



Réf. 2975 GB - 2.32 / d - 1.03



# Fractional power geared motors

Technical catalogue

---

This catalogue presents, in three sections, the LEROY-SOMER range of fractional power gearboxes and geared motors.

#### • 1st section

Each type of gearbox is presented in a format allowing the reader to see the following clearly :

- Product presentation : characteristics and construction
- Adaptation possibilities and designation
- Mounting positions
- Quick selection data (duty factor  $K_P \geq 1$ )
- Table of technical characteristics for a precise definition of slow speed shaft torques at the exact output speed, duty factor, and the most common motor types
- The force on the slow speed shafts (axial and radial)
- Dimensions (feet, baseplate, flange etc.)

#### • 2nd section

- The motors most commonly used :
  - 3-phase and single phase induction with or without brake
  - D.C. with and without brake,  
with their main characteristics.

#### • 3rd section

- Variable speed drives :
  - based on induction motors
  - based on D.C. motors  
with their main characteristics.

---

For additional features and higher power ratings, please contact your Leroy-Somer representative.

# Introduction to electromechanical products

Leroy-Somer's extensive experience in all areas of industrial power and motor transmission has enabled the company to develop a complete range of geared motors for "fractional" power ratings.

These products will satisfy the user's requirements (in terms of reliability and performance) in the same way as the "industrial" products, whilst responding to the specific needs of the "fractional" market.

Certain plants in the Leroy-Somer group have thus become specialists in the design and manufacture of these products (motors and gearboxes).

All gearboxes presented in this catalogue contain components selected for their quality and performance.

For example :

- The shafts (output or countershaft) are mounted exclusively on ball bearings.



- Computer modelling is used for calculation and optimisation of the indentations, and the gear mechanisms on all models are manufactured from the most suitable materials.



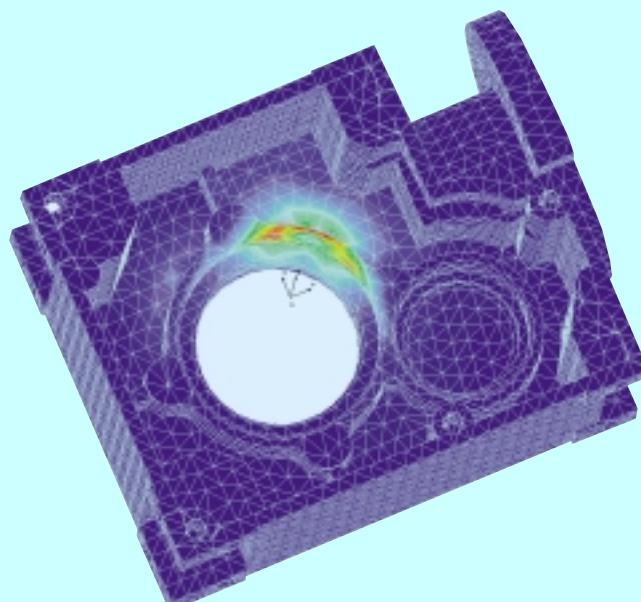
- Reduction gears : all gear mechanisms are made from machine-finished hardened steel. The input trains benefit from micro-finishing ensuring a particularly low noise level.

- Worm gears : all gears are bronze (never synthetic) and the alloy is optimised for the intended function ; shaped screws in hardened steel subjected to either heat treatment and precision grinding, or ionitride surface treatment (depending on type).

Finally, and to ensure the products are easy to use, all gearboxes are lubricated for life and delivered "ready for use".

The motors which accompany the gearboxes in this catalogue are the most commonly used models. As with the gearboxes, these motors are based on the industrial range and comply with the most stringent operating standards.

The products in this catalogue represent the base for "fractional" equipment.



Moreover, all gear housing, produced by computer-aided design (CAD), complies with market requirements : size and weight are reduced to a minimum, and they are easy for the user to service and install.

Any specific application involving requirements for special characteristics, both mechanical and electrical, can be discussed with Leroy-Somer technical departments.



# Electromechanical products

## Contents

PAGES		PAGES	
<b>GENERAL INFORMATION .....</b>	<b>7</b>	<b>A - AXIAL OUTPUT GEARED MOTORS.....</b>	<b>A1.1</b>
Quality assurance	7	Compabloc 1000 (Helical gear mechanism)	A1.1
Units of measurement and standard formulae	8	- General - construction .....	A1.1
- Electricity and Electromagnetism .....	8	- Mounting positions .....	A1.2
- Thermal .....	9	- Adaptation possibilities .....	A1.3
- Noise and vibration .....	9	- Quick selection .....	A1.4
- Dimensions .....	9	- Technical selection .....	A1.6
- Mechanics .....	10	- Gearbox only (AP) characteristics .....	A1.10
Unit conversions	11	- Load on slow speed shaft .....	A1.15
Standard formulae used in electrical engineering	12	- Dimensions .....	A1.20
- Mechanical formulae .....	12	Minibloc MVAB (Double worm type)	A2.1
- Electrical formulae .....	13	- General - construction .....	A2.1
Selecting a geared motor	14	- Mounting positions .....	A2.2
Motor shafts and flanges for gearboxes	15	- Adaptation possibilities .....	A2.3
Flow chart	17	- Quick selection .....	A2.4
		- Technical selection .....	A2.5
		- Gearbox only (AP) characteristics .....	A2.6
		- Load on slow speed shaft .....	A2.7
		- Dimensions .....	A2.8

LEROY-SOMER reserves the right to modify the design, technical specifications and dimensions of the products shown in this catalogue.  
The descriptions cannot in any way be considered contractual.

# Electromechanical products

## Contents

PAGES	PAGES
<b>B - PERPENDICULAR OUTPUT GEARED MOTORS .....</b>	<b>PAGES</b>
<b>Minibloc MVB (Worm) .....</b>	<b>B1.1</b>
- General - construction .....	B1.1
- Mounting positions .....	B1.2
- Adaptation possibilities .....	B1.3
- Selection guide .....	B1.4
- Selection data .....	B1.6
- Load on slow speed shaft .....	B1.8
- Dimensions .....	B1.9
 Minibloc MVA (Worm) .....	 B2.1
- General - construction .....	B2.1
- Mounting positions .....	B2.2
- Adaptation possibilities .....	B2.3
- Selection guide .....	B2.4
- Selection data .....	B2.6
- Gearbox only (AP) characteristics .....	B2.8
- Load on slow speed shaft .....	B2.9
- Dimensions .....	B2.11
 Multibloc 2100 (Worm) .....	 B3.1
- General - construction .....	B3.1
- Mounting positions .....	B3.2
- Adaptation possibilities .....	B3.3
- Selection guide .....	B3.4
- Selection data .....	B3.6
- Gearbox only (AP) characteristics .....	B3.8
- Load on slow speed shaft .....	B3.9
- Dimensions .....	B3.10
 Minibloc MVDE - MVBE (Worm and gear combination) .....	 B4.1
- General - construction .....	B4.1
- Mounting positions .....	B4.2
- Adaptation possibilities .....	B4.3
- Selection guide .....	B4.4
- Selection data .....	B4.5
- Load on slow speed shaft .....	B4.7
- Dimensions .....	B4.9
 <b>C - FIXED-SPEED GEARED MOTORS .....</b>	<b>C1.1</b>
<b>LS 3-phase induction motors .....</b>	<b>C1.1</b>
- General - construction .....	C1.1
- Selection - characteristics .....	C1.2
 <b>LS single phase induction motors .....</b>	<b>C2.1</b>
- General - construction .....	C2.1
- Selection - characteristics .....	C2.2
 <b>FMC brake induction motors .....</b>	<b>C3.1</b>
- General .....	C3.1
- Selection - characteristics .....	C3.2
 <b>FCR brake induction motors .....</b>	<b>C4.1</b>
- General .....	C4.1
- Selection - characteristics .....	C4.2
 <b>FAST brake induction motors .....</b>	<b>C5.1</b>
- General .....	C5.1
- Selection - characteristics .....	C5.2
 <b>MFA enclosed D.C. motors .....</b>	<b>C6.1</b>
- General - construction .....	C6.1
- Mounting positions .....	C6.2
- Selection - characteristics .....	C6.3
- Dimensions .....	C6.4
 <b>MBT low voltage D.C. motors .....</b>	<b>C7.1</b>
- General - construction .....	C7.1
- Mounting positions .....	C7.2
- Selection - characteristics .....	C7.3
- Dimensions .....	C7.4

# Electromechanical products

## Contents

PAGES	PAGES
<b>D - VARIABLE SPEED DRIVE GEARED MOTORS .....</b>	<b>D1.1</b>
MINIDRIVE electronic variable speed drives	D1.1
- General .....	D1.1
- Mounting positions .....	D1.2
- Adaptation possibilities .....	D1.3
- Pilot control and functions .....	D1.4
- Selection .....	D1.6
- Dimensions .....	D1.8
VARMECA variable speed motors + geared motors	D2.1
- General - construction .....	D2.1
- Mounting positions .....	D2.2
- Adaptation possibilities .....	D2.3
- Options .....	D2.4
- Selection .....	D2.5
- VARMECA dimensions.....	D2.6
- VARMECA + Compabloc 1000 selection.....	D2.10
- VARMECA + Compabloc 1000 dimensions.....	D2.12
- VARMECA + Multibloc 2100 selection.....	D2.18
- VARMECA + Multibloc 2100 dimensions.....	D2.19
MVE electronic variable speed drives	D3.1
- General - construction .....	D3.1
- Mounting positions .....	D3.2
- Adaptation possibilities .....	D3.3
- Selection - characteristics .....	D3.4
- MVE dimensions.....	D3.5
- MVE + Compabloc 1000 selection.....	D3.8
- MVE + Compabloc 1000 dimensions.....	D3.9
- MVE + Minibloc MVA selection.....	D3.12
- MVE + Minibloc MVA dimensions.....	D3.13
- MVE + Multibloc 2100 selection.....	D3.14
- MVE + Multibloc 2100 dimensions.....	D3.15
- MVE + Minibloc MVDE - MVBE selection.....	D3.17
- MVE + Minibloc MVDE - MVBE dimensions.....	D3.18

# General information

## Quality assurance

Industrial concerns are having to cope with an ever more competitive environment. Productivity depends to a considerable degree on the right investment at the right time.

LEROY-SOMER has the answer, building motors to precise standards of quality.

When carrying out quality checks on a machine's performance, the first step is to **measure the level of customer satisfaction**.

Careful study of this information tells us which points need looking at, improving and monitoring.

From the moment you place your order with our administrative staff until the motor is up and running (after design studies, launch and production activities) we keep you informed and involved.

Our own procedures are constantly under review. All our staff are involved in both operational process analysis and continuous training programmes. These initiatives help them serve you better, and increased skills bring increased motivation.

At LEROY-SOMER, we think it vital for our customers to know the importance we attach to quality.

LEROY-SOMER has entrusted the certification of its expertise to various international organizations. Certification is granted by independent professional auditors, and recognises the high standards of the **company's quality assurance procedures**.

All activities resulting in the final version of the machine have therefore received official ISO 9000 accreditation. Products are also approved by official bodies who inspect their technical performance with regard to the various standards. This is a fundamental requirement for a company of international standing.



ATTESTATION



# General information

## Units of measurement and standard formulae

### ELECTRICITY AND ELECTROMAGNETISM

Quantity				Units		Units and expressions not recommended
Name	French name	Symbol	Definition	SI	Non SI, but accepted	Conversion
<b>Frequency</b>	Fréquence Période	$f$	$f = \frac{1}{T}$	Hz (hertz)		
<b>Electric current</b>	Courant électrique (intensité de)	$I$		A (amps)		
<b>Electrical potential</b>	Potentiel électrique	$V$		V (volt)		
<b>Voltage</b>	Tension	$U$				
<b>Electromotive force</b>	Force électromotrice	$E$				
<b>Phase angle</b>	Déphasage	$\varphi$	$U = U_m \cos \omega t$ $i = i_m \cos (\omega t - \varphi)$	rad	° degree	
<b>Power factor</b>	Facteur de puissance	$\cos \varphi$				
<b>Reactance</b>	Réactance	$X$	$Z =  Z  e^{j\varphi}$			$j$ is defined as $j^2 = -1$ $\omega$ pulsation = $2 \pi f$
<b>Resistance</b>	Résistance	$R$	$= R + jX$ $ Z  = \sqrt{R^2 + X^2}$	$\Omega$ (ohm)		
<b>Impedance</b>	Impédance	$Z$	$X = L\omega - \frac{1}{C\omega}$			
<b>Self inductance</b>	Inductance propre (self)	$L$	$L = \frac{\Phi}{I}$	H (henry)		
<b>Capacitance</b>	Capacité	$C$	$C = \frac{Q}{V}$	F (farad)		
<b>Quantity of electricity</b>	Charge électrique, Quantité d'électricité	$Q$	$Q = \int I dt$	C (coulomb)	A.h 1 A.h = 3600 C	
<b>Resistivity</b>	Résistivité	$\rho$	$\rho = \frac{R.S}{l}$	$\Omega . m$		$\Omega / m$
<b>Conductance</b>	Conductance	$G$	$G = \frac{1}{R}$	S (siemens)		$1 / \Omega = 1 S$
<b>Number of turns (coil)</b>	Nombre de tours (spires) de l'enroulement	$N$				
<b>Number of phases</b>	Nombre de phases	$m$				
<b>Number of pairs of poles</b>	Nombre de paires de pôles	$p$				
<b>Magnetic field</b>	Champ magnétique	$H$		A/m		
<b>Magnetic potential difference</b>	Différence de potentiel magnétique	$Um$		A		The unit AT (ampere-turns) is incorrect because it treats "turn" as a physical unit
<b>Magnetomotive force</b>	Force magnétomotrice Solénation, courant totalisé	$F, Fm$ $H$	$F = \phi H_s d_s$ $H = NI$			
<b>Magnetic induction</b>	Induction magnétique, Densité de flux magnétique	$B$		T (Tesla) = Wb/m <sup>2</sup>		(gauss) 1 G = $10^{-4}$ T
<b>Magnetic flux density</b>						
<b>Magnetic flux</b>	Flux magnétique, Flux d'induction magnétique	$\Phi$	$\Phi = \int f f_s B_n ds$	Wb (weber)		(maxwell) 1 max = $10^{-8}$ Wb
<b>Magnetic vector potential</b>	Potentiel vecteur magnétique	$A$		Wb/m		
<b>Permeability</b>	Perméabilité d'un milieu	$\mu = \mu_0 \mu_r$	$B = \mu H$			
<b>Permeability of vacuum</b>	Perméabilité du vide	$\mu_0$	$\mu_0 = 4\pi 10^{-7} \text{ H/m}$	H/m		
<b>Permittivity</b>	Permittivité	$\epsilon = \epsilon_0 \epsilon_r$	$\epsilon_0 = \frac{1}{36 \pi 10^9} \text{ F/m}$	F/m		

# General information

## THERMODYNAMICS

Quantity				Units		Units and expressions not recommended
Name	French name	Symbol	Definition	SI	Non SI, but accepted	Conversion
Temperature Thermodynamic	Température Thermodynamique	$T,$		K (kelvin)	temperature Celsius, $\theta, {}^\circ\text{C}$ $T = \theta + 273.15$	${}^\circ\text{C}$ : Degree Celsius $\theta_C$ : temperature. in ${}^\circ\text{C}$ $\theta_F$ : temperature. in ${}^\circ\text{F}$ $\theta_C = \frac{\theta_F - 32}{1.8}$
Temperature rise	Ecart de température	$\Delta T$		K	${}^\circ\text{C}$	$1 {}^\circ\text{C} = 1 \text{ K}$
Heat flux density	Densité de flux thermique	$q, \varphi$	$q = \frac{\Phi}{A}$			
Thermal conductivity	Conductivité thermique	$\lambda$		W/m.K		
Total heat transmission coefficient	Coefficient de transmission thermique global	$K$	$\varphi = K (T_{r2} - T_{r1})$	W/m <sup>2</sup> .K		
Heat capacity	Capacité thermique	$C$	$C = \frac{dQ}{dT}$	J/K		
Specific heat capacity	Capacité thermique massique	$c$	$c = \frac{C}{m}$	J/kg.K		
Internal energy	Energie interne	$U$		J		

## NOISE AND VIBRATION

Quantity				Units		Units and expressions not recommended
Name	French name	Symbol	Definition	SI	Non SI, but accepted	conversions
Sound power level	Niveau de puissance acoustique	$L_w$	$L_w = 10 \lg (P/P_o)$ ( $P_o = 10^{-12} \text{ W}$ )	dB (decibel)		$\lg$ logarithm to base 10 $\lg 10 = 1$
Sound pressure level	Niveau de pression acoustique	$L_p$	$L_p = 20 \lg (P/P_o)$ ( $P_o = 2 \times 10^{-5} \text{ Pa}$ )	dB		

## DIMENSIONS

Quantity				Units		Units and expressions not recommended
Name	French name	Symbol	Definition	SI	Non SI, but accepted	conversions
Angle (plane angle)	Angle (angle plan)	$\alpha, \beta, T, \varphi$			degree : ${}^\circ$ minute : ' second : ''	$180^\circ : \pi \text{ rad} \approx 3.14 \text{ rad}$
Length	Longueur	$l$				cm, dm, dam, hm
Breadth	Largeur	$b$				1 inch = 1" = 25.4 mm
Height	Hauteur	$h$				1 foot = 1' = 304.8 mm
Radius	Rayon	$r$				$\mu\text{m}$
Curved length	Longueur curviligne	$s$				micron $\mu$ angström : $A = 0.10 \text{ nm}$
Area	Aire, superficie	$A, S$		$\text{m}^2$		1 square inch = $6.45 \times 10^{-4} \text{ m}^2$
Volume	Volume	$V$		$\text{m}^3$	litre : l litre : L	gallon UK = $4.546 \times 10^{-3} \text{ m}^3$ gallon US = $3.785 \times 10^{-3} \text{ m}^3$

# General information

## MECHANICS

Quantity				Units		Units and expressions not recommended
Name	French name	Symbol	Definition	SI	Non SI, but accepted	Conversion
Time	Temps	$t$		s (second)	minute : min hour : h day : d	Symbols ' and " are reserved for angles. minute not written as mn
Period (periodic time)	Intervalle de temps, durée Période (durée d'un cycle)	$T$				
Angular speed	Vitesse angulaire	$\omega$	$\omega = \frac{d\phi}{dt}$	rad/s		
Circular frequency	Pulsation					
Angular acceleration	Accélération angulaire	$\alpha$	$\alpha = \frac{d\omega}{dt}$	rad/s <sup>2</sup>		
Speed	Vitesse	$u, v, w,$	$v = \frac{ds}{dt}$	m/s	1 km/h = 0.277778 m/s	
Velocity	Célérité	$c$			1 m/min = 0.0166 m/s	
Acceleration (or deceleration)	Accélération (ou décélération)	$a$	$a = \frac{dv}{dt}$	m/s <sup>2</sup>		
Acceleration of free fall	Accélération de la pesanteur		$g = 9.81 \text{ m/s}^2$ (approx)			
Revolution per minute	Fréquence de rotation	$n$		s <sup>-1</sup>	min <sup>-1</sup>	tr/mn, RPM, TM...
Weight	Masse	$m$		kg (kilogram)	tonne : t 1 t = 1000 kg	kilo, kgs, KG... 1 pound : 1 lb = 0.4536 kg
Mass density	Masse volumique	$\rho$	$\frac{dm}{dV}$	kg/m <sup>3</sup>		
Linear density	Masse linéique	$\rho_e$	$\frac{dm}{dL}$	kg/m		
Surface mass	Masse surfacique	$\rho_A$	$\frac{dm}{dS}$	kg/m <sup>2</sup>		
Momentum	Quantité de mouvement	$P$	$p = m.v$	kg.m/s		
Moment of inertia	Moment d'inertie	$J, I$	$I = \sum m.r^2$	kg.m <sup>2</sup>	$J = \frac{MD^2}{4}$ pound per square foot = 1 lb.ft <sup>2</sup> = 42.1 x 10 <sup>-3</sup> kg.m <sup>2</sup>	
Force	Force	$F$		N (newton)		
Weight	Poids	$G$	$G = m.g$			kgf = kgp = 9.81 N pound force = lbF = 4.448 N
Moment of force, Torque	Moment d'une force	$M$	$M = F.r$	N.m		mdaN, mkg, m.N 1 mkg = 9.81 N.m 1 ft.lbF = 1.356 N.m 1 in.lbF = 0.113 N.m
Pressure	Pression	$p$	$p = \frac{F}{S} = \frac{F}{A}$	Pa (pascal)	bar 1 bar = 10 <sup>5</sup> Pa	1 kgf/cm <sup>2</sup> = 0.981 bar 1 psi = 6894 N/m <sup>2</sup> = 6894 Pa 1 psi = 0.06894 bar 1 atm = 1.013 x 10 <sup>5</sup> Pa
Normal stress	Contrainte normale	$\sigma$		Pa		kg/mm <sup>2</sup> , 1 daN/mm <sup>2</sup> = 10 MPa
Shear stress	Contrainte tangentielle, Cission	$\tau$		MPa = 10 <sup>6</sup> Pa is used		psi = pound per square inch 1 psi = 6894 Pa
Friction factor	Facteur de frottement	$\mu$				incorrectly = friction coefficient $f$
Work	Travail	$W$	$W = F.I$			1 N.m = 1 W.s = 1 J
Energy	Energie	$E$				1 kgm = 9.81 J
Potential energy	Energie potentielle	$Ep$		J (joule)	(calorie) 1 cal = 4.18 J	
Kinetic energy	Energie cinétique	$Ek$	$1/2 J \omega^2$			1 Btu = 1055 J (British thermal unit)
Quantity of heat	Quantité de chaleur	$Q$				
Power	Puissance	$P$	$P = \frac{W}{t}$	W (watt)		1 ch = 736 W 1 HP = 746 W
Volumetric flow	Débit volumique	$q_v$	$q_v = \frac{dV}{dt}$	m <sup>3</sup> /s		
Efficiency	Rendement	$\eta$		< 1		%
Dynamic viscosity	Viscosité dynamique	$\eta, \mu$		Pa.s		poise, 1 P = 0.1 Pa.s
Kinematic viscosity	Viscosité cinématique	$\nu$	$\nu = \frac{\eta}{\rho}$	m <sup>2</sup> /s		stokes, 1 St = 10 <sup>-4</sup> m <sup>2</sup> /s

# General information

## Unit conversions

Units	MKSA (SI = international system)	AGMA (US system)
Length	1 m = 3.2808 ft    1 mm = 0.03937 in	1 ft = 0.3048 m    1 in = 25.4 mm
Weight	1 kg = 2.2046 lb	1 lb = 0.4536 kg
Torque	1 N.m = 0.7376 lb.ft    1 N.m = 141.6 oz.in	1 lb.ft = 1.356 N.m    1 oz.in = 0.00706 N.m
Force	1 N = 0.2248 lb	1 lb = 4.448 N
Moment of inertia	1 kg.m <sup>2</sup> = 23.73 lb.ft <sup>2</sup>	1 lb.ft <sup>2</sup> = 0.04214 kg.m <sup>2</sup>
Power	1 kW = 1.341 HP	1 HP = 0.746 kW
Pressure	1 kPa = 0.14505 psi	1 psi = 6.894 kPa
Magnetic flux	1 T = 1 Wb / m <sup>2</sup> = 6.45210 <sup>4</sup> line / in <sup>2</sup>	1 line / in <sup>2</sup> = 1.55010 <sup>-5</sup> Wb / m <sup>2</sup>
Magnetic losses	1 W / kg = 0.4536 W / lb	1 W / lb = 2.204 W / kg

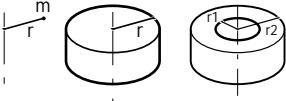
## GLOSSARY

Symbol	Definition	Symbol	Definition
d/h	starts per hour	<b>M</b>	torque transmitted by the geared motor N.m
h/j	daily operating time in hours per day	<b>M<sub>Max</sub></b>	maximum permissible torque N.m
FJ	inertia factor	<b>M<sub>S max</sub></b>	maximum output selection torque N.m
FM	operating factor expressed as a %	<b>M<sub>uS</sub></b>	torque required for the application during output N.m
F <sub>r</sub>	permissible radial force N	<b>M<sub>nS</sub></b>	rated output torque
i	exact reduction of gearbox	<b>n<sub>min</sub>, n<sub>max</sub></b>	gearbox minimum output speed gearbox maximum output speed min <sup>-1</sup>
i <sub>u</sub>	reduction available to the application	<b>n<sub>uE</sub></b>	useful input rotational speed of gearbox min <sup>-1</sup>
J <sub>C/M</sub>	moment of inertia of the load applied to the motor shaft	<b>n<sub>uS</sub></b>	useful output rotational speed of gearbox min <sup>-1</sup>
J <sub>M</sub>	moment of inertia of the motor	<b>P</b>	standard motor power kW
K	overall duty factor	<b>P<sub>n</sub></b>	rated power kW
K1	duty factor dependent upon the inertia	<b>P<sub>uE</sub></b>	input power required for the application kW
K2	duty factor dependent upon the operating factor	<b>P<sub>uS</sub></b>	output power required for the application kW
K <sub>P</sub>	maximum possible duty factor for the geared motor	<b>P<sub>t</sub></b>	rated thermal power of gearbox kW
K <sub>θ</sub>	thermal power correction factor	<b>θ</b>	ambient temperature °C
		<b>Z (d/h)</b>	starting frequency of the application (d/h)

# General information

## Standard formulae used in electrical engineering

### MECHANICAL FORMULAE

Title	Formula	Units	Definitions / Notes
Force	$F = m \cdot \gamma$	$F$ in N $m$ in kg $\gamma$ in $\text{m/s}^2$	A force $F$ is the product of a mass $m$ multiplied by an acceleration $\gamma$
Weight	$G = m \cdot g$	$G$ in N $m$ in kg $g = 9.81 \text{ m/s}^2$	
Torque (moment)	$M = F \cdot r$	$M$ in N.m $F$ in N $r$ in m	The torque (moment) $M$ of a force in relation to an axis is the product of that force multiplied by the distance $r$ of the point of application of $F$ in relation to the axis.
Power - Rotation	$P = M \cdot \omega$	$P$ in W $M$ in N.m $\omega$ in rad/s	Power $P$ is the quantity of work yielded per unit of time.
- Linear	$P = F \cdot V$	$P$ in W $F$ in N $V$ in m/s	$P = M \cdot \frac{N}{9.55}$ with $N$ in $\text{min}^{-1}$ $V$ = linear velocity
Acceleration time	$t = J \cdot \frac{\omega}{M_A}$	$t$ in s $J$ in $\text{kg.m}^2$ $\omega$ in rad/s $M_A$ in N.m	$J$ is the moment of inertia of the system $M_A$ is the moment of acceleration Note : All the calculations refer to a single rotational speed $\omega$ where the inertias at $\omega'$ are corrected to speed $\omega$ by the following calculation : $J_{\omega} = J_{\omega'} \cdot \left(\frac{\omega'}{\omega}\right)^2$
Moment of inertia Centre of gravity Solid cylinder Hollow cylinder	$J = m \cdot r^2$ $J = m \cdot \frac{r^2}{2}$ $J = m \cdot \frac{r_1^2 + r_2^2}{2}$	$J$ in $\text{kg.m}^2$ $m$ in kg $r$ in m	
Inertia of a mass in linear motion	$J = m \cdot \left(\frac{v}{\omega}\right)^2$	$J$ in $\text{kg.m}^2$ $m$ in kg $v$ in m/s $\omega$ in rad/s	The moment of inertia of a mass in linear motion transformed to a rotating motion.
Stopping time	$t_a = t_c + t_2 + t_f$	$t_a$ in ms	$t_c$ Response time of control devices (contactors, limit switches, etc) $t_2$ Response time on brake engagement (see brake tables) $t_f$ Braking time of brake
Braking time	$t_f = \frac{(J_m + J_c) \omega_N}{M_f \pm M_c}$	$J$ in $\text{kg.m}^2$ $M$ in N.m $\omega$ in rad/s	$J_m$ Moment of inertia of brake motor, $J_c$ Moment of inertia of the load $\omega_N$ Angular speed of motor $M_f$ Braking torque of brake motor, $M_c$ Torque due to load : + if it is braking, - if it is driving
Moment of inertia of the load applied to the motor shaft	$J_c = J_1 + J_2 \left(\frac{\omega_2}{\omega_N}\right)^2 + m \left(\frac{v}{\omega_N}\right)^2$	$J$ in $\text{kg.m}^2$ $m$ in kg $v$ in m/s $\omega$ in rad/s	$J_1$ Moment of inertia turning at $\omega_N$ motor angular speed $J_2$ Moment of inertia turning at $\omega_2$ load angular speed $m$ Mass moving at $\omega$ linear speed
Stopping distance	$l_a = v \left(t_c + t_2 + \frac{t_f}{2}\right)$	$l_a$ in m $v$ in m/s $t$ in s	Distance due to linear speed and to the various response and braking times
Number of revolutions before stopping	$a = \frac{\omega_N}{2 \pi} \left(t_c + t_2 + \frac{t_f}{2}\right)$	$\omega$ in rad/s $t$ in s	Number of revolutions due to the angular speed and to the various response and braking times
Accuracy on stopping			Accuracy on stopping or repeat accuracy on braking depends on several factors : state of control devices, temperature, air gap, brake wear, mechanical play in the drive chain, etc. It is reasonable to expect accuracy on stopping of $\pm 20\%$ ; using an A.C. electromagnet, or D.C. electromagnet with D.C. disconnection, and special precautions : $\pm 10\%$ .

# General information

## ELECTRICAL FORMULAE

Title	Formula	Units	Definitions / Notes
Moment of acceleration (acceleration torque)	$M_a = \frac{M_D + 2 M_A + 2 M_M + M_N}{6} - M_r$ General formula : $M_a = \frac{1}{N} \int_0^n (M_{mot} - M_r) dN$	$M_a$ in N.m	The moment of acceleration $M_a$ is the difference between the motor torque (estimated), and the resistive torque of the load $M_r$ ( $M_D, M_A, M_M, M_N$ , see graph below)
Braking torque	$M_f = \frac{(J_m + J_c) \omega_n}{t_b} \pm M_c$	$M_f$ in N.m	The braking torque of a brake motor, when lifting : $M_f \# 2 \times M_N$ The braking torque of a brake motor, when transporting : $M_f$ from 0.6 to 0.8 x $M_N$
Power required by the machine	$P = \frac{M \cdot \omega}{\eta_A}$	$P$ in W $M$ in Nm $\omega$ in rad/s $\eta_A$ no unit	$\eta_A$ expresses the efficiency of the driven machine $M$ is the torque required by the driven machine
Power drawn by the motor (3-phase)	$P = \sqrt{3} \cdot U \cdot I \cdot \cos \varphi$	$P$ in W $U$ in V $I$ in A	$\varphi$ current/voltage phase angle $U$ voltage between phases $I$ line current
Reactive power drawn by the motor	$Q = \sqrt{3} \cdot U \cdot I \cdot \sin \varphi$		
Reactive power provided by a capacitor bank	$Q = \sqrt{3} \cdot U^2 \cdot C \cdot \omega$	Capacity in $\mu F$ $\omega$ circular frequency of mains	
Power supplied by the motor (3-phase)	$P = \sqrt{3} \cdot U \cdot I \cdot \cos \varphi \cdot \eta$		$\eta$ expresses motor efficiency at the point of operation under consideration
Slip	$g = \frac{N_s - N}{N_s}$		Slip is the relative deviation between the actual speed $N$ and the synchronous speed $N_s$
Synchronous speed	$N_s = \frac{120 \cdot f}{p}$	$N_s$ in $\text{min}^{-1}$ $f$ in Hz	$p$ = number of poles $f$ = mains frequency

Quantity	Symbols	Units	Graph of torque and current in terms of speed
Starting current Rated current No-load current	$I_D$ $I_N$ $I_0$	A	
Starting torque Run-up torque Maximum or breakdown torque Rated torque	$M_D$ $M_A$ $M_M$ $M_N$	N.m	
Rated speed Synchronous speed	$N_N$ $N_s$	$\text{min}^{-1}$	

# Electromechanical products

## Selection

In addition to the usual decision criteria : the slow speed, the output torque, the type of motor power supply etc, it is important to know in advance the precise application and the type of operation it will be used for.

The application must be taken into account when selecting a gearbox or geared motor :

ALL THE QUICK SELECTION DATA IN THIS CATALOGUE IS ESTABLISHED FOR CLASS I OPERATION ( $K_p \geq 1$  - Equivalent to Agma class I).

The table below summarises the relationship between the "Agma" class and the gearbox K<sub>p</sub> duty factor:

AGMA class	K <sub>p</sub> duty factor
I	1
II	1,4
III	2

The operating class is defined by the daily operating time and the type of application

according to the table below :

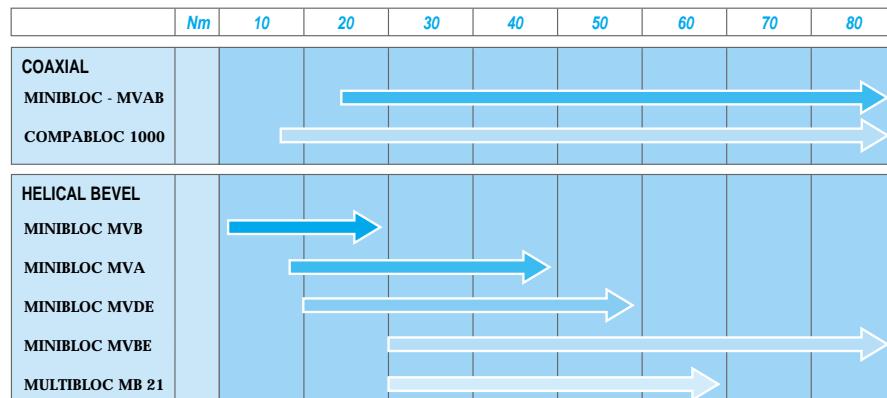
Type of application	Daily operating time	Duty factor K <sub>p</sub>
Shock-free, few starts	2 h/day	0,8
Shock-free, few start(*)	10 h/day	1
With damped shocks	10 h/day	1,4
Shock-free, few start-ups	24 h/day	1,4
With severe shocks, frequent start-ups	10 h/day	2
With damped shocks	24 h/day	2

(\*) Quick selection data

If your application is used for relatively light duty (for example 2 hours per day with only a few starts), using the characteristics tables, you may select a device for which the duty factor K<sub>p</sub> is less than 1.

If you are not sure about the application and its operating conditions, you are advised to contact your LEROY-SOMER representative.

### MAXIMUM OUTPUT TORQUE

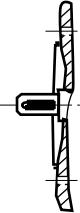
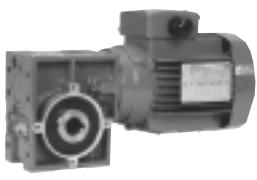
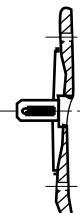
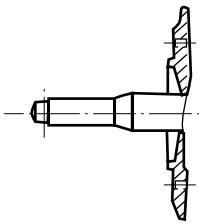
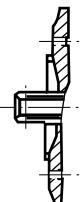


The useful torque on slow speed shafts in the tables is given for :

- gearboxes which have been run-in,
- stable lubricant temperature,
- 4-pole motors powered at a frequency of 50 Hz.

# Electromechanical products

## Shafts and motor flanges for gearboxes

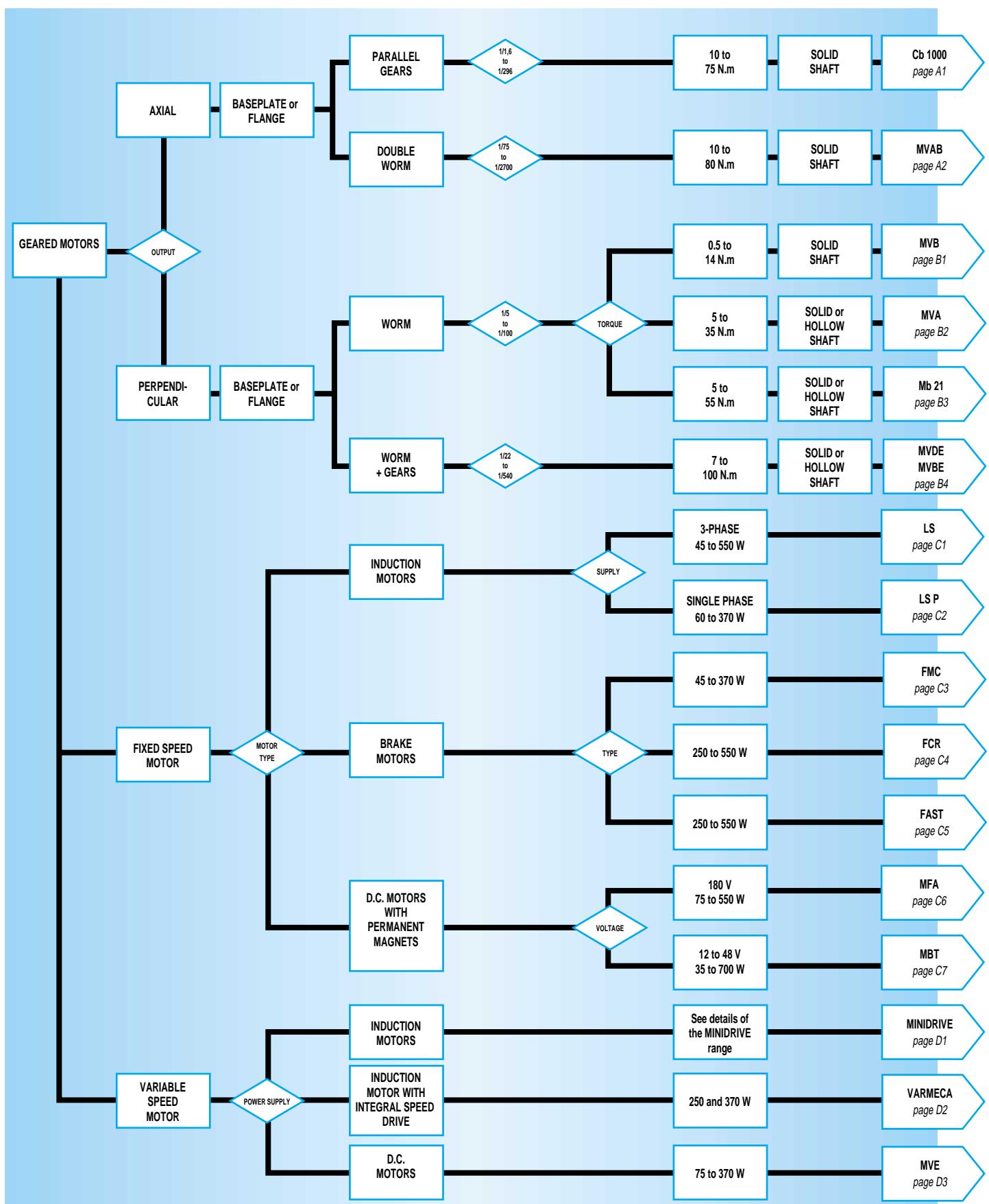
Type	Dimensions	Use
<b>Mb 21</b>	IEC B14 standard motors LS 56 : Ø 9 × 20 - FT 65 flange LS 63 : Ø 11 × 23 - FT 75 flange LS 71 : Ø 14 × 30 - FT 85 flange	 Mb 21 
<b>MVA</b>	Ø 11 × 23 W = 0 FT 65 flange (8 holes)	 MVA 
<b>MVB</b>	Ø 10 × 36.5 W = 26.5 FT 65 flange (8 holes)	 MVB - MVAB - MVDE - MVBE 
<b>Cb 1000</b>	Hollow Ø 9  FT 65 flange (8 holes) or monobloc special flange (Cb 1700 only)  "U mounting" - LS 56 Ø 9 × 20 FT 100 flange - LS 63 Ø 11 × 23 FT 115 flange - LS 71 Ø 14 × 30 FT 130 flange  Note : All these flanges can be combined with any of these shaft extensions, but there are no other possibilities.	 Cb 1700 - Cb 1500 
<b>FMC brake</b>	Ø 12 × 12 W = 6 + pin hole Fixing using 3 M4 holes on Ø 72 (at 120°)	At rear of all motors (with the exception of MS)

All shaft diameters have a tolerance limit of j6 as standard.



# Electromechanical products

## Flow chart





# Electromechanical products

## Compabloc 1000

### General



Compabloc 1000 geared motors with parallel gears are used to adapt the speed of the electric motor to that of the driven machine. Their size is therefore determined by the motor power ( $P$ ) expressed in kilowatts (kW) and the output rotation speed of the gearbox ( $n_S$ ) in revolutions per minute ( $\text{min}^{-1}$ ). The main characteristic of the speed reducer is the nominal output torque ( $M_{nS}$ ) expressed in Newton-metres (N.m).

Two sizes : 15 - 17.  
Nominal output torque : from 10 to 80 N.m.  
Power rating : from 0.06 to 0.45 kW.  
Reduction ratios : from 1.6 to 296.  
From one to four reduction stages : 1, 2, 3, 4.  
High efficiency.  
Reversible.  
Very quiet operation.

$$M_{nS} = \frac{P \times 9550}{n_S} \times \text{efficiency}$$

### Construction

#### Description of Compabloc gearboxes (Cb)

Component	Materials	Remarks
Housing	Aluminium	- Use of die-cast aluminium - Monobloc, internally ribbed - The use of aluminium considerably decreases its weight and improves the heat dissipation - With S baseplate or with BS-BD flanges, they are compact and meet industrial requirements
Gears	Steel Ni Cr Mo	- Cut by the gear hob, they are heat treated and tempered and then undergo final machining - The input train also undergoes microfinishing which ensures a particularly low noise level during operation
Lipseals	Acrylonitrile	- Seals between the housing and the flange - Antidust lipseals on slow speed shaft
Shaft	Steel	- Grinding of sealing surfaces - Key in accordance with DIN 6883 (high version) - Tolerance of diameters in accordance with IEC 72-1 (DIN 748) - Tapped hole at the shaft end for fixing connecting devices in accordance with DIN 332 version I
End shield	Aluminium	Strongly reinforced, it ensures ruggedness of the gearbox under heavy loads
Lubrication	Synthetic oil	- Requiring no maintenance, lubricated for the lifetime of the gearbox - Delivered with the quantity of oil corresponding to the operating position - No drain or fill-level plug. Vent hole on request
Mounting		AP : gearbox with input shaft MI : geared motor with integrated motor MU : geared motor with IEC motor, manufactured with universal mounting
Standard motors		LS : multivoltage 220/380 V, 230/400 V, 240/415 V 3-phase and 230 V single phase - Pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down) - Terminal box fitted with a cable gland with system preventing accidental removal of cable - IP 55 standard protection
Brake motors		FMC : 3-phase or single phase failsafe brake motor for 0.06 to 0.25 kW motors FCO / FCL : 3-phase failsafe brake induction motor from 0.25 to 0.55 kW FAST : 3-phase failsafe brake induction motor with field deviator, from 0.25 to 0.55 kW
Other motors		MFA : D.C. motor IP 23 - IP 44 from 0.075 to 0.37 kW (3000 min <sup>-1</sup> ) MBT : low voltage D.C. motor
Finish	Paint	Shade : RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 µm)

A

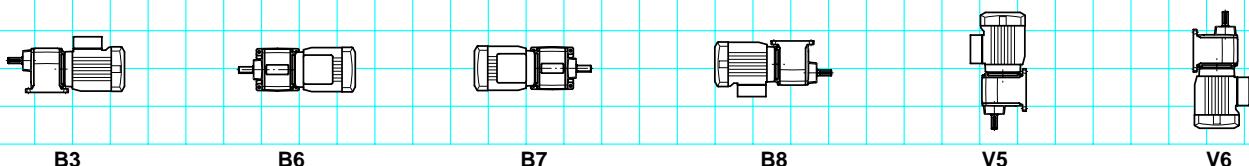
AXIAL OUTPUT GEARED MOTORS

# Electromechanical products

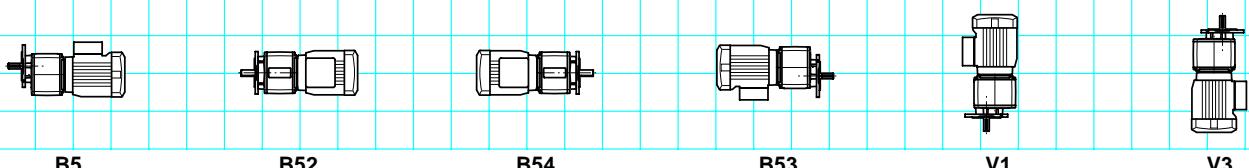
## Compabloc 1000

### Mounting positions

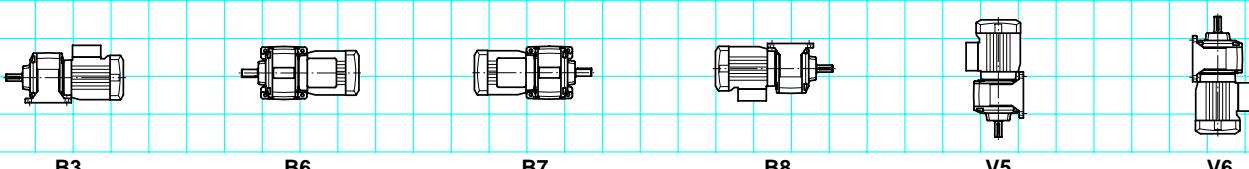
Compabloc Cb 1502 - 1503 - 1504 - Multiposition - with S baseplate (standard)



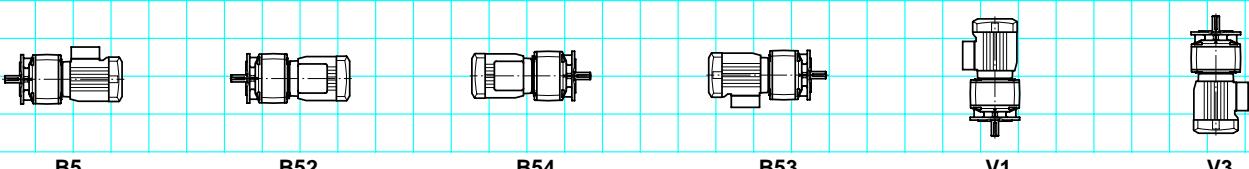
Compabloc Cb 1502 - 1503 - 1504 - Multiposition - flange mounting BS (standard) or BD1 - 2



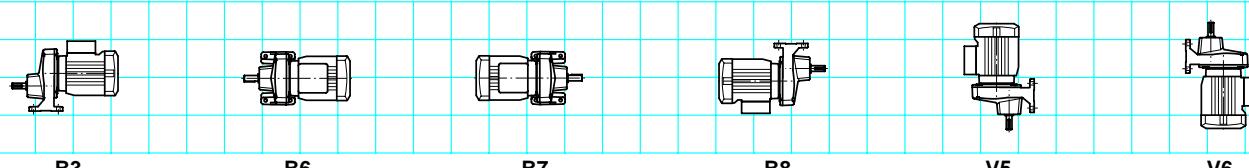
Compabloc Cb 1702 - 1703 - Multiposition - with S baseplate (standard)



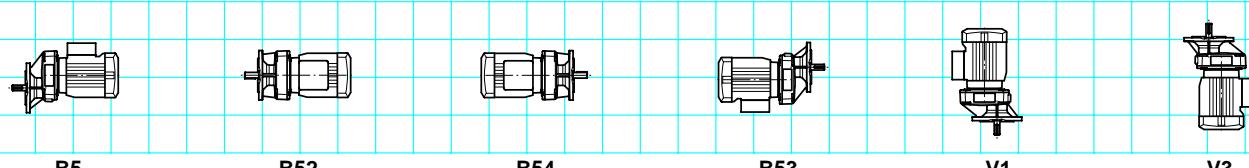
Compabloc Cb 1702 - 1703 - Multiposition - flange mounting BS (standard) or BD1 - 2



Compabloc Cb 1701 - Multiposition - with S baseplate (standard)



Compabloc Cb 1701 - Multiposition - flange mounting BS (standard) or BD1 - 2

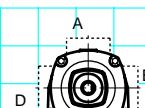


For all these geared motors the positions should only be specified if it is necessary to provide : a vent hole on the gearbox and/or condensate drain holes on the motor. It is VITAL that position V3 and V6A are specified.

All these mounting positions also apply to input shaft (AP) gearboxes without a motor.

#### Terminal box positions

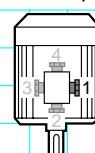
(in relation to the feet of the Compabloc housing)



A : standard

#### Cable gland positions

(Mounting with brake motors : positions 1 and 3 only)



1 : standard

# Electromechanical products

## Compabloc 1000

### Adaptation possibilities

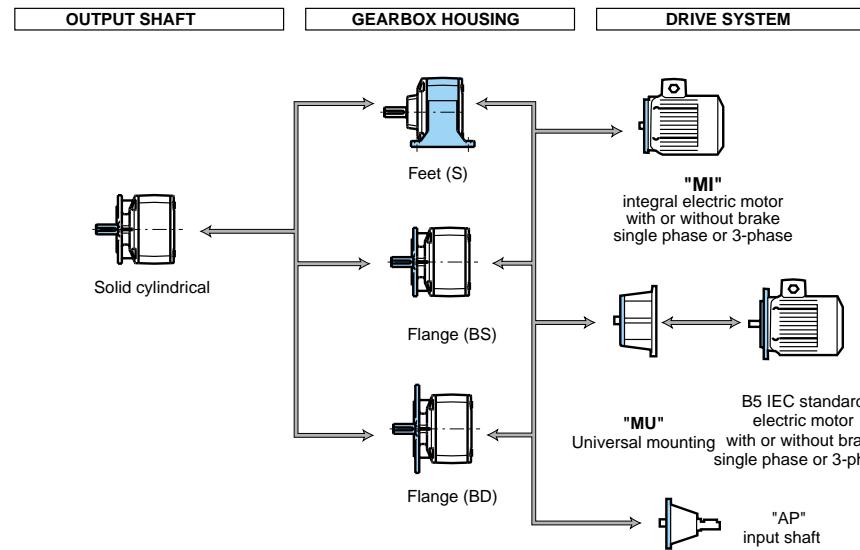
Leroy-Somer offers several drives for its gearboxes which respond to very wide-ranging needs. They are described below and offered in this catalogue, either in the section relating to gearboxes for fixed-speed motors, or in the section on Variable speed control for the types of drive selected.

For other drives, consult the Leroy-Somer technical specialists who will be glad to assist.

A

 Compabloc 1000 gearboxes can be used in conjunction with the following drives :

- single phase motors :
  - LS motor from 0.06 to 0.37 kW,
  - FMC brake motor from 0.06 to 0.37 kW.
- 3-phase induction motors :
  - LS motor from 0.06 to 0.55 kW,
  - FMC brake motor from 0.06 to 0.37 kW,
  - FCR brake motor from 0.25 to 0.55 kW,
  - FAST brake motor from 0.25 to 0.55 kW.
- D.C. motors :
  - MFA from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ).
- electronic drives :
  - MVE from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ).
- low voltage D.C. motors  
(12 to 48 V) :
  - MBT from 0.07 to 0.55 kW.



AXIAL OUTPUT GEARED MOTORS

### Designation / Coding

Cb	1703	S	50	MI	4P, LS63	0.18 kW
Gearbox type	Size	Type of mounting	Exact reduction	Integral mounting	Polarity, type of LS motor and frame size	Motor power

 Example of coding :

Cb 1703 - S - 50 - MI - 4P LS63 - 0.18 kW -  
230/400 V - 3-PH - 50 Hz

# Electromechanical products

## Compabloc 1000

### Selection

Gearbox : Compabloc (Cb) S baseplate or BS, BD flange form

Induction motors : LS series, IP 55, class F, 4-pole

Integral mounting MI

3-phase : multivoltage : 220/380 V - 230/400 V - 240/415 V from 0.06 to 0.55 kW

Single phase : multivoltage : 220/240 V from 0.06 to 0.37 kW

Universal mounting MU

Brake motors : LS series induction, types FCR, FAST, FMC, class F

FCR : multivoltage : 220/380 V - 230/400 V - 240/415 V from 0.25 to 0.55 kW

FAST : multivoltage : 220/380 V - 230/400 V from 0.25 to 0.55 kW

FMC : multivoltage : 220/380 V - 230/400 V - 240/415 V from 0.06 to 0.37 kW

Input shaft mounting AP

**Classe I**  
 $(K_p \geq 1)$

181 to 906 min<sup>-1</sup>

		LS motors, power in Kw						
Output speed min <sup>-1</sup>	Reduction index	0.06	0.09	0.12	0.18	0.25	0.37	0.55
		Type of 4-pole 3-phase motor and frame size						
		56		63			71	
		Type of 4-pole single phase motor and frame size						
		56 P		63 P			71 P	
181	8							
204	7,1							
230	6,3							
259	5,6							
290	5							
322	4,5							
363	4				Cb 1701			
408	3,55							
460	3,15							
518	2,8							
580	2,5							
647	2,24							
725	2							
806	1,8							
906	1,6							
Brake motors								
FMC		56		63		71 <sup>1</sup>		
FAST/FCR						71		
Type of 4-pole single phase motor and frame size								
FMC		56 P		63 P		71 P <sup>1</sup>		

1. For 0.37 kW 4-pole motors, the braking torque is equal to the motor  $T_{N_r}$

#### Exact reductions

Type	Reduction indices														
	8	7,1	6,3	5,6	5	4,5	4	3,55	3,15	2,8	2,5	2,24	2	1,8	1,6
<b>Cb 1701</b>	8,1	7,2	6,4	5,7	5,2	4,7	4,2	3,6	3,3	2,9	2,7	2,4	2,1	1,8	1,6

#### Selection example

Required power :	0.18 kW
Required speed :	900 min <sup>-1</sup>
Duty factor necessary for the application :	K = 1
Mounting :	foot, horizontal
<b>Designation : Cb 1701 S - 1.6 MI / 4P LS 63 0.18 kW 400 V</b>	

# Electromechanical products

## Compabloc 1000

### Selection

**Classe I**  
 $(K_p \geq 1)$

Gearbox : Compabloc (Cb) S baseplate or BS, BD flange form  
 Induction motors : LS series, IP 55, class F, 4-pole  
 3-phase : multivoltage : 220/380 V - 230/400 V - 240/415 V from 0.06 to 0.55 kW  
 Single phase : multivoltage : 220/240 V from 0.06 to 0.37 kW  
 Brake motors : LS series induction, types FCR, FAST, FMC, class F  
 FCR : multivoltage : 220/380 V - 230/400 V - 240/415 V from 0.25 to 0.55 kW  
 FAST : multivoltage : 220/380 V - 230/400 V from 0.25 to 0.55 kW  
 FMC : multivoltage : 220/380 V - 230/400 V - 240/415 V from 0.06 to 0.37 kW

Integral mounting	MI
Universal mounting	MU
Input shaft mounting	AP

A

6.9 to 230 min<sup>-1</sup>

		LS motors, power in kW						
Output speed min <sup>-1</sup>	Reduction index	0.06	0.09	0.12	0.18	0.25	0.37	0.55
		Type of 4-pole 3-phase motor and frame size						
		56		63			71	
		Type of 4-pole single phase motor and frame size						
		56 P		63 P		71 P		
6,9	200	Cb 1504						
7,8	180							
8,9	160							
9,8	140		Cb 1703					
11	125			Cb 1703				
12	112				Cb 1703			
14	100							
16	90							
18	80							
20	71							
23	63							
25	56		Cb 1503			Cb 1703		
29	50							
32	45					Cb 1703		
36	40						Cb 1703	
40	35,5							Cb 1703
46	31,5						Cb 1702	
51	28							Cb 1702
58	25							
64	22,4						Cb 1702	
72	20							
80	18							
90	16							
104	14			Cb 1502				
116	12,5							Cb 1702
129	11,2							
145	10							
161	9							
181	8							
204	7,1							
230	6,3	Cb 1702	Cb 1702	Cb 1702	Cb 1702	Cb 1702	Cb 1702	Cb 1702
Brake motors		Type of 4-pole 3-phase motor and frame size						
FMC		56		63		71 <sup>1</sup>		
FAST/FCR						71		
		Type of 4-pole single phase motor and frame size						
FMC		56 P		63 P		71 P <sup>1</sup>		

1. For 0.37 kW 4-pole motors, the braking torque is equal to motor  $T_N$

#### Exact reductions

Types	Reduction indices																														
	200	180	160	140	125	112	100	90	80	71	63	56	50	45	40	35,5	31,5	28	25	22,4	20	18	16	14	12,5	11,2	10	9	8	7,1	6,3
<b>Cb 1504</b>	203,3	181,1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Cb 1503</b>	-	-	160,9	143,6	125,1	110,4	98,3	88,2	79,7	70,8	64,6	59,1	50,1	46,2	40,8	36,9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Cb 1502</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31,5	28,2	24,5	21,6	19,3	17,3	15,6	13,9	12,7	11,6	9,8	9,1	8	7,2	-
<b>Cb 1703</b>	-	-	156,5	139,1	123,3	110,3	99,5	90,4	81,2	69,8	63,4	55,8	51	45,5	40,1	35,6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Cb 1702</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31,3	27,9	24,7	22,1	19,9	18,1	16,3	14	12,7	11,2	10,2	9,1	8	7,1	6,3

#### Selection example :

Required power : 0.25 kW  
 Required speed : 45 min<sup>-1</sup>  
 Duty factor necessary for the application : K = 1  
 Mounting : foot, horizontal  
 Designation : Cb 1702 S - 31,5 MI / 4P LS 71 0.25 kW 400 V

# Electromechanical products

## Compabloc 1000

### Selection

#### Compabloc 1000 selection data

Options :  
 3-Ph brake motor = 4P LS56 FMC  
 1-Ph brake motor = 4P LS56P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
5,99	68,8	0,85	230,5	Cb 1504	4P LS56	4P LS56P
6,79	60,7	0,98	203,3	Cb 1504	4P LS56	4P LS56P
7,62	54	1,06	181,1	Cb 1504	4P LS56	4P LS56P
8,58	48,7	1,17	160,9	Cb 1503	4P LS56	4P LS56P
8,8	47,5	1,73	156,5	Cb 1703	4P LS56	4P LS56P
9,61	43,5	1,3	143,6	Cb 1503	4P LS56	4P LS56P
9,9	42,2	2	139,1	Cb 1703	4P LS56	4P LS56P
11	38	1,48	125,1	Cb 1503	4P LS56	4P LS56P
11,2	37,3	2,2	123,3	Cb 1703	4P LS56	4P LS56P
12,5	33,4	1,66	110,4	Cb 1503	4P LS56	4P LS56P
12,5	33,4	2,46	110,3	Cb 1703	4P LS56	4P LS56P
13,9	30	2,72	99,5	Cb 1703	4P LS56	4P LS56P
14	29,9	1,84	98,3	Cb 1503	4P LS56	4P LS56P
15,6	26,8	2	88,2	Cb 1503	4P LS56	4P LS56P
17,3	24,2	2,2	79,7	Cb 1503	4P LS56	4P LS56P
19,5	21,4	2,45	70,8	Cb 1503	4P LS56	4P LS56P
21,4	19,5	2,6	64,6	Cb 1503	4P LS56	4P LS56P
23,4	17,9	2,8	59,1	Cb 1503	4P LS56	4P LS56P
27,5	15,2	> 3	50,1	Cb 1503	4P LS56	4P LS56P
29,9	14	> 3	46,2	Cb 1503	4P LS56	4P LS56P
33,8	12,4	> 3	40,8	Cb 1503	4P LS56	4P LS56P
37,4	11,2	> 3	36,9	Cb 1503	4P LS56	4P LS56P
43,8	9,8	> 3	31,5	Cb 1502	4P LS56	4P LS56P
48,9	8,8	> 3	28,2	Cb 1502	4P LS56	4P LS56P
56,3	7,6	> 3	24,5	Cb 1502	4P LS56	4P LS56P
63,9	6,7	> 3	21,6	Cb 1502	4P LS56	4P LS56P
71,5	6	> 3	19,3	Cb 1502	4P LS56	4P LS56P
79,8	5,4	> 3	17,3	Cb 1502	4P LS56	4P LS56P
88,5	4,9	> 3	15,6	Cb 1502	4P LS56	4P LS56P
99,3	4,3	> 3	13,9	Cb 1502	4P LS56	4P LS56P
109	4	> 3	12,7	Cb 1502	4P LS56	4P LS56P
119	3,6	> 3	11,6	Cb 1502	4P LS56	4P LS56P
141	3,1	> 3	9,8	Cb 1502	4P LS56	4P LS56P
152	2,8	> 3	9,1	Cb 1502	4P LS56	4P LS56P
170	2,8	> 3	8,1	Cb 1701	4P LS56	4P LS56P
173	2,5	> 3	8	Cb 1502	4P LS56	4P LS56P
192	2,2	> 3	7,2	Cb 1502	4P LS56	4P LS56P
192	2,3	> 3	7,2	Cb 1701	4P LS56	4P LS56P
216	2	> 3	6,4	Cb 1701	4P LS56	4P LS56P
219	2,1	> 3	6,3	Cb 1702	4P LS56	4P LS56P
242	1,8	> 3	5,7	Cb 1701	4P LS56	4P LS56P
265	1,7	> 3	5,2	Cb 1701	4P LS56	4P LS56P
294	1,5	> 3	4,7	Cb 1701	4P LS56	4P LS56P
329	1,3	> 3	4,2	Cb 1701	4P LS56	4P LS56P
383	1,2	> 3	3,6	Cb 1701	4P LS56	4P LS56P
418	1	> 3	3,3	Cb 1701	4P LS56	4P LS56P
476	0,9	> 3	2,9	Cb 1701	4P LS56	4P LS56P
511	0,8	> 3	2,7	Cb 1701	4P LS56	4P LS56P
575	0,7	> 3	2,4	Cb 1701	4P LS56	4P LS56P
690	0,6	> 3	2,1	Cb 1701	4P LS56	4P LS56P
767	0,55	> 3	1,8	Cb 1701	4P LS56	4P LS56P
863	0,5	> 3	1,6	Cb 1701	4P LS56	4P LS56P

MOTOR POWER  
0,06 kW  
4 poles  
50 Hz

PISSANCE  
MOTEUR  
0,09 kW  
4 pôles  
50 Hz

Options :  
 3-Ph brake motor = 4P LS56 FMC  
 1-Ph brake motor = 4P LS63P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
8,95	77,9	1,06	156,5	Cb 1703	4P LS56	4P LS63P
9,8	71,2	0,8	143,6	Cb 1503	4P LS56	4P LS63P
10,1	69,1	1,2	139,1	Cb 1703	4P LS56	4P LS63P
11,2	62,3	0,9	125,1	Cb 1503	4P LS56	4P LS63P
11,4	61,2	1,3	123,3	Cb 1703	4P LS56	4P LS63P
12,7	54,9	1	110,4	Cb 1503	4P LS56	4P LS63P
12,7	54,9	1,5	110,3	Cb 1703	4P LS56	4P LS63P
14,1	49,5	1,65	99,5	Cb 1703	4P LS56	4P LS63P
14,2	49,1	1,1	98,3	Cb 1503	4P LS56	4P LS63P
15,5	45	1,81	90,4	Cb 1703	4P LS56	4P LS63P
15,9	43,9	1,25	88,2	Cb 1503	4P LS56	4P LS63P
17,2	40,6	2	81,2	Cb 1703	4P LS56	4P LS63P
17,6	39,6	1,4	79,7	Cb 1503	4P LS56	4P LS63P
19,8	35,2	1,5	70,8	Cb 1503	4P LS56	4P LS63P
20	34,9	2,3	69,8	Cb 1703	4P LS56	4P LS63P
21,7	32,1	1,6	64,6	Cb 1503	4P LS56	4P LS63P
22,1	31,6	2,6	63,4	Cb 1703	4P LS56	4P LS63P
23,7	29,4	1,7	59,1	Cb 1503	4P LS56	4P LS63P
25,1	27,8	2,9	55,8	Cb 1703	4P LS56	4P LS63P
27,9	25	2	50,1	Cb 1503	4P LS56	4P LS63P
30,3	23	2,1	46,2	Cb 1503	4P LS56	4P LS63P
34,3	20,3	2,3	40,8	Cb 1503	4P LS56	4P LS63P
37,9	18,4	2,5	36,9	Cb 1503	4P LS56	4P LS63P
44,4	15,9	2,2	31,5	Cb 1502	4P LS56	4P LS63P
49,6	14,2	3	28,2	Cb 1502	4P LS56	4P LS63P
57,1	12,4	> 3	24,5	Cb 1502	4P LS56	4P LS63P
64,8	10,9	> 3	21,6	Cb 1502	4P LS56	4P LS63P
72,5	9,7	> 3	19,3	Cb 1502	4P LS56	4P LS63P
81	8,7	> 3	17,3	Cb 1502	4P LS56	4P LS63P
89,7	7,9	> 3	15,6	Cb 1502	4P LS56	4P LS63P
100	7	> 3	13,9	Cb 1502	4P LS56	4P LS63P
110	6,4	> 3	12,7	Cb 1502	4P LS56	4P LS63P
121	5,8	> 3	11,6	Cb 1502	4P LS56	4P LS63P
143	4,9	> 3	9,8	Cb 1502	4P LS56	4P LS63P
154	4,6	> 3	9,1	Cb 1502	4P LS56	4P LS63P
173	4,2	3	8,1	Cb 1701	4P LS56	4P LS63P
175	4	> 3	8	Cb 1502	4P LS56	4P LS63P
194	3,6	> 3	7,2	Cb 1502	4P LS56	4P LS63P
194	3,7	> 3	7,2	Cb 1701	4P LS56	4P LS63P
219	3,3	> 3	6,4	Cb 1701	4P LS56	4P LS63P
222	3,2	> 3	6,3	Cb 1702	4P LS56	4P LS63P
246	2,9	> 3	5,7	Cb 1701	4P LS56	4P LS63P
269	2,7	> 3	5,2	Cb 1701	4P LS56	4P LS63P
298	2,4	> 3	4,7	Cb 1701	4P LS56	4P LS63P
333	2,2	> 3	4,2	Cb 1701	4P LS56	4P LS63P
389	1,9	> 3	3,6	Cb 1701	4P LS56	4P LS63P
424	1,7	> 3	3,3	Cb 1701	4P LS56	4P LS63P
483	1,5	> 3	2,9	Cb 1701	4P LS56	4P LS63P
519	1,4	> 3	2,7	Cb 1701	4P LS56	4P LS63P
583	1,2	> 3	2,4	Cb 1701	4P LS56	4P LS63P
700	1	> 3	2,1	Cb 1701	4P LS56	4P LS63P
778	0,9	> 3	1,8	Cb 1701	4P LS56	4P LS63P
875	0,8	> 3	1,6	Cb 1701	4P LS56	4P LS63P

Note : On-load speeds are established based on the characteristics for 3-phase motors.

# Electromechanical products

## Compabloc 1000

### Selection

#### Compaloc 1000 selection data

##### Options :

3-Ph brake motor = 4P LS63 FMC  
1-Ph brake motor = 4P LS63P FMC

PUISANCE  
MOTEUR  
**0,12 kW**  
4 pôles  
50 Hz

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
10,13	95,2	<b>0,87</b>	139,1	Cb 1703	4P LS63	4P LS63P
11,4	84,6	<b>0,99</b>	123,3	Cb 1703	4P LS63	4P LS63P
12,8	75,4	<b>1,09</b>	110,3	Cb 1703	4P LS63	4P LS63P
14,2	68	<b>1,2</b>	99,5	Cb 1703	4P LS63	4P LS63P
14,3	67,4	<b>0,81</b>	98,3	Cb 1503	4P LS63	4P LS63P
15,6	61,9	<b>1,32</b>	90,4	Cb 1703	4P LS63	4P LS63P
16	58,1	<b>0,93</b>	88,2	Cb 1503	4P LS63	4P LS63P
17,4	55,5	<b>1,47</b>	81,2	Cb 1703	4P LS63	4P LS63P
17,7	54,5	<b>0,99</b>	79,7	Cb 1503	4P LS63	4P LS63P
19,9	48,5	<b>1,08</b>	70,8	Cb 1503	4P LS63	4P LS63P
20,2	47,8	<b>1,7</b>	69,8	Cb 1703	4P LS63	4P LS63P
21,8	44,3	<b>1,15</b>	64,6	Cb 1503	4P LS63	4P LS63P
22,2	43,5	<b>1,86</b>	63,4	Cb 1703	4P LS63	4P LS63P
23,9	40,4	<b>1,24</b>	59,1	Cb 1503	4P LS63	4P LS63P
25,3	38,1	<b>2,12</b>	55,8	Cb 1703	4P LS63	4P LS63P
27,6	26,2	<b>3,1</b>	51	Cb 1703	4P LS63	4P LS63P
28,1	34,3	<b>1,42</b>	50,1	Cb 1503	4P LS63	4P LS63P
30,5	31,6	<b>1,5</b>	46,2	Cb 1503	4P LS63	4P LS63P
31	23,4	<b>&gt; 3</b>	45,5	Cb 1703	4P LS63	4P LS63P
34,6	27,9	<b>1,65</b>	40,8	Cb 1503	4P LS63	4P LS63P
35,2	20,6	<b>&gt; 3</b>	40,1	Cb 1703	4P LS63	4P LS63P
38,2	25,3	<b>1,78</b>	36,9	Cb 1503	4P LS63	4P LS63P
39,6	18,3	<b>&gt; 3</b>	35,6	Cb 1703	4P LS63	4P LS63P
44,8	22	<b>1,6</b>	31,5	Cb 1502	4P LS63	4P LS63P
45	16,5	<b>2,9</b>	31,3	Cb 1702	4P LS63	4P LS63P
50	19,8	<b>2,2</b>	28,2	Cb 1502	4P LS63	4P LS63P
57,6	17,2	<b>2,5</b>	24,5	Cb 1502	4P LS63	4P LS63P
65,3	15,1	<b>2,9</b>	21,6	Cb 1502	4P LS63	4P LS63P
73	13,2	<b>&gt; 3</b>	19,3	Cb 1502	4P LS63	4P LS63P
81,5	12,1	<b>&gt; 3</b>	17,3	Cb 1502	4P LS63	4P LS63P
90,4	10,9	<b>&gt; 3</b>	15,6	Cb 1502	4P LS63	4P LS63P
101	9,8	<b>&gt; 3</b>	13,9	Cb 1502	4P LS63	4P LS63P
111	8,9	<b>&gt; 3</b>	12,7	Cb 1502	4P LS63	4P LS63P
122	8,1	<b>&gt; 3</b>	11,6	Cb 1502	4P LS63	4P LS63P
144	6,9	<b>&gt; 3</b>	9,8	Cb 1502	4P LS63	4P LS63P
155	6,4	<b>&gt; 3</b>	9,1	Cb 1502	4P LS63	4P LS63P
174	5,8	<b>2,2</b>	8,1	Cb 1701	4P LS63	4P LS63P
176	5,6	<b>&gt; 3</b>	8	Cb 1502	4P LS63	4P LS63P
196	5	<b>&gt; 3</b>	7,2	Cb 1502	4P LS63	4P LS63P
196	5,2	<b>2,4</b>	7,2	Cb 1701	4P LS63	4P LS63P
220	4,6	<b>2,7</b>	6,4	Cb 1701	4P LS63	4P LS63P
224	4,4	<b>&gt; 3</b>	6,3	Cb 1702	4P LS63	4P LS63P
247	4,1	<b>3</b>	5,7	Cb 1701	4P LS63	4P LS63P
271	3,7	<b>&gt; 3</b>	5,2	Cb 1701	4P LS63	4P LS63P
300	3,4	<b>&gt; 3</b>	4,7	Cb 1701	4P LS63	4P LS63P
336	3	<b>&gt; 3</b>	4,2	Cb 1701	4P LS63	4P LS63P
391	2,6	<b>&gt; 3</b>	3,6	Cb 1701	4P LS63	4P LS63P
428	2,4	<b>&gt; 3</b>	3,3	Cb 1701	4P LS63	4P LS63P
486	2,1	<b>&gt; 3</b>	2,9	Cb 1701	4P LS63	4P LS63P
522	1,9	<b>&gt; 3</b>	2,7	Cb 1701	4P LS63	4P LS63P
588	1,7	<b>&gt; 3</b>	2,4	Cb 1701	4P LS63	4P LS63P
705	1,4	<b>&gt; 3</b>	2,1	Cb 1701	4P LS63	4P LS63P
783	1,3	<b>&gt; 3</b>	1,8	Cb 1701	4P LS63	4P LS63P
881	1,1	<b>&gt; 3</b>	1,6	Cb 1701	4P LS63	4P LS63P

##### Options :

3-Ph brake motor = 4P LS63 FMC  
1-Ph brake motor = 4P LS71P FMC

PUISANCE  
MOTEUR  
**0,18 kW**  
4 pôles  
50 Hz

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
15,4	99	<b>0,83</b>	90,4	Cb 1703	4P LS63	4P LS71P
17,1	88,8	<b>0,92</b>	81,2	Cb 1703	4P LS63	4P LS71P
19,9	76,3	<b>1,06</b>	69,8	Cb 1703	4P LS63	4P LS71P
21,9	69,3	<b>1,17</b>	63,4	Cb 1703	4P LS63	4P LS71P
24,9	60,1	<b>1,34</b>	55,8	Cb 1703	4P LS63	4P LS71P
27,3	55,6	<b>1,45</b>	51	Cb 1703	4P LS63	4P LS71P
27,7	54,8	<b>0,89</b>	50,1	Cb 1503	4P LS63	4P LS71P
30	50,6	<b>0,94</b>	46,2	Cb 1503	4P LS63	4P LS71P
30,6	49,6	<b>1,6</b>	45,5	Cb 1703	4P LS63	4P LS71P
34	44,7	<b>1,06</b>	40,8	Cb 1503	4P LS63	4P LS71P
34,7	43,8	<b>1,83</b>	40,1	Cb 1703	4P LS63	4P LS71P
37,7	40,3	<b>1,15</b>	36,9	Cb 1503	4P LS63	4P LS71P
39	38,9	<b>2,1</b>	35,6	Cb 1703	4P LS63	4P LS71P
44,1	35,2	<b>1</b>	31,5	Cb 1502	4P LS63	4P LS71P
44,4	35	<b>1,37</b>	31,3	Cb 1702	4P LS63	4P LS71P
49,3	31,5	<b>1,4</b>	28,2	Cb 1502	4P LS63	4P LS71P
49,8	31,2	<b>1,5</b>	27,9	Cb 1702	4P LS63	4P LS71P
56,3	27,6	<b>1,7</b>	24,7	Cb 1702	4P LS63	4P LS71P
56,7	27,4	<b>1,55</b>	24,5	Cb 1502	4P LS63	4P LS71P
62,9	24,7	<b>1,9</b>	22,1	Cb 1702	4P LS63	4P LS71P
64,4	24,1	<b>1,7</b>	21,6	Cb 1502	4P LS63	4P LS71P
72	21,6	<b>1,9</b>	19,3	Cb 1502	4P LS63	4P LS71P
80,3	19,4	<b>2,1</b>	17,3	Cb 1502	4P LS63	4P LS71P
89	17,5	<b>2,3</b>	15,6	Cb 1502	4P LS63	4P LS71P
100	15,5	<b>2,5</b>	13,9	Cb 1502	4P LS63	4P LS71P
109	14,3	<b>2,6</b>	12,7	Cb 1502	4P LS63	4P LS71P
120	13	<b>2,8</b>	11,6	Cb 1502	4P LS63	4P LS71P
142	10,9	<b>&gt; 3</b>	9,8	Cb 1502	4P LS63	4P LS71P
153	10,1	<b>&gt; 3</b>	9,1	Cb 1502	4P LS63	4P LS71P
172	9,1	<b>1,4</b>	8,1	Cb 1701	4P LS63	4P LS71P
174	8,9	<b>&gt; 3</b>	8	Cb 1502	4P LS63	4P LS71P
193	8	<b>&gt; 3</b>	7,2	Cb 1502	4P LS63	4P LS71P
193	8,1	<b>1,6</b>	7,2	Cb 1701	4P LS63	4P LS71P
217	7,2	<b>1,7</b>	6,4	Cb 1701	4P LS63	4P LS71P
221	7	<b>&gt; 3</b>	6,3	Cb 1702	4P LS63	4P LS71P
244	6,4	<b>1,9</b>	5,7	Cb 1701	4P LS63	4P LS71P
267	5,9	<b>2,1</b>	5,2	Cb 1701	4P LS63	4P LS71P
296	5,3	<b>2,3</b>	4,7	Cb 1701	4P LS63	4P LS71P
331	4,7	<b>2,5</b>	4,2	Cb 1701	4P LS63	4P LS71P
386	4,1	<b>2,8</b>	3,6	Cb 1701	4P LS63	4P LS71P
421	3,7	<b>3</b>	3,3	Cb 1701	4P LS63	4P LS71P
479	3,3	<b>&gt; 3</b>	2,9	Cb 1701	4P LS63	4P LS71P
515	3,1	<b>&gt; 3</b>	2,7	Cb 1701	4P LS63	4P LS71P
579	2,7	<b>&gt; 3</b>	2,4	Cb 1701	4P LS63	4P LS71P
695	2,3	<b>&gt; 3</b>	2,1	Cb 1701	4P LS63	4P LS71P
772	2	<b>&gt; 3</b>	1,8	Cb 1701	4P LS63	4P LS71P
869	1,8	<b>&gt; 3</b>	1,6	Cb 1701	4P LS63	4P LS71P

AXIAL OUTPUT GEARED MOTORS

# Electromechanical products

## Compabloc 1000

### Selection

#### Compaloc 1000 selection data

**Options :**  
 3-Ph brake motor = 4P LS71 FMC  
 4P LS71 FAST  
 4P LS71 FCR  
 4P LS71P FMC

1-Ph brake motor =

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor
				3-phase	1-phase
22,38	93,7	<b>0,86</b>	63,44	<b>Cb 1703</b>	4P LS71
25,15	86,5	<b>0,98</b>	55,8	<b>Cb 1703</b>	4P LS71
27,9	79	<b>1,06</b>	51	<b>Cb 1703</b>	4P LS71
31,3	70,5	<b>1,2</b>	45,5	<b>Cb 1703</b>	4P LS71
35,5	62,2	<b>1,35</b>	40,1	<b>Cb 1703</b>	4P LS71
38,6	55,9	<b>0,8</b>	36,9	<b>Cb 1503</b>	4P LS71
40	55,2	<b>1,5</b>	35,6	<b>Cb 1703</b>	4P LS71
45,2	48,8	<b>0,73</b>	31,5	<b>Cb 1502</b>	4P LS71
45,5	48,5	<b>1</b>	31,3	<b>Cb 1702</b>	4P LS71
50,5	43,7	<b>1</b>	28,2	<b>Cb 1502</b>	4P LS71
51	47,2	<b>1,02</b>	27,9	<b>Cb 1702</b>	4P LS71
57,7	38,2	<b>1,25</b>	24,7	<b>Cb 1702</b>	4P LS71
58,2	37,9	<b>1,1</b>	24,5	<b>Cb 1502</b>	4P LS71
64,5	34,2	<b>1,37</b>	22,1	<b>Cb 1702</b>	4P LS71
66	33,4	<b>1,25</b>	21,6	<b>Cb 1502</b>	4P LS71
71,6	30,8	<b>1,5</b>	19,9	<b>Cb 1702</b>	4P LS71
73,8	29,9	<b>1,4</b>	19,3	<b>Cb 1502</b>	4P LS71
78,7	28	<b>1,6</b>	18,1	<b>Cb 1702</b>	4P LS71
82,4	26,8	<b>1,5</b>	17,3	<b>Cb 1502</b>	4P LS71
87,4	25,2	<b>1,8</b>	16,3	<b>Cb 1702</b>	4P LS71
91,3	24,1	<b>1,6</b>	15,6	<b>Cb 1502</b>	4P LS71
102	21,7	<b>2</b>	14	<b>Cb 1702</b>	4P LS71
103	21,4	<b>1,8</b>	13,9	<b>Cb 1502</b>	4P LS71
112	19,7	<b>1,9</b>	12,7	<b>Cb 1502</b>	4P LS71
123	18	<b>2</b>	11,6	<b>Cb 1502</b>	4P LS71
145	15,2	<b>2,3</b>	9,8	<b>Cb 1502</b>	4P LS71
157	14,1	<b>2,4</b>	9,1	<b>Cb 1502</b>	4P LS71
175	12,9	<b>0,99</b>	8,1	<b>Cb 1701</b>	4P LS71
178	12,4	<b>2,7</b>	8	<b>Cb 1502</b>	4P LS71
197	11,5	<b>1,1</b>	7,2	<b>Cb 1701</b>	4P LS71
198	11,1	<b>2,8</b>	7,2	<b>Cb 1502</b>	4P LS71
222	10,1	<b>1,2</b>	6,4	<b>Cb 1701</b>	4P LS71
226	10	<b>&gt; 3</b>	6,3	<b>Cb 1702</b>	4P LS71
250	9	<b>1,4</b>	5,7	<b>Cb 1701</b>	4P LS71
274	8,2	<b>1,5</b>	5,2	<b>Cb 1701</b>	4P LS71
303	7,4	<b>1,6</b>	4,7	<b>Cb 1701</b>	4P LS71
339	6,7	<b>1,8</b>	4,2	<b>Cb 1701</b>	4P LS71
395	5,7	<b>2</b>	3,6	<b>Cb 1701</b>	4P LS71
432	5,2	<b>2,2</b>	3,3	<b>Cb 1701</b>	4P LS71
491	4,6	<b>2,4</b>	2,9	<b>Cb 1701</b>	4P LS71
528	4,3	<b>2,5</b>	2,7	<b>Cb 1701</b>	4P LS71
594	3,8	<b>2,8</b>	2,4	<b>Cb 1701</b>	4P LS71
710	3,2	<b>&gt; 3</b>	2,1	<b>Cb 1701</b>	4P LS71
790	2,9	<b>&gt; 3</b>	1,8	<b>Cb 1701</b>	4P LS71
890	2,5	<b>&gt; 3</b>	1,6	<b>Cb 1701</b>	4P LS71

**MOTOR POWER**  
**0.25 kW**  
**4 poles**  
**50 Hz**

**Options :**  
 3-Ph brake motor = 4P LS71 FMC  
 4P LS71 FAST  
 4P LS71 FCR  
 4P LS71P FMC

1-Ph brake motor =

**MOTOR POWER**  
**0.37 kW**  
**4 poles**  
**50 Hz**

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor
				3-phase	1-phase
31,3	103	<b>0,78</b>	45,5	<b>Cb 1703</b>	4P LS71
35,5	91	<b>0,88</b>	40,1	<b>Cb 1703</b>	4P LS71
40	80	<b>1</b>	35,6	<b>Cb 1703</b>	4P LS71
51	64,7	<b>0,75</b>	27,9	<b>Cb 1702</b>	4P LS71
57,3	57,6	<b>0,83</b>	24,7	<b>Cb 1702</b>	4P LS71
64,4	51,3	<b>0,92</b>	22,1	<b>Cb 1702</b>	4P LS71
66	50	<b>0,84</b>	21,6	<b>Cb 1502</b>	4P LS71
71,6	46,1	<b>1</b>	19,9	<b>Cb 1702</b>	4P LS71
73,8	44	<b>0,94</b>	19,3	<b>Cb 1502</b>	4P LS71
78,7	41,9	<b>1,1</b>	18,1	<b>Cb 1702</b>	4P LS71
82,4	40	<b>1</b>	17,3	<b>Cb 1502</b>	4P LS71
87,4	37,8	<b>1,2</b>	16,3	<b>Cb 1702</b>	4P LS71
91,3	36,2	<b>1,14</b>	15,6	<b>Cb 1502</b>	4P LS71
102	32,5	<b>1,35</b>	14	<b>Cb 1702</b>	4P LS71
103	32,2	<b>1,23</b>	13,9	<b>Cb 1502</b>	4P LS71
112	29,5	<b>1,3</b>	12,7	<b>Cb 1502</b>	4P LS71
112	29,4	<b>1,46</b>	12,7	<b>Cb 1702</b>	4P LS71
123	26,9	<b>1,35</b>	11,6	<b>Cb 1502</b>	4P LS71
127	26	<b>1,6</b>	11,2	<b>Cb 1702</b>	4P LS71
140	23,6	<b>1,7</b>	10,2	<b>Cb 1702</b>	4P LS71
148	22,3	<b>1,6</b>	9,8	<b>Cb 1502</b>	4P LS71
157	23,2	<b>1,7</b>	9,1	<b>Cb 1702</b>	4P LS71
157	21	<b>1,5</b>	9,1	<b>Cb 1502</b>	4P LS71
176	19,2	<b>0,78</b>	8,1	<b>Cb 1701</b>	4P LS71
178	18,6	<b>1,8</b>	8	<b>Cb 1502</b>	4P LS71
178	18,6	<b>2</b>	8	<b>Cb 1702</b>	4P LS71
198	16,7	<b>1,9</b>	7,2	<b>Cb 1502</b>	4P LS71
198	17,2	<b>0,74</b>	7,2	<b>Cb 1701</b>	4P LS71
201	16,4	<b>2,1</b>	7,1	<b>Cb 1702</b>	4P LS71
223	15,1	<b>0,83</b>	6,4	<b>Cb 1701</b>	4P LS71
226	14,6	<b>2</b>	6,3	<b>Cb 1702</b>	4P LS71
250	13,5	<b>0,92</b>	5,7	<b>Cb 1701</b>	4P LS71
274	12,3	<b>1</b>	5,2	<b>Cb 1701</b>	4P LS71
303	11,1	<b>1,1</b>	4,7	<b>Cb 1701</b>	4P LS71
339	10	<b>1,2</b>	4,2	<b>Cb 1701</b>	4P LS71
396	8,5	<b>1,36</b>	3,6	<b>Cb 1701</b>	4P LS71
432	7,8	<b>1,45</b>	3,3	<b>Cb 1701</b>	4P LS71
491	6,9	<b>1,6</b>	2,9	<b>Cb 1701</b>	4P LS71
528	6,4	<b>1,7</b>	2,7	<b>Cb 1701</b>	4P LS71
594	5,7	<b>1,8</b>	2,4	<b>Cb 1701</b>	4P LS71
713	4,7	<b>2,1</b>	2,1	<b>Cb 1701</b>	4P LS71
792	4,3	<b>2,3</b>	1,8	<b>Cb 1701</b>	4P LS71
891	3,8	<b>2,4</b>	1,6	<b>Cb 1701</b>	4P LS71

Note : On-load speeds are established based on the characteristics for 3-phase motors.

# Electromechanical products

## Compabloc 1000

### Selection

#### Compaloc 1000 selection data

##### Options :

3-Ph brake motor = 4P LS71 FAST  
4P LS71 FCR



Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
85,9	58,4	0,77	16,3	Cb 1702	4P LS71	-
100	50,2	0,88	14	Cb 1702	4P LS71	-
110	45,5	0,83	12,7	Cb 1502	4P LS71	-
110	45,5	0,97	12,7	Cb 1702	4P LS71	-
121	41,5	0,88	11,6	Cb 1502	4P LS71	-
125	40	1,05	11,2	Cb 1702	4P LS71	-
137	36,6	1,12	10,2	Cb 1702	4P LS71	-
143	35,1	0,99	9,8	Cb 1502	4P LS71	-
154	32,6	1,04	9,1	Cb 1502	4P LS71	-
154	32,6	1,22	9,1	Cb 1702	4P LS71	-
175	28,7	1,15	8	Cb 1502	4P LS71	-
175	28,7	1,33	8	Cb 1702	4P LS71	-
194	25,8	1,22	7,2	Cb 1502	4P LS71	-
197	25,5	1,45	7,1	Cb 1702	4P LS71	-
222	22,6	1,6	6,3	Cb 1702	4P LS71	-
298	17,2	0,7	4,7	Cb 1701	4P LS71	-
333	15,4	0,77	4,2	Cb 1701	4P LS71	-
389	13,2	0,87	3,6	Cb 1701	4P LS71	-
424	12,1	0,99	3,3	Cb 1701	4P LS71	-
483	10,6	1,04	2,9	Cb 1701	4P LS71	-
519	9,9	1,1	2,7	Cb 1701	4P LS71	-
583	8,8	1,2	2,4	Cb 1701	4P LS71	-
700	7,3	1,4	2,1	Cb 1701	4P LS71	-
778	6,6	1,5	1,8	Cb 1701	4P LS71	-
875	5,9	1,6	1,6	Cb 1701	4P LS71	-

A

AXIAL OUTPUT GEARED MOTORS

Note : On-load speeds are established based on the characteristics for 3-phase motors.

# Electromechanical products

## Compabloc 1000

### Gearbox only (AP) characteristics

Cb 1701

**Input speed : 2800 min<sup>-1</sup>**

Number of trains	Output speed min <sup>-1</sup>	Reduction	Renard index	Max power kW	Max torque N.m
1	350,8	8,1	8,00	0,503	12,7
1	394,7	7,2	7,10	0,559	12,6
1	445,3	6,4	6,30	0,623	12,5
1	497,6	5,7	5,60	0,688	12,4
1	551,8	5,2	5,00	0,754	12,3
1	607,4	4,7	4,50	0,815	12,1
1	676,3	4,2	4,00	0,890	11,9
1	786,2	3,6	3,55	1,006	11,6
1	865,2	3,3	3,15	1,077	11,3
1	984,5	2,9	2,80	1,190	11,0
1	1075,5	2,7	2,50	1,275	10,8
1	1205,6	2,4	2,24	1,388	10,5
1	1368,2	2,1	2,00	1,513	10,1
1	1544,7	1,8	1,80	1,639	9,7
1	1734,6	1,6	1,60	1,763	9,3

**Input speed : 1400 min<sup>-1</sup>**

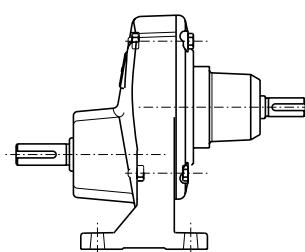
Number of trains	Output speed min <sup>-1</sup>	Reduction	Renard index	Max power kW	Max torque N.m
1	174,8	8,1	8,00	0,253	12,7
1	196,7	7,2	7,10	0,281	12,6
1	221,9	6,4	6,30	0,313	12,5
1	247,9	5,7	5,60	0,346	12,4
1	274,9	5,2	5,00	0,379	12,3
1	302,6	4,7	4,50	0,409	12,1
1	337,0	4,2	4,00	0,447	11,9
1	391,7	3,6	3,55	0,504	11,6
1	431,1	3,3	3,15	0,540	11,3
1	490,5	2,9	2,80	0,596	11,0
1	535,8	2,7	2,50	0,638	10,8
1	600,7	2,4	2,24	0,695	10,5
1	681,7	2,1	2,00	0,757	10,1
1	769,6	1,8	1,80	0,820	9,7
1	864,3	1,6	1,60	0,881	9,3

**Input speed : 900 min<sup>-1</sup>**

Number of trains	Output speed min <sup>-1</sup>	Reduction	Renard index	Max power kW	Max torque N.m
1	113,2	8,1	8,00	0,164	12,7
1	127,4	7,2	7,10	0,182	12,6
1	143,8	6,4	6,30	0,203	12,5
1	160,6	5,7	5,60	0,224	12,4
1	178,1	5,2	5,00	0,245	12,3
1	196,1	4,7	4,50	0,265	12,1
1	218,3	4,2	4,00	0,289	11,9
1	253,8	3,6	3,55	0,327	11,6
1	279,3	3,3	3,15	0,350	11,3
1	317,8	2,9	2,80	0,386	11,0
1	347,2	2,7	2,50	0,414	10,8
1	389,2	2,4	2,24	0,450	10,5
1	441,7	2,1	2,00	0,490	10,1
1	498,6	1,8	1,80	0,531	9,7
1	560,0	1,6	1,60	0,571	9,3

**Input speed : 500 min<sup>-1</sup>**

Number of trains	Output speed min <sup>-1</sup>	Reduction	Renard index	Max power kW	Max torque N.m
1	61,5	8,1	8,00	0,090	12,7
1	69,3	7,2	7,10	0,100	12,6
1	78,1	6,4	6,30	0,111	12,5
1	87,3	5,7	5,60	0,123	12,4
1	96,8	5,2	5,00	0,134	12,3
1	106,6	4,7	4,50	0,145	12,1
1	118,7	4,2	4,00	0,158	11,9
1	137,9	3,6	3,55	0,179	11,6
1	151,8	3,3	3,15	0,191	11,3
1	172,7	2,9	2,80	0,211	11,0
1	188,7	2,7	2,50	0,226	10,8
1	211,5	2,4	2,24	0,246	10,5
1	240,0	2,1	2,00	0,268	10,1
1	271,0	1,8	1,80	0,290	9,7
1	304,3	1,6	1,60	0,311	9,3



# Electromechanical products

## Compabloc 1000

### Gearbox only (AP) characteristics

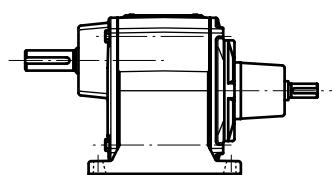
Cb 1502 - 1503 - 1504

**Input speed : 2800 min<sup>-1</sup>**

Number of trains	Output speed min <sup>-1</sup>	Reduction	Renard index	Max power kW	Max torque N.m
4	9,4	296,4	315,0	0,083	56,5
4	10,6	264,5	250,0	0,090	55,7
4	12,1	230,5	224,0	0,099	54,9
4	13,8	203,3	200,0	0,108	54,2
4	15,5	181,1	180,0	0,117	53,4
3	17,4	160,9	160,0	0,125	52,6
3	19,5	143,6	140,0	0,136	51,9
3	22,4	125,1	125,0	0,151	51,1
3	25,4	110,4	112,0	0,166	50,3
3	28,5	98,3	100,0	0,181	49,5
3	31,7	88,2	90,0	0,196	48,8
3	35,1	79,7	80,0	0,212	48,0
3	39,6	70,8	71,0	0,232	47,2
3	43,4	64,6	63,0	0,249	46,5
3	47,4	59,1	56,0	0,266	45,7
3	55,9	50,1	50,0	0,305	44,9
3	60,6	46,2	45,0	0,323	44,2
3	68,7	40,8	40,0	0,357	43,4
3	76,0	36,9	35,5	0,386	42,6
2	88,8	31,5	31,5	0,370	35,6
2	99,5	28,2	28,0	0,499	43,5
2	114,1	24,5	25,0	0,555	42,4
2	129,4	21,6	22,4	0,618	41,8
2	145,3	19,3	20,0	0,682	41,2
2	161,8	17,3	18,0	0,744	40,5
2	179,1	15,6	16,0	0,806	39,7
2	201,7	13,9	14,0	0,878	38,5
2	221,2	12,7	12,5	0,928	37,2
2	241,6	11,6	11,2	0,991	36,4
2	285,4	9,8	10,0	1,113	34,7
2	309,1	9,1	9,0	1,176	33,9
2	350,4	8,0	8,0	1,296	33,0
2	387,3	7,2	7,1	1,366	31,5

**Input speed : 1400 min<sup>-1</sup>**

Number of trains	Output speed min <sup>-1</sup>	Reduction	Renard index	Max power kW	Max torque N.m
4	4,7	296,4	315,0	0,047	60,0
4	5,3	264,5	250,0	0,050	59,5
4	6,1	230,5	224,0	0,055	59,0
4	6,9	203,3	200,0	0,060	58,5
4	7,7	181,1	180,0	0,066	58,0
3	8,7	160,9	160,0	0,070	57,0
3	9,7	143,6	140,0	0,076	56,5
3	11,2	125,1	125,0	0,085	56,2
3	12,7	110,4	112,0	0,093	55,6
3	14,2	98,3	100,0	0,102	55,0
3	15,9	88,2	90,0	0,111	54,4
3	17,6	79,7	80,0	0,120	53,7
3	19,8	70,8	71,0	0,131	52,5
3	21,7	64,6	63,0	0,139	51,2
3	23,7	59,1	56,0	0,147	50,0
3	28,0	50,1	50,0	0,167	48,7
3	30,3	46,2	45,0	0,176	47,5
3	34,3	40,8	40,0	0,193	46,2
3	38,0	36,9	35,5	0,206	45,0
2	44,4	31,5	31,5	0,188	35,6
2	49,7	28,2	28,0	0,252	43,5
2	57,1	24,5	25,0	0,281	42,4
2	64,7	21,6	22,4	0,312	41,8
2	72,7	19,3	20,0	0,344	41,2
2	80,9	17,3	18,0	0,374	40,4
2	89,6	15,6	16,0	0,406	39,7
2	100,9	13,9	14,0	0,442	38,5
2	110,6	12,7	12,5	0,471	37,5
2	120,8	11,6	11,2	0,498	36,4
2	142,7	9,8	10,0	0,560	34,7
2	154,5	9,1	9,0	0,591	33,9
2	175,2	8,0	8,0	0,651	33,0
2	193,6	7,2	7,1	0,686	31,5



# Electromechanical products

## Compabloc 1000

### Gearbox only (AP) characteristics

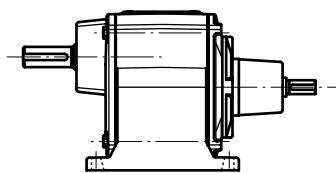
Cb 1502 - 1503 - 1504

#### A Input speed : 900 min<sup>-1</sup>

Number of trains	Output speed min <sup>-1</sup>	Reduction	Renard index	Max power kW	Max torque N.m
4	3,0	296,4	315,0	0,030	61,2
4	3,4	264,5	250,0	0,033	60,8
4	3,9	230,5	224,0	0,036	60,4
4	4,4	203,3	200,0	0,040	60,0
4	5,0	181,1	180,0	0,043	59,5
3	5,6	160,9	160,0	0,046	59,1
3	6,3	143,6	140,0	0,051	58,9
3	7,2	125,1	125,0	0,056	58,4
3	8,2	110,4	112,0	0,061	57,0
3	9,2	98,3	100,0	0,067	56,7
3	10,2	88,2	90,0	0,074	56,2
3	11,3	79,7	80,0	0,080	56,0
3	12,7	70,8	71,0	0,088	55,3
3	13,9	64,6	63,0	0,095	54,9
3	15,2	59,1	56,0	0,102	54,4
3	18,0	50,1	50,0	0,117	53,3
3	19,5	46,2	45,0	0,122	51,8
3	22,1	40,8	40,0	0,133	50,0
3	24,4	36,9	35,5	0,142	48,5
2	28,5	31,5	31,5	0,121	35,6
2	32,0	28,2	28,0	0,162	43,5
2	36,7	24,5	25,0	0,180	42,4
2	41,6	21,6	22,4	0,201	41,8
2	46,7	19,3	20,0	0,221	41,2
2	52,0	17,3	18,0	0,241	40,5
2	57,6	15,6	16,0	0,261	39,7
2	64,8	13,9	14,0	0,284	38,5
2	71,1	12,7	12,5	0,303	37,6
2	77,7	11,6	11,2	0,320	36,4
2	91,7	9,8	10,0	0,360	34,7
2	99,3	9,1	9,0	0,380	33,9
2	112,6	8,0	8,0	0,419	33,0
2	124,5	7,2	7,1	0,441	31,5

#### B Input speed : 500 min<sup>-1</sup>

Number of trains	Output speed min <sup>-1</sup>	Reduction	Renard index	Max power kW	Max torque N.m
4	1,7	296,4	315,0	0,017	63,2
4	1,9	264,5	250,0	0,019	62,8
4	2,2	230,5	224,0	0,021	62,4
4	2,5	203,3	200,0	0,023	62,0
4	2,8	181,1	180,0	0,025	61,6
3	3,1	160,9	160,0	0,026	61,2
3	3,5	143,6	140,0	0,029	60,8
3	4,0	125,1	125,0	0,032	60,4
3	4,5	110,4	112,0	0,036	60,0
3	5,1	98,3	100,0	0,039	59,5
3	5,7	88,2	90,0	0,043	59,1
3	6,3	79,7	80,0	0,047	58,9
3	7,1	70,8	71,0	0,052	58,6
3	7,7	64,6	63,0	0,056	58,3
3	8,5	59,1	56,0	0,059	56,9
3	10,0	50,1	50,0	0,069	56,6
3	10,8	46,2	45,0	0,074	56,3
3	12,3	40,8	40,0	0,082	55,6
3	13,6	36,9	35,5	0,089	55,2
2	15,9	31,5	31,5	0,0672	35,6
2	17,8	28,2	28,0	0,0901	43,5
2	20,4	24,5	25,0	0,1002	42,4
2	23,1	21,6	22,4	0,1114	41,8
2	25,9	19,3	20,0	0,1228	41,2
2	28,9	17,3	18,0	0,1340	40,5
2	32,0	15,6	16,0	0,1449	39,7
2	36,0	13,9	14,0	0,1578	38,5
2	39,5	12,7	12,5	0,1690	37,7
2	43,1	11,6	11,2	0,1780	36,4
2	51,0	9,8	10,0	0,1999	34,7
2	55,2	9,1	9,0	0,2111	33,9
2	62,6	8,0	8,0	0,2325	33,0
2	69,2	7,2	7,1	0,2450	31,5



# Electromechanical products

## Compabloc 1000

### Gearbox only (AP) characteristics

Cb 1702 - 1703

**Input speed : 2800 min<sup>-1</sup>**

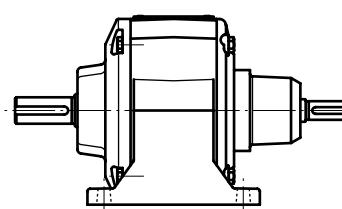
Number of trains	Output speed min <sup>-1</sup>	Reduction	Renard index	Max power kW	Max torque N.m
3	18,2	156,5	160,0	0,189	81,4
3	20,5	139,1	140,0	0,209	81,2
3	23,1	123,3	125,0	0,233	81,0
3	25,8	110,3	112,0	0,257	80,8
3	28,6	99,5	100,0	0,282	80,6
3	31,5	90,4	90,0	0,307	80,4
3	35,1	81,2	80,0	0,339	80,2
3	40,8	69,8	71,0	0,390	80,0
3	44,9	63,4	63,0	0,425	79,8
3	51,1	55,8	56,0	0,480	79,6
3	55,8	51,0	50,0	0,521	79,4
3	62,6	45,5	45,0	0,580	79,2
3	71,1	40,1	40,0	0,654	79,0
3	80,2	35,6	35,5	0,733	78,8
2	90,9	31,3	31,5	0,509	48,6
2	102,3	27,9	28,0	0,564	48,1
2	115,4	24,7	25,0	0,627	47,6
2	129,0	22,1	22,4	0,690	47,0
2	143,0	19,9	20,0	0,755	46,5
2	157,5	18,1	18,0	0,818	45,9
2	175,3	16,3	16,0	0,895	45,2
2	203,9	14,0	14,0	1,010	44,0
2	224,2	12,7	12,5	1,087	43,1
2	255,4	11,2	11,2	1,201	41,9
2	278,9	10,2	10,0	1,276	40,8
2	312,5	9,1	9,0	1,392	39,8
2	354,9	8,0	8,0	1,520	38,3
2	400,3	7,1	7,1	1,649	36,9
2	449,5	6,3	6,3	1,775	35,4

**Input speed : 1400 min<sup>-1</sup>**

Number of trains	Output speed min <sup>-1</sup>	Reduction	Renard index	Max power kW	Max torque N.m
3	9,1	156,5	160,0	0,098	82,6
3	10,2	139,1	140,0	0,109	82,4
3	11,5	123,3	125,0	0,121	82,2
3	12,9	110,3	112,0	0,133	82,0
3	14,3	99,5	100,0	0,145	81,8
3	15,7	90,4	90,0	0,158	81,6
3	17,5	81,2	80,0	0,174	81,4
3	20,3	69,8	71,0	0,200	81,2
3	22,4	63,4	63,0	0,218	81,0
3	25,5	55,8	56,0	0,246	80,8
3	27,8	51,0	50,0	0,266	80,6
3	31,2	45,5	45,0	0,296	80,4
3	35,4	40,1	40,0	0,334	80,2
3	39,9	35,6	35,5	0,374	80,0
2	45,3	31,3	31,5	0,257	48,6
2	51,0	27,9	28,0	0,284	48,1
2	57,5	24,7	25,0	0,316	47,6
2	64,3	22,1	22,4	0,347	47,0
2	71,2	19,9	20,0	0,379	46,5
2	78,5	18,1	18,0	0,411	45,9
2	87,3	16,3	16,0	0,449	45,2
2	101,6	14,0	14,0	0,506	44,0
2	111,7	12,7	12,5	0,545	43,1
2	127,2	11,2	11,2	0,601	41,9
2	138,9	10,2	10,0	0,639	40,8
2	155,7	9,1	9,0	0,697	39,8
2	176,8	8,0	8,0	0,760	38,3
2	199,4	7,1	7,1	0,825	36,9
2	224,0	6,3	6,3	0,888	35,4

A

AXIAL OUTPUT GEARED MOTORS



# Electromechanical products

## Compabloc 1000

### Gearbox only (AP) characteristics

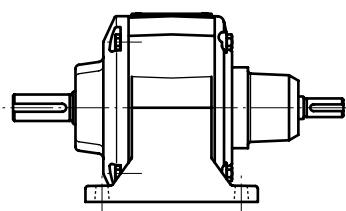
Cb 1702 - 1703

**Input speed : 900 min<sup>-1</sup>**

Number of trains	Output speed min <sup>-1</sup>	Reduction	Renard index	Max power kW	Max torque N.m
3	5,9	156,5	160,0	0,064	83,0
3	6,6	139,1	140,0	0,071	82,8
3	7,5	123,3	125,0	0,078	82,7
3	8,3	110,3	112,0	0,087	82,6
3	9,2	99,5	100,0	0,095	82,5
3	10,2	90,4	90,0	0,103	82,3
3	11,3	81,2	80,0	0,114	82,2
3	13,2	69,8	71,0	0,130	81,9
3	14,5	63,4	63,0	0,143	81,8
3	16,5	55,8	56,0	0,161	81,6
3	18,0	51,0	50,0	0,174	81,4
3	20,2	45,5	45,0	0,194	81,2
3	22,9	40,1	40,0	0,218	81,0
3	25,9	35,6	35,5	0,244	80,8
2	29,4	31,3	31,5	0,166	48,6
2	33,0	27,9	28,0	0,184	48,1
2	37,3	24,7	25,0	0,204	47,6
2	41,6	22,1	22,4	0,225	47,0
2	46,2	19,9	20,0	0,245	46,5
2	50,8	18,1	18,0	0,266	45,9
2	56,6	16,3	16,0	0,291	45,2
2	65,8	14,0	14,0	0,328	44,0
2	72,4	12,7	12,5	0,353	43,1
2	82,4	11,2	11,2	0,390	41,9
2	90,0	10,2	10,0	0,414	40,8
2	100,9	9,1	9,0	0,451	39,8
2	114,6	8,0	8,0	0,492	38,3
2	129,2	7,1	7,1	0,534	36,9
2	145,1	6,3	6,3	0,575	35,4

**Input speed : 500 min<sup>-1</sup>**

Number of trains	Output speed min <sup>-1</sup>	Reduction	Renard index	Max power kW	Max torque N.m
3	3,2	156,5	160,0	0,035	83,5
3	3,6	139,1	140,0	0,039	83,4
3	4,1	123,3	125,0	0,043	83,3
3	4,5	110,3	112,0	0,047	83,2
3	5,0	99,5	100,0	0,052	83,1
3	5,5	90,4	90,0	0,057	83,0
3	6,2	81,2	80,0	0,062	82,9
3	7,2	69,8	71,0	0,072	82,7
3	7,9	63,4	63,0	0,078	82,6
3	9,0	55,8	56,0	0,088	82,5
3	9,8	51,0	50,0	0,096	82,4
3	11,0	45,5	45,0	0,107	82,3
3	12,5	40,1	40,0	0,120	82,1
3	14,1	35,6	35,5	0,135	81,9
2	16,0	31,3	31,5	0,090	48,6
2	17,9	27,9	28,0	0,100	48,1
2	20,3	24,7	25,0	0,111	47,6
2	22,6	22,1	22,4	0,122	47,0
2	25,1	19,9	20,0	0,134	46,5
2	27,6	18,1	18,0	0,145	45,9
2	30,8	16,3	16,0	0,158	45,2
2	35,8	14,0	14,0	0,178	44,0
2	39,3	12,7	12,5	0,192	43,1
2	44,8	11,2	11,2	0,212	41,9
2	48,9	10,2	10,0	0,225	40,8
2	54,8	9,1	9,0	0,245	39,8
2	62,3	8,0	8,0	0,268	38,3
2	70,2	7,1	7,1	0,290	36,9
2	78,9	6,3	6,3	0,313	35,4



# Electromechanical products

## Compabloc 1000

### Load on slow speed shaft

Cb 1701

For this type of product the permissible load on the slow speed shaft depends on the speed of rotation and the transmitted torque but not on the reduction.

#### Force in N.m.

Gearbox characteristics		Clockwise or anti-clockwise direction		
Speed min <sup>-1</sup>	Max. torque N.m	F <sub>r</sub>	F <sub>a</sub> +	F <sub>a</sub> -
1100	7	817	502	479
1100	10	779	473	440
900	7	879	552	530
900	10	842	524	490
750	7	940	603	579
750	11	890	562	526
600	8	1007	660	632
600	12	957	622	580
500	9	1064	708	679
500	14	1001	664	613
400	11	1129	774	733
400	17	1055	714	654
300	13	1232	872	822
300	20	1145	807	731
200	17	1384	1025	962
200	25	1248	960	858
≤ 150	17	1544	1196	1124
≤ 150	25	1445	1123	1018

#### Direction of force

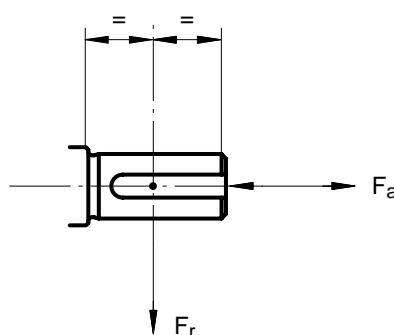
F<sub>a</sub> + = PULLING axial force on shaft end.

F<sub>a</sub> - = PUSHING axial force on shaft end.

F<sub>r</sub> = radial force on the shaft end at 22.5 mm from the shoulder.

Note : These values correspond to the most adverse load conditions.

SPECIAL CASES : please consult Leroy Somer.



# Electromechanical products

## Compabloc 1000

### Load on slow speed shaft

Cb 1502

For this type of product the permissible load on the slow speed shaft depends on the speed of rotation and the transmitted torque but not on the reduction.

#### Force in N.m.

Gearbox characteristics		Clockwise or anti-clockwise direction		
Speed min <sup>-1</sup>	Max. torque N.m	F <sub>r</sub>	F <sub>a</sub> +	F <sub>a</sub> -
400	16	1296	618	645
300	15	1464	730	757
300	20	1399	677	713
200	22	1613	832	871
200	33	1465	719	781
150	22	1802	893	1021
150	33	1651	869	934
150	45	1404	838	929
100	22	1900	1435	1485
100	33	1800	1274	1347
100	45	1710	1077	1172
75	22	1900	1936	1990
75	33	1800	1768	1843
75	45	1710	1563	1660
50	22	1900	2838	2902
50	33	1800	2663	2756
50	45	1710	2441	2570
≤ 40	22	1900	3040	3040
≤ 40	33	1800	2995	2995
≤ 40	45	1710	2800	2800

#### Direction of force

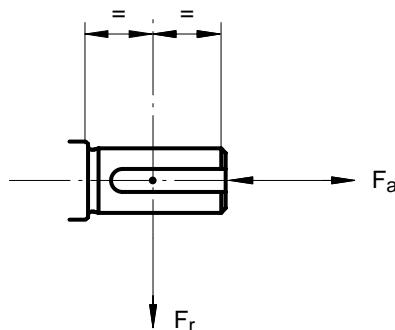
F<sub>a</sub> + = PULLING axial force on shaft end.

F<sub>a</sub> - = PUSHING axial force on shaft end.

F<sub>r</sub> = radial force on the shaft end at 20 mm from the shoulder.

Note : These values correspond to the most adverse load conditions.

SPECIAL CASES : please consult Leroy Somer.



# Electromechanical products

## Compabloc 1000

### Load on slow speed shaft

Cb 1503 - 1504

For this type of product the permissible load on the slow speed shaft depends on the speed of rotation and the transmitted torque but not on the reduction.

#### Force in N.m.

Gearbox characteristics		Clockwise or anti-clockwise direction		
Speed min $^{-1}$	Max. torque N.m	$F_r$	$F_{a+}$	$F_{a-}$
60	26	1820	2396	2466
60	34	1800	2200	2290
60	45	1710	2016	2133
60	60	1580	1775	1930
50	26	1820	2832	2913
50	34	1800	2634	2731
50	45	1710	2441	2570
50	60	1580	2197	2364
$\leq 40$	26	1820	2998	2998
$\leq 40$	34	1800	2915	2915
$\leq 40$	45	1710	2800	2800
$\leq 40$	60	1580	2644	2644

#### Direction of force

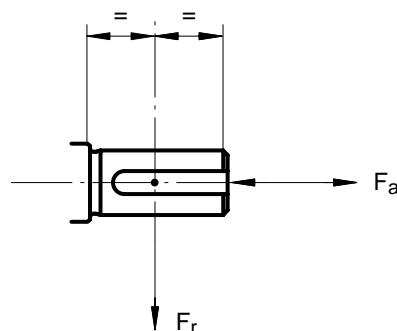
$F_{a+}$  = PULLING axial force on shaft end.

$F_{a-}$  = PUSHING axial force on shaft end.

$F_r$  = radial force on the shaft end at 20 mm from the shoulder.

Note : These values correspond to the most adverse load conditions.

SPECIAL CASES : please consult Leroy Somer.



# Electromechanical products

## Compabloc 1000

### Load on slow speed shaft

Cb 1702

For this type of product the permissible load on the slow speed shaft depends on the speed of rotation and the transmitted torque but not on the reduction.

#### Force in N.m.

Gearbox characteristics		Clockwise or anti-clockwise direction		
Speed min <sup>-1</sup>	Max. torque N.m	F <sub>r</sub>	F <sub>a</sub> +	F <sub>a</sub> -
500	22,5	950	768	813
360	30	910	956	1020
360	45	453	1162	1266
200	30	1305	1175	1242
200	45	848	1399	1510
100	30	1842	1514	1588
100	45	1421	1770	1891
100	60	950	2077	2248
50	30	2525	2087	2167
50	45	1995	2490	2624
50	60	1690	2599	2783
40	30	2700	2410	2496
40	45	2415	2480	2612
40	60	1957	2820	3011
30	32	2700	3221	3323
30	48	2600	3001	3149
30	65	2106	3231	3231
≤ 20	32	2700	3567	3567
≤ 20	48	2600	3404	3404
≤ 20	65	2500	3231	3231

#### Direction of force

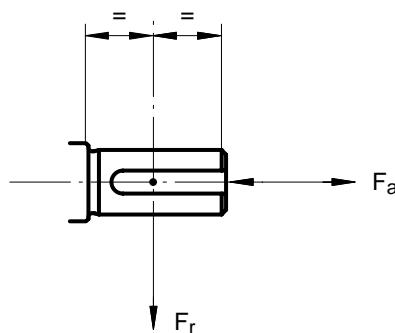
F<sub>a</sub> + = PULLING axial force on shaft end.

F<sub>a</sub> - = PUSHING axial force on shaft end.

F<sub>r</sub> = radial force on the shaft end at 22.5 mm from the shoulder.

Note : These values correspond to the most adverse load conditions.

SPECIAL CASES : please consult Leroy Somer.



# Electromechanical products

## Compabloc 1000

### Load on slow speed shaft

Cb 1703

For this type of product the permissible load on the slow speed shaft depends on the speed of rotation and the transmitted torque but not on the reduction.

#### Force in N.m.

Gearbox characteristics		Clockwise or anti-clockwise direction		
Speed min <sup>-1</sup>	Max. torque N.m	F <sub>r</sub>	F <sub>a</sub> +	F <sub>a</sub> -
60	32	2600	1892	1962
60	48	2500	1616	1709
60	65	2400	1341	1347
60	80	2200	1172	1270
50	32	2630	2280	2348
50	48	2600	1910	2008
50	65	2480	1621	1753
50	80	2380	1375	1500
40	32	2630	2829	2942
40	48	2600	2478	2588
40	65	2500	2155	2299
40	80	2400	1880	2060
35	32	2630	3271	3351
35	48	2600	2856	2983
35	65	2500	2534	2686
35	80	2400	2258	2444
30	32	2630	3407	3488
30	48	2600	3230	3351
30	65	2500	3024	3189
30	80	2400	2734	2739
≤ 25	32	2630	3572	3572
≤ 25	48	2600	3411	3411
≤ 25	65	2500	3241	3241
≤ 25	80	2400	3091	3091

#### Direction of force

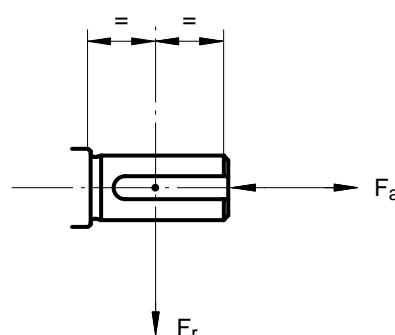
F<sub>a</sub> + = PULLING axial force on shaft end.

F<sub>a</sub> - = PUSHING axial force on shaft end.

F<sub>r</sub> = radial force on the shaft end at 22.5 mm from the shoulder.

Note : These values correspond to the most adverse load conditions.

SPECIAL CASES : please consult Leroy Somer.



# Electromechanical products

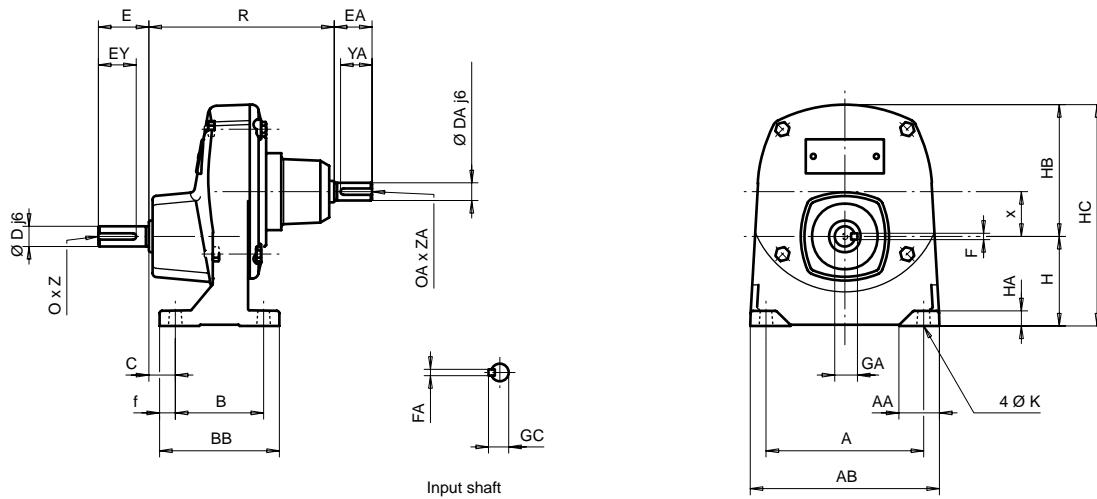
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) gearboxes, AP input shaft mounting,  
Cb 1701

*Dimensions in millimetres*

#### - S baseplate form



Type	Gearboxes with baseplate													Solid output shaft						Weight kg		
	R	A	AA	AB	B	BB	x	H	HB	HC	C	f	K	HA	D	E	EY	GA	F	O	Z	
Cb 1701	147	125	32,5	150	70	95	35,5	71	104,5	175,5	21	12,5	9	12	16	40	30	18	5	M5	15	2,95

Type	Input shaft						
	DA	EA	YA	GC	FA	OA	ZA
Cb 1701	14	30	25	16	5	M5	14

# Electromechanical products

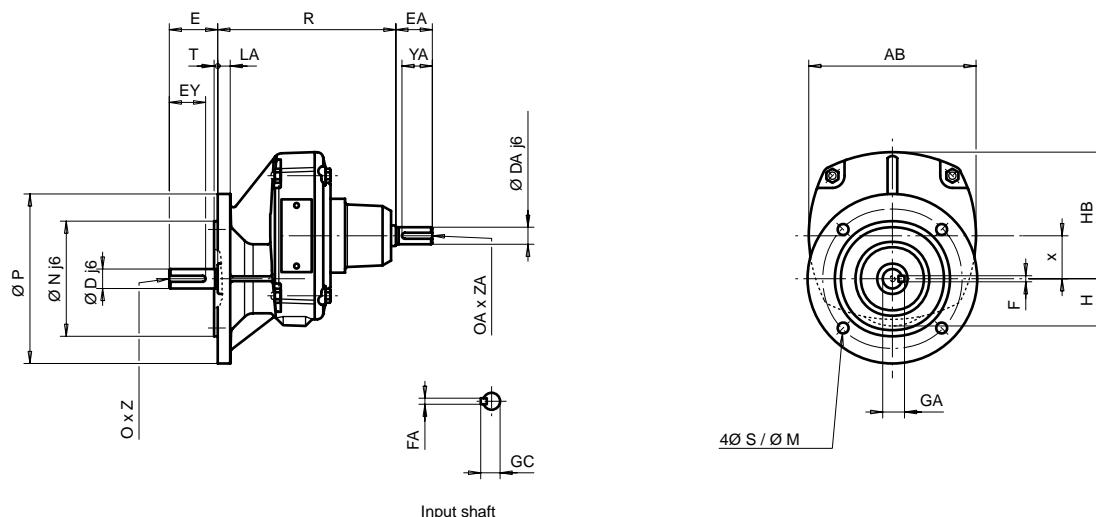
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) gearboxes, AP input shaft mounting,  
Cb 1701

Dimensions in millimetres

#### - BS, BD1, BD2 flange form



Type	Gearboxes with BS flange											Solid output shaft						Weight kg	
	R	AB	M	N	P	S	LA	T	HB	H	x	D	E	EY	GA	F	O	Z	
Cb 1701	147	138	115	95	140	9	10	3	104,5	39	35,5	16	40	30	18	5	M5	15	2,85

Type	Input shaft						
	DA	EA	YA	GC	FA	OA	ZA
Cb 1701	14	30	25	16	5	M5	14

Type	Other possible flanges <sup>1</sup>											
	BD1			BD2								
Cb 1701	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2
	100	80	120	7	10	3	130	110	160	9	10	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

A

AXIAL OUTPUT GEARED MOTORS

# Electromechanical products

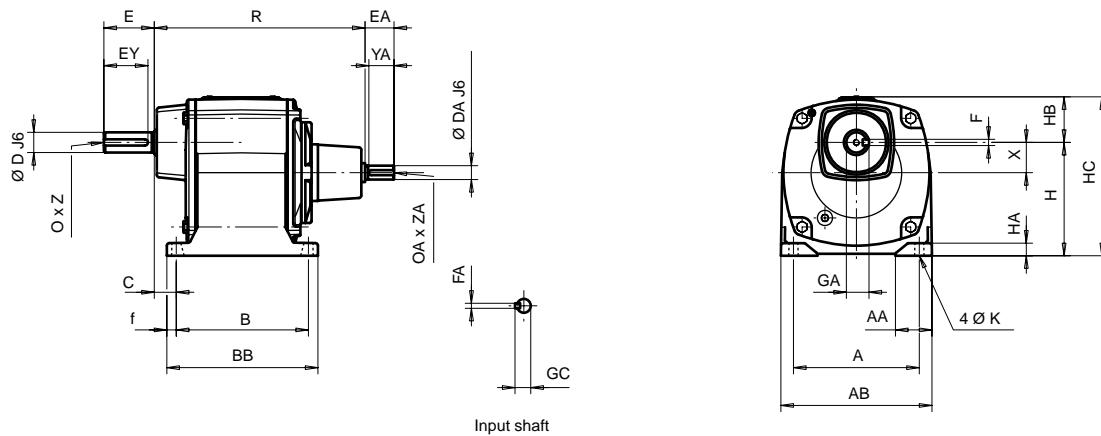
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) gearboxes, AP input shaft mounting,  
Cb 1502, Cb 1503, Cb 1504

*Dimensions in millimetres*

#### - S baseplate form



Type	Gearboxes with baseplate													Solid output shaft						Weight kg		
	R	A	AA	AB	B	BB	x	H	HB	HC	C	f	K	HA	D	E	EY	GA	F	O	Z	
Cb 1502	167,5	100	29	120	105	120	24	90	36,5	126	17,5	7,5	7	10	16	40	37	18	5	M5	15	2,8
Cb 1503	167,5	100	29	120	105	120	24	90	36,5	126	17,5	7,5	7	10	16	40	37	18	5	M5	15	3,1
Cb 1504	167,5	100	29	120	105	120	24	90	36,5	126	17,5	7,5	7	10	16	40	37	18	5	M5	15	3,2

Type	Input shaft						
	DA	EA	YA	GC	FA	OA	ZA
Cb 1502 - 3 - 4	11	23	20	12,5	4	M4	10

# Electromechanical products

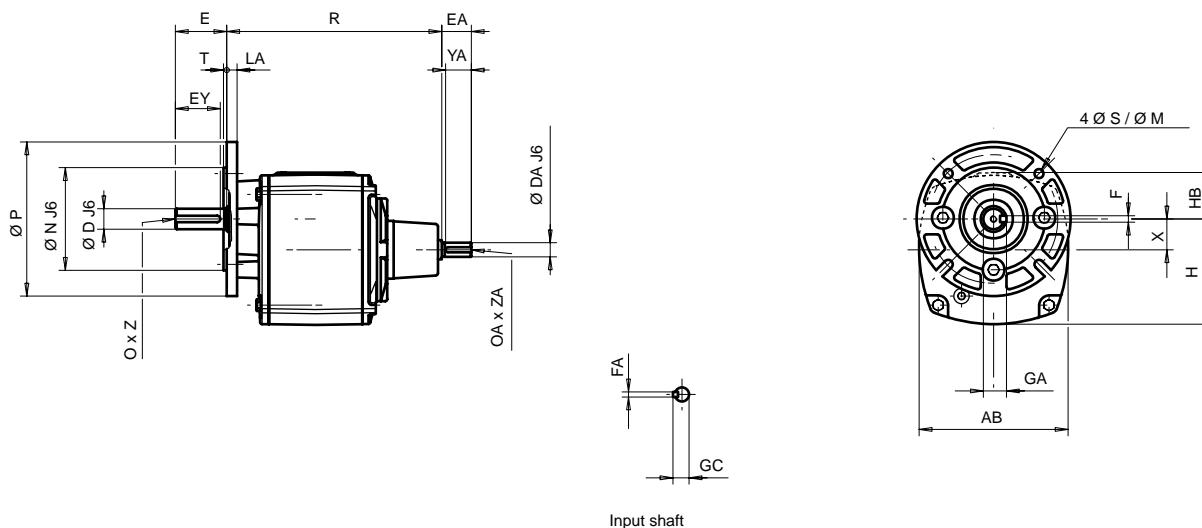
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) gearboxes, AP input shaft mounting,  
Cb 1502, Cb 1503, Cb 1504

Dimensions in millimetres

#### - BS, BD1, BD2 flange form



Type	Gearboxes with BS flange										Solid output shaft						Weight kg		
	R	AB	M	N	P	S *	LA	T	HB	H	x	D	E	EY	GA	F	O	Z	
Cb 1502	167,5	116	100	80	120	7	8	2,5	36,5	82	24	16	40	37	18	5	M5	15	2,9
Cb 1503	167,5	116	100	80	120	7	8	2,5	36,5	82	24	16	40	37	18	5	M5	15	3,2
Cb 1504	167,5	116	100	80	120	7	8	2,5	36,5	82	24	16	40	37	18	5	M5	15	3,3

Type	Input shaft						
	DA	EA	YA	GC	FA	OA	ZA
Cb 1502 - 3 - 4	11	23	20	12,5	4	M4	10

Type	Other possible flanges <sup>1</sup>											
	BD1						BD2					
M1	N1	P1	S1*	LA1	T1	M2	N2	P2	S2*	LA2	T2	
Cb 1502 - 3 - 4	85	70	105	7	8	2,5	115	95	140	9	8	2,5

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

\* To simplify mounting the gearbox, the 2 lower holes on the flange have been replaced by 2 notches.

A

AXIAL OUTPUT GEARED MOTORS

# Electromechanical products

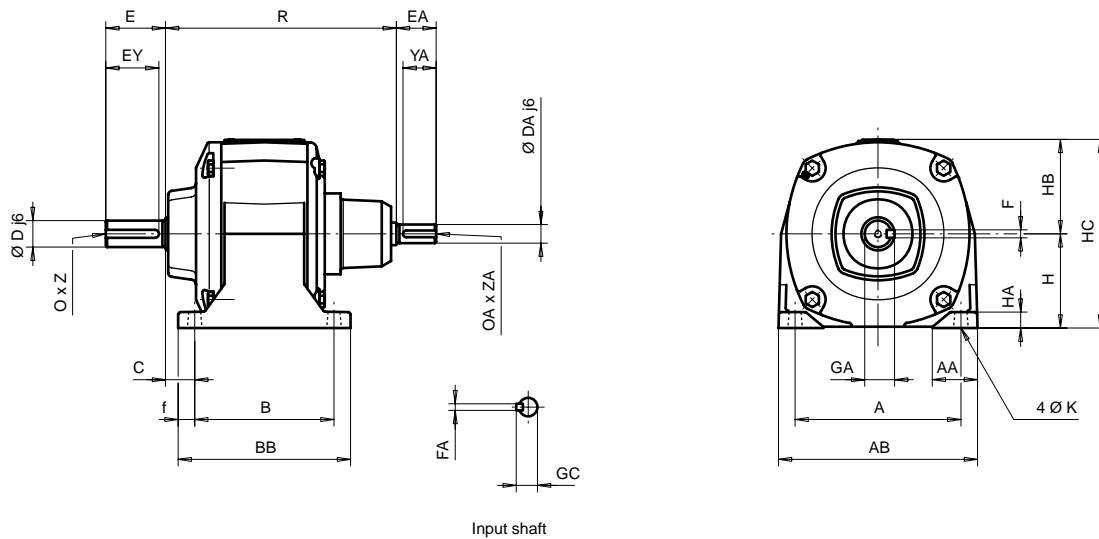
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) gearboxes, AP input shaft mounting,  
Cb 1702, Cb 1703

*Dimensions in millimetres*

#### - S baseplate form



Type	Gearboxes with baseplate												Solid output shaft						Weight kg		
	R	A	AA	AB	B	BB	H	HB	HC	C	f	K	HA	D	E	EY	GA	F	O	Z	
Cb 1702	174	125	31,5	150	105	130	71	72	143	22	12,5	9	12	20	45	40	22,5	6	M6	15	4,3
Cb 1703	194	125	31,5	150	125	150	71	72	143	22	12,5	9	12	20	45	40	22,5	6	M6	15	5,15

Type	Input shaft						
	DA	EA	YA	GC	FA	OA	ZA
Cb 1702	14	30	25	16	5	M5	14
Cb 1703	14	30	25	16	5	M5	14

# Electromechanical products

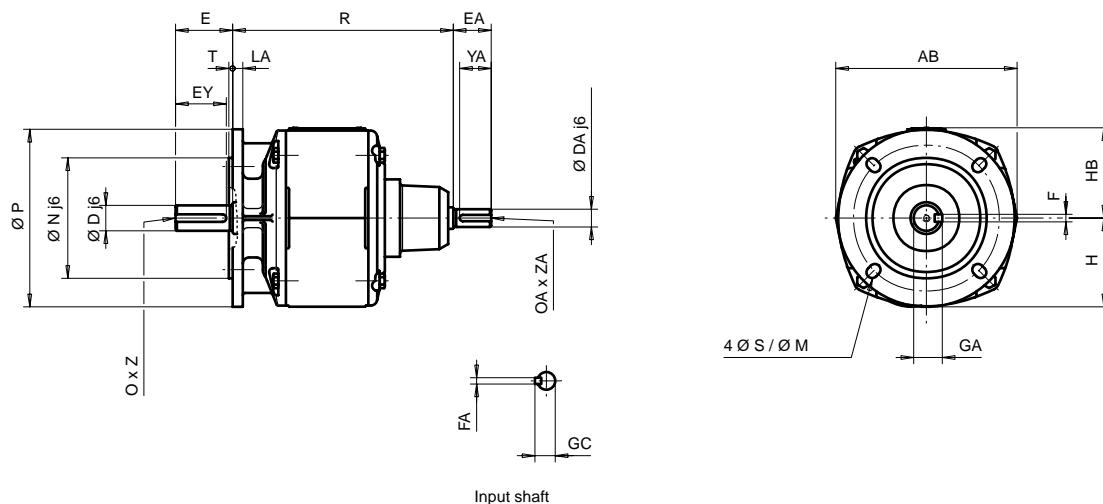
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) gearboxes, AP input shaft mounting,  
Cb 1702, Cb 1703

Dimensions in millimetres

#### - BS, BD1, BD2 flange form



Type	Gearboxes with BS flange									Solid output shaft						Weight kg		
	R	AB	M	N	P	S	LA	T	HB	H	D	E	EY	GA	F	O	Z	
Cb 1702	174	143	115	95	140	9	8	3	72	69	20	45	40	22,5	6	M6	15	4,35
Cb 1703	194	143	115	95	140	9	8	3	72	69	20	45	40	22,5	6	M6	15	5,25

Type	Input shaft						
	DA	EA	YA	GC	FA	OA	ZA
Cb 1702	14	30	25	16	5	M5	14
Cb 1703	14	30	25	16	5	M5	14

Type	Other possible flanges <sup>1</sup>											
	BD1			BD2								
Cb 1702 - 03	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

A

AXIAL OUTPUT GEARED MOTORS

# Electromechanical products

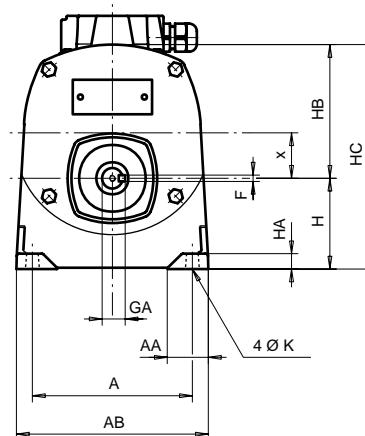
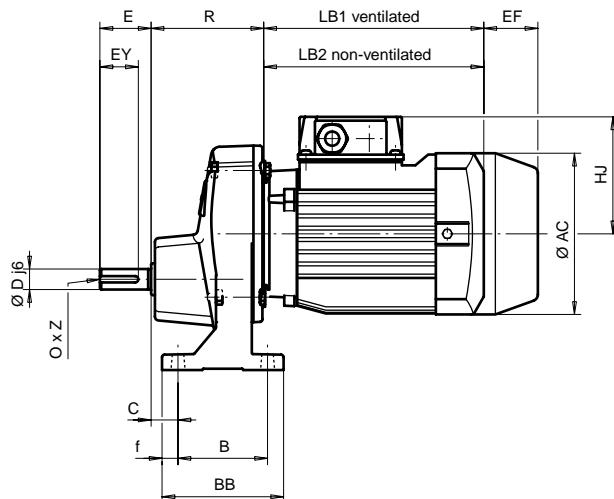
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) geared motors, MI integral mounting,  
Cb 1701

*Dimensions in millimetres*

#### - S baseplate form



Type	Gearboxes with baseplate													Solid output shaft						Weight*		
	R	A	AA	AB	B	BB	x	H	HB	HC	C	f	K	HA	D	E	EY	GA	F	O	Z	
Cb 1701	88	125	32,5	150	70	95	35,5	71	104,5	175,5	21	12,5	9	12	16	40	30	18	5	M5	15	2,05

\* Gearbox only.

Frame size	Induction and brake motors												Brakes						
	LS 3-phase				LS single phase				Max weight				Max weight				Brakes		
	AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR	FMC	FAST	FCR	Weight <sup>1</sup> kg		
56	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	-	-			
63	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	-	-			
71 <sup>2</sup>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2	2,5			

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

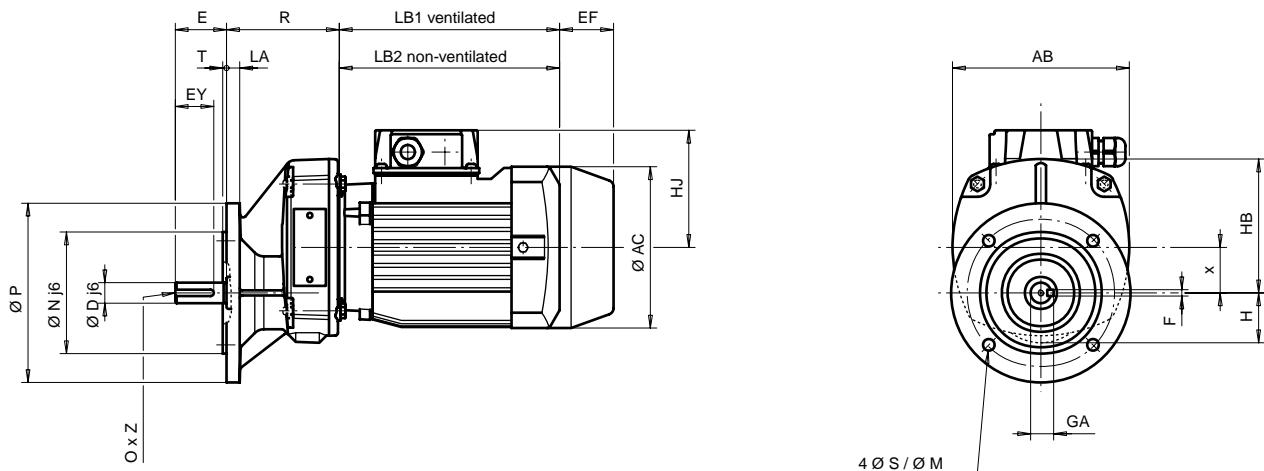
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) geared motors, MI integral mounting,  
Cb 1701

Dimensions in millimetres

- BS, BD1, BD2 flange form



Type	Gearboxes with flange											Solid output shaft						Weight*	
	R	AB	M	N	P	S	LA	T	HB	H	x	D	E	EY	GA	F	O	Z	
Cb 1701	88	138	115	95	140	9	10	3	104,5	39	35,5	16	40	30	18	5	M5	15	1,95

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>											
	BD1					BD2						
M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2	
Cb 1701	100	80	120	7	10	3	130	110	160	9	10	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Frame size	Induction and brake motors												
	LS 3-phase				LS single phase				Brakes				
	AC	HJ	LB1	LB2	Max weight	AC	HJ	LB1	LB2	Max weight	EF max.	Weight <sup>1</sup> kg	
56	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-
63	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-
71 <sup>2</sup>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

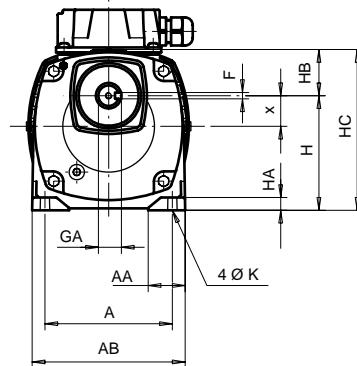
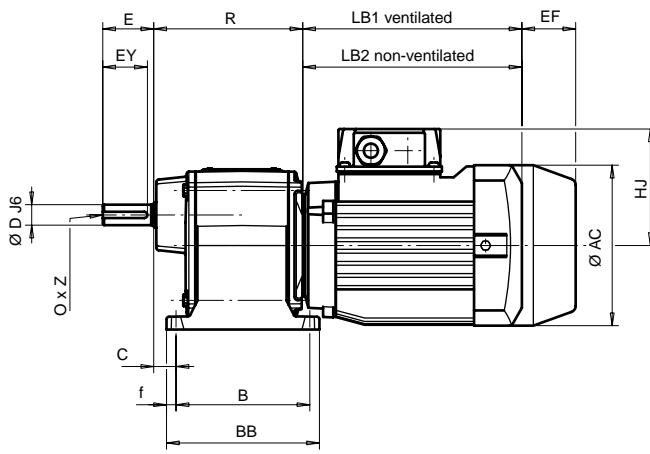
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) geared motors, MI integral mounting,  
Cb 1502, Cb 1503, Cb 1504

*Dimensions in millimetres*

#### - S baseplate form



Type	Gearboxes with baseplate													Solid output shaft						Weight*		
	R	A	AA	AB	B	BB	x	H	HB	HC	C	f	K	HA	D	E	EY	GA	F	O	Z	
Cb 1502	117	100	29	120	105	120	24	90	36,5	126	17,5	7,5	7	10	16	40	37	18	5	M5	15	2,5
Cb 1503	117	100	29	120	105	120	24	90	36,5	126	17,5	7,5	7	10	16	40	37	18	5	M5	15	2,8
Cb 1504	117	100	29	120	105	120	24	90	36,5	126	17,5	7,5	7	10	16	40	37	18	5	M5	15	2,9

\* Gearbox only.

Frame size	Induction and brake motors												Brakes					
	LS 3-phase				LS single phase				Max weight				Brakes					
	AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR	FMC	FAST	FCR		
56	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	-	-		
63	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	-	-		
71 <sup>2</sup>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2	2,5		

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

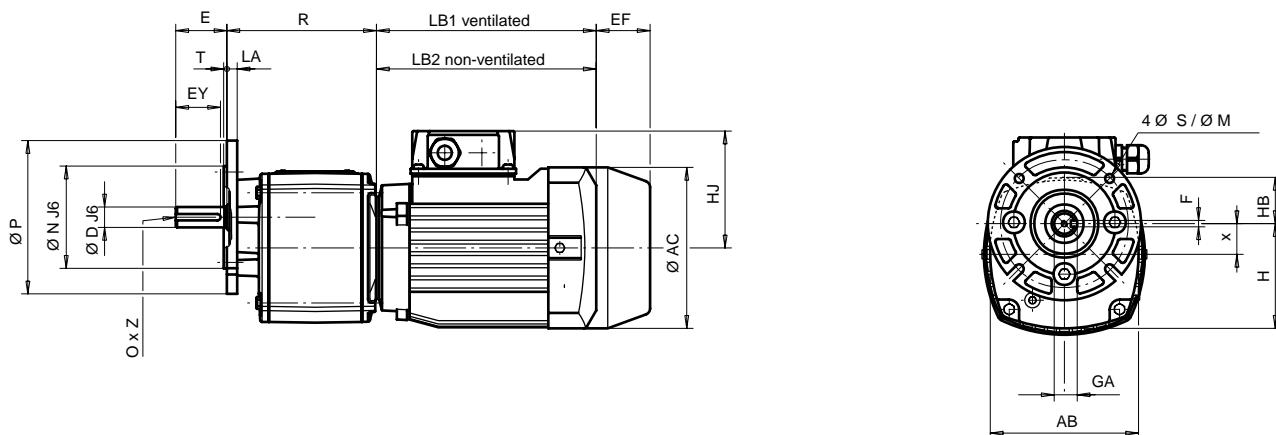
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) geared motors, MI integral mounting,  
Cb 1502, Cb 1503, Cb 1504

Dimensions in millimetres

#### - BS, BD1, BD2 flange form



A

AXIAL OUTPUT GEARED MOTORS

Type	Gearboxes with flange										Solid output shaft							Weight*	
	R	AB	M	N	P	S *	LA	T	HB	H	x	D	E	EY	GA	F	O	Z	
Cb 1502	117	116	100	80	120	7	8	2,5	36,5	82	24	16	40	37	18	5	M5	15	2,5
Cb 1503	117	116	100	80	120	7	8	2,5	36,5	82	24	16	40	37	18	5	M5	15	2,8
Cb 1504	117	116	100	80	120	7	8	2,5	36,5	82	24	16	40	37	18	5	M5	15	2,9

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>											
	BD1					BD2						
M1	N1	P1	S1*	LA1	T1	M2	N2	P2	S2*	LA2	T2	
Cb 1502 - 3 - 4	85	70	105	7	8	2,5	115	95	140	9	8	2,5

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

\* To simplify mounting the gearbox, the 2 lower holes on the flange have been replaced by 2 notches.

Frame size	Induction and brake motors													
	LS 3-phase				LS single phase				Brakes					
	Max weight				Max weight				EF max.					
AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR	Weight <sup>1</sup> kg	
56	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9
63	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9
71 <sup>2</sup>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

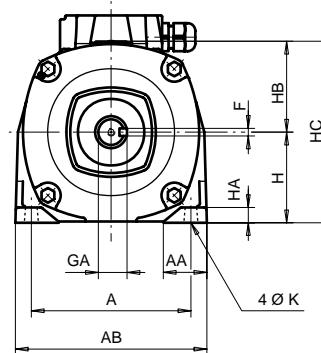
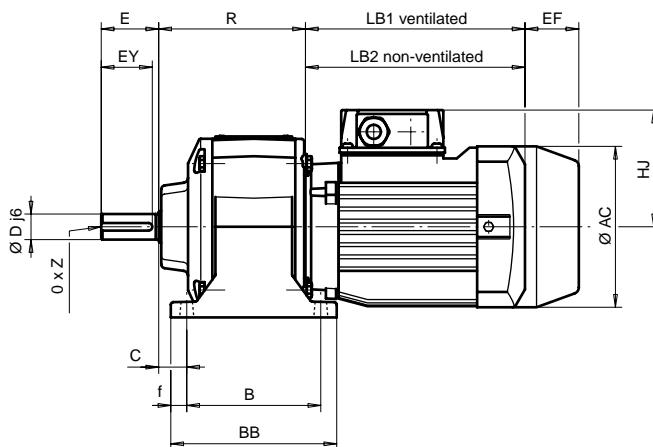
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) geared motors, MI integral mounting,  
Cb 1702, Cb 1703

*Dimensions in millimetres*

#### - S baseplate form



Type	Gearboxes with baseplate												Solid output shaft						Weight*		
	R	A	AA	AB	B	BB	H	HB	HC	C	f	K	HA	D	E	EY	GA	F	O	Z	
Cb 1702	115	125	31,5	150	105	130	71	72	143	22	12,5	9	12	20	45	40	22,5	6	M6	15	3,4
Cb 1703	135	125	31,5	150	125	150	71	72	143	22	12,5	9	12	20	45	40	22,5	6	M6	15	4,25

\* Gearbox only.

Frame size	Induction and brake motors												Brakes					
	LS 3-phase				LS single phase				Max weight				Brakes					
	AC	HJ	LB1	LB2	Max weight	AC	HJ	LB1	LB2	Max weight	FMC	FAST	FCR	FMC	FAST	FCR		
56	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	-	-		
63	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	-	-		
71 <sup>2</sup>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2	2,5		

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

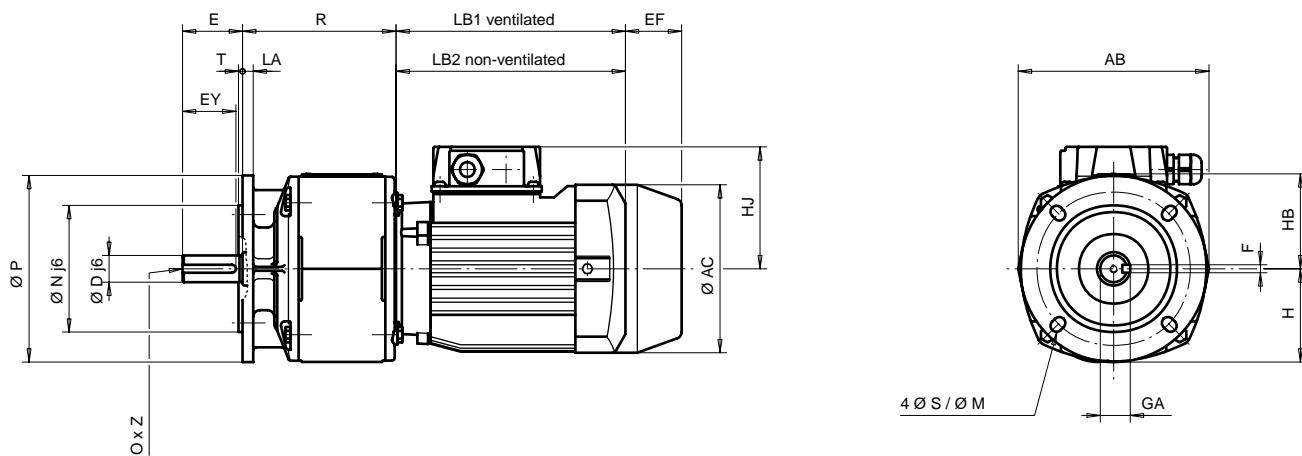
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) geared motors, MI integral mounting,  
Cb 1702, Cb 1703

Dimensions in millimetres

#### - BS, BD1, BD2 flange form



Type	Gearboxes with flange									Solid output shaft							Weight*	
	R	AB	M	N	P	S	LA	T	HB	H	D	E	EY	GA	F	O	Z	
Cb 1702	115	143	115	95	140	9	8	3	72	69	20	45	40	22,5	6	M6	15	3,45
Cb 1703	135	143	115	95	140	9	8	3	72	69	20	45	40	22,5	6	M6	15	4,35

\* Gearbox only.

Other possible flanges <sup>1</sup>												
Type	BD1						BD2					
	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2
Cb 1702 - 03	100	80	120	7	7	3	130	110	160	9	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Induction and brake motors																
Frame size	LS 3-phase				LS single phase				Brakes							
	AC	HJ	LB1	LB2	Max weight	AC	HJ	LB1	LB2	Max weight	EF max.	FMC	FAST	FCR	Weight <sup>1</sup> kg	
56	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	-	-
63	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	-	-
71 <sup>2</sup>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

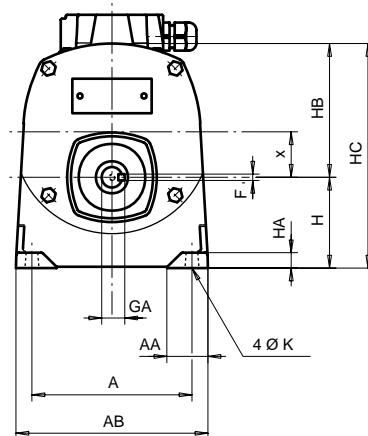
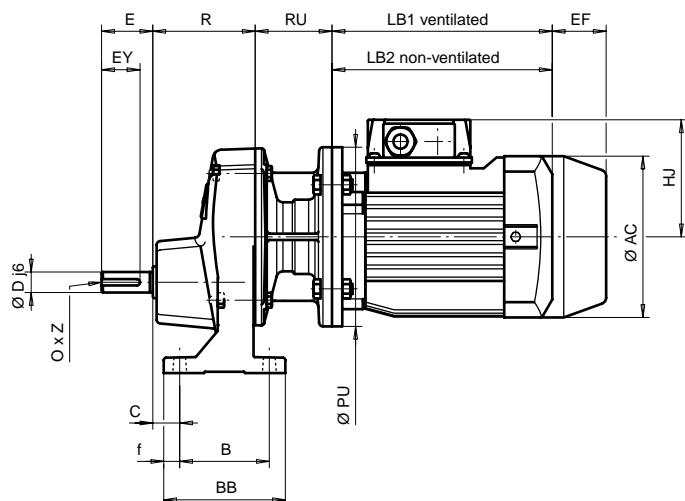
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) geared motors, MU universal mounting,  
Cb 1701

*Dimensions in millimetres*

#### - S baseplate form



Type	Gearboxes with baseplate													Solid output shaft						Weight*			
	R	A	AA	AB	B	BB	x	H	HB	HC	C	f	K	HA	RU	D	E	EY	GA	F	O	Z	
Cb 1701	88	125	32,5	150	70	95	35,5	71	104,5	175,5	21	12,5	9	12	60	16	40	30	18	5	M5	15	3,2

\* Gearbox only.

Induction and brake motors																				
LS 3-phase					LS single phase					Brakes										
Frame size	AC	HJ	LB1	LB2	PU	Max weight		AC	HJ	LB1	LB2	PU	Max weight		EF max.			Weight <sup>1</sup> kg		
						kg	kg						kg	kg	FMC	FAST	FCR	FMC	FAST	FCR
56	110	85	156	135	120	3,4		110	90	156	135	120	3,5		50	-	-	0,9	-	-
63	124	95	172	150	140	4,3		124	110	172	150	140	4,5		50	-	-	0,9	-	-
71 <sup>2</sup>	140	102	183	155	160	6,5		140	129	183	155	160	7,5		50	28	90	0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

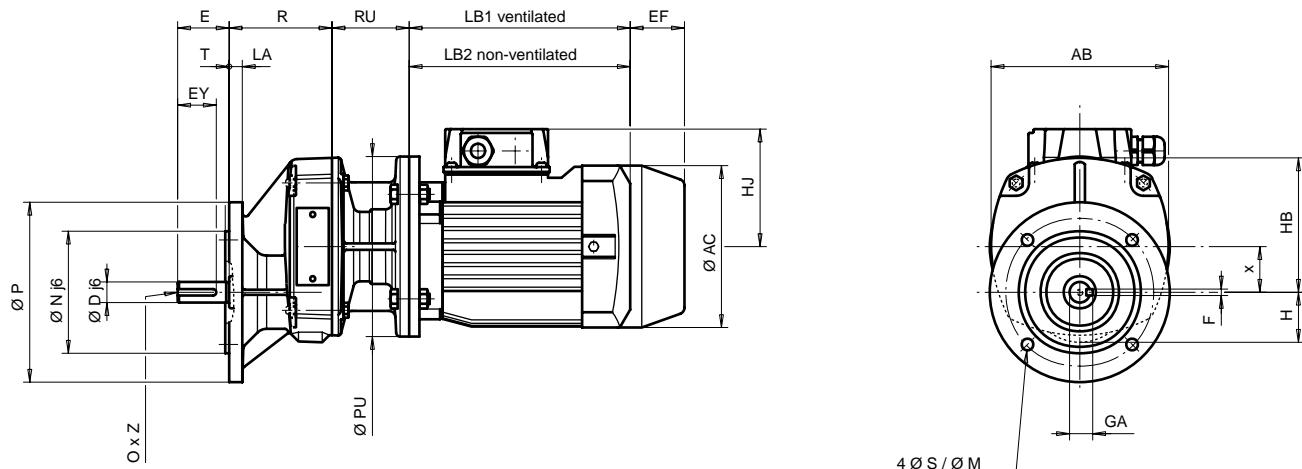
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) geared motors, MU universal mounting,  
Cb 1701

Dimensions in millimetres

#### - BS, BD1, BD2 flange form



Type	Gearboxes with flange											Solid output shaft						Weight*		
	R	AB	M	N	P	S	LA	T	HB	H	x	RU	D	E	EY	GA	F	O	Z	
Cb 1701	88	138	115	95	140	9	10	3	104,5	39	35,5	60	16	40	30	18	5	M5	15	3,1

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>											
	BD1					BD2						
M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2	
Cb 1701	100	80	120	7	10	3	130	110	160	9	10	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Frame size	Induction and brake motors										Brakes				
	LS 3-phase					LS single phase									
	AC	HJ	LB1	LB2	PU	Max weight	AC	HJ	LB1	LB2	PU	Max weight	FMC	FAST	FCR
56	110	85	156	135	120	3,4	110	90	156	135	120	3,5	50	-	-
63	124	95	172	150	140	4,3	124	110	172	150	140	4,5	50	-	-
71 <sup>2</sup>	140	102	183	155	160	6,5	140	129	183	155	160	7,5	50	28	90

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

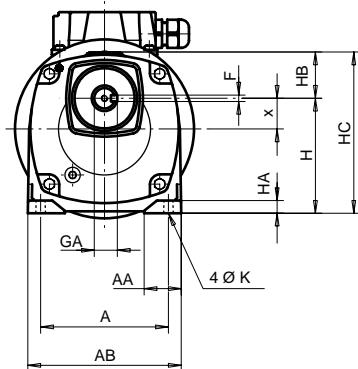
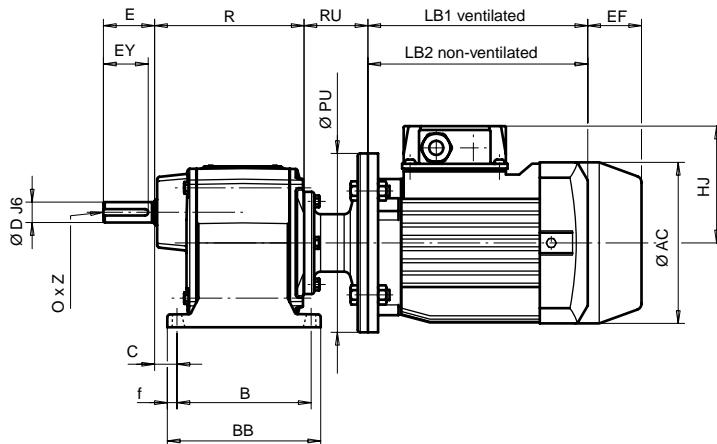
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) geared motors, MU universal mounting,  
Cb 1502, Cb 1503, Cb 1504

*Dimensions in millimetres*

#### - S baseplate form



Type	Gearboxes with baseplate													Solid output shaft						Weight*			
	R	A	AA	AB	B	BB	x	H	HB	HC	C	f	K	HA	RU	D	E	EY	GA	F	O	Z	
Cb 1502	117	100	29	120	105	120	24	90	36,5	126	17,5	7,5	7	10	50	16	40	37	18	5	M5	15	3,1
Cb 1503	117	100	29	120	105	120	24	90	36,5	126	17,5	7,5	7	10	50	16	40	37	18	5	M5	15	3,4
Cb 1504	117	100	29	120	105	120	24	90	36,5	126	17,5	7,5	7	10	50	16	40	37	18	5	M5	15	3,5

\* Gearbox only.

Induction and brake motors																						
LS 3-phase										LS single phase										Brakes		
Frame size	AC	HJ	LB1	LB2	PU	Max weight				Max weight				EF max.			Weight <sup>1</sup> kg					
						kg	AC	HJ	LB1	LB2	PU	kg	FMC	FAST	FCR	FMC	FAST	FCR				
56	110	85	156	135	120	3,4	110	90	156	135	120	3,5	50	-	-	0,9	-	-				
63	124	95	172	150	140	4,3	124	110	172	150	140	4,5	50	-	-	0,9	-	-				
71 <sup>2</sup>	140	102	183	155	160	6,5	140	129	183	155	160	7,5	50	28	90	0,9	2	2,5				

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

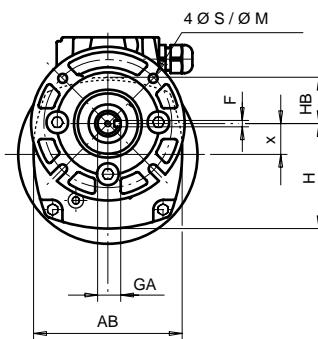
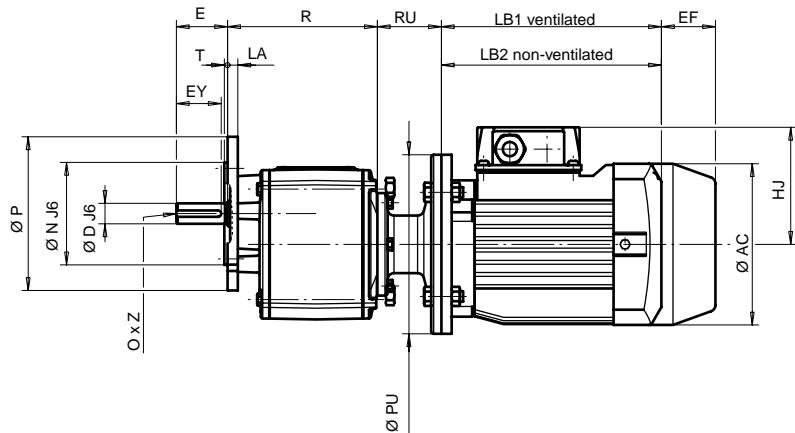
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) geared motors, MU universal mounting,  
Cb 1502, Cb 1503, Cb 1504

Dimensions in millimetres

#### - BS, BD1, BD2 flange form



A  
**AXIAL OUTPUT GEARED MOTORS**

Type	Gearboxes with flange										Solid output shaft							Weight*		
	R	AB	M	N	P	S *	LA	T	HB	H	x	RU	D	E	EY	GA	F	O	Z	
Cb 1502	117	116	100	80	120	7	8	2,5	36,5	82	24	50	16	40	37	18	5	M5	15	3,1
Cb 1503	117	116	100	80	120	7	8	2,5	36,5	82	24	50	16	40	37	18	5	M5	15	3,4
Cb 1504	117	116	100	80	120	7	8	2,5	36,5	82	24	50	16	40	37	18	5	M5	15	3,5

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>											
	BD1					BD2						
M1	N1	P1	S1*	LA1	T1	M2	N2	P2	S2*	LA2	T2	
Cb 1502 - 3 - 4	85	70	105	7	8	2,5	115	95	140	9	8	2,5

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

\* To simplify mounting the gearbox, the 2 lower holes on the flange have been replaced by 2 notches.

Frame size	Induction and brake motors																	
	LS 3-phase					LS single phase					Brakes							
	Max weight					Max weight					EF max.			Weight <sup>1</sup> kg				
AC	HJ	LB1	LB2	PU	kg	AC	HJ	LB1	LB2	PU	kg	FMC	FAST	FCR	FMC	FAST	FCR	
56	110	85	156	135	120	3,4	110	90	156	135	120	3,5	50	-	-	0,9	-	-
63	124	95	172	150	140	4,3	124	110	172	150	140	4,5	50	-	-	0,9	-	-
71 <sup>2</sup>	140	102	183	155	160	6,5	140	129	183	155	160	7,5	50	28	90	0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

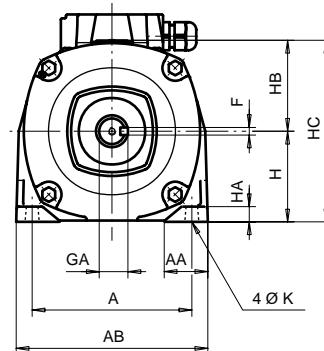
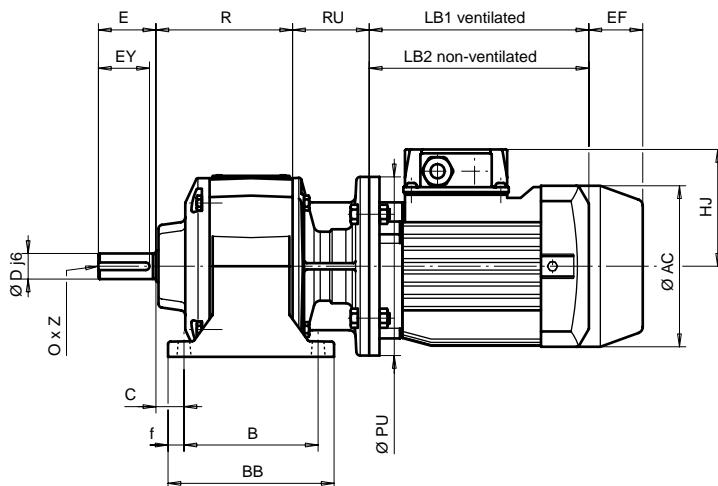
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) geared motors, MU universal mounting,  
Cb 1702, Cb 1703

*Dimensions in millimetres*

#### - S baseplate form



Type	Gearboxes with baseplate													Solid output shaft						Weight*		
	R	A	AA	AB	B	BB	H	HB	HC	C	f	K	HA	RU	D	E	EY	GA	F	O	Z	
Cb 1702	107	125	31,5	150	105	130	71	72	143	22	12,5	9	12	60	20	45	40	22,5	6	M6	15	4,55
Cb 1703	127	125	31,5	150	125	150	71	72	143	22	12,5	9	12	60	20	45	40	22,5	6	M6	15	5,4

\* Gearbox only.

Induction and brake motors																		
LS 3-phase					LS single phase					Brakes								
Frame size	Max weight					Max weight					EF max.			Weight <sup>1</sup> kg				
	AC	HJ	LB1	LB2	PU	kg	AC	HJ	LB1	LB2	PU	kg	FMC	FAST	FCR	FMC	FAST	FCR
56	110	85	156	135	120	3,4	110	90	156	135	120	3,5	50	-	-	0,9	-	-
63	124	95	172	150	140	4,3	124	110	172	150	140	4,5	50	-	-	0,9	-	-
71 <sup>2</sup>	140	102	183	155	160	6,5	140	129	183	155	160	7,5	50	28	90	0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

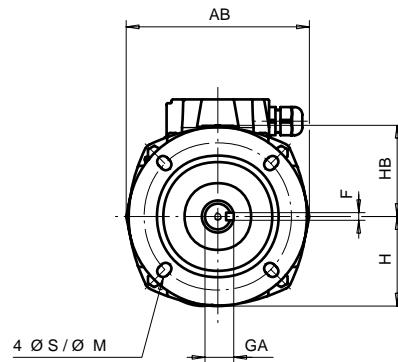
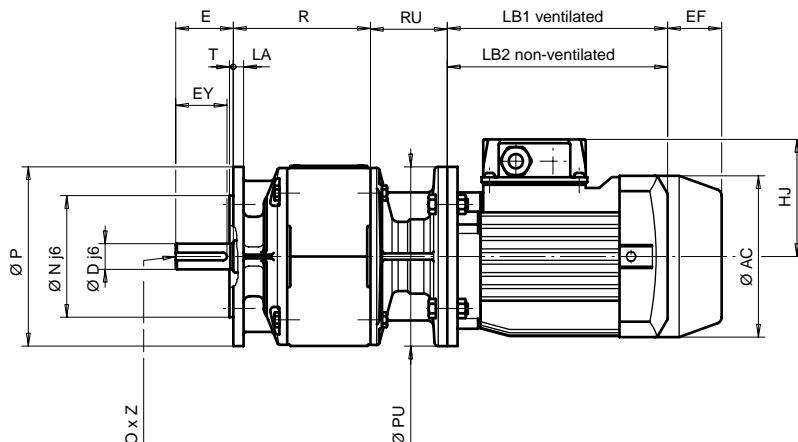
## Compabloc 1000

### Dimensions

Dimensions of Compabloc (Cb) geared motors, MU universal mounting,  
Cb 1702, Cb 1703

Dimensions in millimetres

#### - BS, BD1, BD2 flange form



A

AXIAL OUTPUT GEARED MOTORS

Type	Gearboxes with flange											Solid output shaft							Weight*
	R	AB	M	N	P	S	LA	T	HB	H	RU	D	E	EY	GA	F	O	Z	
Cb 1702	107	143	115	95	140	9	8	3	72	69	60	20	45	40	22,5	6	M6	15	4,6
Cb 1703	127	143	115	95	140	9	8	3	72	69	60	20	45	40	22,5	6	M6	15	5,5

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>											
	BD1						BD2					
	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2
Cb 1702 - 03	100	80	120	7	7	3	130	110	160	9	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Frame size	Induction and brake motors															
	LS 3-phase					LS single phase					Brakes					
	AC	HJ	LB1	LB2	PU	Max weight	AC	HJ	LB1	LB2	PU	Max weight	EF max.	FMC	FAST	FCR
56	110	85	156	135	120	3,4	110	90	156	135	120	3,5	50	-	-	0,9
63	124	95	172	150	140	4,3	124	110	172	150	140	4,5	50	-	-	0,9
71 <sup>2</sup>	140	102	183	155	160	6,5	140	129	183	155	160	7,5	50	28	90	0,9
																2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.



# Electromechanical products

## Minibloc MVAB

### General



Minibloc MVAB geared motors are double worm type equipment.  
Their design allows very high reduction ratios in a very compact size.

One size : MVAB.  
Nominal output torque : from 10 to 80 N.m.  
Power ratings : from 0.06 to 0.18 kW.  
Reduction ratios : from 75 to 2700  
(up to 1/8100 on request).  
Very quiet operation.

A

### Construction

#### Description of Minibloc MVAB gearboxes

Component	Materials	Remarks
Housing	Aluminium	<ul style="list-style-type: none"> <li>- Pressure die-cast aluminium</li> <li>- Fully sealed</li> <li>- Neat design</li> </ul>
Wheel Worm	Bronze Steel	<p>1<sup>st</sup> train : - Bronze wheel - Worm in heat treated, tempered and precision-ground steel</p> <p>2<sup>nd</sup> train : - Die-cast bronze wheel - Worm in steel 42CD4 treated by ionitriding</p>
Shafts	Steel	<ul style="list-style-type: none"> <li>- Solid</li> <li>- Ground or burnished sealing surfaces</li> <li>- Key in accordance with DIN 6883</li> <li>- Tolerance of diameters in accordance with IEC 72-1</li> <li>- Tapped hole on shaft extension</li> </ul>
Lipseals	Acrylonitrile	- Antidust double lipseals on output shaft
Lubrification	Grease	<ul style="list-style-type: none"> <li>- Synthetic grease</li> <li>- No maintenance</li> <li>- Multiposition operation</li> <li>- No drain, level and fill holes</li> </ul>
Mounting		AP : gearbox with primary shaft MI : gearbox with integrated motor
Standard motor		<p>LS : multivoltage 220/380 V, 230/400 V, 240/415 V 3-phase and 230 V single phase</p> <ul style="list-style-type: none"> <li>- Pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down)</li> <li>- Terminal box fitted with a cable gland with system preventing accidental removal of cable</li> <li>- IP 55 standard protection</li> <li>- Fixing on gearbox by B14 flange</li> </ul>
Brake motor		FMC : 3-phase or single phase failsafe brake induction motor, from 0.06 to 0.18 kW
Other motors		MFA : D.C. motor IP 23-IP 44 from 0.075 to 0.37 kW (3000 min <sup>-1</sup> ) MBT : low voltage D.C. motor
Finish	Paint	Shade : RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 µm)

AXIAL OUTPUT GEARED MOTORS

# Electromechanical products

## Minibloc MVAB

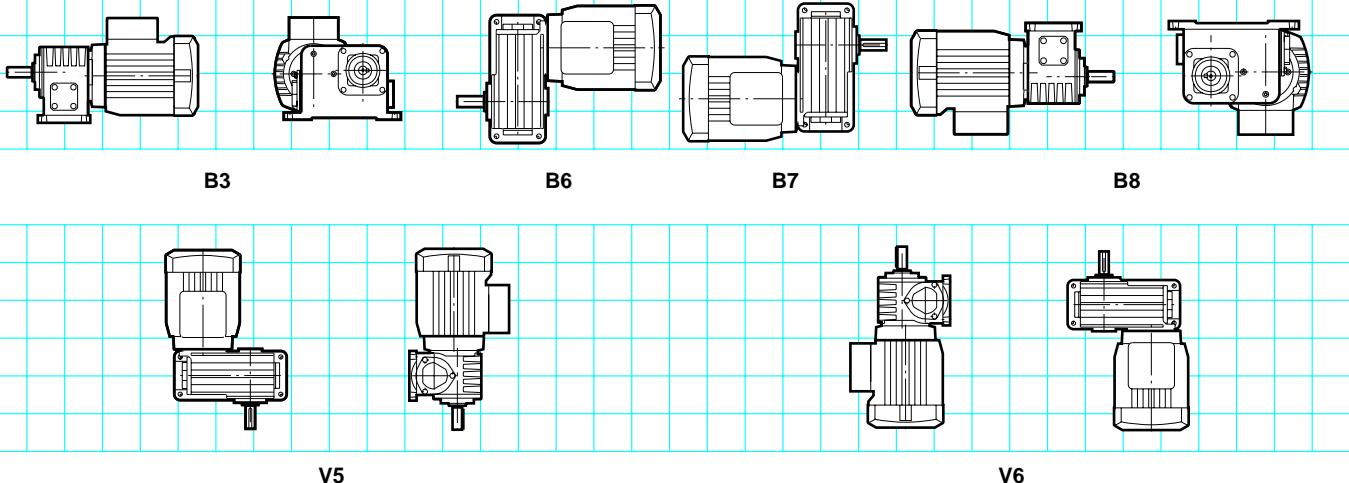
### Mounting positions

For all these geared motors, the positions should be specified only if it is necessary to provide : a vent hole on the gearbox and/or condensate drain holes on the motor.

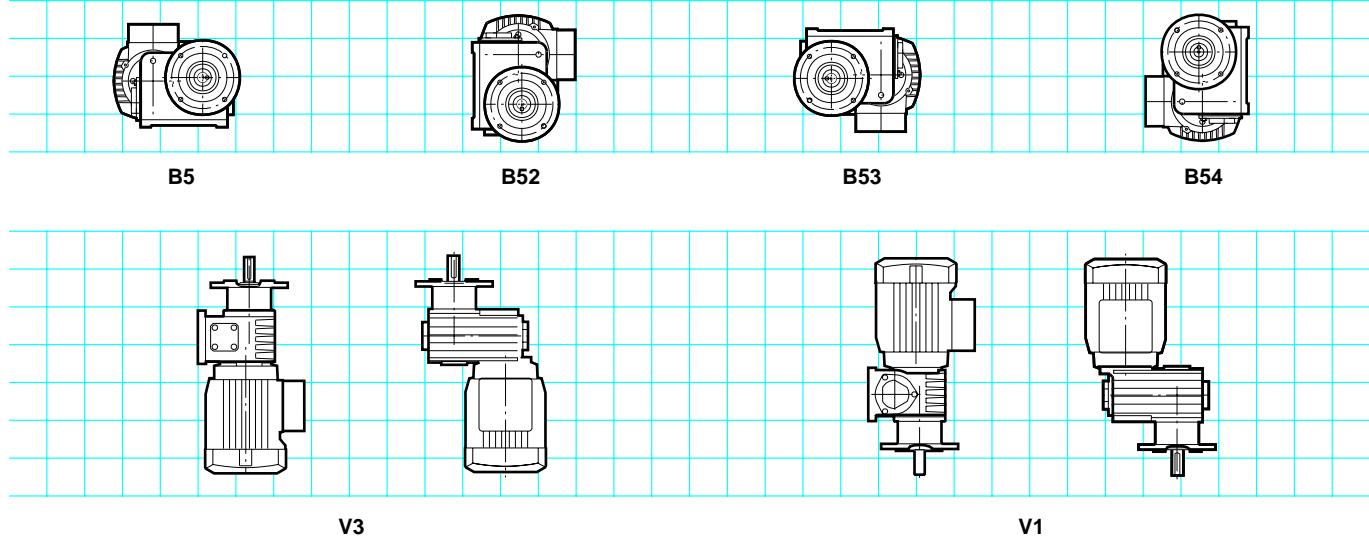
All these mounting positions also apply to input shaft (AP) gearboxes without a motor.

A

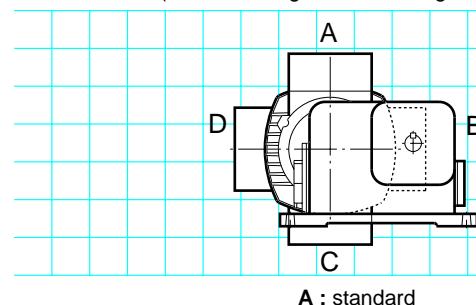
#### Minibloc MVAB - Multiposition - with S baseplate (standard)



#### Minibloc MVAB - Multiposition - with BS flange (standard) - BD1 - BD2

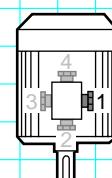


**Terminal box positions**  
(in relation to gearbox housing baseplate)



A : standard

**Cable gland positions**



1 : standard

# Electromechanical products

## Minibloc MVAB

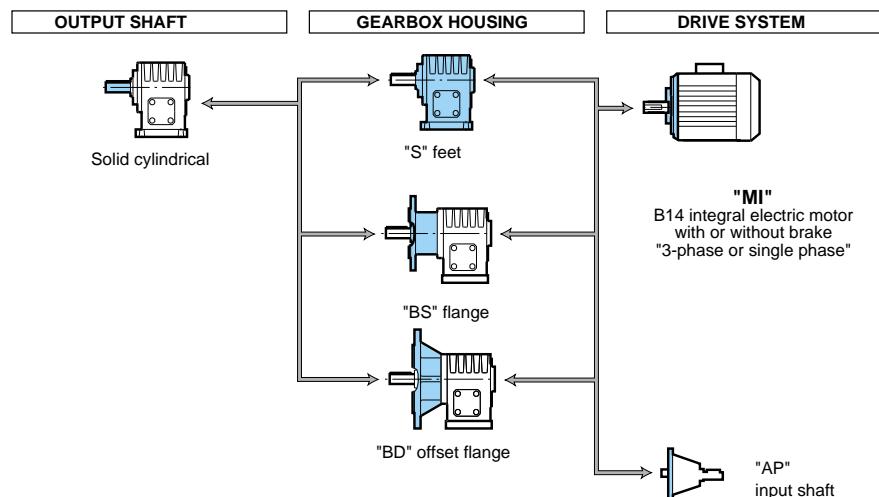
### Adaptation possibilities

Leroy-Somer offers several drives for its gearboxes which respond to very wide-ranging needs. They are described below and/or offered in this catalogue, either in the section relating to gearboxes for fixed-speed motors, or in the section on Variable speed control for the types of drive selected.

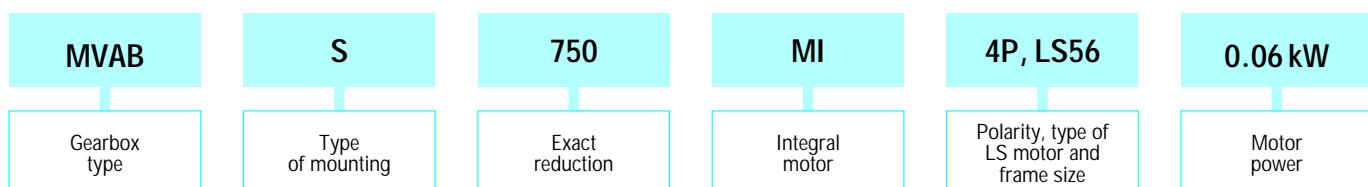
For other drives, consult the Leroy-Somer technical specialists who will be glad to assist.

 **Minibloc MVAB gearboxes can be used in conjunction with the following drives :**

- **single phase motors :**
  - LS motor from 0.06 to 0.18 kW,
  - FMC brake motor from 0.06 to 0.18 kW.
- **3-phase induction motors :**
  - LS motor from 0.06 to 0.18 kW,
  - FMC brake motor from 0.06 to 0.18 kW.
- **D.C. motors :**
  - MFA from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ).
- **electronic drives :**
  - MVE from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ).
- **low voltage D.C. motors (12 to 48 V) :**
  - MBT from 0.07 to 0.37 kW.



### Designation / Coding



 **Example of coding :**

MVAB - S - 750 - MI - 4P LS56 - 0.06kW -  
230/400V - 3-PH - 50 Hz

A

AXIAL OUTPUT GEEARED MOTORS

# Electromechanical products

## Minibloc MVAB

### Selection

Gearbox : Minibloc MVAB S baseplate or BS flange form

Induction motors : LS series, IP 55, class F, 4-pole

3-phase : *multivoltage* : 220/380 V - 230/400 V - 240/415 V from 0.06 to 0.18 kW

Single phase : *multivoltage* : 220/240 V from 0.06 to 0.18 kW

Integral mounting MI

Brake motors : LS series induction, class F, 4-pole

FMC : 3-phase : *multivoltage* : 220/380 V - 230/400 V - 240/415 V from 0.06 to 0.18 kW

FMC : single phase : *multivoltage* : 220/240 V from 0.06 to 0.18 kW

Input shaft mounting AP

**Class I**  
 $(K_p \geq 1)$

0.5 to 18.2 min<sup>-1</sup>

		LS motors, power in kW			
		0.06	0.09	0.12	0.18
Output speed min <sup>-1</sup>	Reduction index	Type of B14 3-phase 4-pole motor and frame size			
		56	63		
0,5	2700				
0,61	2250				
0,76	1800				
0,91	1500				
1,2	1140				
1,52	900				
1,9	720				
2,28	600				
2,5	540	MVAB			
3	450				
3,8	360				
4,56	300				
6,08	225				
9,13	150				
13	105				
18,2	75				

B14 brake motors		Type of 3-phase 4-pole motor and frame size			
FMC	56	63			
		Type of single phase 4-pole motor and frame size			
FMC	56 P	63 P	71 P		

The reduction indices correspond to exact reductions.

Note : single phase motors have a permanent capacitor ( $C_D/C_N \approx 0.6$ ).

#### Selection example :

Required power : 0.06 kW

Required speed : 3 min<sup>-1</sup>

Mains power : single phase 50 Hz 230 V

Mounting and position baseplate - horizontal

Designation :

MVAB - S - 450 MI / 4P LS 56 P 0.06 kW 230 V

# Electromechanical products

## Minibloc MVAB

### Selection

#### Minibloc MVAB selection data

##### Options :

3-Ph brake motor = 4P LS56 FMC  
1-Ph brake motor = 4P LS56P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
0,51	56,2	<b>1,58</b>	2700	<b>MVAB</b>	4P LS56	4P LS56P
0,61	56,4	<b>1,55</b>	2250	<b>MVAB</b>	4P LS56	4P LS56P
0,77	59,5	<b>1,44</b>	1800	<b>MVAB</b>	4P LS56	4P LS56P
0,92	49,8	<b>1,69</b>	1500	<b>MVAB</b>	4P LS56	4P LS56P
1,21	52	<b>1,47</b>	1140	<b>MVAB</b>	4P LS56	4P LS56P
1,53	44,9	<b>1,7</b>	900	<b>MVAB</b>	4P LS56	4P LS56P
1,91	42	<b>1,76</b>	720	<b>MVAB</b>	4P LS56	4P LS56P
2,3	42,4	<b>1,7</b>	600	<b>MVAB</b>	4P LS56	4P LS56P
2,56	35,8	<b>1,96</b>	540	<b>MVAB</b>	4P LS56	4P LS56P
3,07	33,6	<b>2</b>	450	<b>MVAB</b>	4P LS56	4P LS56P
3,83	28,4	<b>2,47</b>	360	<b>MVAB</b>	4P LS56	4P LS56P
4,6	27,4	<b>2,3</b>	300	<b>MVAB</b>	4P LS56	4P LS56P
6,13	22,4	<b>2,6</b>	225	<b>MVAB</b>	4P LS56	4P LS56P
9,2	17,4	<b>2,8</b>	150	<b>MVAB</b>	4P LS56	4P LS56P
13,1	13,1	<b>3</b>	105	<b>MVAB</b>	4P LS56	4P LS56P
18,4	10,9	> 3	75	<b>MVAB</b>	4P LS56	4P LS56P



##### Options :

3-Ph brake motor = 4P LS56 FMC  
1-Ph brake motor = 4P LS63P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
0,78	99,2	<b>0,85</b>	1800	<b>MVAB</b>	4P LS56	4P LS63P
0,93	83,2	<b>1</b>	1500	<b>MVAB</b>	4P LS56	4P LS63P
1,23	83,9	<b>0,96</b>	1140	<b>MVAB</b>	4P LS56	4P LS63P
1,56	72	<b>1,07</b>	900	<b>MVAB</b>	4P LS56	4P LS63P
1,94	66,5	<b>1,1</b>	720	<b>MVAB</b>	4P LS56	4P LS63P
2,33	62,7	<b>1,15</b>	600	<b>MVAB</b>	4P LS56	4P LS63P
2,6	59,5	<b>1,2</b>	540	<b>MVAB</b>	4P LS56	4P LS63P
3,1	55,5	<b>1,23</b>	450	<b>MVAB</b>	4P LS56	4P LS63P
3,89	46,4	<b>1,47</b>	360	<b>MVAB</b>	4P LS56	4P LS63P
4,67	44,2	<b>1,43</b>	300	<b>MVAB</b>	4P LS56	4P LS63P
6,22	35,9	<b>1,6</b>	225	<b>MVAB</b>	4P LS56	4P LS63P
9,33	27,7	<b>1,74</b>	150	<b>MVAB</b>	4P LS56	4P LS63P
13,33	21,3	<b>1,8</b>	105	<b>MVAB</b>	4P LS56	4P LS63P
18,7	17,9	<b>2,2</b>	75	<b>MVAB</b>	4P LS56	4P LS63P



##### Options :

3-Ph brake motor = 4P LS63 FMC  
1-Ph brake motor = 4P LS63P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
3,13	76,9	<b>0,89</b>	450	<b>MVAB</b>	4P LS63	4P LS63P
3,92	64,3	<b>1,06</b>	360	<b>MVAB</b>	4P LS63	4P LS63P
4,7	61	<b>1,03</b>	300	<b>MVAB</b>	4P LS63	4P LS63P
6,27	49,3	<b>1,25</b>	225	<b>MVAB</b>	4P LS63	4P LS63P
9,4	39	<b>1,23</b>	150	<b>MVAB</b>	4P LS63	4P LS63P
13,4	29,9	<b>1,3</b>	105	<b>MVAB</b>	4P LS63	4P LS63P
18,8	24,4	<b>1,48</b>	75	<b>MVAB</b>	4P LS63	4P LS63P



##### Options :

3-Ph brake motor = 4P LS63 FMC  
1-Ph brake motor = 4P LS71P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
13,6	46,8	<b>0,83</b>	105	<b>MVAB</b>	4P LS63	4P LS71P
19	38	<b>0,98</b>	75	<b>MVAB</b>	4P LS63	4P LS71P



Note : On-load speeds are established based on the characteristics for 3-phase motors.

# Electromechanical products

## Minibloc MVAB

### Gearbox only (AP) characteristics

**A**  
Input speed : 2800 min<sup>-1</sup>

Output speed min <sup>-1</sup>	Reduction	Max power kW	Max torque N.m
1,0	2700	0,105	59,2
1,2	2250	0,107	63,2
1,6	1800	0,109	68,9
1,9	1500	0,109	59,2
2,5	1140	0,113	62,3
3,1	900	0,116	54,4
3,9	720	0,121	52,4
4,7	600	0,122	50,4
5,2	540	0,125	49,2
6,2	450	0,129	46,2
7,8	360	0,129	36,9
9,3	300	0,139	40,5
12,4	225	0,142	33,2
18,7	150	0,149	26,7
26,7	105	0,157	21,1
37,3	75	0,159	15,8

Input speed : 1400 min<sup>-1</sup>

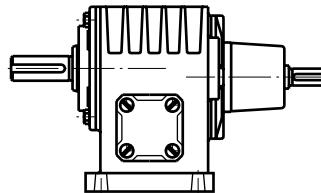
Output speed min <sup>-1</sup>	Reduction	Max power kW	Max torque N.m
0,5	2700	0,091	89,0
0,6	2250	0,087	87,5
0,8	1800	0,080	85,5
0,9	1500	0,090	84,0
1,2	1140	0,086	80,3
1,6	900	0,094	76,5
1,9	720	0,097	74,1
2,3	600	0,100	72,0
2,6	540	0,103	70,0
3,1	450	0,108	68,2
3,9	360	0,124	68,1
4,7	300	0,122	63,0
6,2	225	0,136	57,9
9,3	150	0,144	48,1
13,3	105	0,151	38,9
18,7	75	0,168	36,0

Input speed : 900 min<sup>-1</sup>

Output speed min <sup>-1</sup>	Reduction	Max power kW	Max torque N.m
0,3	2700	0,074	93,5
0,4	2250	0,063	92,0
0,5	1800	0,059	90,0
0,6	1500	0,065	88,0
0,8	1140	0,063	84,5
1,0	900	0,069	80,5
1,3	720	0,072	78,0
1,5	600	0,075	75,0
1,7	540	0,077	73,0
2,0	450	0,081	71,5
2,5	360	0,093	71,5
3,0	300	0,093	66,0
4,0	225	0,089	66,0
6,0	150	0,120	56,5
8,6	105	0,126	44,9
12,0	75	0,132	40,4

Input speed : 500 min<sup>-1</sup>

Output speed min <sup>-1</sup>	Reduction	Max power kW	Max torque N.m
0,19	2700	0,050	100,0
0,22	2250	0,039	98,4
0,28	1800	0,039	96,3
0,33	1500	0,044	94,2
0,44	1140	0,043	90,4
0,56	900	0,048	86,1
0,69	720	0,048	83,5
0,83	600	0,049	80,3
0,93	540	0,051	78,1
1,11	450	0,054	76,5
1,39	360	0,061	76,5
1,67	300	0,061	70,6
2,22	225	0,068	70,6
3,33	150	0,078	60,5
4,76	105	0,091	54,6
6,67	75	0,121	54,0



# Electromechanical products

## Minibloc MVAB

### Load on slow speed shaft

Force in N.M.

Gearbox characteristics	Clockwise or anti-clockwise direction		
The radial force is limited by the stress on the shoulder of the shaft			
Torque N.m	$F_r$	$F_{a -}$	$F_{a +}$
45	1720	1391	2988
50	1650	1346	2943
55	1630	1301	2897
60	1590	1256	2852
65	1550	1211	2807
70	1500	1166	2762
75	1460	1120	2714
80	1420	1075	2672
85	1370	1030	2627
90	1330	1030	2582

#### Direction of force

$F_{a +}$  = PULLING axial force on shaft end.

$F_{a -}$  = PUSHING axial force on shaft end.

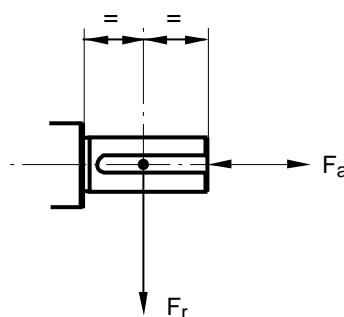
$F_r$  = radial force on the shaft end at 20 mm from the shoulder.

Note : These values correspond to the most adverse load conditions.

SPECIAL CASES : please consult Leroy Somer.

A

AXIAL OUTPUT GEARED MOTORS



# Electromechanical products

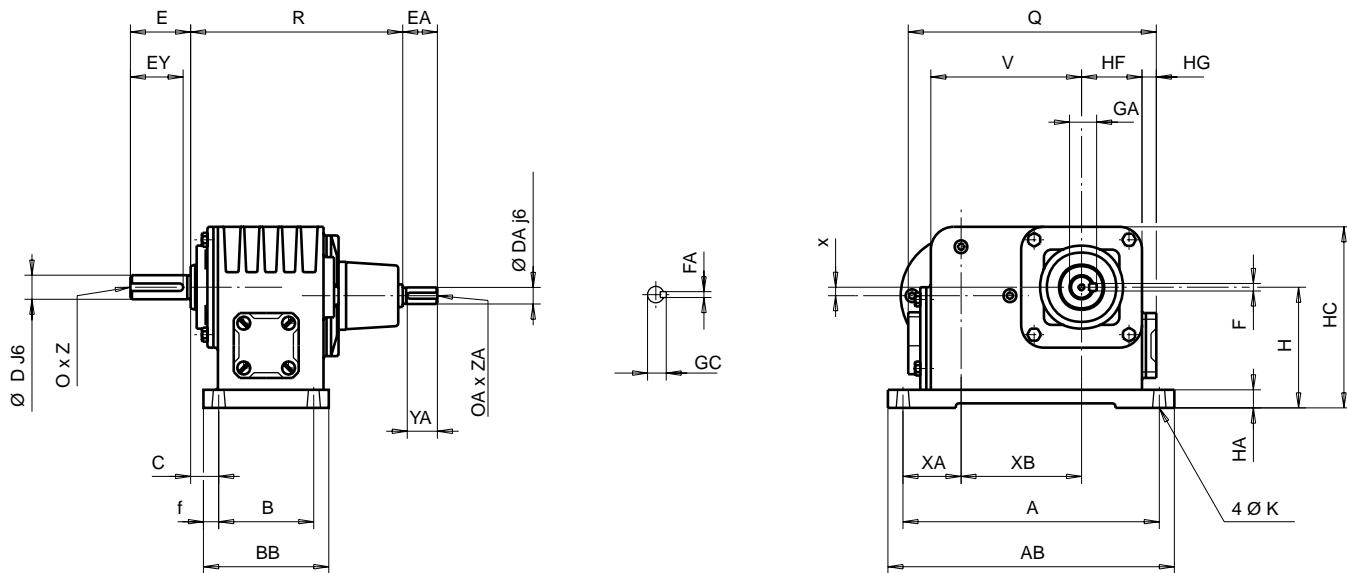
## Minibloc MVAB

### Dimensions

Dimensions of Minibloc MVAB gearboxes, AP input shaft mounting

*Dimensions in millimetres*

#### - S baseplate form



Type	Gearboxes with S baseplate															Weight kg			
	R	x	A	AB	B	BB	C	f	H	HA	HC	K	XB	XA	V	HF	HG	Q	
MVAB	140,5	5,6	170	190	63	83	18,5	10	80	12	120	Δ 7	80	38,5	100	40	9,6	164	3,6

Type	Input shaft							Solid output shaft						
	DA	EA	YA	GC	FA	OA	ZA	D	E	EY	GA	F	O	Z
MVAB	11	23	18	12,5	4	M4	10	16	40	30	18	5	M5	15

# Electromechanical products

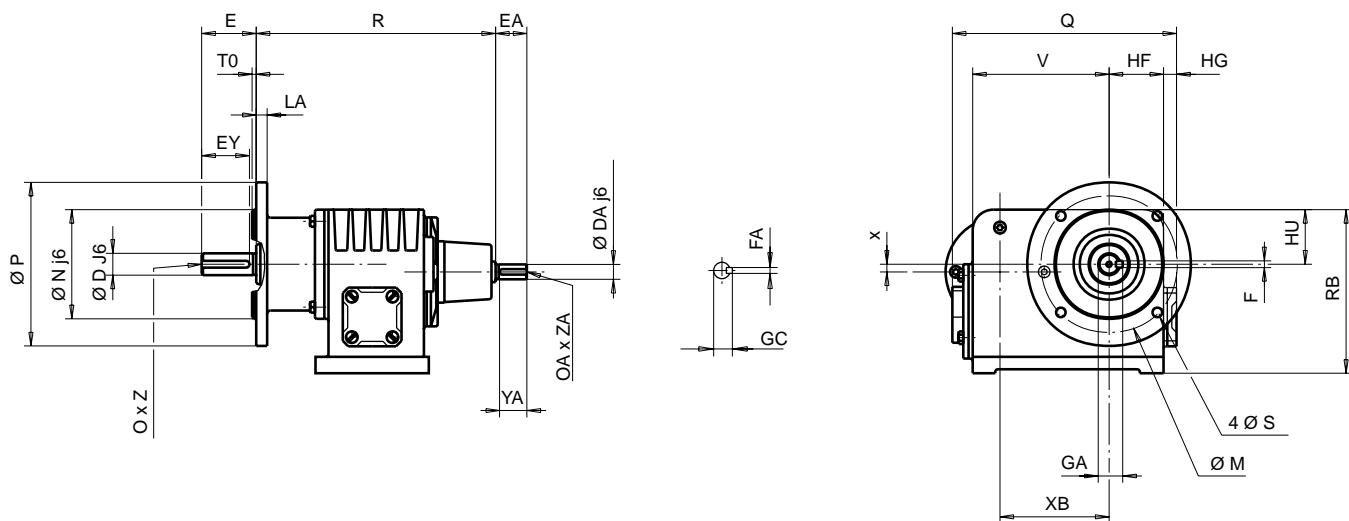
## Minibloc MVAB

### Dimensions

Dimensions of Minibloc MVAB gearboxes, AP input shaft mounting

*Dimensions in millimetres*

#### - BS, BD1, BD2 flange form



Gearboxes with BS flange															Weight	
Type	R	x	M	N	P	S	LA	T	RB	HU	XB	V	HF	HG	Q	kg
<b>MVAB</b>	175,5	5,6	100	80	120	7	8	3	120	40	80	100	40	9,6	164	3,9

Other possible flanges <sup>1</sup>																
Type	BD1						BD2									
	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2				
<b>MVAB</b>	85	70	105	7	8	3	115	95	140	9	10	3				

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Input shaft							Solid output shaft						
	DA	EA	YA	GC	FA	OA	ZA	D	E	EY	GA	F	O	Z
<b>MVAB</b>	11	23	18	12,5	4	M4	10	16	40	30	18	5	M5	15

A

AXIAL OUTPUT GEARED MOTORS

# Electromechanical products

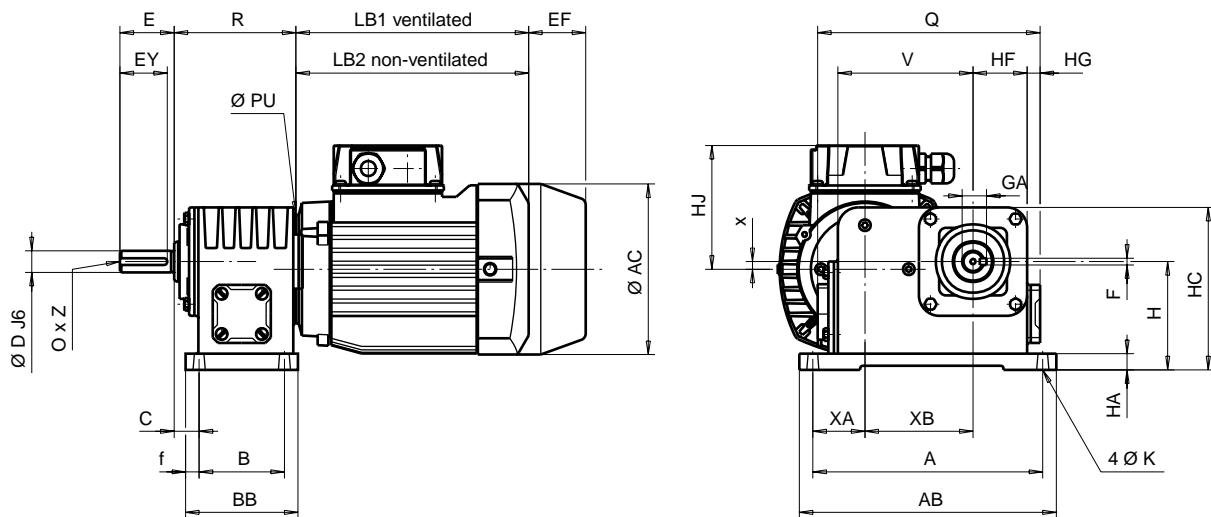
## Minibloc MVAB

### Dimensions

Dimensions of Minibloc MVAB geared motors, MI integral mounting

*Dimensions in millimetres*

#### - S baseplate form



Type	Gearboxes with feet															Weight*			
	R	x	A	AB	B	BB	C	f	H	HA	HC	XA	XB	V	HF	HG	Q	PU	
MVAB	90	5,6	170	190	63	83	18,5	10	80	12	120	38,5	80	100	40	9,6	164	80	3,6

\* Gearbox only.

Type	Solid output shaft						
	D	E	EY	GA	F	O	Z
MVAB	16	40	30	18	5	M5	15

Frame size	Induction and brake motors														
	LS 3-phase				LS single phase				Brakes						
	AC	HJ	LB1	LB2	Max. weight	AC	HJ	LB1	LB2	Max. weight	FMC	FAST	FCR	Weight <sup>1</sup> kg	
56	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	
63	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	
71 <sup>2</sup>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# **Electromechanical products**

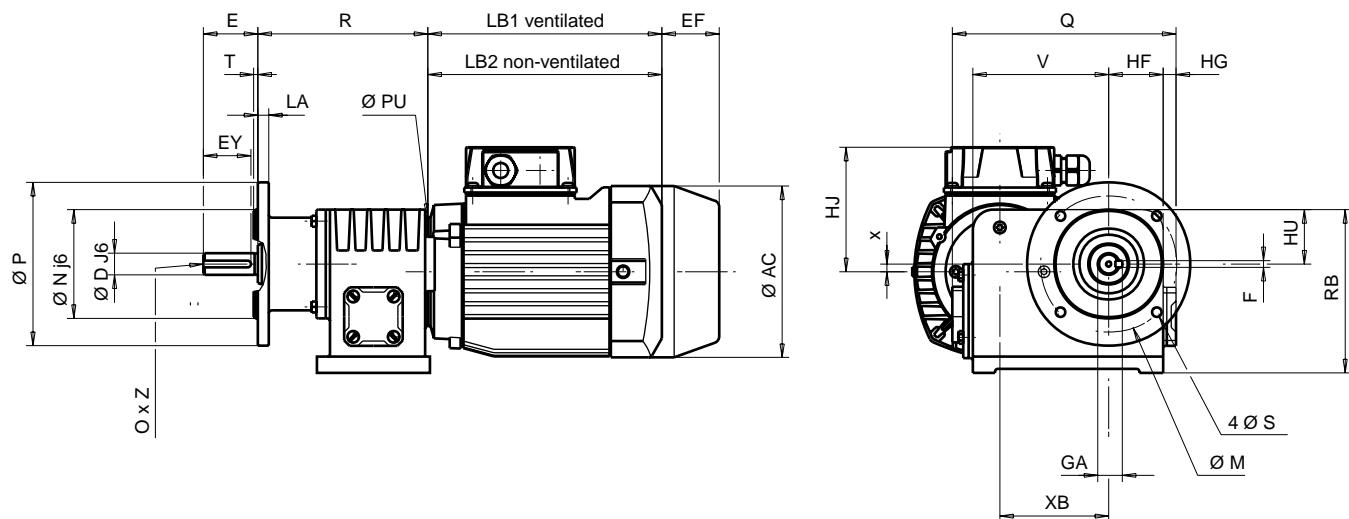
## **Minibloc MVAB**

# Dimensions

## Dimensions of Minibloc MVAB geared motors, MI integral mounting

*Dimensions in millimetres*

#### - BS, BD1, BD2 flange form



---

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>											
	BD1					BD2						
	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2
<b>MVAB</b>	85	70	105	7	8	3	115	95	140	9	10	3

<sup>1</sup> The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Solid output shaft						
	D	E	EY	GA	F	O	Z
MVAB	16	40	30	18	5	M5	15

Induction and brake motors																
LS 3-phase				LS single phase				Brakes								
Frame size					Max. weight kg					Max. weight kg	Max. braking force			Weight <sup>1</sup> kg		
	AC	HJ	LB1	LB2		AC	HJ	LB1	LB2		FMC	FAST	FCR	FMC	FAST	FCR
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	-	-
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	-	-
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2	2,5

#### **1. Additional brake weight.**

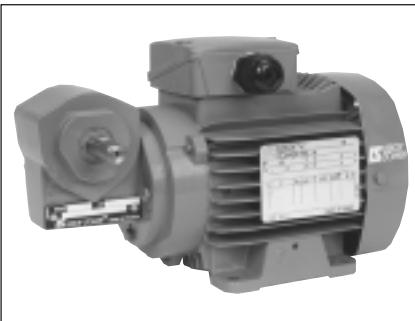
2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.



# Electromechanical products

## Minibloc MVB

### General



Minibloc geared motors are worm type equipment. They are particularly compact and light but still offer excellent performance. Their design allows numerous adaptations so that the best solution can be found for any problem.

One size: MVB.  
Nominal output torque : from 5 to 14 N.m.  
Power ratings : from 0.04 to 0.37 kW.  
Reduction ratio from 5 to 90.  
Very quiet operation.

B

### Construction

#### Description of Minibloc MVB gearboxes

Component	Materials	Remarks
Housing	Aluminium	- Pressure die-cast aluminium - Fully sealed - Neat design
Wheel Worm	Bronze Steel	- Bronze - Worm in heat treated, tempered and precision-ground steel
Feet	Steel	- Zinc-plated steel : anti-rust protection - Removable : easy adaptation
Shafts	Steel	- Solid - Ground or burnished sealing surfaces - Key in accordance with DIN 6883 - Tolerance of diameters in accordance with 72-1
Lipseals	Acrylonitrile	- Antidust double lipseals on slow speed shaft
Lubrication	Grease	- Synthetic grease - No maintenance - Multiposition operation - No drain, level and fill holes
Mounting		MI : gearbox with integral motor
Standard motor		LS : multi-voltage 220/380 V, 230/240 V, 240/415 V 3-phase and 230 V single phase - Pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down) - Terminal box fitted with a cable gland with system preventing accidental removal of cable - IP 55 standard protection - Fixing on gearbox by B14 flange
Brake motor		FMC : 3-phase or single phase failsafe brake induction motor, from 0.04 to 0.37 kW FCR : 3-phase failsafe brake induction motor, from 0.25 to 0.37 kW FAST : 3-phase failsafe brake induction motor with field deviator from 0.25 to 0.37 kW.
Other motors		MFA : D.C. motor IP 23-IP 44 from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ) MBT : low voltage D.C. motor
Finish	Paint	Shade : RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 $\mu\text{m}$ )

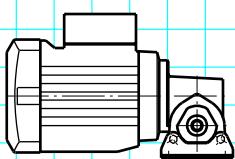
# Electromechanical products

## Minibloc MVB

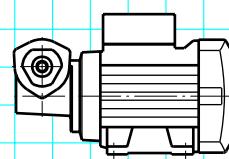
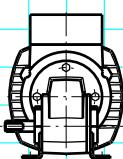
### Mounting positions

Minibloc MVB is a multi-position product and can therefore be mounted in all positions, regardless of its form.

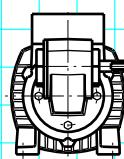
#### Minibloc MVB - multi-position - with baseplate (S) or feet under the motor (PF)



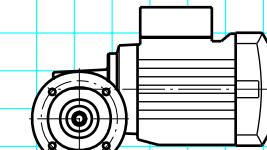
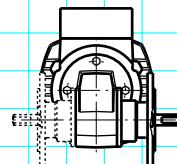
S1-M11



PF-M33



#### Minibloc MVB - multi-position - with standard (B) or projecting (BD1-BD2) flange



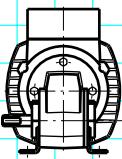
M35D

Warning : the "left" end shield forms one piece with the blind side of the housing.

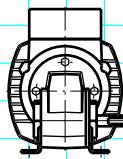
- In the standard version, only "right" flange mounting is available (see page 10).
- To operate the motor with the flange on the other side, it is possible to turn the gearbox by 180° (see page 11).

For symmetrical products : please consult Leroy Somer.

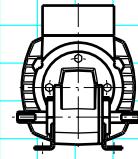
#### Output shaft



Left (standard) (G)

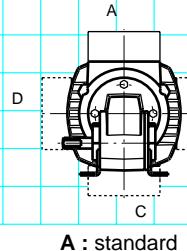


Right (D)



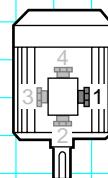
Left + right (X)

#### Terminal box positions



A : standard

#### Cable gland positions



1 : standard

# Electromechanical products

## Minibloc MVB

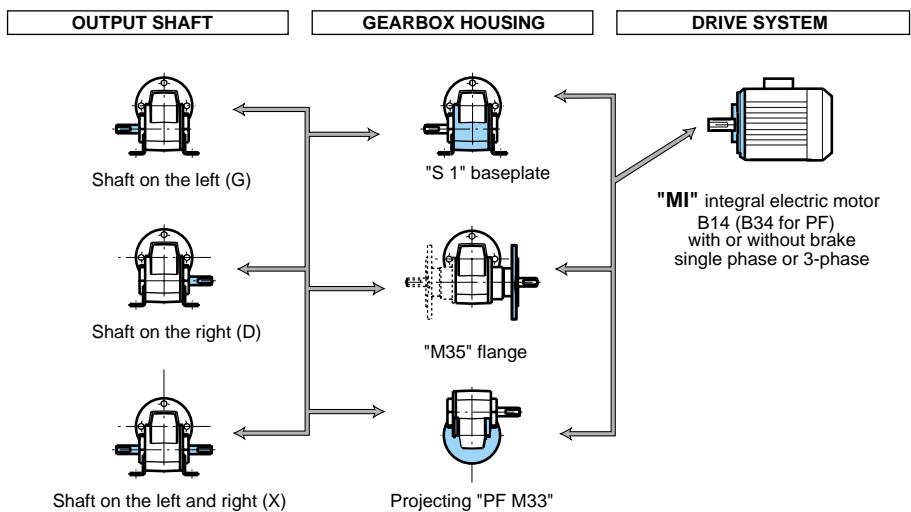
### Adaptation possibilities

Leroy-Somer offers several drives for its gearboxes which respond to very wide-ranging needs. They are described below and/or offered in this catalogue, either in the section relating to gearboxes for fixed-speed motors, or in the section on variable speed control for the types of drive selected.

For other drives, consult the Leroy-Somer technical specialists who will be glad to assist.

 **Minibloc MVB gearboxes can be used in conjunction with the following drives :**

- single phase motors :
  - LS motor from 0.06 to 0.37 kW,
  - FMC brake motor from 0.06 to 0.37 kW.
- 3-phase induction motors :
  - LS motors from 0.045 to 0.37 kW,
  - FMC brake motor from 0.06 to 0.37 kW,
  - FCR brake motors from 0.25 to 0.37 kW,
  - FAST brake motors 0.25 and 0.37 kW.
- D.C. motors :
  - MFA from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ).
- electronic drives :
  - MVE from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ).
- low voltage D.C. motors (12 to 48 V) :
  - MBT from 0.07 to 0.37 kW.



### Designation / Coding

MVB	S1-M11	G	38	MI	4P LS 56	0.06 kW
Gearbox type	Type of mounting	Position of output shaft	Exact reduction	Integral motor	Polarity Type of LS motor and frame size	Motor power

 **Example of coding :**

MVB - S1 - M11G - 38 - MI - 4P LS56 - 0.06 kW  
- 230/400 V - 3-PH - 50 Hz

# Electromechanical products

## Minibloc MVB

### Selection

Gearbox : Minibloc MVB S1 baseplate form or with M53 or M35 flange

Induction motors : LS series, IP 55, class F

*multi-voltage* : 220/380 V - 230/400 V - 240/415 V from 0.04 to 0.55 kW

Brake motors : LS series induction, FCR, FAST, FMC types, class F

FCR : 4-pole - *multi-voltage* : 220/380 V - 230/400 V - 240/415 V from 0.25 to 0.55 kW

FAST : 4-pole - *voltage* : 220/380 V - 230/400 V from 0.25 to 0.55 kW

FMC : 4- and 6-pole - *multi-voltage* : 220/380 V - 230/400 V - 240/415 V from 0.04 to 0.37 kW

Integral mounting

MI

3-PHASE  
Class I  
(K<sub>p</sub> ≥ 1)

10 to 400 min <sup>-1</sup>						
Output speed min <sup>-1</sup>	Actual reduction index	Number of poles	LS motors, power in kW			
			0.045	0.06	0.09	0.12
			Type of B14 3-phase 4-pole motor and frame size		Type of B14 3-phase 6-pole motor and frame size	
10	90	6		56		63
12	75	6				71
15.5	90	4				
15	60	6				
18	50	6				
18.7	75	4				
23.7	38	6				
23.3	60	4				
28	50	4				
30	30	6				
36.8	38	4				
37.5	24	6				
45	20	6				
46.6	30	4	MVB			
58.3	24	4				
60	15	6				
70	20	4				
90	10	6				
93.3	15	4				
140	10	4				
180	5	6				
257	3.5	6				
280	5	4				
400	3.5	4				
B14 brake motors						
FMC			Type of 3-phase 4-pole motor and frame size		Type of 3-phase 6-pole motor and frame size	
FAST/FCR			56	63	71 <sup>1</sup>	71
Type of 3-phase 6-pole motor and frame size						
FMC		56	63	71	71	
FAST/FCR						

1. For 0.37 kW 4-pole and 0.25 kW 6-pole motors, the braking torque is equal to the motor rated torque.

The reduction indices correspond to exact reductions.

Not available.

#### Selection example :

Required power : 0.06 kW

Required speed : 36 min<sup>-1</sup>

Mains power : 3-phase 50 Hz 400 V

Mounting and position baseplate - horizontal

Shaft end : output on left

#### Designation :

MVB - S1 - M11G - 38 MI / 4P LS 56 0.06 kW  
400 V

# Electromechanical products

## Minibloc MVB

### Selection

**SINGLE PHASE**  
Class I  
( $K_p \geq 1$ )

Gearbox : Minibloc MVB S1 baseplate form or with M53 or M35 flange

Induction motors : LS series single phase, IP 55, class F

multi-voltage : 220/240 V from 0.06 to 0.37 kW

Brake motors : single phase induction

FMC : multi-voltage : 220/240 V from 0.06 to 0.37 kW

Integral mounting

MI

15 to 400 min<sup>-1</sup>

Output speed min <sup>-1</sup>	Reduction index	LS motors, power in kW					
		0.06	0.09	0.12	0.18	0.25	0.37
		Type of LS single phase motor and frame size					
		56 P	63 P	71 P			
15	90						
18.7	75						
23	60						
28	50						
36.8	38						
46.6	30						
58.3	24		MVB				
70	20						
93.3	15						
140	10						
280	5						
400	3,5						

LS single phase 4-pole brake motors	Power in kW					
	0,06	0,09	0,12	0,18	0,25	0,37 <sup>1</sup>
FMC	56 P	63 P	71 P			

1. For 0.37 kW 4-pole motors, the braking torque is equal to the motor  $C_N$

The reduction indices correspond to exact reductions.

Note : Single phase motors have a permanent capacitor ( $C_D/C_N \approx 0.6$ ).

B  
**PERPENDICULAR OUTPUT GEARED MOTORS**

#### Selection example :

Required power : 0.06 kW

Required speed : 36 min<sup>-1</sup>

Mains power : single phase 50 Hz 230 V

Mounting and position baseplate - horizontal

Shaft end : output on left

#### Designation :

MVB - S1 - M11G - 38 MI / 4P LS 56 P

0.06 kW 230 V

# Electromechanical products

## Minibloc MVB

### Selection

#### Minibloc MVB selection data

##### Options :

3-Ph brake motor = 6P LS56 FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
9,7	7,1	1,03	90	MVB	6P LS56	-
11,7	8,1	1,19	75	MVB	6P LS56	-
14,6	8	1,5	60	MVB	6P LS56	-
17,5	6,9	1,6	50	MVB	6P LS56	-
23	6,5	2,2	38	MVB	6P LS56	-
29,2	5,4	2,5	30	MVB	6P LS56	-
36,5	4,9	2,9	24	MVB	6P LS56	-
43,8	4,5	> 3	20	MVB	6P LS56	-
58,3	3,7	> 3	15	MVB	6P LS56	-
88	2,8	> 3	10	MVB	6P LS56	-
175	1,5	> 3	5	MVB	6P LS56	-
250	1,1	> 3	3,5	MVB	6P LS56	-

MOTOR POWER  
0,045 kW  
6 poles  
50 Hz

##### Options :

3-Ph brake motor = 4P LS56 FMC  
1-Ph brake motor = 4P LS56P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
15,3	6,4	1,06	90	MVB	4P LS56	4P LS56P
18,4	6,5	1,4	75	MVB	4P LS56	4P LS56P
23	7	1,6	60	MVB	4P LS56	4P LS56P
27,6	5,8	1,7	50	MVB	4P LS56	4P LS56P
36,3	5,7	2,4	38	MVB	4P LS56	4P LS56P
46	4,6	2,8	30	MVB	4P LS56	4P LS56P
57,5	4,2	> 3	24	MVB	4P LS56	4P LS56P
69	3,8	> 3	20	MVB	4P LS56	4P LS56P
92	3,2	> 3	15	MVB	4P LS56	4P LS56P
138	2,4	> 3	10	MVB	4P LS56	4P LS56P
276	1,3	> 3	5	MVB	4P LS56	4P LS56P
394	0,9	> 3	3,5	MVB	4P LS56	4P LS56P

MOTOR POWER  
0,06 kW  
4 poles  
50 Hz

##### Options :

3-Ph brake motor = 4P LS63 FMC  
6P LS63 FMC

1-Ph brake motor = 4P LS63P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
17,2	14,6	0,73	50	MVB	6P LS63	-
18,7	10,6	0,85	75	MVB	4P LS56	4P LS63P
23,3	11,1	1	60	MVB	4P LS56	4P LS63P
22,6	15,2	0,95	38	MVB	6P LS63	-
28	9,2	1,1	50	MVB	4P LS56	4P LS63P
28,7	12,3	1,1	30	MVB	6P LS63	-
36,8	9,1	1,5	38	MVB	4P LS56	4P LS63P
35,8	10,8	1,3	24	MVB	6P LS63	-
43	10,2	1,3	20	MVB	6P LS63	-
46,7	7,6	1,7	30	MVB	4P LS56	4P LS63P
58,3	6,8	1,9	24	MVB	4P LS56	4P LS63P
57,3	8,4	1,8	15	MVB	6P LS63	-
70	6,1	2,1	20	MVB	4P LS56	4P LS63P
86	6,4	2,2	10	MVB	6P LS63	-
93	5,1	2,5	15	MVB	4P LS56	4P LS63P
140	3,8	> 3	10	MVB	4P LS56	4P LS63P
172	3,6	> 3	5	MVB	6P LS63	-
246	2,6	> 3	3,5	MVB	6P LS63	-
280	2,1	> 3	5	MVB	4P LS56	4P LS63P
400	1,5	> 3	3,5	MVB	4P LS56	4P LS63P

MOTOR POWER  
0,09 kW  
4 or  
6 poles  
50 Hz

##### Options :

3-Ph brake motor = 4P LS63 FMC

6P LS71 FMC

1-Ph brake motor = 4P LS63P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
28,2	13	0,77	50	MVB	4P LS63	4P LS63P
30,7	16	0,85	30	MVB	6P LS71	-
37,1	12,7	1,1	38	MVB	4P LS63	4P LS63P
38,3	14,7	0,98	24	MVB	6P LS71	-
46	13,2	1,03	20	MVB	6P LS71	-
47	10,2	1,25	30	MVB	4P LS63	4P LS63P
58,8	9,4	1,4	24	MVB	4P LS63	4P LS63P
61,3	10,8	1,3	15	MVB	6P LS71	-
70,5	8,6	1,5	20	MVB	4P LS63	4P LS63P
92	8,2	1,7	10	MVB	6P LS71	-
94	7	1,9	15	MVB	4P LS63	4P LS63P
141	5,3	2,5	10	MVB	4P LS63	4P LS63P
184	4,5	2,5	5	MVB	6P LS71	-
263	3,3	> 3	3,5	MVB	6P LS71	-
282	2,9	> 3	5	MVB	4P LS63	4P LS63P
403	2,1	> 3	3,5	MVB	4P LS63	4P LS63P

MOTOR POWER  
0,12 kW  
4 or  
6 poles  
50 Hz

Note : On-load speeds are established based on the characteristics of 3-phase motors.

# Electromechanical products

## Minibloc MVB

### Selection

#### Minibloc MVB selection data

##### Options :

3-Ph brake motor = 4P LS63 FMC  
 6P LS71 FMC  
 6P LS71 FCR  
 6P LS71 FAST  
 4P LS71P FMC

1-Ph brake motor =

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
57,9	14,8	0,9	24	MVB	4P LS63	4P LS71P
62,5	16,5	0,85	15	MVB	6P LS71	-
69,5	13,6	0,95	20	MVB	4P LS63	4P LS71P
94	12,4	1,1	10	MVB	6P LS71	-
93	11,1	1,2	15	MVB	4P LS63	-
139	8,3	1,6	10	MVB	4P LS63	4P LS71P
188	6,9	1,6	5	MVB	6P LS71	-
269	4,9	2,1	3,5	MVB	6P LS71	-
278	4,6	2,2	5	MVB	4P LS63	4P LS71P
397	3,3	2,6	3,5	MVB	4P LS63	4P LS71P



##### Options :

3-Ph brake motor = 4P LS71 FMC  
 4P LS71 FAST  
 4P LS71 FCR  
 4P LS71P FMC

1-Ph brake motor =

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
142	17,4	0,76	10	MVB	4P LS71	4P LS71P
284	9,6	1	5	MVB	4P LS71	4P LS71P
406	7,1	1,2	3,5	MVB	4P LS71	4P LS71P



##### Options :

3-Ph brake motor = 4P LS71 FMC  
 4P LS71 FAST  
 4P LS71 FCR  
 6P LS71 FAST  
 6P LS71 FCR  
 4P LS71P FMC

1-Ph brake motor =

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
71,3	18,4	0,7	20	MVB	4P LS71	4P LS71P
84	19,6	0,73	10	MVB	6P LS71	-
95	15,6	0,83	15	MVB	4P LS71	4P LS71P
143	11,5	1,2	10	MVB	4P LS71	4P LS71P
168	10,8	1,4	5	MVB	6P LS71	-
240	7,8	1,3	3,5	MVB	6P LS71	-
285	6,4	1,5	5	MVB	4P LS71	4P LS71P
407	4,6	1,9	3,5	MVB	4P LS71	4P LS71P



Note : On-load speeds are established based on the characteristics of 3-phase motors.

# Electromechanical products

## Minibloc MVB

### Load on slow speed shaft

Force in N.m.

Reduction	Speed min <sup>-1</sup>	Torque N.m	Clockwise or anti-clockwise direction								
			M11G M33G	M53G	M53G	M11G M33G	M11D M33D	M35D	M11D M33D	M35D	
F <sub>r</sub>	F <sub>r</sub>	F <sub>a</sub> -	F <sub>a</sub> -	F <sub>a</sub> +	F <sub>r</sub>	F <sub>r</sub>	F <sub>a</sub> -	F <sub>a</sub> +			
5	284	10,5	525	558	112	230	497	525	558	497	230
10	142	13,5	510	569	379	515	893	510	569	893	515
15	94,7	13,5	510	572	638	838	1172	510	572	1172	838
20	71	12,5	515	579	851	1116	1464	515	579	1464	1116
30	47,3	12,5	515	588	1181	1485	1485	515	588	1485	1485
40	35,5	11	520	590	1376	1501	1501	520	590	1501	1501
50	28,4	10	530	590	1385	1510	1510	530	590	1510	1510
60	23,7	10	530	590	1388	1513	1513	530	590	1513	1513
75	18,9	10	530	590	1391	1516	1516	530	590	1516	1516
90	15,7	6	550	590	1394	1519	1519	550	590	1519	1519

#### Direction of force

##### M11G M33G & M53G

F<sub>a</sub> + = PUSHING axial force on shaft end.  
F<sub>a</sub> - = PULLING axial force on shaft end.

##### M11D M33D & M35D

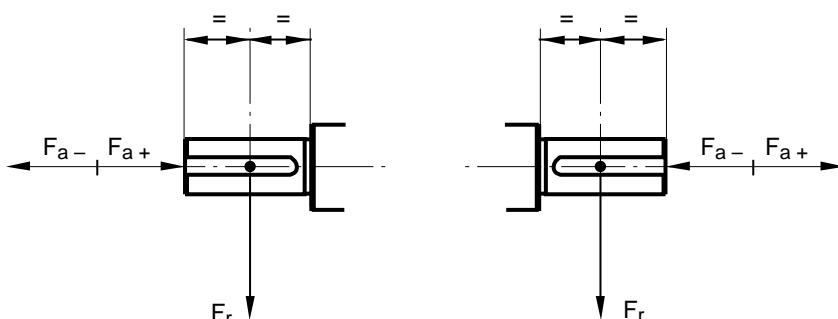
F<sub>a</sub> + = PULLING axial force on shaft end.  
F<sub>a</sub> - = PUSHING axial force on shaft end.

F<sub>r</sub> = radial force on the shaft end at 15 mm from the shoulder.

Note : 1 Where there are 2 shaft ends, load F<sub>r</sub> must be shared between them.

2 These values correspond to the most adverse load conditions.

SPECIAL CASES : please consult Leroy Somer.



Shaft on left

Shaft on right

# Electromechanical products

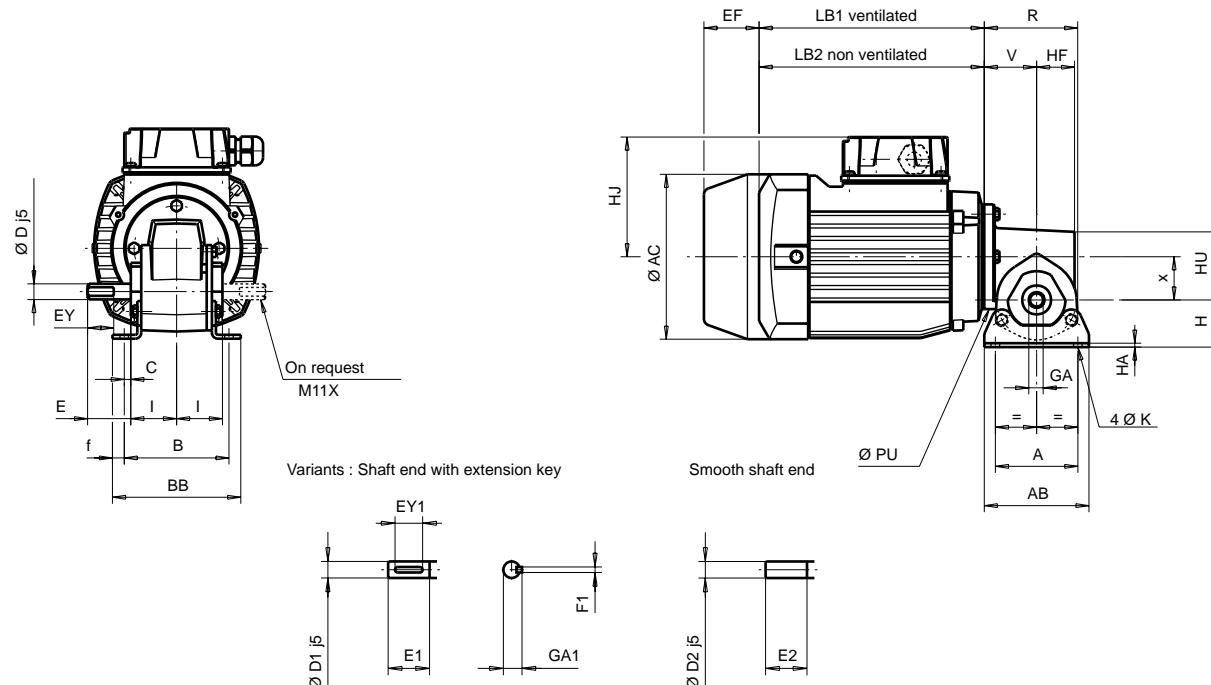
## Minibloc MVB

### Dimensions

Dimensions of Minibloc MVB geared motors, MI integral mounting

Dimensions in millimetres

#### - S1 M11 baseplate form



Type	Gearboxes with baseplate															Weight*	
	R	x	A	AB	B	BB	C	f	H	HA	V	HF	I	K	HU	PU	
MVB	72	33	63	80	80	98	5	9	36	3	40	29	35	6,5	55	80	0,96

\* Gearbox only.

Type	Solid output shaft with flat end (standard)				Solid output shaft with key <sup>1</sup>					Smooth solid output shaft <sup>1</sup>			
	D	E	EY	GA	D1	E1	EY1	GA1	F1	D2	E2		
MVB	12	30	20	11	12	30	25	13,5	4	12	30		

1. The letters are indexed to differentiate them from the letters shown on the standard shaft diagram.

Frame size	Induction and brake motors														
	LS 3-phase				LS single phase					Brakes					
Frame size	AC	HJ	LB1	LB2	Max. weight	AC	HJ	LB1	LB2	Max. weight	FMC	FAST	FCR	Weight <sup>1</sup> kg	
56	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	-
63	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	-
71 <sup>2</sup>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2
															2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

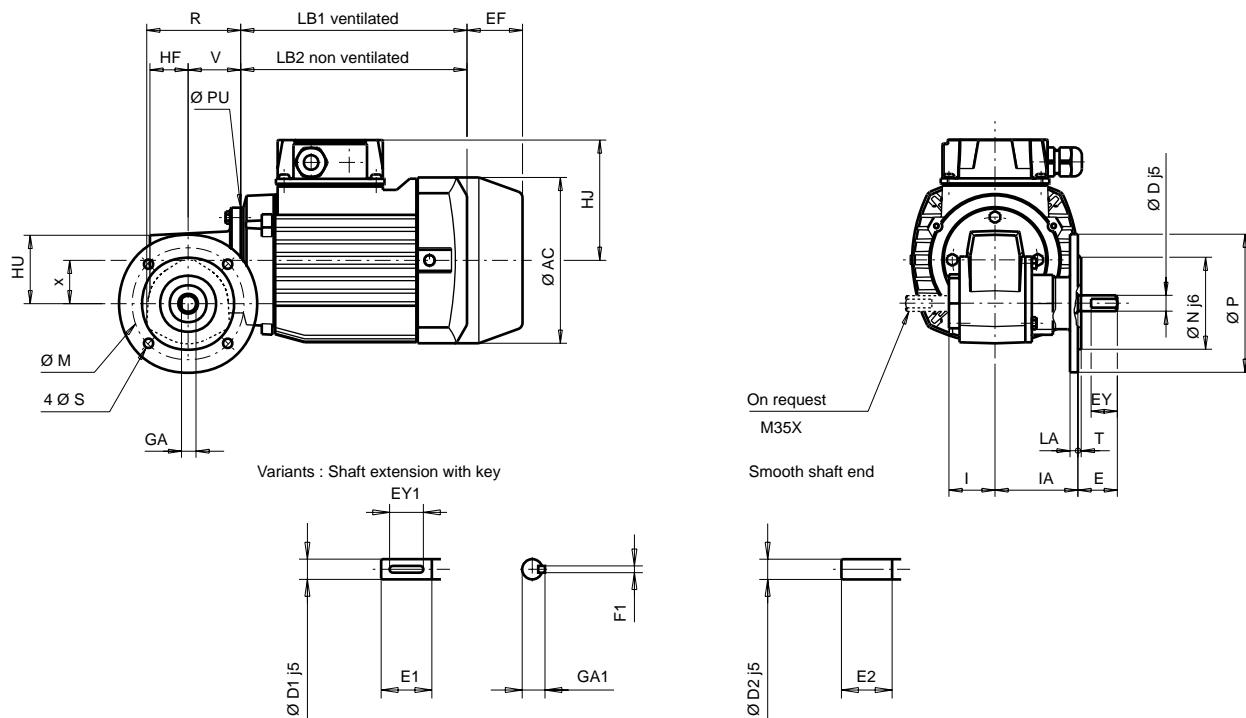
## Minibloc MVB

### Dimensions

Dimensions of Minibloc MVB geared motors, MI integral mounting,  
solid output shaft, terminal box in position A

Dimensions in millimetres

#### - M35D flange form



Type	Gearboxes with flange													Weight*	
	R	x	M	N	P	S	LA	T	I	IA	V	HF	HU	PU	
<b>MVB</b>	72	33	85	70	105	7	7	2,5	35	63	40	29	55	80	1,1

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>										Weight <sup>1</sup>	
	BD1					BD2						
	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2		
<b>MVB</b>	65	50	80	5,5	7	2,5	75	60	90	7	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Solid output shaft with flat end (standard)				Solid output shaft with key <sup>1</sup>					Smooth solid output shaft <sup>1</sup>	
	D	E	EY	GA	D1	E1	EY1	GA1	F1	D2	E2
<b>MVB</b>	12	30	20	11	12	30	25	13,5	4	12	30

1. The letters are indexed to differentiate them from the letters shown on the standard shaft diagram.

Frame size	Induction and brake motors								Brakes				
	LS 3-phase				LS single phase								
									FMC	FAST	FCR	Weight <sup>1</sup> kg	
AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg				
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90
											0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

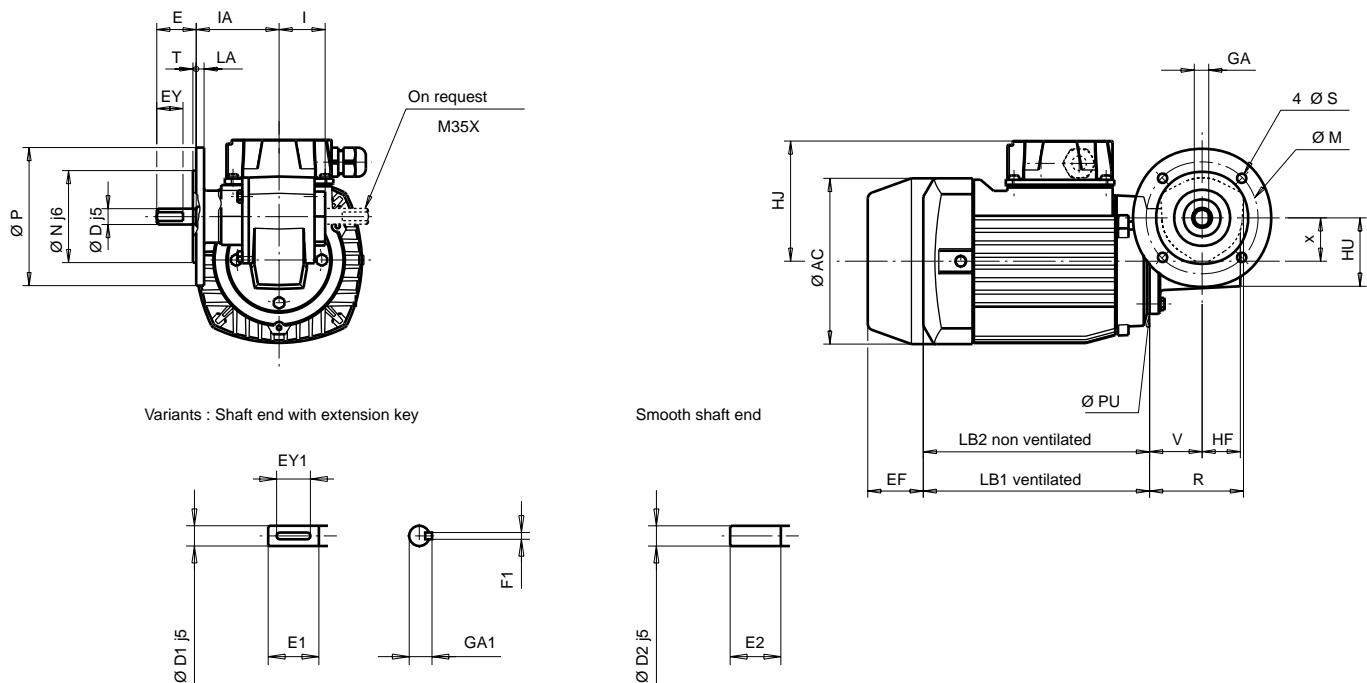
## Minibloc MVB

### Dimensions

Dimensions of Minibloc MVB geared motors, MI integral mounting, solid output shaft, terminal box in position C

Dimensions in millimetres

#### - M35D flange form



Type	Gearboxes with flange													Weight*	
	R	x	M	N	P	S	LA	T	I	IA	V	HF	HU	PU	
<b>MVB</b>	72	33	85	70	105	7	7	2,5	35	63	40	29	55	80	1,1

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>					
	BD1			BD2		
Type	M1	N1	P1	S1	LA1	T1
<b>MVB</b>	65	50	80	5,5	7	2,5
	75	60	90	7	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard shaft diagram.

Type	Solid output shaft with flat end (standard)				Solid output shaft with key <sup>1</sup>					Smooth solid output shaft <sup>1</sup>	
	D	E	EY	GA	D1	E1	EY1	GA1	F1	D2	E2
<b>MVB</b>	12	30	20	11	12	30	25	13,5	4	12	30

1. The letters are indexed to differentiate them from the letters shown on the standard shaft diagram.

Frame size	Induction and brake motors												
	LS 3-phase				LS single phase				Brakes				
	Max. weight				Max. weight				EF max.				
Frame size	AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90
											FMC	FAST	FCR
											0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

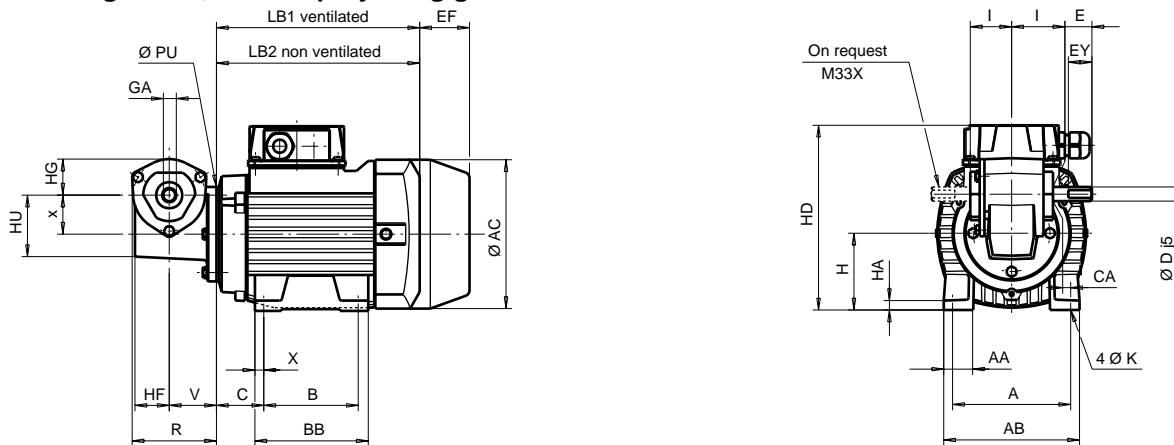
## Minibloc MVB

### Dimensions

Dimensions of Minibloc MVB geared motors, MI integral mounting

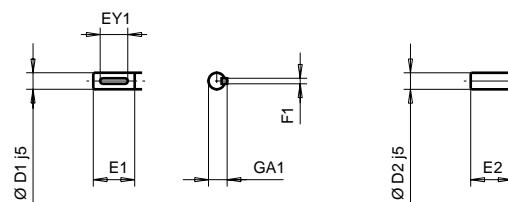
Dimensions in millimetres

#### - Foot mounting motor, PF M33 projecting gearbox



Variants : Shaft extension with key

Smooth shaft end



Type	Projecting gearboxes							Weight*
	R	x	HG	V	HF	HU	PU	
MVB	72	33	31	40	29	55	80	0,84

\* Gearbox only.

Type	Solid output shaft with flat end (standard)				Solid output shaft with key <sup>1</sup>				Smooth solid output shaft <sup>1</sup>		
	D	E	EY	GA	D1	E1	EY1	GA1	F1	D2	E2
MVB	12	30	20	11	12	30	25	13,5	4	12	30

1. The letters are indexed to differentiate them from the letters shown on the standard shaft diagram.

Frame size	Induction motors												Max. weight kg	Max. weight kg		
	AC	A	AA	AB	B	BB	C	X	CA	K	H	HA	LB1	LB2		
56	110	90	24	104	71	89	36	9	5	6	56	5	156	132	141	3,4
63	124	100	30	115	80	94	40	8	10	7	63	6	172	150	158	4,3
71 <sup>1</sup>	140	112	22	126	90	104	45	7	16	7	71	6	183	155	173	6,5

1. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

Type	Additional brake dimensions			Weight <sup>1</sup> kg
	FMC	FAST	FCR	
56	50	-	-	0,9
63	50	-	-	0,9
71 <sup>2</sup>	50	28	90	0,9
				2
				2,5

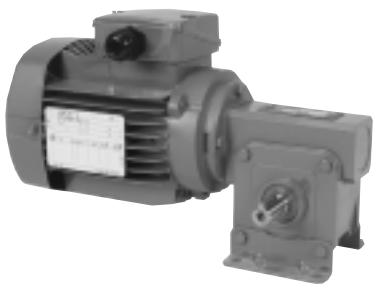
1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

## Minibloc MVA

### General



Minibloc MVA geared motors are worm type equipment. They are particularly compact and light but still offer excellent performance. Their design allows numerous adaptations so that the best solution can be found for any problem.

One size : MVA.  
Nominal output torque : from 1 to 33 N.m.  
Power ratings : from 0.04 to 0.37 kW.  
Reduction ratio from 5 to 90.  
Very quiet operation.

B

### Construction

#### Description of Minibloc MVA gearboxes

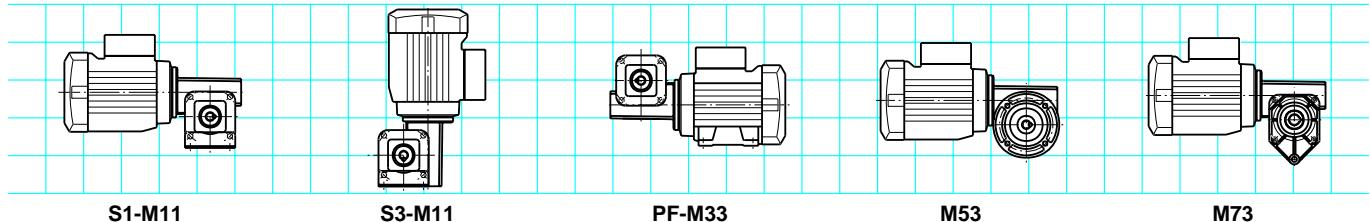
Component	Materials	Remarks
Housing	Aluminium	- pressure die-cast aluminium - fully sealed - neat design
Wheel Worm	Bronze Steel	- die-cast bronze - worm in steel 42CD4 treated by ionitriding
Feet	Steel	- zinc-plated steel : anti-rust protection - removable : easy adaptation
Shafts	Steel	- solid or hollow - ground or burnished sealing surfaces - key in accordance with DIN 6883 - tolerance of diameters in accordance with IEC 72-1 - tapped hole on solid shaft extension
Lipseals	Acrylonitrile	- antidust double lipseals on slow speed shaft
Lubrication	Grease	- synthetic grease - no maintenance - multiposition operation - no drain, level and fill holes
Mounting		AP : gearbox with input shaft MI : gearbox with integral motor
Standard motor		LS : multivoltage 220/380 V, 230/240 V, 240/415 V 3-phase and 230 V single phase - pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down) - terminal box fitted with a cable gland with system preventing accidental removal of cable - IP 55 standard protection - fixing on gearbox by B14 flange
Brake motor		FMC : 3-phase or single phase failsafe brake induction motor, from 0.06 to 0.37 kW FCR : 3-phase failsafe brake induction motor, from 0.25 to 0.55 kW FAST : 3-phase failsafe brake induction motor with field deviator from 0.25 to 0.55 kW.
Other motors		MFA : D.C. motor IP 23-IP 44 from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ) MBT : low voltage D.C. motor
Safety device	Plastic	Protective cover on the output opposite the working shaft for all gearboxes with hollow shaft or extension shaft
Finish	Paint	Shade : RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 $\mu\text{m}$ )

# Electromechanical products

## Minibloc MVA

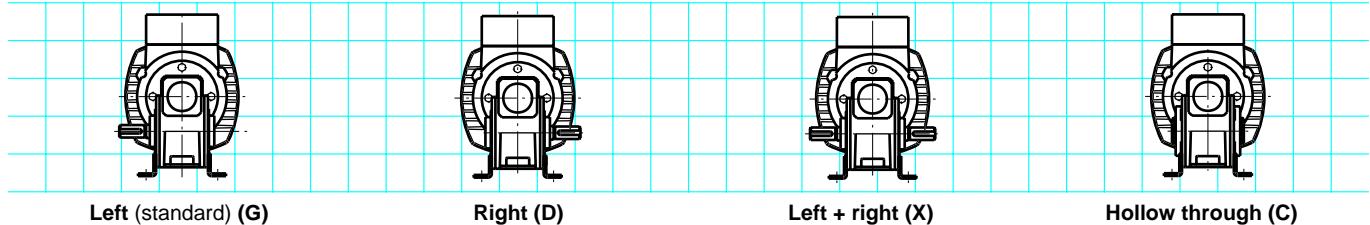
### Mounting positions

Minibloc MVA is a multiposition product and can therefore be mounted in all positions, regardless of its form.

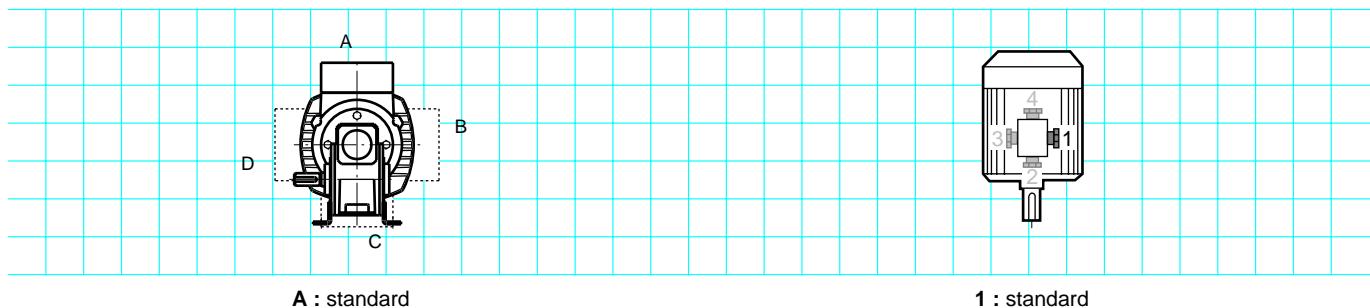


B

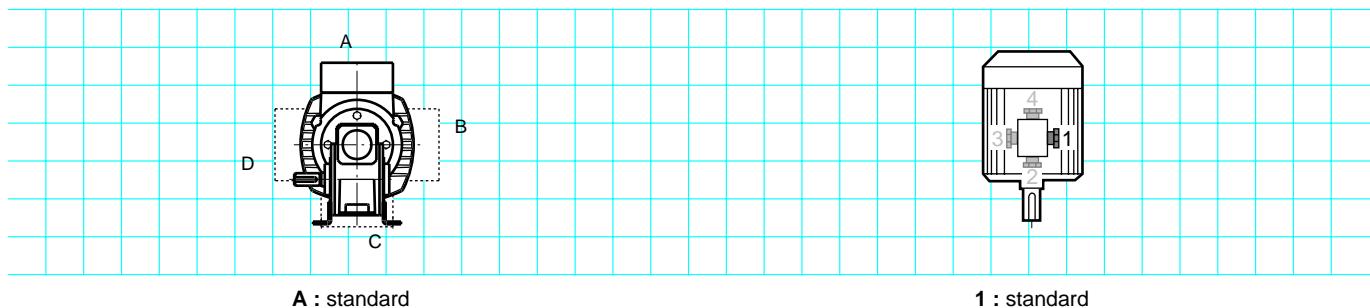
#### Output shaft



#### Terminal box positions



#### Cable gland positions



# Electromechanical products

## Minibloc MVA

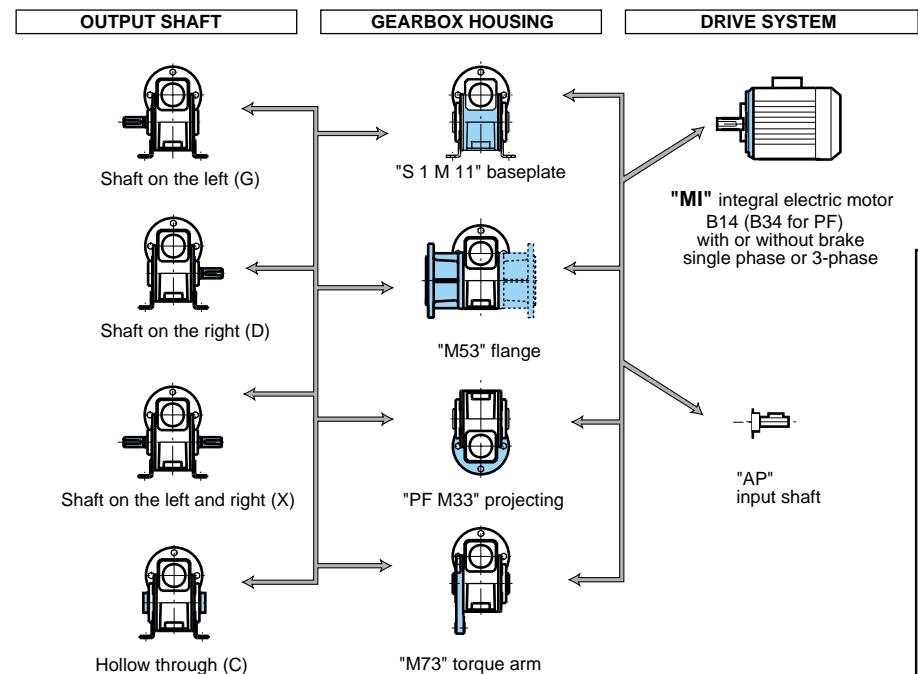
### Adaptation possibilities

Leroy-Somer offers several drives for its gearboxes which respond to very wide-ranging needs. They are described below and/or offered in this catalogue, either in the section relating to gearboxes for fixed-speed motors, or in the section on variable speed control for the types of drive selected.

For other drives, consult the Leroy-Somer technical specialists who will be glad to assist.

 **Minibloc MVA gearboxes can be used in conjunction with the following drives :**

- single phase motors :
  - LS motor from 0.06 to 0.37 kW,
  - FMC brake motor from 0.06 to 0.37 kW.
- 3-phase induction motors :
  - LS motors from 0.045 to 0.55 kW,
  - FMC brake motor from 0.06 to 0.37 kW,
  - FCR brake motors from 0.25 to 0.55 kW,
  - FAST brake motors 0.25 and 0.55 kW.
- D.C. motors :
  - MFA from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ).
- electronic drives :
  - MVE from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ).
- low voltage D.C. motors (12 to 48 V) :
  - MBT from 0.07 to 0.37 kW.



### Designation / Coding

MVA	S1-M11	G	40	MI	4P LS 56	0.06 kW
Gearbox type	Type of mounting	Position of output shaft	Exact reduction	Integral mounting	Polarity Type of LS motor and frame size	Motor power

 **Example of coding :**

MVA - S1 - M11G - 40 - MI - 4P LS56 - 0.06 kW  
- 230/400 V - 3-PH - 50 Hz

# Electromechanical products

## Minibloc MVA

### Selection

Gearbox : Minibloc MVA S baseplate form or with M53 or M35 flange

Induction motors : LS series, IP 55, class F

*multivoltage* : 220/380 V - 230/400 V - 240/415 V from 0.04 to 0.55 kW

Brake motors : LS series induction, FCR, FAST, FMC types, class F

FCR : 4-pole - *multivoltage* : 220/380 V - 230/400 V - 240/415 V from 0.25 to 0.55 kW

FAST : 4-pole - *voltage* : 220/380 V - 230/400 V from 0.25 to 0.55 kW

FMC : 4 and 6-pole - *multivoltage* : 220/380 V - 230/400 V - 240/415 V from 0.04 to 0.37 kW

Integral mounting MI

Input shaft mounting AP

3-PHASE  
Class I  
(K<sub>p</sub>≥1)

10 to 280 min <sup>-1</sup>								
LS motors, power in kW								
Type of B14 3-phase 4-pole motor and frame size								
Output speed min <sup>-1</sup>	Reduction index	Number of poles	0.045	0.06	0.09	0.12	0.18	0.25
10	90	6						
12	75	6						
15.5	90	4						
15	60	6						
18	50	6						
18.7	75	4						
22.5	40	6						
23.3	60	4						
28	50	4						
30	30	6						
35	40	4						
36	25	6						
45	20	6						
46.6	30	4						
56	25	4						
60	15	6						
69.2	13	6						
70	20	4						
90	10	6						
93.3	15	4						
108	13	4						
138	6.5	6						
140	10	4						
180	5	6						
215	6.5	4						
280	5	4						
B 14 brake motors								
Type of 3-phase 4-pole motor and frame size								
FMC			56		63		71 <sup>1</sup>	
FAST/FCR							71	71
Type of 3-phase 6-pole motor and frame size								
FMC		56		63		71 <sup>1</sup>		
FAST/FCR							71	

1. For 0.37 kW 4-pole and 0.25 kW 6-pole motors, the braking torque is equal to the motor rated torque.

The reduction indices correspond to exact reductions.

Not available

#### Selection example :

Required power : 0.06 kW

Required speed : 36 min<sup>-1</sup>

Mains power : 3-phase 50 Hz 400 V

Mounting and position baseplate - vertical

Shaft end : 1 on left

#### Designation :

MVA - S1 - M11G - 40 MI / 4P LS 56 0.06 kW  
400 V

# Electromechanical products

## Minibloc MVA

### Selection

**SINGLE PHASE**  
Class I  
( $K_p \geq 1$ )

Gearbox : Minibloc MVA S baseplate form or with M53 or M35 flange

Induction motors : LS series single phase, IP 55, class F

*multivoltage* : 220/240 V from 0.06 to 0.37 kW

Brake motors : single phase induction

FMC : *multivoltage* : 220/240 V from 0.06 to 0.37 kW

Integral mounting MI

Input shaft mounting AP

15.5 to 280 min<sup>-1</sup>

Output speed min <sup>-1</sup>	Reduction index	LS motors, power in kW					
		0.06	0.09	0.12	0.18	0.25	0.37
		56 P	63 P	63 P	71 P	71 P	71 P
15.5	90						
18.7	75						
23.3	60						
28	50						
35	40						
46.6	30						
56	25						
70	20			MVA			
93.3	15						
108	13						
140	10						
215	6.5						
280	5						

LS single phase 4-pole brake motors	Power in kW					
	0,06	0,09	0,12	0,18	0,25	0,37 <sup>1</sup>
	Type of LS single phase motor and frame size					
FMC	56 P	63 P	63 P	71 P	71 P	71 P

1. For 0.37 kW 4-pole motors, the braking torque is equal to the motor rated torque.

The reduction indices correspond to exact reductions.

Note : Single phase motors have a permanent capacitor ( $C_D/C_N \approx 0.6$ ).

B

PERPENDICULAR OUTPUT GEARED MOTORS

#### Selection example :

Required power : 0.06 kW

Required speed : 36 min<sup>-1</sup>

Mains power : single phase 50 Hz 230 V

Mounting and position baseplate - horizontal

Shaft end : 1 on left

#### Designation :

MVA - S1 - M11G - 40 MI / 4P LS 56 P

0.06 kW 230 V

# Electromechanical products

## Minibloc MVA

### Selection

#### Minibloc MVA selection data

**Options :**  
3-Ph brake motor = 6P LS56 FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
10	13,1	1,3	90	MVA	6P LS56	-
12	11	1,8	75	MVA	6P LS56	-
15	10	2,4	60	MVA	6P LS56	-
18	9,7	2,8	50	MVA	6P LS56	-
22,5	8	> 3	40	MVA	6P LS56	-
30	6,7	> 3	30	MVA	6P LS56	-
36	6,2	> 3	25	MVA	6P LS56	-
45	5	> 3	20	MVA	6P LS56	-
60	3,9	> 3	15	MVA	6P LS56	-
69	3,6	> 3	13	MVA	6P LS56	-
90	2,8	> 3	10	MVA	6P LS56	-
138	1,9	> 3	6,5	MVA	6P LS56	-
180	1,5	> 3	5	MVA	6P LS56	-

MOTOR POWER  
0.045 kW  
6 poles  
50 Hz

**Options :**  
3-Ph brake motor = 4P LS56 FMC  
1-Ph brake motor = 4P LS56P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
15,3	12,4	1	90	MVA	4P LS56	4P LS56P
18,4	10,3	1,7	75	MVA	4P LS56	4P LS56P
23	9,2	2,3	60	MVA	4P LS56	4P LS56P
27,6	9	2,6	50	MVA	4P LS56	4P LS56P
34,5	7,3	> 3	40	MVA	4P LS56	4P LS56P
46	6,1	> 3	30	MVA	4P LS56	4P LS56P
55,2	5,6	> 3	25	MVA	4P LS56	4P LS56P
69	4,6	> 3	20	MVA	4P LS56	4P LS56P
92	3,5	> 3	15	MVA	4P LS56	4P LS56P
106	3,2	> 3	13	MVA	4P LS56	4P LS56P
138	2,5	> 3	10	MVA	4P LS56	4P LS56P
212	1,7	> 3	6,5	MVA	4P LS56	4P LS56P
276	1,3	> 3	5	MVA	4P LS56	4P LS56P

MOTOR POWER  
0.06 kW  
4 poles  
50 Hz

**Options :**  
3-Ph brake motor = 4P LS56 FMC  
6P LS63 FMC  
1-Ph brake motor = 4P LS63P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
14,3	24,5	0,98	60	MVA	6P LS63	-
17,2	24,5	1,1	50	MVA	6P LS63	-
18,7	17,5	1	75	MVA	4P LS56	4P LS63P
21,5	20,4	1,5	40	MVA	6P LS63	-
23,3	14	1,5	60	MVA	4P LS56	4P LS63P
28	15	1,5	50	MVA	6P LS63	-
28,7	17,5	2,1	30	MVA	6P LS63	-
34,4	15,8	1,7	25	MVA	6P LS63	-
35	12,1	2,2	40	MVA	4P LS56	4P LS63P
43	12,8	2,5	20	MVA	6P LS63	-
46,7	10,3	> 3	30	MVA	4P LS56	4P LS63P
56	9,4	2,9	25	MVA	4P LS56	4P LS63P
57,3	9,8	> 3	15	MVA	6P LS63	-
66,2	9	> 3	13	MVA	6P LS63	-
70	7,6	> 3	20	MVA	4P LS56	4P LS63P
86	7,2	> 3	10	MVA	6P LS63	-
93,3	5,8	> 3	15	MVA	4P LS56	4P LS63P
107,7	5,3	> 3	13	MVA	4P LS56	4P LS63P
132,3	4,9	> 3	6,5	MVA	6P LS63	-
140	4,2	> 3	10	MVA	4P LS56	4P LS63P
172	3,8	> 3	5	MVA	6P LS63	-
215,4	2,8	> 3	6,5	MVA	4P LS56	4P LS63P
280	2,2	> 3	5	MVA	4P LS56	4P LS63P

MOTOR POWER  
0.09 kW  
4 or  
6 poles  
50 Hz

**Options :**  
3-Ph brake motor = 4P LS63 FMC  
6P LS71 FMC  
1-Ph brake motor = 4P LS63P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
18,4	31,7	0,86	50	MVA	6P LS71	-
23	26,4	1,2	40	MVA	6P LS71	-
23,5	21,9	1	60	MVA	4P LS63	4P LS63P
28,2	20,9	1,1	50	MVA	4P LS63	4P LS63P
30,7	22	1,7	30	MVA	6P LS71	-
35,3	17,2	1,5	40	MVA	4P LS63	4P LS63P
36,8	20,3	1,5	25	MVA	6P LS71	-
46	16,5	1,9	20	MVA	6P LS71	-
47	14,4	2,4	30	MVA	4P LS63	4P LS63P
56,4	13,2	2,1	25	MVA	4P LS63	4P LS63P
60,3	12,9	2,5	15	MVA	6P LS71	-
70,5	10,7	2,8	20	MVA	4P LS63	4P LS63P
70,8	11,7	2,3	13	MVA	6P LS71	-
92	9,2	2,6	10	MVA	6P LS71	-
94	8,2	> 3	15	MVA	4P LS63	4P LS63P
108,5	7,5	> 3	13	MVA	4P LS63	4P LS63P
141	6,1	> 3	10	MVA	4P LS63	4P LS63P
141,5	6,2	> 3	6,5	MVA	6P LS71	-
184	4,9	> 3	5	MVA	6P LS71	-
217	4	> 3	6,5	MVA	4P LS63	4P LS63P
282	3,1	> 3	5	MVA	4P LS63	4P LS63P

MOTOR POWER  
0.12 kW  
4 or  
6 poles  
50 Hz

Note: On-load speeds are established based on the characteristics for 3-phase motors.

# Electromechanical products

## Minibloc MVA

### Selection

#### Minibloc MVA selection data

##### Options :

3-Ph brake motor = 4P LS63 FMC  
6P LS71 FMC  
1-Ph brake motor = 4P LS71P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
27,8	33,4	0,7	50	MVA	4P LS63	4P LS71P
31,3	33,5	1,1	30	MVA	6P LS71	-
34,8	27,7	1	40	MVA	4P LS63	4P LS71P
37,6	31	0,99	25	MVA	6P LS71	-
46,3	23	1,5	30	MVA	4P LS63	4P LS71P
55,6	21	1,3	25	MVA	4P LS63	4P LS71P
62,7	19,2	1,7	15	MVA	6P LS71	-
69,5	17,3	1,7	20	MVA	4P LS63	4P LS71P
72,3	18,3	1,47	13	MVA	6P LS71	-
92,7	13,2	2,3	15	MVA	4P LS63	-
106,9	12,1	2,1	13	MVA	4P LS63	4P LS71P
139	9,5	2,3	10	MVA	4P LS63	4P LS71P
144,6	9,5	2,4	6,5	MVA	6P LS71	-
188	7,5	2,4	5	MVA	6P LS71	-
213,8	6,4	> 3	6,5	MVA	4P LS63	4P LS71P
278	5	> 3	5	MVA	4P LS63	4P LS71P



##### Options :

3-Ph brake motor = 4P LS71 FMC  
4P LS71 FAST  
4P LS71 FCR  
6P LS71 FAST  
6P LS71 FCR  
1-Ph brake motor = 4P LS71P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
35,6	37,8	0,7	40	MVA	4P LS71	4P LS71P
47,5	32	1,08	30	MVA	4P LS71	4P LS71P
56	28	1,15	15	MVA	6P LS71	-
57	29,3	0,96	25	MVA	4P LS71	4P LS71P
64,6	25,9	1,04	13	MVA	6P LS71	-
71,3	24,1	1,2	20	MVA	4P LS71	4P LS71P
84	22,4	1,05	10	MVA	6P LS71	-
95	18,3	1,6	15	MVA	4P LS71	4P LS71P
109,6	16,7	1,5	13	MVA	4P LS71	4P LS71P
129	14,6	1,6	6,5	MVA	6P LS71	-
142,5	13,3	1,7	10	MVA	4P LS71	4P LS71P
168	11,9	1,6	5	MVA	6P LS71	-
219	9	2,3	6,5	MVA	4P LS71	4P LS71P
285	7	2,6	5	MVA	4P LS71	4P LS71P



##### Options :

3-Ph brake motor = 4P LS71 FAST  
4P LS71 FCR  
1-Ph brake motor = 4P LS71P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
71	36,3	0,82	20	MVA	4P LS71	4P LS71P
94,7	27,6	1,1	15	MVA	4P LS71	4P LS71P
109	25,6	1	13	MVA	4P LS71	4P LS71P
142	20,2	1,1	10	MVA	4P LS71	4P LS71P
218	13,6	1,55	6,5	MVA	4P LS71	4P LS71P
284	10,6	1,7	5	MVA	4P LS71	4P LS71P



##### Options :

3-Ph brake motor = 4P LS71 FAST  
4P LS71 FCR

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
140	30,8	0,72	10	MVA	4P LS71	-
215	20,8	1	6,5	MVA	4P LS71	-
280	16,1	1,1	5	MVA	4P LS71	-



Note: On-load speeds are established based on the characteristics for 3-phase motors.

# Electromechanical products

## Minibloc MVA

### Gearbox only (AP) characteristics

**Input speed : 2800 min<sup>-1</sup>**

Output speed min <sup>-1</sup>	Reduction	Max. power kW	Max. torque N.m
31,1	90	0,092	9,5
37,3	75	0,119	11,8
46,7	60	0,167	16,0
56,0	50	0,210	20,0
70,0	40	0,247	19,8
93,3	30	0,286	19,1
112,0	25	0,331	20,0
140,0	20	0,364	18,0
186,7	15	0,392	15,0
215,4	13	0,491	17,4
280,0	10	0,562	15,8
430,8	6,5	0,658	12,4
560,0	5	0,739	11,0

**Input speed : 1400 min<sup>-1</sup>**

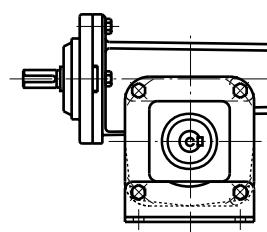
Output speed min <sup>-1</sup>	Reduction	Max. power kW	Max. torque N.m
15,6	90	0,061	12,5
18,7	75	0,089	17,3
23,3	60	0,118	21,6
28,0	50	0,129	23,0
35,0	40	0,177	27,0
46,7	30	0,261	34,5
56,0	25	0,236	28,0
70,0	20	0,298	29,5
93,3	15	0,393	30,0
107,7	13	0,363	25,5
140,0	10	0,396	22,0
215,4	6,5	0,555	21,0
280,0	5	0,610	18,0

**Input speed : 900 min<sup>-1</sup>**

Output speed min <sup>-1</sup>	Reduction	Max. power kW	Max. torque N.m
10,0	90	0,054	17,0
12,0	75	0,070	20,0
15,0	60	0,090	24,0
18,0	50	0,102	27,0
22,5	40	0,137	31,0
30,0	30	0,189	36,9
36,0	25	0,171	30,5
45,0	20	0,213	31,6
60,0	15	0,279	32,1
69,2	13	0,255	27,0
90,0	10	0,280	23,5
138,5	6,5	0,391	22,5
180,0	5	0,423	19,2

**Input speed : 500 min<sup>-1</sup>**

Output speed min <sup>-1</sup>	Reduction	Max. power kW	Max. torque N.m
5,6	90	0,037	18,7
6,7	75	0,049	22,0
8,3	60	0,062	26,4
10,0	50	0,069	29,7
12,5	40	0,092	34,1
16,7	30	0,126	40,6
20,0	25	0,112	33,6
25,0	20	0,139	34,8
33,3	15	0,181	35,3
38,5	13	0,176	32,0
50,0	10	0,179	25,8
76,9	6,5	0,249	24,8
100,0	5	0,269	21,2



# Electromechanical products

## Minibloc MVA

### Load on slow speed shaft. Shaft diameter $\leq 15$ mm

Force in N.m.

Reduction	Speed min <sup>-1</sup>	Torque N.m	Clockwise or anti-clockwise direction								
			M11G M33G $F_r$	M53G $F_r$	M11G M33G & M53G $F_a -$	M11G M33G & M53G $F_a +$	M11D M33D $F_r$	M11D M33D $F_r$	M35D $F_r$	M11D M33D & M35D $F_a -$	M11D M33D & M35D $F_a +$
5	284	20	435	435	103	350	435	435	350	103	
6,5	218	21	515	515	139	430	515	515	430	139	
10	142	22	654	654	314	710	654	654	710	314	
13	109	23	741	741	407	878	741	741	878	407	
15	94,6	31,5	702	702	445	898	702	702	898	445	
20	71	29,5	780	780	523	1043	780	780	1043	523	
25	56,8	26,9	790	790	560	1012	790	790	1012	560	
30	47,3	34,5	690	690	652	1177	690	690	1177	652	
40	35,5	26,9	790	790	784	1347	790	790	1347	784	
50	28,4	23,5	810	810	831	1415	810	810	1415	831	
60	23,7	20	820	820	937	1589	820	820	1589	937	
75	18,9	15	840	840	1290	1770	840	840	1770	1290	
90	15,7	12	860	860	1370	1950	860	860	1950	1370	

#### Direction of force

##### M11D M33D M35D

$F_a +$  = PULLING axial force on the shaft end.  
 $F_a -$  = PUSHING axial force on the shaft end.

##### M11G M33G M53G

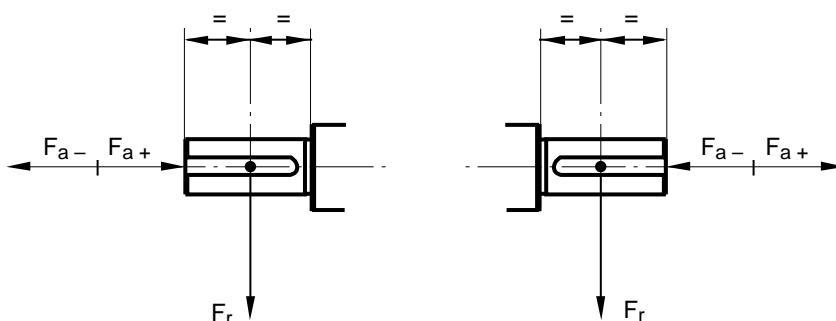
$F_a +$  = PUSHING axial force on the shaft end.  
 $F_a -$  = PULLING axial force on the shaft end.

$F_r$  = radial force on the shaft end at 15 mm from the shoulder.

Note : 1 Where there are 2 shaft ends, the load must be shared between them.

2 These values correspond to the most adverse load conditions.

SPECIAL CASES : please consult Leroy Somer.



# Electromechanical products

## Minibloc MVA

### Load on slow speed shaft Shaft diameter > 15 mm or hollow shaft

**Force in N.m.**

Reduction	Speed $\text{min}^{-1}$	Torque N.m	Clockwise or anti-clockwise direction								
			Gearbox characteristics			M11G M33G	M53G	M11G M33G & M53G	M11D M33G	M35D	M11D M33G & M35D
			$F_r$	$F_r$	$F_a -$	$F_a +$	$F_r$	$F_r$	$F_a -$	$F_a +$	
5	284	20	828	578	290	720	828	578	720	290	
6,5	218	21	944	659	451	1085	944	659	1085	451	
10	142	22	1144	799	684	1343	1144	799	1343	684	
13	109	23	1243	838	822	1589	1243	838	1589	822	
15	94,6	31,5	1269	886	891	1669	1269	886	1669	891	
20	71	29,5	1463	1021	1082	2016	1463	1021	2016	1082	
25	56,8	26,9	1629	1138	1256	2338	1629	1138	2338	1256	
30	47,3	34,5	1683	1150	1395	2545	1683	1150	2545	1395	
40	35,5	26,9	1956	1150	1697	3116	1956	1150	3116	1697	
50	28,4	23,5	2162	1150	1870	3294	2162	1150	3294	1870	
60	23,7	20	2336	1150	2127	3325	2336	1150	3325	2127	
75	18,9	15	2500	1150	2441	3349	2500	1150	3349	2441	
90	15,7	12	2600	1150	2879	3357	2600	1150	3357	2879	

#### Direction of force

##### M11D M33D M35D

$F_a +$  = PULLING axial force on the shaft end.  
 $F_a -$  = PUSHING axial force on the shaft end.

##### M11G M33G M53G

$F_a +$  = PUSHING axial force on the shaft end.  
 $F_a -$  = PULLING axial force on the shaft end.

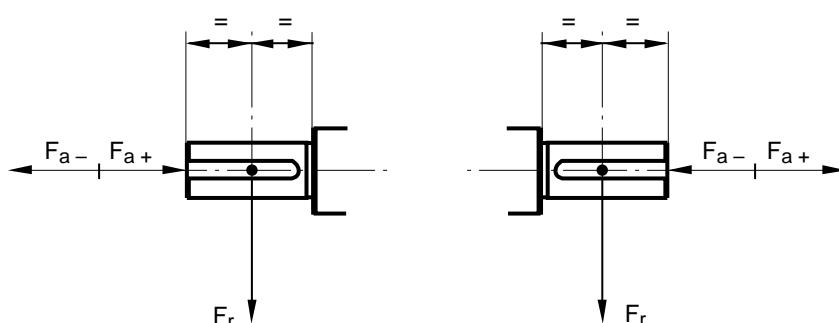
$F_r$  = radial force on the shaft end at 20 mm from the shoulder.

Note : 1 Where there are 2 shaft ends, the load  $F_r$  is shared between them.

2 For M53G or M35D, the force corresponds to the extension shaft.

3 These values correspond to the most adverse load conditions.

SPECIAL CASES : please consult Leroy Somer.



# Electromechanical products

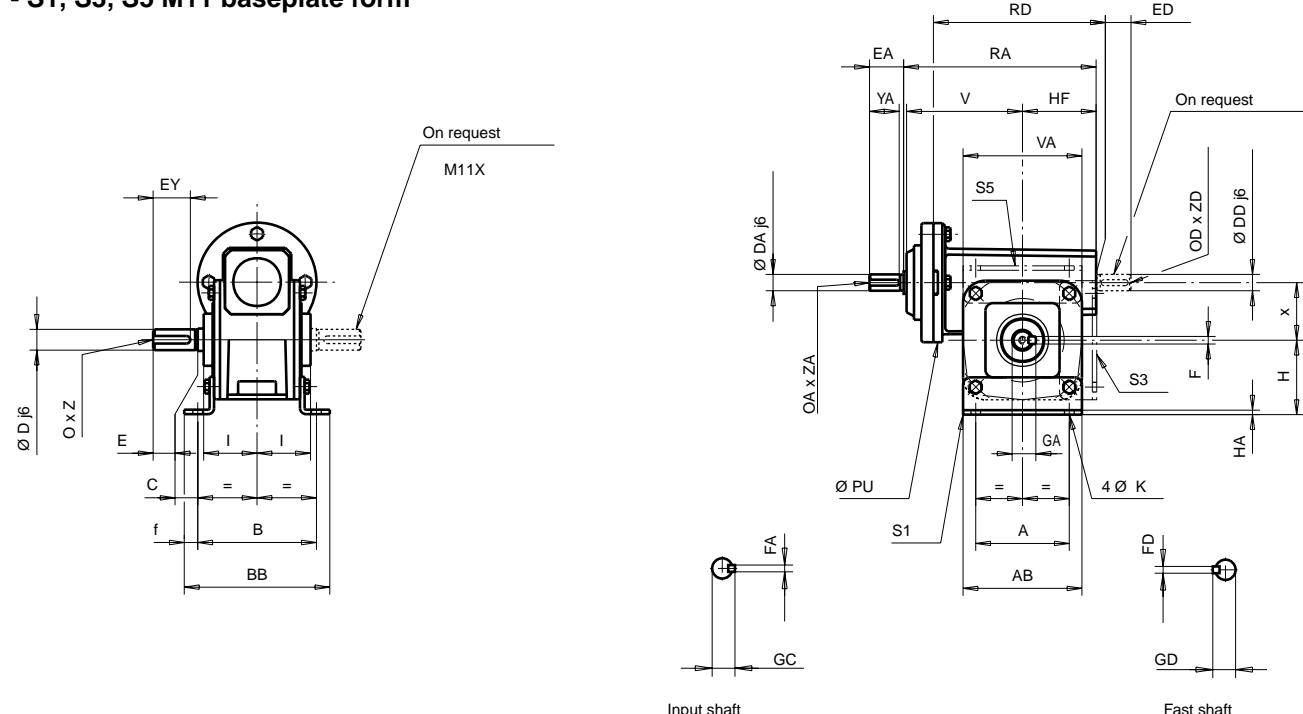
## Minibloc MVA

### Dimensions

Dimensions of Minibloc MVA gearboxes, AP input shaft mounting, solid output shaft

Dimensions in millimetres

#### - S1, S3, S5 M11 baseplate form



Gearboxes with baseplate																	Weight	
Type	RD	RA	x	A	AB	B	BB	C	f	H	HA	V	VA	HF	I	K	PU	kg
MVA	110	129,5	38,6	63	80	80	98	0	9	50	3	78	80	49	36	6,5	80	1,9

Note : In position S3 and S5, the distance between the centre of the slow speed shaft and the base of the motor feet is 50 mm.

Type	Input shaft							Solid output shaft						
	DA	EA	YA	GC	FA	OA	ZA	D	E	EY	GA	F	O	Z
MVA	11	23	18	12,5	4	M4	10	14	30	25	16	5	M5	15

Type	Fast shaft (on request)						
	DD	ED	GD	FD	OD	ZD	
MVA	11	23	12,5	4	M4	10	

# Electromechanical products

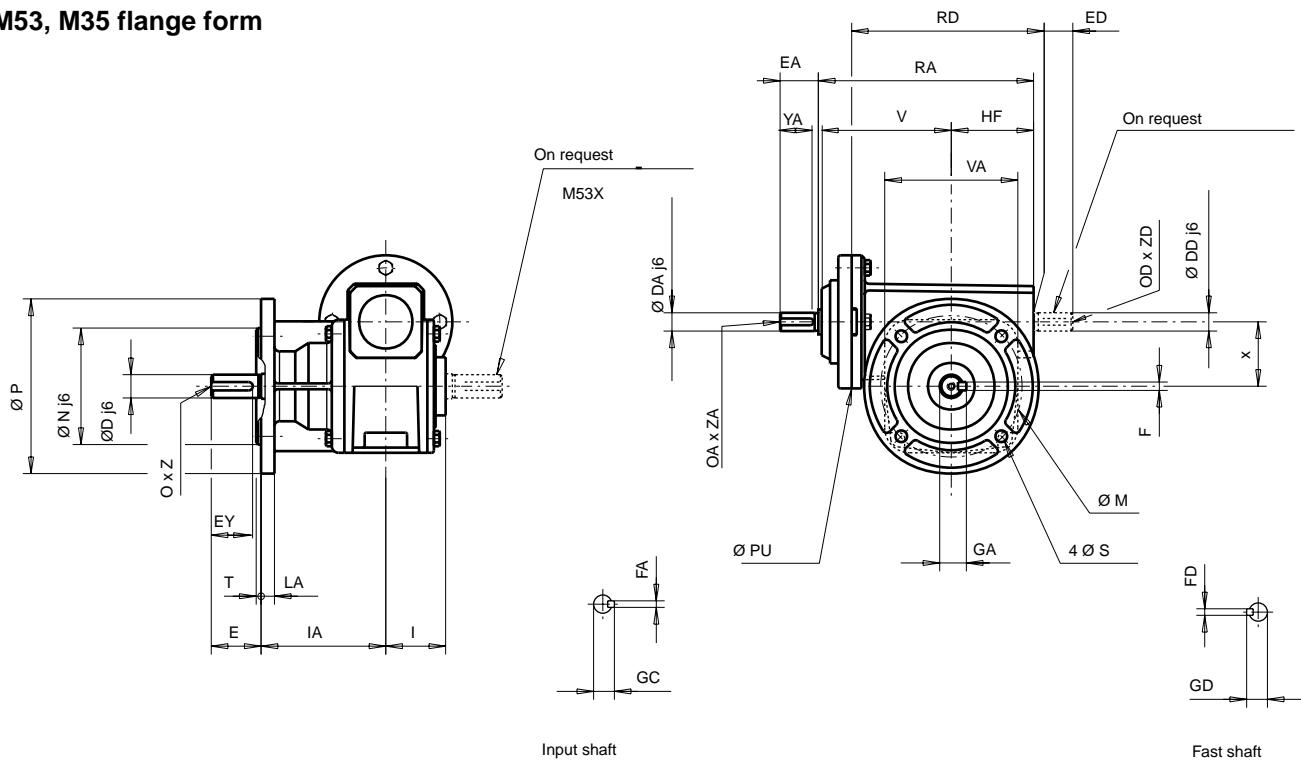
## Minibloc MVA

### Dimensions

Dimensions of Minibloc MVA gearboxes, AP input shaft mounting, solid output shaft

Dimensions in millimetres

#### - M53, M35 flange form



Gearboxes with flange														Weight		
Type	RD	RA	x	M	N	P	S	LA	T	IA	I	V	VA	HF	PU	kg
<b>MVA</b>	110	129,5	38,6	85	70	105	7	8	2,5	75	36	78	80	49	80	2,2

Other flanges available <sup>1</sup>														
Type	BD1						BD2							
	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2		
<b>MVA</b>	65	50	80	5,5	8	2,5	115	95	140	9	8	3		

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Input shaft							Solid output shaft						
	DA	EA	YA	GC	FA	OA	ZA	D	E	EY	GA	F	O	Z
<b>MVA</b>	11	23	18	12,5	4	M4	10	14	30	25	16	5	M5	15

Fast shaft (on request)						
Type	DD	ED	GD	FD	OD	ZD
<b>MVA</b>	11	23	12,5	4	M4	10

# Electromechanical products

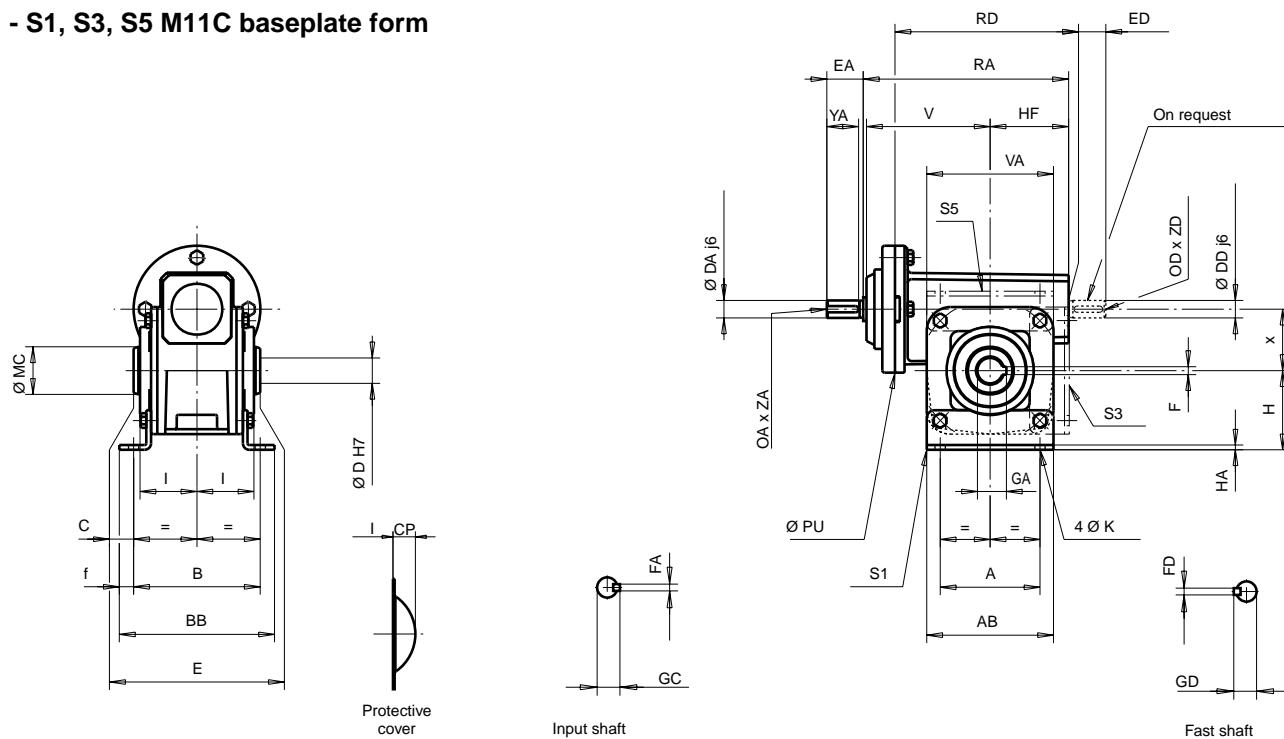
## Minibloc MVA

### Dimensions

Dimensions of Minibloc MVA gearboxes, AP input shaft mounting, hollow output shaft (C)

Dimensions in millimetres

#### - S1, S3, S5 M11C baseplate form



Type	Gearboxes with baseplate																Weight kg	
	RD	RA	x	A	AB	B	BB	C	f	H	HA	V	VA	HF	I	K	PU	
MVA	110	129,5	38,6	63	80	80	98	0	9	50	3	78	80	49	36	6,5	80	2,2

Note : In position S3 and S5, the distance between the centre of the slow speed shaft and the base of the motor feet is 50 mm.

Input shaft							
Type	DA	EA	YA	GC	FA	OA	ZA
MVA	11	23	18	12,5	4	M4	10

Hollow output shaft						
Type	D	E	MC	GA	F	CP
MVA	16	80	30	18	5	16

Other hollow shaft available <sup>1</sup>						
Type	D1	E1	MC1	GA1	F1	CP1
MVA	20	80	30	23	6	16

1. The letters are indexed to differentiate them from those on the standard hollow shaft diagram.

Fast shaft (on request)						
Type	DD	ED	GD	FD	OD	ZD
MVA	11	23	12,5	4	M4	10

# Electromechanical products

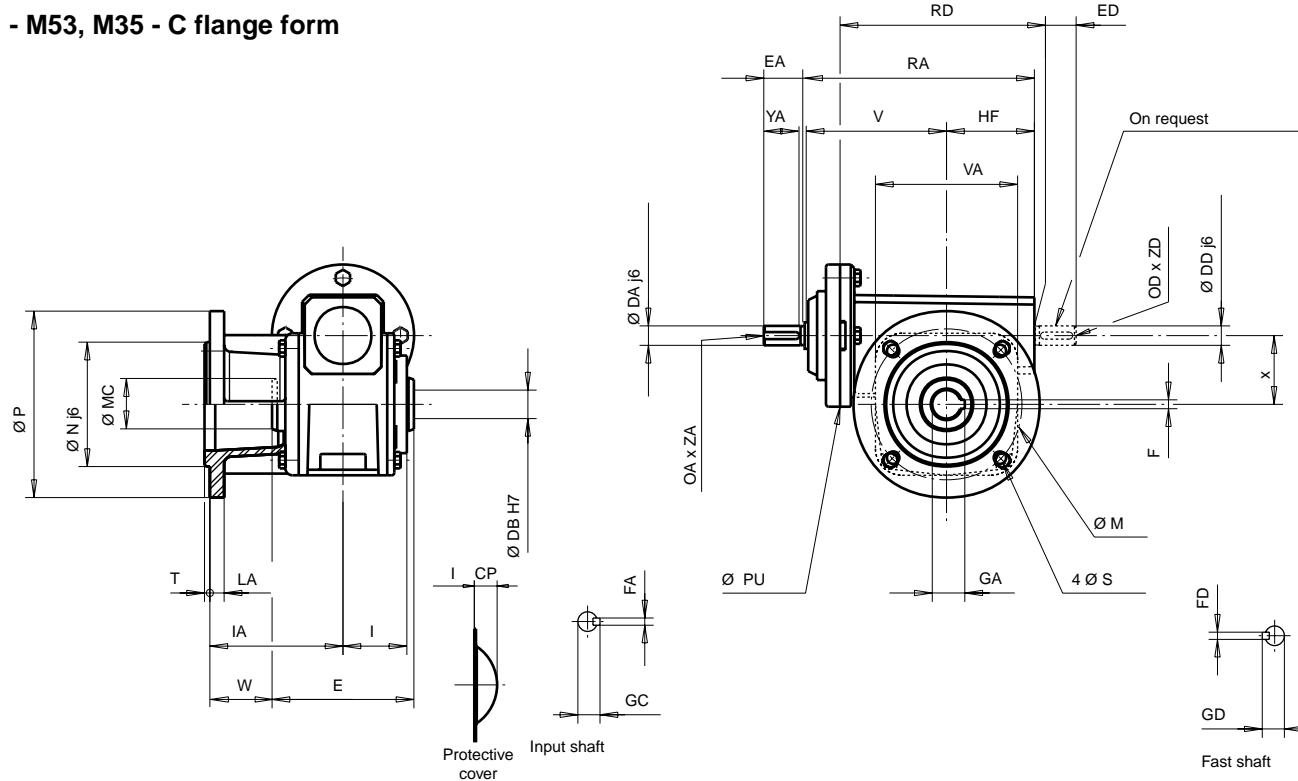
## Minibloc MVA

### Dimensions

Dimensions of Minibloc MVA gearboxes, AP input shaft mounting,  
hollow output shaft (C)

Dimensions in millimetres

#### - M53, M35 - C flange form



Gearboxes with flange														Weight		
Type	RD	RA	x	M	N	P	S	LA	T	IA	I	V	VA	HF	PU	kg
<b>MVA</b>	110	129,5	38,6	85	70	105	7	8	2,5	75	36	78	80	49	80	2,3

Input shaft							
Type	DA	EA	YA	GC	FA	OA	ZA
<b>MVA</b>	11	23	18	12,5	4	M4	10

Hollow output shaft							
Type	D	E	MC	GA	F	W	CP
<b>MVA</b>	16	80	30	18	5	35	16

Other hollow shaft available <sup>1</sup>							
Type	D1	E1	MC1	GA1	F1	W1	CP1
<b>MVA</b>	20	80	30	23	6	35	16

1. The letters are indexed to differentiate them from those on the standard hollow shaft diagram.

Fast shaft (on request)						
Type	DD	ED	GD	FD	OD	ZD
<b>MVA</b>	11	23	12,5	4	M4	10

# Electromechanical products

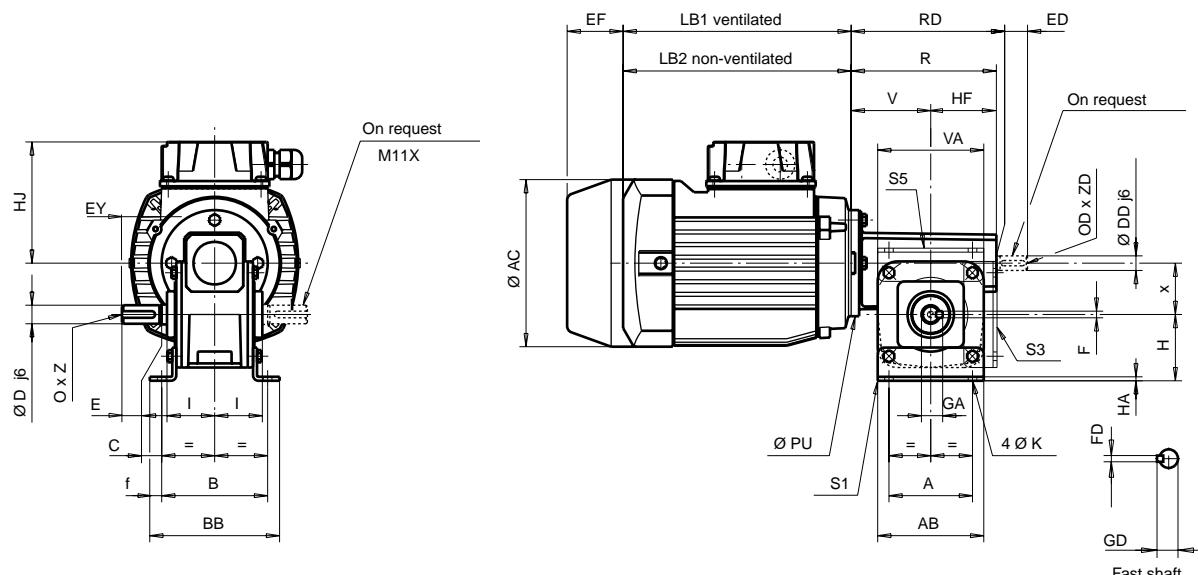
## Minibloc MVA

### Dimensions

Dimensions of Minibloc MVA geared motors, MI integral mounting,  
solid output shaft

Dimensions in millimetres

#### - S1, S3, S5 M11 baseplate form



Gearboxes with baseplate																	Weight*	
Type	RD	R	x	A	AB	B	BB	C	f	H	HA	V	VA	HF	I	K	PU	kg
<b>MVA</b>	110	109,5	38,6	63	80	80	98	0	9	50	3	60,5	80	49	36	6,5	80	

\* Gearbox only.

Note : In position S3 and S5, the distance between the centre of the slow speed shaft and the base of the motor feet is 50 mm.

Solid output shaft							
Type	D	E	EY	GA	F	O	Z
<b>MVA</b>	14	30	25	16	5	M5	15

Fast shaft (on request)							
Type	DD	ED	GD	FD	OD	ZD	
<b>MVA</b>	11	23	12,5	4	M4	10	

Induction and brake motors																		
LS 3-phase								LS single phase								Brakes		
Frame					Max. weight						Max. weight		EF max.			Weight <sup>1</sup> kg		
size	AC	HJ	LB1	LB2	kg		AC	HJ	LB1	LB2	kg		FMC	FAST	FCR	FMC	FAST	FCR
<b>56</b>	110	85	156	135	3,4		110	90	156	135	3,5		50	-	-	0,9	-	-
<b>63</b>	124	95	172	150	4,3		124	110	172	150	4,5		50	-	-	0,9	-	-
<b>71<sup>2</sup></b>	140	102	183	155	6,5		140	129	183	155	7,5		50	28	90	0,9	2	2,5

1. Additional brake weight

2. For LS 71 : 0,25 kW 6-pole 3-phase, 0,37 kW 4-pole single phase, 0,55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

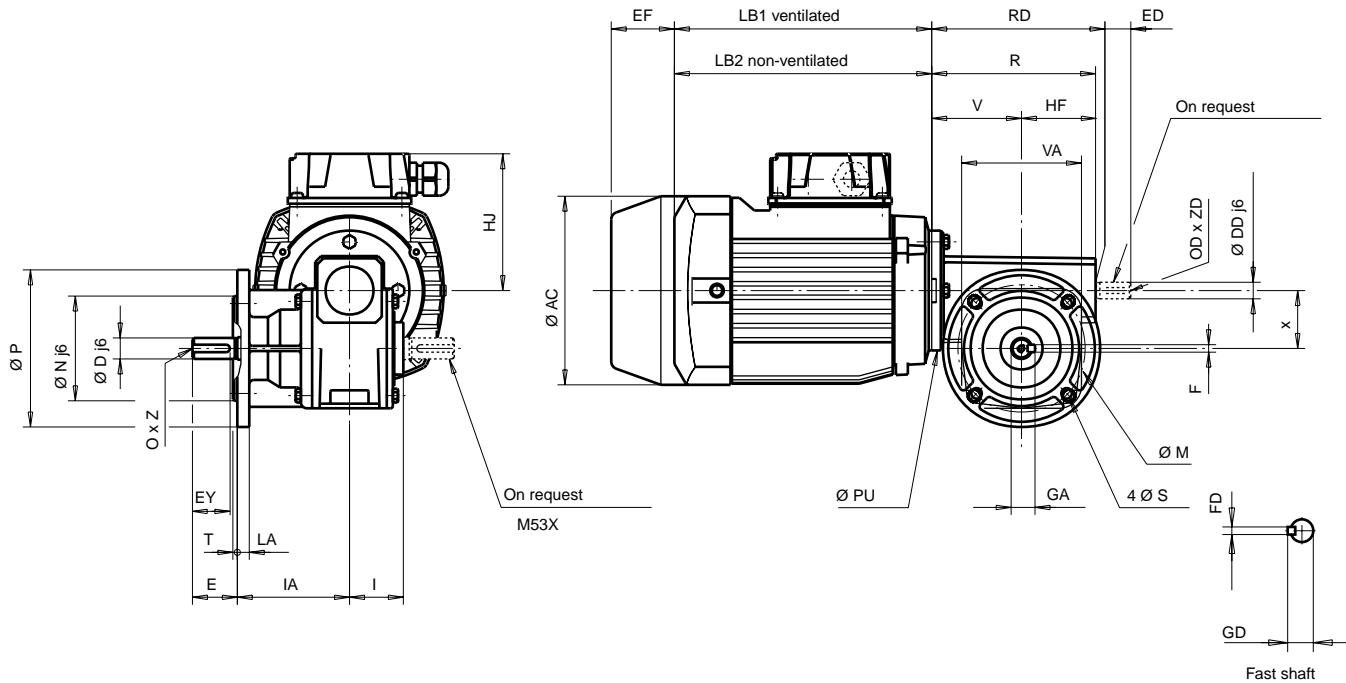
## Minibloc MVA

### Dimensions

Dimensions of Minibloc MVA geared motors, MI integral mounting,  
solid output shaft

Dimensions in millimetres

#### - M53, M35 flange form



Type	Gearboxes with flange													Weight*		
	RD	R	x	M	N	P	S	LA	T	IA	I	V	HF	PU		
<b>MVA</b>	110	109,5	38,6	85	70	105	7	8	2,5	75	36	60,5	80	49	80	2

\* Gearbox only.

Other flanges available <sup>1</sup>															
Type	BD1						BD2								
	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2	DD	ED	GD
<b>MVA</b>	65	50	80	5,5	8	2,5	115	95	140	9	8	3			

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Solid output shaft						Type	Fast shaft (on request)					
	D	E	EY	GA	F	O	Z	DD	ED	GD	FD	OD	ZD
<b>MVA</b>	14	30	25	16	5	M5	15	11	23	12,5	4	M4	10

Induction and brake motors														
LS 3-phase					LS single phase					Brakes				
Frame size	Max. weight				Max. weight				EF max.			Weight <sup>1</sup> kg		
	AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR	FMC
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9
											2		2,5	

1. Additional brake weight

2. For LS 71 : 0,25 kW 6-pole 3-phase, 0,37 kW 4-pole single phase, 0,55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

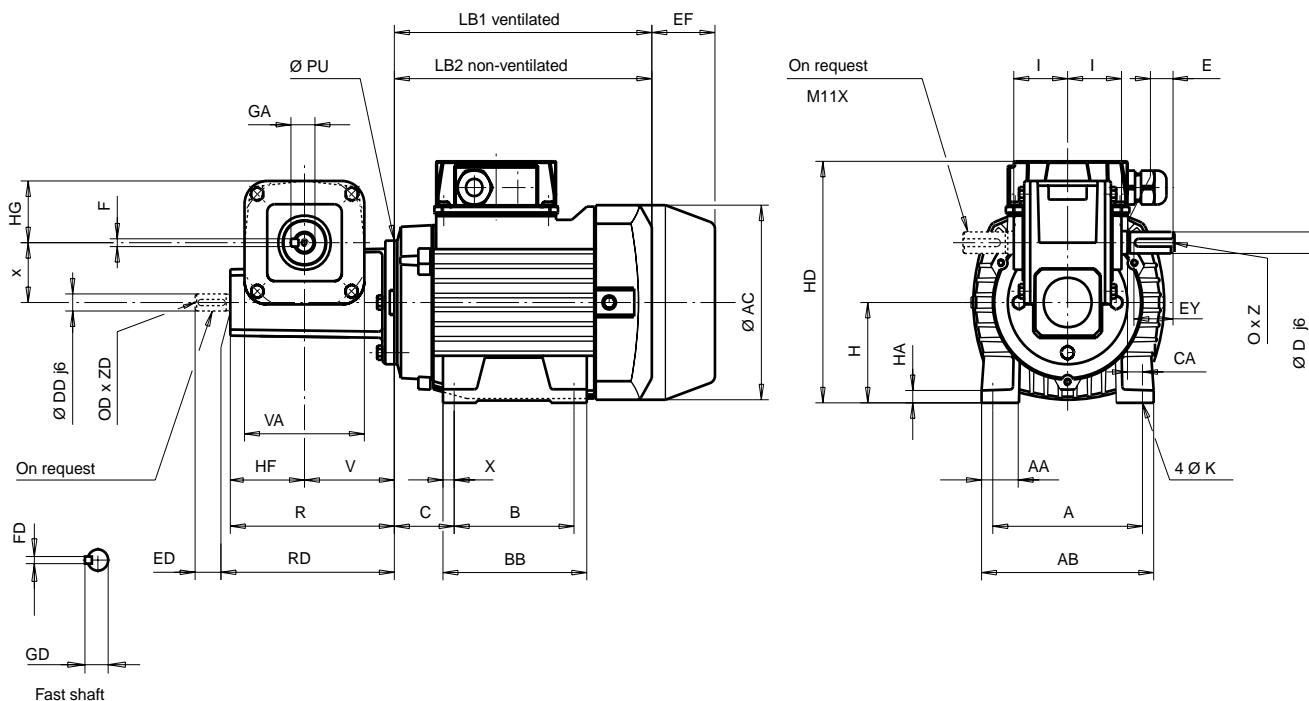
## Minibloc MVA

### Dimensions

Dimensions of Minibloc MVA geared motors, MI integral mounting, solid output shaft

Dimensions in millimetres

#### - Foot mounting motor, PF M33 projecting gearbox



Type	Projecting gearboxes								Weight*	
	RD	R	x	HG	V	VA	HF	I	PU	
<b>MVA</b>	110	109,5	38,6	40	60,5	80	49	36	80	1,7

\* Gearbox only.

Type	Solid output shaft						Fast shaft (on request)							
	D	E	EY	GA	F	O	Z	Type	DD	ED	GD	FD	OD	ZD
<b>MVA</b>	14	30	25	16	5	M5	15	<b>MVA</b>	11	23	12,5	4	M4	10

Frame size	Induction motors												Max. weight	Max. weight		
	LS 3-phase and single phase												LS 3-phase	LS single phase		
	AC	A	AA	AB	B	BB	C	CA	H	HA	LB1	LB2	HD	kg	HD	kg
<b>56</b>	110	90	24	104	71	89	36	5	56	5	156	132	141	3,4	146	3,5
<b>63</b>	124	100	30	115	80	94	40	10	63	6	172	150	158	4,3	173	4,5
<b>71<sup>1</sup></b>	140	112	22	126	90	104	45	16	71	6	183	155	173	6,5	200	7,5

1. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

Type	Additional brake dimensions						Weight <sup>1</sup> kg	
	EF max.			FCR				
	FMC	FAST	FCR	FMC	FAST	FCR		
<b>56</b>	50	-	-	0,9	-	-		
<b>63</b>	50	-	-	0,9	-	-		
<b>71<sup>2</sup></b>	50	28	90	0,9	2	2,5		

1. Additional brake weight

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

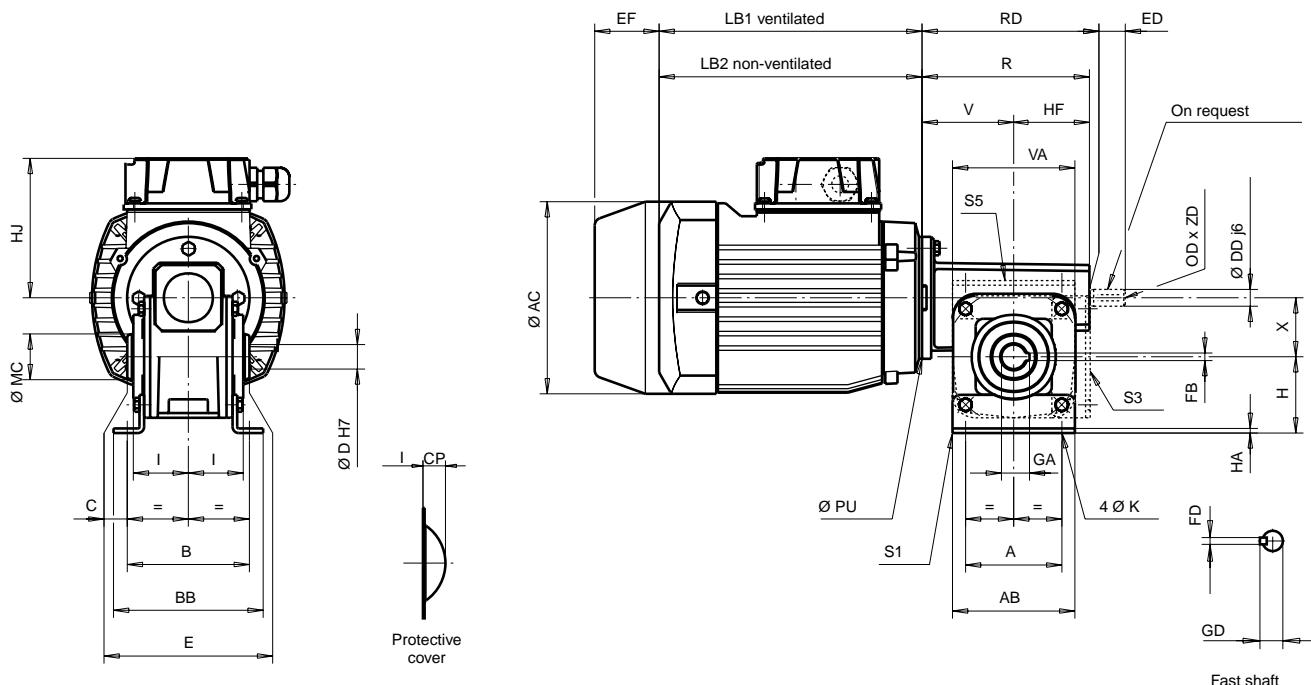
## Minibloc MVA

### Dimensions

Dimensions of Minibloc MVA geared motors, MI integral mounting,  
hollow output shaft (C)

Dimensions in millimetres

#### - S1, S3, S5 M11C baseplate form



Type	Gearboxes with baseplate															Weight*		
	RD	R	x	A	AB	B	BB	C	f	H	HA	V	VA	HF	I	K	PU	
<b>MVA</b>	110	109,5	38,6	63	80	80	98	0	9	50	3	60,5	80	49	36	6,5	80	2

\* Gearbox only.

Note : In position S3 and S5, the distance between the centre of the slow speed shaft and the base of the motor feet is 50 mm.

Type	Hollow output shaft					
	D	E	MC	GA	F	CP
<b>MVA</b>	16	80	30	18	5	16

Type	Other hollow shaft available <sup>1</sup>					
	D1	E1	MC1	GA1	F1	CP1
<b>MVA</b>	20	80	30	23	6	16

1. The letters are indexed to differentiate them from those shown on the standard hollow shaft diagram.

Type	Fast shaft (on request)					
	DD	ED	GD	FD	OD	ZD
<b>MVA</b>	11	23	12,5	4	M4	10

Induction and brake motors																
LS 3-phase							LS single phase							Brakes		
Frame size	Max. weight				Max. weight				EF max.			Weight <sup>1</sup> kg				
	AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR	FMC	FAST	FCR
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	-	-
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	-	-
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2	2,5

1. Additional brake weight

2. For LS 71 : 0,25 kW 6-pole 3-phase, 0,37 kW 4-pole single phase, 0,55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

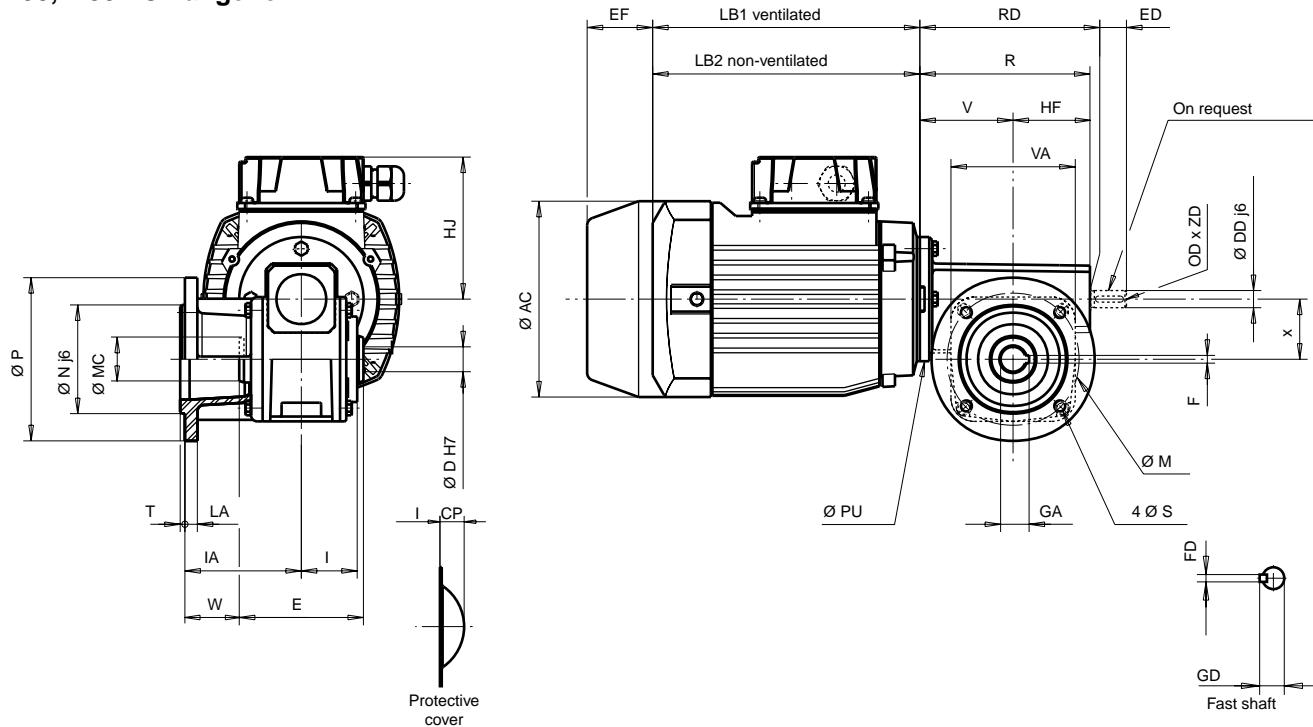
## Minibloc MVA

### Dimensions

Dimensions of Minibloc MVA geared motors, MI integral mounting, hollow output shaft (C)

Dimensions in millimetres

#### - M53, M35 - C flange form



Type	Gearboxes with flange														Weight*	
	RD	R	x	M	N	P	S	LA	T	IA	I	V	VA	HF	PU	
<b>MVA</b>	110	109,5	38,6	85	70	105	7	8	2,5	75	36	60,5	80	49	80	2,1

\* Gearbox only.

Hollow output shaft						
Type	D	E	MC	GA	F	W
<b>MVA</b>	16	80	30	18	5	35

Other hollow shaft available <sup>1</sup>						
Type	D1	E1	MC1	GA1	F1	W1
<b>MVA</b>	20	80	30	23	6	35

1. The letters are indexed to differentiate them from those shown on the standard hollow shaft diagram.

Fast shaft (on request)						
Type	DD	ED	GD	FD	OD	ZD
<b>MVA</b>	11	23	12,5	4	M4	10

Frame size	Induction and brake motors														Weight <sup>1</sup> kg	
	LS 3-phase				LS single phase				Brakes							
	AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR	FMC	FAST	FCR
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	-	-
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	-	-
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2	2,5

1. Additional brake weight

2. For LS 71 : 0,25 kW 6-pole 3-phase, 0,37 kW 4-pole single phase, 0,55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

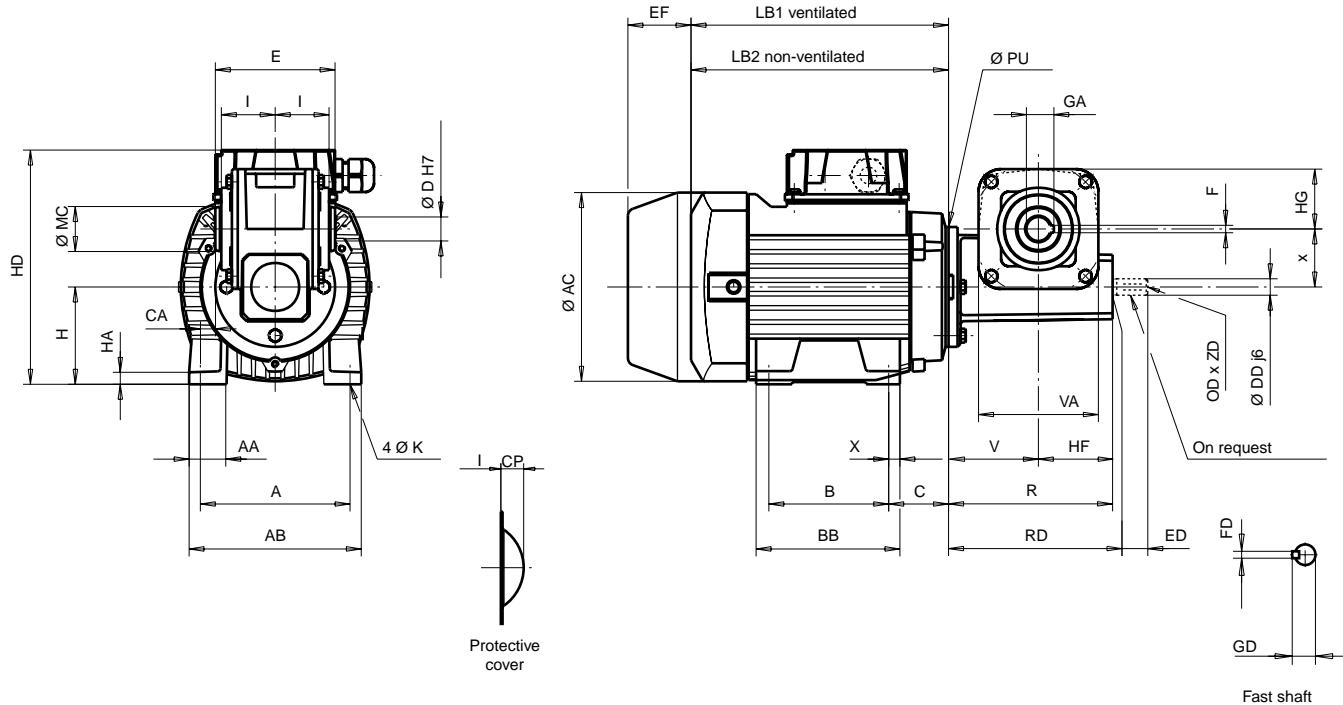
## Minibloc MVA

### Dimensions

Dimensions of Minibloc MVA,geared motors MI integral mounting,  
hollow output shaft (C)

Dimensions in millimetres

#### - Foot mounting motor, PF M33 - C projecting gearbox



Type	Projecting gearboxes								Weight*	
	RD	R	x	HG	V	VA	HF	I		
MVA	110	109,5	38,6	40	60,5	80	49	36	80	kg

\* Gearbox only.

Type	Hollow output shaft					
	D	E	MC	GA	F	CP
MVA	16	80	30	18	5	16

Type	Other hollow shaft available <sup>1</sup>					
	D1	E1	MC1	GA1	F1	CP1
MVA	20	80	30	23	6	16

Type	Fast shaft (on request)					
	DD	ED	GD	FD	OD	ZD
MVA	11	23	12,5	4	M4	10

1. The letters are indexed to differentiate them from those shown on the standard hollow shaft diagram.

Frame size	Induction motors												Max. weight	Max. weight				
	LS 3-phase and single phase																	
	AC	A	AA	AB	B	BB	C	X	CA	K	H	HA	LB1	LB2	HD	kg	HD	kg
56	110	90	24	104	71	89	36	9	5	6	56	5	156	132	141	3,4	146	3,5
63	124	100	30	115	80	94	40	8	10	7	63	6	172	150	158	4,3	173	4,5
71 <sup>1</sup>	140	112	22	126	90	104	45	7	16	7	71	6	183	155	173	6,5	200	7,5

1. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

Type	Additional brake dimensions			Weight <sup>1</sup> kg	
	EF max.				
	FMC	FAST	FCR		
56	50	-	-	0,9	
63	50	-	-	0,9	
71 <sup>2</sup>	50	28	90	0,9	
				2	
				2,5	

1. Additional brake weight

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

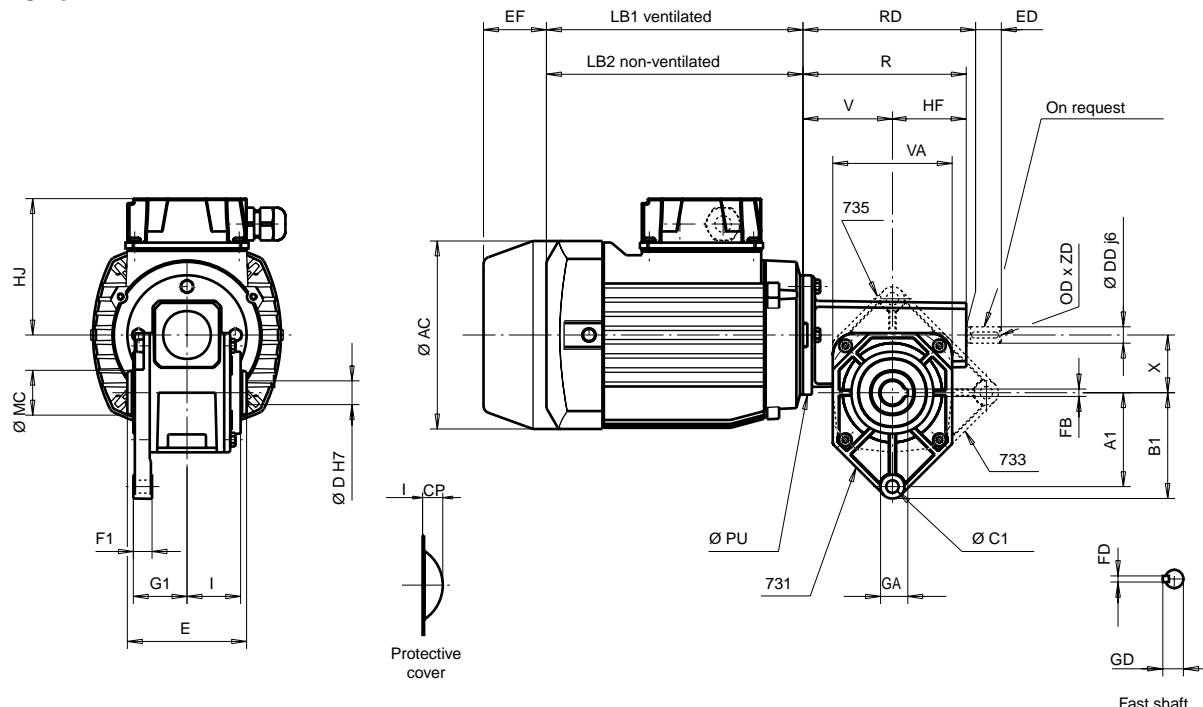
## Minibloc MVA

### Dimensions

Dimensions of Minibloc MVA geared motors, MI integral mounting, hollow output shaft (C), with torque arm

Dimensions in millimetres

#### - M73 - C form



Gearboxes with torque arm														Weight*
Type	RD	R	x	B1	A1	I	G1	F1	C1	V	VA	HF	PU	kg
<b>MVA</b>	110	109,5	38,6	71,5	63	36	36	12,5	8,3	60,5	80	49	80	2

\* Gearbox only.

Hollow output shaft						Other hollow shaft available <sup>1</sup>						Fast shaft (on request)							
Type	D	E	MC	GA	F	Type	D1	E1	MC1	GA1	F1	CP1	Type	DD	ED	GD	FD	OD	ZD
<b>MVA</b>	16	80	30	18	5	<b>MVA</b>	20	80	30	23	6	16	<b>MVA</b>	11	23	12,5	4	M4	10

1. The letters are indexed to differentiate them from those shown on the standard hollow shaft diagram.

Frame size	Induction and brake motors												
	LS 3-phase				LS single phase				Brakes				
	AC	HJ	LB1	LB2	Max. weight	AC	HJ	LB1	LB2	Max. weight	EF max.	Weight <sup>1</sup> kg	
size	kg				kg	kg	kg	kg	kg	kg	FMC FAST FCR	FMC FAST FCR	
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90

1. Additional brake weight

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

B

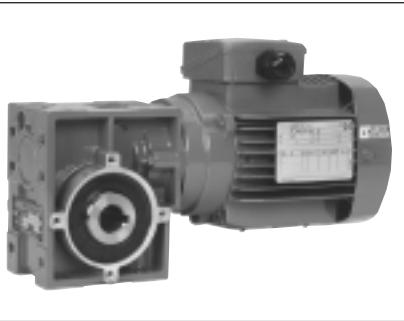
PERPENDICULAR OUTPUT GEARED MOTORS



# Electromechanical products

## Multibloc 2100

### General



Multibloc 2100 geared motors with worm gear are used to adapt the speed of the electric motor to that of the driven machine. Their size is therefore determined by the motor power ( $P$ ) expressed in kilowatts (kW) and the output speed of rotation of the gearbox ( $n_S$ ) in revolutions per minute ( $\text{min}^{-1}$ ).

The main characteristic of the speed reducers is the nominal output torque ( $M_{nS}$ ) expressed in Newton-metres (N.m).

$$M_{nS} = \frac{P \times 9550}{n_S} \times \text{efficiency}$$

Nominal output torque : from 5 N.m to 55 N.m.  
Power ratings : from 0.045 to 0.55 kW.  
Reduction ratios : from 7.5 to 100.  
Efficiency : 45 % to 84 %.  
Very quiet operation.

### Construction

#### Description of Multibloc (Mb) gearboxes

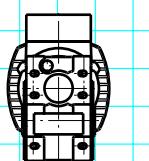
Component	Materials	Remarks
Housing	Aluminium	- monobloc - multiposition - die-cast aluminium - heavily ribbed to improve the mechanical resistance and thermal dissipation
Gears	Steel + bronze	- worm and wheel system • worm in tempered steel, ground sides • wheel in centrifuged bronze
Shaft	Steel	- grinding of sealing surfaces - key in accordance with DIN 6883 - tolerance of diameters in accordance with IEC 72-1 (DIN 748) - for output shaft, tapped hole on shaft extension
Lipseals	Acrylonitrile	- monobloc housing, shaft seals ensure dust and damp protection - no hole opening into the housing
Lubrication	Synthetic oil	- delivered with the quantity of oil corresponding to a multiposition operation - no maintenance, lubricated for the lifetime of the gearbox - no drain, level or fill plug - vent hole on request
Mounting		AP : gearbox with input shaft MU : geared motor with IEC motor, constructed with universal mounting
Standard motor		LS : multivoltage 220/380 V, 230/400 V, 240/415 V 3-phase and 230 V single phase - pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down) - terminal box fitted with a cable gland with system preventing accidental removal of cable - IP 55 standard protection - fixing on gearbox by B14 flange
Brake motor		FMC : 3-phase or single phase failsafe brake induction motor, from 0.06 to 0.37 kW FCR : 3-phase failsafe brake induction motor, from 0.25 to 0.55 kW FAST : 3-phase failsafe brake induction motor with field deviator from 0.25 to 0.55 kW.
Other motors		MFA : D.C. motor from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ) IP 23/44 MBT : low voltage D.C. motor
Safety device	Plastic	Protective cover on the output opposite the working shaft for all gearboxes with hollow shaft or extension shaft
Finish	Paint	Shade : RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 $\mu\text{m}$ )

# Electromechanical products

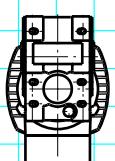
## Multibloc 2100

### Mounting positions

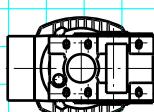
#### Standard Multibloc 2101 N multiposition M00



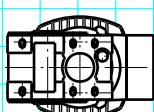
B00



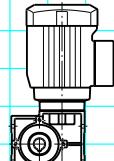
P00



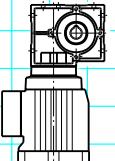
H00



T00



V00

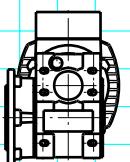


W00

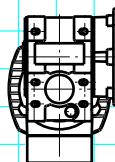
The position should be specified if vent, fill, level or drain holes are required.

B

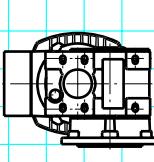
#### Standard Multibloc 2101 with flange BS multiposition M50 or M05 or M55



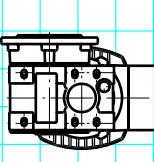
B50



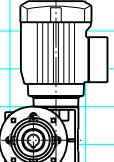
P50



H50



T50



V50

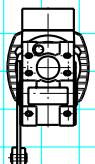


W50

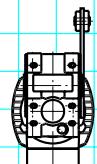
Other flange positions : on the right (eg. : B05), on both sides (eg. : B55).

The position should be specified if vent, fill, level or drain holes are required.

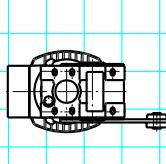
#### Standard Multibloc 2101 with torque arm multiposition M70 or M07



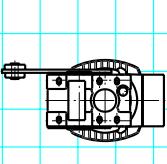
B70



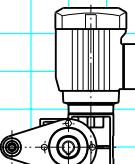
P70



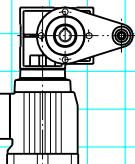
H70



T70



V70

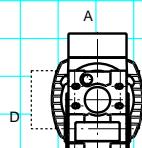


W70

Other torque arm positions : on the right (eg. : B07).

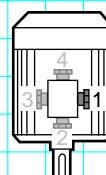
The position should be specified if vent, fill, level or drain holes are required.

#### Terminal box positions



A : standard

#### Cable gland positions



1 : standard

# Electromechanical products

## Multibloc 2100

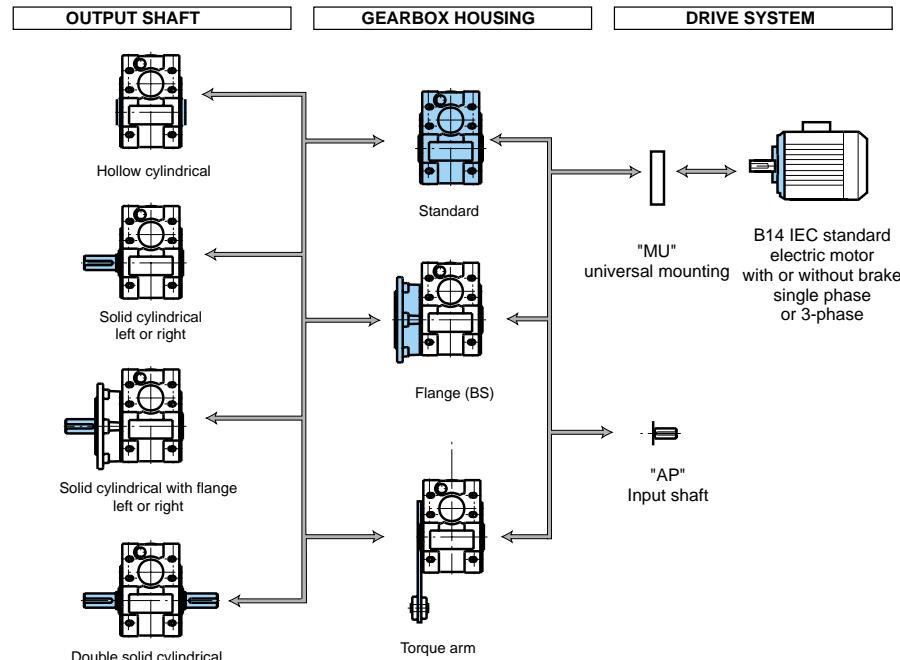
### Adaptation possibilities

Leroy-Somer offers several drives for its gearboxes which respond to very wide-ranging needs. They are described below and offered in this catalogue, either in the section relating to gearboxes for fixed-speed motors, or in the section on Variable speed control for the types of drive selected.

For other drives, consult the Leroy-Somer technical specialists who will be glad to assist.

 *Multibloc Mb 2101 gearboxes can be used in conjunction with the following drives :*

- single phase motors :
  - LS motor from 0.06 to 0.37 kW,
  - FMC brake motor from 0.06 to 0.37 kW.
- 3-phase induction motors :
  - LS motor from 0.045 to 0.37 kW,
  - FMC brake motor from 0.045 to 0.37 kW,
  - FCR brake motor from 0.25 to 0.55 kW,
  - FAST brake motor from 0.25 to 0.55 kW.
- D.C. motors :
  - MFA from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ).
- electronic drives :
  - MVE from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ).
- low voltage D.C. motors (12 to 48 V) :
  - MBT from 0.07 to 0.55 kW



### Designation / Coding

Mb	2101	M00	C	20	MU	4P, LS 63	0.12 kW
Gearbox type	Size and number of stages	Mounting position	Slow speed shaft	Reduction index	Universal mounting	Polarity, type of LS motor and frame size	Motor power

 *Example of coding :*

Mb 2101 - M00C - 20 - MU - 4P LS63 - 0.12 kW  
- 230/400 V - 3-PH - 50 Hz

# Electromechanical products

## Multibloc 2100

### Selection

Gearbox : Multibloc Mb M00 form or with M50 or M05 flange

Induction motors : LS series, IP 55, class F

*multivoltage* : 220/380 V - 230/400 V - 240/415 V from 0.04 to 0.55 kW

Brake motors : LS induction series, type FCR, FAST, FMC, class F

FCR : 4-pole - *multivoltage* : 220/380 V - 230/400 V - 240/415 V from 0.25 to 0.55 kW

FAST : 4-pole - *multivoltage* : 220/380 V - 230/400 V from 0.25 to 0.55 kW

FMC : 4 and 6-pole - *multivoltage* : 220/380 V - 230/400 V - 240/415 V from 0.04 to 0.37 kW

Universal mounting MU

Input shaft mounting AP

**3-PHASE  
Class I  
(K<sub>P</sub>≥1)**

**9 to 185 min<sup>-1</sup>**

Output speed min <sup>-1</sup>	Reduction index	Number of poles	LS motors, power in kW							
			0.045	0.06	0.09	0.12	0.18	0.25	0.37	0.55
			Type of 3-phase 4-pole B14 motor, and frame size							
			56		63		71			
9	100	6								
11	80	6								
14	100	4								
15	60	6								
17	80	4								
18	50	6								
23	40	6								
23	60	4								
27	50	4								
30	30	6								
34	40	4								
36	25	6								
45	20	6								
46	30	4								
59	25	4								
60	15	6								
69	20	4								
72	12.5	6								
90	10	6								
92	15	4								
110	12.5	4								
120	7.5	6								
137	10	4								
185	7.5	4								

B14 brake motors										
Type of 3-phase 4-pole motor and frame size										
FMC			56		63		71 <sup>1</sup>			
FAST/FCR							71			

Type of 3-phase 6-pole motor and frame size										
FMC		56		63		71 <sup>1</sup>				
FAST/FCR						71				

1. For 0.37 kW 4-pole and 0.25 kW 6-pole motors, the braking torque is equal to the motor rated torque.

The reduction indices correspond to exact reductions.

Not available.

#### Selection example :

Required power : 0.12 kW

Required speed : 45 min<sup>-1</sup>

Mains power : 3-phase 50 Hz 400 V

Mounting and position flange

Shaft extension : hollow

#### Designation :

Mb 2101 - M50C - 20 MU / 6P LS 63 0.12 kW  
400 V

# Electromechanical products

## Multibloc 2100

### Selection

**SINGLE PHASE**  
Class I  
( $K_p \geq 1$ )

Gearbox : Multibloc Mb M00 form or with M50 or M05 flange  
 Induction motors : LS series single phase, 4-pole, IP 55, class F  
*multivoltage* : 220/240 V from 0.06 to 0.37 kW  
 Brake motors : single phase 4-pole induction  
 FMC : *multivoltage* : 220/240 V from 0.06 to 0.37 kW

Universal mounting MU

Input shaft mounting AP

14 to 185 min<sup>-1</sup>

Output speed min <sup>-1</sup>	Reduction index	LS motors, power in kW					
		0.06	0.09	0.12	0.18	0.25	0.37
		56 P	63 P	63 P	71 P	71 P	71 P
14	100						
17	80						
23	60						
27	50						
34	40						
46	30						
55	25						
69	20						
91	15						
109	12,5						
137	10						
185	7,5						

LS 4-pole single phase brake motors	Power in kW					
	0,06	0,09	0,12	0,18	0,25	0,37 <sup>1</sup>
	Type of LS single phase motor and frame size					
FMC	56 P	63 P	63 P	71 P	71 P	71 P

1. For 0.37 kW 4-pole motors, the braking torque is equal to the motor rated torque.

The reduction indices correspond to exact reductions.

Note : Single phase motors have a permanent capacitor ( $C_D/C_N \approx 0.6$ ).

B

PERPENDICULAR OUTPUT GEARED MOTORS

#### Selection example :

Required power : 0.06 kW  
 Required speed : 36 min<sup>-1</sup>  
 Mains power : single phase 50 Hz 230 V  
 Mounting and position baseplate - horizontal  
 Shaft extension : hollow

#### Designation :

Mb 2101 - M00C - 40 MU / 4P LS 56 P  
 0.06 kW 230 V

# Electromechanical products

## Multibloc 2100

### Selection

#### Multibloc 2100 selection data

##### Options :

3-Ph brake motor = 6P LS56 FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
9	21	1,2	100	Mb 21	6P LS56	-
11	18,9	1,7	80	Mb 21	6P LS56	-
15	15,6	2,3	60	Mb 21	6P LS56	-
18	13,8	2,6	50	Mb 21	6P LS56	-
22	12	> 3	40	Mb 21	6P LS56	-
30	9,8	> 3	30	Mb 21	6P LS56	-
36	8,9	> 3	25	Mb 21	6P LS56	-
45	7,3	> 3	20	Mb 21	6P LS56	-
60	5,8	> 3	15	Mb 21	6P LS56	-
72	4,9	> 3	12,5	Mb 21	6P LS56	-
90	3,9	> 3	10	Mb 21	6P LS56	-
120	3	> 3	7,5	Mb 21	6P LS56	-

MOTOR POWER  
0,045 kW  
6 poles  
50 Hz

##### Options :

3-Ph brake motor = 4P LS56 FMC  
1-Ph brake motor = 4P LS56P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
13,8	13,7	2,1	100	Mb 21	4P LS56	4P LS56P
17,3	12,3	2,8	80	Mb 21	4P LS56	4P LS56P
23	10,2	> 3	60	Mb 21	4P LS56	4P LS56P
28	8,8	> 3	50	Mb 21	4P LS56	4P LS56P
35	7,6	> 3	40	Mb 21	4P LS56	4P LS56P
46	6,1	> 3	30	Mb 21	4P LS56	4P LS56P
55	5,4	> 3	25	Mb 21	4P LS56	4P LS56P
69	4,5	> 3	20	Mb 21	4P LS56	4P LS56P
92	3,5	> 3	15	Mb 21	4P LS56	4P LS56P
110	3	> 3	12,5	Mb 21	4P LS56	4P LS56P
138	2,4	> 3	10	Mb 21	4P LS56	4P LS56P
184	1,9	> 3	7,5	Mb 21	4P LS56	4P LS56P

MOTOR POWER  
0,06 kW  
4 poles  
50 Hz

##### Options :

3-Ph brake motor = 4P LS63 FMC  
6P LS63 FMC

1-Ph brake motor = 4P LS63P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
8,6	41	0,76	100	Mb 21	6P LS63	-
11	35	1	80	Mb 21	6P LS63	-
14	30,1	1,4	60	Mb 21	6P LS63	-
14,5	23	1,26	100	Mb 21	4P LS56	4P LS63P
17	26,8	1,7	50	Mb 21	6P LS63	-
17,5	21,6	1,57	80	Mb 21	4P LS56	4P LS63P
22	21,9	2,3	40	Mb 21	6P LS63	-
23	17,6	2,1	60	Mb 21	4P LS56	4P LS63P
28	15,7	2,5	50	Mb 21	4P LS56	4P LS63P
29	17,8	> 3	30	Mb 21	6P LS63	-
34	16,4	2,8	25	Mb 21	6P LS63	-
35	13	> 3	40	Mb 21	4P LS56	4P LS63P
43	13,6	> 3	20	Mb 21	6P LS63	-
47	10,4	> 3	30	Mb 21	4P LS56	4P LS63P
56	9,4	> 3	25	Mb 21	4P LS56	4P LS63P
57	10,6	> 3	15	Mb 21	6P LS63	-
69	9	> 3	12,5	Mb 21	6P LS63	-
70	7,7	> 3	20	Mb 21	4P LS56	4P LS63P
86	7,4	> 3	10	Mb 21	6P LS63	-
93	6	> 3	15	Mb 21	4P LS56	4P LS63P
112	5,1	> 3	12,5	Mb 21	4P LS56	4P LS63P
115	5,7	> 3	7,5	Mb 21	6P LS63	-
140	4,2	> 3	10	Mb 21	4P LS56	4P LS63P
187	3,2	> 3	7,5	Mb 21	4P LS56	4P LS63P

MOTOR POWER  
0,09 kW  
4 or  
6 poles  
50 Hz

##### Options :

3-Ph brake motor = 4P LS63 FMC

6P LS63 FMC

1-Ph brake motor = 4P LS63P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
12	44,9	0,8	80	Mb 21	6P LS63	-
14	34,4	0,8	100	Mb 21	4P LS63	4P LS63P
15	41	1	60	Mb 21	6P LS63	-
17,6	30,6	1,1	80	Mb 21	4P LS63	4P LS63P
18	35	1,3	50	Mb 21	6P LS63	-
23	29	1,8	40	Mb 21	6P LS63	-
23,5	24,4	1,5	60	Mb 21	4P LS63	4P LS63P
28	22,1	1,8	50	Mb 21	4P LS63	4P LS63P
31	22,9	2,4	30	Mb 21	6P LS63	-
35	18,6	2,4	40	Mb 21	4P LS63	4P LS63P
37	21	2,1	25	Mb 21	6P LS63	-
46	17,4	2,8	20	Mb 21	6P LS63	-
47	14,9	> 3	30	Mb 21	4P LS63	4P LS63P
56	13,3	> 3	25	Mb 21	4P LS63	4P LS63P
61	13,7	> 3	15	Mb 21	6P LS63	-
71	11	> 3	20	Mb 21	4P LS63	4P LS63P
74	11,6	> 3	12,5	Mb 21	6P LS63	-
92	9,6	> 3	10	Mb 21	6P LS63	-
94	8,5	> 3	15	Mb 21	4P LS63	4P LS63P
113	7,2	> 3	12,5	Mb 21	4P LS63	4P LS63P
123	7,5	> 3	7,5	Mb 21	6P LS63	-
141	6,8	> 3	10	Mb 21	4P LS63	4P LS63P
188	4,6	> 3	7,5	Mb 21	4P LS63	4P LS63P

MOTOR POWER  
0,12 kW  
4 or  
6 poles  
50 Hz

Note : On-load speeds are established based on the characteristics for 3-phase motors.

# Electromechanical products

## Multibloc 2100

### Selection

#### Multibloc 2100 selection data

##### Options :

3-Ph brake motor = 4P LS63 FMC  
6P LS71 FMC  
6P LS71 FCR  
6P LS71 FAST  
1-Ph brake motor = 4P LS71P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
16	58	0,73	60	Mb 21	6P LS71	-
17,4	49,4	0,7	80	Mb 21	4P LS63	4P LS71P
19	51,6	0,9	50	Mb 21	6P LS71	-
23	40	0,95	60	Mb 21	4P LS63	4P LS71P
24	43,7	1,2	40	Mb 21	6P LS71	-
28	35,6	1,1	50	Mb 21	4P LS63	4P LS71P
31	35,5	1,6	30	Mb 21	6P LS71	-
35	29,5	1,5	40	Mb 21	4P LS63	4P LS71P
38	31,7	1,4	25	Mb 21	6P LS71	-
46	24,3	2	30	Mb 21	4P LS63	4P LS71P
47	26,7	1,8	20	Mb 21	6P LS71	-
56	21,2	1,9	25	Mb 21	4P LS63	4P LS71P
63	20,8	2,5	15	Mb 21	6P LS71	-
70	17,7	2,4	20	Mb 21	4P LS63	4P LS71P
75	17,6	> 3	12,5	Mb 21	6P LS71	-
93	12,9	> 3	15	Mb 21	4P LS63	4P LS71P
94	14,4	> 3	10	Mb 21	6P LS71	-
111	11,8	> 3	12,5	Mb 21	4P LS63	4P LS71P
125	10,6	> 3	7,5	Mb 21	6P LS71	-
139	9,6	> 3	10	Mb 21	4P LS63	4P LS71P
185	7,4	> 3	7,5	Mb 21	4P LS63	4P LS71P



##### Options :

3-Ph brake motor = 4P LS71 FMC  
4P LS71 FCR  
4P LS71 FAST  
6P LS71 FMC  
6P LS71 FCR  
6P LS71 FAST  
1-Ph brake motor = 4P LS71P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
21	70,5	0,72	40	Mb 21	6P LS71	-
24	55,7	0,7	60	Mb 21	4P LS71	4P LS71P
28	56,3	1	30	Mb 21	6P LS71	-
29	49	0,8	50	Mb 21	4P LS71	4P LS71P
35	48	0,96	25	Mb 21	6P LS71	-
36	41,8	1,1	40	Mb 21	4P LS71	4P LS71P
42	42	1,2	20	Mb 21	6P LS71	-
48	33	1,5	30	Mb 21	4P LS71	4P LS71P
56	32,9	1,6	15	Mb 21	6P LS71	-
57	30,2	1,3	25	Mb 21	4P LS71	4P LS71P
67	28,2	1,2	12,5	Mb 21	6P LS71	-
72	24	1,8	20	Mb 21	4P LS71	4P LS71P
84	23	2,1	10	Mb 21	6P LS71	-
95	19,4	2,3	15	Mb 21	4P LS71	4P LS71P
112	17,9	2	7,5	Mb 21	6P LS71	-
114	16,3	2,3	12,5	Mb 21	4P LS71	4P LS71P
143	13,5	2,3	10	Mb 21	4P LS71	4P LS71P
190	10,4	2,3	7,5	Mb 21	4P LS71	4P LS71P



##### Options :

3-Ph brake motor = 4P LS71 FMC  
4P LS71 FCR  
4P LS71 FAST  
1-Ph brake motor = 4P LS71P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
36	63	0,7	40	Mb 21	4P LS71	4P LS71P
47	52	0,97	30	Mb 21	4P LS71	4P LS71P
57	46	0,87	25	Mb 21	4P LS71	4P LS71P
71	38,3	1,1	20	Mb 21	4P LS71	4P LS71P
95	29,4	1,5	15	Mb 21	4P LS71	4P LS71P
114	25	1,5	12,5	Mb 21	4P LS71	4P LS71P
142	21	1,48	10	Mb 21	4P LS71	4P LS71P
189	16	1,5	7,5	Mb 21	4P LS71	4P LS71P



##### Options :

3-Ph brake motor = 4P LS71 FCR  
4P LS71 FAST

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
70	58,5	0,7	20	Mb 21	4P LS71	-
93	45,8	1	15	Mb 21	4P LS71	-
112	38,4	1	12,5	Mb 21	4P LS71	-
140	31,9	1	10	Mb 21	4P LS71	-
187	24,4	1	7,5	Mb 21	4P LS71	-



Note : On-load speeds are established based on the characteristics for 3-phase motors.

# Electromechanical products

## Multibloc 2100

### Gearbox only (AP) characteristics

**Input speed : 2800 min<sup>-1</sup>**

Output speed min <sup>-1</sup>	Reduction	Max. power kW	Max. torque N.m
28,0	100	0,153	22,0
35,0	80	0,182	24,0
46,7	60	0,244	28,0
56,0	50	0,293	30,0
70,0	40	0,334	29,5
93,3	30	0,391	28,0
112,0	25	0,452	29,0
140,0	20	0,541	28,9
186,7	15	0,635	26,5
224,0	12,5	0,679	24,0
280,0	10	0,734	21,3
373,3	7,5	0,737	16,4

**Input speed : 1400 min<sup>-1</sup>**

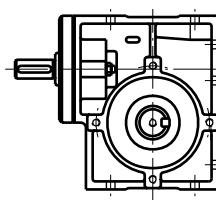
Output speed min <sup>-1</sup>	Reduction	Max. power kW	Max. torque N.m
14,0	100	0,105	29,0
17,5	80	0,131	34,0
23,3	60	0,170	37,5
28,0	50	0,200	40,0
35,0	40	0,260	44,5
46,7	30	0,349	49,2
56,0	25	0,321	40,0
70,0	20	0,409	43,0
93,3	15	0,543	45,0
112,0	12,5	0,544	38,0
140,0	10	0,543	31,4
186,7	7,5	0,543	24,1

**Input speed : 900 min<sup>-1</sup>**

Output speed min <sup>-1</sup>	Reduction	Max. power kW	Max. torque N.m
9,0	100	0,076	31,0
11,3	80	0,096	36,0
15,0	60	0,129	42,0
18,0	50	0,158	46,5
22,5	40	0,199	51,0
30,0	30	0,269	56,0
36,0	25	0,240	45,0
45,0	20	0,307	48,5
60,0	15	0,409	51,0
72,0	12,5	0,513	55,0
90,0	10	0,540	47,5
120,0	7,5	0,541	36,9

**Input speed : 500 min<sup>-1</sup>**

Output speed min <sup>-1</sup>	Reduction	Max. power kW	Max. torque N.m
5,0	100	0,052	34,0
6,3	80	0,069	43,0
8,3	60	0,092	50,0
10,0	50	0,115	57,0
12,5	40	0,143	61,0
16,7	30	0,188	67,0
20,0	25	0,167	54,0
25,0	20	0,212	58,0
33,3	15	0,283	61,0
40,0	12,5	0,350	65,0
50,0	10	0,376	58,0
66,7	7,5	0,383	46,0



# **Electromechanical products**

## **Multibloc 2100**

## Load on slow speed shaft

The permissible loads on the slow speed shaft depends on the reduction.

**Force in N.m.**

Gearbox characteristics		Clockwise or anti-clockwise direction							
Reduction	Max. torque N.m	M00G	M50G	M50G & M00G		M00D	M05D	M05D & M00D	
		F <sub>r</sub>	F <sub>r</sub>	F <sub>a</sub> -	F <sub>a</sub> +	F <sub>r</sub>	F <sub>r</sub>	F <sub>a</sub> -	F <sub>a</sub> +
7,5	23	1342	1050	590	1248	1349	1003	1251	591
10	30	1454	1083	720	1460	1462	1088	1465	721
12,5	36	1547	1355	897	1707	1555	1355	1713	898
15	40	1645	1345	951	1832	1653	1345	1841	952
20	37	1883	1355	1194	2246	1893	1355	2253	1194
25	44	2009	1330	1336	2498	2010	1330	2504	1337
30	50	2131	1315	1525	2797	2143	1315	2802	1525
40	42	2450	1335	1868	3408	2464	1335	3405	1891
50	36	2600	1355	2081	3851	2600	1355	3896	2107
60	36	2600	1355	2304	4257	2600	1355	4112	2290
80	32	2650	1375	2686	5019	2600	1375	4980	2671
100	26	2700	1385	3008	5629	2600	1385	5500	2937

### Direction of force

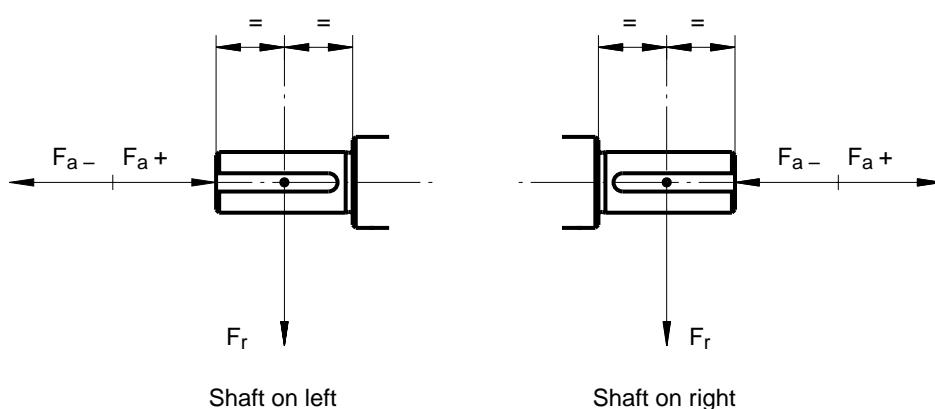
**M00D & M05D**       $F_a +$  = PULLING axial force on the shaft end.  
                                 $F_a -$  = PUSHING axial force on the shaft end.

**M00G & M50G**       $F_a +$  = PUSHING axial force on the shaft end.  
                                 $F_a -$  = PULLING axial force on the shaft end

$F_r$  = radial force on the shaft end 22.5 mm from the shoulder of the hollow shaft.

- Note : 1 Where there are 2 shaft ends, the load must be shared between them.  
 2 The force corresponds to the extension shaft in the hollow shaft.  
 3 These values correspond to the most adverse load conditions.

**SPECIAL CASES** : please consult Leroy Somer.



# Electromechanical products

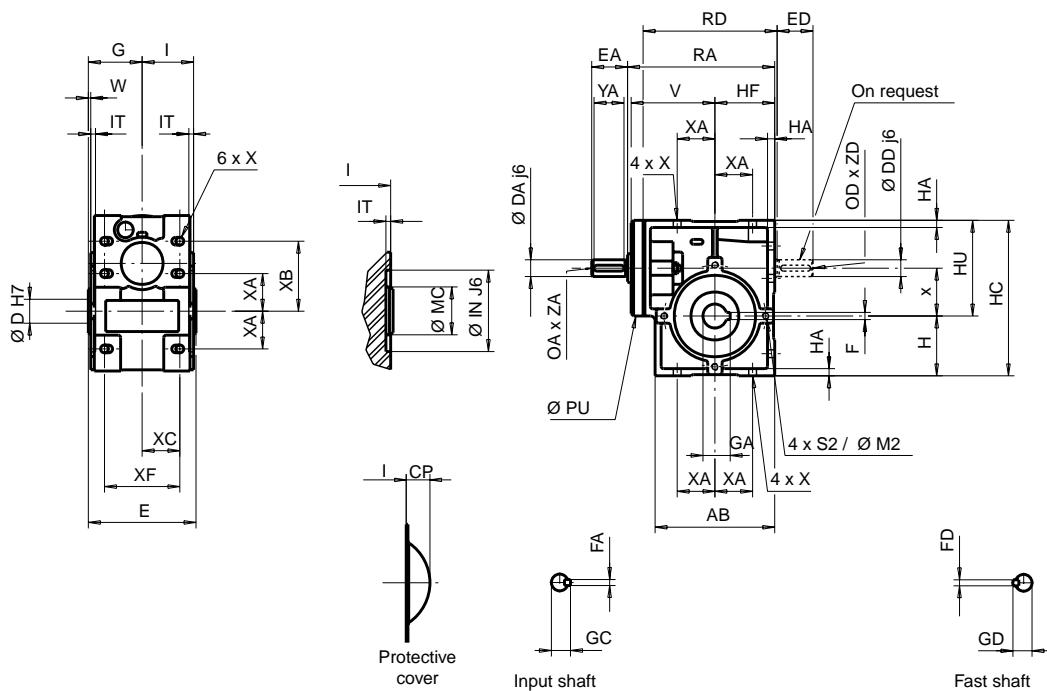
## Multibloc 2100

### Dimensions

Dimensions of Multibloc (Mb) gearboxes, AP input shaft mounting,  
hollow output shaft (C)

*Dimensions in millimetres*

#### - M00 - C standard form



Type	Standard gearboxes																		Weight kg				
	RA	HC	AB	RD	H	x	HU	HF	HA	V	XA	XB	XC	XF	G	I	IN	IT	X	S2	M2	PU	
Mb 2101	123	130	100	112	50	40	80	50	6	70	31,5	58,5	31,5	63	45	43	68	3	6,5	M6×15	85	80	3,1

Type	(AP) input shaft							Hollow output shaft						
	DA	EA	YA	GC	FA	OA	ZA	D	E	GA	F	MC	W	CP
Mb 2101	14	30	25	16	5	M5	15	20	90	22,8	6	40	2	20

Type	Fast shaft (on request)					
	DD	ED	GD	FD	OD	ZD
Mb 2101	14	30	16	5	M5	15

# Electromechanical products

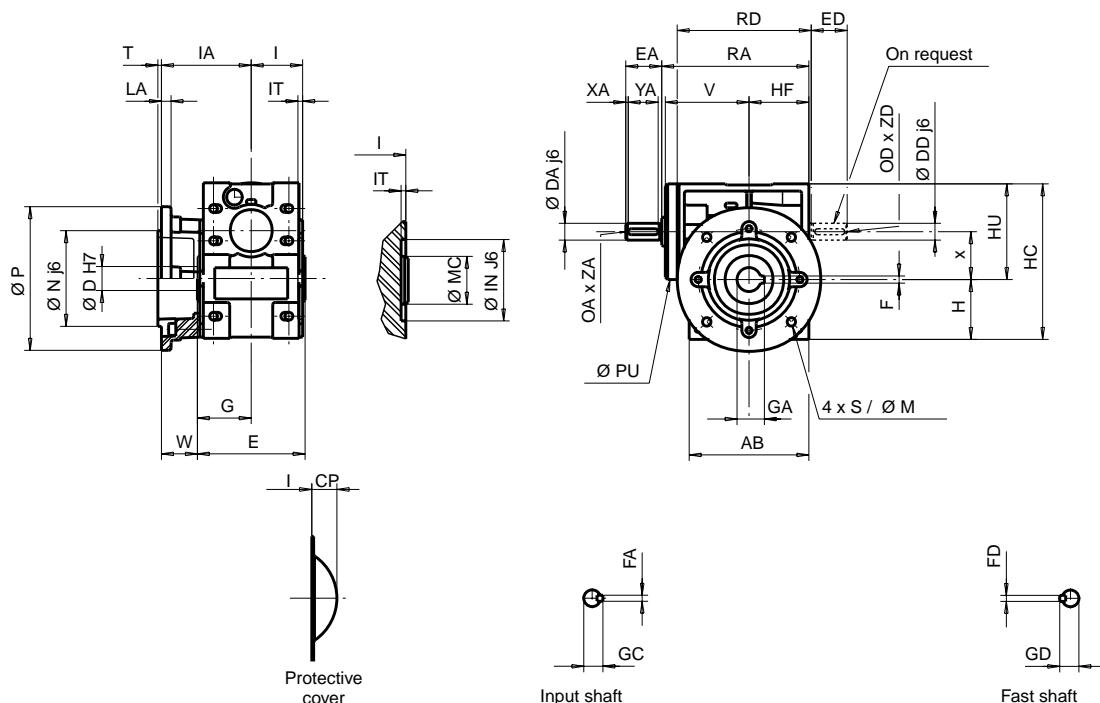
## Multibloc 2100

### Dimensions

Dimensions of Multibloc (Mb) gearboxes, AP input shaft mounting, hollow output shaft(C)

Dimensions in millimetres

#### - M50, M05 - C flange form



Type	Gearboxes with flange																		Weight kg			
	RA	HC	AB	RD	H	x	HU	HF	V	G	I	IA	IN	IT	M	N	P	S	LA	T	PU	
Mb 2101	123	130	100	112	50	40	80	50	70	45	43	75	68	3	100	80	120	7	8	3	80	3,4

#### Other possible flanges<sup>1</sup>

Type	BD1						BD2					
	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2
Mb 2101	85	70	105	7	8	3	115	95	140	9	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Input shaft (AP)						Hollow output shaft							
	DA	EA	YA	GC	FA	OA	ZA	D	E	GA	F	MC	W	CP
Mb 2101	14	30	25	16	5	M5	15	20	90	22,8	6	40	30	20

Type	Fast shaft (on request)						
	DD	ED	GD	FD	OD	ZD	
Mb 2101	14	30	16	5	M5	15	

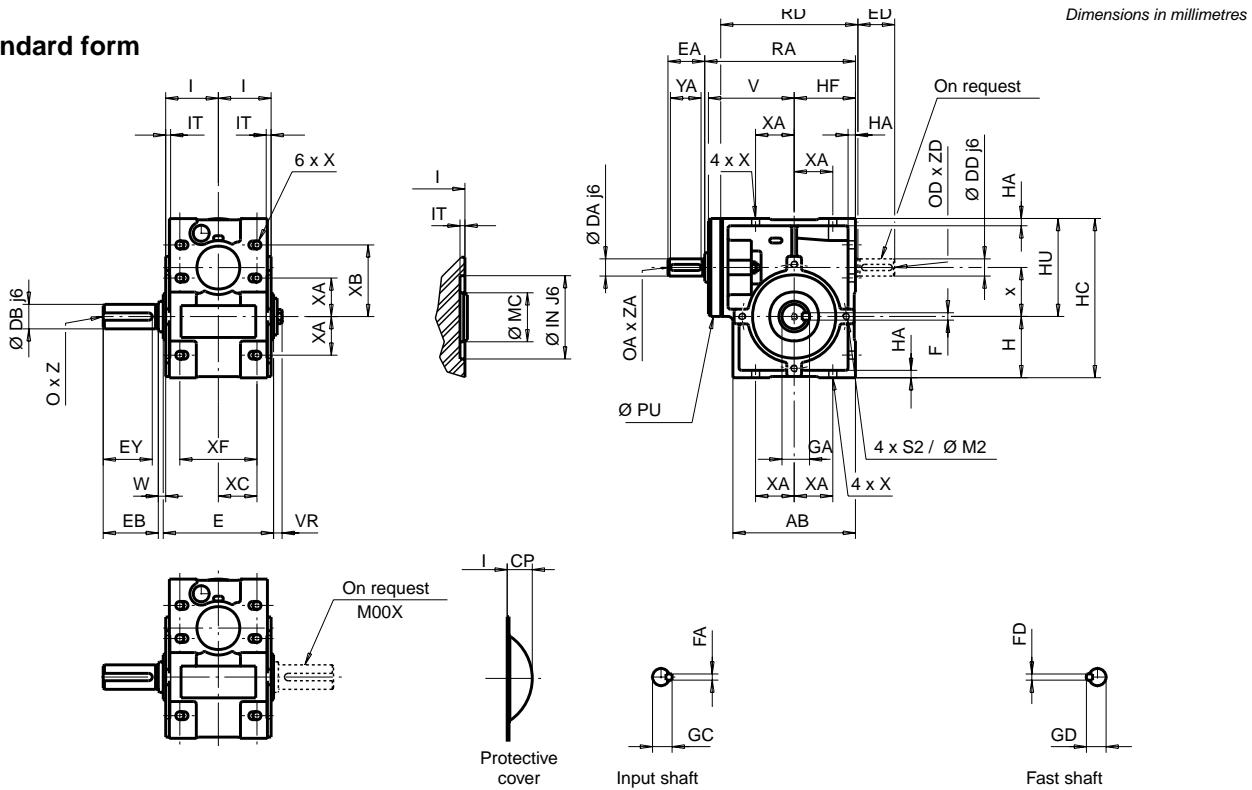
# Electromechanical products

## Multibloc 2100

### Dimensions

Dimensions of Multibloc (Mb) gearboxes, AP input shaft mounting, solid output shaft

#### - M00 standard form



Type	Standard gearboxes																		Weight kg			
	RA	HC	AB	RD	H	x	HU	HF	HA	V	XA	XB	XC	XF	I	IN	IT	X	S2	M2	PU	
Mb 2101	123	130	100	112	50	40	80	50	6	70	31,5	58,5	31,5	63	43	68	3	6,5	M6x15	85	80	3,4

Type	Input shaft (AP)							Solid output shaft										VR	CP
	DA	EA	YA	GC	FA	OA	ZA	DB	EB	EY	E	GA	F	W	MC	O	Z		
Mb 2101	14	30	25	16	5	M5	15	20	45	40	90	22,5	6	6	40	M6	15	7	20

Type	Fast shaft (on request)					
	DD	ED	GD	FD	OD	ZD
Mb 2101	14	30	16	5	M5	15

# Electromechanical products

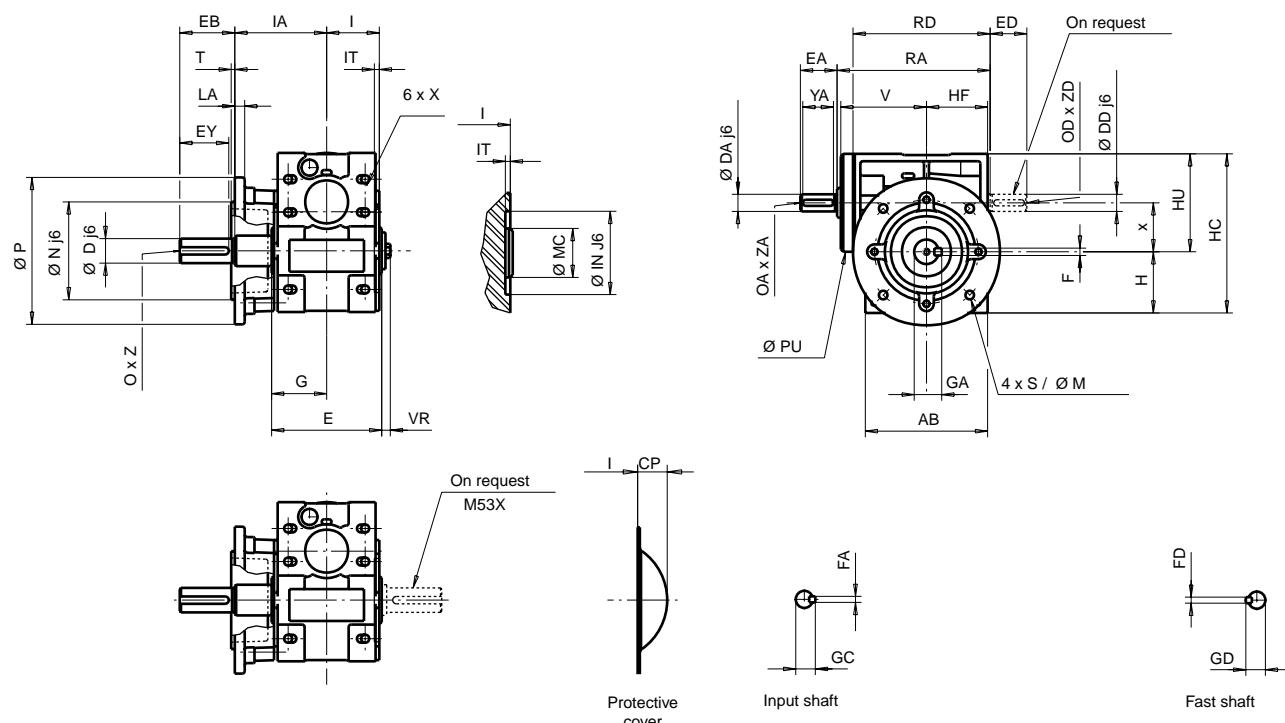
## Multibloc 2100

### Dimensions

Dimensions of Multibloc (Mb) gearboxes, AP input shaft mounting, solid output shaft

Dimensions in millimetres

#### - M50, M05 flange form



Type	Gearboxes with flange																		Weight kg			
	RA	HC	AB	RD	H	x	HU	HF	V	G	I	IA	IN	IT	M	N	P	S	LA	T	PU	
Mb 2101	123	130	100	112	50	40	80	50	70	45	43	75	68	3	100	80	120	7	8	3	80	3,8

#### Other possible flanges<sup>1</sup>

Type	BD1						BD2					
	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2
Mb 2101	85	70	105	7	8	3	115	95	140	9	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Input shaft (AP)							Hollow output shaft										
	DA	EA	YA	GC	FA	OA	ZA	DB	EB	EY	E	GA	F	MC	O	Z	VR	CP
Mb 2101	14	30	25	16	5	M5	15	20	45	40	90	22,5	6	40	M6	15	7	20

Type	Fast shaft (on request)						
	DD	ED	GD	FD	OD	ZD	
Mb 2101	14	30	16	5	M5	15	

# Electromechanical products

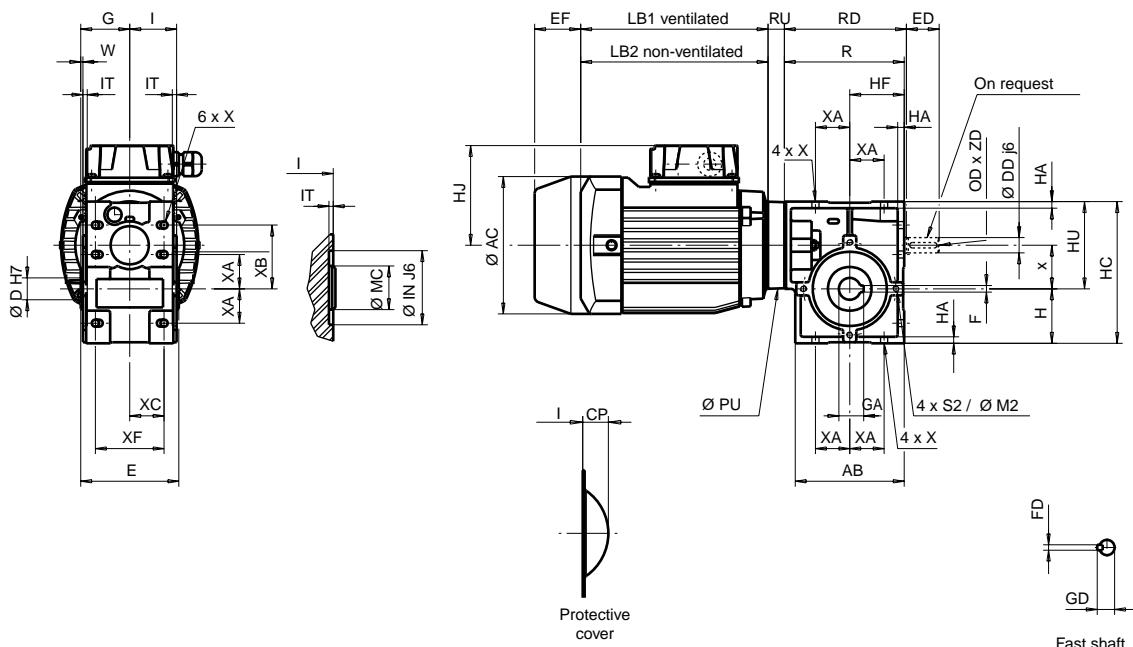
## Multibloc 2100

### Dimensions

Dimensions of Multibloc (Mb) geared motors, MU universal mounting, hollow output shaft (C)

Dimensions in millimetres

#### - M00 - C standard form



Type	Standard gearboxes																		Weight*			
	R	HC	AB	RD	RU	H	x	HU	HF	HA	XA	XB	XC	XF	G	I	IN	IT	X	S2	M2	
<b>Mb 2101</b>	110	130	100	112	15	50	40	80	50	6	31,5	58,5	31,5	63	45	43	68	3	6,5	M6x15	85	3

\* Gearbox only.

Type	Hollow output shaft						Fast shaft (on request)						
	D	E	GA	F	MC	W	CP	DD	ED	GD	FD	OD	ZD
<b>Mb 2101</b>	20	90	22,8	6	40	2	20	14	30	16	5	M5	15

Frame size	Induction and brake motors										Brakes				
	LS 3-phase					LS single phase									
	AC	HJ	LB1	LB2	PU	Max. weight	AC	HJ	LB1	LB2	PU	Max. weight	EF max.	Weight <sup>1</sup> kg	
56	110	85	156	135	80	3,4	110	90	156	135	80	3,5	50	-	-
63	124	95	172	150	90	4,3	124	110	172	150	90	4,5	50	-	-
71 <sup>2</sup>	140	102	183	155	105	6,5	140	129	183	155	105	7,5	50	28	90

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

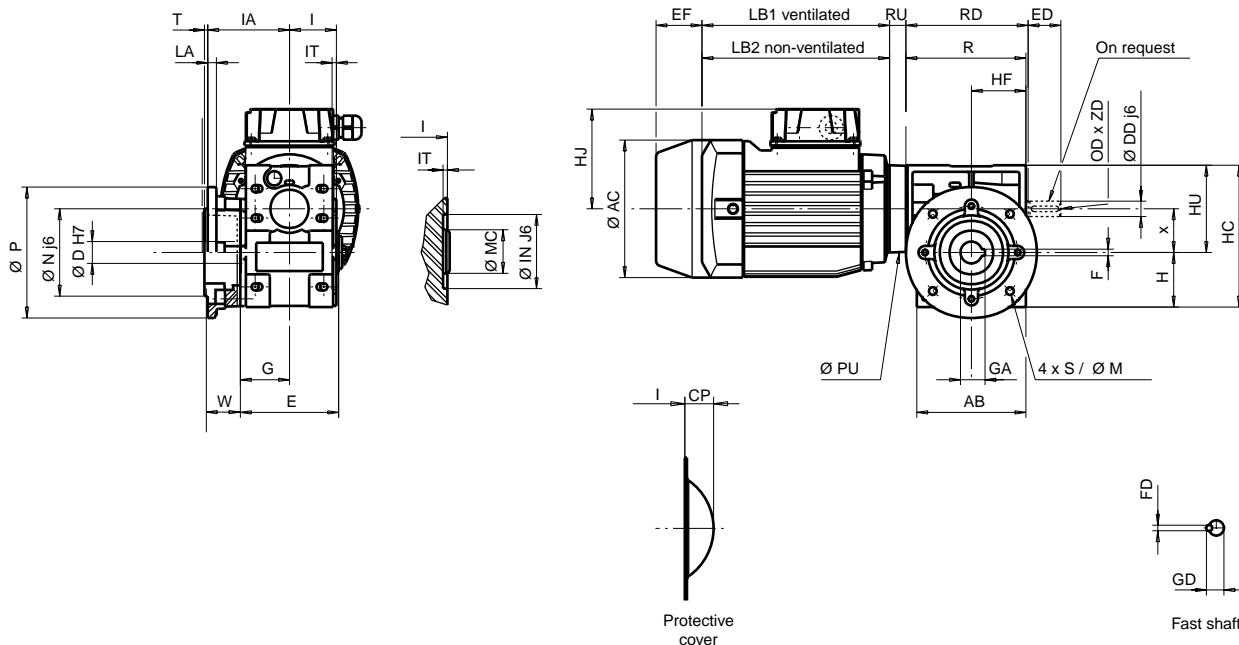
## Multibloc 2100

### Dimensions

Dimensions of Multibloc (Mb) geared motors, MU universal mounting, hollow output shaft (C)

Dimensions in millimetres

#### - M50, M05 - C flange form



Type	Gearboxes with flange																	Weight*			
	R	HC	AB	RD	RU	H	x	HU	HF	G	I	IA	IN	IT	M	N	P	S	LA	T	
Mb 2101	110	130	100	112	15	50	40	80	50	45	43	75	68	3	100	80	120	7	8	3	3,3

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>																		
	BD1			BD2															
Mb 2101	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2							

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Hollow output shaft						Fast shaft (on request)						
	D	E	GA	F	MC	W	CP	DD	ED	GD	FD	OD	ZD
Mb 2101	20	90	22,8	6	40	30	20	14	30	16	5	M5	15

Frame size	Induction and brake motors						Brakes								
	LS 3-phase			LS single phase			Brakes			Brakes					
	Max. weight			Max. weight			EF max.			Weight <sup>1</sup> kg					
AC	HJ	LB1	LB2	PU	kg	AC	HJ	LB1	LB2	PU	kg	FMC	FAST	FCR	
56	110	85	156	135	80	3,4	110	90	156	135	80	3,5	50	-	-
63	124	95	172	150	90	4,3	124	110	172	150	90	4,5	50	-	-
71 <sup>2</sup>	140	102	183	155	105	6,5	140	129	183	155	105	7,5	50	28	90

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

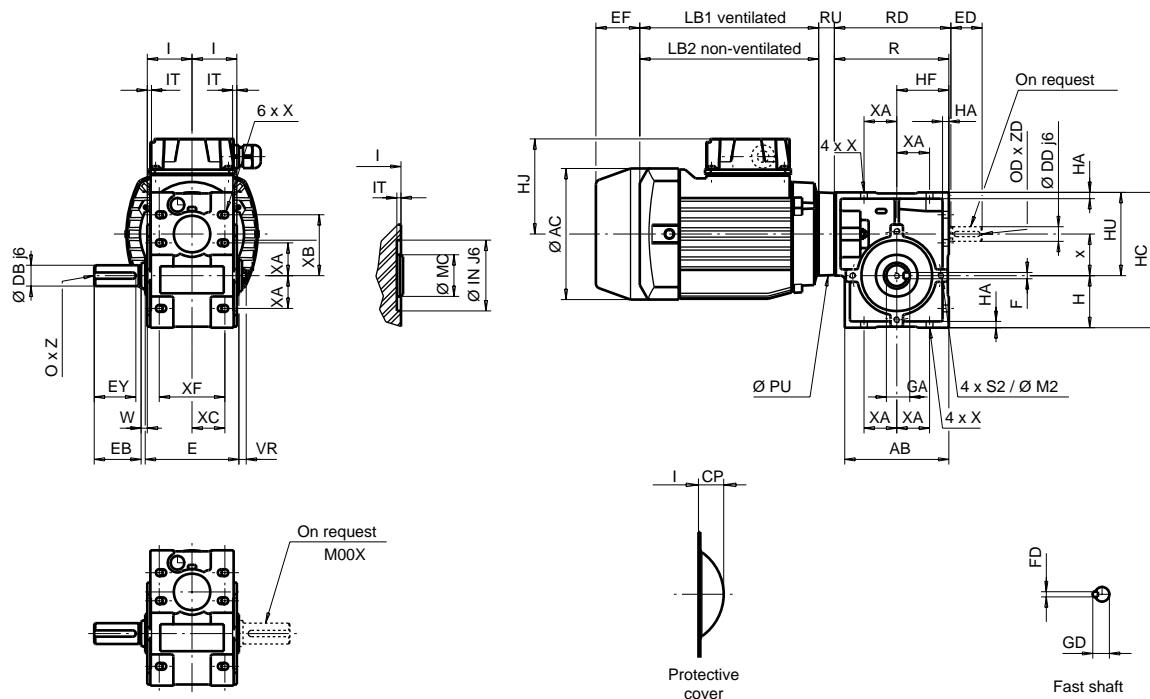
## Multibloc 2100

### Dimensions

Dimensions of Multibloc (Mb) geared motors, MU universal mounting, solid output shaft (separate)

Dimensions in millimetres

#### - M00 standard form



Type	Standard gearboxes															Weight*					
	R	HJ	AB	RD	RU	H	x	HU	HF	HA	XA	XB	XC	XF	I	IN	IT	X	S2	M2	
<b>Mb 2101</b>	110	130	100	112	15	50	40	80	50	6	31,5	58,5	31,5	63	43	68	3	6,5	M6x15	85	3,3

\* Gearbox only.

Type	Solid output shaft												Fast shaft (on request)					
	DB	EB	EY	E	GA	F	W	MC	O	Z	VR	CP	DD	ED	GD	FD	OD	ZD
<b>Mb 2101</b>	20	45	40	90	22,5	6	6	40	M6	15	7	20	14	30	16	5	M5	15

Frame size	Induction and brake motors												Brakes					
	LS 3-phase						LS single phase						Brakes					
	Max. weight						Max. weight						FMC	FAST	FCR	FMC	FAST	FCR
56	AC	HJ	LB1	LB2	PU	kg	AC	HJ	LB1	LB2	PU	kg	50	-	-	0,9	-	-
63	110	85	156	135	80	3,4	110	90	156	135	80	3,5	50	-	-	0,9	-	-
71 <sup>2</sup>	124	95	172	150	90	4,3	124	110	172	150	90	4,5	50	28	90	0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

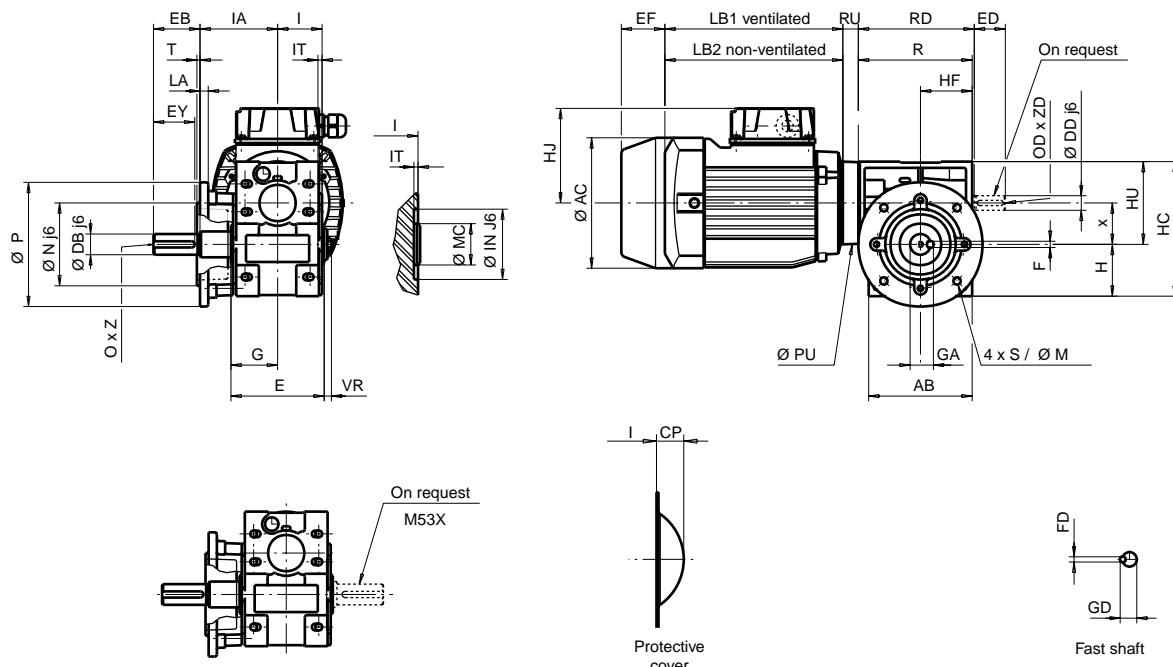
## Multibloc 2100

### Dimensions

Dimensions of Multibloc (Mb) geared motors, MU universal mounting, solid output shaft

Dimensions in millimetres

#### - M50, M05 flange form



Type	Gearboxes with flange																		Weight*		
	R	HC	AB	RD	RU	H	x	HU	HF	G	I	IA	IN	IT	M	N	P	S	LA	T	
Mb 2101	110	130	100	112	15	50	40	80	50	45	43	75	68	3	100	80	120	7	8	3	3,7

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>											
	BD1						BD2					
	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2
Mb 2101	85	70	105	7	8	3	115	95	140	9	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Solid output shaft										Fast shaft (on request)						
	DB	EB	EY	E	GA	F	MC	O	Z	VR	CP	DD	ED	GD	FD	OD	ZD
Mb 2101	20	45	40	90	22,5	6	40	M6	15	7	20	14	30	16	5	M5	15

Frame size	Induction and brake motors												Brakes					
	LS 3-phase						LS single phase						Brakes					
	Max. weight						Max. weight						FMC	FAST	FCR	FMC	FAST	FCR
56	AC	HJ	LB1	LB2	PU	kg	AC	HJ	LB1	LB2	PU	kg	50	-	-	0,9	-	-
63	110	85	156	135	80	3,4	110	90	156	135	80	3,5	50	-	-	0,9	-	-
71 <sup>2</sup>	124	95	172	150	90	4,3	124	110	172	150	90	4,5	50	-	-	0,9	-	-
71 <sup>2</sup>	140	102	183	155	105	6,5	140	129	183	155	105	7,5	50	28	90	0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0,25 kW 6-pole 3-phase, 0,37 kW 4-pole single phase, 0,55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

## Multibloc 2100

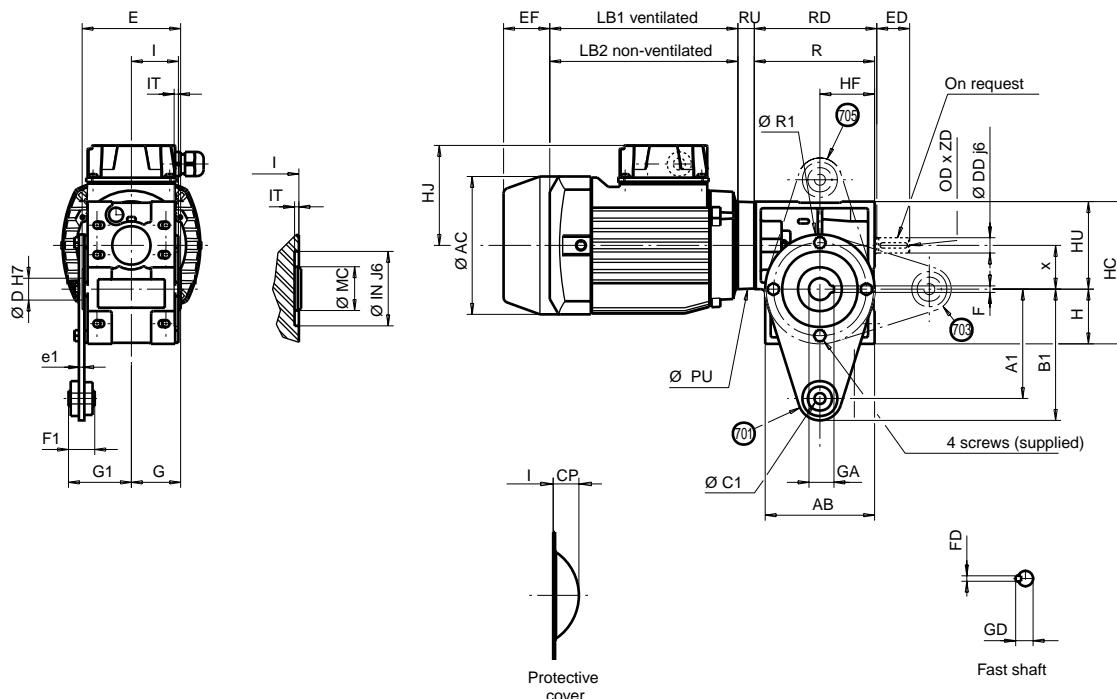
### Dimensions

Dimensions of Multibloc (Mb) geared motors, MU universal mounting, hollow output shaft (C), with torque arm

Dimensions in millimetres

For ease of installation on the machine, the torque arm is not mounted on the gearbox when supplied (fixing screws included).

#### - M70, M07 - C form



Type	Gearboxes with torque arm																		Weight*			
	R	HC	AB	RD	RU	H	x	HU	HF	G	I	IN	IT	A1	B1	R1	C1	F1	G1	e1	Screws	
<b>Mb 2101</b>	110	130	100	112	15	50	40	80	50	45	43	68	3	100	120	100	10	24	57,5	5	M6x16	3,4

\* Gearbox only.

Type	Hollow output shaft						Fast shaft (on request)					
	D	E	GA	F	MC	CP	DD	ED	GD	FD	OD	ZD
<b>Mb 2101</b>	20	90	22,8	6	40	20	14	30	16	5	M5	15

Frame size	Induction and brake motors												Weight <sup>1</sup> kg					
	LS 3-phase					LS single phase					Brakes							
	AC	HJ	LB1	LB2	PU	Max. weight	AC	HJ	LB1	LB2	PU	Max. weight	EF max.					
56	110	85	156	135	80	3,4	110	90	156	135	80	3,5	50	-	-			
63	124	95	172	150	90	4,3	124	110	172	150	90	4,5	50	-	-			
71 <sup>2</sup>	140	102	183	155	105	6,5	140	129	183	155	105	7,5	50	28	90	0,9	2	2,5

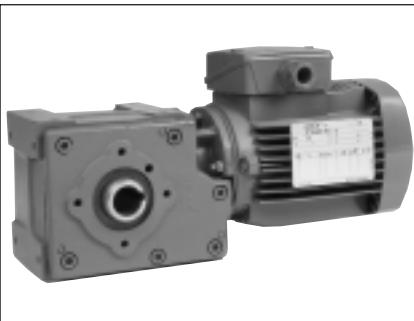
1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

## Minibloc MVDE-MVBE

### General



Minibloc MVDE-MVBE double reduction gearboxes.

- Input train : high quality worm and wheel system ensuring very quiet operation.
- Output train : helical gears in heat-treated steel ensuring high output performance.
- The unit is very compact and this combination allows high efficiency with the stated reductions.

Two sizes : MVDE-MVBE.  
Nominal output torque : from 15 to 80 N.m.  
Power ratings : from 0.06 to 0.37 kW.  
Reduction ratio : from 1/21 to 1/540.  
Two reduction stages.  
Reversible up to 1/100.  
Very quiet operation.

### Construction

#### Description of Minibloc MVDE-MVBE gearboxes

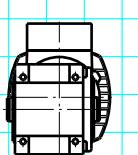
Component	Materials	Remarks
Housing	Aluminium	<ul style="list-style-type: none"> <li>- Monobloc</li> <li>- Very compact</li> <li>- Mounting holes on every side</li> <li>- Multiposition, allowing adaptation of baseplate, flanges, etc.</li> </ul>
Gears	Steel + bronze	<ul style="list-style-type: none"> <li>- Primary gear train : worm in heat-treated tempered steel, precision ground thread form, bronze wheel</li> <li>- Secondary train : helical gears in Ni Cr Mo steel</li> <li>- Ensures very quiet operation</li> </ul>
Shaft	Steel	<ul style="list-style-type: none"> <li>- Solid or hollow</li> <li>- Ground sealing surfaces</li> <li>- Key in accordance with DIN 6883</li> <li>- Tolerance of diameters in accordance with IEC 72-I (DIN 748)</li> <li>- Tapped holes on solid or removable shaft extensions</li> </ul>
Lipseals	Acrylonitrile	- Antidust lipseals on output shaft
End shield	Aluminium	- Ensures ruggedness of gearbox under heavy loads
Lubrication	Oil	<ul style="list-style-type: none"> <li>- No maintenance, lubricated for the lifetime of the gearbox</li> <li>- No drain, level or fill plug</li> <li>- Vent hole on request</li> <li>- Supplied with the quantity of oil corresponding to multiposition operation</li> </ul>
Mounting		MI : geared motor with integral motor
Standard motor		<p>LS : multivoltage 220/380 V, 230/400 V, 240/415 V 3-phase and 230 V single phase</p> <ul style="list-style-type: none"> <li>- Pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down)</li> <li>- Terminal box fitted with cable gland preventing accidental removal of cable</li> <li>- IP 55 standard protection</li> </ul>
Brake motor		<p>FMC : failsafe 3-phase or single phase brake motor, from 0.06 to 0.37 kW</p> <p>FCR : failsafe brake induction motor, from 0.25 to 0.37 kW</p> <p>FAST : failsafe brake induction motor with field deviator, from 0.25 to 0.37 kW</p>
Other motors		<p>MFA : D.C. motor IP 23-IP 44 from 0.075 to 0.37 kW (<math>3000 \text{ min}^{-1}</math>)</p> <p>MBT : low voltage D.C. motor</p>
Safety	Plastic	Protective cover on the output opposite the working shaft for all gearboxes with hollow or extension shaft
Finish	Paint	Shade : RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 $\mu\text{m}$ )

# Electromechanical products

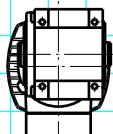
## Minibloc MVDE-MVBE

### Mounting positions

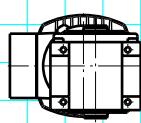
#### Standard MVDE - MVBE multiposition M00



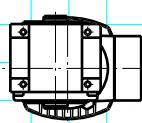
B00



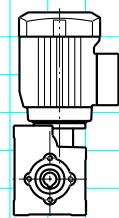
P00



H00



T00



V00

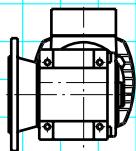


W00

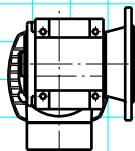
The position should be specified if vent, fill, level or drain holes are required.

B

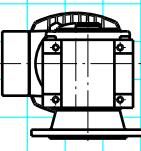
#### Standard MVDE - MVBE with flange B multiposition M50 or M05 or M55



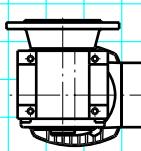
B50



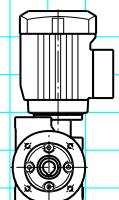
P50



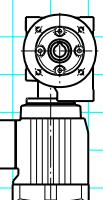
H50



T50



V50

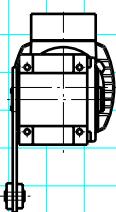


W50

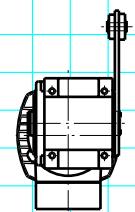
Other flange positions : right (eg. : B05), on both sides (eg. : B55).

The position should be specified if vent, fill, level or drain holes are required.

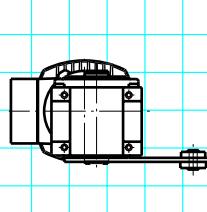
#### Standard MVDE - MVBE with torque arm multiposition M70 or M07



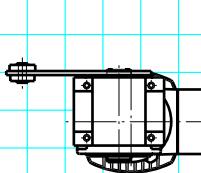
B70



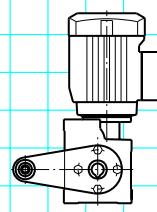
P70



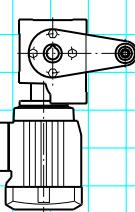
H70



T70



V70

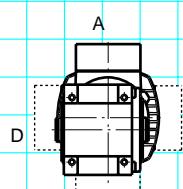


W70

Other torque arm position : right (eg. : B07).

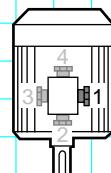
The position should be specified if vent, fill, level or drain holes are required.

#### Terminal box positions



A : standard

#### Cable gland positions



1 : standard

# Electromechanical products

## Minibloc MVDE-MVBE

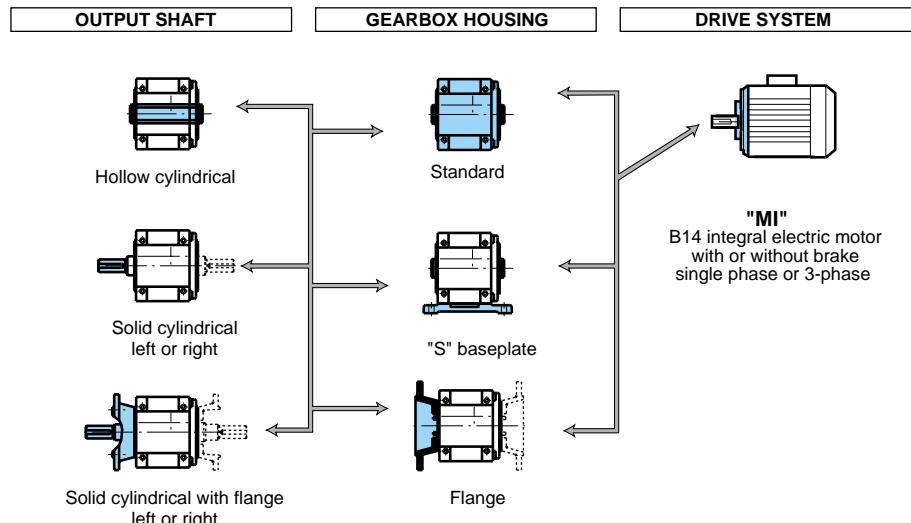
### Adaptation possibilities

Leroy-Somer offers several drives for its gearboxes which respond to very wide-ranging needs. They are described below and/or offered in this catalogue, either in the section relating to gearboxes for fixed-speed motors, or in the section on variable speed control for the types of drive selected.

For other drives, consult Leroy Somer technical specialists who will be glad to assist.

 *Minibloc MVDE-MVBE gearboxes can be used in conjunction with the following drives :*

- single phase motors :
  - LS motor from 0.06 to 0.37 kW,
  - FMC brake motor from 0.06 to 0.37 kW.
- 3-phase induction motors :
  - LS motors from 0.06 to 0.37 kW,
  - FMC brake motor from 0.06 to 0.37 kW,
  - FCR brake motors from 0.25 to 0.37 kW,
  - FAST brake motors 0.25 and 0.37 kW.
- D.C. motors :
  - MFA from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ).
- electronic drives :
  - MVE from 0.075 to 0.37 kW ( $3000 \text{ min}^{-1}$ ).
- low voltage D.C. motors (12 to 48 V) :
  - MBT from 0.07 to 0.37 kW.



### Designation / Coding

MV	BE	S1	M00	C	120	MI	4P, LS 63	0.12 kW
Minibloc gearbox type	Size	Type of mounting	Mounting position	Definition of output shaft	Reduction index	Integral mounting	Polarity Type of LS motor and frame size	Motor power

 *Example of coding :*

MVBE - S1 - M00C - 120 - MI - 4P LS63 - 0.12 kW - 230/400 V - 3-PH - 50 Hz

PERPENDICULAR OUTPUT GEARED MOTORS

# Electromechanical products

## Minibloc MVDE-MVBE

### Selection

Gearbox : Minibloc MV (MVDE-MVBE) plain housing M00 or with baseplate S1-M00 or flange M50 or M05  
 Induction motors : LS series, IP 55, class F, 4-pole

3-phase : *multivoltage* : 220/380 V - 230/400 V - 240/415 V from 0.06 to 0.37 kW

Single phase : *multivoltage* : 220/240 V from 0.06 to 0.37 kW

Brake motors : LS series induction, types FCR, FAST, FMC, class F

FCR : 4-pole - *multivoltage* : 220/380 V - 230/400 V - 240/415 V from 0.25 to 0.37 kW

FAST : 4-pole - *voltage* : 220/380 V - 230/400 V from 0.25 to 0.37 kW

FMC : 4-pole - *multivoltage* : 220/380 V - 230/400 V - 240/415 V from 0.06 to 0.37 kW

Integral mounting MI

Input shaft mounting AP

**Classe I**  
 $(K_p \geq 1)$

2.6 to 65.4 min<sup>-1</sup>

Average output speed min <sup>-1</sup>	Actual reduction index	LS motors, power in kW					
		0.06	0.09	0.12	0.18	0.25	0.37
		Type of B14 3-phase motor, 4-pole and frame size					
Average output speed min <sup>-1</sup>	Actual reduction index	MVDE	MVBE	56 P	63 P	71 P	
2,6	-	-	540				
3,2	-	-	450	MVBE			
4	345,5	360					
4,3	312,5	336	MVDE		MVBE		
4,7	-	300	MVBE				
5,1	280,8	275,5					
5,7	250	246					
6,2	224,6	228	MVDE				
7,6	187,5	187			MVBE		
7,9	-	180	MVBE				
10	138,2	144					
12	125	120					
12,9	112,3	108				MVBE	
14,8	93,8	98,4					
16,1	84,2	90					
20,1	69,1	72				MVBE	
23,2	62,5	60		MVDE			
30	44,9	49,2					
34,3	40,6	42					
40	36,5	34,4					
46,3	31,3	30					MVBE
57,2	25	24,6					
65,4	22,5	21					
B14 brake motors		Type of 3-phase 4-pole motor and frame size					
FMC		56		63		71 <sup>1</sup>	
FAST/FCR						71	
Type of single phase 4 pole motor and frame size							
FMC		56 P		63 P		71 P <sup>1</sup>	

1. For 0.37 kW 4-pole motors, the braking torque is equal to the motor rated torque.

Note : Single phase motors have a permanent capacitor ( $C_D/C_N \approx 0.6$ ).

#### Selection example :

Required power : 0.09 kW

Required speed : 9.9 min<sup>-1</sup>

Mains power : 3-phase 50 Hz 400 V

Mounting and position flange - horizontal

Shaft end : hollow

#### Designation :

MVBE M50C - 144 MI / 4P LS 56 0.09 kW  
400 V

# Electromechanical products

## Minibloc MVDE-MVBE

### Selection

#### Minibloc MVDE-MVBE selection data

##### Options :

3-Ph brake motor = 4P LS56 FMC  
1-Ph brake motor = 4P LS56P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
2,56	38	1,03	540	MVBE	4P LS56	4P LS56P
3,07	39,2	1,5	450	MVBE	4P LS56	4P LS56P
3,83	40,4	1,9	360	MVBE	4P LS56	4P LS56P
3,99	30,2	1,4	345,5	MVDE	4P LS56	4P LS56P
4,11	34,9	2,1	336	MVBE	4P LS56	4P LS56P
4,42	27,2	1,4	312,5	MVDE	4P LS56	4P LS56P
4,6	33,6	2,1	300	MVBE	4P LS56	4P LS56P
4,92	24,5	1,4	280,8	MVDE	4P LS56	4P LS56P
5	28,7	2,1	275,5	MVBE	4P LS56	4P LS56P
5,52	28	1,6	250	MVDE	4P LS56	4P LS56P
5,61	27,6	2,1	246	MVBE	4P LS56	4P LS56P
6,05	33,2	3	228	MVBE	4P LS56	4P LS56P
6,14	25,2	1,6	224,6	MVDE	4P LS56	4P LS56P
7,36	23,4	1,9	187,5	MVDE	4P LS56	4P LS56P
7,38	27,2	3	187	MVBE	4P LS56	4P LS56P
9,99	21,2	2,25	138,2	MVDE	4P LS56	4P LS56P
11	19,3	2,3	125	MVDE	4P LS56	4P LS56P
12,3	17,2	2,3	112,3	MVDE	4P LS56	4P LS56P
14,7	17,5	2,5	93,8	MVDE	4P LS56	4P LS56P
16,4	15,7	2,4	84,2	MVDE	4P LS56	4P LS56P
20	14,3	> 3	69,1	MVDE	4P LS56	4P LS56P
22,1	13	> 3	62,5	MVDE	4P LS56	4P LS56P
30,7	10,5	> 3	44,9	MVDE	4P LS56	4P LS56P
34	9,4	> 3	40,6	MVDE	4P LS56	4P LS56P
37,8	8,5	> 3	36,5	MVDE	4P LS56	4P LS56P
44,1	7,8	> 3	31,3	MVDE	4P LS56	4P LS56P
55,2	6,3	> 3	25	MVDE	4P LS56	4P LS56P
61,3	5,7	> 3	22,5	MVDE	4P LS56	4P LS56P

MOTOR POWER  
**0.06 kW**  
4 poles  
50 Hz

##### Options :

3-Ph brake motor = 4P LS56 FMC  
1-Ph brake motor = 4P LS63P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
2,59	59,8	0,65	540	MVBE	4P LS56	4P LS63P
3,1	63,8	0,95	450	MVBE	4P LS56	4P LS63P
3,9	66,2	1,13	360	MVBE	4P LS56	4P LS63P
4,05	48,8	0,86	345,5	MVDE	4P LS56	4P LS63P
4,17	57,7	1,25	336	MVBE	4P LS56	4P LS63P
4,48	44,2	0,86	312,5	MVDE	4P LS56	4P LS63P
4,67	55,2	1,29	300	MVBE	4P LS56	4P LS63P
4,99	39,6	0,86	280,8	MVDE	4P LS56	4P LS63P
5,08	50,8	1,16	275,5	MVBE	4P LS56	4P LS63P
5,6	46	1	250	MVDE	4P LS56	4P LS63P
5,7	45,3	1,3	246	MVBE	4P LS56	4P LS63P
6,14	54,6	1,8	228	MVBE	4P LS56	4P LS63P
6,24	41,3	1	224,6	MVDE	4P LS56	4P LS63P
7,47	38	1,2	187,5	MVDE	4P LS56	4P LS63P
7,5	44,7	1,8	187	MVBE	4P LS56	4P LS63P
7,78	44,2	2,1	180	MVBE	4P LS56	4P LS63P
9,72	41	2,3	144	MVBE	4P LS56	4P LS63P
10,1	34,9	1,4	138,2	MVDE	4P LS56	4P LS63P
11,2	31,5	1,4	125	MVDE	4P LS56	4P LS63P
12,47	28,3	1,38	112,3	MVDE	4P LS56	4P LS63P
14,93	28,2	1,5	93,8	MVDE	4P LS56	4P LS63P
16,63	25,3	1,5	84,2	MVDE	4P LS56	4P LS63P
20,3	22,9	2,1	69,1	MVDE	4P LS56	4P LS63P
22,4	20,7	2,1	62,5	MVDE	4P LS56	4P LS63P
31,2	17,1	2,9	44,9	MVDE	4P LS56	4P LS63P
34,5	15,5	2,9	40,6	MVDE	4P LS56	4P LS63P
38,4	13,9	2,9	36,5	MVDE	4P LS56	4P LS63P
44,7	12,5	> 3	31,3	MVDE	4P LS56	4P LS63P
56	10,1	> 3	25	MVDE	4P LS56	4P LS63P
62,2	9,1	> 3	22,5	MVDE	4P LS56	4P LS63P

PUISSEANCE  
MOTEUR  
**0.09 kW**  
4 pôles  
50 Hz

Note : On-load speeds are established based on the characteristics for 3-phase motors.

# Electromechanical products

## Minibloc MVDE-MVBE

### Selection

#### Minibloc MVDE-MVBE selection data

##### Options :

3-Ph brake motor = 4P LS63 FMC  
1-Ph brake motor = 4P LS63P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
3,92	90,6	0,83	360	MVBE	4P LS63	4P LS63P
4,2	76,4	0,94	336	MVBE	4P LS63	4P LS63P
4,7	75,6	0,93	300	MVBE	4P LS63	4P LS63P
5,12	62,7	0,95	275,5	MVBE	4P LS63	4P LS63P
5,73	62	0,99	246	MVBE	4P LS63	4P LS63P
6,18	74,2	1,35	228	MVBE	4P LS63	4P LS63P
6,28	56,57	0,73	224,6	MVDE	4P LS63	4P LS63P
7,52	51,8	0,85	187,5	MVDE	4P LS63	4P LS63P
7,54	60,8	1,35	187	MVBE	4P LS63	4P LS63P
7,83	61,5	1,5	180	MVBE	4P LS63	4P LS63P
9,8	55	1,7	144	MVBE	4P LS63	4P LS63P
10,2	47,2	1,02	138,2	MVDE	4P LS63	4P LS63P
11,3	42,6	1,03	125	MVDE	4P LS63	4P LS63P
11,8	50,5	1,8	120	MVBE	4P LS63	4P LS63P
12,6	38,2	1,02	112,3	MVDE	4P LS63	4P LS63P
13,1	45,5	1,98	108	MVBE	4P LS63	4P LS63P
14,3	41,7	1,75	98,4	MVBE	4P LS63	4P LS63P
15	39	1,1	93,8	MVDE	4P LS63	4P LS63P
16,7	35	1,09	84,2	MVDE	4P LS63	4P LS63P
20,4	32	1,5	69,1	MVDE	4P LS63	4P LS63P
22,6	28,9	1,5	62,5	MVDE	4P LS63	4P LS63P
31,4	23,4	2,1	44,9	MVDE	4P LS63	4P LS63P
34,7	21,1	2,1	40,6	MVDE	4P LS63	4P LS63P
38,6	19	2,1	36,5	MVDE	4P LS63	4P LS63P
45	17,3	2,8	31,3	MVDE	4P LS63	4P LS63P
56,4	14	2,7	25	MVDE	4P LS63	4P LS63P
62,7	12,6	2,7	22,5	MVDE	4P LS63	4P LS63P

##### Options :

3-Ph brake motor = 4P LS63 FMC  
1-Ph brake motor = 4P LS71P FMC

Output speed min <sup>-1</sup>	Useful torque in N.m	Duty factor K <sub>P</sub>	Exact reduction	Gearbox type	Type of motor	
					3-phase	1-phase
6,1	118,4	0,85	228	MVBE	4P LS63	4P LS71P
7,4	97,8	0,84	187	MVBE	4P LS63	4P LS71P
7,7	96	0,95	180	MVBE	4P LS63	4P LS71P
9,7	86,9	1,08	144	MVBE	4P LS63	4P LS71P
11,6	80	1,1	120	MVBE	4P LS63	4P LS71P
12,9	73,3	1	108	MVBE	4P LS63	4P LS71P
14,1	65,8	1,1	98,4	MVBE	4P LS63	4P LS71P
14,8	61,6	0,7	93,8	MVDE	4P LS63	4P LS71P
15,4	65,8	1,4	90	MVBE	4P LS63	4P LS71P
16,5	55,2	0,7	84,2	MVDE	4P LS63	4P LS71P
19,3	56,1	1,7	72	MVBE	4P LS63	4P LS71P
20,1	50,5	0,99	69,1	MVDE	4P LS63	4P LS71P
22,2	45,7	0,99	62,5	MVDE	4P LS63	4P LS71P
23,2	48,9	1,9	60	MVBE	4P LS63	4P LS71P
28,3	40	1,9	49,2	MVBE	4P LS63	4P LS71P
31	37,2	1,3	44,9	MVDE	4P LS63	4P LS71P
33	35,9	2,2	42	MVBE	4P LS63	4P LS71P
34,2	33,7	1,3	40,6	MVDE	4P LS63	4P LS71P
38,1	30,2	1,3	36,5	MVDE	4P LS63	4P LS71P
40,4	29,3	2,2	34,4	MVBE	4P LS63	4P LS71P
44,4	27,5	1,6	31,3	MVDE	4P LS63	4P LS71P
46,3	27,1	2,7	30	MVBE	4P LS63	4P LS71P
55,6	22	1,7	25	MVDE	4P LS63	4P LS71P
56,5	22,2	2,7	24,6	MVBE	4P LS63	4P LS71P
61,8	20	1,7	22,5	MVDE	4P LS63	4P LS71P
66,2	19,5	> 3	21	MVBE	4P LS63	4P LS71P

Note : On-load speeds are established based on the characteristics for 3-phase motors.

PUISANCE MOTEUR  
**0,12 kW**  
4 pôles  
50 Hz

Options :  
3-Ph brake motor = 4P LS71 FMC  
4P LS71 FCR  
4P LS71 FAST  
1-Ph brake motor = 4P LS71P FMC

PUISANCE MOTEUR  
**0,25 kW**  
4 pôles  
50 Hz

Options :  
3-Ph brake motor = 4P LS71 FMC  
4P LS71 FCR  
4P LS71 FAST  
1-Ph brake motor = 4P LS71P FMC

PUISANCE MOTEUR  
**0,37 kW**  
4 pôles  
50 Hz

# Electromechanical products

## Minibloc MVDE

### Load on slow speed shaft

Force in N.m.

Gearbox characteristics		Clockwise or anti-clockwise direction							
Speed min <sup>-1</sup>	Torque N.m	M00G $F_r$	M50G $F_r$	M00G & M50G		M00D $F_r$	M05D $F_r$	M00D & M05D	
				$F_a -$	$F_a +$			$F_a -$	$F_a +$
135	25	1396	810	759	1413	1217	810	1735	757
135	37,5	1328	760	667	1166	1060	760	1670	667
135	50	1261	700	574	925	903	700	1584	574
100	25	1557	810	901	1692	1379	810	2055	901
100	37,5	1490	760	787	1434	1221	760	1965	773
100	50	1422	700	590	1182	1064	700	1880	690
75	25	1728	810	1060	2005	1549	810	2430	1159
75	37,5	1640	760	974	1746	1392	760	2307	920
75	50	1540	700	919	1505	1235	700	2225	810
50	25	1760	810	1594	2610	1760	810	2610	1366
50	37,5	1640	760	1570	2467	1640	760	2517	1228
50	50	1540	700	1521	2200	1504	700	2425	1137
40	25	1760	810	1998	2610	1760	810	2610	1749
40	37,5	1640	760	1981	2517	1640	760	2517	1606
40	50	1540	700	1936	2425	1540	700	2425	1438
30	25	1760	810	1998	2610	1760	810	2610	2347
30	37,5	1640	760	1981	2517	1640	760	2517	2197
30	50	1540	700	2425	2425	1540	700	2425	2019
≤ 25	25	1760	810	2610	2610	1760	810	2610	2610
≤ 25	37,5	1640	760	2517	2517	1640	760	2517	2517
≤ 25	50	1540	700	2425	2425	1540	700	2425	2425

#### Direction of force

##### M00G & M50G

$F_a +$  = PUSHING axial force on the shaft end.  
 $F_a -$  = PULLING axial force on the shaft end.

##### M00D & M05D

$F_a +$  = PULLING axial force on the shaft end.  
 $F_a -$  = PUSHING axial force on the shaft end.

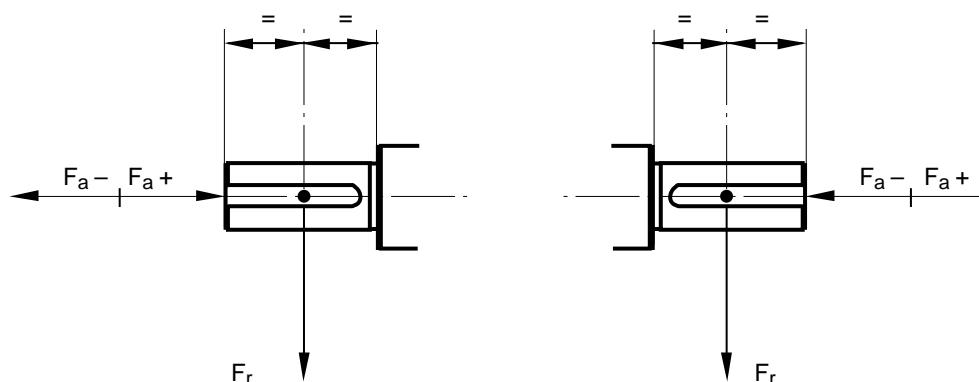
$F_r$  = radial force on the shaft end at 20 mm from the shoulder.

Note : 1 Where there are 2 shaft ends, the load must be shared between them.

2 For M50G or M05D, the force corresponds to the extension shaft.

3 These values correspond to the most adverse load conditions.

SPECIAL CASES : please consult Leroy Somer.



# Electromechanical products

## Minibloc MVBE

### Load on slow speed shaft

Force in N.m.

Gearbox characteristics		Clockwise or anti-clockwise direction							
Speed min <sup>-1</sup>	Torque N.m	M00G $F_r$	M50G $F_r$	M00G & M50G		M00D $F_r$	M05D $F_r$	M00D & M05D	
				$F_a -$	$F_a +$			$F_a -$	$F_a +$
135	50	1260	1074	855	2042	1666	1360	1488	851
135	75	985	840	727	1934	1550	1270	1094	719
135	100	711	606	598	1825	1433	1180	716	588
100	50	1450	1237	1020	2394	1866	1360	1810	1015
100	75	1176	1003	892	2287	1750	1270	1397	885
100	100	901	769	764	2179	1633	1180	1016	781
75	50	1651	1360	1208	2780	2078	1360	2176	1198
75	75	1377	1174	1078	2695	1961	1270	1736	1065
75	100	1102	940	951	2590	1844	1180	1323	936
50	50	1969	1360	1501	3131	2412	1360	2817	1508
50	75	1695	1270	1382	2999	2295	1270	2324	1374
50	100	1421	1180	1259	2868	2179	1180	1875	1242
40	50	2164	1360	1711	3131	2500	1360	2920	1685
40	75	1889	1270	1563	2999	2350	1270	2312	1575
40	100	1615	1180	1463	2868	2200	1180	2817	1508
30	50	2437	1360	1917	3121	2500	1360	3136	2332
30	75	2162	1270	1810	2999	2350	1270	3007	2315
30	100	1888	1180	1735	2868	2200	1180	2878	2295
25	50	2500	1360	2183	3121	2500	1360	3136	2832
25	75	2349	1270	2058	2999	2350	1270	3007	2821
25	100	2075	1180	1938	2868	2200	1180	2878	2597
≤ 20	50	2500	1360	2964	3131	2500	1360	3136	3131
≤ 20	75	2350	1270	2641	2999	2350	1270	3007	1999
≤ 20	100	2200	1180	2319	2868	2200	1180	2878	2868

#### Direction of force

##### M00G & M50G

$F_a +$  = PUSHING axial force on the shaft end.  
 $F_a -$  = PULLING axial force on the shaft end.

##### M00D & M05D

$F_a +$  = PULLING axial force on the shaft end.  
 $F_a -$  = PUSHING axial force on the shaft end.

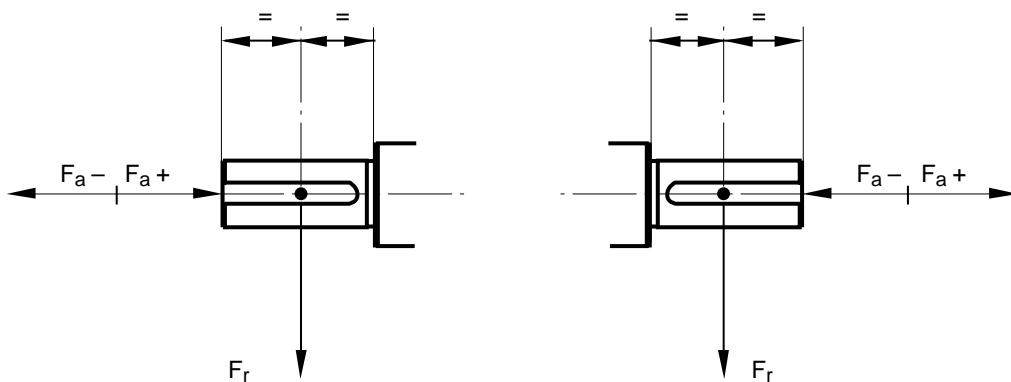
$F_r$  = radial force on the shaft end at 22.5 mm from shoulder.

Note : 1 Where there are 2 shaft ends, the load must be shared between them.

2 For M50G or M05D, the force corresponds to the extension shaft.

3 These values correspond to the most adverse load conditions.

SPECIAL CASES : please consult Leroy Somer.



# Electromechanical products

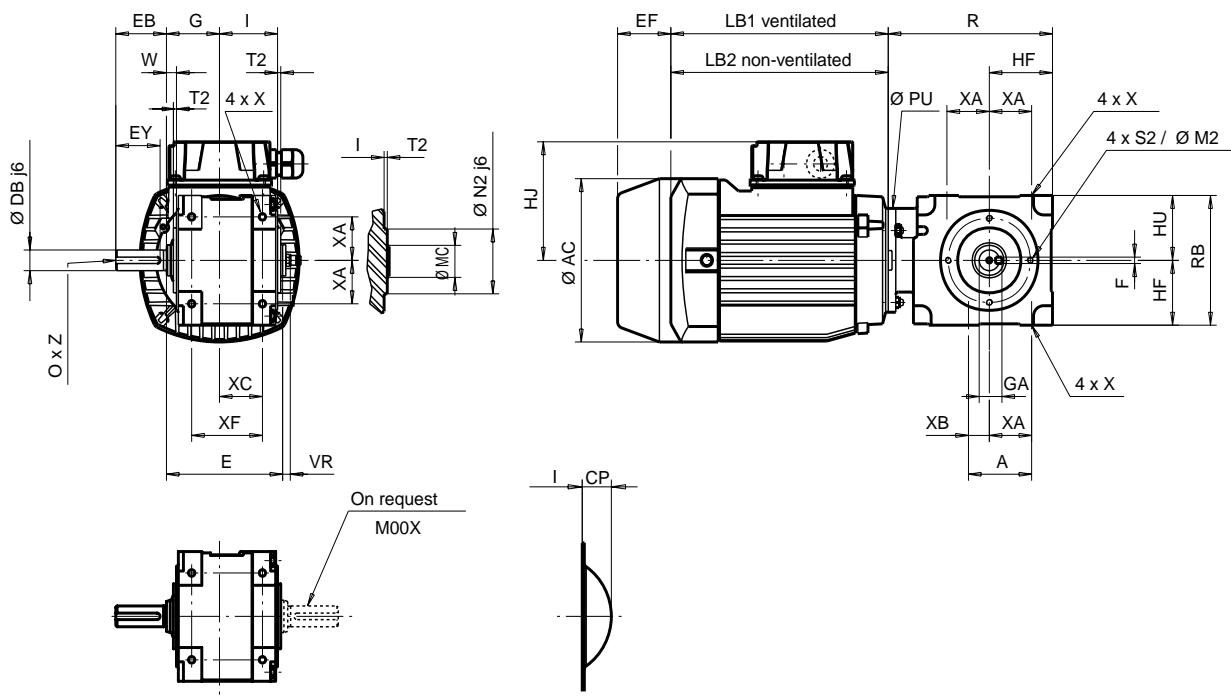
## Minibloc MVDE

### Dimensions

Dimensions of Minibloc MVDE geared motors, MI integral mounting, solid output shaft

Dimensions in millimetres

#### - M00 standard form



\* Gearbox only.

Standard gearboxes													Weight*					
Type	R	A	XF	XA	XB	RB	HU	HF	X	XC	G	I	N2	T2	S2	M2	PU	
<b>MVDE</b>	130	50	56	33,5	16,5	100	50	50	M6x10	34	42	46	50	2,5	M5x12	65	80	2,4

**PERPENDICULAR OUTPUT GEARED MOTORS**

**Solid output shaft**

Type	DB	EB	EY	E	VR	GA	F	W	MC	0	Z	CP
<b>MVDE</b>	16	40	35	92	6	18	5	8	25	M5	15	20

Frame size	Induction and brake motors													
	LS 3-phase				LS single phase				Brakes					
	Max. weight				Max. weight				EF max.					
AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR	Weight <sup>1</sup> kg	
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9 2 2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

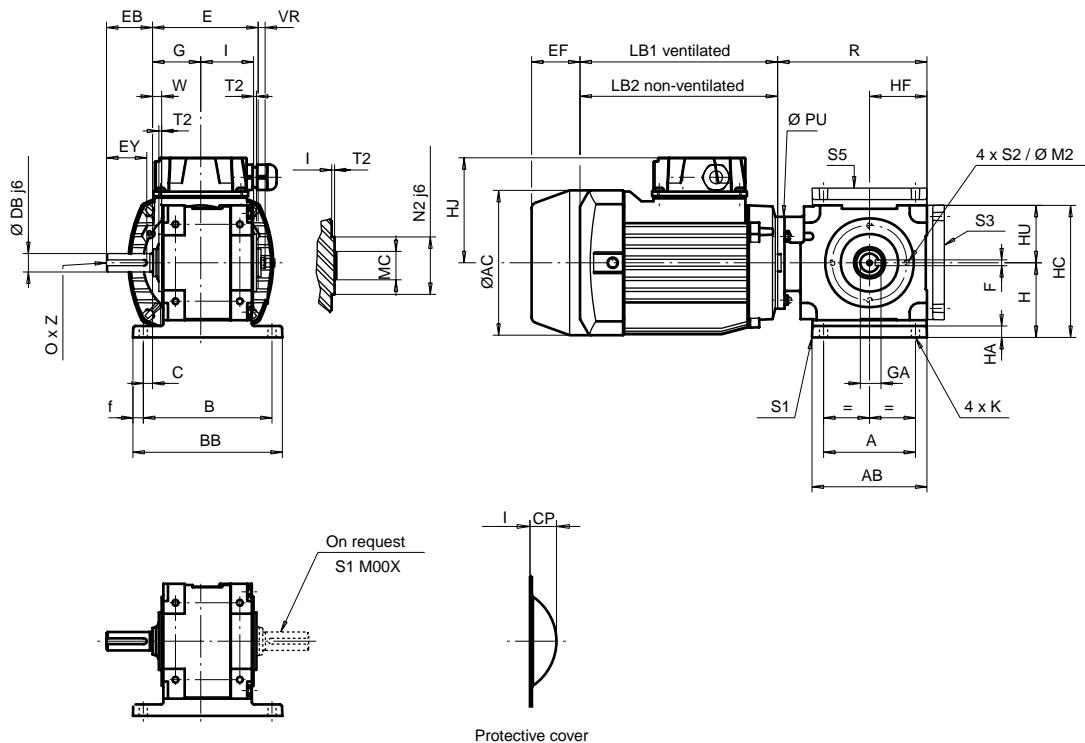
## Minibloc MVDE

### Dimensions

Dimensions of Minibloc MVDE geared motors, MI integral mounting, solid output shaft

Dimensions in millimetres

#### - S1, S3, S5 baseplate form



Type	Gearboxes with baseplate																	Weight*			
	R	A	AB	B	BB	I	HF	HC	H	HU	f	HA	K	G	N2	T2	C	S2	M2	PU	
<b>MVDE</b>	130	80	100	112	130	46	50	115	65	50	9	10	6,8	42	50	2,5	8	M5x12	65	80	2,6

\* Gearbox only.

Note : In position S3 and S5, the distance between the centre of the slow speed shaft and the base of the motor feet is 50 mm.

Type	Solid output shaft											
	DB	EB	EY	E	VR	GA	F	W	MC	0	Z	CP
<b>MVDE</b>	16	40	35	92	6	18	5	8	25	M5	15	20

Frame size	Induction and brake motors													
	LS 3-phase				LS single phase				Brakes					
	Max. weight				Max. weight				EF max.					
AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR	Weight <sup>1</sup> kg	
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9
											2		2,5	

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

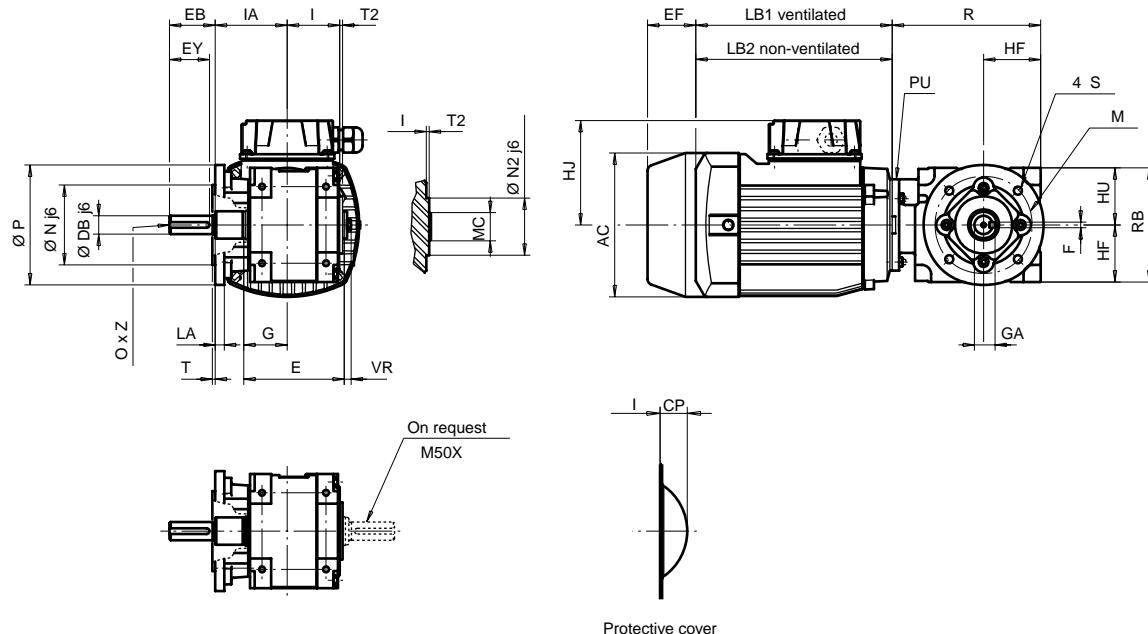
## Minibloc MVDE

### Dimensions

Dimensions of Minibloc MVDE geared motors, MI integral mounting, solid output shaft

Dimensions in millimetres

#### - M50, M05 flange form



Type	Gearboxes with flange															Weight*	
	R	RB	HU	HF	M	N	P	S	LA	T	IA	G	I	N2	T2	PU	
<b>MVDE</b>	130	100	50	50	85	70	105	7	8	2,5	63	38	46	50	2,5	80	2,7

\* Gearbox only.

Other possible flanges <sup>1</sup>						
BD1						
Type	M1	N1	P1	S1	LA1	T1
<b>MVDE</b>	100	80	120	7	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Solid output shaft										
	DB	EB	EY	E	VR	GA	F	MC	O	Z	CP
<b>MVDE</b>	16	40	35	88	6	18	5	25	M5	15	20

Frame size	Induction and brake motors								Brakes							
	LS 3-phase				LS single phase				Brakes							
	Max. weight				Max. weight				EF max.				Weight <sup>1</sup> kg			
AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR	FMC	FAST	FCR	
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	-	-
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	-	-
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

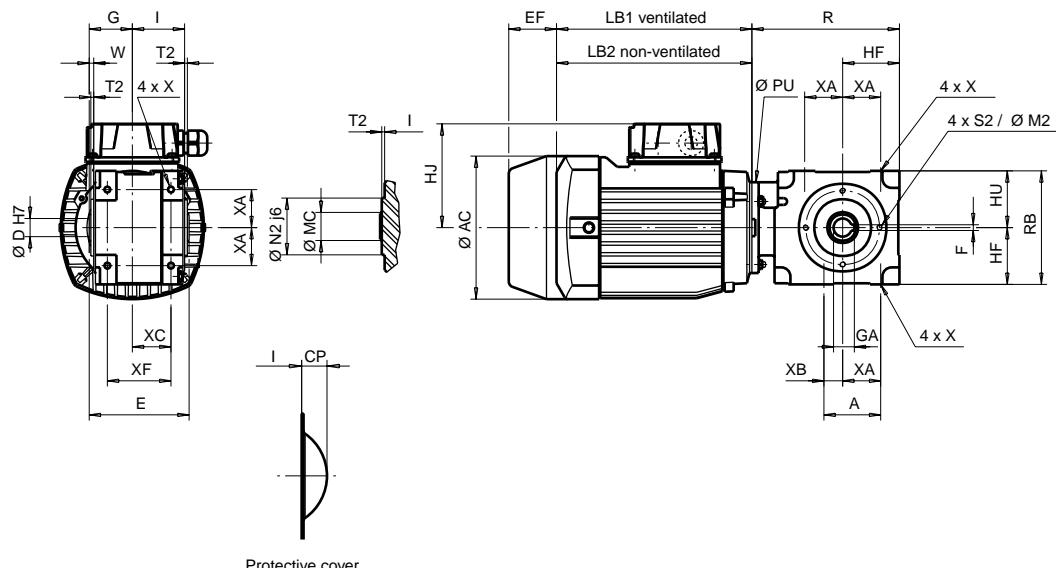
## Minibloc MVDE

### Dimensions

Dimensions of Minibloc MVDE geared motors, MI integral mounting, hollow output shaft (C)

Dimensions in millimetres

#### - M00 - C standard form



Protective cover

Type	Standard gearboxes															Weight*		
	R	A	XF	XA	XB	RB	HU	HF	X	XC	G	I	N2	T2	S2	M2	PU	
<b>MVDE</b>	130	50	56	33,5	16,5	100	50	50	M6x10	34	38	46	50	2,5	M5x12	65	80	2,2

\* Gearbox only.

Type	Hollow output shaft						
	D	E	GA	F	W	MC	CP
<b>MVDE</b>	16	88	18,3	5	4	25	20

Frame size	Induction and brake motors															Weight <sup>1</sup> kg		
	LS 3-phase				LS single phase				Brakes									
	AC	HJ	LB1	LB2	Max. weight		AC	HJ	LB1	LB2	Max. weight		FMC	FAST	FCR	FMC	FAST	FCR
<b>56</b>	110	85	156	135	3,4		110	90	156	135	3,5		50	-	-	0,9	-	-
<b>63</b>	124	95	172	150	4,3		124	110	172	150	4,5		50	-	-	0,9	-	-
<b>71<sup>2</sup></b>	140	102	183	155	6,5		140	129	183	155	7,5		50	28	90	0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

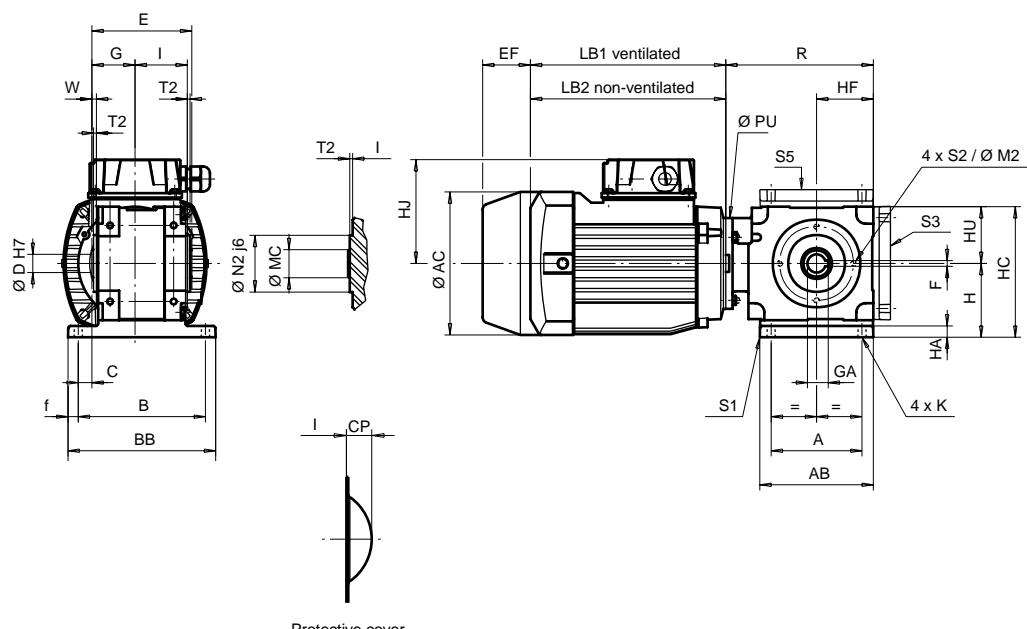
## Minibloc MVDE

### Dimensions

Dimensions of Minibloc MVDE geared motors, MI integral mounting, hollow output shaft (C)

Dimensions in millimetres

#### - S1, S3, S5 - C baseplate form



Type	Gearboxes with baseplate																	Weight*			
	R	A	AB	B	BB	I	HF	HC	H	HU	f	HA	K	G	N2	T2	C	S2	M2	PU	
<b>MVDE</b>	130	80	100	112	130	46	50	115	65	50	9	10	6,8	38	50	2,5	12	M5x12	65	80	2,4

\* Gearbox only.

Note : In position S3 and S5, the distance between the centre of the slow speed shaft and the base of the motor feet is 65 mm.

Hollow output shaft						
Type	D	E	GA	F	W	MC
<b>MVDE</b>	16	88	18,3	5	4	25

Frame size	Induction and brake motors												Brakes			Weight <sup>1</sup> kg			
	LS 3-phase				LS single phase				Max. weight				EF max.			Weight <sup>1</sup> kg			
	AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR	FMC	FAST	FCR			
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	-	-			
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	-	-			
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2	2,5			

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

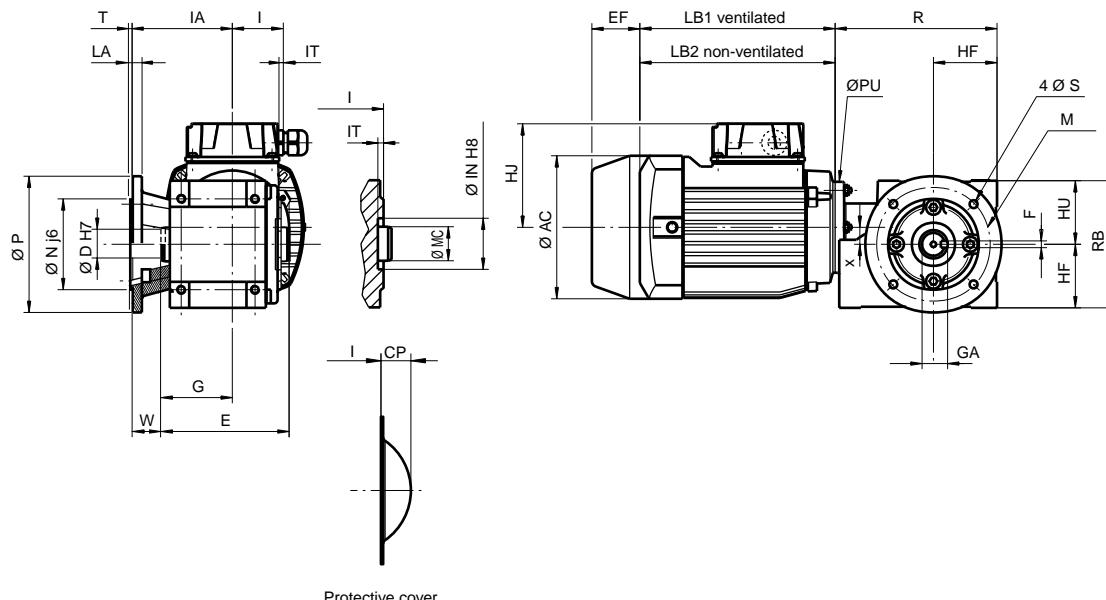
## Minibloc MVDE

### Dimensions

Dimensions of Minibloc MVDE geared motors, MI integral mounting, hollow output shaft (C)

Dimensions in millimetres

- M50, M05 - C flange form



Type	Gearboxes with flange															Weight*	
	R	RB	HU	HF	M	N	P	S	LA	T	IA	G	I	N2	T2	PU	
<b>MVDE</b>	130	100	50	50	85	70	105	7	8	2,5	63	38	46	50	2,5	80	2,5

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>					
	M1	N1	P1	S1	LA1	T1
<b>MVDE</b>	100	80	120	7	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Hollow output shaft						
	D	E	GA	F	W	MC	CP
<b>MVDE</b>	16	88	18,3	5	25	25	20

Frame size	Induction and brake motors								Brakes					
	LS 3-phase				LS single phase									
	Max. weight				Max. weight				FMC	FAST	FCR	Weight <sup>1</sup> kg		
AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg					
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

## Minibloc MVDE

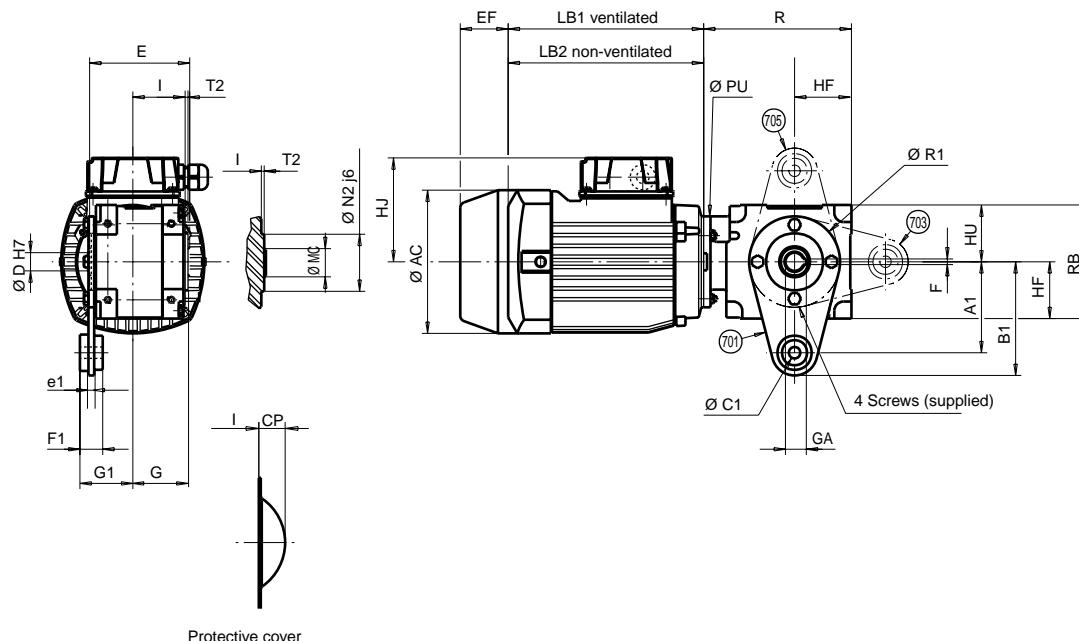
### Dimensions

Dimensions of Minibloc MVDE geared motors, MI integral mounting, hollow output shaft (C), with torque arm

Dimensions in millimetres

For ease of installation on the machine, the torque arm is not mounted on the gearbox when supplied (fixing screws included).

- M70, M07 - C form



Protective cover

Type	Gearboxes with torque arm														Weight*			
	R	HF	RB	HU	G	I	N2	T2	A1	B1	R1	C1	F1	G1	e1	Screws	PU	
MVDE	130	50	100	50	50	46	50	2,5	80	100	80	10	20	46,5	5	M5x16	80	2,6

\* Gearbox only.

Hollow output shaft					
Type	D	E	GA	F	MC
MVDE	16	88	18,3	5	25

Frame size	Induction and brake motors						Brakes									
	LS 3-phase				LS single phase											
	AC	HJ	LB1	LB2	Max. weight	Max. weight										
56	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	-	-
63	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	-	-
71 <sup>2</sup>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

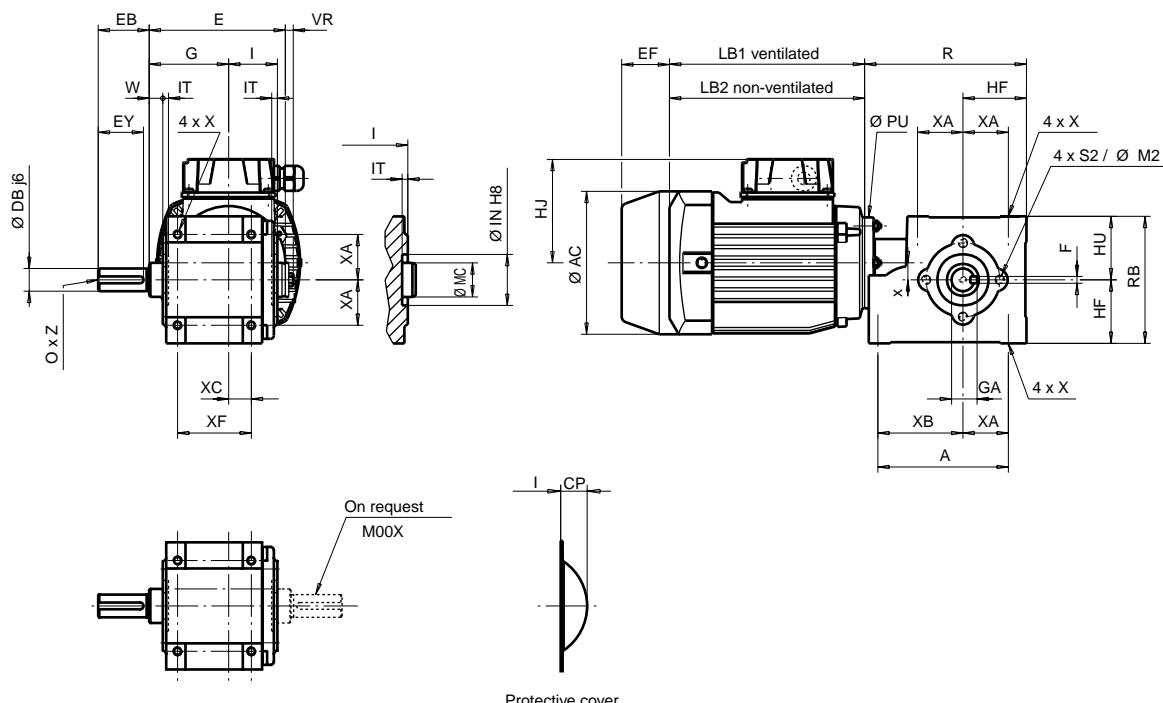
## Minibloc MVBE

### Dimensions

Dimensions of Minibloc MVBE geared motors, MI integral mounting, solid output shaft

Dimensions in millimetres

#### - M00 standard form



Type	Standard gearboxes															Weight*			
	R	x	A	XF	XA	XB	RB	HU	HF	X	XC	G	I	IN	IT	S2	M2	PU	
<b>MVBE</b>	143	15	115	65	40	75	112	56	56	M8×12	20	70	43	45	5	M8×12	65	80	6,6

\* Gearbox only.

Solid output shaft													
Type	DB	EB	EY	E	VR	GA	F	W	MC	0	Z	CP	
<b>MVBE</b>	20	45	40	120	7	22,5	6	12	30	M6	15	20	

Induction and brake motors																			
LS 3-phase					LS single phase					Brakes									
Frame size	Max. weight				AC	HJ	LB1	LB2	Max. weight				EF max.			Weight <sup>1</sup> kg			
	AC	HJ	LB1	LB2					AC	HJ	LB1	LB2	FMC	FAST	FCR	FMC	FAST	FCR	
<b>56</b>	110	85	156	135	3,4				110	90	156	135	3,5	50	-	-	0,9	-	-
<b>63</b>	124	95	172	150	4,3				124	110	172	150	4,5	50	-	-	0,9	-	-
<b>71<sup>2</sup></b>	140	102	183	155	6,5				140	129	183	155	7,5	50	28	90	0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

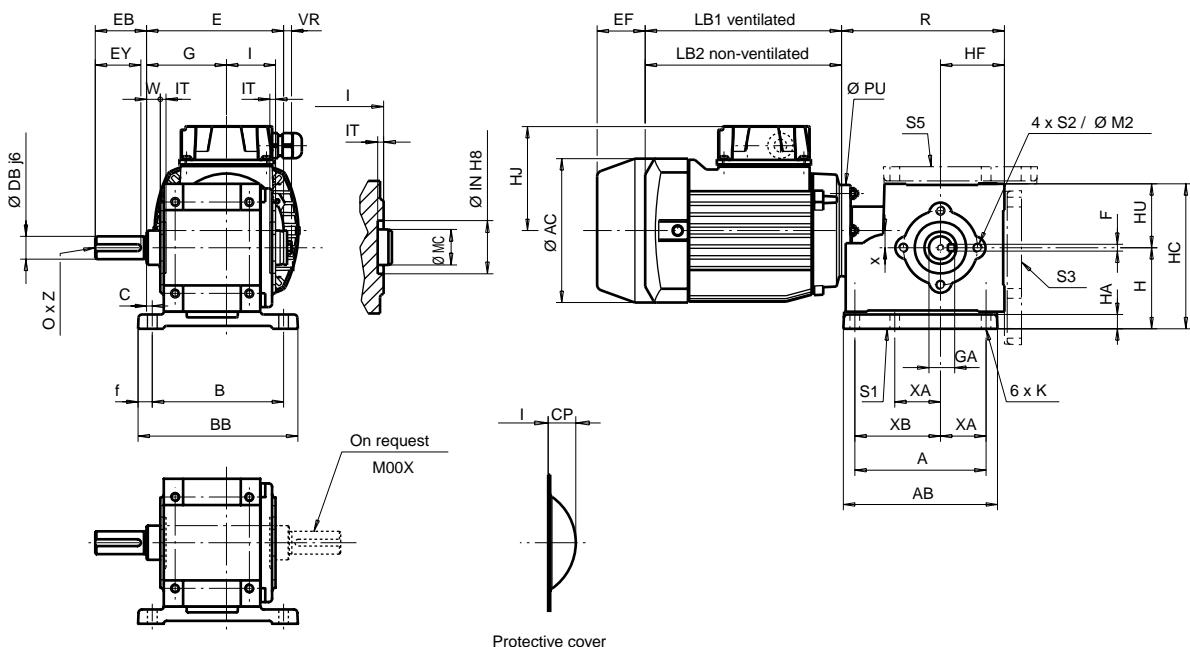
## Minibloc MVBE

### Dimensions

Dimensions of Minibloc MVBE geared motors, MI integral mounting, solid output shaft

Dimensions in millimetres

#### - S1, S3, S5 baseplate form



Type	Gearboxes with baseplate																		Weight*					
	R	x	A	AB	B	BB	I	XA	XB	HF	HC	H	HU	f	HA	K	G	IN	IT	C	S2	M2	PU	
<b>MVBE</b>	143	15	115	135	115	140	43	40	75	56	127	71	56	12,5	12	8,5	70	45	5	5	M8x12	65	80	6,2

\* Gearbox only.

Note : In position S3 and S5, the distance between the centre of the slow speed shaft and the base of the motor feet is 71 mm.

Type	Solid output shaft											
	DB	EB	EY	E	VR	GA	F	W	MC	0	Z	CP
<b>MVBE</b>	20	45	40	120	7	22,5	6	12	30	M6	15	20

Frame size	Induction and brake motors												Weight <sup>1</sup> kg			
	LS 3-phase				LS single phase				Brakes							
AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR	FMC	FAST	FCR	
56	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9	-	-
63	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9	-	-
71 <sup>2</sup>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

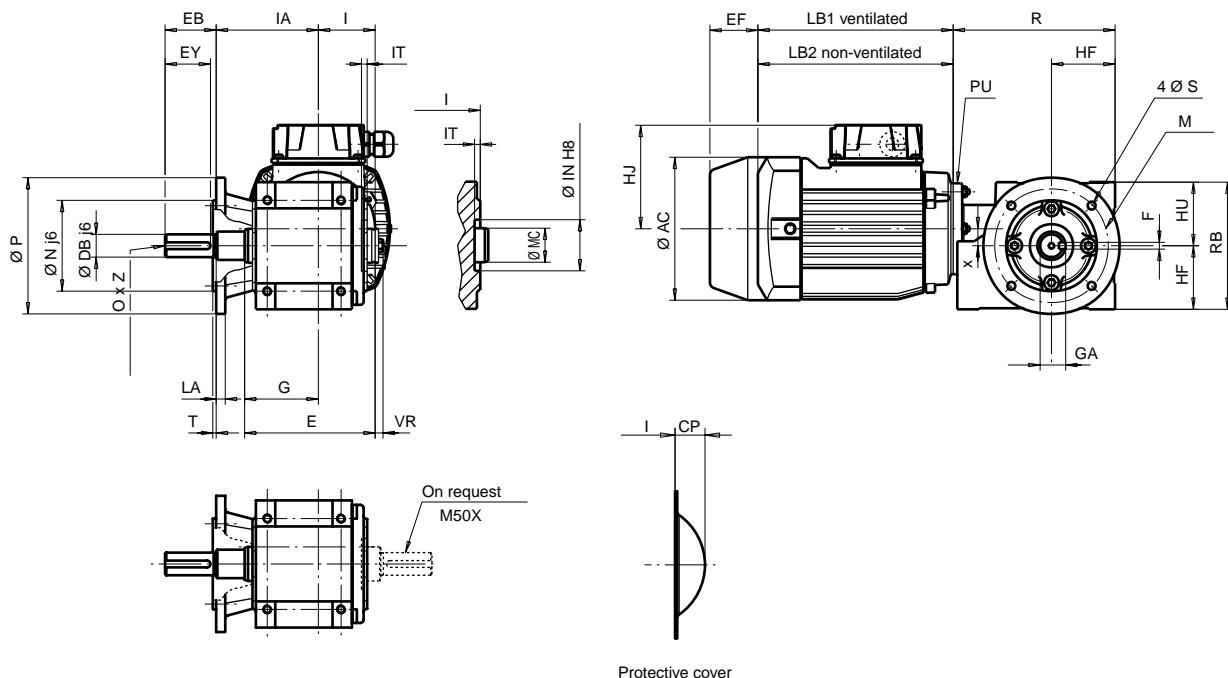
## Minibloc MVBE

### Dimensions

Dimensions of Minibloc MVBE geared motors, MI integral mounting, solid output shaft

Dimensions in millimetres

#### - M50, M05 flange form



Type	Gearboxes with flange															Weight*		
	R	x	RB	HU	HF	M	N	P	S	LA	T	IA	G	I	IN	IT	PU	
<b>MVBE</b>	143	15	112	56	56	100	80	120	7	8	3	90	65	43	45	5	80	7,4

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>											
	BD1						BD2					
	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2
<b>MVBE</b>	85	70	105	7	8	3	115	95	140	9	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Solid output shaft										
	DB	EB	EY	E	VR	GA	F	MC	O	Z	CP
<b>MVBE</b>	20	45	40	115	7	22,5	6	30	M6	15	20

Frame size	Induction and brake motors												
	LS 3-phase				LS single phase				Brakes				
	Max. weight				Max. weight				EF max.				
56	AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2	kg	FMC	FAST	FCR
56	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-
63	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-
71 <sup>2</sup>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90
											FMC	FAST	FCR
											0,9	-	-
											0,9	-	-
											0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

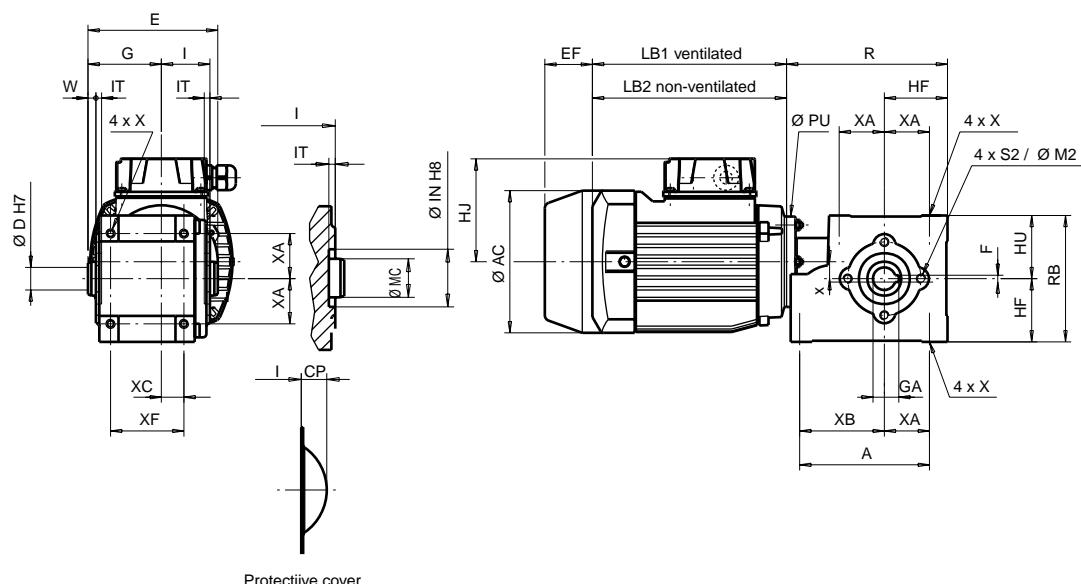
## Minibloc MVBE

### Dimensions

Dimensions of Minibloc MVBE geared motors, MI integral mounting, hollow output shaft (C)

Dimensions in millimetres

#### - M00 - C standard form



Type	Standard gearboxes															Weight*			
	R	x	A	XF	XA	XB	RB	HU	HF	X	XC	G	I	IN	IT	S2	M2	PU	
<b>MVBE</b>	143	15	115	65	40	75	112	56	56	M8×12	20	65	43	45	5	M8×12	65	80	6,2

\* Gearbox only.

Type	D	E	GA	F	W	MC	CP
<b>MVBE</b>	20	115	22,8	6	7	30	20

Frame size	Induction and brake motors								Weight <sup>1</sup> kg							
	LS 3-phase				LS single phase					Weight <sup>1</sup> kg						
	AC	HJ	LB1	LB2	Max. weight	AC	HJ	LB1	LB2							
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-			
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-			
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9	2	2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

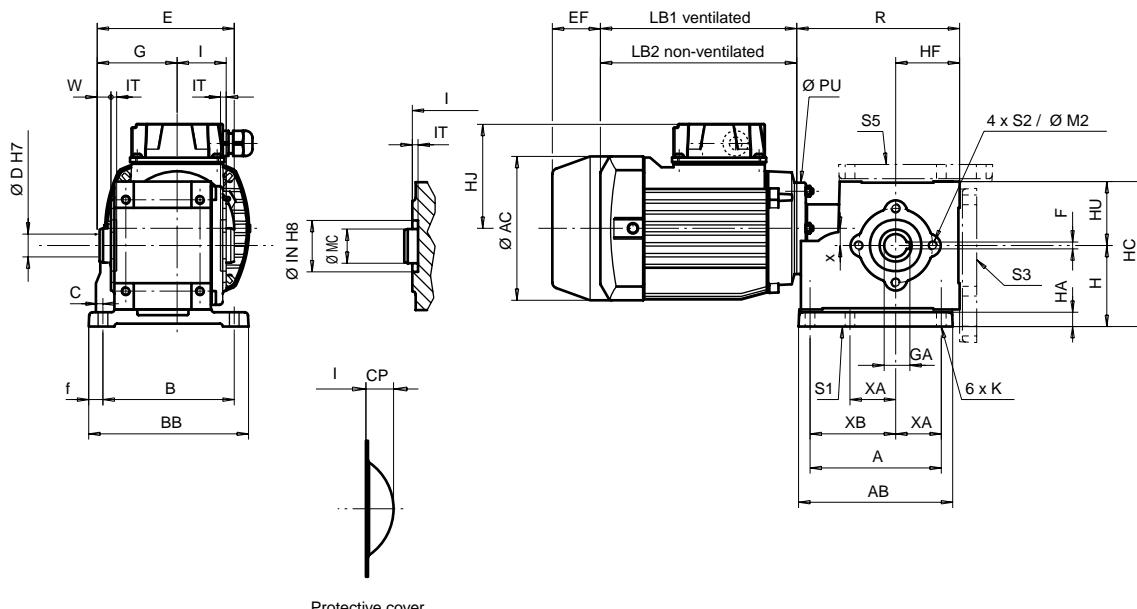
## Minibloc MVBE

### Dimensions

Dimensions of Minibloc MVBE geared motors, MI integral mounting, hollow output shaft (C)

Dimensions in millimetres

#### - S1, S3, S5 - C baseplate form



Type	Gearboxes with baseplate																				Weight*			
	R	x	A	AB	B	BB	I	XA	XB	HF	HC	H	HU	f	HA	K	G	IN	IT	C	S2	M2	PU	
<b>MVBE</b>	143	15	115	135	115	140	43	40	75	56	127	71	56	12,5	12	8,5	65	45	5	0	M8x12	65	80	7,6

\* Gearbox only.

Note : In position S3 and S5, the distance between the centre of the slow speed shaft and the base of the motor feet is 71 mm.

Hollow output shaft						
Type	D	E	GA	F	W	MC
<b>MVBE</b>	20	115	22,8	6	7	30

Frame size	Induction and brake motors							Brakes						
	LS 3-phase				LS single phase				Brakes					
	AC	HJ	LB1	LB2	Max. weight	AC	HJ	LB1	LB2	Max. weight	EF max.	FMC	FAST	FCR
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

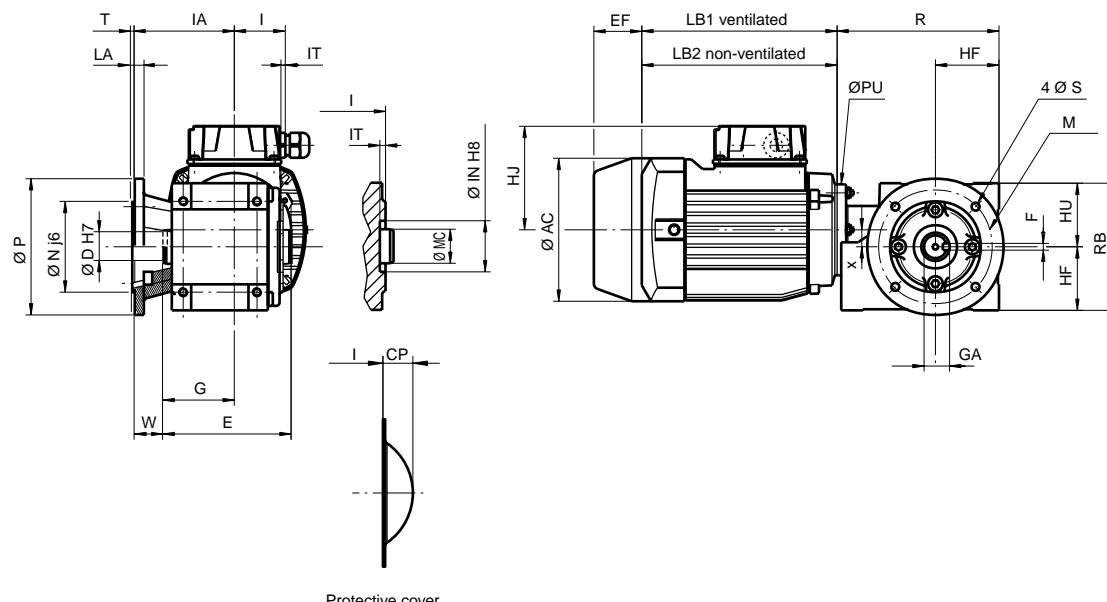
## Minibloc MVBE

### Dimensions

Dimensions of Minibloc MVBE geared motors, MI integral mounting, hollow output shaft (C)

Dimensions in millimetres

#### - M50, M05 - C flange form



Type	Gearboxes with flange															Weight*		
	R	x	RB	HU	HF	M	N	P	S	LA	T	IA	G	I	IN	IT	PU	
<b>MVBE</b>	143	15	112	56	56	100	80	120	7	8	3	90	65	43	45	5	80	7

\* Gearbox only.

Type	Other possible flanges <sup>1</sup>											
	BD1					BD2						
<b>MVBE</b>	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2		
	85	70	105	7	8	3	115	95	140	9	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Hollow output shaft						
	D	E	GA	F	W	MC	CP
<b>MVBE</b>	20	115	22,8	6	25	30	20

Frame size	Induction and brake motors								Weight <sup>1</sup> kg	
	LS 3-phase				LS single phase					
AC	HJ	LB1	LB2	kg	AC	HJ	LB1	LB2		
<b>56</b>	110	85	156	135	3,4	110	90	156	135	3,5
<b>63</b>	124	95	172	150	4,3	124	110	172	150	4,5
<b>71<sup>2</sup></b>	140	102	183	155	6,5	140	129	183	155	7,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# Electromechanical products

## Minibloc MVBE

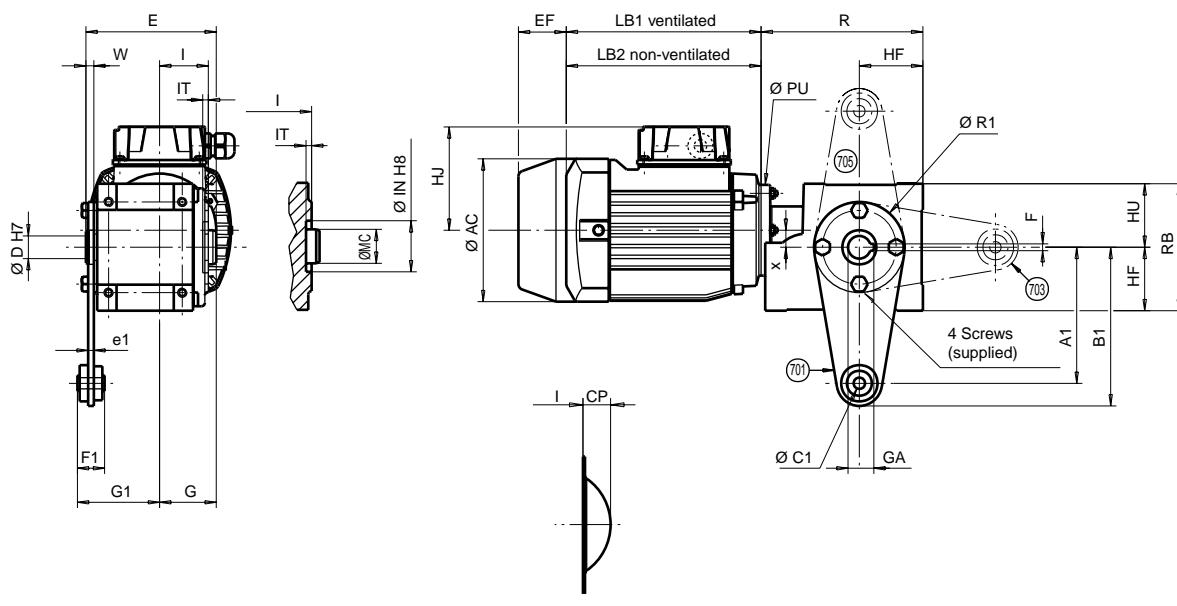
### Dimensions

Dimensions of Minibloc MVBE geared motors, MI integral mounting, hollow output shaft (C), with torque arm

Dimensions in millimetres

For ease of installation on the machine, the torque arm is not mounted on the gearbox when supplied (fixing screws included).

#### - M70, M07 - C form



Protective cover

Type	Gearboxes with torque arm															Weight*			
	R	x	HF	RB	HU	G	I	IN	IT	A1	B1	R1	C1	F1	G1	e1	Screws	PU	
MVBE	143	15	56	112	56	50	43	45	5	120	140	80	10	24	72,5	5	M8x16	80	6,6

\* Gearbox only.

Hollow output shaft						
Type	D	E	GA	F	W	MC
MVBE	20	115	22,8	6	7	30
						CP

Frame size	Induction and brake motors												Weight <sup>1</sup> kg	
	LS 3-phase				LS single phase				Brakes					
	AC	HJ	LB1	LB2	Max. weight	AC	HJ	LB1	LB2	Max. weight	FMC	FAST	FCR	
56	110	85	156	135	3,4	110	90	156	135	3,5	50	-	-	0,9
63	124	95	172	150	4,3	124	110	172	150	4,5	50	-	-	0,9
71 <sup>2</sup>	140	102	183	155	6,5	140	129	183	155	7,5	50	28	90	0,9 2 2,5

1. Additional brake weight.

2. For LS 71 : 0.25 kW 6-pole 3-phase, 0.37 kW 4-pole single phase, 0.55 kW 4-pole 3-phase : dimension LB = + 9.

# LS 3-phase TEFV induction motors

## General



**3-phase TEFV induction motors, LS series**, conforming to IEC 34, 38, 72.  
 • Single speed : rated power 0.06 to 0.55 kW for frame sizes from 56 to 71 mm - 4, 6-pole 230/400V, 50 Hz.

THESE MOTORS CAN ALSO BE USED WITH VARIABLE SPEED DRIVE ASSEMBLIES :  
**FMV AND VARMECA**  
 (See Variable Speed section)

### A.C. supply

- Standard conforming to IEC 38 :
  - 230/400 V + 10 % - 10 % at 50 Hz.
  - Standard construction for the following supplies :
  - 220/380V + 5 % - 5 % in 50 Hz,
  - 230/400V + 10 % - 10 % (IEC 38) at 50 Hz,
  - 240/415V + 5 % - 5 % at 50 Hz.

## Construction

### Description of LS standard 3-phase motors

Component	Materials	Remarks
Finned housing	Aluminium alloy	<ul style="list-style-type: none"> <li>- With or without integral feet</li> <li>- Pressure die-cast</li> <li>• 4 fixing holes for foot mounting</li> </ul>
Stator	Insulated low-carbon magnetic steel laminations Electro-plated copper	<ul style="list-style-type: none"> <li>- Low carbon content guarantees long-term lamination pack stability</li> <li>- Welded packs</li> <li>- Semi-enclosed slots</li> <li>- Class F insulation</li> </ul>
Rotor	Insulated low-carbon magnetic steel laminations Aluminium (ASL)	<ul style="list-style-type: none"> <li>- Inclined cage bars</li> <li>- Rotor cage pressure die-cast in aluminium (or alloy for special applications )</li> <li>- Shrink-fitted to shaft</li> <li>- Dynamically balanced motor</li> </ul>
Shaft	Steel	<ul style="list-style-type: none"> <li>- Shaft end fitted with screw and washer</li> <li>- Closed keyway</li> </ul>
End shields	Aluminium alloy	<ul style="list-style-type: none"> <li>- Drive end and non-drive end</li> </ul>
Bearings and lubrication		<ul style="list-style-type: none"> <li>- Set of CN ball bearings</li> <li>- Greased for life</li> </ul>
Fan	Composite material or aluminium alloy	Straight blades
Fan cover	Pressed steel	<ul style="list-style-type: none"> <li>- On request, fitted with a drip cover for operation in vertical position, shaft facing down</li> </ul>
Terminal box	Composite material or aluminium alloy	<ul style="list-style-type: none"> <li>- IP 55</li> <li>- 4 positions, on opposite side to feet</li> <li>- Contains a terminal block with 6 steel terminals as standard (brass optional)</li> <li>- Terminal box comes complete with cable gland preventing accidental removal of cable</li> <li>- 1 earth terminal in each terminal box</li> </ul>
Finish	Paint	Colour : RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 µm)

# LS 3-phase TEFV induction motors

## Selection

**4  
poles**  
 $1500 \text{ min}^{-1}$

IP 55 - 50 Hz - Class F -  $\Delta T 80 \text{ K}$  - 230 V / 400 V

Type	Rated power at 50 Hz	Rated speed	Rated current	Power factor	Efficiency	Starting current / Rated current
	$P_N$ kW	$N_N$ $\text{min}^{-1}$	$I_N(400 \text{ V})$ A	$\cos \varphi$ 4/4	$\eta \%$ 4/4	$I_D/I_N$
LS 56	0.06	1380	0.3	0.75	42	2.8
LS 56	0.09	1400	0.4	0.60	55	3.2
LS 63	0.12	1410	0.4	0.65	60	3.2
LS 63	0.18	1390	0.65	0.65	63	3.7
LS 71	0.25	1425	0.8	0.65	70	4.6
LS 71	0.37	1420	1.1	0.70	72	4.9
LS 71	0.55	1400	1.6	0.70	70	4.8

**6  
poles**  
 $1000 \text{ min}^{-1}$

IP 55 - 50 Hz - Class F -  $\Delta T 80 \text{ K}$  - 230 V / 400 V

Type	Rated power at 50 Hz	Rated speed	Rated current	Power factor	Efficiency	Starting current / Rated current
	$P_N$ kW	$N_N$ $\text{min}^{-1}$	$I_N(400 \text{ V})$ A	$\cos \varphi$ 4/4	$\eta \%$ 4/4	$I_D/I_N$
LS 63	0.09	860	0.45	0.80	35	2
LS 71	0.12	920	0.63	0.55	50	3
LS 71	0.18	940	0.8	0.63	52	2.7
LS 71	0.25	840	1.05	0.70	50	2.5

# LS single phase TEFV induction motors

## General



**Single phase TEFV induction motors,**  
LS series, conforming to IEC 34, 38, 72.  
Rated power 0.06 to 0.37 kW. Frame sizes  
from 56 to 71 mm. 4-pole.

**A.C. supply**  
230 V + 10 % - 10 %, 50 Hz.

**Protection**  
Standard version IP 55 fully sealed against  
projected liquid and dust in an industrial  
environment

**Winding** standard class F type, formed on  
automatic machines for repeat accuracy  
and reliability.

Impregnated on automatic production line  
with tropicalized class H varnish ensuring  
correct operation in humid environments  
(up to 90 % relative humidity).

**Rotor**, squirrel cage, pressure die-cast in  
aluminium, ensuring rigidity of turning part,  
balanced dynamically.

### Possibilities

For applications requiring high starting  
torque and continuous high torque : model  
"PR" (with electric relay) = on request.

For applications which do not require high  
starting torque : model "P" (with permanent  
capacitor) = standard.

### Individual checks before sending

- Routine check (no-load test, dielectric test,  
check of resistance and direction of  
rotation).
- Level of vibration conforms to class N  
of noise to IEC 34 9.

## Construction

### Description of LS standard single phase motors

Component	Materials	Remarks
Finned housing	Aluminium alloy	<ul style="list-style-type: none"> <li>- With or without integral feet</li> <li>- Pressure die-cast</li> <li>• 4 fixing holes for foot mounting</li> </ul>
Stator	Insulated low-carbon magnetic steel laminations Electro-plated copper	<ul style="list-style-type: none"> <li>- Low carbon content guarantees long-term lamination pack stability</li> <li>- Welded packs</li> <li>- Semi-enclosed slots</li> <li>- Class F insulation</li> </ul>
Rotor	Insulated low-carbon magnetic steel laminations Aluminium	<ul style="list-style-type: none"> <li>- Inclined cage bars</li> <li>- Rotor cage pressure die-cast in aluminium (or alloy for special applications)</li> <li>- Shrink-fitted to shaft</li> <li>- Dynamically balanced rotor</li> </ul>
Shaft	Steel	<ul style="list-style-type: none"> <li>- Shaft end fitted with screw and washer</li> <li>- Closed keyway</li> </ul>
End shields	Aluminium alloy	- Drive end and non-drive end
Bearings		<ul style="list-style-type: none"> <li>- Set of CN ball bearings</li> <li>- Greased for life</li> </ul>
Fan	Composite material	Straight blades
Fan cover	Pressed steel	<ul style="list-style-type: none"> <li>- On request, fitted with a drip cover for operation in vertical position, shaft facing down</li> </ul>
Terminal box	Aluminium alloy	<ul style="list-style-type: none"> <li>- IP 55</li> <li>- 4 positions, on opposite side to feet</li> <li>- Contains a terminal block with 6 steel terminals as standard (brass optional)</li> <li>- Terminal box comes complete with cable gland preventing accidental removal of cable</li> <li>- 1 earth terminal in each terminal box</li> </ul>
Finish	Paint	Colour : RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 µm)

# LS single phase TEFV induction motors

## Selection



With permanent capacitor (P)  
IP 55 - 50 Hz - Class F - ΔT 80 K - 230 V

Type	Rated power at 50 Hz	Rated speed	Rated current	Power factor	Efficiency	Starting current / Rated current
	$P_N$ kW	$N_N$ min <sup>-1</sup>	$I_N$ (230 V) A	$\cos \varphi$ 4/4	$\eta$ % 4/4	$I_D/I_N$
LS 56 P	0.06	1420	0.7	0.93	40	2.6
LS 63 P	0.09	1380	0.75	0.97	55	2.3
LS 63 P	0.12	1410	1	0.97	56	2.8
LS 71 P	0.18	1430	1.8	0.78	57	3.9
LS 71 P	0.25	1430	2.1	0.83	63	4.3
LS 71 P	0.37	1410	2.8	0.86	66	3.9



With voltage relays (PR)  
IP 55 - 50 Hz - Class F - ΔT 80 K - 230 V

Type	Rated power at 50 Hz	Rated speed	Rated current	Power factor	Efficiency	Starting current / Rated current
	$P_N$ kW	$N_N$ min <sup>-1</sup>	$I_N$ (230 V) A	$\cos \varphi$ 4/4	$\eta$ % 4/4	$I_D/I_N$
LS 63 PR	0.12	1425	1.1	0.93	57	4
LS 71 PR	0.18	1460	1.7	0.78	57	5
LS 71 PR	0.37	1450	3	0.86	67	4.9

# FMC brake induction motors

## General



### 3-phase or single phase brake induction motors, LS series, failsafe and with D.C. output.

Rated power from 0.06 to 0.37 kW ; frame size 56 to 71 ; 4 and 6-pole ; 230/400 V.

- D.O.L. starting on 230 V or 400 V supplies with 3-phase operation in
  - delta connection ( $\Delta$ ) at 230 V,
  - star connection (Y) at 400 V.
- Single phase operation at 230 V  $\pm$  10 % 50 Hz.

### PRESENTATION

#### Motor protection

Standard version IP 55, fully sealed against projected liquid and dust in an industrial environment.

#### Brake protection

Standard version IP 40 ensuring good ventilation of the brake disk.

#### Motor body

Heat sink with cooling fins, pressure die-cast in aluminium alloy.

#### Brake end shields

In light metal alloy fixed by tie rods.

#### Brake housing

In pressure die-cast aluminium to improve heat dissipation of the electro-magnet.

#### Bearings

- Protected ball bearings, greased for life.
- Bearings fitted (depending on gearbox type) : blocked at the front.

#### Finish

Assembly using screws with zinc bichromate or cadmium finish.  
RAL 6000 (green) paint finish.  
Shaft end protected against atmospheric corrosion.  
Identification on a riveted aluminium plate.

#### Brake motor power supply

Standard in accordance with IEC 38, ie : 230/400V + 10 % - 10 % at 50 Hz.

Standard construction for the following supplies :

- 220/380 V + 5 % - 5 % at 50 Hz ;
- 230/400 V + 10 % - 10 % at 50 Hz ;
- 240/415 V + 5 % - 5 % at 50 Hz.

### Brake power supply

Incorporated in the motor as standard. The motor is connected like a standard motor.

Separate : the AC supply is outside the motor or direct D.C. supply.

### Stator

Consists of magnetic steel laminations with a high level of permeability and minimal losses, mounted using electric welding and retained in the heat-expanded body to ensure mechanical resistance.

### Winding

Class F as standard, formed on automatic machines to ensure repeat accuracy and reliability. Impregnated with tropicalized Class H varnish ensuring correct operation in humid environments (up to 90% relative humidity).

### Rotor

Magnetic steel laminations with a high level of permeability. Squirrel cage pressure die-cast in aluminium for operation in S1 continuous duty, in special alloy for operation in S4 duty (DP rotor).

### Metal terminal box

Fully sealed, fitted with one or two cable glands, placed on top of the motor. Rectifier on inside.

### Connection of A.C. supply

Terminal block with 6 terminals enabling connection to the A.C. supply via copper connector links (see diagram inside the terminal box).

### Individual checks before sending

Routine tests, no-load test, dielectric test, check of resistance and the direction of rotation.

### Special features

Manual brake release (optional).  
Adjustment of the air gap without dismantling the brake.  
Brake torque preset in factory.

Rotation speed at no load at 50 Hz depending on the number of poles

Number of poles	$\text{min}^{-1}$
2	3000
4	1500
6	1000
8	750

# FMC brake induction motors

## Selection

**3-PHASE  
4 poles  
1500 min<sup>-1</sup>**

- LS motor - 3-phase - IP 55 - Class F - 230/400 V - 50 Hz  
Aluminium rotor, S1 duty
- Brake - IP 40 - Built-in brake power supply  
Braking torque preset in factory

Motor type	Brake type	Rated power at 50 Hz $P_N$ kW	Rated speed $N_N$ min <sup>-1</sup>	Rated current $I_N$ (400 V) A	Power factor $\cos \varphi$ 4/4	Efficiency $\eta$ % 4/4	Starting current / Rated current $I_D / I_N$	Max. torque / Rated torque $M_D / M_N$	Rated torque $M_N$ N.m	Moment of inertia $J$ 10 <sup>3</sup> kg.m <sup>2</sup>	Braking torque $M_f \pm 20\%$ N.m	Weight IM B3 kg
LS 56	FMC15	0,06	1380	0,3	0,75	42	2,8	2,2	0,43	0,2	1,5	4,7
LS 56	FMC15	0,09	1400	0,4	0,60	55	3,2	2,8	0,64	0,2	1,5	4,9
LS 63	FMC15	0,12	1410	0,4	0,65	63	3,2	2,6	0,85	0,37	1,5	5,7
LS 63	FMC25	0,18	1390	0,65	0,65	63	3,7	2,7	1,25	0,5	2,5	5,9
LS 71	FMC25	0,25	1425	0,8	0,65	70	4,6	2,7	1,7	0,71	2,5	7,3
LS 71	FMC25	0,37	1420	1,12	0,70	72	4,9	2,7	2,55	0,88	2,5	8,2

**3-PHASE  
6 poles  
1000 min<sup>-1</sup>**

- LS motor - single phase - IP 55 - Class F - 230/400 V - 50 Hz  
Aluminium rotor, S1 duty  
Permanent capacitor system
- Brake - IP 40 - Built-in brake power supply  
Braking torque preset in factory

Motor type	Brake type	Rated power at 50 Hz $P_N$ kW	Rated speed $N_N$ min <sup>-1</sup>	Rated current $I_N$ (400 V) A	Power factor $\cos \varphi$ 4/4	Efficiency $\eta$ % 4/4	Starting current / Rated current $I_D / I_N$	Max. torque / Rated torque $M_D / M_N$	Rated torque $M_N$ N.m	Moment of inertia $J$ 10 <sup>3</sup> kg.m <sup>2</sup>	Braking torque $M_f \pm 20\%$ N.m	Weight IM B3 kg
LS 56 P	FMC15	0,06	1420	0,7	0,93	40	2,6	1,2	0,4	0,2	1,5	5,4
LS 63 P	FMC15	0,09	1380	0,75	0,97	55	2,3	0,75	0,62	0,37	1,5	6,2
LS 63 P	FMC15	0,12	1410	1	0,97	56	2,8	0,9	0,82	0,5	1,5	6,4
LS 71 P	FMC25	0,18	1430	1,8	0,78	57	3,9	0,6	1,2	0,71	2,5	7,8
LS 71 P	FMC25	0,25	1430	2,1	0,83	63	4,3	0,6	1,7	1,15	2,5	8,7
LS 71 P	FMC25	0,37	1410	2,8	0,86	66	4	0,52	2,5	1,25	2,5	9

All these motors can have any of the following separate brake power supplies :

- A.C. (rectifier in the terminal box) : 24 - 48 - 110 - 127 - 220 - 254 volts
- D.C. (no rectifier) : 12 - 19 - 24 - 41 - 48 - 97 - 112 - 196 - 225 volts

Optional : brake release lever

# FCR brake induction motors

## General



### 3-phase brake induction motors

LS series, failsafe, rated power 0.18 to 0.55 kW, frame size 71.  
Single speed : 4, 6 or 8-pole Alu or DP.  
Single speed : 4, 6 or 8-pole CS.  
Two-speed : 2/8-pole CS ; 2/4, 4/6, 4/8-pole DP or Alu ; 230/400 V, 50 Hz.  
• D.O.L. starting on 230 V or 400 V supplies with operation in :  
- delta connection ( $\Delta$ ) in 230 V,  
- star connection (Y) in 400 V.

### PRESSENTATION

#### Motor protection

Standard version IP 55, fully sealed against projected liquid and dust in an industrial environment.

#### Brake protection

Standard version IP 44 ensuring good protection.

#### Motor body

Heat sink with cooling fins, pressure die-cast in aluminium alloy.

#### Brake end shields

In cast iron, fixed by tie rods.  
Cast iron brake shields.

#### Fan cover

Metal, fan with straight blades ensuring cooling in both directions of rotation.

#### Bearings

Protected ball bearings (type 2RS), greased for life.

#### Bearings fitted :

- blocked at the rear to guarantee precise positioning of the load whatever the direction of the force ;
- heavily preloaded at the front to eliminate axial oscillation.

#### Finish

Assembly using screws with zinc bichromate finish.

RAL 6000 (green) paint finish.

Shaft end and flange protected against atmospheric corrosion.

Identification on a riveted aluminium plate.

#### Brake motor power supply

Standard in accordance with IEC 38, ie :

230/400V + 10 % - 10 % at 50 Hz.

Standard construction for the following supplies :

220/380 V + 5 % - 5 % at 50 Hz ;

230/400 V + 10 % - 10 % (IEC 38) at 50 Hz ;

240/415 V + 5 % - 5 % at 50 Hz.

Brake motor design allowing Y/ $\Delta$  starting.

### Brake power supply

Incorporated in the motor as standard. The motor is connected like a standard motor.  
Separate : the A.C. supply is external to the motor. It may be identical to the motor voltage 230 V, 400 V or different (110 V - 2 x 24 V - 48 V with separate power supply).

### Stator

Consists of magnetic steel laminations with a high level of permeability and minimal losses, mounted using electric welding and retained in the heat-expanded body to ensure mechanical resistance.

### Winding

Class F as standard, formed on automatic machines to ensure repeat accuracy and reliability. Impregnated with tropicalized Class H varnish ensuring correct operation in humid environments (up to 90% relative humidity).

### Rotor

Magnetic steel laminations with a high level of permeability. Squirrel cage pressure die-cast in aluminium for operation in S1 continuous duty, in special alloy for operation in S4 duty (DP rotor), in cuprosilicon for special applications (CS rotor).

### Metal terminal box

Fully sealed, fitted with one or two cable glands, placed on top of the motor.

### Connection of A.C. supply

Terminal block with 6 terminals enabling connection to the A.C. supply via copper connector links (see diagram inside the terminal box).

### Individual checks before sending

Routine tests, no-load test, dielectric test, check of resistance and the direction of rotation.

### Options

- Separate power supply.
- Different inertia selections (J01, J02, J03 interchangeable on the same motor frame size).
- Different braking torques.
- Manual brake release.
- Drip cover.
- 2<sup>nd</sup> shaft end.
- Temperature sensors.

Rotation speed at no load at 50 Hz depending on the number of poles

Number of poles	min <sup>-1</sup>
2	3000
4	1500
6	1000
8	750

# FCR brake induction motors

## Selection



- LS motor - IP 55 - 50 Hz - Class F - 230/400 V  
Aluminium rotor, S1 duty

• Brake - IP 44 - Built-in brake power supply  
Braking torque can be adjusted by spring selection

Motor type	Brake type	Rated power at 50 Hz	Rated speed	Rated current	Power factor	Efficiency	Starting current / Rated current	Maximum torque / Rated torque	Rated torque	Moment of inertia motor only	Braking torque	Weight kg	
		P <sub>N</sub> kW	N <sub>N</sub> min <sup>-1</sup>	I <sub>N</sub> (400 V) A	Cos φ 4/4	η % 4/4	I <sub>D</sub> / I <sub>N</sub>	M <sub>D</sub> / M <sub>N</sub>	M <sub>N</sub> N.m	J 10 <sup>-3</sup> kg.m <sup>2</sup>	M <sub>f</sub> ± 20 % N.m	J01 to J03	J05
LS 71 L	FCR	0,25	1410	0,85	0,78	54,3	4	2,5	1,7	0,67	See	9,1	11,6
LS 71 L	FCR	0,37	1420	1,2	0,79	60,7	4	2,5	2,5	0,85	table	10	12,5
LS 71 L	FCR	0,55	1400	1,6	0,72	69	4,3	2,3	3,7	1,1	below	11	13,5



- LS motor - IP 55 - 50 Hz - Class F - 230/400 V  
Aluminium rotor, S1 duty

• Brake - IP 44 - Built-in brake power supply  
Braking torque can be adjusted by spring selection

Motor type	Brake type	Rated power at 50 Hz	Rated speed	Rated current	Power factor	Efficiency	Starting current / Rated current	Maximum torque / Rated torque	Rated torque	Moment of inertia motor only	Braking torque	Weight kg	
		P <sub>N</sub> kW	N <sub>N</sub> min <sup>-1</sup>	I <sub>N</sub> (400 V) A	Cos φ 4/4	η % 4/4	I <sub>D</sub> / I <sub>N</sub>	M <sub>D</sub> / M <sub>N</sub>	M <sub>N</sub> N.m	J 10 <sup>-3</sup> kg.m <sup>2</sup>	M <sub>f</sub> ± 20 % N.m	J01 to J03	J05
LS 71 L	FCR	0,18	930	0,6	0,58	55	2,9	2,3	1,8	1,1	See table	10,3	12,8
LS 71 L	FCR	0,25	930	1,1	0,65	51	2,8	1,9	2,6	1,27	above	10,6	13,1

## Characteristics

Braking torque - Brake inertia - Electro-magnets

### Possible braking torque (N.m)

Frame size	Braking torque (N.m)								
	71	1,2	1,6	2	2,4	2,5	4	5	6

### Moment of inertia of brakes only (10<sup>-3</sup> kg.m<sup>2</sup>)

Frame size	Inertia			
	Standard	J01	J02	J03
	0,4	1		3,2

### Electro-magnet characteristics

FCR 71 brake		
Voltage (V)	Resistance (Ω)	Power (W)
20	8,8	46
100	217	48
180	670	48

# FAST brake induction motors

## General



**3-phase brake induction motors, LS series,** failsafe with field deviator (without electro-magnet) power rating 0.18 to 0.55 kW, frame size 71 mm, 4, 6-pole ; 230/400 V, 50 Hz.

- D.O.L. starting on 230 V or 400 V supplies with operation in :
  - delta connection ( $\Delta$ ) at 230 V,
  - star connection (Y) at 400 V.
- Star/delta starting, and the use of an inverter or speed controller are not compatible with this type of brake motor.

### PRESENTATION

#### Motor protection

Standard version IP 55, fully sealed against projected liquid and dust in an industrial environment.

#### Brake protection

Standard version IP 55 ensuring good protection of the brake disk.

#### Motor body

Heat sink with cooling fins, pressure die-cast in aluminium alloy.

#### Brake end shields

In cast iron, fixed using tie rods.  
Brake shield pressure die-cast in aluminium.

#### Fan cover

Metal, fan with straight blades ensuring cooling in both directions of rotation.

#### Bearings

- Protected C3 type ball bearings (type 2RS), greased for life.

#### Assembly of the bearings :

- blocked at the rear to ensure exact positioning of the load whatever direction of the force;
- heavily preloaded at the front to eliminate axial oscillation.

#### Finish

Assembly using screws with zinc bichromate or cadmium finish.

RAL 6000 (green) paint finish.

Shaft end and flange protected against atmospheric corrosion.

Identification on a riveted aluminium plate.

#### Brake motor power supply

Standard in accordance with IEC 38 ie :

230/400 V + 10 % -10 % at 50 Hz.

Standard construction for the following supplies :

220/380 V + 5 % - 5 % at 50 Hz,

230/400 V + 10 % - 10 % (IEC 38) at 50 Hz,

240/415 V + 5 % - 5 % at 50 Hz.

This brake motor design does not allow Y/ $\Delta$  starting.

#### Stator

Consists of magnetic steel laminations with a high level of permeability and minimal losses, mounted using electric welding and retained in the heat-expanded body to ensure mechanical resistance.

#### Winding

Class F as standard, formed on automatic machines to ensure repeat accuracy and reliability. Impregnated with tropicalized Class H varnish ensuring correct operation in humid environments (up to 90% relative humidity).

#### Rotor

Magnetic steel laminations with a high level of permeability. Squirrel cage pressure die-cast in aluminium for operation in S1 continuous duty, in special alloy for operation in S4 duty (DP rotor).

#### Metal terminal box

Fully sealed, fitted with one or two cable glands, placed on top of the motor.

#### Connection of A.C. supply

Terminal block with 6 terminals enabling connection to the A.C. supply via copper connector links (see diagram inside the terminal box).

#### Individual checks before sending

Routine tests, no-load test, dielectric test, check of resistance and the direction of rotation.

#### Special features

One million operations without adjustment. Dimensions hardly differ to those of a standard motor.

Response time  $\leq$  10 ms.

#### Operating conditions

For an operating factor of 40 % :  
1,500 starts per hour.

Rotation speed at no load at 50 Hz depending on the number of poles

Number of poles

4	1500
6	1000

# FAST brake induction motors

## Selection

- LS motor - IP 55 - 50 Hz - Class F - 230/400 V - Aluminium rotor, S1 duty
- IP 44 brake with field deviator

**4 poles**  
1500 min<sup>-1</sup>

Motor type	Brake type	Rated power at 50 Hz kW	Rated speed N <sub>N</sub> min <sup>-1</sup>	Rated current I <sub>N</sub> (400 V) A	Power factor Cos φ 4/4	Efficiency η % 4/4	Starting current / Rated current I <sub>D</sub> / I <sub>N</sub>	Maximum torque / Rated torque M <sub>D</sub> / M <sub>N</sub>	Rated torque M <sub>N</sub> N.m	Moment of inertia J 10 <sup>3</sup> kg.m <sup>2</sup>	Braking torque M <sub>f</sub> ± 20 % N.m	Weight IM B3 kg
LS 71 L	FAST	0.25	1450	1,35	0,50	54,5	4,2	3,3	1,6	0,9	3	8,4
LS 71 L	FAST	0.37	1430	1,5	0,59	60	3,8	2,1	2,5	1,1	3	9,3
LS 71 L	FAST	0.55	1415	1,95	0,65	63	4,1	2,1	3,8	1,25	3	10,3

- LS motor - IP 55 - 50 Hz - Class F - 230/400 V - Aluminium rotor (DP), S4 duty
- IP 44 brake with field deviator

**4 poles**  
1500 min<sup>-1</sup>

Motor type	Brake type	Rated power at 50 Hz kW	Rated speed N <sub>N</sub> min <sup>-1</sup>	Rated current I <sub>N</sub> (400 V) A	Power factor Cos φ 4/4	Efficiency η % 4/4	Starting current / Rated current I <sub>D</sub> / I <sub>N</sub>	Maximum torque / Rated torque M <sub>D</sub> / M <sub>N</sub>	Rated torque M <sub>N</sub> N.m	Moment of inertia J 10 <sup>3</sup> kg.m <sup>2</sup>	Braking torque M <sub>f</sub> ± 20 % N.m	Weight IM B3 kg
LS 71 L	FAST	0.25	1450	1,7	0,40	50	4,2	6	1,6	1,1	4	8,4
LS 71 L	FAST	0.37	1425	1,8	0,53	55	4	4	2,5	1,1	4	9,3
LS 71 L	FAST	0.55	1400	2,8	0,55	51	3,4	2,5	3,8	1,35	4	10,3

- LS motor - IP 55 - 50 Hz - Class F - 230/400 V - Aluminium rotor, S1 duty
- IP 44 brake with field deviator

**6 poles**  
1000 min<sup>-1</sup>

Motor type	Brake type	Rated power at 50 Hz kW	Rated speed N <sub>N</sub> min <sup>-1</sup>	Rated current I <sub>N</sub> (400 V) A	Power factor Cos φ 4/4	Efficiency η % 4/4	Starting current / Rated current I <sub>D</sub> / I <sub>N</sub>	Maximum torque / Rated torque M <sub>D</sub> / M <sub>N</sub>	Rated torque M <sub>N</sub> N.m	Moment of inertia J 10 <sup>3</sup> kg.m <sup>2</sup>	Braking torque M <sub>f</sub> ± 20 % N.m	Weight IM B3 kg
LS 71 L	FAST	0.18	950	1,1	0,50	45	2,6	1,9	1,9	1,1	3	9,6
LS 71 L	FAST	0.25	940	1,5	0,52	47	2,4	1,8	2,5	1,3	3	9,9

- LS motor - IP 55 - 50 Hz - Class F - 230/400 V - Aluminium rotor (DP), S4 duty
- IP 44 brake with field deviator

**6 poles**  
1000 min<sup>-1</sup>

Motor type	Brake type	Rated power at 50 Hz kW	Rated speed N <sub>N</sub> min <sup>-1</sup>	Rated current I <sub>N</sub> (400 V) A	Power factor Cos φ 4/4	Efficiency η % 4/4	Starting current / Rated current I <sub>D</sub> / I <sub>N</sub>	Maximum torque / Rated torque M <sub>D</sub> / M <sub>N</sub>	Rated torque M <sub>N</sub> N.m	Moment of inertia J 10 <sup>3</sup> kg.m <sup>2</sup>	Braking torque M <sub>f</sub> ± 20 % N.m	Weight IM B3 kg
LS 71 L	FAST	0.18	940	1,1	0,50	48	3	2,6	1,9	1,1	3	9,6
LS 71 L	FAST	0.25	880	1,3	0,57	49	2,3	2,2	2,6	1,3	3	9,9

# MFA enclosed D.C. motors

## General



### Enclosed D.C. motors

- **MFA**

- energisation by permanent magnets,
- frame size 56 and 63,
- power rating 0.075 to 0.55 kW,
- IP 44 protection.

THESE MOTORS ARE GENERALLY INTENDED TO FIT **MVE** VARIABLE SPEED DRIVES

(See pages D3.1 to D3.19)

### Operating conditions

S1 duty, environment requiring an enclosed motor.

Altitude lower than 1000 m.

Ambient temperature less than or equal to 40 °C.

Absolute humidity between 5 and 23 g/m<sup>3</sup>

Current range from 50 to 100 % of  $I_N$  in continuous operation and higher in transient operation.

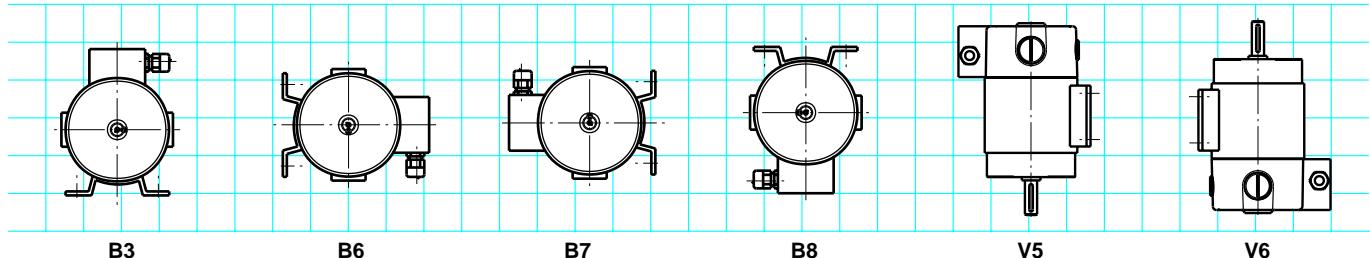
## Construction

Component	Materials	Remarks
Stator (or body)	Steel housing	
Field coils	Permanent magnets	- With a high force magnetic field
Armature	Insulated low-carbon magnetic steel laminations Insulated electro-plated copper	- Formed on automatic machines for repeat accuracy and reliability - Bindings reinforced with heat-treated polymerised fibreglass on the commutator end - Class F insulation
Commutator	Silver-plated copper on plastic	- Large number of segments
Shaft	Steel	- Open keyway - Straight-ended key
Brushes	Electrographite compound	- Easy access via plug on sides of the motor
End shields	Aluminium alloy	- DE shield, FF flange mounted, or FT face mounted
Bearings and lubrication	Steel	- Ball bearings, C3 play - Type 2RS, dust and damp proof, "greased for life"
Terminal box	Composite material	- Placed on top of the motor - Output via cable gland, on the right when seen from the shaft end - Connection to a terminal block

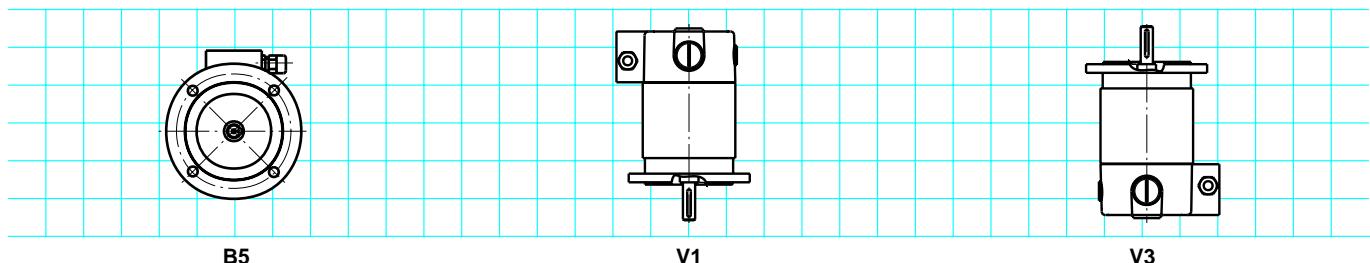
# MFA enclosed D.C. motors

## Mounting positions

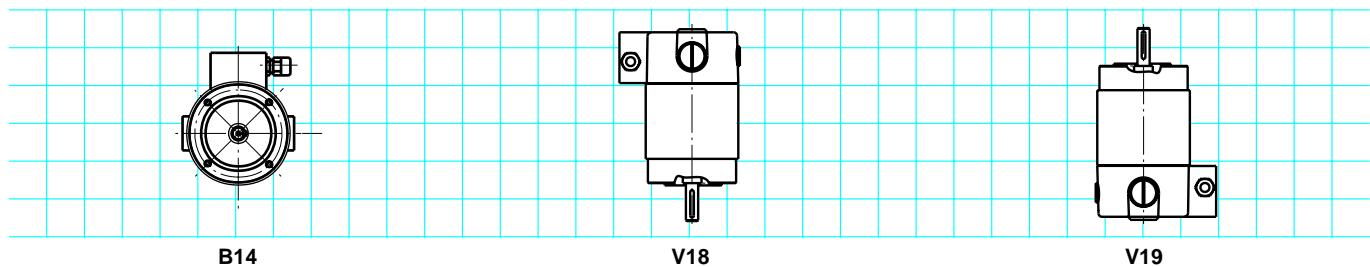
### Foot mounted motors



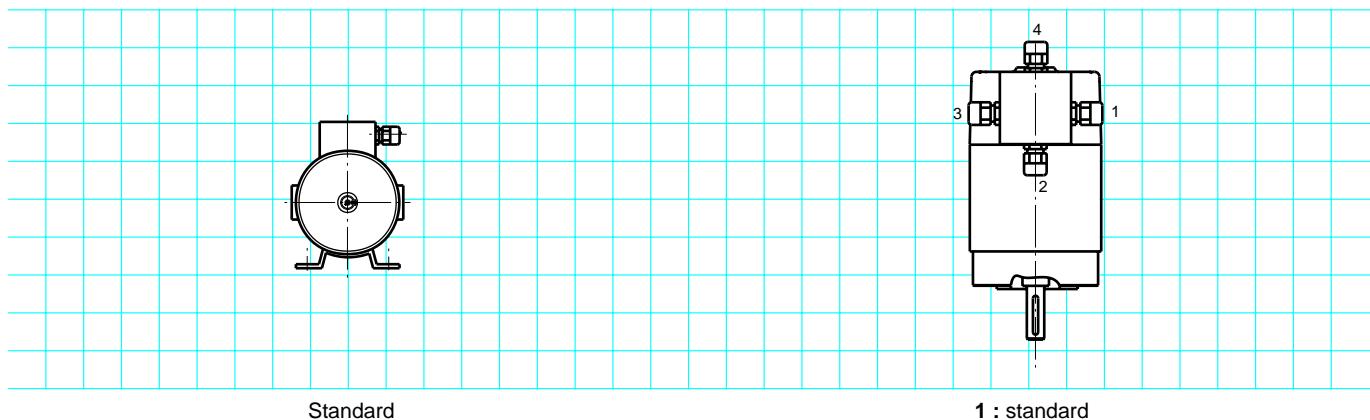
### Flange mounted motors



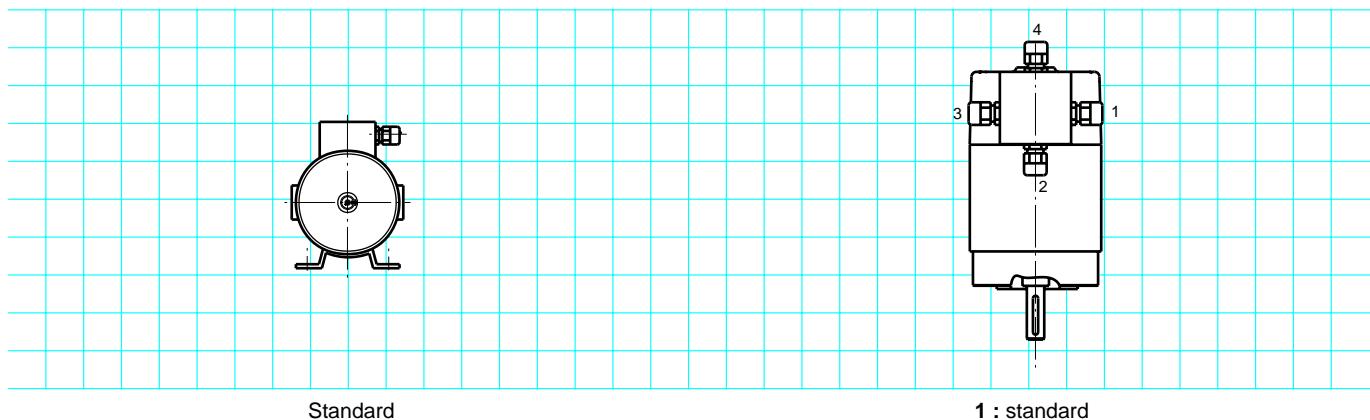
### Face mounted motors



### Terminal box positions



### Cable gland positions



# MFA enclosed D.C. motors

## Selection

**FF  
1.6**

- MFA motor - IP 44 - Class F
- Field excitation by permanent magnets
- Power supply by *thyristors* (form factor 1.6)
- S1 duty - Ambient temperature  $\leq 40^{\circ}\text{C}$  - Altitude  $\leq 1000\text{ m}$

$P$ kW	$n$ min <sup>-1</sup>	$M_N$ N.m	$I_N$ A	$\eta$	$L$ mH	$R_{115^{\circ}}$ $\Omega$	$U_{\max}$ V	Moment of inertia $10^{-3}\text{ kg.m}^2$	MFA size	Manuf. code
<b>0,075</b>	3000	0,24	0,6	0,62	88	29,37	200	0,26	<b>56</b>	<b>S</b>
<b>0,12</b>	3000	0,38	1	0,58	23	11,84	200	0,51	<b>56</b>	<b>L</b>
<b>0,18</b>	3000	0,57	1,2	0,72	23,00	6,78	200	0,88	<b>56</b>	<b>VL</b>
<b>0,18</b>	3000	0,57	1,2	0,69	32,00	6,71	200	1,3	<b>63</b>	<b>S</b>
<b>0,25</b>	3000	0,80	1,9	0,71	21,00	4,25	200	1,7	<b>63</b>	<b>M</b>
<b>0,37</b>	3000	1,18	2,4	0,75	14,30	2,53	200	2,5	<b>63</b>	<b>L</b>

**FF  
1.05**

- MFA motor - IP 44 - Class F
- Field excitation by permanent magnets
- Power supply by *transistors* (form factor 1.05)
- S1 duty - Ambient temperature  $\leq 40^{\circ}\text{C}$  - Altitude  $\leq 1000\text{ m}$

$P$ kW	$n$ min <sup>-1</sup>	$M_N$ N.m	$I_N$ A	$\eta$	$L$ mH	$R_{115^{\circ}}$ $\Omega$	$U_{\max}$ V	Moment of inertia $10^{-3}\text{ kg.m}^2$	MFA size	Manuf. code
<b>0,09</b>	3000	0,29	0,65	0,7	88	29,37	200	0,26	<b>56</b>	<b>S</b>
<b>0,12</b>	3000	0,38	0,83	0,8	44	14,69	200	0,46	<b>56</b>	<b>M</b>
<b>0,18</b>	3000	0,57	1	0,83	23,00	11,84	200	0,51	<b>56</b>	<b>L</b>
<b>0,25</b>	3000	0,80	2,1	0,83	23,00	6,78	200	0,88	<b>56</b>	<b>VL</b>
<b>0,3</b>	3000	0,96	2,1	0,83	32,00	6,71	200	1,3	<b>63</b>	<b>S</b>
<b>0,45</b>	3000	1,43	2,6	0,83	21,00	2,53	200	1,7	<b>63</b>	<b>M</b>
<b>0,55</b>	3000	1,75	3,5	0,86	14,3	2,53	200	2,5	<b>63</b>	<b>L</b>



**Maximum current** which must not be exceeded :  
1.6 times the rated current ; otherwise there  
is a risk that the magnets will be demagnetized.

Possibility of 2000 min<sup>-1</sup> rated speed : Please consult Leroy Somer.

- $P$  : Rated power  
 $n$  : Rated speed  $\pm 10\%$   
 $M_N$  : Rated torque  
 $I_N$  : Rated current  
 $\eta$  : Efficiency  
 $L$  : Motor choke  
 $R_{115^{\circ}}$  : Armature resistance at  $115^{\circ}\text{C}$   
 $U_{\max}$  : Maximum armature voltage

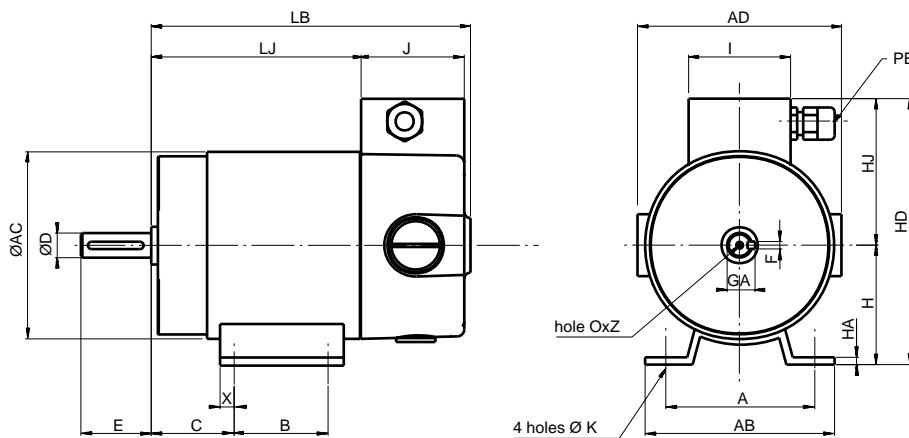
# MFA enclosed D.C. motors

## Dimensions

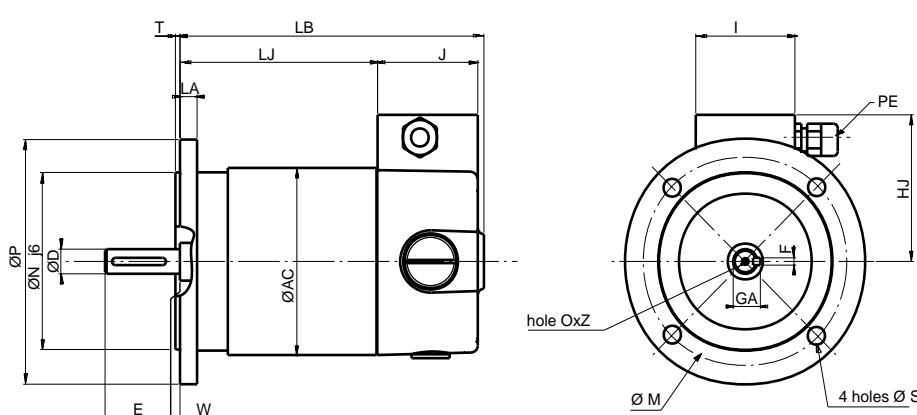
### Dimensions of MFA enclosed D.C. motors

Dimensions in millimetres

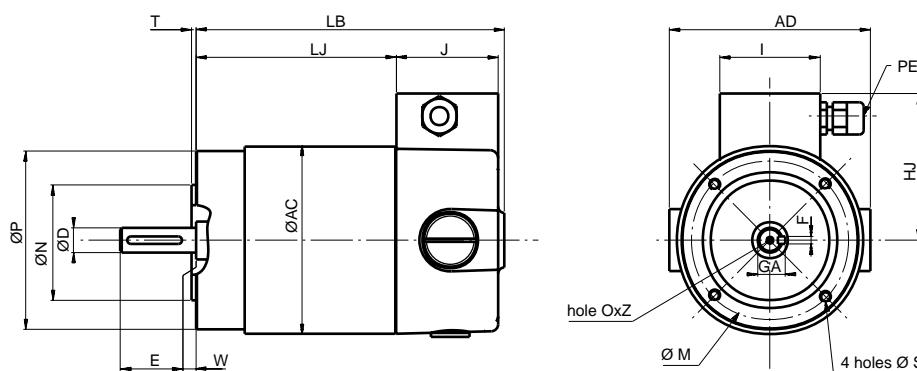
#### - B3 foot mounted



#### - (FF) flange mounted B5



#### - (FT) face mounted B14



# MFA enclosed D.C. motors

## Dimensions

### Dimensions of standard MFA enclosed D.C. motors

Dimensions in millimetres

#### - foot or flange mounted

Type	Motors															Weight kg		
	A	AB	AD	B	X	C	AC	H	HA	HD	HJ	J	I	K	LB <sup>1</sup>	LJ <sup>1</sup>	PE	
<b>MFA 56 S</b>	90	108	108	71	9	36	86	56	2	127	71	49	49	6	159	103	9	3
<b>MFA 56 M</b>	90	108	108	71	9	36	86	56	2	127	71	49	49	6	184	128	9	3.5
<b>MFA 56 L</b>	90	108	108	71	9	36	86	56	2	127	71	49	49	6	199	143	9	4
<b>MFA 63 S</b>	100	120	134	80	10	40	120	63	2	161	98	78	75	7	197	119	11	7.5
<b>MFA 63 M</b>	100	120	134	80	10	40	120	63	2	161	98	78	75	7	222	144	11	9
<b>MFA 63 L</b>	100	120	134	80	10	40	120	63	2	161	98	78	75	7	252	174	11	11

1. In flange mounted version (B5) LB and LJ = + 4 mm for MFA 56 and + 11 mm for MFA 63.

Type	Flanges						Faceplates					Shaft extension					
	M	N	P	LA	S	T	M	N	P	S	T	D	E	O x Z	GA	F	W
<b>MFA 56 S/M/L</b>	100	80	120	8	7	3	65	50	80	M5	2.5	11 j6	23	M4x10	12.5	4	0
<b>MFA 63 S/M/L</b>	115	95	140	10	9	3	75	60	120	M5	2.5	11 j6	23	M4x10	12.5	4	0

#### IMPORTANT

See page 15 for the dimensions of flanges and shaft ends as a function of the gearbox selected.

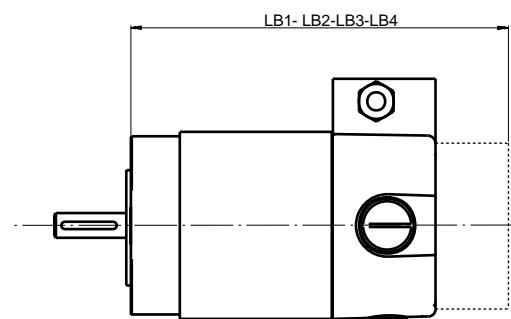
# MFA enclosed D.C. motors

## Dimensions

### Dimensions of MFA enclosed D.C. motors

Dimensions in millimetres

- foot or flange mounted



Type	Motors with options			
	LB1	LB2	LB3	LB4
<b>MFA 56 S</b>	210	193	203	208
<b>MFA 56 M</b>	235	218	228	233
<b>MFA 56 L</b>	250	233	243	248
<b>MFA 63 S</b>	245	228	238	243
<b>MFA 63 M</b>	270	253	263	268
<b>MFA 63 L</b>	300	283	293	298

In flange mounted version (B5) the dimensions LB1 - 2 - 3 - 4 = + 4 mm for MFA 56 and + 11 mm for MFA 63

LB1 = detection of 20 V dynamo speed

LB2 = detection of 30 V alternator speed

LB3 = FMC safety brake 2.5 N.m

LB4 = FMC safety brake 4 N.m

For the brake release lever (option) dimension LB3 = + 10 mm

# MBT low voltage D.C. motors

## General



### Low voltage enclosed D.C. motors

#### • MBT :

- field excitation by permanent magnets,
- rated power 0.035 to 0.7 kW,
- protection IP 40.

**MBT 65 :** 2-pole construction

**MBT 82 :** 2-pole construction  
(4-pole in development)

**MBT 1141 :** 4-pole construction  
only

### Operating conditions

S1 duty.

Altitude less than 1000 m.

Ambient temperature less than or equal to 40 °C.

### Applications

- On-board equipment
- Medical equipment

### WARNING :

These motors are always supplied to order :  
the operating conditions must be precisely defined.

The tables only show characteristics for  
motors operating at rated speeds : 1500-  
3000 min<sup>-1</sup> and for the usual voltages from  
12 to 48 volts. These values are the most  
widely used.

These motors can be constructed for other  
speeds and voltages : please consult Leroy  
Somer.

These motors can all be used with the  
gearboxes shown on the previous pages.  
Only the flanges and shaft ends need to be  
adapted for the selected gearboxes.  
(see page 15)

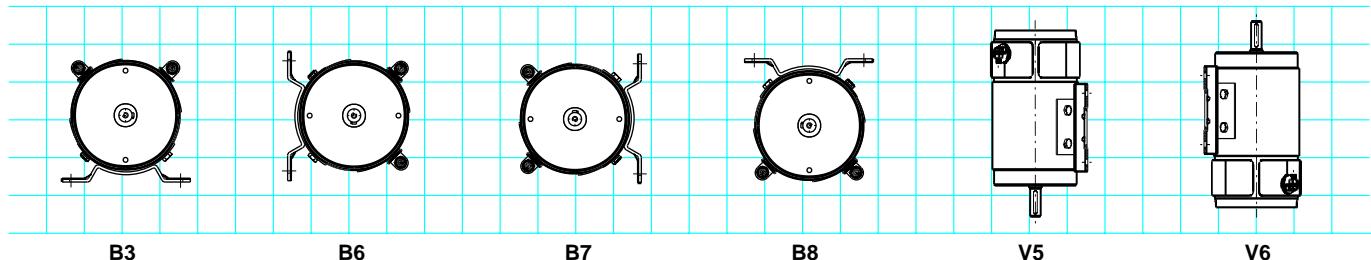
## Construction

Component	Materials	Remarks
Body	Steel	
Field coils	Permanent magnets	- With a high force magnetic field
Armature	Insulated low-carbon magnetic steel laminations Insulated electro-plated copper Class F insulating materials	- Formed on automatic machines for repeat accuracy and reliability - Binding reinforced on the commutator end
Commutator	Silver-plated copper on plastic	
Shaft	Steel	- Open keyway - Straight-ended key
Brushes	Electrographite compound	- Several varieties suitable for different applications - For MBT1141, LS patented cassette / brush system
End shields	Aluminium alloy	- DE shield (flange mounted or face mounted)
Bearings	Steel	- Ball bearings - Greased for life
Connection	- Flying leads, or - Terminals	- Depending on the application

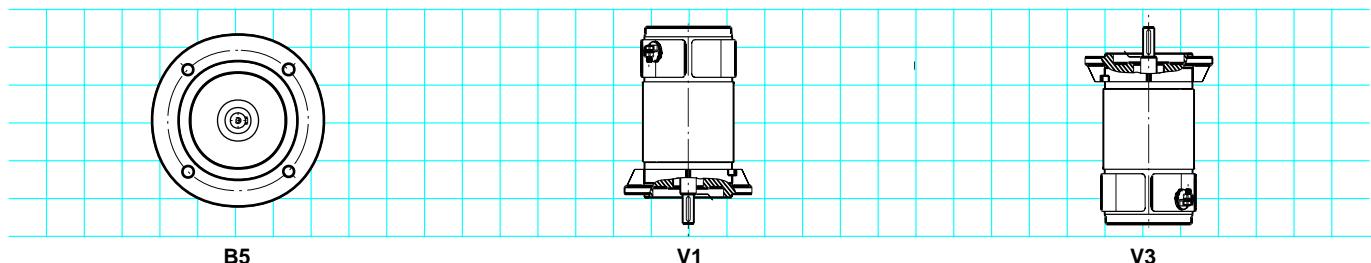
# MBT low voltage D.C. motors

## Mounting positions

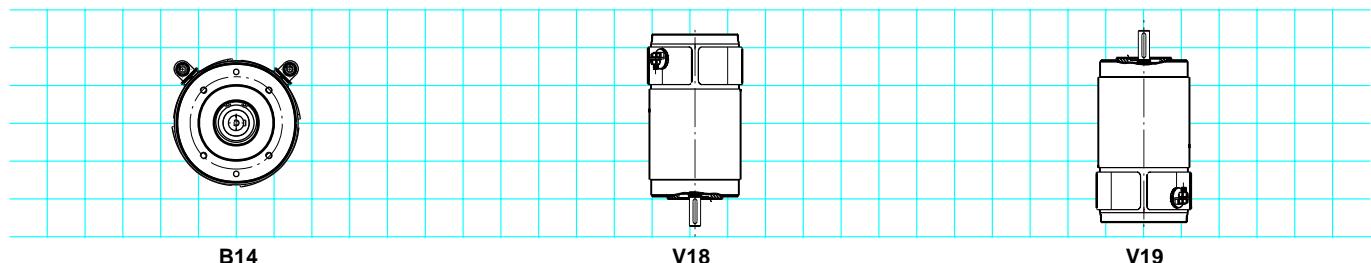
Foot mounted motors (MBT 1141 only)



Flange mounted motors (MBT 1141 only)



Face mounted motors



# MBT low voltage D.C. motors

## Selection

**FF  
1.05**

- MBT motor - IP 40 - Class F
- Field excitation by permanent magnets

- Non-ventilated IC410 motor

S1 duty - Ambient temperature  $\leq 40^{\circ}\text{C}$  - Rated speed : 3000 rpm

P kW	Number of poles	$M_N$ N.m	$\eta$ average	$I_N$ (24 V)	Operating voltage min V	Operating voltage max V	Moment of inertia $10^{-3} \text{ kg.m}^2$	MBT size	Manuf. code
<b>0,07</b>	2	0,22	0,7	4	12	48	0,11	<b>65</b>	<b>M</b>
<b>0,09</b>	2	0,28	0,73	5	24	48	0,14	<b>65</b>	<b>L</b>
<b>0,15</b>	2	0,49	0,76	8,2	24	48	0,26	<b>82</b>	<b>S</b>
<b>0,2</b>	2	0,65	0,81	10,3	24	48	0,46	<b>82</b>	<b>M</b>
<b>0,25</b>	2	0,81	0,83	12,6	24	48	0,51	<b>82</b>	<b>L</b>
<b>0,3</b>	2	0,98	0,85	14,7	24	48	0,71	<b>82</b>	<b>IL</b>
<b>0,25</b>	4	0,82	0,8	13	24	48	1,14	<b>1141</b>	<b>S</b>
<b>0,37</b>	4	1,21	0,83	18,6	24	48	1,53	<b>1141</b>	<b>M</b>
<b>0,55</b>	4	1,8	0,86	26,6	24	48	2,33	<b>1141</b>	<b>L</b>
<b>0,7</b>	4	2,3	0,86	33,9	24	48	2,76	<b>1141</b>	<b>VL</b>

**FF  
1.05**

- MBT motor - IP 40 - Class F
- Field excitation by permanent magnets

- IC410 non-ventilated motor

S1 duty - Ambient temperature  $\leq 40^{\circ}\text{C}$  - Rated speed : 1500 rpm

P kW	Number of poles	$M_N$ N.m	$\eta$ average	$I_N$ (24 V)	Operating voltage min V	Operating voltage max V	Moment of inertia $10^{-3} \text{ kg.m}^2$	MBT size	Manuf. code
<b>0,035</b>	2	0,22	0,7	2	12	48	0,11	<b>65</b>	<b>M</b>
<b>0,045</b>	2	0,28	0,73	2,5	12	48	0,14	<b>65</b>	<b>L</b>
<b>0,075</b>	2	0,49	0,65	4,8	12	48	0,26	<b>82</b>	<b>S</b>
<b>0,1</b>	2	0,65	0,7	6	12	48	0,46	<b>82</b>	<b>M</b>
<b>0,13</b>	2	0,78	0,8	6,8	12	48	0,51	<b>82</b>	<b>L</b>
<b>0,15</b>	2	0,98	0,8	7,8	24	48	0,71	<b>82</b>	<b>IL</b>
<b>0,15</b>	4	0,98	0,75	8,3	12	48	1,14	<b>1141</b>	<b>S</b>
<b>0,2</b>	4	1,3	0,8	10,4	12	48	1,53	<b>1141</b>	<b>M</b>
<b>0,35</b>	4	2,3	0,8	18,2	24	48	2,33	<b>1141</b>	<b>L</b>
<b>0,45</b>	4	2,9	0,82	22,8	24	48	2,76	<b>1141</b>	<b>VL</b>

P : Rated power  
 $M_N$  : Rated torque  
 $I_N$  : Rated current  
 $\eta$  : Efficiency

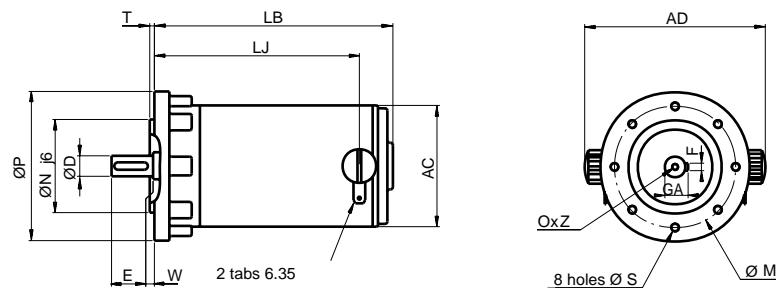
# MBT low voltage D.C. motors

## Dimensions

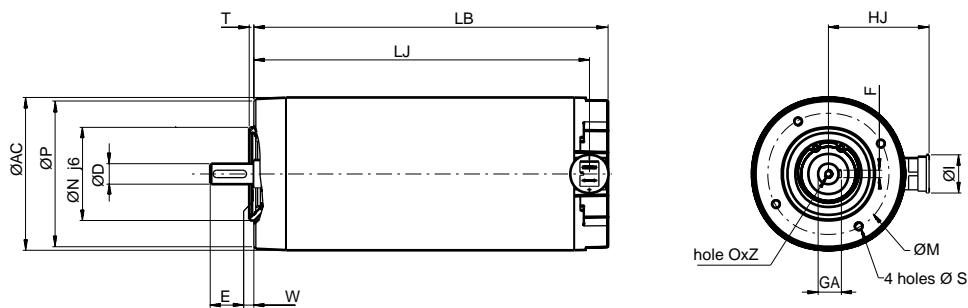
Dimensions of MBT 65 and MBT 82 low voltage D.C. motors

Dimensions in millimetres

### - MBT 65 (FT) face mounted B14



### - MBT 82 (FT) face mounted B14



NOTE : (See flange and shaft end characteristics on page 15 for adaptation to the gearbox selected)

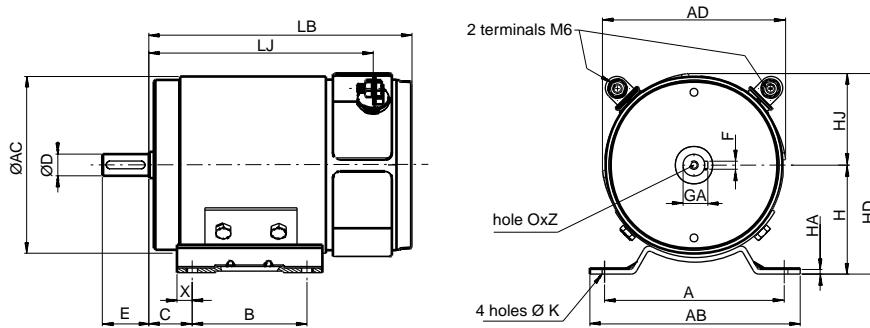
# MBT low voltage D.C. motors

## Dimensions

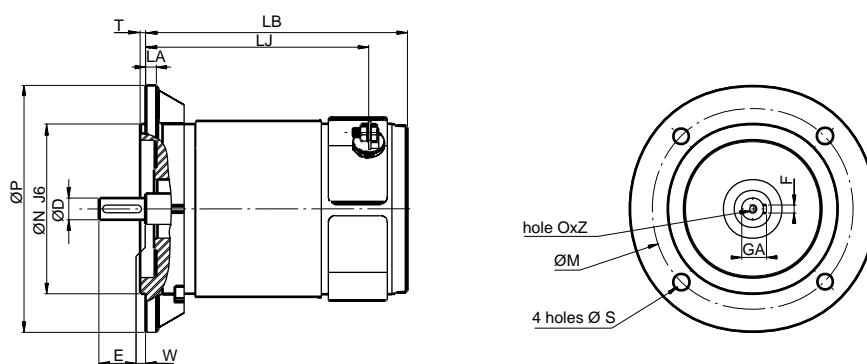
### Dimensions of MBT 1141 low voltage D.C. motors

Dimensions in millimetres

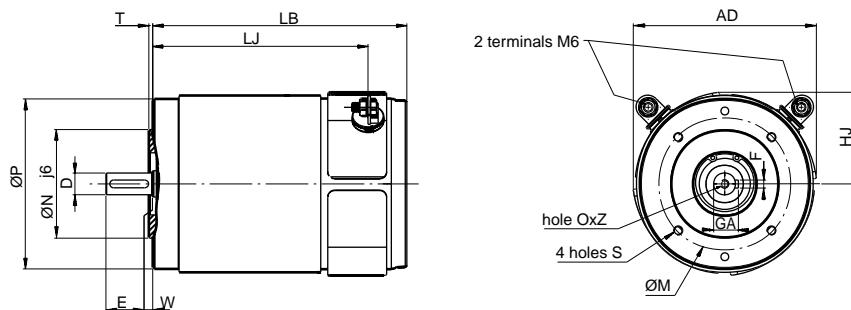
#### - MBT 1141 foot mounted B3



#### - MBT 1141 (FF) flange mounted B5



#### - MBT 1141 (FT) face mounted B14



**NOTE :** (See flange and shaft end characteristics on page 15 for adaptation to the gearbox selected)

# MBT low voltage D.C. motors

## Dimensions

### Dimensions of standard MBT low voltage D.C. motors

*Dimensions in millimetres*

#### - foot or flange mounted

Type	Motors													Weight kg		
	A	AB	AD	B	X	C	AC	H	HA	HD	HJ	I	K	LB <sup>1</sup>	LJ <sup>1</sup>	
<b>MBT 65 M</b>	-	-	97	-	-	-	65	-	-	-	-	-	-	128	110,5	0.9
<b>MBT 65 L</b>	-	-	97	-	-	-	65	-	-	-	-	-	-	143	125,5	1.1
<b>MBT 82 S</b>	-	-	-	-	-	-	82	-	-	-	56	22	-	150	140	3
<b>MBT 82 M</b>	-	-	-	-	-	-	82	-	-	-	56	22	-	170	160	3.5
<b>MBT 82 L</b>	-	-	-	-	-	-	82	-	-	-	56	22	-	190	180	4
<b>MBT 82 IL</b>	-	-	-	-	-	-	82	-	-	-	56	22	-	210	200	4.5
<b>MBT 1141 S</b>	100	120	118	80	10	40	114	63	2	120	57	-	7	167	142	6
<b>MBT 1141 M</b>	100	120	118	80	10	40	114	63	2	120	57	-	7	187	162	7.5
<b>MBT 1141 L</b>	100	120	118	80	10	40	114	63	2	120	57	-	7	227	202	9
<b>MBT 1141 VL</b>	100	120	118	80	10	40	114	63	2	120	57	-	7	257	232	10.5

1. In flange mounted version (B5) LB and LJ = + 15 mm MBT 1141.

Type	Flanges						Faceplates					Shaft extension					
	M	N	P	LA	S	T	M	N	P	S	T	D	E	O x Z	GA	F	W
<b>MBT 65</b>	-	-	-	-	-	-	65	50	80	M5	2.5	11	23	M4x10	12.5	4	0
<b>MBT 82</b>	-	-	-	-	-	-	65	50	80	M5	2.5	11	23	M4x10	12.5	4	0
<b>MBT 1141</b>	115	95	140	10	9	3	85	70	105	M6	2.5	14	30	M5x12	16	5	0

As these motors are designed to be sold to individual specifications, there are a number of options with regard to the types of flange and shaft extension supplied.

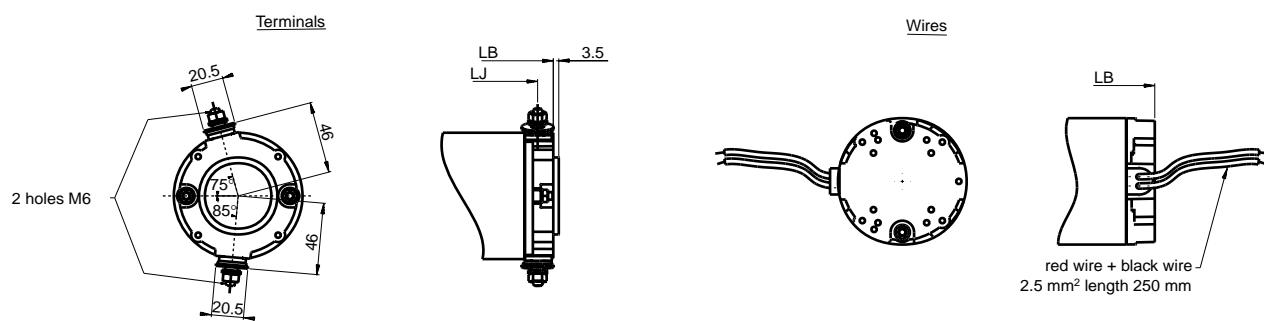
# MBT low voltage D.C. motors

## Main dimensions of options

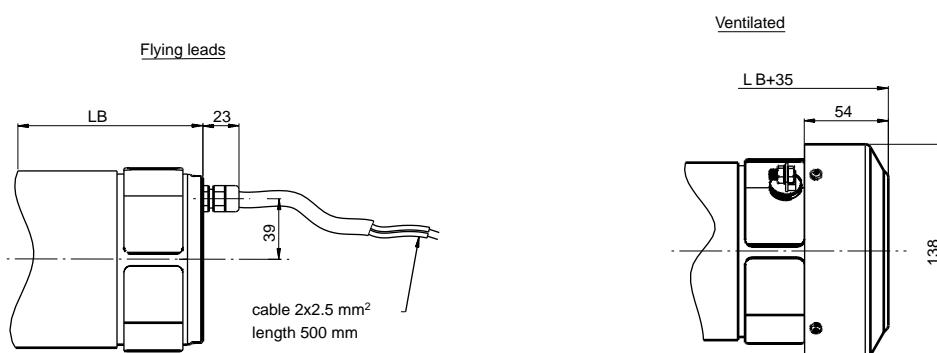
Dimensions of MBT low voltage D.C. motors

*Dimensions in millimetres*

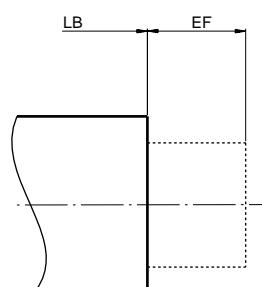
### - MBT 82 motor



### - MBT 1141 motor



### - MBT 82 and MBT 1141 motor with brake



MBT 82 - MBT 1141		
Brake type	Braking torque	Braking force (mm)
FMC	2.5 N.m	48
FMCL	4 N.m	53

For LB-LJ dimensions, see page C7.6.

# MBT low voltage D.C. motors

## Main dimensions of options

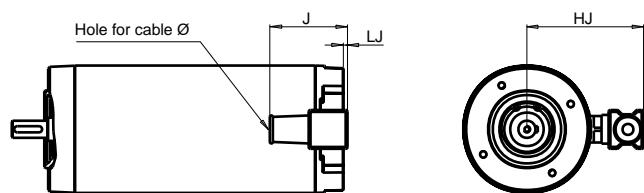
### Dimensions of standard MBT low voltage D.C. motors

*Dimensions in millimetres*

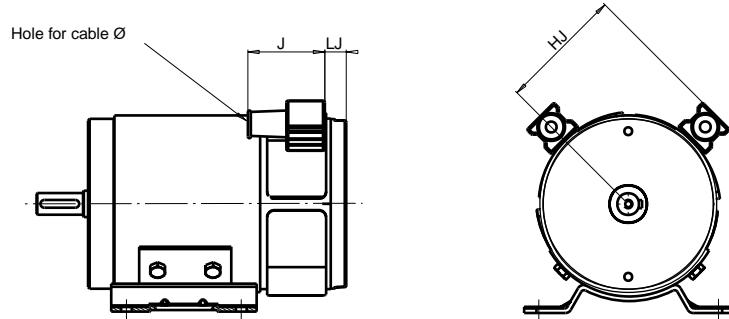
- **Terminal cap**

This can be positioned at every 1/4 turn.

- **MBT 82**



- **MBT 1141**

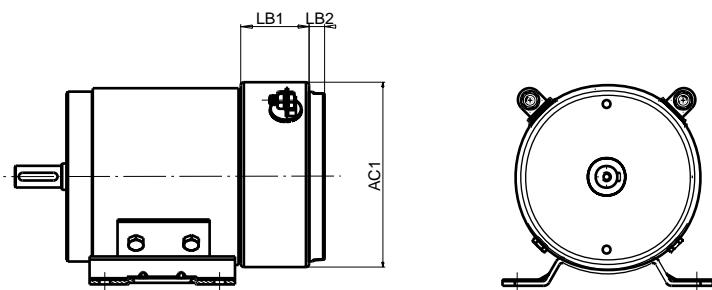


Type	HJ	J	LJ	Max. cable Ø
<b>MBT 82</b>	75	50	3	8
<b>MBT 1141</b>	80	50	14	8

- **Protective sleeve**

Changes the protection level of the MBT 1141 motor (only) from IP 40 to IP 44.

- **MBT 1141**



Type	AC1	LB1	LB2
<b>MBT 1141</b>	119	44	10

*This option can be used in addition to the terminal caps.*

# Electronic variable speed drives MINIDRIVE

## General



### General operating principle

The MINIDRIVE is an A.C. drive for supplying induction motors. Thus, changing the frequency (F) is the same as changing the synchronism speed (N) of a given motor.

However, changing the frequency without changing the supply voltage varies the density of the magnetic flux in the motor. MINIDRIVE electronic drives therefore vary the output VOLTAGE and FREQUENCY simultaneously. This optimizes the motor torque curve and its temperature rise. MINIDRIVE electronic drives supply the motor with a voltage generated from an internal fixed D.C. voltage.

The MINIDRIVE uses pulse width modulation (PWM) to control the motor Voltage/Frequency ratio in open loop mode.

Electronic drives supply the motor with a current close to a sine wave with few harmonics.

The MINIDRIVE regulates the speed in relation to the supply voltage and the load. It thus ensures a constant speed of rotation. The drive is controlled directly via the reference potentiometer and a switch, and does not require programming.

Due to its built-in voltage doubler, the MINIDRIVE can be used to control a standard 230V/400V - 50 Hz motor from a 115V or 230V 50/60Hz single-phase mains supply (M/ML versions).

The synchronism speed ( $\text{min}^{-1}$ ) of a cage induction motor depends on the number of poles (P) and the frequency (F) of its power supply. These values are linked by the equation :

$$N = \frac{120 \times F}{P}$$

### Power module

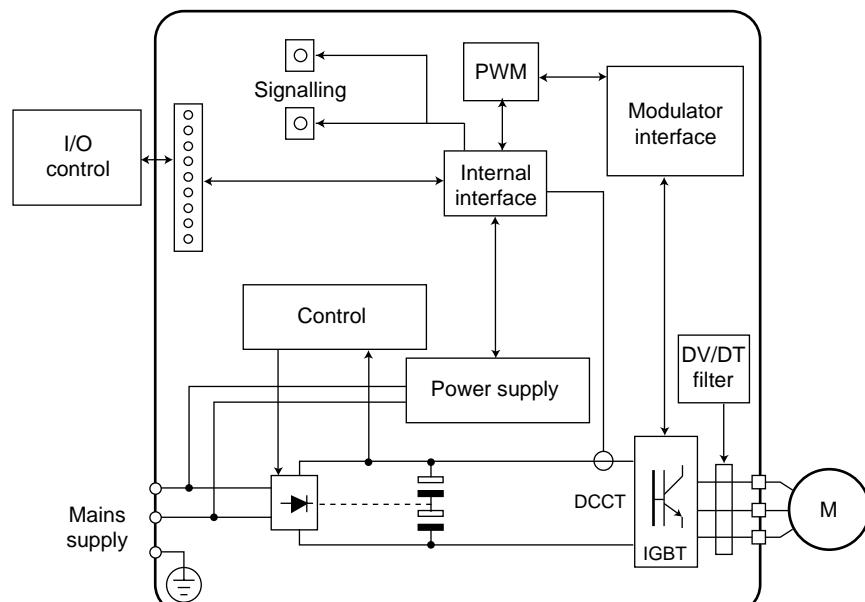
The MINIDRIVE uses an IGBT transistor inverter bridge. This leading-edge technology considerably reduces the noise and temperature rise of the variable speed motor (motor switching frequency 16 KHz).

### Synoptic view

The electronic drive consists of :

- a mains voltage rectifier, followed by filtering capacitors providing a fixed D.C. voltage which depends on the mains voltage;
- an inverter : this D.C. voltage supplies the IGBT inverter with 6 transistors. The inverter converts the D.C. voltage to an A.C. voltage modulated in both voltage and frequency;
- an internal current measurement;
- an internal voltage measurement;
- an electronic power and control card incorporating the amplification circuits for the power switching signals and the terminal blocks.

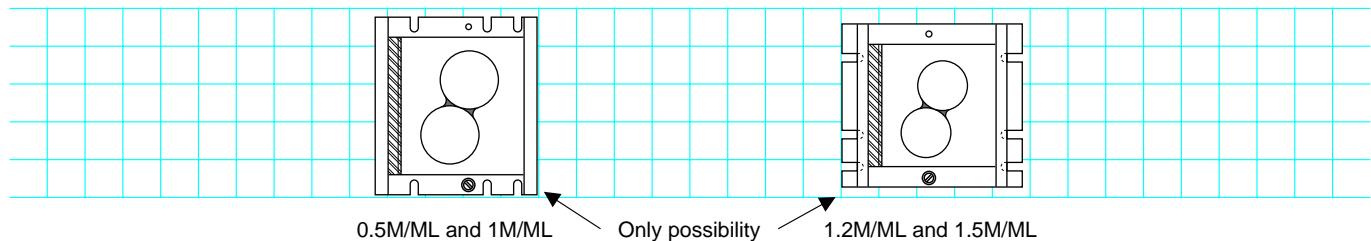
MINIDRIVE block diagram



# Electronic variable speed drives MINIDRIVE

## Mounting positions

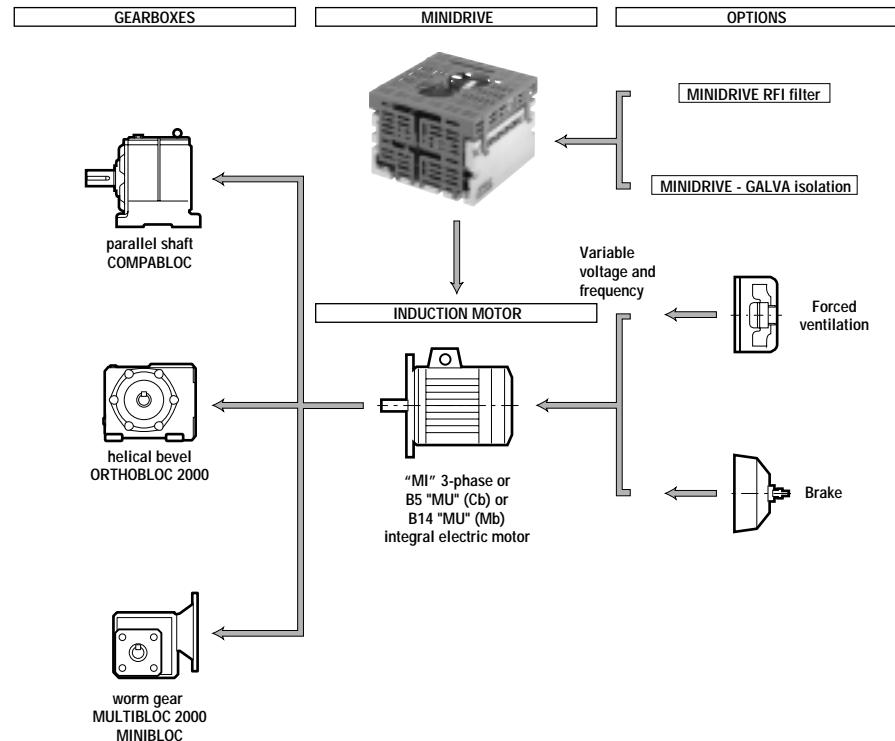
MINIDRIVE electronic drive



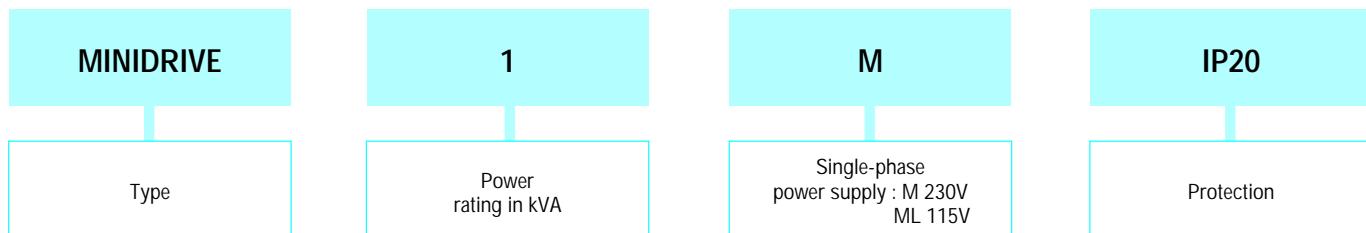
# Electronic variable speed drives MINIDRIVE

## Adaptation possibilities

Leroy-Somer offers complete MINIDRIVE drive systems (motor-gearbox-drive), which respond to very wide-ranging needs. They are described below and offered in this catalogue. The MINIDRIVE is a general-purpose drive for motors from 0.09 kW to 1.1 kW. Refer to the various relevant sections for the gearbox or motor definitions. For other applications, consult the Leroy-Somer technical specialists who will be glad to assist.



## Designation / Coding



☞ Example of coding :  
MINIDRIVE electronic drive for single-phase induction motor, 0.37 kW

Designation  
MINIDRIVE 1 M IP20

All the products in this catalogue have a code.

The coding table is incorporated in the price list with the list of designations.

# Electronic variable speed drives MINIDRIVE

## Pilot control and functions

### General

- Open loop scalar control (U/F ratio).
- Speed regulation.
- Switching frequency : 16 kHz motor.
- Permissible overload : 150% of the rated drive current for 6 seconds.
- Constant torque throughout the speed range from 3 Hz to 50 Hz depending on the thermal limits for the associated motor.
- Starting torque : 200% of rated torque.

### Control

- Negative control logic via isolated volt-free contacts.

### Pilot control

- Analogue voltage input : 0 - 5 V not galvanically isolated.
- Potentiometer input : 5 kΩ potentiometer, IP00, supplied with the MINIDRIVE.
- Logic input : forward, reverse, fault acknowledgement.
- Stopping mode on ramp.
- Dynamic braking performed by the drive.

### Adjustments

- Min and max frequency limit.
- Separate acceleration and deceleration ramps : 0.3 to 20 seconds.
- Frequency ranges : 0 - 50 Hz or 0 - 100 Hz (2, 4 and 6-pole motor).
- Slip compensation : 0 - 3 V/Hz/A.

### Protection

- I<sup>2</sup>xt motor overload : 120% of rated current.
- Motor phase/phase short-circuit.
- Mains overvoltage and D.C. bus.
- Mains undervoltage and D.C. bus.
- Locked rotor.
- Drive self-diagnostics.
- Limiting current inrush onto the mains on power-up.
- Manual or automatic reset.

### Communication

- Display via 2 LEDs :
  - one green LED : presence of D.C. bus voltage.
  - one 3-colour LED : abnormal operating conditions - fault.

### Environment

- Drive protection : IP20 (for IP00 please consult Leroy-Somer).
- Storage temperature : -25 °C to +55 °C, 12 months maximum.
- Operating temperature : 0 to +45 °C.
- Motor output dV/dt filter (reduces overvoltages linked to switching).
- Conformity to standards :
  - CE with external RFI filter option.
  - UL, CSA.

### Options

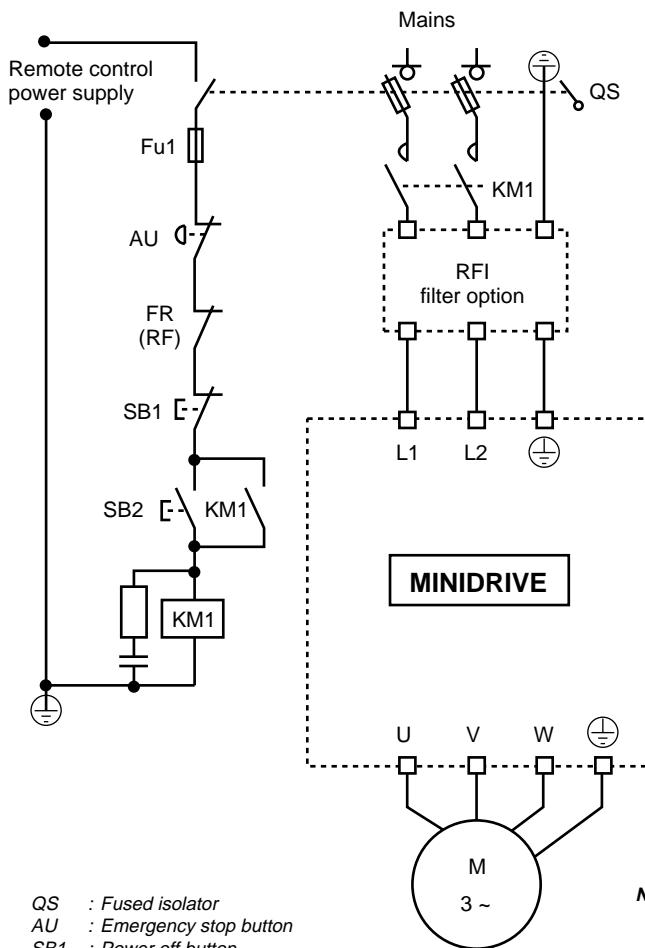
- Potentiometer + switch kit (IP64 potentiometer, button, bezel, faceplate, 2-pole switch).
- Galvanic isolation card for integration, MINIDRIVE.
- RFI filter, MINIDRIVE. Class A and Class B.
- 115V power supply, models 0.5 ML to 1.5 ML.

*These options can be combined.*

# Electronic variable speed drives MINIDRIVE

## Pilot control and functions / Standard wiring

MINIDRIVE electronic frequency inverters  
Standard wiring



QS : Fused isolator  
AU : Emergency stop button  
SB1 : Power off button  
SB2 : Power on button  
KM1 : Line contactor

Note : - The contactor and relay coils  
should be equipped with an RC circuit.

GEARED MOTORS FOR VARIABLE SPEED APPLICATIONS

D

# Electronic variable speed drives MINIDRIVE

## Selection

### Induction motors controlled by a frequency modulator

#### General :

The choice of motor depends on :  
– the operating **speed range** : minimum speed, maximum speed. These criteria will give an indication of the number of motor poles;  
– the **resistive torque** of the driven machine, which is used to calculate the power rating in kW.

#### Applications :

The modulator is designed for constant torque applications (eg : conveyors, displacement, etc).

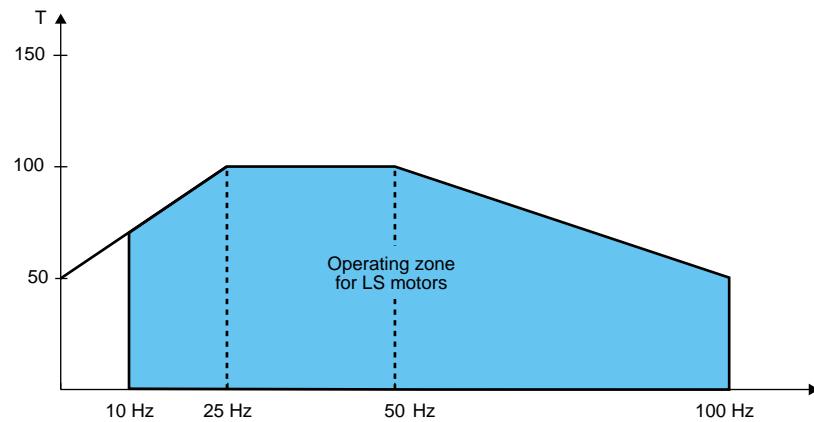
#### Leroy-Somer offers the following drive options :

– **The LS motor** : this is suitable for quadratic torque applications and constant torque applications where the speed range does not exceed 1 to 5 in S1 duty. With low operating factors and use with a gearbox, it is also suitable for speed ranges from 1 to 10.

#### Performance :

Leroy-Somer has validated the performance of these motor / frequency modulator assemblies on a test bench. These tests have been used to draw up a table of torque-speed characteristics, for quick, simple and safe motor selection.

*General torque-speed characteristics for Leroy-Somer motors and geared motors in continuous operation, excluding variations in efficiency.*



IP 55 - 50 Hz - Class F -  $\Delta T$  80 K - 230 V / 400 V



Type	Rated power at 50 Hz	Rated speed	Rated current	Power factor	Efficiency	Weight
	$P_N$ kW	$N_N$ $\text{min}^{-1}$	$I_N$ (230 V tri) A	$\cos \varphi$ 4/4	$\eta$ % 4/4	kg
LS 56	0.05	1380	0.5	0.75	42	4
LS 56	0.09	1400	0.7	0.60	55	4
LS 63	0.12	1410	0.7	0.65	60	4.8
LS 63	0.18	1390	1.1	0.65	63	5
LS 71	0.25	1425	1.4	0.65	70	6.4
LS 71	0.37	1420	1.9	0.70	72	7.3
LS 71	0.55	1390	2.8	0.75	66	8.3
LS 80	0.75	1400	3.5	0.77	70	9.3

# Electronic variable speed drives MINIDRIVE

## Selection

### General electrical characteristics

Characteristics	MINIDRIVE 0.5 M to 1.5 M	MINIDRIVE 0.5 M/ML to 1.5 M/ML
Mains voltage	230 V ± 10 % single-phase	230 V ± 10 % or 115 V ± 10 %
Mains frequency	50 or 60 Hz ± 2 %	50 or 60 Hz ± 2 %
Output voltage	Variable from 0 V to 220 V 3-phase	Variable from 0 V to 220 V 3-phase
Overload capacity	150 % for 30 seconds	150 % for 30 seconds

### Drive output electrical characteristics

MINIDRIVE rating	Size	Input characteristics		Output characteristics		
		230V ±10%		0 to 230V		
		Single-phase		0 to 100 Hz		
L <sub>e</sub> (A)	I <sub>e</sub> Peak < 10ms (A)	P <sub>mot</sub> (kW)	I <sub>sn</sub> (A)	I <sub>s</sub> lim 6 sec (A)		
0.5 M	1	7	35	0.25	1.6	2.5
1 M	1	7	35	0.37	2.3	3.5
1.2 M	2	10	45	0.55	3.2	4.9
1.5 M	2	10	45	0.75	4.0	6.0

MINIDRIVE rating	Size	Input characteristics		Output characteristics		
		115/230V ±10%		0 to 230V		
		Single-phase		0 to 100 Hz		
L <sub>e</sub> (A)	I <sub>e</sub> Peak < 10ms (A)	P <sub>mot</sub> (kW)	I <sub>sn</sub> (A)	I <sub>s</sub> lim 6 sec (A)		
115V	230V					
0.5 M/ML	1	11	7	40	0.25	1.6
1 M/ML	1	11	7	40	0.37	2.3
1.2 M/ML	2	16	10	55	0.55	3.2
1.5 M/ML	2	16	10	55	0.75	4.0

GEARED MOTORS FOR VARIABLE SPEED APPLICATIONS

D

# Electronic variable speed drives MINIDRIVE

## Dimensions

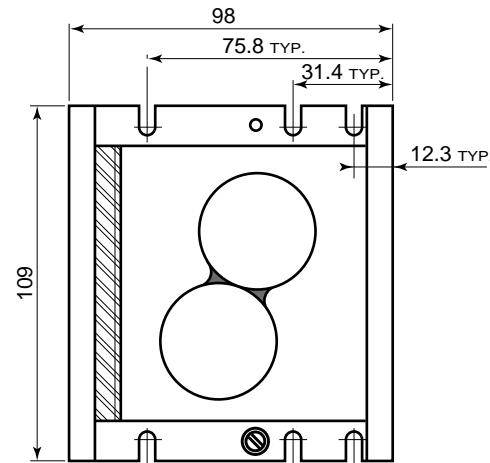
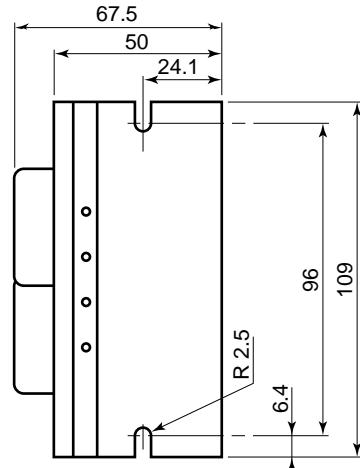
### Dimensions of MINIDRIVE electronic frequency inverters

Dimensions in millimetres

#### MINIDRIVE

##### Size 1

0.5 M/ML  
1 M/ML



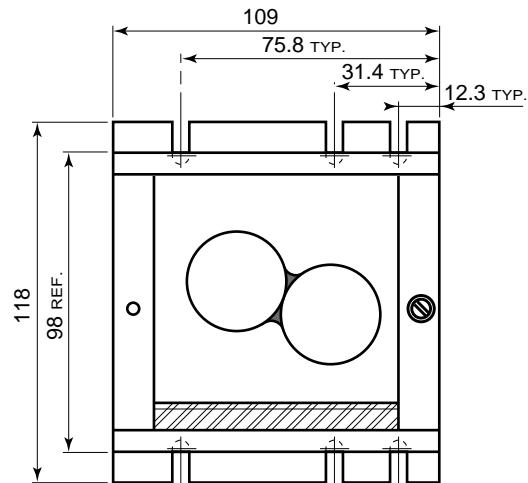
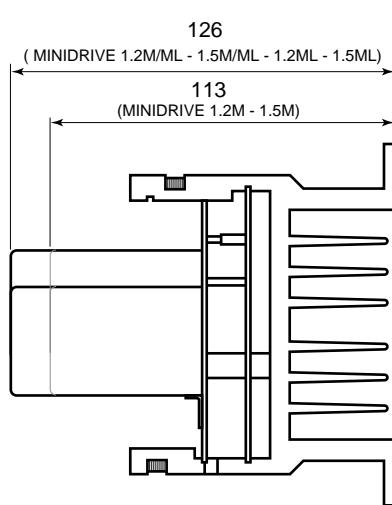
- Individually packed in a box 150 x 125 x 165

Weight : 0.6 kg

#### MINIDRIVE

##### Size 2

1.2 M/ML  
1.5 M/ML



- Individually packed in a box 150 x 125 x 165

Weight : 1 kg

# VARMECA

## variable speed motors

### General



Variable speed motor constructed in accordance with IEC standard and Low Voltage Directive :  
 - rated power of 0.25 kW and 0.37 kW ;  
 - frame size 71 ;  
 - single phase mains power supply 230 V ± 10 %, 50/60 Hz ± 5 % ;  
 - standard 3-phase induction motor.  
 Paint finish.

### Construction

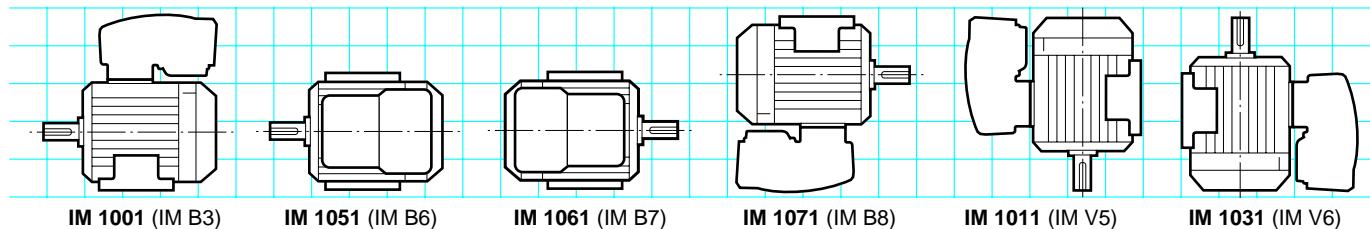
#### Description of VARMECA

Component	Remarks
Construction	<ul style="list-style-type: none"> <li>- IP 55 protection , class F</li> <li>- Aluminium terminal box and plastic cable gland</li> <li>- Steel fan cover</li> <li>- Captive cover screws</li> <li>- Connection of power and control cables on connector with flexible blades</li> <li>- Integral RFI filter, conforming to directive EMC-EN50081.2 in accordance with EN55011 class A</li> <li>- electronics encased in plastic resin for good mechanical resistance and immunity to humid environments.</li> </ul>
Characteristics	<ul style="list-style-type: none"> <li>- Motor synchronous speed variation range : From 12 to 80 Hz at constant torque or from 12 to 50 Hz for general applications 4-pole motor : 360 to 2400 min<sup>-1</sup> 2-pole motor : 720 to 4800 min<sup>-1</sup> (possible with motor only)</li> <li>- Cos. Phi : close to 1</li> </ul>
Pilot control (selection of control functions by micro-switch)	<ul style="list-style-type: none"> <li>- Speed reference                     <ul style="list-style-type: none"> <li>• 0 - 10 V via integral adjustment button</li> <li>• 0 - 10 V via remote potentiometer option</li> <li>• 0 - 10 V via external reference</li> </ul> </li> <li>- 4 - 20 mA via external reference (optional)</li> <li>- Run / Stop :                     <ul style="list-style-type: none"> <li>• via single phase 230 V power supply : 10 times per hour</li> <li>• via remote volt-free contact</li> <li>• via integrated Run / Stop control on cover (optional)</li> </ul> </li> <li>- Forward / Reverse :                     <ul style="list-style-type: none"> <li>• via internal connection in the terminal block</li> <li>• via remote volt-free contact</li> <li>• via control integrated on cover (optional)</li> </ul> </li> <li>- Stop mode : • on ramp, • freewheel (for separate brake power supply option)</li> <li>- Ramps :                     <ul style="list-style-type: none"> <li>• selection of acceleration ramp on control terminal block : 1 s - 2 s - 5 s - 10 s</li> <li>• selection of deceleration ramp on control terminal block : 1 s - 2 s - 5 s - 10 s</li> </ul> </li> <li>- Boost : 50 % or 100 %</li> </ul>
Protection	<ul style="list-style-type: none"> <li>- Power :                     <ul style="list-style-type: none"> <li>• undervoltage for &lt; 195 V</li> <li>• overvoltage for &gt; 255 V</li> <li>• overload or mechanical locking : - thermal control on motor and speed controller - protection against locked rotor</li> </ul> </li> <li>- short-circuit of motor windings</li> <li>- phase-earth insulation fault</li> <li>- Control :                     <ul style="list-style-type: none"> <li>• automatic protection against short-circuits on inputs or outputs 0 - 10 V</li> </ul> </li> </ul> <p>Trip clearance : by powering down the VARMECA</p>
Environmental characteristics	<ul style="list-style-type: none"> <li>- Storage temperature : - 20 °C to + 55 °C</li> <li>- Transport temperature : - 20 °C to + 70 °C</li> <li>- Operating temperature : - 10 °C to + 40 °C</li> <li>- Altitude : ≤ 1000 m without derating</li> <li>- Relative ambient humidity : 90 % maximum</li> <li>- Vibrations : IEC 68-2-34 (acceleration 0.01 g<sup>2</sup>/Hz)</li> <li>- Shocks : IEC 68-2-27 (peak acceleration 50 g)</li> <li>- Immunity : according to EN 50082-2</li> <li>- Conducted and radiated emissions (integral filter) : conforming to EN 50081-2 according to EN 55011 class A</li> </ul>

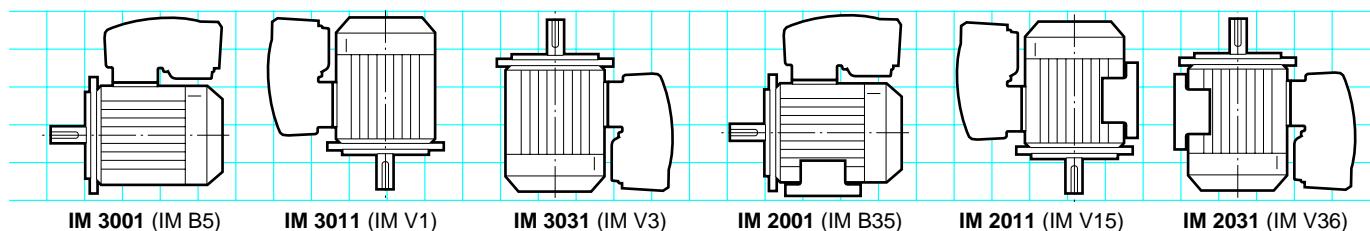
# VARMECA variable speed motors

## Mounting positions

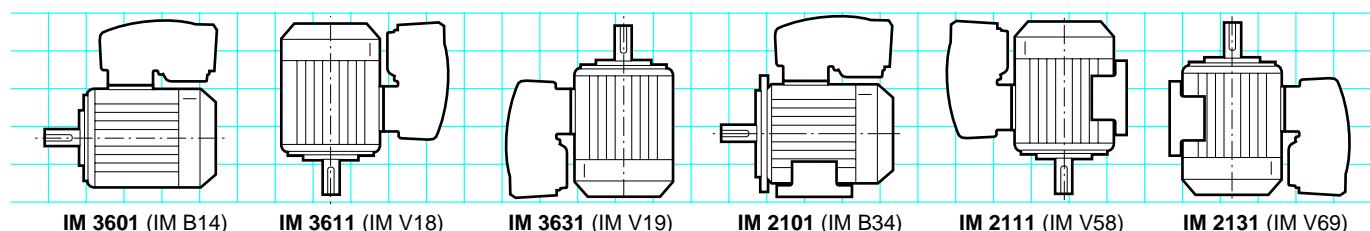
### Foot mounted variable speed motors



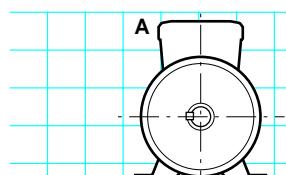
### (FF) flange mounted variable speed motors



### (FT) face mounted variable speed motors

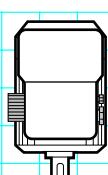


### VARMECA positions



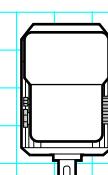
A : standard

standard :

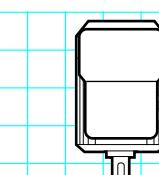


BD

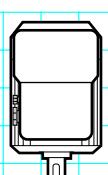
or



BG



option : SD



or SG

### cable gland

# VARMECA variable speed motors

## Adaptation possibilities

Leroy-Somer offers complete motor-gearbox-speed controller (VARMECA) drive systems which respond to very wide-ranging needs.

VARMECA is a variable speed motor for use in general applications with rated power of 0.25 and 0.37 kW.

Refer to the other relevant sections for a definition of the gearboxes or motors.

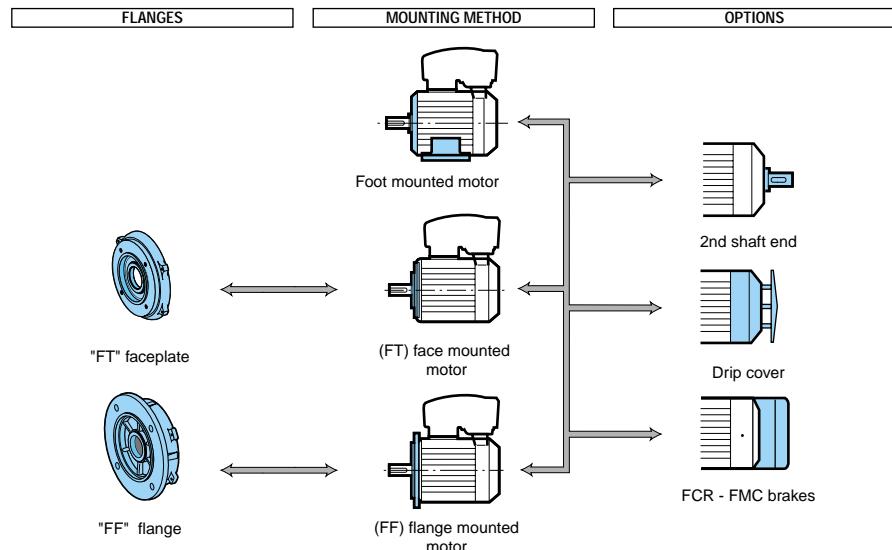
For other drives, please consult the Leroy Somer specialist technicians who will be glad to assist.

☞ **VARMECA VMA M variable speed motors comprise :**

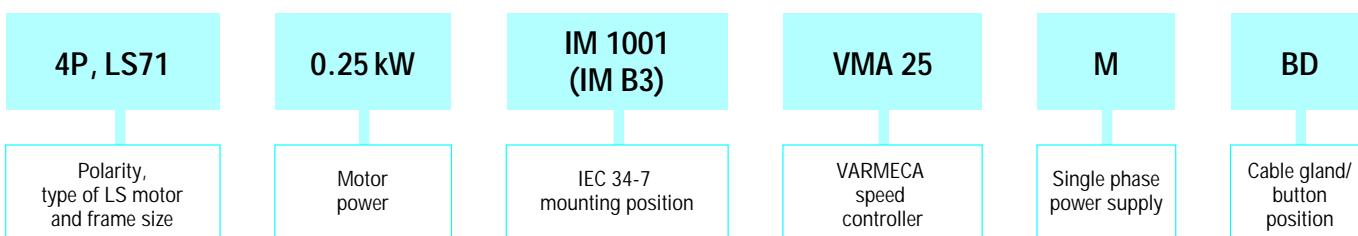
- an integral speed controller with a single phase power supply of 230 V 50 Hz

mounted on :

- a 3-phase motor connected at 230 V 50 Hz.



## Designation / Coding



☞ **Example of coding :**

4P LS71 - 0.25 kW - IM 1001 - VMA 25 M - BD

VARIABLE SPEED DRIVE GEARED MOTORS

D

# VARMECA variable speed motors

## Options



Leroy Somer has always offered options for mechanical variable speed control, and has developed an even wider range using the possibilities offered by electronic technology. They respond to specific problems presented by the designer, the integrator

and the user who are looking for the ideal solution. The options shown below deal with problems associated with remote control, electro-magnetic disturbance, direct control, and braking problems ; solutions for the adjustment of minimum and maximum speeds.

### Description of VARMEECA options

Component	Remarks
Version without speed control button	The speed can be adjusted via : <ul style="list-style-type: none"><li>- external potentiometer (option POT 1T 10K or POT 10T 10K)</li><li>- internal potentiometer</li><li>- external 0-10 V reference</li><li>- 4-20 mA reference</li></ul>
Options which can be integrated	<ul style="list-style-type: none"><li>- RUN / STOP control on the cover (ref. CMA)<ul style="list-style-type: none"><li>• the start command is given by pressing the RUN key for 1 second</li><li>• the stop command is given by pressing the STOP key</li><li>• the direction of motor rotation is set in the control terminal block</li></ul></li><li>- FORWARD/REVERSE / STOP control on the cover (ref. CMAVAR)<ul style="list-style-type: none"><li>• the start command is given by pressing the FORWARD or REVERSE key for 1 second</li><li>• the stop command is given by pressing the STOP key</li></ul></li></ul>
FMC, FCR brake (with freewheel stop mode)	<ul style="list-style-type: none"><li>- Failsafe electromagnetic brake :<ul style="list-style-type: none"><li>• separate power supply</li><li>• ensures a precise, reduced stopping time and safety</li><li>• the brake is energised as soon as the run command has been validated</li><li>• the brake is released after a stop instruction, at the end of deceleration</li></ul></li></ul>
External options	<ul style="list-style-type: none"><li>- 1-turn potentiometer (ref. POT 1T 10K)<ul style="list-style-type: none"><li>• Characteristics : 10 kΩ with button and faceplate : connection or control terminal block</li></ul></li><li>- 10-turn potentiometer (ref. POT 10T 10K)<ul style="list-style-type: none"><li>• Characteristics : 10 kΩ with button and indicator : connection or control terminal block</li></ul></li></ul>

# VARMECA

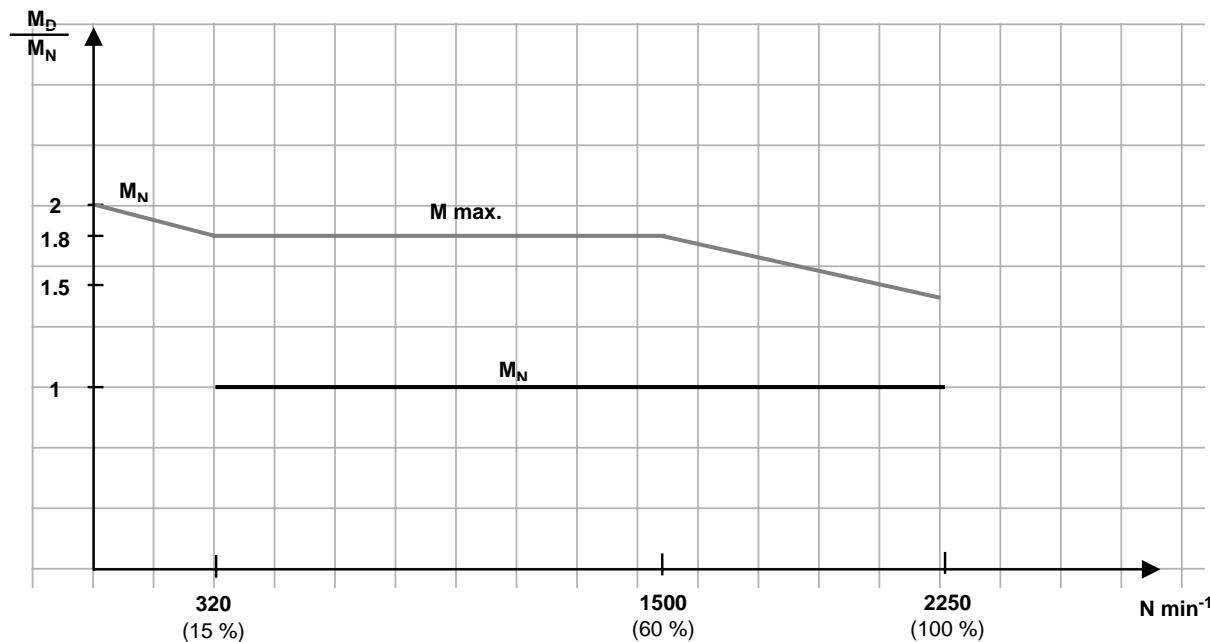
## variable speed motors

### Selection

VARMECA - IP 55  
 50/60 HZ  $\pm$  5 % - Class F - 230 V  $\Delta \pm 10\%$   
 4-pole - Aluminium rotor (Brake IP44)

Motor type	VARMECA type	Power P <sub>N</sub> kW	Rated torque 320 to 2250 min <sup>-1</sup>	Rated motor current I <sub>N</sub> (230 V) A	Starting torque /Rated torque M <sub>D</sub> / M <sub>N</sub>	Moment of inertia		Braking torque M <sub>f</sub> ± 20 % N.m		
						without brake				
						Brake type FMC	J			
LS71	VMA 25 M	0,25	1,1	1,2	2	0,675	0,71	1,08	2,5	4
	VMA 37 M	0,37	1,6	1,94	2	0,85	0,88	1,25	2,5	4

Torque / speed characteristics



**Key :**

- M<sub>N</sub> : rated motor torque in S1 duty
- M<sub>D</sub> : starting torque
- M<sub>max</sub> : maximum overload torque
- N min<sup>-1</sup> : motor speed of rotation

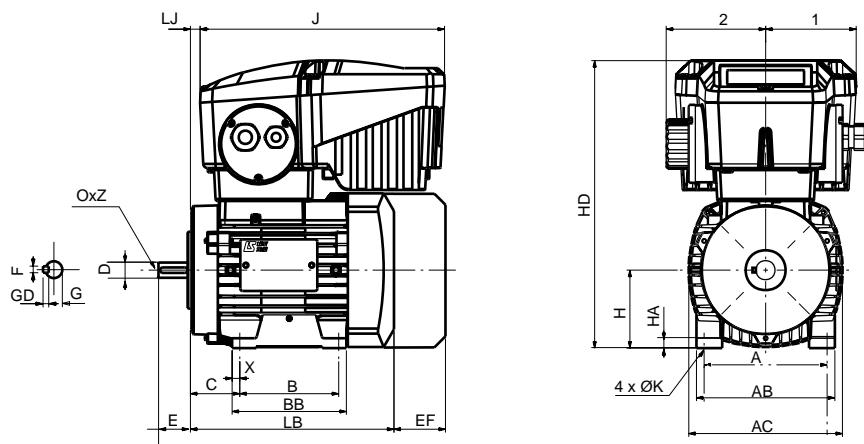
# VARMECA variable speed motors

## Dimensions

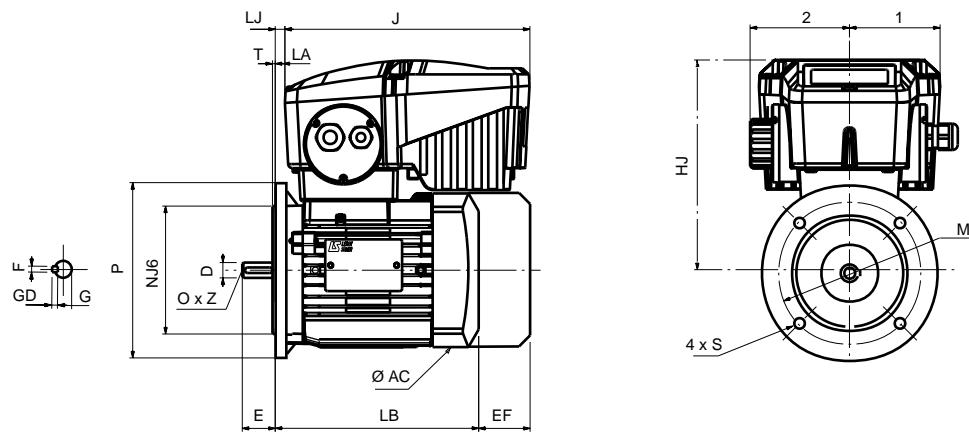
### Dimensions of VARMECA variable speed motors

Dimensions in millimetres

#### - B3 foot mounted



#### - (FF) flange mounted B5



# VARMECA

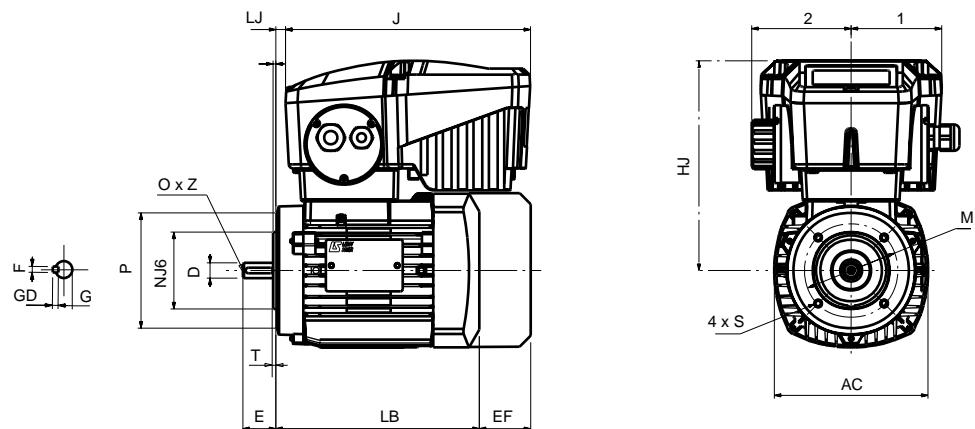
## variable speed motors

### Dimensions

#### Dimensions of VARMECA variable speed motors

Dimensions in millimetres

- (FT) face mounted B14



Type	Variable speed motor															Weight kg			
	AC	A	AB	B	BB	C	X	H	HA	K	LB	LJ	J	HD	HJ	1	2		
LS 71	140	112	126	90	104	45	7	71	6	7	183	8	225	266	195	82,5	92,5		9,5

Brakes							
Type	EF max.		Weight <sup>1</sup> kg		FMC	FCR	FMC
	FMC	FCR					
LS 71	50	90	0,9	2,5			

1. Additional brake weight.

Output shaft							
Type	D	E	F	GD	G	O	Z
LS 71	14	30	5	5	11	M5	15

Standard flanges														
Type	(FF) flange mounted B5							(FT) face mounted B14						
	Symbol	M	N	P	LA	S	T	Symbol	M	N	P	S	T	
LS 71	FF130	130	110	160	10	9	3,5	FT85	85	70	105	M6	2,5	



# VARMECA + Compabloc 1000 variable speed geared motors

## Adaptation possibilites

Leroy-Somer offers complete motor-gearbox-speed controller (VARMECA) drive systems which respond to very wide-ranging needs.

VARMECA is a variable speed motor for use in general applications with rated power of 0.25 and 0.37 kW.

Refer to the other relevant sections for a definition of the gearboxes or motors.

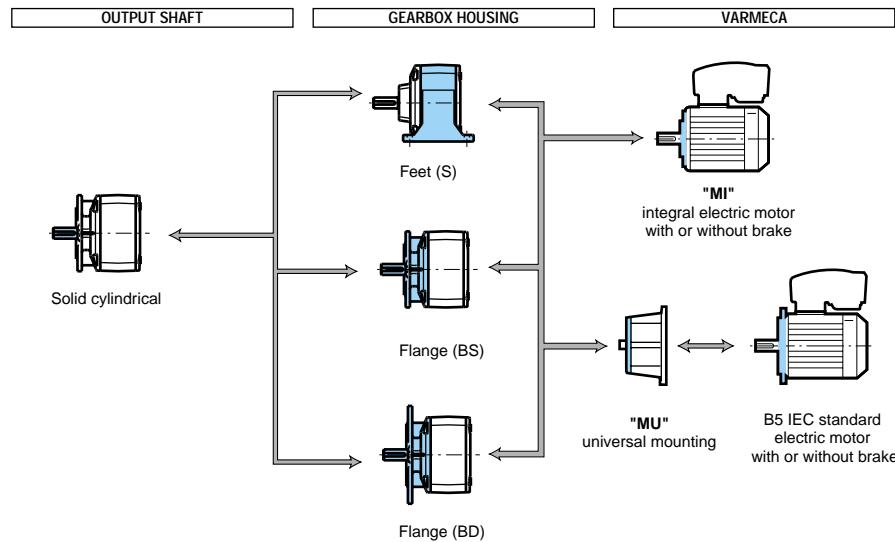
For other drives, please consult the Leroy Somer specialist technicians who will be glad to assist.

☞ **VARMECA VMA M variable speed motors comprise :**

- an integral speed controller with a single phase power supply of 230 V 50 Hz

mounted on :

- a 3-phase induction motor connected at 230 V 50 Hz.



## Designation / Coding

Cb	1703	S	B3	40	MI	4P, LS71	0.25 kW	VMA 25	M	BD
Gearbox type	Size	Mounting form	Mounting position	Exact reduction	Integral mounting	Polarity, type of LS motor and frame size	Motor power	VARMECA speed controller	1-Ph supply	Cable gland/ button position

☞ **Example of coding :**

Cb 1703 - S B3 - 40 - MI - 4P LS71 - 0.25 kW - VMA 25 M BD

VARIABLE SPEED DRIVE GEARED MOTORS

D

# VARMECA + Compabloc 100 variable speed geared motors

## Selection

Gearbox : Compabloc (Cb) S baseplate or with BS, BD flange

Induction motors : LS series, IP 55, class F, 4-pole

3-phase : *multivoltage* : 220/380 V - 230/400 V - 240/415 V, 0.25 and 0.37 kW

Brake motors : LS series induction, types FCR, FMC, class F (separate power supply)

FCR : *multivoltage* : 220/380 V - 230/400 V - 240/415 V 0.25 and 0.37 kW

FMC : *multivoltage* : 220/380 V - 230/400 V - 240/415 V 0.25 and 0.37 kW

Frequency controller : type VMA 25 M and VMA 37 M, 0.25 and 0.37 kW (see pages D2.1 to D2.5)

**Classe I**  
 $(K_p \geq 1)$

Integral mounting MI

Universal mounting MU

### Cb 1701

VARMECA single phase variable speed geared motor, power in kW				
		0.25	0.37	
Max. output speed min <sup>-1</sup>	Min. output speed min <sup>-1</sup>	Frame size		
		71	Type VMA	
		25 M	37 M	
290	43,5	8		
327	49	7,1		
368	55,2	6,3		
414	62,1	5,6		
464	69,6	5		
515	77,3	4,5		
580	87	4	Cb 1701	
653	98	3,55		
736	110	3,15		
829	124	2,8		
928	139	2,5		
1036	155	2,24		
1160	174	2		
1289	193	1,8		
1450	217	1,6		
Brake motors		Type of 4-pole 3-phase motor and frame size		
FMC		LS 71		
FCR		LS 71		

### Exact reductions

Type	Reduction indices														
	8	7,1	6,3	5,6	5	4,5	4	3,55	3,15	2,8	2,5	2,24	2	1,8	1,6
Cb 1701	8,1	7,2	6,4	5,7	5,2	4,7	4,2	3,6	3,3	2,9	2,7	2,4	2,1	1,8	1,6

### Selection example :

Required power : 0.25 kW

Required speed : 87 to 580 min<sup>-1</sup>

Duty factor necessary for the application : Kp = 1

Mounting : foot, horizontal

Cable gland, button position button on left, cable gland on right

Designation :

Cb 1703 S - 4 MU / 4P - LS71 - 0.25 kW - VMA 25 M BD

# VARMECA + Compabloc 100 variable speed geared motors

## Selection

Gearbox : Compabloc (Cb) S baseplate or BS, BD flange form

Induction motors : LS series, IP 55, class F, 4-pole

3-phase : *multivoltage* : 220/380 V - 230/400 V - 240/415 V, 0.25 and 0.37 kW

Brake motors : LS series induction, types FCR, FMC, class F (separate power supply)

FCR : *multivoltage* : 220/380 V - 230/400 V - 240/415 V 0.25 and 0.37 kW

FMC : *multivoltage* : 220/380 V - 230/400 V - 240/415 V 0.25 and 0.37 kW

Frequency controller : type VMA 25 M and VMA 37 M, 0.25 and 0.37 kW (see pages D2.1 to D2.5)

**Classe I**  
 $(K_p \geq 1)$

Integral mounting MI

Universal mounting MU

### Cb 1702-1703

VARMECA single phase variable speed geared motor, power in kW

0.25	0.37
------	------

Frame size

71

VMA type

Max. output speed min <sup>-1</sup>	Min. output speed min <sup>-1</sup>	Reduction index	25 M	37 M
14,5	2,18	160		
16,6	2,49	140		
18,6	2,78	125		
20,7	3,1	112		
23,2	3,48	100		
25,8	3,86	90		
29	4,35	80		
32,7	4,9	71		
36,8	5,52	63		
41,4	6,21	56		
46,4	6,96	50		
51,6	7,73	45		
58	8,7	40		
65,4	9,8	35,5		
73,7	11	31,5		
82,9	12,4	28		
92,8	13,9	25		
103	15,5	22,4		
116	17,4	20		
129	19,3	18		
145	21,7	16		
166	24,9	14		
186	27,8	12,5		
207	31	11,2		
232	34,8	10		
258	38,7	9		
290	43,5	8		
327	49	7,1		
368	55,2	6,3		

Cb 1703

Cb 1702

Brake motors

Type of 4-pole 3-phase motor and frame size

FMC

LS 71

FCR

LS 71

### Exact reductions

Reduction indices

Types	160	140	125	112	100	90	80	71	63	56	50	45	40	35,5	31,5	28	25	22,4	20	18	16	14	12,5	11,2	10	9	8	7,1	6,3	
<b>Cb 1703</b>	156,5	139,1	123,3	110,3	99,5	90,4	81,2	69,8	63,4	55,8	51	45,5	40,1	35,6																
<b>Cb 1702</b>																31,3	27,9	24,7	22,1	19,9	18,1	16,3	14	12,7	11,2	10,2	9,1	8	7,1	6,3

### Selection example :

Required power : 0.25 kW

Required speed : 8.7 to 58 min<sup>-1</sup>

Duty factor necessary for the application : Kp = 1

Mounting : foot, horizontal

Button, cable gland position button on left, cable gland on right

Designation :

**Cb 1703 S - 40 MU / 4P - LS71 - 0.25 kW - VMA 25 M BD**

VARIABLE SPEED DRIVE GEARED MOTORS

D

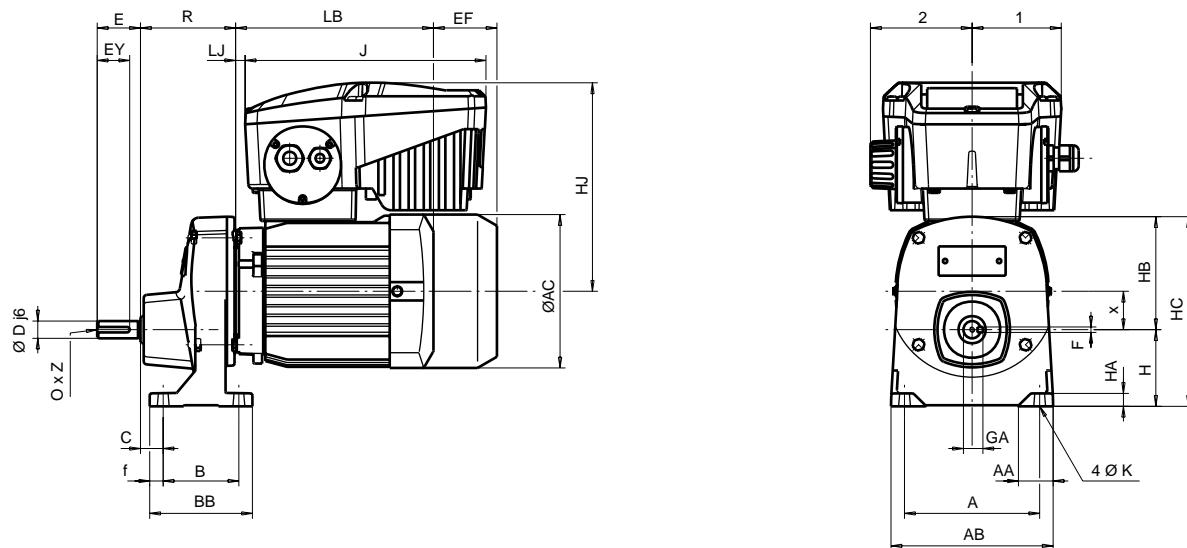
# VARMECA + Compabloc 100 variable speed geared motors

## Dimensions

Dimensions of Compabloc (Cb) geared motors, MI integral mounting,  
Cb 1701

*Dimensions in millimetres*

### - S baseplate form



Type	Gearboxes with baseplate												Solid output shaft						Weight*			
	R	A	AA	AB	B	BB	x	H	HB	HC	C	f	K	HA	D	E	EY	GA	F	O	Z	
<b>Cb 1701</b>	88	125	32,5	150	70	95	35,5	71	104,5	175,5	21	12,5	9	12	16	40	30	18	5	M5	15	2,050

\* Gearbox only.

For other requirements, see page A1.32.

Type	Variable speed motor								Brakes			
	AC	LB	LJ	J	HJ	1	2	Weight kg	EF max.	Weight <sup>1</sup> kg		
									FMC	FCR	FMC	FCR
<b>LS 71</b>	140	183	8	225	195	82,5	92,5	9,5	50	90	0,9	2,5

1. Additional brake weight.

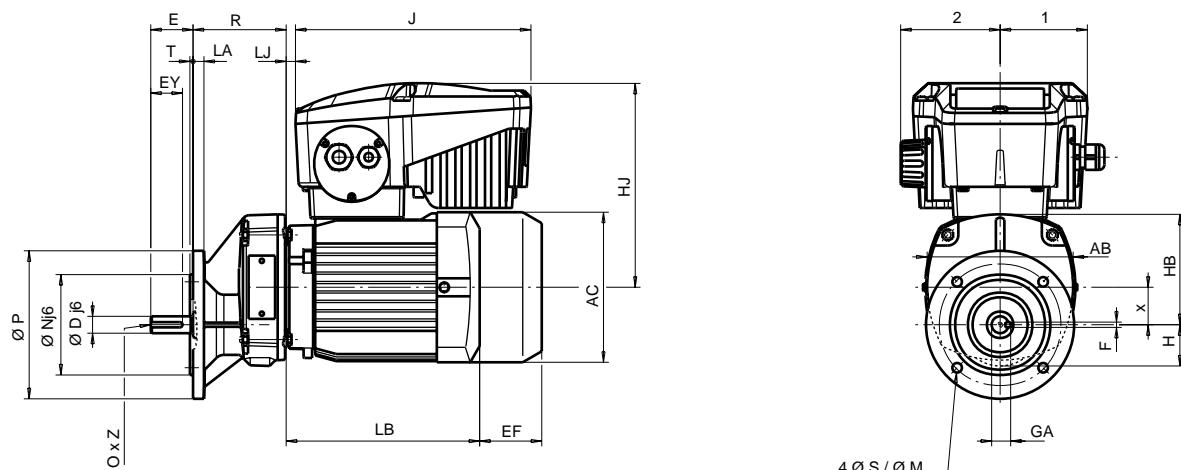
# VARMECA + Compabloc 1000 variable speed geared motors

## Dimensions

Dimensions of Compabloc (Cb) geared motors, MI integral mounting,  
Cb 1701

Dimensions in millimetres

### - BS, BD1, BD2 flange form



Type	Gearboxes with flange										Solid output shaft						Weight*		
	R	AB	M	N	P	S	LA	T	HB	H	x	D	E	EY	GA	F	O		
Cb 1701	88	138	115	95	140	9	10	3	104,5	39	35,5	16	40	30	18	5	M5	15	1,95

\* Gearbox only.

For other requirements, see page A1.33.

Type	Other possible flanges <sup>1</sup>											
	BD1			BD2								
M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2	
Cb 1701	100	80	120	7	10	3	130	110	160	9	10	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Variable speed motor							Brakes			
	AC	LB	LJ	J	HJ	1	2	Weight kg	EF max.	Weight <sup>1</sup> kg	
LS 71	140	183	8	225	195	82,5	92,5	9,5	50	90	0,9 2,5

1. Additional brake weight.

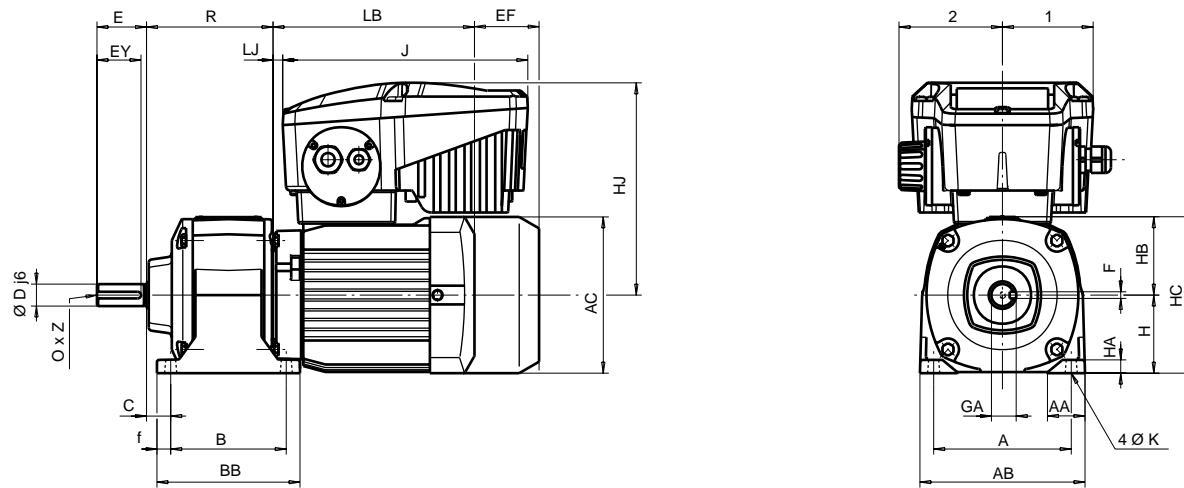
# VARMECA + Compabloc 1000 variable speed geared motors

## Dimensions

Dimensions of Compabloc (Cb) geared motors, MI integral mounting,  
Cb 1702-1703

*Dimensions in millimetres*

### - S baseplate form



Type	Gearboxes with baseplate												Solid output shaft						Weight*		
	R	A	AA	AB	B	BB	H	HB	HC	C	f	K	HA	D	E	EY	GA	F	O	Z	
Cb 1702	115	125	31,5	150	105	130	71	72	143	22	12,5	9	12	20	45	40	22,5	6	M6	15	3,400
Cb 1703	135	125	31,5	150	125	150	71	72	143	22	12,5	9	12	20	45	40	22,5	6	M6	15	4,250

\* Gearbox only.

For other requirements, see page A1.36.

Type	Variable speed motor							Weight kg	Brakes	
	AC	LB	LJ	J	HJ	1	2		FMC	FCR
LS 71	140	183	8	225	195	82,5	92,5	9.5	50	90

1. Additional brake weight.

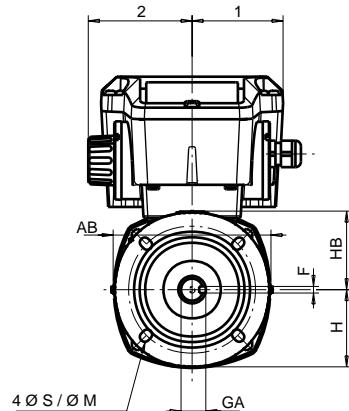
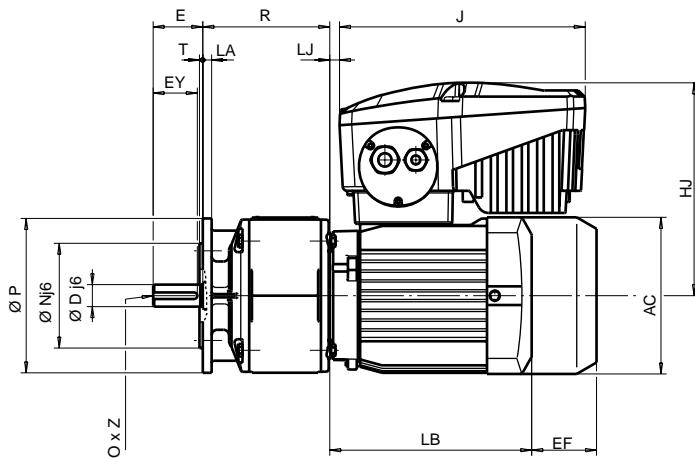
# VARMECA + Compabloc 1000 variable speed geared motors

## Dimensions

Dimensions of Compabloc (Cb) geared motors, MI integral mounting,  
Cb 1702-1703

*Dimensions in millimetres*

- BS, BD1, BD2 flange form



Type	Gearboxes with flange										Solid output shaft							Weight*
	R	AB	M	N	P	S	LA	T	HB	H	D	E	EY	GA	F	O	Z	
Cb 1702	115	143	115	95	140	9	8	3	72	69	20	45	40	22,5	6	M6	15	3,450
Cb 1703	135	143	115	95	140	9	8	3	72	69	20	45	40	22,5	6	M6	15	4,350

\* Gearbox only.

For other requirements, see page A1.37.

Type	Other possible flanges <sup>1</sup>											
	BD1					BD2						
M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2	
Cb 1702 - 03	100	80	120	7	7	3	130	110	160	9	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Variable speed motor							Brakes				
	AC	LB	LJ	J	HJ	1	2	Weight kg	EF max.	Weight <sup>1</sup> kg		
LS 71	140	183	8	225	195	82,5	92,5	9,5	50	90	0,9	2,5

1. Additional brake weight.



# VARMECA + Multibloc 2100 variable speed geared motors

## Adaptation possibilities

Leroy-Somer offers complete motor-gearbox-speed controller (VARMECA) drive systems which respond to very wide-ranging needs.

VARMECA is a variable speed motor for use in general applications with power ratings of 0.25 and 0.37 kW.

Refer to the other relevant sections for a definition of the gearboxes or motors.

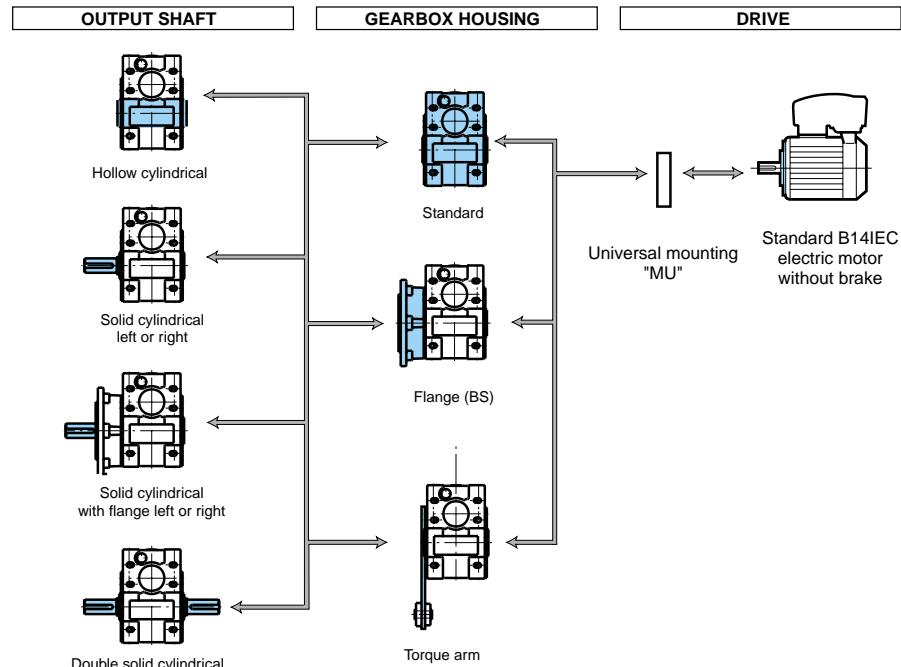
For other drives, please consult the Leroy Somer specialist technicians who will be glad to assist.

 **VARMECA VMA M variable speed motors comprise :**

- an integral speed controller with a single phase power supply of 230 V 50 Hz

mounted on :

- a 3-phase motor connected at 230 V 50 Hz.



## Designation / Coding

<b>Mb</b>	<b>2101</b>	<b>M00</b>	<b>C</b>	<b>20</b>	<b>MU</b>	<b>4P, LS71</b>	<b>0.25 kW</b>	<b>VMA 25</b>	<b>M</b>	<b>BD</b>
Gearbox type	Size and number of stages	Mounting position	Slow speed shaft	Reduction index	Universal mounting	Polarity, type of LS motor and frame size	Motor power	VARMECA speed controller	1-phase supply	Cable gland/ button position

 **Example of coding :**

Mb 2101 - M00C - 20 - MU - 4P LS63 - 0.12 kW  
- VMA 25 M BD

**VARIABLE SPEED DRIVE GEARED MOTORS**

D

# **VARMECA + Multibloc 2100 variable speed geared motors**

# Selection

**Gearbox :** Multibloc (Mb) M00, or M50 or M05 with flange

**Induction motors : LS series, IP 55, class F, 4-pole**

**3-phase : multivoltage : 220/380 V - 230/400 V - 240/415 V, 0.25 and 0.37 kW**

**Brake motors : LS series induction, types FCR, FMC, class F (separate power supply)**

**FCR : multivoltage : 220/380 V - 230/400 V - 240/415 V 0.25 and 0.37 kW**

FMC : multivoltage : 220/380 V - 230/400 V - 240/415 V 0.25 and 0.37 kW

**Frequency controller** : type VMA 25 M and VMA 37 M, 0.25 and 0.37 kW (see pages D2.1 to D2.5)

Universal mounting MU



Mb 2101

VARMECA single phase variable speed geared motor, power in kW			
		0.25	0.37
Max. output speed $\text{min}^{-1}$	Min. output speed $\text{min}^{-1}$	Frame size	
		71	VMA type
		25 M	37 M
23,2	3,48	100	
29	4,35	80	
38,7	5,8	60	
46,4	6,96	50	
58	8,7	40	
77,3	11,6	30	
92,8	13,9	25	
116	17,4	20	Mb 21
155	23,2	15	
186	27,8	12,5	
232	34,8	10	
309	45,8	7,5	

### **Selection example :**

**Required power :**

0.37 kW

Required speed :

13.9 to 92.8 min<sup>-1</sup>

Duty factor necessary for the application :

K<sub>p</sub> = 1

#### Mounting :

#### Mounting:

button on left, cable gland on right

Designation :

**Mb 2101 - M00C - 25 MU / 4P - LS71 - 0.37 kW - VMA 37 M BD**

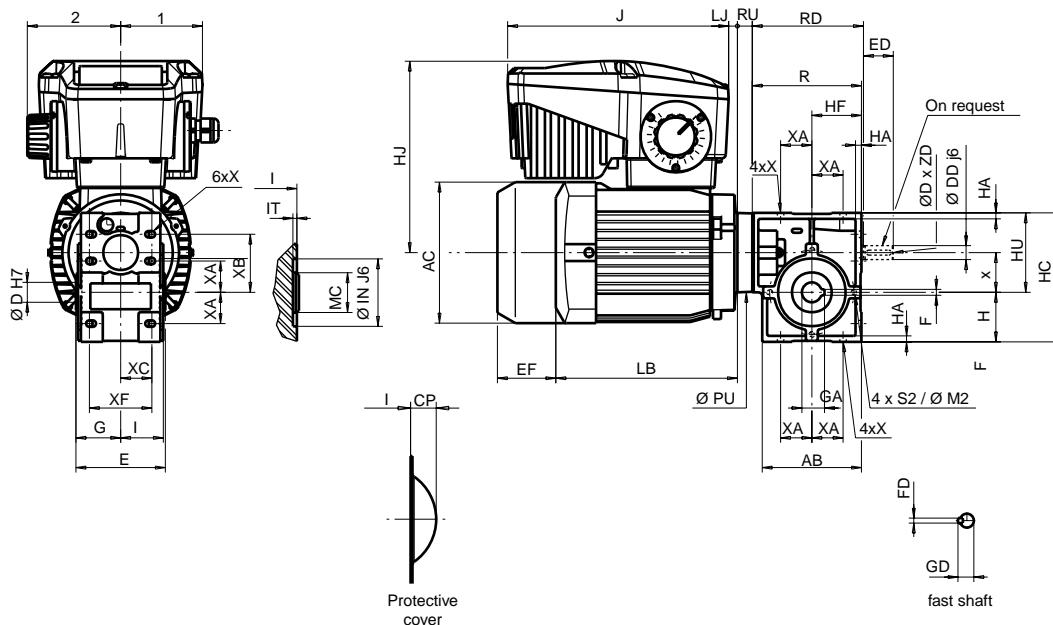
# VARMECA + Multibloc 2100 variable speed geared motors

## Dimensions

Dimensions of Multibloc (Mb) geared motors, MU universal mounting,  
hollow output shaft (C)

Dimensions in millimetres

### - M00 - C standard form



Type	Standard gearboxes																		Weight*			
	R	HC	AB	RD	RU	H	x	HU	HF	HA	XA	XB	XC	XF	G	I	IN	IT	X	S2	M2	
<b>Mb 2101</b>	110	130	100	112	15	50	40	80	50	6	31,5	58,5	31,5	63	45	43	68	3	6,5	M6x15	85	3

\* Gearbox only.

For other requirements, see page B3.16.

Type	Hollow output shaft							Fast shaft (on request)						
	D	E	GA	F	MC	W	CP	DD	ED	GD	FD	OD	ZD	
<b>Mb 2101</b>	20	90	22,8	6	40	30	20	14	30	16	5	M5	15	

Type	Variable speed motor							Brakes				
	AC	LB	LJ	J	HJ	1	2	Weight kg	EF max.	Weight 1 kg		
<b>LS 71</b>	140	183	8	225	195	82,5	92,5	9,5	50	90	0,9	2,5

1. Additional brake weight.

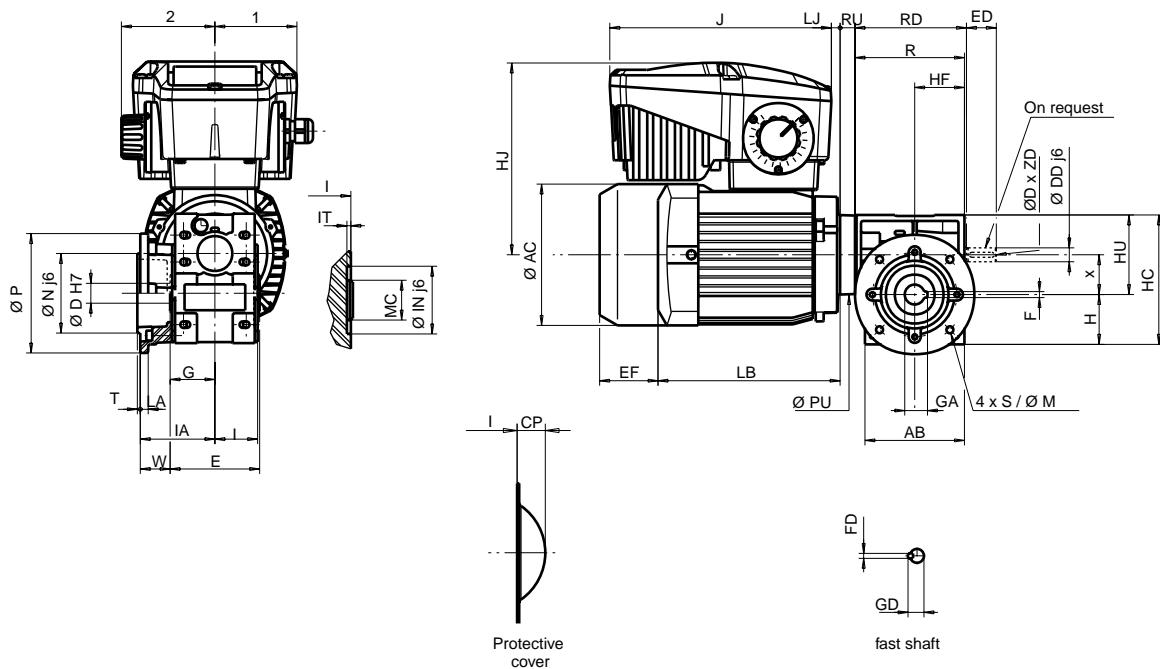
# VARMECA + Multibloc 2100 variable speed geared motors

## Dimensions

Dimensions of Multibloc (Mb) geared motors, MU universal mounting,  
hollow output shaft (C)

Dimensions in millimetres

### - M50, M05 - C flange form



Type	Gearboxes with flange															Weight*					
	R	HC	AB	RD	RU	H	x	HU	HF	G	I	IA	IN	IT	M	N	P	S	LA	T	kg
<b>Mb 2101</b>	110	130	100	112	15	50	40	80	50	45	43	75	68	3	100	80	120	7	8	3	3,3

\* Gearbox only.

For other requirements, see pages B3.17 and B3.18.

Type	Other possible flanges <sup>1</sup>																		
	BD1				BD2														
<b>Mb 2101</b>	85	70	105	7	8	3	115	95	140	9	8	3							

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	Hollow output shaft							Fast shaft (on request)						
	D	E	GA	F	MC	W	CP	DD	ED	GD	FD	OD	ZD	
<b>Mb 2101</b>	20	90	22,8	6	40	30	20	14	30	16	5	M5	15	

Type	Variable speed motor								Brakes					
	AC	LB	LJ	J	HJ	1	2	kg	EF max.	Weight <sup>1</sup> kg	FMC	FCR	FMC	FCR
<b>LS 71</b>	140	183	8	225	195	82,5	92,5	9.5	50	90	0,9	2,5		

1. Additional brake weight.

# MVE electronic variable speed drives

## General



### MVE

Variable speed drive enabling operation at constant torque.

It consists of :

- an electronic speed controller with thyristors, VE ;
- an enclosed D.C. motor, IP44, MFA series.

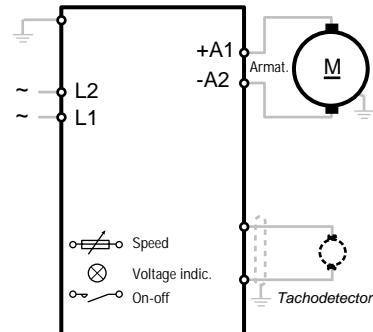
An assembly which is easy to set up and use.

## Construction

### Description of VE speed controllers

Speed controller characteristics	VE
Presentation	• IP 40 casing
Power supply	• VE 7 to VE 36 : SINGLE PHASE, 50-60 Hz, 220-240 V
Speed range	• 1 to 15 as standard • 1 to 30 with tachogenerator (option)
Ramps	• Built-in acceleration and deceleration, adjustable from 0 to 10 s
Tachymetric feedback	• Yes
Current limit	• Can be adjusted from 0.5 to 1.5 $I_N$
Settings	• Minimum speed • Maximum speed
Control	• On/off switch • Speed variation by potentiometer
Protection	• By built-in fuse

### Block diagram—MVE



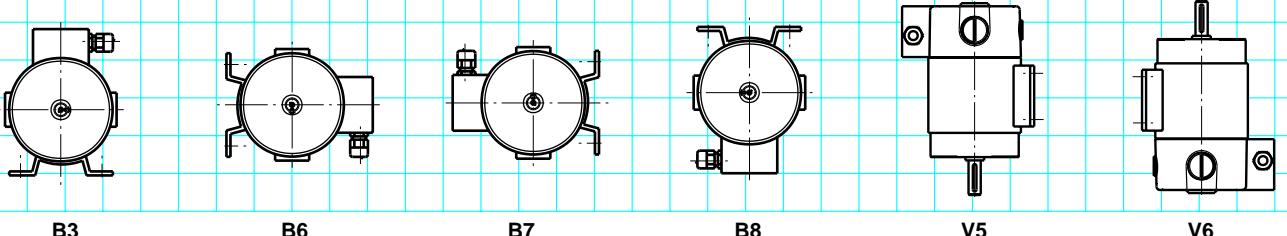
### Description of MFA D.C. motors

Component	Material	Remarks
Stator (or body)	Steel body	
Field coils	Permanent magnets	- With a high force magnetic field
Armature	Insulated low-carbon magnetic steel laminations Insulated electro-plated copper	- Formed on automatic machines for repeat accuracy and reliability - Binding reinforced with heat-treated polymerized fibre glass on commutator end - Class F insulation system
Commutator	- Connection on terminal block	- A large number of blades
Shaft	Steel	- Open keyway - Straight-ended key
Brushes	Electrographite compound	- Ease of access by plug on the motor sides
End shields	Aluminium alloy	- DE shield (FF) flange mounted or (FT) face mounted
Bearings and greasing	Steel	- Ball bearings, C3 play - 2RS type, dust and damp proof, greased for life
Terminal box	Composite material	- Placed on top of motor - Output by cable gland, on right viewed from shaft end - Connection on terminal block

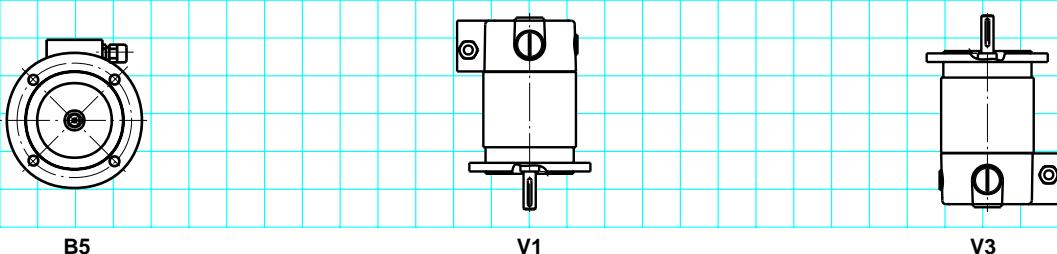
# MVE electronic variable speed drives

## Mounting positions

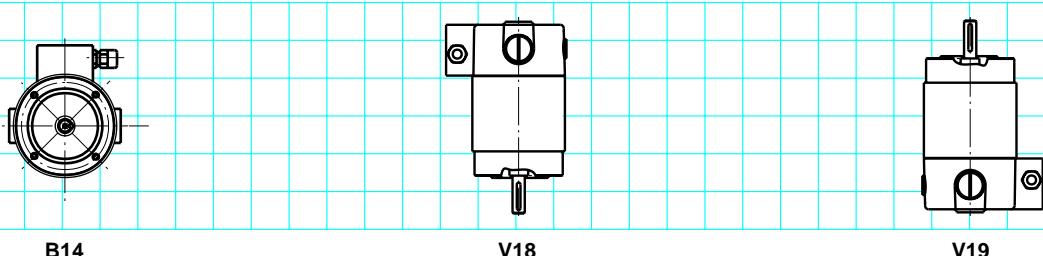
### Foot mounted motors



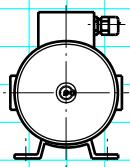
### (FF) flange mounted motors



### (FT) face mounted motors

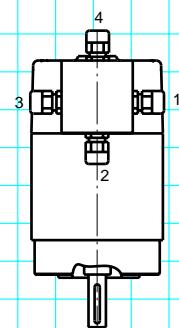


### Terminal box position



Standard

### Cable gland position



1 : standard

### Controller



Only possibility

# MVE electronic variable speed drives

## Adaptation possibilities

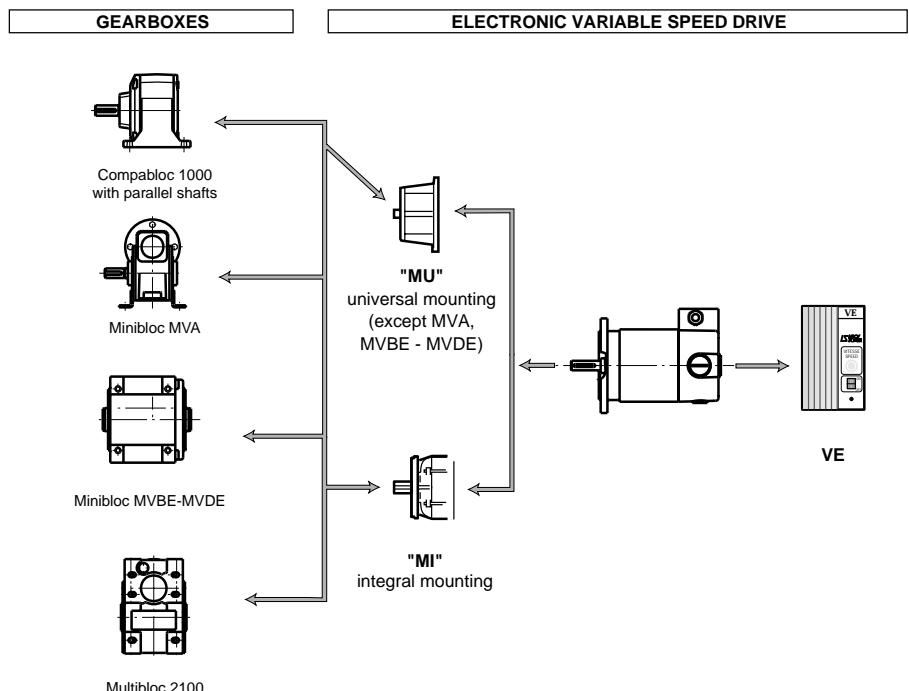
For more details on each item, refer to the corresponding section.

☞ MVE variable speed drives can be used in conjunction with :

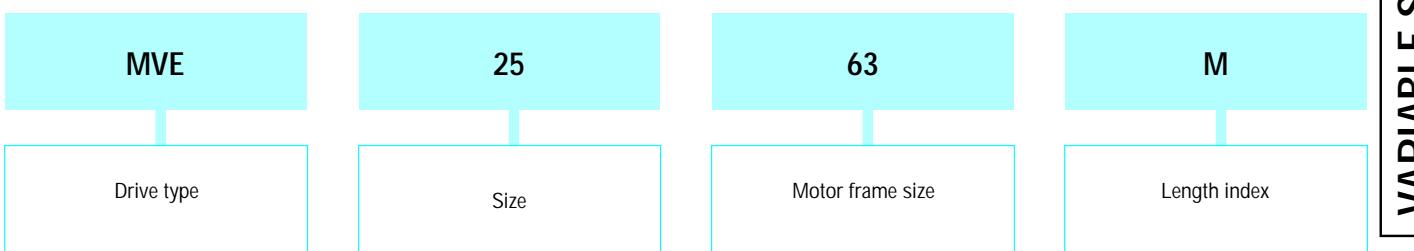
- speed reducers with integral or universal mounting :
  - parallel or concentric shafts : Cb 1000,
  - worm : Minibloc MVA, MVBE/MVDE,
  - Multibloc 2100.

☞ The options :

- faceplate
- flange
- speed detection with hollow shaft :
  - D.C. tachogenerator, 20 V/1000 min<sup>-1</sup>,
  - A.C. tachogenerator, 30 V/1000 min<sup>-1</sup>.
- safety brake :
  - FMC type 2.5 N.m.



## Designation / Coding



☞ Example of coding :

MVE 25 - 63 M

VARIABLE SPEED DRIVE GEARED MOTORS

D

# MVE electronic variable speed drives

## Selection

**FF  
1.6**

Power supply via thyristors (form factor 1.6)

Enclosed motor

S1 duty - Ambient temperature  $\leq 40^{\circ}\text{C}$  - Altitude  $\leq 1000\text{ m}$

50 - 60 Hz single phase supply	Power rating kW	Rated torque N.m	Speed range $\text{min}^{-1}$	Armature voltage V	Rated current A	Geared motor designation	Composition	
							motor	controller
220 - 240 V $\pm 10\%$	0,075	0,24	200-3000	180	0,6	<b>MVE 7-56 S</b>	MFA 56 S	VE 7
	0,12	0,4	200-3000	180	0,9	<b>MVE 12-56 L</b>	MFA 56 L	VE 12
	0,18	0,6	200-3000	180	1,4	<b>MVE 18-63 S</b>	MFA 63 S	VE 18
	0,25	0,8	200-3000	180	1,7	<b>MVE 25-63 M</b>	MFA 63 M	VE 25
	0,37	1,2	200-3000	180	2,4	<b>MVE 36-63 L</b>	MFA 63 L	VE 36

### Brake characteristics

MVE size	$M_f$ N.m	$P_f$ W	$U_f$ V	$I_f$ mA	Brake type
7-56 S - 12-56 L	1,5	13,5	190	71	FMC
18-63 S - 25-63 M - 36-63 L	2,5	13,5	190	71	FMC

### Selection example :

**Data :**  
 -useful power 0.10 kW between 400 and 2300  $\text{min}^{-1}$ ;  
 - single phase mains power supply 230 V horizontal, foot mounted.

### Operating mode

Search in the power selection table for the rated power equal to or greater than the useful power : in this case you will find 0.12 kW, for a speed range from 200 to 3000  $\text{min}^{-1}$ .

### Variable speed drive selected :

MVE 12-56L

$M_f$  : Braking torque

$P_f$  : Brake power

$U_f$  : Brake coil voltage

$I_f$  : Brake coil current

# MVE

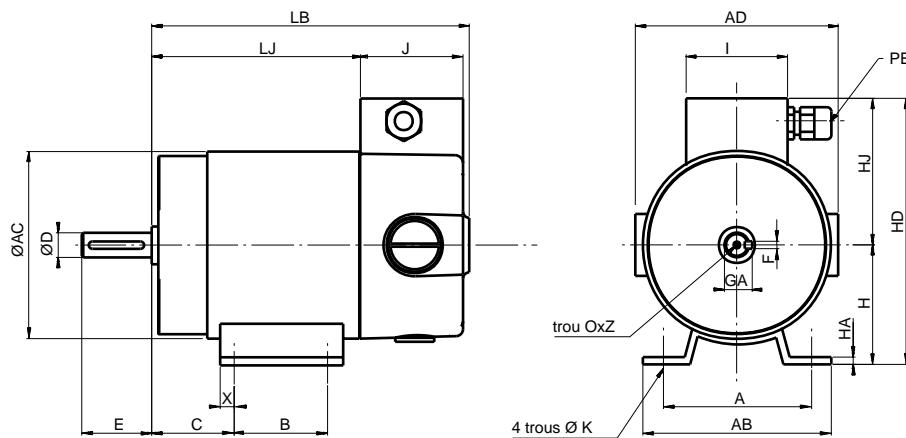
## electronic variable speed drives

### Dimensions

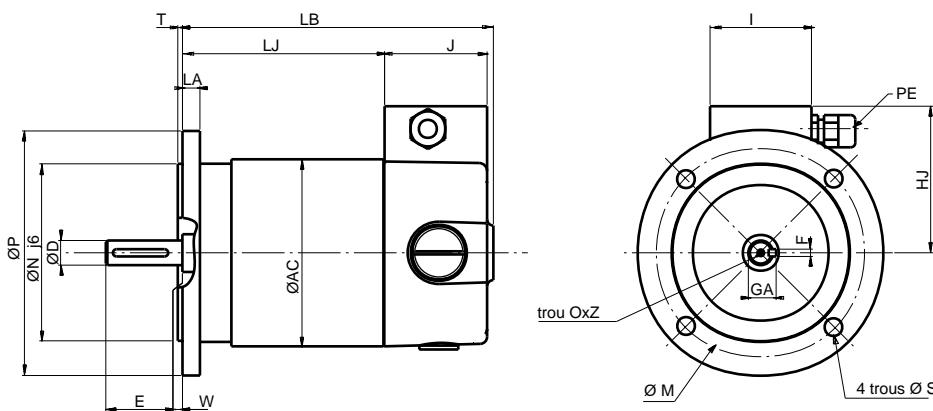
#### Dimensions of MFA enclosed D.C. motors

Dimensions in millimetres

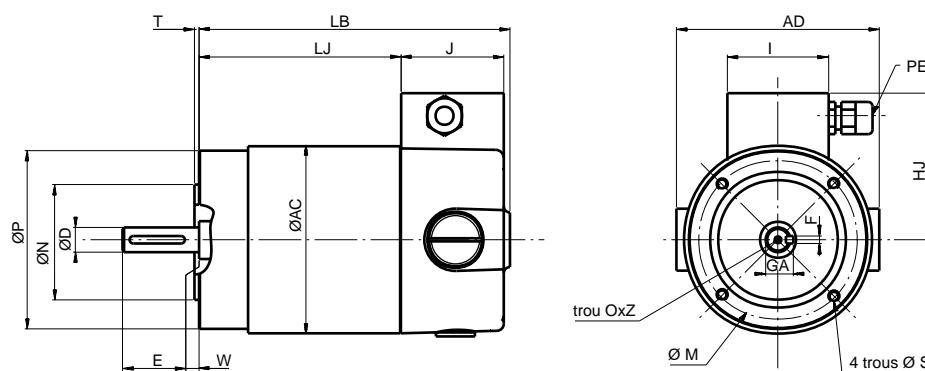
##### - B3 foot mounted



##### - (FF) flange mounted B5



##### - (FT) face mounted B14



VARIABLE SPEED DRIVE GEARED MOTORS

D

# MVE

## electronic variable speed drives

### Dimensions

Dimensions of standard MFA enclosed D.C. motors

*Dimensions in millimetres*

#### - foot or flange mounted

Type	Motors															Weight kg		
	A	AB	AD	B	X	C	AC	H	HA	HD	HJ	J	I	K	LB <sup>1</sup>	LJ <sup>1</sup>	PE	
<b>MFA 56 S</b>	90	108	108	71	9	36	86	56	2	127	71	49	49	6	159	103	9	3
<b>MFA 56 L</b>	90	108	108	71	9	36	86	56	2	127	71	49	49	6	199	143	9	4
<b>MFA 63 S</b>	100	120	134	80	10	40	120	63	2	161	98	78	75	7	197	119	11	7.5
<b>MFA 63 M</b>	100	120	134	80	10	40	120	63	2	161	98	78	75	7	222	144	11	9
<b>MFA 63 L</b>	100	120	134	80	10	40	120	63	2	161	98	78	75	7	252	174	11	11

1. In flange mounted version (B5) LB and LJ = + 4 mm for MFA 56 and + 11 mm for MFA 63.

Type	Flanges						Faceplates					Shaft extension					
	M	N	P	LA	S	T	M	N	P	S	T	D	E	O x Z	GA	F	W
<b>MFA 56 S/M/L</b>	100	80	120	8	7	3	65	50	80	M5	2.5	11 j6	23	M4x10	12.5	4	0
<b>MFA 63 S/M/L</b>	115	95	140	10	9	3	75	60	120	M5	2.5	11 j6	23	M4x10	12.5	4	0

#### **IMPORTANT**

See page 15 for flange and shaft extension dimensions depending on the gearbox selected.

# MVE electronic variable speed drives

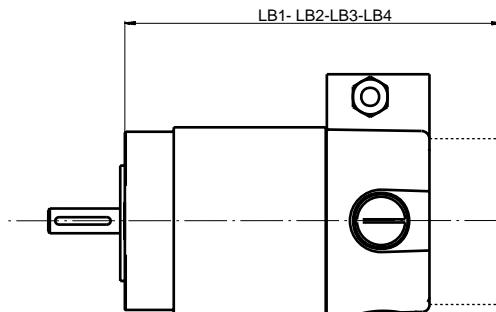
## Dimensions of options

### Dimensions of MFA enclosed D.C. motors

Dimensions in millimetres

#### - foot or flange mounted

Type	Motors with options			
	LB1	LB2	LB3	LB4
<b>MFA 56 S</b>	210	193	203	208
<b>MFA 56 L</b>	250	233	243	248
<b>MFA 63 S</b>	245	228	238	243
<b>MFA 63 M</b>	270	253	263	268
<b>MFA 63 L</b>	300	283	293	298



In flange mounted version (B5) dimensions LB1 - 2 - 3 - 4 = + 4 mm for MFA 56 and + 11 mm for MFA 63

LB1 = D.C. tacho speed detection 20 V

LB2 = A.C. tacho speed detection 30 V

LB3 = FMC safety brake 2.5 N.m

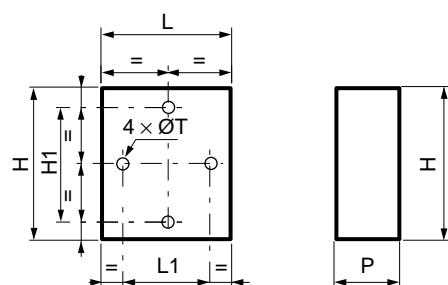
LB4 = FMC safety brake 4 N.m

For brake release lever (optional) length LB3 = + 10 mm

### Dimensions of VE electronic variable speed drives

Dimensions in millimetres

#### - VE 7 to VE 36



Controllers						Weight
H	H1	L	L1	P	T	kg
190	110	136	80	80	4,5	1,5

VARIABLE SPEED DRIVE GEARED MOTORS

D

# MVE + Compabloc 1000 electronic variable speed drives

## Selection

Compabloc gearbox (Cb) : S baseplate or BS, BD flange form  
D.C. motors : MFA series, IP 44, class F

Field excitation : permanent magnets

Armature : 180 V

Power supply : via VE type thyristor controller

FMC brake block, adaptable for all types

Integral mounting

MI

**Classe I**  
 $(K_p \geq 1)$

0.8 to 1 875 min<sup>-1</sup>

2 - 3 and 4 stages

Minimum output speed min <sup>-1</sup>	Maximum output speed min <sup>-1</sup>	Reduction index	MFA motors, power in kW				
			0,075	0,12	0,18	0,25	0,37
			Variable speed drive type				
			MVE 7-56 S	MVE 12-56 L	MVE 18-63 S	MVE 25-63 M	MVE 36-63 L
0.8	11.3	250					
0.9	13	224					
1	15	200	Cb 1504				
1.1	16.5	180					
1.2	18.5	160		Cb 1504			
1.4	21.4	140					
1.6	24	125			Cb 1703		
1.8	26.8	112					
2	30	100				Cb 1703	
2.2	33.3	90					
2.5	37.5	80					
2.8	42.2	71					
3.1	47.6	63		Cb 1503			
3.6	53.7	56					Cb 1703
4	60	50					
4.4	66.6	45					
5	75	40					
5.6	84.5	35.5					
6.2	93.7	31.5					
8	120	25					
8.9	134	22.4					
10	150	20					
11.1	166.6	18					
12.5	187.5	16		Cb 1502			
14.2	214	14					
16	240	12.5					
20	300	10					
22.2	333	9					
25	375	8					
31.7	476	6.3	Cb 1702	Cb 1702	Cb 1702	Cb 1702	Cb 1702
1 etage							
25	375	8					
28.1	422	7.1					
31.7	476	6.3					
36	537	5.6					
40	600	5					
44	666	4.5					
50	750	4					
56	845	3.6		Cb 1701			
62	937	3.2					
71	1070	2.8					
80	1200	2.5					
89	1340	2.2					
100	1500	2					
111	1666	1.8					
125	1875	1.6					

### Exact reductions

	Reduction indices																								
	2 - 3 and 4 stages																								
Cb 1504	264,5	230,5	203,3	181,1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cb 1503	-	-	-	-	160,9	143,6	125,1	110,4	98,3	88,2	79,7	70,8	64,6	59,1	50,1	46,2	40,8	36,9	-	-	-	-	-	-	-
Cb 1502	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31,5	28,2	24,5	21,6	19,3	17,3	15,6	13,9
Cb 1703	-	-	-	-	156,5	139,1	123,3	110,3	99,5	90,4	81,2	69,8	63,4	55,8	51	45,5	40,1	35,6	-	-	-	-	-	-	-
Cb 1702	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31,3	27,9	24,7	22,1	19,9	18,1	16,3	14

	Reduction indices																								
	1 stage																								
Cb 1701	8	7,1	6,3	5,6	5	4,5	4	3,6	3,2	2,8	2,5	2,2	2	1,8	1,6	-	-	-	-	-	-	-	-	-	-
	8,1	7,2	6,4	5,7	5,2	4,7	4,2	3,6	3,3	2,9	2,7	2,4	2,1	1,8	1,6	-	-	-	-	-	-	-	-	-	-

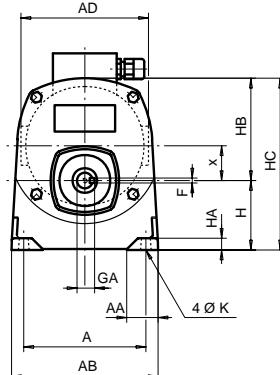
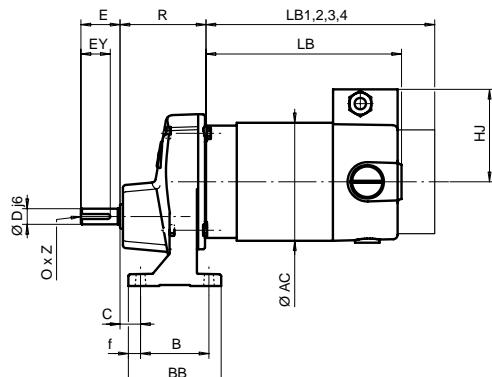
# MVE + Compabloc 1000 electronic variable speed drives

## Dimensions

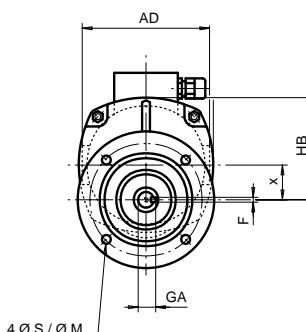
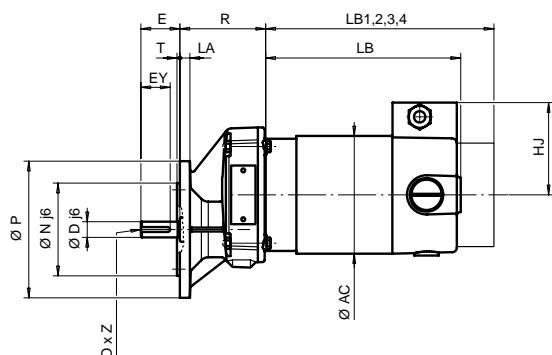
Dimensions of Compabloc (Cb) geared motors,  
MI integral mounting,  
Cb 1701

Dimensions in millimetres

### - S baseplate form



### - BS flange form



Type	Gearboxes with baseplate or flange												Solid output shaft					Weight*				
	R	A	AA	AB	B	BB	x	H	HB	HC	C	f	K	HA	D	E	EY	GA	F	O	Z	
Cb 1701	88	125	32,5	150	70	95	35,5	71	105	176	21	12,5	9	12	16	40	30	18	5	M5	15	2,05

\* Gearbox only.

Type	Standard flange						Other possible flanges <sup>1</sup>											
	BS						BD1						BD2					
M	N	P	S	LA	T	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2	
Cb 1701	115	95	140	9	10	3	100	80	120	7	10	3	130	110	160	9	10	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	D.C. motors				Weight
	AD	AC	HJ	LB	
MFA 56 S	108	86	71	159	3
MFA 56 M	108	86	71	184	3,5
MFA 56 L	108	86	71	199	4
MFA 63 S	134	114	98	197	7,5
MFA 63 M	134	114	98	222	9
MFA 63 L	134	114	98	252	11

Type	LB1	LB2	LB3	LB4
MFA 56 S	210	193	203	208
MFA 56 M	235	218	228	233
MFA 56 L	250	233	243	248
MFA 63 S	245	228	238	243
MFA 63 M	270	253	263	268
MFA 63 L	300	283	293	298

LB1 = D.C. tacho speed detection 20 V

LB2 = A.C. tacho speed detection 30 V

LB3 = FMC safety brake 2,5 N.m

LB4 = FMC safety brake 4 N.m

For the brake release lever (optional) length LB3 = + 10 mm

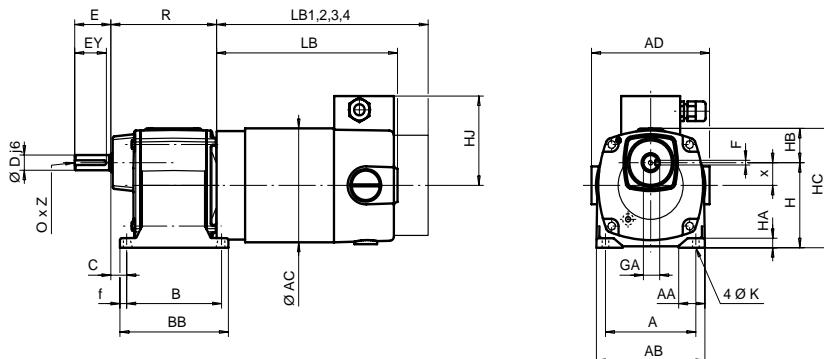
# MVE + Compabloc 1000 electronic variable speed drives

## Dimensions

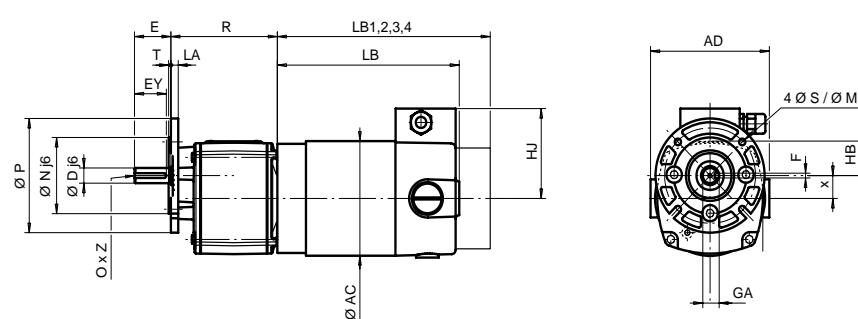
Dimensions of Compabloc (Cb) geared motors,  
MI integral mounting,  
Cb 1502, Cb 1503, Cb 1504

Dimensions in millimetres

### - S baseplate form



### - BS flange form



Type	Gearboxes with baseplate or flange												Solid output shaft					Weight*				
	R	A	AA	AB	B	BB	x	H	HB	HC	C	f	K	HA	D	E	EY	GA	F	O	Z	kg
<b>Cb1502 - 3 - 4</b>	117	100	29	120	105	120	24	90	36,5	126	17,5	7,5	7	10	16	40	37	18	5	M5	15	

\* Gearbox only : Cb 1502 = 2.5 kg - Cb 1503 = 2.8 kg - Cb 1504 = 2.9 kg.

Type	Standard flange						Other possible flanges <sup>1</sup>											
	BS			BD1			BD2											
M	N	P	S*	LA	T	M1	N1	P1	S1*	LA1	T1	M2	N2	P2	S2	LA2	T2	
<b>Cb1502 - 3 - 4</b>	100	80	20	7	8	2,5	85	70	105	7	8	2,5	115	95	140	9	8	2,5

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

\* For ease of installation when mounting the geared motor, the 2 lower flange holes are replaced by 2 notches.

Type	D.C. motors				Weight
	AD	AC	HJ	LB	
<b>MFA 56 S</b>	108	86	71	159	3
<b>MFA 56 M</b>	108	86	71	184	3,5
<b>MFA 56 L</b>	108	86	71	199	4
<b>MFA 63 S</b>	134	114	98	197	7,5
<b>MFA 63 M</b>	134	114	98	222	9
<b>MFA 63 L</b>	134	114	98	252	11

Type	D.C. motors with options			
	LB1	LB2	LB3	LB4
<b>MFA 56 S</b>	210	193	203	208
<b>MFA 56 M</b>	235	218	228	233
<b>MFA 56 L</b>	250	233	243	248
<b>MFA 63 S</b>	245	228	238	243
<b>MFA 63 M</b>	270	253	263	268
<b>MFA 63 L</b>	300	283	293	298

LB1 = D.C. tacho speed detection 20 V

LB2 = A.C. tacho speed detection 30 V

LB3 = FMC safety brake 2,5 N.m

LB4 = FMC safety brake 4 N.m

For the brake release lever (optional) length LB3 = + 10 mm

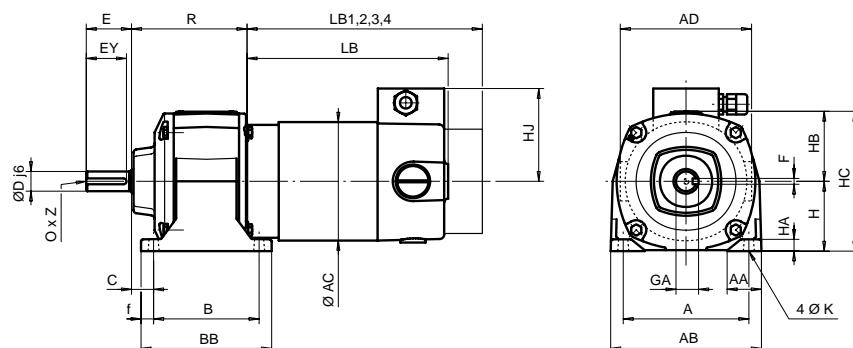
# MVE + Compabloc 1000 electronic variable speed drives

## Dimensions

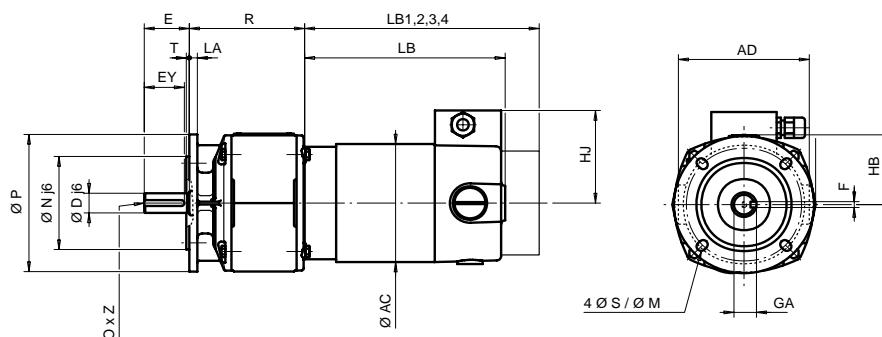
Dimensions of Compabloc (Cb) geared motors,  
MI integral mounting,  
Cb 1702, Cb 1703

Dimensions in millimetres

### - S baseplate form



### - BS flange form



Type	Gearboxes with baseplate or flange												Solid output shaft						Weight*		
	R	A	AA	AB	B	BB	H	HB	HC	C	f	K	HA	D	E	EY	GA	F	O	Z	
Cb 1702	115	125	31,5	150	105	130	71	72	143	22	12,5	9	12	20	45	40	22,5	6	M6	15	3,4
Cb 1703	135	125	31,5	150	125	150	71	72	143	22	12,5	9	12	20	45	40	22,5	6	M6	15	4,25

\* Gearbox only.

Type	Standard flange						Other possible flanges <sup>1</sup>											
	BS						BD1						BD2					
M	N	P	S	LA	T	M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2	
Cb 1702 - 03	115	95	140	9	8	3	100	80	120	7	7	3	130	110	160	9	8	3

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	D.C. motors				Weight
	AD	AC	HJ	LB	
MFA 56 S	108	86	71	159	3
MFA 56 M	108	86	71	184	3,5
MFA 56 L	108	86	71	199	4
MFA 63 S	134	114	98	197	7,5
MFA 63 M	134	114	98	222	9
MFA 63 L	134	114	98	252	11

Type	LB1	LB2	LB3	LB4
MFA 56 S	210	193	203	208
MFA 56 M	235	218	228	233
MFA 56 L	250	233	243	248
MFA 63 S	245	228	238	243
MFA 63 M	270	253	263	268
MFA 63 L	300	283	293	298

LB1 = D.C. tacho speed detection 20 V

LB2 = A.C. tacho speed detection 30 V

LB3 = FMC safety brake 2,5 N.m

LB4 = FMC safety brake 4 N.m

For the brake release lever (optional) length LB3 = + 10 mm

# MVE + Minibloc MVA electronic variable speed drives

## Selection

Gearbox : Minibloc (MVA) with S baseplate or M53 or M35 flange  
 D.C. motors : MFA series, IP 44, class F

Field excitation : permanent magnets  
 Armature : 180 V

Power supply : via VE type thyristor controller  
 FMC brake block, adaptable for all types

Integral mounting

MI

**Classe I**  
 $(K_p \geq 1)$

### 2.2 to 600 min<sup>-1</sup>

Minimum output speed min <sup>-1</sup>	Maximum output speed min <sup>-1</sup>	Reduction index	MFA motors, power in kW				
			0,075	0,12	0,18	0,25	0,37
			Type of variable speed drive				
2.2	33	90		MVE 7-56 S	MVE 12-56 L	MVE 18-63 S	MVE 25-63 M
2.7	40	75					MVE 36-63 L
3.3	50	60					
4	60	50					
5	75	40					
6.7	100	30				MVA	
10	150	20					
13.3	200	15					
20	300	10					
40	600	5					

D.C. brake motors, power in kW					
	0,075	0,12	0,18	0,25	0,37
Type of variable speed drive					
FMC	MVE 7-56 S	MVE 12-56 L	MVE 18-63 S	MVE 25-63 M	MVE 36-63 L

#### Selection example :

Required power : 0.25 kW

Required speed : 6.7 to 100 min<sup>-1</sup>

Mounting : foot

Position : horizontal, shaft on left

Designation :  
**MVA - S1 - M11G - 30 MI MVE 25-63 M**

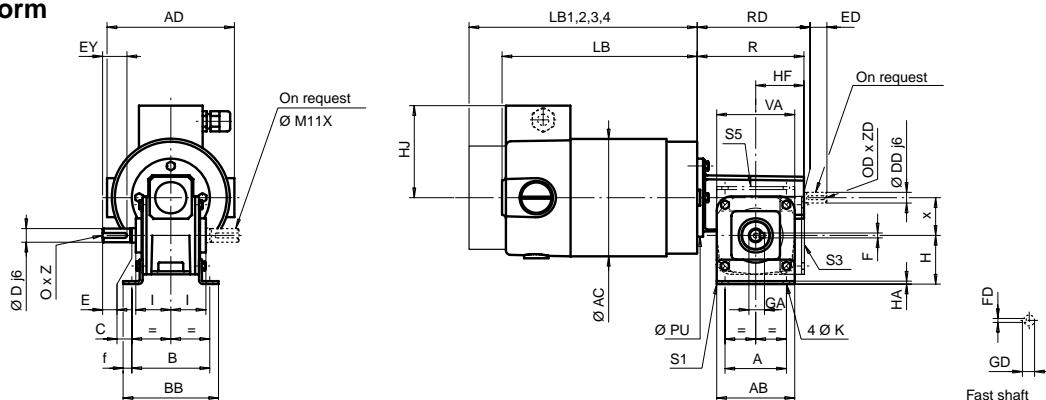
# MVE + Minibloc MVA electronic variable speed drives

## Dimensions

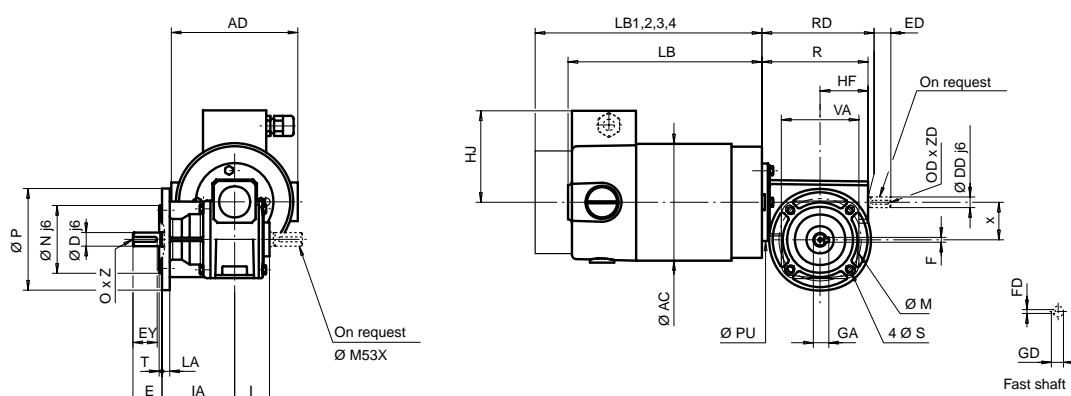
Dimensions of Minibloc MVA geared motors,  
MI integral mounting,  
solid output shaft

Dimensions in millimetres

### - S baseplate form



### - M53 or M35 flange form



#### Gearboxes with baseplate and flange

Type	RD	R	x	A	AB	B	BB	C	f	H	HA	VA	HF	I	K	PU	M	N	P	S	LA	T	IA	Weight kg*	B. Plate	Flange
<b>MVA</b>	110	109,5	38,6	63	80	80	98	0	9	50	3	80	49	36	6,5	80	85	70	105	7	8	2,5	75	1,7	2	

\* Gearbox only.

For other flanges and requirements, including hollow shaft, see pages B2.17, B2.18, B2.19, B2.20 and B2.21.

Type	D	E	EY	GA	F	O	Z
<b>MVA</b>	14	30	25	16	5	M5	15

Type	DD	ED	GD	FD	OD	ZD
<b>MVA</b>	11	23	12,5	4	M4	10

Type	D.C. motors				Weight
Type	AD	AC	HJ	LB	kg
<b>MFA 56 S</b>	108	86	71	159	3
<b>MFA 56 M</b>	108	86	71	184	3,5
<b>MFA 56 L</b>	108	86	71	199	4
<b>MFA 63 S</b>	134	114	98	197	7,5
<b>MFA 63 M</b>	134	114	98	222	9
<b>MFA 63 L</b>	134	114	98	252	11

Type	LB1	LB2	LB3	LB4
<b>MFA 56 S</b>	210	193	203	208
<b>MFA 56 M</b>	235	218	228	233
<b>MFA 56 L</b>	250	233	243	248
<b>MFA 63 S</b>	245	228	238	243
<b>MFA 63 M</b>	270	253	263	268
<b>MFA 63 L</b>	300	283	293	298

LB1 = D.C. tacho speed detection 20 V

LB2 = A..C. tacho speed detection 30 V

LB3 = FMC safety brake 2,5 N.m

LB4 = FMC safety brake 4 N.m

For the brake release lever (optional) length LB3 = + 10 mm

# MVE + Multibloc 2100 electronic variable speed drives

## Selection

Gearbox : Multibloc (Mb) M00 or M53 or M35 flange  
D.C. motors : MFA series, IP 44, class F

Field excitation : permanent magnets  
Armature : 180 V

Power supply : via VE type thyristor controller  
FMC brake block, adaptable for all types

Universal mounting MU

**Classe I**  
 $(K_p \geq 1)$

### 2 to 400 min<sup>-1</sup>

Minimum output speed min <sup>-1</sup>	Maximum output speed min <sup>-1</sup>	Reduction index	MFA motors, power in kW				
			0,075	0,12	0,18	0,25	0,37
			MVE 7-56 S	MVE 12-56 L	MVE 18-63 S	MVE 25-63 M	MVE 36-63 L
2	30	100					
2.5	37.5	80					
3.3	50	60					
4	60	50					
5	75	40					
6.6	100	30					
8	120	25			Mb 21		
10	150	20					
13.3	200	15					
16	240	12,5					
20	300	10					
26.6	400	7,5					

### D.C. brake motors, power in kW

		0,075	0,12	0,18	0,25	0,37
		Type of variable speed drive				
FMC		MVE 7-56 S	MVE 12-56 L	MVE 18-63 S	MVE 25-63 M	MVE 36-63 L

#### Selection example :

Required power : 0.18 kW

Required speed : 5 to 75 min<sup>-1</sup>

Mounting : foot

Position : horizontal, hollow shaft

Designation :  
Mb 2101 - M00C - 40 MU MVE 18-63 S

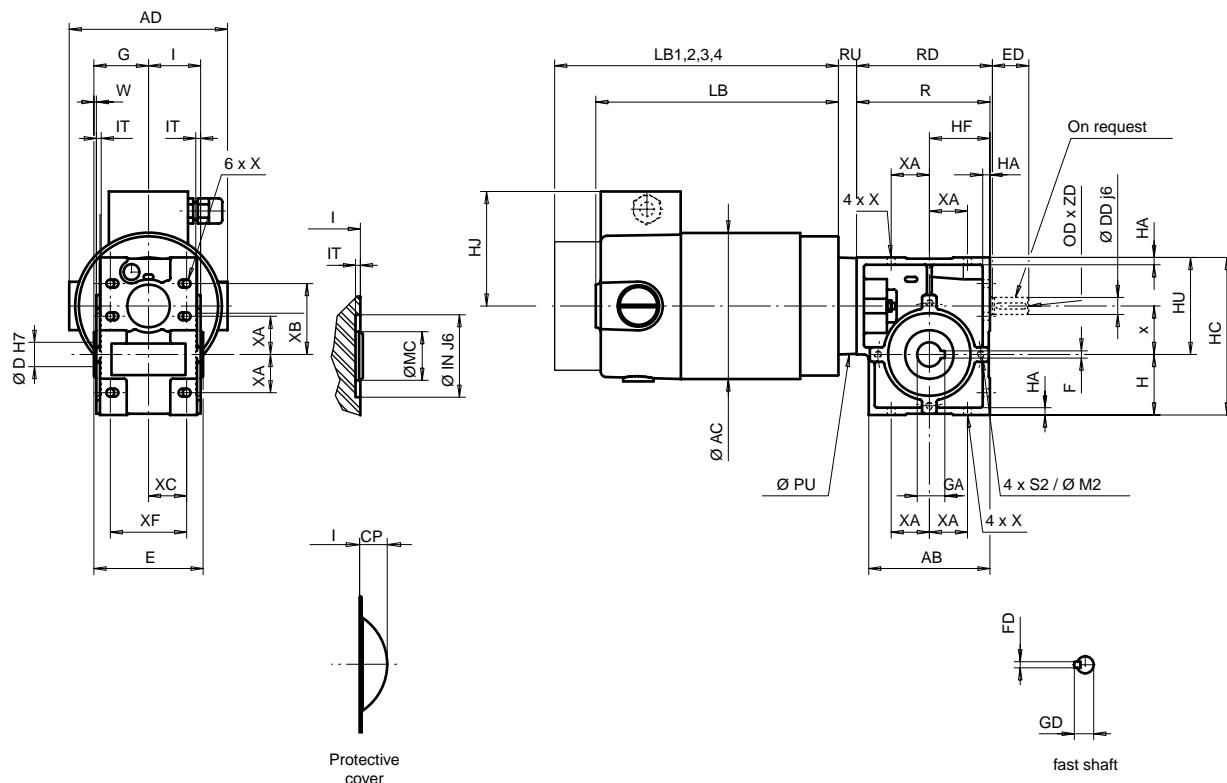
# MVE + Multibloc 2100 electronic variable speed drives

## Dimensions

Dimensions of Multibloc (Mb) geared motors,  
MU universal mounting  
hollow output shaft (C)

Dimensions in millimetres

### - M00 - C standard form



Type	Standard gearboxes															Weight*						
	R	HC	AB	RD	RU	H	x	HU	HF	HA	XA	XB	XC	XF	G	I	IN	IT	X	S2	M2	
<b>Mb 2101</b>	110	130	100	112	15	50	40	80	50	6	31,5	58,5	31,5	63	45	43	68	3	6,5	M6x15	85	3

\* Gearbox only.

For other requirements, see page B3.16.

Type	Hollow output shaft							Fast shaft (on request)						
	D	E	GA	F	MC	W	CP	DD	ED	GD	FD	OD	ZD	
<b>Mb 2101</b>	20	90	22,8	6	40	2	20	14	30	16	5	M5	15	

Type	D.C. motors				Weight
	AD	AC	HJ	LB	
<b>MFA 56 S</b>	108	86	71	159	3
<b>MFA 56 M</b>	108	86	71	184	3,5
<b>MFA 56 L</b>	108	86	71	199	4
<b>MFA 63 S</b>	134	114	98	197	7,5
<b>MFA 63 M</b>	134	114	98	222	9
<b>MFA 63 L</b>	134	114	98	252	11

Type	LB1	LB2	LB3	LB4
<b>MFA 56 S</b>	210	193	203	208
<b>MFA 56 M</b>	235	218	228	233
<b>MFA 56 L</b>	250	233	243	248
<b>MFA 63 S</b>	245	228	238	243
<b>MFA 63 M</b>	270	253	263	268
<b>MFA 63 L</b>	300	283	293	298

LB1 = D.C. tacho speed detection 20 V

LB2 = A.C. tacho speed detection 30 V

LB3 = FMC safety brake 2,5 N.m

LB4 = FMC safety brake 4 N.m

For the brake release lever (optional) length LB3 = + 10 mm

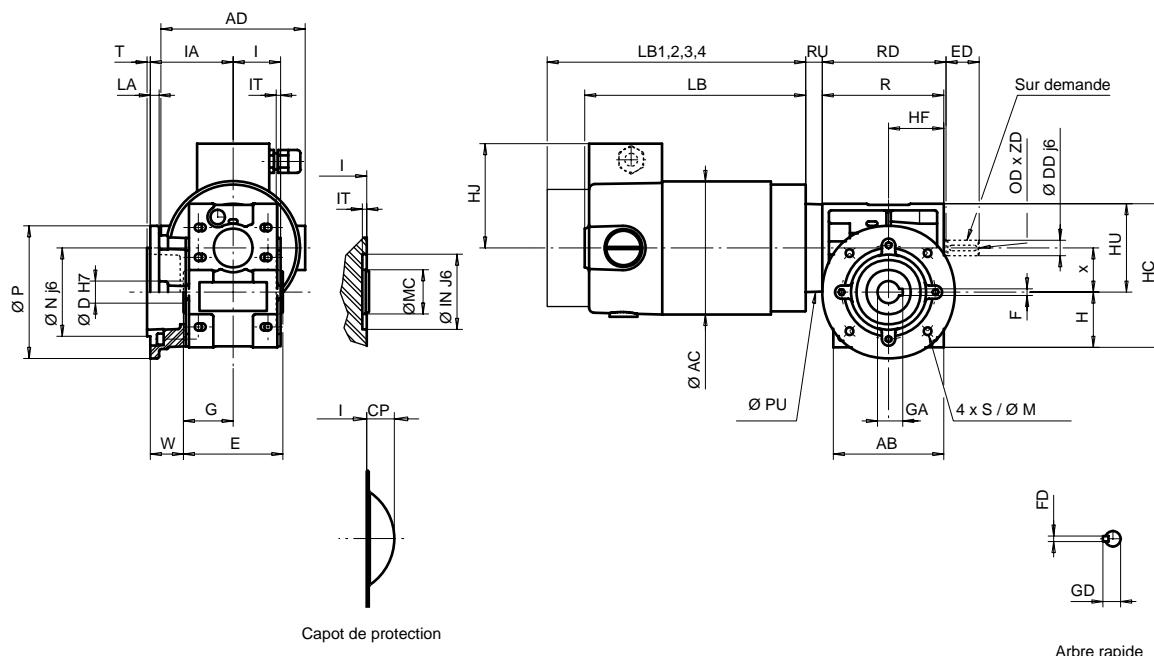
# MVE + Multibloc 2100 electronic variable speed drives

## Dimensions

Dimensions of Multibloc (Mb) geared motors,  
MU universal mounting  
hollow output shaft (C)

Dimensions in millimetres

### - M50, M05 flange form



Type	Gearboxes with flange																Weight*			
	R	HC	AB	RD	RU	H	x	HU	HF	G	I	IA	IT	M	N	P	S	LA	T	kg
<b>Mb 2101</b>	110	130	100	112	15	50	40	80	50	45	43	75	68	3	100	80	120	7	8	3,3

\* Gearbox only.

For other requirements, see pages B3.17 and B3.18.

Type	Hollow output shaft							Fast shaft (on request)					
	D	E	GA	F	MC	W	CP	DD	ED	GD	FD	OD	ZD
<b>Mb 2101</b>	20	90	22,8	6	40	30	20	14	30	16	5	M5	15

Type	Other possible flanges <sup>1</sup>																	
	BD1			BD2			M1	N1	P1	S1	LA1	T1	M2	N2	P2	S2	LA2	T2
<b>Mb 2101</b>	85	70	105	7	8	3	115	95	140	9	8	3						

1. The letters are indexed to differentiate them from the letters shown on the standard flange diagram.

Type	D.C. motors				Weight
	AD	AC	HJ	LB	
<b>MFA 56 S</b>	108	86	71	159	3
<b>MFA 56 M</b>	108	86	71	184	3,5
<b>MFA 56 L</b>	108	86	71	199	4
<b>MFA 63 S</b>	134	114	98	197	7,5
<b>MFA 63 M</b>	134	114	98	222	9
<b>MFA 63 L</b>	134	114	98	252	11

LB1 = D.C. tacho speed detection 20 V

LB2 = A.C. tacho speed detection 30 V

LB3 = FMC safety brake 2,5 N.m

LB4 = FMC safety brake 4 N.m

For the brake release lever (optional) length LB3 = + 10 mm

# MVE + Minibloc MVDE-MVBE electronic variable speed drives

## Selection

Gearbox : Minibloc MV (MVDE-MVBE) plain housing M00, or with S1 baseplate - M00, or with M50 or M05 flange  
 D.C. motors : MFA series, IP 44, class F

Field excitation : permanent magnets  
 Armature : 180 V

Power supply : via VE type thyristor controller  
 FMC brake block, adaptable for all types

Integral mounting

MI

**Classe I**  
 $(K_p \geq 1)$

0.36 to 139 min<sup>-1</sup>

Minimum output speed min <sup>-1</sup>	Maximum output speed min <sup>-1</sup>	Actual reduction index	MFA motors, power in kW						
			0,075		0,12		0,18		
			MVDE	MVBE	MVE 7-56 S	MVE 12-56 L	MVE 18-63 S	MVE 25-63 M	MVE 36-63 L
0.36	5.5	-	540						
0.44	6.6	-	450		MVBE				
0.56	8.5	345,5	360		MVDE				
0.6	9.2	312,5	336		MVDE				
0.67	10	-	300		MVBE				
0.72	10.8	280,8	275,5		MVDE				
0.8	12	250	246		MVDE				
0.86	13	224,6	228		MVDE				
1.06	16	187,5	187		MVBE		MVBE		
1.1	16.6	-	180		MVBE		MVBE		
1.4	21	138,2	144		MVDE		MVDE		
1.7	24.5	125	120		MVDE		MVDE		
1.8	27	112,3	108		MVDE		MVDE		
2.1	32	93,8	98,4		MVDE		MVDE		
2.3	34	84,2	90		MVDE		MVDE		
2.8	42	69,1	72		MVDE		MVDE		
3.3	49	62,5	60		MVDE		MVDE		
4.5	67	44,9	49,2		MVDE		MVDE		
4.9	73	40,6	42		MVDE		MVDE		
5.7	86	36,5	34,4		MVDE		MVDE		
6.5	98	31,3	30		MVDE		MVDE		
8.3	125	25	24,6		MVDE		MVDE		
9.3	139	22,5	21		MVDE		MVDE		

FMC	D.C. brake motors, power in kW				
	0,075		0,12		0,18
	MVE 7-56 S		MVE 12-56 L		MVE 18-63 S
					MVE 25-63 M
					MVE 36-63 L

The exact maximum slow speed is found by dividing the input speed by the actual reduction of the selected gearbox.

### Selection example :

Required power : 0.12 kW

Required speed : 0.56 to 8.5 min<sup>-1</sup>

Mounting and position : flange - horizontal

Shaft end : hollow

### Designation :

MVDE M50C - 345.5 MI MVE 12-56 L

VARIABLE SPEED DRIVE GEARED MOTORS

D

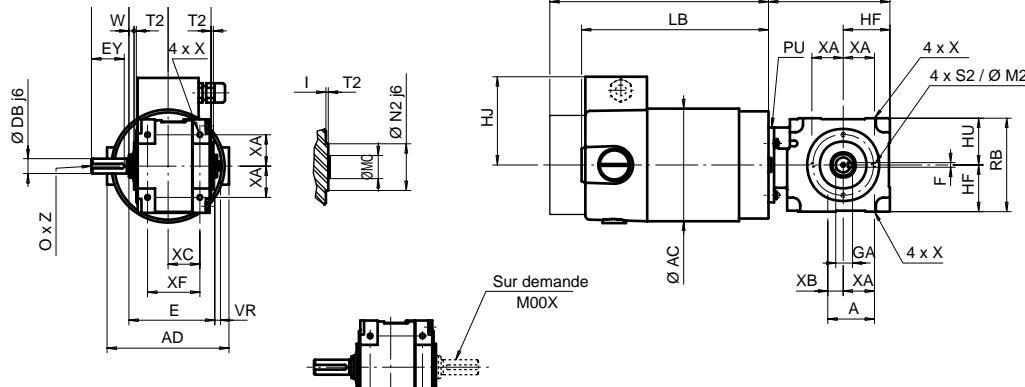
# MVE + Minibloc MVDE electronic variable speed drives

## Dimensions

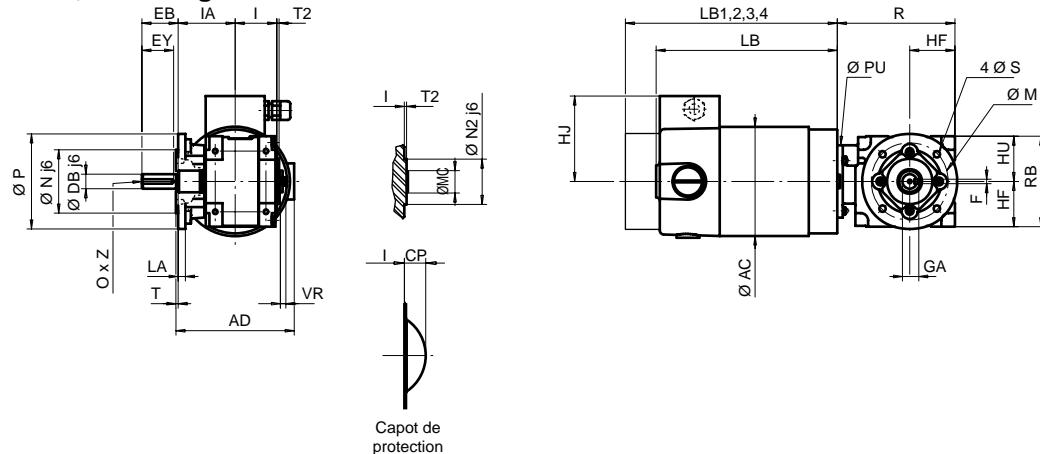
Dimensions of Minibloc MVDE geared motors,  
MI integral mounting,  
solid output shaft

Dimensions in millimetres

### - M00 standard form



### - M50, M05 flange form



#### Standard gearboxes with flange

Type	R	A	XF	XA	XB	RB	HU	HF	X	XC	G	I	N2	T2	S2	M2	PU	Weight*
<b>MVDE</b>	130	50	56	33,5	16,5	100	50	50	M6x10	34	42	46	50	2,5	M5x12	65	80	2,4

\* Gearbox only.

#### Geared motors with flange M50, M05

Type	M	N	P	S	LA	T	IA	Weight*	DB	EB	EY	E	VR	GA	F	W	MC	0	Z	CP
<b>MVDE</b>	85	70	105	7	8	2,5	63	3,2	16	40	35	92	6	18	5	8	25	M5	15	20

\* Gearbox only.

For other flanges and requirements, including hollow shaft, see pages B4.10, B4.12, B4.13, B4.14 and B4.15.

#### D.C. motors

Type	AD	AC	HJ	LB	Weight
<b>MFA 56 S</b>	108	86	71	159	3
<b>MFA 56 M</b>	108	86	71	184	3,5
<b>MFA 56 L</b>	108	86	71	199	4
<b>MFA 63 S</b>	134	114	98	197	7,5
<b>MFA 63 M</b>	134	114	98	222	9
<b>MFA 63 L</b>	134	114	98	252	11

#### D.C. motors with options

Type	LB1	LB2	LB3	LB4
<b>MFA 56 S</b>	210	193	203	208
<b>MFA 56 M</b>	235	218	228	233
<b>MFA 56 L</b>	250	233	243	248
<b>MFA 63 S</b>	245	228	238	243
<b>MFA 63 M</b>	270	253	263	268
<b>MFA 63 L</b>	300	283	293	298

LB1 = D.C. tacho speed detection 20 V

LB2 = A.C. tacho speed detection 30 V

LB3 = FMC safety brake 2,5 N.m

LB4 = FMC safety brake 4 N.m

For the brake release lever (optional) length LB3 = + 10 mm

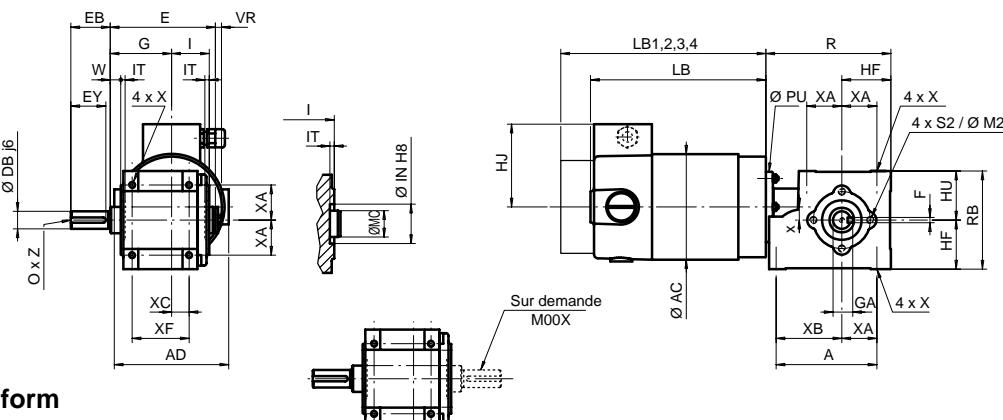
# MVE + Minibloc MVBE electronic variable speed drives

## Dimensions

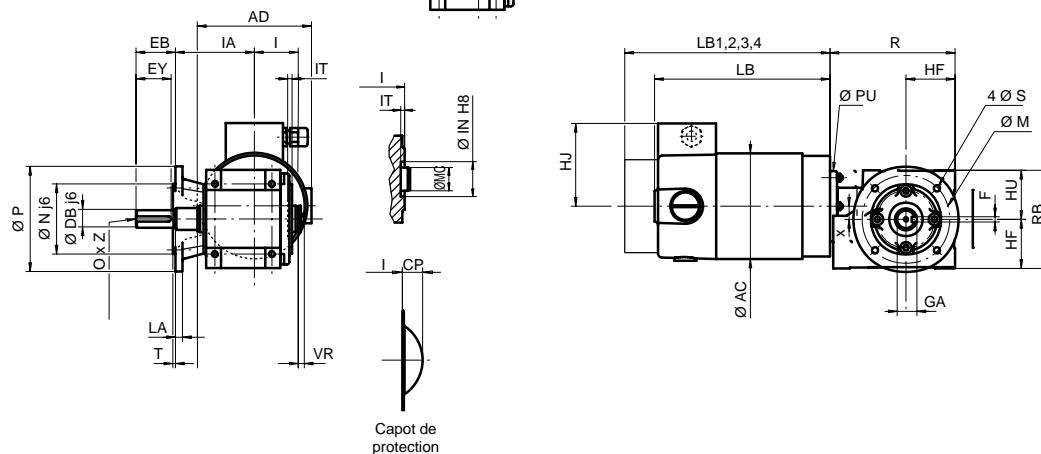
Dimensions of Minibloc MVBE geared motors,  
MI integral mounting,  
solid output shaft

Dimensions in millimetres

### - M00 standard form



### - M50, M05 flange form



Type	Standard gearboxes with flange																Weight*		
	R	x	A	XF	XA	XB	RB	HU	HF	X	XC	G	I	IN	IT	S2	M2	PU	
<b>MVBE</b>	143	15	115	65	40	75	112	56	56	M8x12	20	70	43	45	5	M8x12	65	80	6,6

\* Gearbox only.

Type	Geared motors with flange M50, M05								Weight*	Solid output shaft											
	M	N	P	S	LA	T	IA	kg		DB	EB	EY	E	VR	GA	F	W	MC	O	Z	CP
<b>MVBE</b>	100	80	120	7	8	3	90	7,4		20	45	40	120	7	22,5	6	12	30	M6	15	20

\* Gearbox only.

For other flanges and requirements, including hollow shaft, see pages B4.17, B4.19, B4.20, B4.21 and B4.22.

Type	D.C. motors				Weight
	AD	AC	HJ	LB	
<b>MFA 56 S</b>	108	86	71	159	3
<b>MFA 56 M</b>	108	86	71	184	3,5
<b>MFA 56 L</b>	108	86	71	199	4
<b>MFA 63 S</b>	134	114	98	197	7,5
<b>MFA 63 M</b>	134	114	98	222	9
<b>MFA 63 L</b>	134	114	98	252	11

Type	D.C. motors with options							
	LB1	LB2	LB3	LB4				
<b>MFA 56 S</b>	210	193	203	208				
<b>MFA 56 M</b>	235	218	228	233				
<b>MFA 56 L</b>	250	233	243	248				
<b>MFA 63 S</b>	245	228	238	243				
<b>MFA 63 M</b>	270	253	263	268				
<b>MFA 63 L</b>	300	283	293	298				

LB1 = D.C. tacho speed detection 20 V

LB2 = A.C. tacho speed detection 30 V

LB3 = FMC safety brake 2.5 N.m

LB4 = FMC safety brake 4 N.m

For the brake release lever (optional) length LB3 = + 10 mm

**I - APPLICATION AREA**

Acceptance of our tenders or the placing of any order with us implies acceptance of the following conditions without exception or reservation. These conditions of sale shall prevail over all stipulations appearing on the customer's purchase order, his general conditions of purchase or any other document emanating from him and / or a third party.

A dispensation from these General Conditions of Sale applies to sales concerning foundry parts, which are subject to the European Foundries General Conditions of Sale, latest edition.

**II - ORDERS**

All orders, including those taken by our agents and representatives, by whatever mode of transmission, become valid only after we have accepted them in writing.

We reserve the right to modify the characteristics of our goods without prior warning. However, the customer reserves the possibility to specify technical specifications in the order. Unless such requirements have been notified in writing, the customer will not be able to refuse delivery of new modified goods.

Our company will not accept responsibility for an incorrect choice of goods if this incorrect choice results from incomplete and / or erroneous conditions of use, or conditions that have not been conveyed to the vendor by the customer.

Unless otherwise specified, our tenders and estimates are only valid for thirty days from the date of issue.

When the goods have to satisfy standards, particular regulations and / or be inspected by standards or control organisations, the price request must be accompanied by full specifications with which we must comply with. This is mentioned in the estimate. All test and inspection fees are the customer's responsibility.

**III - PRICE**

Our prices and price lists are shown exclusive of tax and may be revised without prior notice.

Our prices are either firm for the duration specified on the estimate, or subject to revision according to a formula accompanying the tender which, depending on the regulations, covers a change in the cost of raw materials, products, various services and salaries, an index of which is published in the B.O.C.C.R.F. ("Bulletin Officiel de la Concurrence, de la Consommation et de la Répression des Fraudes").

For any order of goods not found in our catalogue, requiring special manufacture, the invoice will include a minimum fixed sum of 600 FRF (six hundred French Francs) exclusive of tax, to cover start - up costs. Any tax due will be charged to the customer.

All related costs, such as customs clearance and special inspections, will be added on.

Customers should remember that the French Franc (or other currency) is being replaced by the Single European Currency (EURO) according to a European Community ruling. In accordance with the general principles of monetary law, references to the French Franc will then as of right be considered to refer to the Euro. This substitution will be enforced on the date and in accordance with the conditions defined by the European Community ruling.

**IV - DELIVERY**

Our export sales are governed by the INCOTERMS published by the International Chamber of Commerce ("I.C.C. INCOTERMS"), latest edition.

Goods are despatched in accordance with the conditions indicated on our order acknowledgement, sent out in response to any order for goods and / or services.

Unless otherwise specified, our prices refer to goods put at customer's disposal in our factories, and include standard packaging.

Unless otherwise specified, goods are always transported at the consignee's risk. Without exception, it is up to the purchaser to raise with the transporter, in the legal form and time limits, any claim concerning the condition or the number of packages received and also to send us at the same time a copy of this declaration. Failure to respect this procedure will relieve us of all responsibility.

In the case of CIF (Cost, Insurance & Freight) or CIP (Carriage & Insurance Paid to) sales, etc..., in the event of damage, our responsibility will only be engaged if any reservations and required declarations have been notified in the required time period, and will not in any case exceed the indemnity sum received from our insurers.

If the arrangements for despatch are modified, we reserve the right to invoice any additional costs arising from such changes. Packages cannot be returned.

Should the delivery of goods be delayed for a reason not attributable to the vendor, goods will be stored on the vendor's premises, at the own risk of the customer, at a charge for storage of 1% (one per cent) of the total order sum per week, beginning, without a grace period, on the day after the scheduled date of delivery indicated in the contract. After thirty days from this date, the vendor has the right to dispose of these goods as he wishes and arrange a new delivery date for the said goods with the customer. In all instances, all down payments received remain the property of the vendor as indemnity, without prejudice to other claims for damages that the vendor may wish to bring.

**V - DELIVERY DATES**

Delivery times are stated for information only, and do not include the month of August.

Delivery dates are counted from the issue date of the order acknowledgement from the vendor and are subject to compliance with the provisions indicated on the order acknowledgement, notably receipt of the down payment for the order, notification of the issuance of an irrevocable letter of credit conforming to all vendor requirements (especially as regards the amount, currency, validity, licence, etc.) and acceptance of the terms of payment with any guarantees which may be required, etc...

In no case does late delivery automatically entitle the customer to damages and / or penalties.

Unless otherwise specified, we reserve the right to make partial deliveries.

Delivery dates are automatically suspended without formal notice, and the vendor shall have no responsibility in cases of Force Majeure, or events beyond the control of the vendor or his suppliers such as delays, saturation, or unavailability of the planned transport methods, energy, raw materials etc., serious

accidents such as fires, explosions, strikes, lock out, or emergency measures taken by the Authorities occurring after the conclusion of the order and preventing its normal execution. Similarly, delivery dates are automatically suspended without formal notice in all cases of failure to perform or late payment by the customer.

**VI - TESTS**

All goods manufactured by the vendor are tested before leaving the factory in accordance with vendor's ISO 9001 certifications. Customers may attend these tests : they simply have to convey the wish to do so in writing when the order is placed.

Specific tests and acceptance tests requested by the customer, whether conducted on the customer's premises, in our factories, on-site, or by inspection organisations, must be noted on the order and are to be paid for by the customer.

Goods specially developed for a customer will have to be approved by the latter before any delivery of mass - produced goods, notified by signing and returning to us the Product Approval Schedule reference Q1. T. 034.

In the event of the customer's insistence on delivery without having signed this form beforehand, the goods will then still be considered as prototypes and the customer will assume sole responsibility for using it or supplying it to his own customers.

**VII -TERMS OF PAYMENT**

All our sales are considered as carried out and payable at the registered office of the vendor, without exception, whatever the method of payment, the place of conclusion of the sale and delivery.

When the customer is based in France, our invoices are payable on receipt in cash, by banker's draft, or by L.C.R. ("Lettre de Change - Relevé"), within thirty days from the end of the month following the invoice date, net and without discount. When the customer is based outside France, our invoices are payable in cash against delivery of the dispatching documents or by irrevocable documentary credit confirmed by a first class French bank with all bank charges payable by the customer. Payments must be made in the currency of the invoice.

In accordance with French Law N° 92.1442 dated December 31,1992, non-payment of an invoice by its due date will give rise, after formal notice, to a penalty equal to one and a half times (1.5) the official rate of interest, and to late payment interest at the bank base rate plus five per cent. If the invoice carries V.A.T. (Value Added Tax), this is calculated on the amount, inclusive of tax, of the remaining sum due and comes into force from the due date.

Should steps have to be taken to recover the said amount, a surcharge of 15% (fifteen per cent) of the sum demanded will be payable.

Moreover, as a consequence of non - payment of an invoice or any term of payment, whatever the method of payment envisaged, the customer shall pay immediately for the whole of the outstanding amount owed to the vendor (including his subsidiaries, sister or parent companies, whether in France or overseas) for all deliveries or services, whatever their initial due date.

Notwithstanding any particular terms of payment arranged between the parties concerned, the vendor reserves the right to demand :

- payment in cash, before the goods leave the factory, for all orders in the process of manufacture, in the event of a problem with payment, or if the customer's financial situation justifies it,
- a down payment for the order.

Unless we are at fault, all down payments are non - returnable, without prejudice to our right to claim damages.

Any payment made in advance of the fixed payment date will lead to a discount of 0.2 % (zero point two per cent) per month of the amount concerned.

**VIII - COMPENSATION CLAUSE**

Unless prohibited by law, the vendor and the customer expressly agree between one another to compensate their respective debts arising from their commercial relationship, even if the conditions defined by law for legal compensation are not all satisfied.

In applying this clause, by vendor we mean any company in the LEROY SOMER group.

**IX - TRANSFER OF RISKS - TRANSFERT OF TITLE**

Transfer of risks occurs upon the handing over of the goods, according to the delivery conditions agreed at the time of ordering.

**THE TRANSFER OF TITLE OF THE GOODS SOLD TO THE CUSTOMER OCCURS UPON PAYMENT OF THE WHOLE PRINCIPAL SUM AND INTEREST.**

The provision of a document creating an obligation to pay (bank draft or similar) does not constitute payment.

So long as the price has not been paid in full, the customer is obliged to inform the vendor, within twenty - four hours, of the seizure, requisition or confiscation of goods to the benefit of a third party, and to take all safety measures to acquaint others with and respect our right of title in the event of intervention by creditors.

Failure to pay the amount due, whether total or partial, on the due date, for whatever reason and on whatever grounds, authorises the vendor to demand as of right and without formal notice, the return of the goods, wherever they may be, at the customer's expense and risk.

Return of the goods does not imply to cancellation of the sale. However, we reserve the option to apply the cancellation clause contained in these General Conditions of Sale.

**X - CONFIDENTIALITY**

The vendor and the customer undertake to maintain confidentiality of information of a technical, commercial or other nature, obtained during negotiations and / or the execution of any order.

**XI - INDUSTRIAL AND INTELLECTUAL PROPERTY RIGHTS**

The results, data, studies and information (whether patentable or not), or software developed by the vendor during execution of any order, and delivered to the customer, are the sole property of the vendor.

Apart from the instructions for use, servicing and maintenance, reports and documents of any type that we deliver to our customers remain our property and must be returned to us on

request, even when design fees have been charged for them, and they shall not be communicated to third parties or used without the prior written agreement of the vendor.

**XII - CANCELLATION CLAUSE**

We reserve the right to cancel immediately, as of right and without formal notice, the sale of our goods in case of non-payment of any part of the price by the due date, or in case of any breach in the contractual obligations of the customer. In this case, the goods will have to be returned to us immediately, at the customer's own risk and expense, subject to a penalty of 10% (ten per cent) of its value per week of delay. All payments already received shall remain our property as indemnity, without prejudice to our rights to claim damages.

**XIII -WARRANTY**

The vendor warrants the goods against any defect, arising from a default in material or in workmanship, for twelve months starting from the date on which they are made available, according to the conditions defined below.

The warranty for goods with special applications, or goods used 24 hours a day, is automatically reduced by half.

On the other hand, parts or accessories of other origin, which bear their own brand name, are included in our warranty only to the extent of the warranty conditions granted by the suppliers of these parts.

The vendor's warranty will only apply insofar as the goods have been stored, used and maintained in accordance with the vendor's instructions and documentation. It cannot be invoked when the default results from :

- failure to monitor, maintain or store the goods correctly,
- normal wear and tear of goods,
- intervention on or modification to the goods without the vendor's prior authorisation in writing,
- abnormal use, or use not conforming to the intended purpose,
- defective installation at the customer's and / or the final user's premises,
- non-communication, by the customer, of the intended purpose or the conditions of use of the goods,
- failure to use original manufacturer's spare parts,
- Force Majeure or any event beyond the control of the vendor,
- etc ...

In all cases, the warranty is limited to the replacement or the repair of parts or goods recognised as defective by our technical departments. If the repair is entrusted to a third party, it should only be carried out after acceptance by the vendor of the estimate for repair.

No goods should be returned without the vendor's prior authorisation in writing.

Goods to be repaired should be sent prepaid, to the address indicated by the vendor. If the goods have not been repaired under warranty, the cost of dispatching it back will be invoiced to the customer or to the end purchaser.

This warranty applies to our goods in accessible form and therefore does not cover the cost of dismantling and reinstallation of the said goods in the equipment in which they are integrated .

Repair, modification, or replacement of spare parts or goods during the warranty period will not extend the duration of the warranty.

The provisions of this article constitute the only obligation on the part of the vendor concerning the warranty for the goods supplied.

**XIV -LIABILITY**

The vendor will be liable for bodily injury caused by his goods or personnel.

The repair of property damages attributable to the vendor is expressly limited to a sum which may not exceed the amount of the goods found as defective.

It is expressly agreed that the vendor and the customer each waive any right to claim for indirect, consequential and / or punitive damages of any kind, such as loss of production, loss of profit, costs of withdrawal from the market or costs of recall, costs of dismantling and reinstallation of goods, loss of contracts, etc.

**XV - SPARE PARTS AND ACCESSORIES**

Spare parts and accessories are provided on request insofar as they are available. Related costs (carriage and any other costs) are always added to the invoice.

We reserve the right to demand a minimum quantity or invoice a minimum per order.

**XVI - PARTIAL INVALIDITY**

If any provision of these General Conditions of Sale is held to be unenforceable for any reason, it shall be adjusted rather than voided, if possible, in order to achieve the intent of the parties to the extent possible. In any event, all other provisions shall be deemed valid and enforceable to the full extent possible.

**XVII -DISPUTES**

**THESE GENERAL CONDITIONS OF SALE ARE GOVERNED BY FRENCH LAW.**

**ANY DISPUTE RELATING TO OUR SALES, EVEN IN THE CASE OF MULTIPLE DEFENDANTS, SHALL BE, IN THE ABSENCE OF AMICABLE SETTLEMENT AND NOTWITHSTANDING ANY CLAUSE TO THE CONTRARY, SUBJECT TO THE JURISDICTION OF THE COURTS OF ANGOULEME (France).**

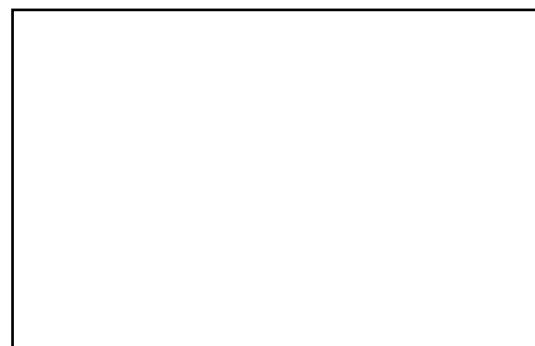


# **WORLD LEADER IN INDUSTRIAL DRIVE SYSTEMS**

**ELECTRIC MOTORS - GEARBOXES - ELECTRONICS  
ALTERNATORS - ASYNCHRONOUS GENERATORS - DC MACHINES**



**37 PRODUCTION UNITS  
470 SALES & SERVICE CENTRES WORLDWIDE**



LEROY-SOMER 16015 ANGOULÈME CEDEX - FRANCE

RCS ANGOULÈME N° B 671 820 223  
S.A. au capital de 62 779 000 €

[www.leroy-somer.com](http://www.leroy-somer.com)