

VARMECA
Variable speed
motors and geared motors
Selection guide

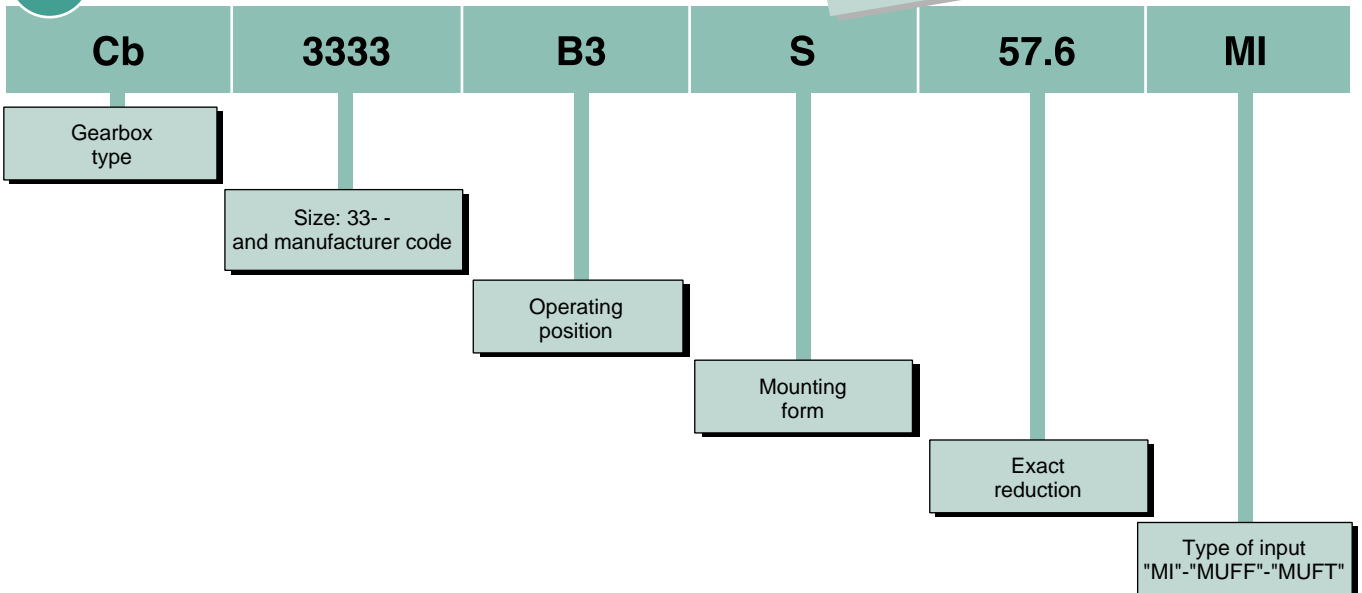
Variable speed motors and geared motors Drive systems



Gearbox options available:

- BS flange mounted
- BD flange mounted (different diameter flange)
- BT face mounted, etc.

1 GEARBOX



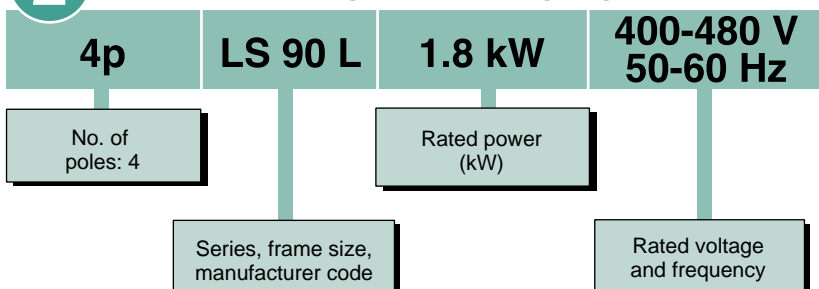
Possible motor options:

- drip cover
- 2nd shaft extension, etc.
- brake

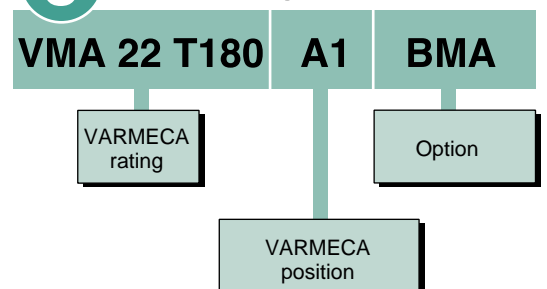
Possible VARMECA options:

- BMA, BMA VAR
- CVI VMA,
- SO VMA, etc.

2 VARIABLE SPEED MOTOR



3 VARMECA



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.

Variable speed motors and geared motors

Contents

	PAGE		PAGE
A - VARMECA - General information	8	F - VARMECA + ORTHOBLOC 2000	51
A1 - Quality assurance	5	F1 - General	51
A2 - General operating principle	6	F2 - Construction	51
A3 - Product name	6	F3 - Mounting arrangements	52
A4 - Characteristics	6	F4 - Adaptation possibilities	50
A5 - Environmental characteristics	7	F5 - Designation / Coding	53
A6 - Terminal blocks	7	F6 - Selection (AGMA class I $k_p = 1$)	54
A7 - Description of cables and protection devices	8	F7 - Dimensions	55 to 57
A8 - Description of the VARMECA 20 braking resistor	9	G - VARMECA + MANUBLOC 2000	59
A9 - Options	9	G1 - General	59
B - VARMECA - Motor characteristics	11	G2 - Construction	59
B1 - Selection: Single-phase power supply, Δ connection	11	G3 - Mounting arrangements	60
B2 - Selection: 3-phase power supply, Δ connection	12	G4 - Adaptation possibilities	61
B3 - Selection: 3-phase power supply, Y connection	13	G5 - Designation / Coding	61
B4 - Dimensions: Foot mounted	14	G6 - Selection (AGMA class I $k_p = 1$)	62
B5 - Dimensions: Foot and flange mounted	15	G7 - Dimensions	63 to 66
B6 - Dimensions: Flange mounted	16	H - VARMECA + MULTIBLOC 2100	67
B7 - Dimensions: Foot and face mounted	17	H1 - General	67
B7 - Dimensions: Face mounted	18	H2 - Construction	67
C - VARMECA - Geared motor characteristics	19	H3 - Mounting arrangements	68
C1 - General selection procedure and gearbox selection	19	H4 - Adaptation possibilities	69
C2 - Gearbox technology	19	H5 - Designation / Coding	69
C3 - Selection for gearboxes	20	H6 - Selection (AGMA class I $k_p = 1$)	70
C4 - Torque/speed characteristics	21	H7 - Dimensions	71 and 72
D - VARMECA + COMPABLOC 3000	23	I - VARMECA + MULTIBLOC 2000	73
D1 - General	23	I1 - General	73
D2 - Construction	23	I2 - Construction	73
D3 - Mounting arrangements	24	I3 - Mounting arrangements	74
D4 - Adaptation possibilities	25	I4 - Adaptation possibilities	74
D5 - Designation / Coding	25	I5 - Designation / Coding	75
D6 - Selection (k_p factor for AGMA class I, II, III)	26 to 33	I6 - Selection (AGMA class I $k_p = 1$)	76
D7 - Dimensions	34 to 40	I7 - Dimensions	77 to 83
E - VARMECA + COMPABLOC 2000	41		
E1 - General	41		
E2 - Construction	41		
E3 - Mounting arrangements	42		
E4 - Adaptation possibilities	43		
E5 - Designation / Coding	43		
E6 - Selection (AGMA class I $k_p = 1$)	44		
E7 - Dimensions	45 to 49		

Variable speed motors and geared motors

Index

	PAGE		PAGE
AGMA.....	19	Second motor.....	9
Altitude	7	Selection	11, 20, 26
Approvals	7	Shaft.....	23, 41, 51, 59, 67, 73
Braking resistor	9	Speed.....	11, 12, 13, 21
Cable gland	8	Speed variation range.....	6, 21
Cables	8	Starting.....	6
COMPABLOC 2000	41	Storage	7
COMPABLOC 3000	23	Supply voltage	6
Connection	8	Terminal block connection	7
Construction	6	Terminal blocks.....	7
Designation	6	Torque arm	73
Electrical characteristics	6	Torque curve.....	21
EMC	7	UL standard	7
Environment	7	Vibrations	7
FCR brake	20	Weight	16
Fieldbus.....	9		
Flanges.....	16, 23, 41, 51, 59, 73		
FMC brake.....	20		
Fuses.....	8		
Gearbox selection	19		
Humidity	7		
IEC	7		
Immunity	7		
Installation	7		
Insulation classification.....	23, 41, 51, 59, 67, 73		
Interference	7		
ISO	5		
Kp duty factor	19		
MANUBLOC	59		
Mounting.....	7		
MULTIBLOC 2000.....	73		
MULTIBLOC 2100.....	67		
Noise	9		
Oil	23, 41, 51, 59, 67, 73		
Operation.....	6, 24, 42, 52, 60, 68, 74		
Options	9		
ORTHOLOC.....	51		
Paint	23, 41, 51, 59, 67, 73		
Pilot control.....	7, 9		
Protection	7		
Quality	5		
RFI filter	9		

Variable speed motors and geared motors VARMECA - General information

A1 - 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 processes 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 organisations. 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.



DET NORSKE
VERITAS

ATTESTATION



Variable speed motors and geared motors VARMECA - General information

A2 - General operating principle

VARMECA is the physical association of a 3-phase induction motor and an integrated variable speed drive.

The motor allows all kinds of mounting arrangements (foot or flange) and can be combined with standard gearboxes from the LEROY-SOMER range.

A3 - Product name

eg: VMA-A21TL-075

	Ramps	Increment	Fmax.	Functions & Configurations (≠)
VMA A 21-22	100 s	1 s	220 Hz	PI Regulation, Pump Control (see doc. ref. 3532 section 2.5 - p.14, config. 5)
VMA B 21-22	40 s	0.1 s	100 Hz	Torque limiter, Faster/Slower, Dynamic Control (see doc. ref. 3532 section 2.5 - p.14, config. 7), VMAESFR card adaptation
VMA 14 *	20 s	1 s	220 Hz	PI Regulation

- 21: Short casing } M : Single-phase power supply 200 - 240 V ±10%; 50/60 Hz ±10%
 22: Long casing } TL : 3-phase power supply 200 - 240 V ±10%; 50/60 Hz ±10%
 T : 3-phase power supply 380 - 480 V ±10%; 50/60 Hz ±10%

* VMA 14: 3-phase power supply 400 - 440 V ±10%; 50/60 Hz ±10%

VARMECA					
200/240V single-phase power supply		200/240V 3-phase power supply		400/480V 3-phase power supply	
VMA rating	Power (kW)	VMA rating	Power (kW)	VMA rating	Power (kW)
A or B 21M - 025	0.25	A or B 21TL - 025	0.25	A or B 21T - 025	0.25
A or B 21M - 037	0.37	A or B 21TL - 037	0.37	A or B 21T - 037	0.37
A or B 21M - 055	0.55	A or B 21TL - 055	0.55	A or B 21T - 055	0.55
A or B 21M - 075	0.75	A or B 21TL - 075	0.75	A or B 21T - 075	0.75
A or B 22M - 090	0.9	A or B 22TL - 090	0.9	A or B 21T - 090	0.9
A or B 22M - 110	1.1	A or B 22TL - 110	1.1	A or B 21T - 110	1.1
A or B 22M - 150	1.5	A or B 22TL - 150	1.5	A or B 22T - 150	1.5
	-	A or B 22TL - 180	1.8	A or B 22T - 180	1.8
	-	A or B 22TL - 220	2.2	A or B 22T - 220	2.2
	-	-	-	A or B 22T - 300	3
	-	-	-	A or B 22T - 400	4
	-	-	-	14 - 550*	5.5
	-	-	-	14 - 750*	7.5

* VMA 14: 3-phase power supply 400-440V ±10%; 50/60 Hz ±10%

A4 - Characteristics

Characteristics	VARMECA
Overload	150% of In for 40s, 10 times per hour
Motor frequency variation range	- from 12 to 80 Hz at constant torque - from 12 to 50 Hz for general applications - from 6 to 220 Hz (VARMECA A20 and 14) or from 6 to 100 Hz (VARMECA B20)
Efficiency	97.5% x motor efficiency
Maximum number of power-ups per hour	Single-phase power supply: 10 3-phase power supply: unlimited

Variable speed motors and geared motors VARMECA - General information

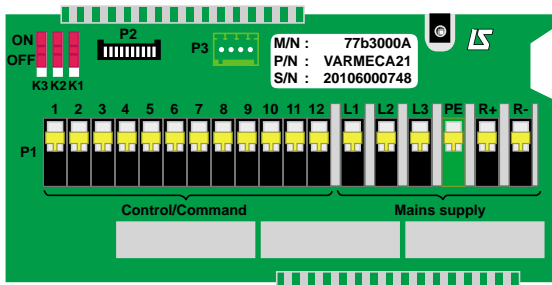
A5 - Environmental characteristics

Characteristics	Level	
	VMA 21 -22	VMA 14
Protection index	IP 65	IP 55
Storage temperature	-40°C to +70°C (IEC 68.2.3)	-40°C to +70°C (IEC 68.2.3)
Transport temperature	-40°C to +70°C	-40°C to +70°C
Operating temperature	-20°C to +40°C (+50°C with derating)	-20°C to +40°C (+50°C with derating)
Altitude	≤ 1000m without derating	≤ 1000m without derating
Ambient humidity	Without condensation	Without condensation
Vibration	IEC 68-2-34 (acceleration 0.01 g ² /Hz)	IEC 68-2-34 (acceleration 0.01 g ² /Hz)
Shocks	IEC 68-2-27 (peak acceleration 20g)	IEC 68-2-27 (peak acceleration 20g)
Immunity	Conforming to EN 50082-2 level 4	Conforming to EN 50082-2 level 4
Radiated conducted emissions	<ul style="list-style-type: none"> Conforming to EN 50081-2 as standard Conforming to EN 50081-1 with EMC filter option for the VMA 21 M range 	Conforming to EN 50081-2 with EMC filter option
UL standard	Conforming to FILE E211799	Not tested



A6 - Terminal blocks

Terminal layout



P1 terminal block (standard configuration)

Max. cross-section: 2.5 mm²

Marking	Functions - Characteristics
L1, L2	Connection of protected mains supply phases Single-phase
L1, L2, L3	3-phase
PE	Earth connection
R1, R2	Braking resistor connection
1	Drive locking logic input
2	Speed analogue output 0/10V, 3mA Analogue input: 0/10V or 4/20 mA
3	Source +24V, 30mA (± 10%)
4	Source +10V, 3mA (± 10%)
5	0V - Connected to the casing earth
6	Reference input 0/10V or 4/20mA
7	Reverse/Stop logic input
8	Forward/Stop logic input
9	Ramp selection logic input
10	Source +24V, 30mA (± 10%)
11, 12	Fault relay - normally closed contact 1A

Variable speed motors and geared motors VARMECA - General information

A7 - Description of cables and protection devices



- When using a circuit-breaker, it must be a motor circuit-breaker (D curve).
- Comply with the size of protection fuses.

- The cable size may vary according to legislation applicable in the country, which will take precedence over the values in the tables below.
- These tables should never be used instead of current standards.

P (kW)	200/240V single-phase power supply				200/240V 3-phase power supply				400/480V 3-phase power supply			
	VMA rating	I (A)	gl fuses or circuit-breaker (A)	Cables (mm ²)	VMA rating	I (A)	gl fuses or circuit-breaker (A)	Cables (mm ²)	VMA rating	I (A)	gl fuses or circuit-breaker (A)	Cables (mm ²)
0.25	A or B 21M-025	3.5	8	1.5	A or B 21TL-025	2	4	1.5	A or B 21T-025	1	4	1.5
0.37	A or B 21M-037	4	10	1.5	A or B 21TL-037	3	6	1.5	A or B 21T-037	1.5	4	1.5
0.55	A or B 21M-055	4.5	10	1.5	A or B 21TL-055	4	6	1.5	A or B 21T-055	2	6	1.5
0.75	A or B 21M-075	7	16	2.5	A or B 21TL-075	5	8	1.5	A or B 21T-075	3	6	1.5
0.9	A or B 22M-090	9	16	2.5	A or B 22TL-090	5.5	10	1.5	A or B 21T-090	3.5	8	1.5
1.1	A or B 22M-110	11	20	2.5	A or B 22TL-110	6	10	1.5	A or B 21T-110	4	10	1.5
1.5	A or B 22M-150	14	25	2.5	A or B 22TL-150	7	16	2.5	A or B 22T-150	5	10	1.5
1.8	-	-	-	-	A or B 22TL-180	7.5	16	2.5	A or B 22T-180	5.5	10	2.5
2.2	-	-	-	-	A or B 22TL-220	8	16	2.5	A or B 22T-220	6	10	2.5
3	-	-	-	-	-	-	-	-	A or B 22T-300	7	16	2.5
4	-	-	-	-	-	-	-	-	A or B 22T-400	8	16	2.5
5.5	-	-	-	-	-	-	-	-	14,550*	13	16	2.5
7.5	-	-	-	-	-	-	-	-	14,750*	16	20	4

* VMA 14: 3-phase power supply 400-440V ±10%; 50/60 Hz ±10%

Note:

- The mains current value is a typical value which depends on the source impedance. The higher the impedance, the lower the current.
- The fuses (UL approved) are intended for installations capable of delivering 5000A maximum at 480V.

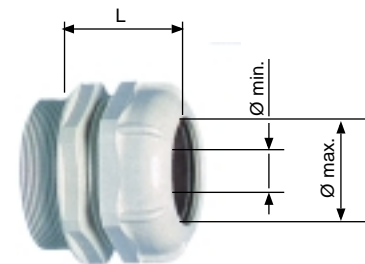
Polyamide anchoring cable gland

VARMECA rating	Type of CABLE GLAND
VMA 21 - 22	ISO 16 and ISO 20
VMA 14	ISO 16 and ISO 25

Cable gland clamping capacity (Standards NFEN 50 262)

Type of cable gland	POLYAMIDE anchoring cable gland		
	Clamping capacity		Length L
	MIN. cable ø	MAX. cable ø	
ISO 16	6	10	17
ISO 20	10	15	17
ISO 25	13	19	17

Dimensions in millimetres



Polyamide anchoring cable gland

Variable speed motors and geared motors VARMECA - General information

A8 - Description of the VARMECA 20 braking resistor

For operation in 4 quadrants and energy dissipation, resistors are fixed directly onto the VARMECA casing.



	RF 100			RF 200		
	P peak kW	P thermal W	Value Ω	P peak kW	P thermal W	Value Ω
VMA A or B 21T	2.8	100	200	2.8	200	200 (2x100 in series)
VMA A or B 21M/TL	0.65			0.65		
VMA A or B 22T	2.8			2.8		
VMA A or B 22M/TL	0.65			0.65		

External resistors with greater thermal power can be used, provided that the minimum ohmic value is respected.

A9 - Options

VARMECA		VMA 21 - 22			VMA 14
Designation	Description	M	TL	T	T
B	Integrated speed control knob	●	●	●	★
BMA	Integrated speed control and run-stop control knob	●	●	●	NA
BMAVAR	Integrated speed control knob and forward-stop/reverse-stop control	●	●	●	NA
CVI VMA 20	Integrated speed settings	●	●	●	NA
FLT VMA 14	RFI filter	NA	NA	NA	●
FLT VMA 21 M	Class B EMC filter (domestic level) - Single-phase supply	●	NA	NA	NA
RF100 - RF200	Braking resistors. Power 100 and 200W	●	●	●	NA
SO VMA	Fixed brake control and power supply - 3-phase supply	NA	NA	●	NA
VMA ESFR	Additional I/O interface and sequential brake control	●	●	●	NA
CDC VMA 10	VARMECA console	NA	NA	NA	●
CDC VMA 20	VARMECA console	●	●	●	NA
PEGASE VMA 10	VARMECA PC software	NA	NA	NA	●
PEGASE VMA 20	VARMECA PC software	●	●	●	NA
VMA COM PB	Fieldbus: PROFIBUS DP	●	●	●	NA
VMA COM IS	Fieldbus: INTERBUS S	●	●	●	NA
VMA COM DT	Fieldbus: DEVICENET	●	●	●	NA
VMA COM CN	Fieldbus: CAN OPEN	●	●	●	NA
POT 10K 1T	1-turn 10 K Ohm potentiometer	●	●	●	●
POT 10 K 10T	10-turn 10 K Ohm potentiometer	●	●	●	●
LEC VMA	Digital display for remote reading	●	●	●	●
FLASQUE 4 PE	4 PE shield for supplying a 2nd motor	●	●	●	NA

★ In frame size 132, the VARMECA 14 is supplied as standard with a control button (BD: button on the left, cable gland on the right - BG: button on the right, cable gland on the left - SD: no button, cable gland on the right - SG: no button, cable gland on the left)

Key: in offer not available

M : single-phase VMA power supply

TL : 3-phase VMA power supply

T : 3-phase VMA power supply

Variable speed motors and geared motors VARMECA - General information



Variable speed motors VARMECA - Motor characteristics

B1 - Selection: Single-phase power supply, Δ connection

SINGLE-PHASE POWER SUPPLY: 200V -10% to 240V +10%, 50/60Hz \pm 10%
3-phase motors 230V/400V \pm 10% Δ CONNECTED
Torque/speed characteristics of 2, 4 and 6-pole motors

2
poles
3000 min⁻¹

Type	Measured torque (N.m)/Speed (min ⁻¹)										M _D (Nm)	F _d (kHz)	
	Rated torque at 3000 min ⁻¹	Speeds											
		M _N	600	900	1200	1500	1800	2200	2400	3000			3600
2 P - LS 71 0.25 kW - VMA *21M 025	0.8	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.6	1.6	11	
2 P - LS 71 0.37 kW - VMA *21M 037	1.2	0.8	1	1.1	1.2	1.2	1.2	1.2	1.2	1	1.9	11	
2 P - LS 71 0.55 kW - VMA *21M 055	1.8	1.2	1.4	1.6	1.7	1.8	1.8	1.8	1.8	1.5	3.6	11	
2 P - LS 80 L 0.75 kW - VMA *21M 075	2.4	2	2	2.2	2.2	2.3	2.5	2.5	2.4	2	4.5	11	
2 P - LS 80 L 1.1 kW - VMA *22M 110	3.5	3	3.1	3.3	3.3	3.3	3.6	3.8	3.6	2.9	8	11	
2 P - LS 90 S 1.5 kW - VMA *22M 150	4.8	4	4	4	4.1	4.1	4.3	4.8	4.8	4	9	8	

* Either version A or B

4
poles
1500 min⁻¹

Type	Measured torque (N.m)/Speed (min ⁻¹)								M _D (Nm)	F _d (kHz)
	Rated torque at 1500 min ⁻¹	Speeds								
		M _N	320	600	900	1200	1500	1800		
4 P - LS 71 0.25 kW - VMA *21M 025	1.6	1.1	1.2	1.3	1.5	1.6	1.4	1.1	2.4	11
4 P - LS 71 0.37 kW - VMA *21M 037	2.4	1.6	1.8	1.9	2.2	2.4	2	1.6	4.8	11
4 P - LS 71 0.55 kW - VMA *21M 055	3.6	2.2	2.6	2.8	3.2	3.6	2.9	2.4	7.2	11
4 P - LS 80 L 0.75 kW - VMA *21M 075	4.8	3	4	4.4	4.4	4.8	4	3	10	11
4 P - LS 80 L 0.9 kW - VMA *22M 090	5.7	4	4.8	5.4	5.7	5.7	4.8	4	11	11
4 P - LS 90 S 1.1 kW - VMA *22M 110	7	4.7	5.3	6.7	7	7	5.8	4.4	13	11
4 P - LS 90 L 1.5 kW - VMA *22M 150	9.5	6.7	8.2	9.1	9.5	9.5	7.8	6.2	18	8

* Either version A or B

6
poles
1000 min⁻¹

Type	Measured torque (N.m)/Speed (min ⁻¹)							M _D (Nm)	F _d (kHz)
	Rated torque at 1000 min ⁻¹	Speeds							
		M _N	200	400	600	1000	1200		
6 P - LS 80 L 0.25 kW - VMA *21M 025	2.4	2.2	2.4	2.4	2.4	2	1.7	8	11
6 P - LS 80 L 0.37 kW - VMA *21M 055	3.5	3.1	3.4	3.7	3.8	3.2	2.6	10	11
6 P - LS 80 L 0.55 kW - VMA *21M 075	5.3	4.3	4.9	5.3	5.3	4.8	4.3	13	11
6 P - LS 90 S 0.75 kW - VMA *22M 090	7.2	6.8	6.8	7.2	7.6	6.3	4.8	16	11
6 P - LS 90 L 1.1 kW - VMA *22M 150	10.5	7.7	7.7	8.7	10.5	8.7	6.7	20	8

* Either version A or B

Key:

M_N: rated torque - M_D: starting torque - F_d: switching frequency

Variable speed motors VARMECA - Motor characteristics

B2 - Selection: 3-phase power supply, Δ connection

3-PHASE POWER SUPPLY: 200V -10% to 240V +10%, 50/60Hz \pm 10%
3-phase motors 230V/400V \pm 10% Δ CONNECTED
Torque/speed characteristics of 2, 4 and 6-pole motors

2
poles
3000 min⁻¹

Type	Rated torque at 3000 min ⁻¹ M _N	Measured torque (N.m)/Speed (min ⁻¹)									M _D (Nm)	F _d (kHz)
		Speeds										
		600	900	1200	1500	1800	2200	2400	3000	3600		
2 P - LS 71 0.25 kW - VMA *21TL 025	0.8	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.7	1.6	11
2 P - LS 71 0.37 kW - VMA *21TL 037	1.2	0.8	1	1.1	1.2	1.2	1.2	1.2	1.2	1	1.9	11
2 P - LS 71 0.55 kW - VMA *21TL 055	1.8	1.2	1.4	1.6	1.7	1.8	1.8	1.8	1.8	1.5	3.6	11
2 P - LS 80 L 0.75 kW - VMA *21TL 075	2.4	2.1	2.1	2.3	2.4	2.5	2.7	2.7	2.6	2	4.5	8
2 P - LS 80 L 1.1 kW - VMA *22TL 110	3.5	3.3	3.3	3.5	3.5	3.5	3.8	3.8	3.8	2.9	8	8
2 P - LS 90 S 1.5 kW - VMA *22TL 150	4.8	4	4	4.3	4.3	4.3	4.5	4.5	4.8	4	9	6
2 P - LS 90 L 1.8 kW - VMA *22TL 180	5.7	5.5	5.5	5.8	5.8	6	6	6.2	6.2	4.8	12	4
2 P - LS 90 L 2.2 kW - VMA *22TL 220	7	7	7	7.2	7.5	7.5	7.5	7.5	7.5	6	12	4

* Either version A or B

4
poles
1500 min⁻¹

Type	Rated torque at 1500 min ⁻¹ M _N	Measured torque (N.m)/Speed (min ⁻¹)							M _D (Nm)	F _d (kHz)
		Speeds								
		320	600	900	1200	1500	1800	2200		
4 P - LS 71 0.25 kW - VMA *21TL 025	1.6	1.1	1.2	1.3	1.5	1.6	1.4	1.1	2.4	11
4 P - LS 71 0.37 kW - VMA *21TL 037	2.4	1.6	1.8	1.9	2.2	2.4	2	1.6	4.8	11
4 P - LS 71 0.55 kW - VMA *21TL 055	3.6	2.2	2.6	2.8	3.2	3.6	2.9	2.4	7.2	11
4 P - LS 80 L 0.75 kW - VMA *21TL 075	4.8	3.4	4.2	4.6	4.6	4.9	4.1	3.2	10	8
4 P - LS 80 L 0.9 kW - VMA *22TL 090	5.7	4.6	5	5.8	6	6	5	4.2	11	8
4 P - LS 90 S 1.1 kW - VMA *22TL 110	7	5.2	5.5	7	7	7	6	4.7	13	8
4 P - LS 90 L 1.5 kW - VMA *22TL 150	9.5	7	8.5	9.5	9.5	9.5	8	6.5	18	6
4 P - LS 90 L 1.8 kW - VMA *22TL 180	11.5	7.7	10	11	12	12	10	8	24	4
4 P - LS 100 L 2.2 kW - VMA *22TL 220	14	9.4	12	13	13	14.5	12	9.5	26	4

* Either version A or B

6
poles
1000 min⁻¹

Type	Rated torque at 1000 min ⁻¹ M _N	Measured torque (N.m)/Speed (min ⁻¹)					M _D (Nm)	F _d (kHz)	
		Speeds							
		200	400	600	1000	1200			1500
6 P - LS 80 L 0.25 kW - VMA *21TL 025	2.4	2.3	2.5	2.5	2.5	2.1	1.8	8	11
6 P - LS 80 L 0.37 kW - VMA *21TL 055	3.5	3.2	3.5	3.9	4	3.3	2.7	10	11
6 P - LS 80 L 0.55 kW - VMA *21TL 075	5.3	4.5	5	5.5	5.5	5	4.5	13	8
6 P - LS 90 S 0.75 kW - VMA *22TL 090	7.2	7	7	7.5	8	6.5	5	16	8
6 P - LS 90 L 1.1 kW - VMA *22TL 150	10.5	8	8	9	11	9	7	20	6
6 P - LS 100 L 1.5 kW - VMA *22TL 180	14.3	8	10	15	15	12	10	40	4

* Either version A or B

Key:

M_N: rated torque - M_D: starting torque - F_d: switching frequency

Variable speed motors VARMECA - Motor characteristics

B3 - Selection: 3-phase power supply, Y connection

3-PHASE POWER SUPPLY: VMA 21 and 22: 400V -10% to 480V +10%, 50/60Hz ±10%

VMA 14: 400V -10% to 440V +10%, 50/60Hz ±10%

3-phase motors 230V/400V ±10% Y CONNECTED

Torque/speed characteristics of 2, 4 and 6-pole motors

2
poles
3000 min⁻¹

Type	Rated torque at 3000 min ⁻¹ M _N	Measured torque (N.m)/Speed (min ⁻¹)									M _D (Nm)	F _d (kHz)
		Speeds										
		600	900	1200	1500	1800	2200	2400	3000	3600		
2 P - LS 71 0.25 kW - VMA *21T 025	0.8	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.6	1.6	11
2 P - LS 71 0.37 kW - VMA *21T 037	1.2	0.8	1	1.1	1.2	1.2	1.2	1.2	1.2	1	2.4	11
2 P - LS 71 0.55 kW - VMA *21T 055	1.8	1.2	1.4	1.6	1.7	1.8	1.8	1.8	1.8	1.5	3.6	11
2 P - LS 80 L 0.75 kW - VMA *21T 075	2.4	2.1	2.1	2.3	2.4	2.5	2.7	2.7	2.6	2	4.5	11
2 P - LS 80 L 1.1 kW - VMA *21T 110	3.5	3.3	3.3	3.5	3.5	3.5	3.8	3.8	3.8	2.9	8	11
2 P - LS 90 S 1.5 kW - VMA *22T 150	4.8	4	4	4.3	4.3	4.3	4.5	4.5	4.8	4	9	8
2 P - LS 90 L 1.8 kW - VMA *22T 180	5.7	5.5	5.5	5.8	5.8	6	6	6.2	6.2	4.8	12	8
2 P - LS 90 L 2.2 kW - VMA *22T 220	7	7	7	7.2	7.5	7.5	7.5	7.5	7.5	6	12	8
2 P - LS 100 L 3 kW - VMA *22T 300	9.5	6.7	8.5	9	9.5	9	10	10	10	8	14	6
2 P - LS 112 M 4 kW - VMA *22T 400	12.7	11	12	13	13	13	13	13	13	10.7	16	4
2 P - LS 132 S 5.5 kW - VMA 14 550	17.5	12.3	12.3	15	15	15.8	16.8	18	18	14.6	25	4
2 P - LS 132 S 7.5 kW - VMA 14 750	23.9	16.1	16.1	20	23.9	24.9	25.2	25.4	24.8	19.8	32	4

* Either version A or B

4
poles
1500 min⁻¹

Type	Rated torque at 1500 min ⁻¹ M _N	Measured torque (N.m)/Speed (min ⁻¹)								M _D (Nm)	F _d (kHz)
		Speeds									
		320	600	900	1200	1500	1800	2200			
4 P - LS 71 0.25 kW - VMA *21T 025	1.6	1.1	1.2	1.3	1.5	1.6	1.35	1.1	3.2	11	
4 P - LS 71 0.37 kW - VMA *21T 037	2.4	1.6	1.8	1.9	2.2	2.4	2	1.6	4.8	11	
4 P - LS 71 0.55 kW - VMA *21T 055	3.6	2.5	2.6	2.8	3.2	3.6	2.9	2.35	7.2	11	
4 P - LS 80 L 0.75 kW - VMA *21T 075	4.8	3.4	4.2	4.6	4.6	4.9	4.1	3.2	10	11	
4 P - LS 80 L 0.9 kW - VMA *21T 090	5.7	4.6	5	5.8	6	6	5	4.2	11	11	
4 P - LS 90 L 1.1 kW - VMA *21T 110	7	5.2	5.5	7	7	7	6	4.7	13	11	
4 P - LS 90 L 1.5 kW - VMA *22T 150	9.5	7	8.5	9.5	9.5	9.5	8	6.5	18	8	
4 P - LS 90 L 1.8 kW - VMA *22T 180	11.5	7.7	10	11	12	12	10	8	24	8	
4 P - LS 100 L 2.2 kW - VMA *22T 220	14	9.4	12	13	13	14.5	12	9.5	26	8	
4 P - LS 100 L 3 kW - VMA *22T 300	19.1	12.8	12	15	17	19.1	16	12.8	30	6	
4 P - LS 112 MG 4 kW - VMA *22T 400	25.5	18	20	20	25	25	22	17	40	4	
4 P - LS 132 SM 5.5 kW - VMA 14 550	35	25	35	35	35	35	30	26.5	40	4	
4 P - LS 132 M 7.5 kW - VMA 14 750	47.8	31.9	40	47	48	48	40	32	50	4	

* Either version A or B

6
poles
1000 min⁻¹

Type	Rated torque at 1000 min ⁻¹ M _N	Measured torque (N.m)/Speed (min ⁻¹)						M _D (Nm)	F _d (kHz)
		Speeds							
		200	400	600	1000	1200	1500		
6 P - LS 80 L 0.25 kW - VMA *21T 037	2.4	2.3	2.5	2.5	2.5	2.1	1.8	8	11
6 P - LS 80 L 0.37 kW - VMA *21T 055	3.5	3.2	3.5	3.9	4	3.3	2.7	10	11
6 P - LS 80 L 0.55 kW - VMA *21T 075	5.3	4.5	5	5.5	5.5	5	4.5	13	11
6 P - LS 90 S 0.75 kW - VMA *21T 090	7.2	7	7	7.5	8	6.5	5	16	11
6 P - LS 90 L 1.1 kW - VMA *22T 150	10.5	8	8	9	11	9	7	20	11
6 P - LS 100 L 1.5 kW - VMA *22T 180	14.3	8	10	15	15	12	10	30	8
6 P - LS 112 M 2.2 kW - VMA *22T 300	21	9	12	18	20	18	15	40	8
6 P - LS 132 S 3 kW - VMA *22T 400	28.6	14	18	19	25	21	16	60	6
6 P - LS 132 M 4 kW - VMA 14 550	38.2	23	35	39	39	37	25	44	4
6 P - LS 132 M 5.5 kW - VMA 14 750	52.5	27	40	45	53	45	30	54	4

* Either version A or B

Key:

M_N: rated torque - M_D: starting torque - F_d: switching frequency

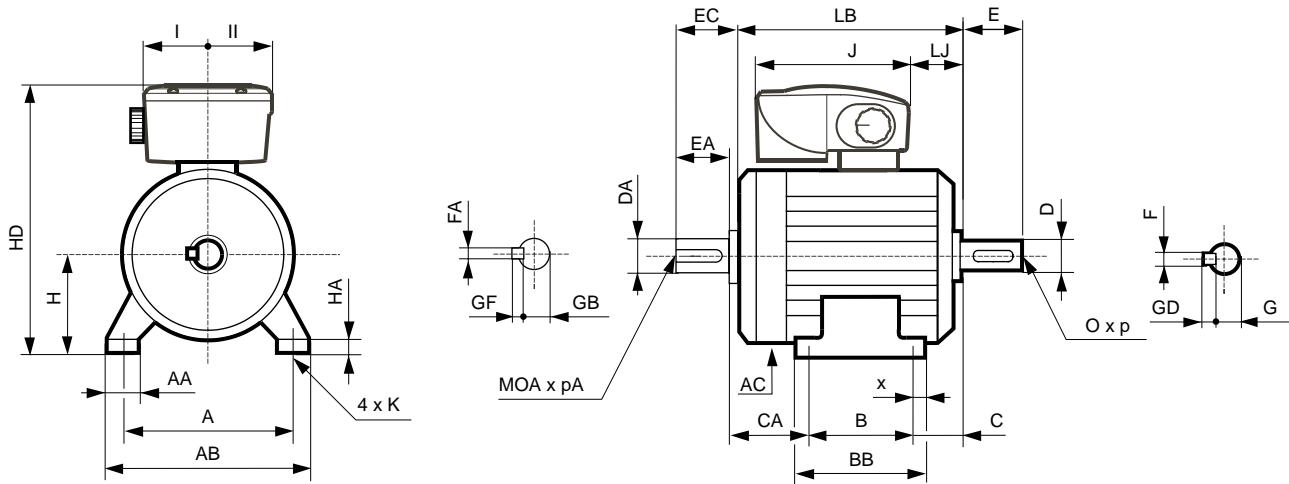
Variable speed motors VARMECA - Motor characteristics

B4 - Dimensions: Foot mounted

Dimensions of VARMECA motors

Dimensions in millimetres

- foot mounted



Type	Main dimensions																
	A	AB	B	BB	C	x	AA	K	HA	H	AC	HD	LB	LJ	J	I	II
LS 71	112	126	90	104	45	7	23	7	6	71	140	170	183	8	218	75	75
LS 80 L - VMA 21	125	157	100	120	50	10	29	9	10	80	170	270	215	12	218	75	75
LS 80 L - VMA 22	125	157	100	120	50	10	29	9	10	80	170	270	215	12	231	75	75
LS 90 S - VMA 21	140	172	100	120	56	10	37	10	11	90	190	289	218	12	218	75	75
LS 90 S - VMA 22	140	172	100	120	56	10	37	10	11	90	190	289	218	12	231	75	75
LS 90 L - VMA 21	140	172	125	162	56	28	37	10	11	90	190	289	245	12	218	75	75
LS 90 L - VMA 22	140	172	125	162	56	28	37	10	11	90	190	289	245	12	231	75	75
LS 100 L	160	196	140	165	63	12	40	12	13	100	200	304	290	12	231	75	75
LS 112 M	190	220	140	165	70	12	45	12	14	112	200	316	290	12	231	75	75
LS 112 MG	190	220	140	165	70	12	52	12	14	112	235	325	315	21	231	75	75
LS 132 S ¹	216	250	140	170	89	16	50	12	15	132	235	397	351	38	324	112	112
LS 132 SM/M ¹	216	250	178	208	89	16	59	12	18	132	280	414	387	16	324	112	112

1. In frame size 132, dimension I includes the control button supplied as standard.

Type	Output shaft							Secondary shaft extension						
	2, 4, 6 poles							2, 4, 6 poles						
	F	GD	D	G	E	O	p	FA	GF	DA	GB	EA	OA	pA
LS 71	5	5	14j6	11	30	5	15	5	5	14j6	11	30	5	15
LS 80 L	6	6	19j6	15.5	40	6	16	5	5	14j6	11	30	5	15
LS 90 S/L	8	7	24j6	20	50	8	19	6	6	19j6	15.5	40	6	16
LS 100 L	8	7	28j6	24	60	10	22	8	7	24j6	20	50	8	19
LS 112 M/MG	8	7	28j6	24	60	10	22	8	7	24j6	20	50	8	19
LS 132 S/M/SM	10	8	38k6	33	80	12	28	8	7	28j6	24	60	10	22

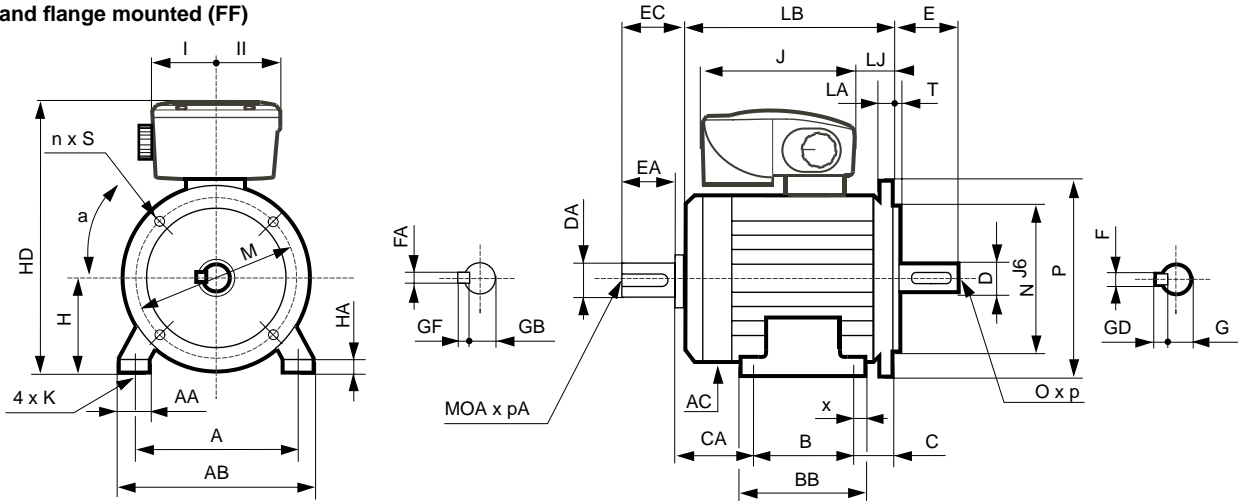
Variable speed motors VARMECA - Motor characteristics

B5 - Dimensions: Foot and flange mounted

Dimensions of VARMECA motors

Dimensions in millimetres

- foot and flange mounted (FF)



Type	Main dimensions																	
	A	AB	B	BB	C	x	AA	K	HA	H	AC	HD	LB	LJ	J	I	II	Sym.
LS 71	112	126	90	104	45	7	23	7	6	71	140	170	183	8	218	75	75	FF 130
LS 80 L - VMA 21	125	157	100	120	50	10	29	9	10	80	170	270	215	12	218	75	75	FF 165
LS 80 L - VMA 22	125	157	100	120	50	10	29	9	10	80	170	270	267	12	231	75	75	FF 165
LS 90 S - VMA 21	140	172	100	120	56	10	37	10	11	90	190	289	218	32	218	75	75	FF 165
LS 90 S - VMA 22	140	172	100	120	56	10	37	10	11	90	190	289	218	32	231	75	75	FF 165
LS 90 L - VMA 21	140	172	125	162	56	28	37	10	11	90	190	289	245	32	218	75	75	FF 165
LS 90 L - VMA 22	140	172	125	162	56	28	37	10	11	90	190	289	265	32	231	75	75	FF 165
LS 100 L	160	196	140	165	63	12	40	12	13	100	200	304	290	12	231	75	75	FF 215
LS 112 M	190	220	140	165	70	12	45	12	14	112	200	316	290	12	231	75	75	FF 215
LS 112 MG	190	220	140	165	70	12	52	12	14	112	235	325	315	21	231	75	75	FF 215
LS 132 S ¹	216	250	140	170	89	16	50	12	15	132	235	397	351	38	324	112	112	FF 265
LS 132 SM/M ¹	216	250	178	208	89	16	59	12	18	132	280	414	387	16	324	112	112	FF 265

1. In frame size 132, dimension I includes the control button supplied as standard.

Type	Output shaft								Secondary shaft extension							
	2, 4, 6 poles								2, 4, 6 poles							
	F	GD	D	G	E	O	p	FA	GF	DA	GB	EA	OA	pA		
LS 71	5	5	14j6	11	30	5	15	5	5	14j6	11	30	5	15		
LS 80 L	6	6	19j6	15.5	40	6	16	5	5	14j6	11	30	5	15		
LS 90 S/L	8	7	24j6	20	50	8	19	6	6	19j6	15.5	40	6	16		
LS 100 L	8	7	28j6	24	60	10	22	8	7	24j6	20	50	8	19		
LS 112 M/MG	8	7	28j6	24	60	10	22	8	7	24j6	20	50	8	19		
LS 132 S/M/SM	10	8	38k6	33	80	12	28	8	7	28j6	24	60	10	22		

Type	IEC symbol	Flange (FF) dimensions							
		M	N	P	T	n	a	S	LA
LS 71 L	FF 130	130	110	160	3.5	4	45°	10	10
LS 80 L	FF 165	165	130	200	3.5	4	45°	12	10
LS 90 S/L	FF 165	165	130	200	3.5	4	45°	12	10
LS 100 L	FF 215	215	180	250	4	4	45°	15	12
LS 112 M/MG	FF 215	215	180	250	4	4	45°	15	12
LS 132 S/M/SM	FF 265	265	230	300	4	4	45°	15	14

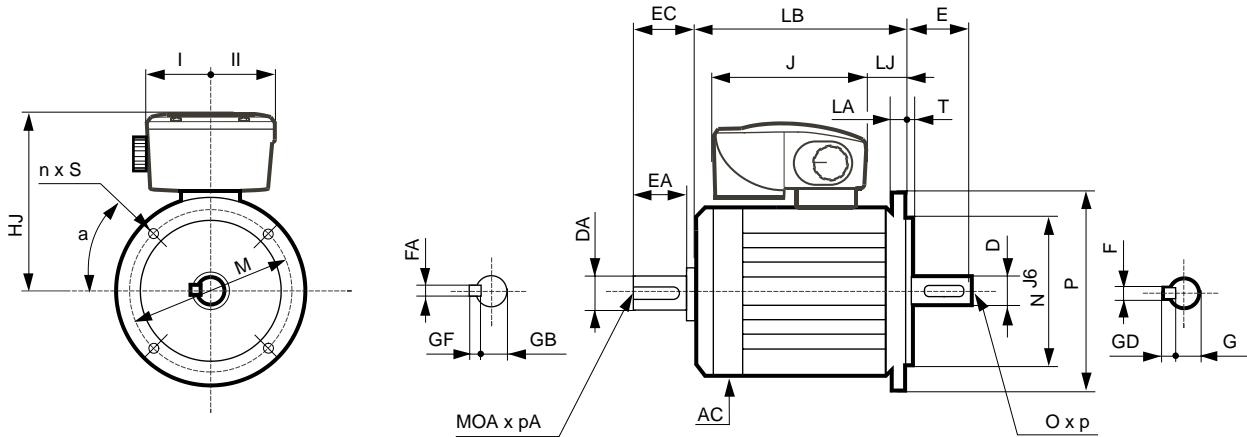
Variable speed motors VARMECA - Motor characteristics

B6 - Dimensions: Flange mounted

Dimensions of VARMECA motors

Dimensions in millimetres

- (FF) flange mounted



Type	Main dimensions							Output shaft						Weight kg	
	AC	LB	HJ	LJ	J	I	II	D	E	F	G	GD	O		p
LS 71	140	183	99	8	218	75	75	14j6	30	5	11	5	M5	15	12.5
LS 80 L - VMA 21	170	215	190	12	218	75	75	19j6	40	6	15.5	6	M6	16	15.1
LS 80 L - VMA 22	170	215	189	12	231	75	75	19j6	40	6	15.5	6	M6	16	15.1
LS 90 S - VMA 21	190	238	199	32	218	75	75	24j6	50	8	20	7	M8	19	17.7
LS 90 S - VMA 22	190	238	199	32	231	75	75	24j6	50	8	20	7	M8	19	17.7
LS 90 L - VMA 21	190	265	199	32	218	75	75	24j6	50	8	20	7	M8	19	19.4
LS 90 L - VMA 22	190	265	199	32	231	75	75	24j6	50	8	20	7	M8	19	19.4
LS 100 L	200	290	204	12	231	75	75	28j6	60	8	24	7	M10	22	25
LS 112 M	200	290	204	12	231	75	75	28j6	60	8	24	7	M10	22	28.6
LS 112 MG	235	315	213	21	231	75	75	28j6	60	8	24	7	M10	22	37.5
LS 132 S ¹	235	351	265	20	324	112	112	38k6	80	10	33	8	M12	28	43
LS 132 SM/M ¹	280	387	282	16	324	112	112	38k6	80	10	33	8	M12	28	60.8

1. In frame size 132, dimension I includes the control button supplied as standard.

Type	IEC symbol	Flange (FF) dimensions								Secondary shaft extension						
		M	N	P	T	n	a	S	LA	FA	GF	DA	GB	EA	OA	pA
LS 71	FF 130	130	110	160	3.5	4	45°	10	10	5	5	14j6	11	30	5	15
LS 80 L	FF 165	165	130	200	3.5	4	45°	12	10	5	5	14j6	11	30	5	15
LS 90 S/L	FF 165	165	130	200	3.5	4	45°	12	10	5	5	14j6	11	30	5	15
LS 100 L	FF 215	215	180	250	4	4	45°	15	12	6	6	19j6	15.5	40	6	16
LS 112 M/MG	FF 215	215	180	250	4	4	45°	15	12	8	7	24j6	20	50	8	19
LS 132 S/M/SM	FF 265	265	230	300	4	4	45°	15	14	8	7	24j6	20	50	8	19

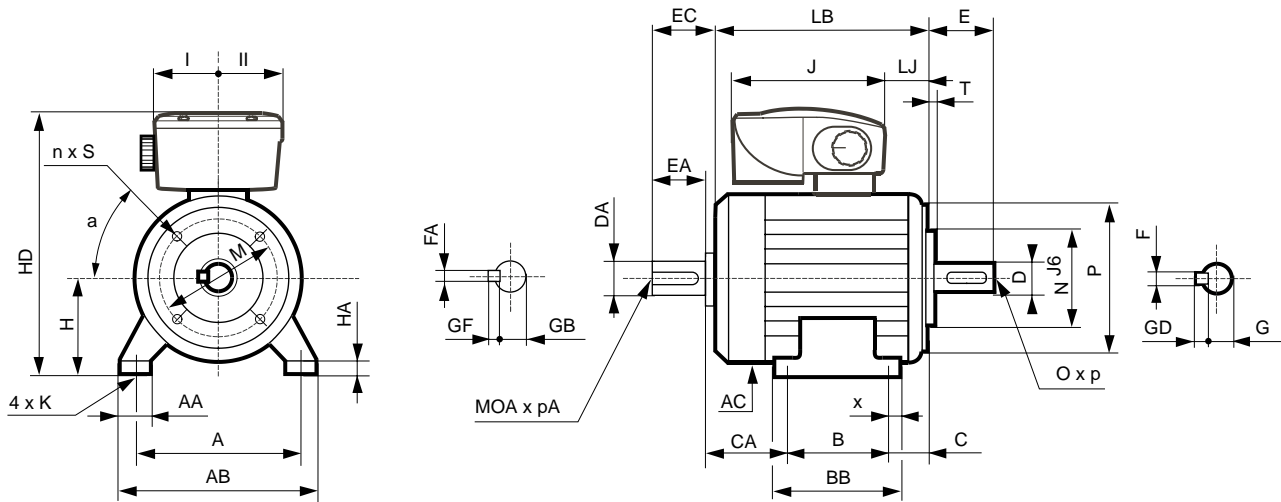
Variable speed motors VARMECA - Motor characteristics

B7 - Dimensions: Foot and face mounted

Dimensions of VARMECA motors

Dimensions in millimetres

- foot and face mounted (FT)



Type	Main dimensions																	
	A	AB	B	BB	C	x	AA	K	HA	H	AC	HD	LB	LJ	J	I	II	Sym.
LS 71	112	126	90	104	45	7	23	7	6	71	140	170	183	8	218	75	75	FT 85
LS 80 L - VMA 21	125	157	100	120	50	10	29	9	10	80	170	270	215	12	218	75	75	FT 100
LS 80 L - VMA 22	125	157	100	120	50	10	29	9	10	80	170	270	215	12	231	75	75	FT 100
LS 90 S - VMA 21	140	172	100	120	56	10	37	10	11	90	190	289	218	12	218	75	75	FT 115
LS 90 S - VMA 22	140	172	100	120	56	10	37	10	11	90	190	289	218	12	231	75	75	FT 115
LS 90 L - VMA 21	140	172	125	162	56	28	37	10	11	90	190	289	245	12	218	75	75	FT 115
LS 90 L - VMA 22	140	172	125	162	56	28	37	10	11	90	190	289	245	12	231	75	75	FT 115
LS 100 L	160	196	140	165	63	12	40	12	13	100	200	304	290	12	231	75	75	FT 130
LS 112 M	190	220	140	165	70	12	45	12	14	112	200	316	290	12	231	75	75	FT 130
LS 112 MG	190	220	140	165	70	12	52	12	14	112	235	325	315	21	231	75	75	FT 130
LS 132 S ¹	216	250	140	170	89	16	50	12	15	132	235	397	351	38	324	112	112	FT 215
LS 132 SM/M ¹	216	250	178	208	89	16	59	12	18	132	280	414	387	16	324	112	112	FT 215

1. In frame size 132, dimension I includes the control button supplied as standard.

Type	IEC symbol	Faceplate (FT) dimensions							Secondary shaft extension						
		M	N	P	T	n	a	S	FA	GF	DA	GB	EA	OA	pA
LS 71 L	FT 85	85	70	105	2.5	4	45°	M6	5	5	14j6	11	30	5	15
LS 80 L	FT 100	100	80	120	3	4	45°	M6	5	5	14j6	11	30	5	15
LS 90 S/L	FT 115	115	95	140	3	4	45°	M8	5	5	14j6	11	30	5	15
LS 100 L	FT 130	130	110	160	3.5	4	45°	M8	6	6	19j6	15.5	40	6	16
LS 112 M/MG	FT 130	130	110	160	3.5	4	45°	M8	8	7	24j6	20	50	8	19
LS 132 S/SM/M	FT 215	215	180	250	4	4	45°	M12	8	7	24j6	20	50	8	19

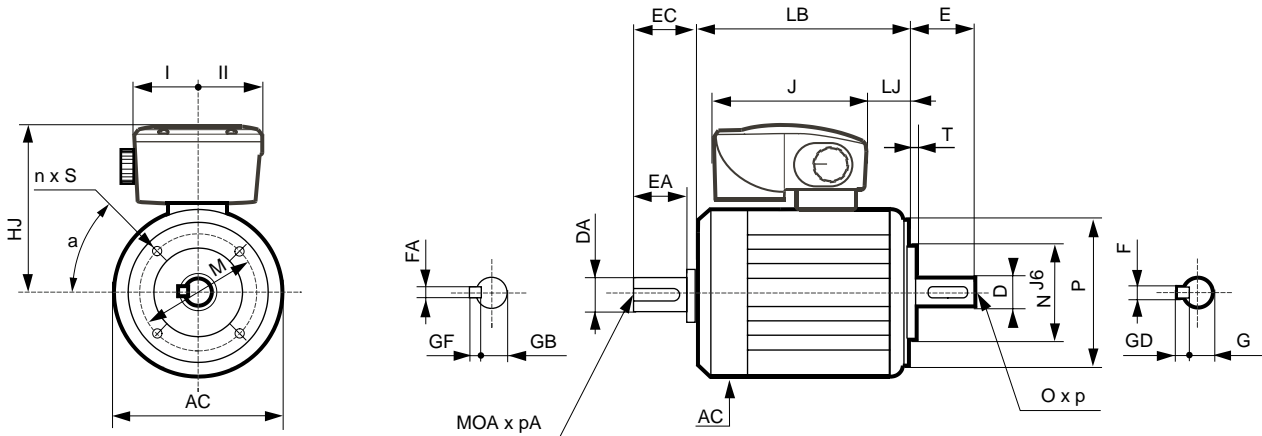
Variable speed motors VARMECA - Motor characteristics

B8 - Dimensions: Face mounted

Dimensions of VARMECA motors

Dimensions in millimetres

- face mounted (FT)



Type	Main dimensions							Output shaft						Weight kg	
	AC	LB	HJ	LJ	J	I	II	D	E	F	G	GD	O		p
LS 71	140	193	99	8	218	75	75	14j6	30	5	11	5	M5	15	12.5
LS 80 L - VMA 21	170	215	190	12	218	75	75	19j6	40	6	15.5	6	M6	16	15.1
LS 80 L - VMA 22	170	215	190	12	231	75	75	19j6	40	6	15.5	6	M6	16	15.1
LS 90 S - VMA 21	190	218	199	12	218	75	75	24j6	50	8	20	7	M8	19	17.7
LS 90 S - VMA 22	190	218	199	12	231	75	75	24j6	50	8	20	7	M8	19	17.7
LS 90 L - VMA 21	190	245	199	12	218	75	75	24j6	50	8	20	7	M8	19	19.4
LS 90 L - VMA 22	190	245	199	12	231	75	75	24j6	50	8	20	7	M8	19	19.4
LS 100 L	200	290	204	12	231	75	75	28j6	60	8	24	7	M10	22	25
LS 112 M	200	290	204	12	231	75	75	28j6	60	8	24	7	M10	22	28.6
LS 112 MG	235	315	213	21	231	75	75	28j6	60	8	24	7	M10	22	37.5
LS 132 S ¹	235	351	265	38	324	112	112	38k6	80	10	33	8	M12	28	43
LS 132 SM/M ¹	280	387	282	16	324	112	112	38k6	80	10	33	8	M12	28	60.8

1. In frame size 132, dimension I includes the control button supplied as standard.

Type	IEC symbol	Faceplate (FT) dimensions							Secondary shaft extension						
		M	N	P	T	n	a	S	FA	GF	DA	GB	EA	OA	pA
LS 71 L	FT 85	85	70	105	2.5	4	45°	M6	5	5	14j6	11	30	5	15
LS 80 L	FT 100	100	80	120	3	4	45°	M6	5	5	14j6	11	30	5	15
LS 90 S/L	FT 115	115	95	140	3	4	45°	M8	5	5	14j6	11	30	5	15
LS 100 L	FT 130	130	110	160	3.5	4	45°	M8	6	6	19j6	15.5	40	6	16
LS 112 M/MG	FT 130	130	110	160	3.5	4	45°	M8	8	7	24j6	20	50	8	19
LS 132 S/SM/M	FT 215	215	180	250	4	4	45°	M12	8	7	24j6	20	50	8	19

Variable speed motors and geared motors

VARMECA - Geared motor characteristics

C1 - General selection procedure and gearbox selection

In order to make a general selection, you need to know:

- the gearbox technology
- the Kp duty factor
- the classification according to "AGMA"
- the maximum output speed (n_{max}) and the variable speed motor power rating or the desired output torque ($M_{S max}$)

- the mounting method

you should also check:

- the permissible radial force.

The mounting position and code can then be defined.

For options, we recommend that you consult the technical catalogue for the chosen gearbox.

C2 - Gearbox technology

The role assigned to speed reducers is to adapt the speed and torque of variable speed geared motors to that of the driven machines. For more than thirty years, LEROY-SOMER has been developing a complete range of adapted products. These products are the work of the LEROY-SOMER design offices and factories. The high level of integration in the manufacturing process ensures continuity of the products offered, reduced costs, total control of quality, and priority customer privilege access to a **single contact person**.

Helical gears have enabled our **Compabloc** range to establish a firm footing on the difficult market of high-efficiency in-line gearboxes.

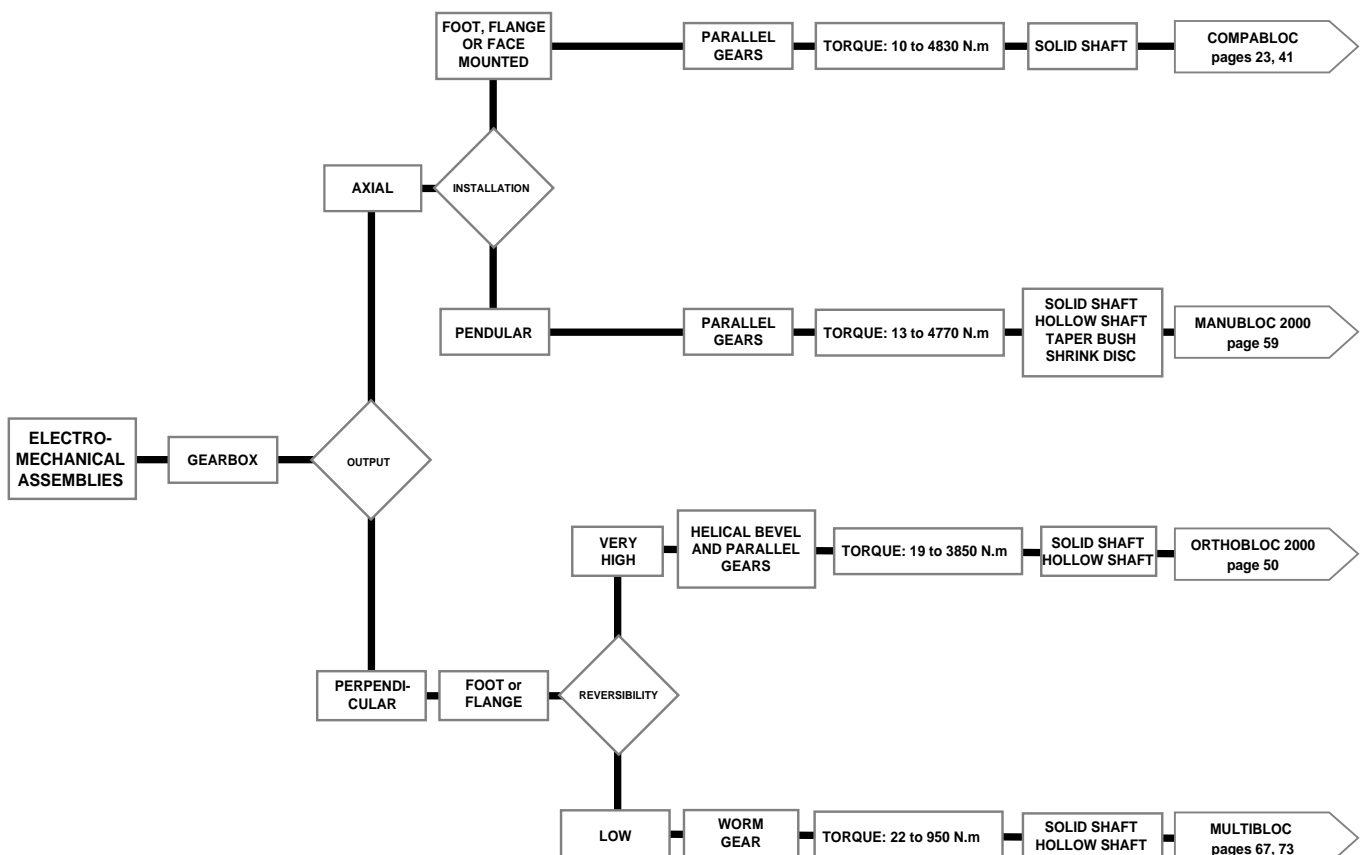
The same helical gears are found in gearboxes with shaft mounted gears and hollow shafts.

These **Manubloc** gearboxes are fitted with taper bushes (as an option) making it extremely simple to connect up the unit to be driven.

Helical bevel gears constitute the **Orthobloc** range which allows a perpendicular output, while retaining the advantages of Compabloc: high efficiency, wide reduction range, integral mounting of the variable speed geared motor.

The **worm gear** constitutes the heart of our **Multibloc** series.

This is the oldest and most tried and tested principle for transmitting high torque in intermittent duty.



Variable speed motors and geared motors VARMECA - Geared motor characteristics

C3 - Selection for gearboxes

4
poles

SINGLE-PHASE POWER SUPPLY: 200 V -10 % to 240 V +10% - 50/60 Hz ± 10%
3-phase motors 230 V / 400 V ±10 % Δ CONNECTED - 4 poles

Motor type	VARMECA type	Rated output power P_N kW	Rated torque 320 to 2250 min^{-1} M_N N.m	Rated motor current $I_N(230\text{ V})$ A	Starting torque/Rated torque M_D/M_N	Moment of inertia			Braking torque	
						no brake	with FMC brake	with FCR J01 brake	FMC brake	FCR J0 brake
						J $J 10^{-3} \text{ kg.m}^2$			$M_f \pm 20\%$ N.m	
LS 71	VMA* 21 M 025	0.25	1.1	1.22	2.2	0.675	0.71	1.07	2.5	2.5
LS 71	VMA* 21 M 037	0.37	1.6	1.95	3	0.85	0.88	1.25	2.5	4
LS 71	VMA* 21 M 055	0.55	2.35	2.9	3	1.1	-	1.5	-	4
LS 80 L	VMA* 21 M 075	0.75	3.2	3.5	3	1.8	-	2.8	-	6
LS 80 L	VMA* 22 M 090	0.9	3.8	4	2.9	2.4	-	3.4	-	6
LS 90 L	VMA* 22 M 110	1.1	4.7	4.7	2.7	3.2	-	5	-	10
LS 90 L	VMA* 22 M 150	1.5	6.4	6.1	2.8	3.9	-	5.7	-	10

* : either version A or B

4
poles

3-PHASE POWER SUPPLY: 200 V -10 % to 240 V +10% - 50/60 Hz ± 10%
3-phase motors 230 V / 400 V Δ CONNECTED - 4 poles

Motor type	VARMECA type	Rated output power P_N kW	Rated torque 320 to 2250 min^{-1} M_N N.m	Rated motor current $I_N(230\text{ V})$ A	Starting torque/Rated torque M_D/M_N	Moment of inertia			Braking torque	
						no brake	with FMC brake	with FCR J01 brake	FMC brake	FCR J0 brake
						J $J 10^{-3} \text{ kg.m}^2$			$M_f \pm 20\%$ N.m	
LS 71	VMA* 21 TL 025	0.25	1.1	1.22	2.2	0.67	0.71	1.07	2.5	2.5
LS 71	VMA* 21 TL 037	0.37	1.6	1.95	3	0.85	0.88	1.25	2.5	4
LS 71	VMA* 21 TL 055	0.55	2.35	2.9	3	1.1	-	1.5	-	4
LS 80 L	VMA* 21 TL 075	0.75	3.2	3.5	3	1.8	-	2.8	-	6
LS 80 L	VMA* 22 TL 090	0.9	3.8	4	2.9	2.4	-	3.4	-	6
LS 90 L	VMA* 22 TL 110	1.1	4.7	4.7	2.7	3.2	-	5	-	10
LS 90 L	VMA* 22 TL 150	1.5	6.4	6.1	2.8	3.9	-	5.7	-	10
LS 90 L	VMA* 22 TL 180	1.8	7.7	7.1	3	4.9	-	6.7	-	15
LS 100 L	VMA* 22 TL 220	2.2	9.4	8.85	2.7	5.6	-	7.4	-	15

* : either version A or B

4
poles

3-PHASE POWER SUPPLY: VMA 21 and 22, 400 V -10% to 480 V +10% - 50/60 Hz ± 10%
VMA 14, 400 V -10% to 440 V +10% - 50/60 Hz ± 10%
3-phase motors 230 V / 400 V ±10% Y CONNECTED - 4 poles

Motor type	VARMECA type	Rated output power P_N kW	Rated torque 320 to 2250 min^{-1} M_N N.m	Rated motor current $I_N(400\text{ V})$ A	Starting torque/Rated torque M_D/M_N	Moment of inertia			Braking torque	
						no brake	with FMC brake	with FCR J01 brake	FMC brake	FCR J0 brake
						J $J 10^{-3} \text{ kg.m}^2$			$M_f \pm 20\%$ N.m	
LS 71	VMA* 21 T 025	0.25	1.1	0.7	2.9	0.67	0.71	1.07	2.5	2.5
LS 71	VMA* 21 T 037	0.37	1.6	1.12	3	0.85	0.88	1.25	2.5	4
LS 71	VMA* 21 T 055	0.55	2.35	1.65	3	1.1	-	1.5	-	4
LS 80 L	VMA* 21 T 075	0.75	3.2	2	3	1.8	-	2.8	-	6
LS 80 L	VMA* 21 T 090	0.9	3.8	2.3	2.9	2.4	-	3.4	-	6
LS 90 L	VMA* 21 T 110	1.1	4.7	2.7	2.7	3.2	-	5	-	10
LS 90 L	VMA* 22 T 150	1.5	6.4	3.5	2.8	3.9	-	5.7	-	10
LS 90 L	VMA* 22 T 180	1.8	7.7	4.1	3	4.9	-	6.7	-	15
LS 100 L	VMA* 22 T 220	2.2	9.4	5.1	2.7	5.6	-	7.4	-	15
LS 100 L	VMA* 22 T 300	3	12.8	7.2	2.3	6.5	-	8.3	-	15
LS 112 MG	VMA* 22 T 400	4	17	8	2.3	15	-	19.3	-	22
LS 132 SM	VMA 14.550	5.5	23.4	11	2	33	-	-	-	-
LS 132 M	VMA 14.750	7.5	31.9	14	1.5	35	-	-	-	-

* : either version A or B

Variable speed motors and geared motors VARMECA - Geared motor characteristics

C4 - Torque/speed characteristics

Constant torque for range of speed from 1 to 7

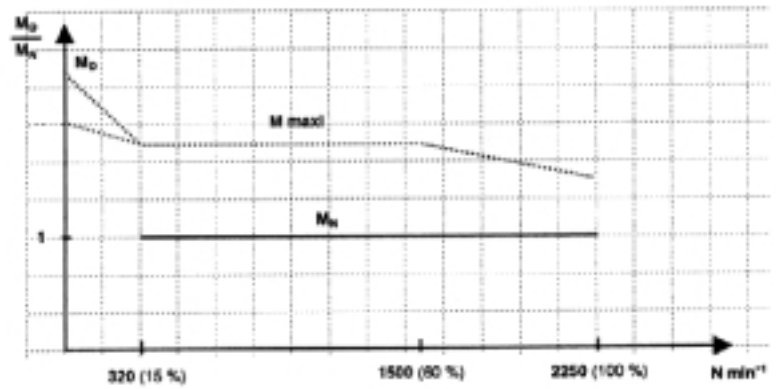
Key

M_N : rated motor torque in S1 duty

M_D : starting torque

M_{max} : maximum overload torque

$N \text{ min}^{-1}$: motor speed of rotation



Variable speed motors and geared motors

VARMECA - Geared motor characteristics



Variable speed geared motors VARMECA + COMPABLOC 3000

D1 - General



Compabloc 3000 speed reducers 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 speeds of the gearbox (n_{\min} - n_{\max}) in revolutions per minute (min^{-1}).

The main characteristic of speed reducers is the rated output torque (M_{nS}) expressed in newton-metres (N.m):

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

A range of four sizes: 30, 31, 32, 33.

Rated output torque: from 10 N.m to 1000 N.m.

Power ratings: from 0.25 to 7.5 kW.

Reduction ratios: 1.25 to 200.

High efficiency: 95% to 98%.

Reversible.

Quiet operation.

D2 - Construction

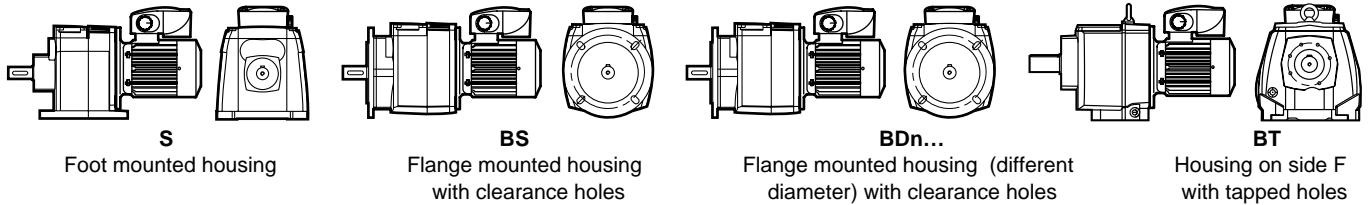
Component	Materials	Remarks
Frame	Aluminium (30) Cast iron (31 to 33)	<ul style="list-style-type: none"> - use of cast aluminium - use of ENGJL-200 cast iron (flake graphite: 200 MPa tensile strength) single component perlite to ensure unit is fully sealed - monobloc ribbed with internal reinforcements to absorb vibrations and noise, and increase its rigidity - foot mounted S, form BT or with flanges BS, BD. They are compact and meet industrial requirements
Gears	Steel Ni Cr Mo	<ul style="list-style-type: none"> - cut by the gear hob, they are heat treated and then undergo final machining. The quality and precision of the gear cutting allow maximum torque with minimum noise level
Shaft	Steel	<ul style="list-style-type: none"> - grinding of sealing surfaces - key in accordance with ISO R773 - tolerance of diameters in accordance with NF E 22-051 and ISO R775 - tapped holes at the shaft end for fixing connecting devices in accordance with DIN 332 version D
Lipseals	Nitrile	<ul style="list-style-type: none"> - sealing ring on motor side - sealed gasket with antidust lipseal in accordance with DIN 3760 form AS - gasket under the access cover
Lubrication	Oil	<ul style="list-style-type: none"> - in accordance with ISO 6743/6 - delivered with the quantity of oil corresponding to the operating position, it is fitted with drain, level and breather plugs (except Cb 30)
Mounting		<ul style="list-style-type: none"> MI: geared motor with integral mounting MU: geared motor with IEC motor, manufactured with universal mounting
VARMECA variable speed motor		<ul style="list-style-type: none"> VARMECA: single-phase power supply 200/240 V, 3-phase 200 V to 480 V LS motor: - 3-phase 230/400 V - pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down) - VARMECA casing in aluminium with cable gland supplied - VARMECA protection IP 65 - motor protection IP 55, class F
VARMECA variable speed motor and brake		<ul style="list-style-type: none"> FMC: failsafe brake, from 0.25 to 0.37 kW, IP 44 protection (LS 71) FCR: failsafe brake, from 0.25 to 4 kW, IP 55 protection (LS 71 to 112)
Finish	Paint	Shade: RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 μm)

Variable speed geared motors VARMECA + COMPABLOC 3000

D3 - Mounting arrangements

Standard position: gearbox view from side F, motor behind, side D on the floor.

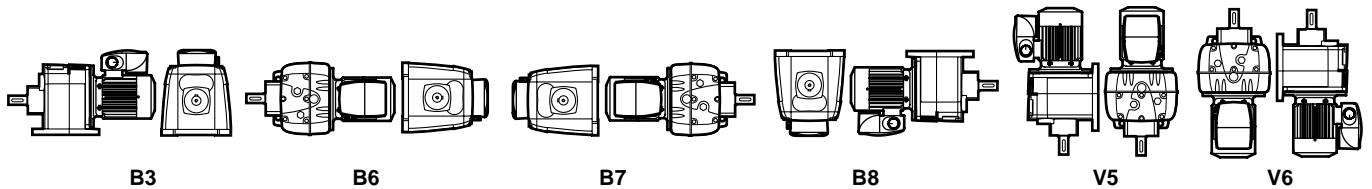
1 - Definition of mounting form: S, BS, BDn..., BT



2 - Definition of operating position

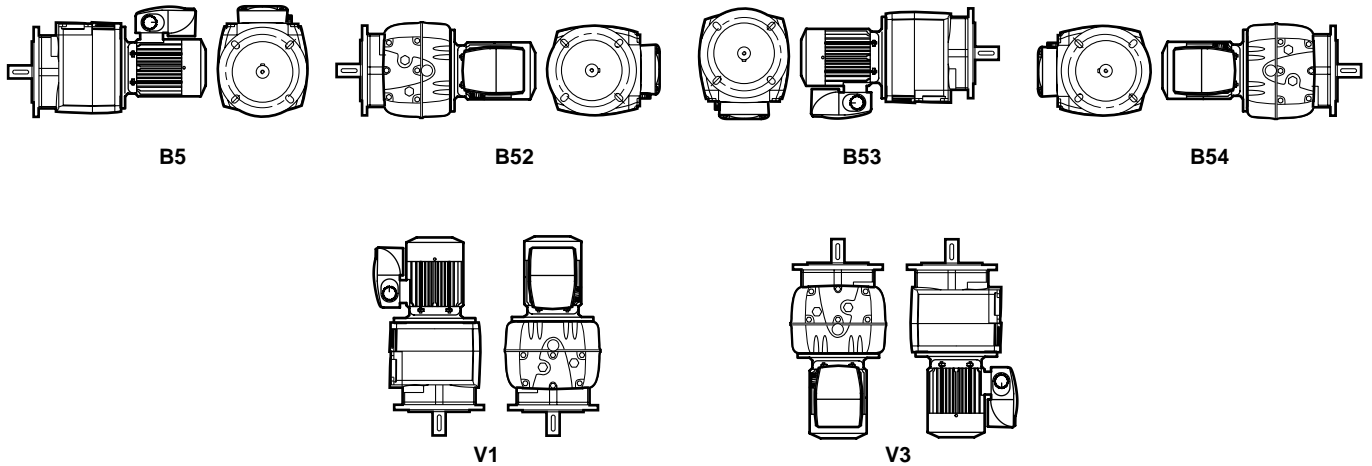
2.1 - S foot mounted

1-stage Compabloc: Cb 3031* and 3131 to 3331, multi-stage Compabloc: Cb 3032* and 3033* - Cb 3133 to 3333



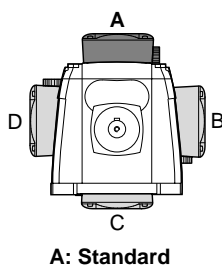
2.2 - With BS, BDn... flange, or BT faceplate

1-stage Compabloc: Cb 3031* and 3131 to 3331, multi-stage Compabloc: Cb 3032* and 3033* - Cb 3133 to 3333

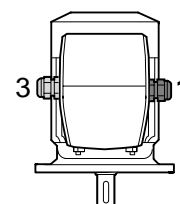


M*: For these multi-position geared motors (M), the positions need only be specified if the following are required: vent hole on the gearbox and/or condensate drainholes on the motor. They MUST be specified for positions V3 and V6.

3 - VARMECA positions



4 - Cable gland positions

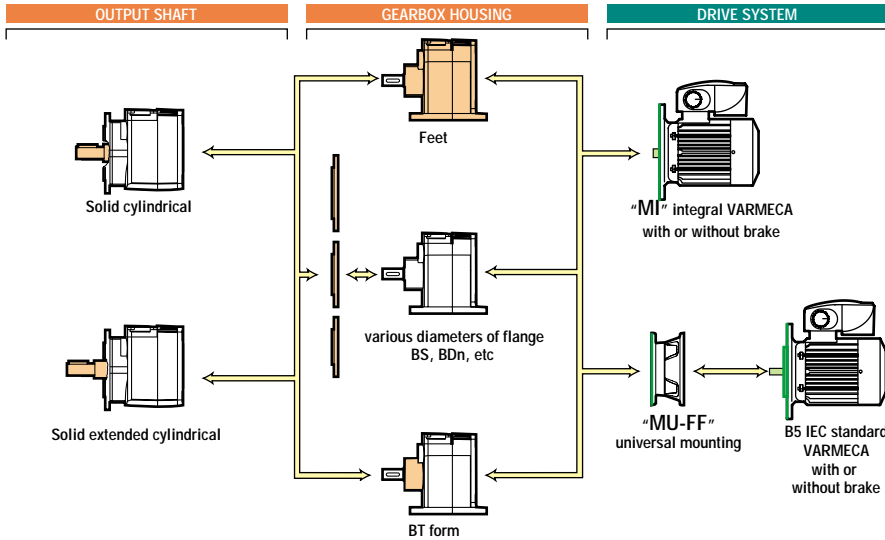


VMA 20: 1, standard
VMA 14: BD, CG on right or BG, CG on left

Variable speed geared motors VARMECA + COMPABLOC 3000

D4 - Adaptation possibilities

Leroy-Somer offers several adaptations for its gearboxes which respond to very wide-ranging needs. They are described below and offered in the Leroy-Somer configurator.
For other drives, consult the Leroy-Somer technical specialists who will be glad to assist.



D5 - Designation / Coding

Cb	3333	B3	S	57.6	MI	4P	LS 90L	1.8 kW	VMA 22T 180	A1	BMA
Gearbox type	Size and manufacturer code	Operating position	Mounting form	Exact reduction	Input type	No. of poles	Series, frame size and manufacturer code	Rated power in kW	VARMECA rating	VARMECA, CG position	Option

Selection example:

Required power:	1.8 kW - 3-ph 400 V
Required speeds:	6 to 40 min ⁻¹
Duty factor necessary for the application:	kp = 2
Mounting:	foot, horizontal position
CG position:	cable gland on right

Designation: Cb 3333 B3 S 57.6 MI - 4P LS 90 L 1.8 kW - VMA 22T 180

Variable speed geared motors VARMECA + COMPABLOC 3000

D6 - Selection (kp factor for AGMA class I, II, III)

Compabloc 3031 (Cb) gearbox: S foot mounted form, BT faceplate, BS, BDn... flange form

VARMECA variable speed motors: LS 4-pole, IP 65, class F

- 3-phase T: 400 V -10% to 480 V +10%, 50-60 Hz $\pm 10\%$
- 3-phase TL: 200 V -10% to 240 V +10%, 50-60 Hz $\pm 10\%$
- Single-phase M: 200 V -10% to 240 V +10%, 50-60 Hz $\pm 10\%$

Variable speed brake motors: 4-pole, class F

FCR J01: IP 55, from 0.25 to 0.9 kW

FMC: IP 44, from 0.25 to 0.37 kW

Integral mounting MI

Universal mounting MU-FF

Cb 3031 from 277 to 1704 min⁻¹

VARMECA variable speed motors, power kW

0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
------	------	------	------	-----	-----	-----	-----	-----	---	---	-----	-----

3-phase 4-pole LS motor and frame size

71 L	80 L	90 L	100 L	112 MG	132 SM	132 M
------	------	------	-------	--------	--------	-------

3-phase 4-pole LS brake motor and frame size

71 FMC ou 71 L FCR	71 L FCR	80 L FCR	90 L FCR	100 L FCR	112MG FCR	NA	NA
--------------------	----------	----------	----------	-----------	-----------	----	----

3-phase VMA -- T --- 400/480 V

21T025	21T037	21T055	21T075	21T090	21T110	22T150	22T180	22T220	22T300	22T400	14-550	14-750
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

3-phase VMA -- TL --- 200/240 V

21TL025	21TL037	21TL055	21TL075	22TL090	22TL110	22TL150	22TL180	22TL220	NA	NA	NA	NA
---------	---------	---------	---------	---------	---------	---------	---------	---------	----	----	----	----

Single phase VMA -- M --- 200/240 V

21M025	21M037	21M055	21M075	22M090	22M110	22M150	NA	NA	NA	NA	NA	NA
--------	--------	--------	--------	--------	--------	--------	----	----	----	----	----	----

Minimum output speed min ⁻¹	Maximum output speed min ⁻¹	Exact reduction	0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
39.4	277	8.13	2.08	1.36											
44.3	312	7.22	2.34	1.53											
50	352	6.4	2.64	1.73											
55	387	5.82	2.90	1.90											
61.9	435	5.17	3.27	2.14											
69.8	491	4.58	3.69	2.41	1.59	1.15									
78.5	552	4.08	4.15	2.71	1.79	1.30	1.08								
88.3	621	3.63	4.66	3.05	2.01	1.46	1.21								
98.9	695	3.24	5.22	3.42	2.25	1.63	1.35								
116	818	2.75	6.15	4.02	2.65	1.92	1.59								
126	882	2.55	6.63	4.34	2.86	2.07	1.72								
146	1027	2.19	7.72	5.05	3.33	2.41	2.00								
164	1150	1.96	8.64	5.66	3.73	2.70	2.24								
175	1232	1.83	9.26	6.06	3.99	2.90	2.40								
208	1463	1.54	10.99	7.19	4.74	3.44	2.85								
219	1539	1.46	11.56	7.57	4.99	3.62	3.00								
242	1704	1.32	12.83	8.40	5.54	4.02	3.33								

NA not available

Selection example:

Required power: 0.75 kW - 3-ph 400 V

Required speeds: 69.8 to 491 min⁻¹

Duty factor necessary for the application: kp = 1

Mounting: foot, horizontal position

CG position: cable gland on right

Designation: Cb 3031 M S 4.58 MI - 4P LS 80 L 0.75 kW - VMA 21T 075

Variable speed geared motors VARMECA + COMPABLOC 3000

D6 - Selection (kp factor for AGMA class I, II, III)

Compabloc 3032 and Cb 3033 (Cb) gearbox: S foot mounted form, BT faceplate, BS, BDn...flange form

VARMECA variable speed motors: LS 4-pole, IP 65, class F

- 3-phase T: 400 V -10% to 480 V +10%, 50-60 Hz ±10%
- 3-phase TL: 200 V -10% to 240 V +10%, 50-60 Hz ±10%
- Single-phase M: 200 V -10% to 240 V +10%, 50-60 Hz ±10%

Variable speed brake motors: 4-pole, class F

FCR J01: IP 55, from 0.25 to 0.9 kW

FMC: IP 44, from 0.25 to 0.37 kW

Integral mounting MI

Universal mounting MU-FF

Cb 3032 and Cb 3033 from 19.5 to 305 min⁻¹

VARMECA variable speed motors, power kW

0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
------	------	------	------	-----	-----	-----	-----	-----	---	---	-----	-----

3-phase 4-pole LS motor and frame size

71 L	80 L	90 L	100 L	112 MG	132 SM	132 M
------	------	------	-------	--------	--------	-------

3-phase 4-pole LS brake motor and frame size

71 FMC ou 71 L FCR	71 L FCR	80 L FCR	90 L FCR	100 L FCR	112MG FCR	NA	NA
--------------------	----------	----------	----------	-----------	-----------	----	----

3-phase VMA -- T --- 400/480 V

21T025	21T037	21T055	21T075	21T090	21T110	22T150	22T180	22T220	22T300	22T400	14-550	14-750
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

3-phase VMA -- TL --- 200/240 V

21TL025	21TL037	21TL055	21TL075	22TL090	22TL110	22TL150	22TL180	22TL220	NA	NA	NA	NA
---------	---------	---------	---------	---------	---------	---------	---------	---------	----	----	----	----

Single phase VMA -- M --- 200/240 V

21M025	21M037	21M055	21M075	22M090	22M110	22M150	NA	NA	NA	NA	NA	NA
--------	--------	--------	--------	--------	--------	--------	----	----	----	----	----	----

Minimum output speed min ⁻¹	Maximum output speed min ⁻¹	Exact reduction	0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
2.78	19.5	115													
3.12	22	102													
3.51	24.7	91.1	1.01												
3.94	27.7	81.3	1.13												
4.63	32.6	69.1	1.33												
4.99	35.1	64.1	1.43												
5.81	41	55	1.65	1.08											
6.51	45.8	49.2	1.84	1.21											
6.97	49	45.9	1.97	1.29											
8.28	58.2	38.7	2.32	1.52	1.00										
8.71	61.3	36.7	2.44	1.60	1.05										
7.05	49.6	45.4	2.11	1.38											
7.94	55.8	40.3	2.37	1.55											
8.96	63	35.7	2.66	1.74											
9.85	69.3	32.5	2.92	1.91											
11.1	78	28.8	3.28	2.15											
12.5	87.9	25.6	3.69	2.42	1.59	1.15									
14.1	98.9	22.8	4.14	2.71	1.78	1.29	1.07								
15.8	111	20.2	4.64	3.04	2.00	1.45	1.20								
17.7	125	18.1	5.18	3.39	2.23	1.62	1.34								
20.8	147	15.4	6.07	3.97	2.62	1.90	1.57								
22.5	158	14.2	6.53	4.27	2.82	2.04	1.69								
26.2	184	12.2	7.56	4.95	3.26	2.36	1.96								
29.3	206	10.9	8.43	5.52	3.64	2.64	2.19								
31.4	221	10.2		5.90	3.89	2.82	2.34								
37.3	262	8.59		6.96	4.58	3.32	2.76								
39.2	276	8.16		7.31	4.81	3.49	2.89								
43.4	305	7.38		8.08	5.32	3.86	3.20								

NA not available

Cb 3033

Cb 3032

Selection example:

Required power: 0.55 kW - 3-ph 400 V

Required speeds: 9 to 63 min⁻¹

Duty factor necessary for the application: kp = 1

Mounting: foot, vertical position, shaft facing up

CG position: cable gland on right

Designation: Cb 3032 V6 S 35.7 MI - 4P LS 71 L 0.55 kW - VMA 21T 055

Variable speed geared motors VARMECA + COMPABLOC 3000

D6 - Selection (kp factor for AGMA class I, II, III)

Compabloc 3133 (Cb) gearbox: S foot mounted form, BT faceplate, BS, BDn...flange form

VARMECA variable speed motors: LS 4-pole, IP 65, class F

- 3-phase T: 400 V -10% to 480 V +10%, 50-60 Hz ±10%
- 3-phase TL: 200 V -10% to 240 V +10%, 50-60 Hz ±10%
- Single-phase M: 200 V -10% to 240 V +10%, 50-60 Hz ±10%

Variable speed brake motors: 4-pole, class F

FCR J01: IP 55, from 0.25 to 3 kW

Integral mounting MI

Universal mounting MU-FF

Cb 3133 from 11.2 to 575 min⁻¹

VARMECA variable speed motors, power kW

0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
------	------	------	------	-----	-----	-----	-----	-----	---	---	-----	-----

3-phase 4-pole LS motor and frame size

71 L	80 L	90 L	100 L	112 MG	132 SM	132 M
------	------	------	-------	--------	--------	-------

3-phase 4-pole LS FCR J01 brake motor and frame size

71 L FCR	80 L FCR	90 L FCR	100 L FCR	112MG FCR	NA	NA
----------	----------	----------	-----------	-----------	----	----

3-phase VMA -- T --- 400/480 V

21T025	21T037	21T055	21T075	21T090	21T110	22T150	22T180	22T220	22T300	22T400	14-550	14-750
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

3-phase VMA -- TL --- 200/240 V

21TL025	21TL037	21TL055	21TL075	22TL090	22TL110	22TL150	22TL180	22TL220	NA	NA	NA	NA
---------	---------	---------	---------	---------	---------	---------	---------	---------	----	----	----	----

Single phase VMA -- M --- 200/240 V

21M025	21M037	21M055	21M075	22M090	22M110	22M150	NA	NA	NA	NA	NA	NA
--------	--------	--------	--------	--------	--------	--------	----	----	----	----	----	----

Minimum output speed min ⁻¹	Maximum output speed min ⁻¹	Exact reduction	0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
1.57	11.2	200	1.12												
1.76	12.4	181	1.23												
2.02	14.2	158	1.39												
2.22	15.6	144	1.48												
2.57	18	124	1.63	1.06											
2.88	20.3	111	1.76	1.14											
3.22	22.6	99.4	1.90	1.23											
3.68	25.9	87	2.07	1.35											
3.89	27.4	82.2	2.15	1.40											
4.62	32.5	69.2	2.41	1.57	1.03										
4.9	34.5	65.3	2.51	1.63	1.07										
5.53	38.9	57.8	2.72	1.77	1.16										
6.32	44.5	50.6		1.26											
6.51	45.8	49.1	4.51	2.93											
7.19	50.5	44.5	4.97	3.22											
8.24	57.9	38.8	5.68	3.68	2.41	1.74	1.44								
9.05	63.6	35.4	6.22	4.04	2.64	1.91	1.58								
10.4	73.6	30.6	7.18	4.66	3.05	2.20	1.83								
11.7	82.6	27.2	8.02	5.21	3.41	2.46	2.04								
13.1	92.2	24.4	8.93	5.79	3.79	2.74	2.27	1.85	1.34	1.12					
15	105	21.4		6.54	4.28	3.10	2.56	2.09	1.52	1.26	1.03				
15.8	111	20.2		6.89	4.51	3.26	2.70	2.20	1.60	1.33	1.08				
18.8	132	17		7.89	5.17	3.74	3.09	2.52	1.83	1.52	1.24				
20	140	16		8.23	5.39	3.89	3.22	2.62	1.91	1.59	1.29				
22.5	158	14.2			5.84	4.22	3.50	2.84	2.07	1.72	1.40	1.03			
25.6	181	12.4			6.39	4.62	3.82	3.11	2.27	1.88	1.53	1.12			
29.3	206	10.9			6.96	5.03	4.17	3.39	2.47	2.05	1.67	1.22			
30.7	216	10.4		9.64	6.31	4.56	3.78								
33.1	233	9.67						3.68	2.68	2.23	1.82	1.33			
36.4	256	8.79		11.44	7.49	5.42	4.49								
37.3	263	8.57						3.98	2.90	2.41	1.97	1.44			
38.7	272	8.28		12.06											
42.3	297	7.57			6.40	5.30	4.31	3.14	2.61	2.13	1.55				
43.6	307	7.34			8.85	6.40	5.30	4.31	3.14	2.61	2.13	1.55			
49.8	350	6.42			9.63	6.96	5.77	4.69	3.42	2.84	2.31	1.69			
56.6	398	5.65			10.02	7.25	6.00	4.88	3.55	2.95	2.41	1.76			
64.1	451	4.99						5.07	3.69	3.07	2.50	1.83			
72.3	508	4.43						5.22	3.80	3.16	2.58	1.88			
81.8	575	3.91			8.64	7.15	5.82	4.24	3.52	2.87	2.10				

NA not available

Selection example:

Required power: 1.5 kW - 3-ph 400 V

Required speeds: 16 to 110 min⁻¹

Duty factor necessary for the application: kp = 1.4

Mounting: foot, horizontal position

CG position: cable gland on right, button option

Designation: Cb 3133 B3 S 20.2 MI - 4P LS 90 L 1.5 kW - VMA 22T 150+BMA

Variable speed geared motors VARMECA + COMPABLOC 3000

D6 - Selection (kp factor for AGMA class I, II, III)

Compabloc 3231 (Cb) gearbox: S foot mounted form, BT faceplate, BS, BDn...flange form

VARMECA variable speed motors: LS 4-pole, IP 65, class F

- 3-phase T: 400 V -10% to 480 V +10%, 50-60 Hz ±10%
- 3-phase TL: 200 V -10% to 240 V +10%, 50-60 Hz ±10%
- Single-phase M: 200 V -10% to 240 V +10%, 50-60 Hz ±10%

Variable speed brake motors: 4-pole, class F

FCR J01: IP 55, from 0.25 to 4 kW

Integral mounting MI

Universal mounting MU-FF

Cb 3231 from 279 to 1831 min⁻¹

VARMECA variable speed motors, power kW

0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
------	------	------	------	-----	-----	-----	-----	-----	---	---	-----	-----

3-phase 4-pole LS motor and frame size

71 L	80 L	90 L	100 L	112 MG	132 SM	132 M
------	------	------	-------	--------	--------	-------

3-phase 4-pole LS FCR J01 brake motor and frame size

71 L FCR	80 L FCR	90 L FCR	100 L FCR	112MG FCR	NA	NA
----------	----------	----------	-----------	-----------	----	----

3-phase VMA -- T --- 400/480 V

21T025	21T037	21T055	21T075	21T090	21T110	22T150	22T180	22T220	22T300	22T400	14-550	14-750
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

3-phase VMA -- TL --- 200/240 V

21TL025	21TL037	21TL055	21TL075	22TL090	22TL110	22TL150	22TL180	22TL220	NA	NA	NA	NA
---------	---------	---------	---------	---------	---------	---------	---------	---------	----	----	----	----

Single phase VMA -- M --- 200/240 V

21M025	21M037	21M055	21M075	22M090	22M110	22M150	NA	NA	NA	NA	NA	NA
--------	--------	--------	--------	--------	--------	--------	----	----	----	----	----	----

Minimum output speed min ⁻¹	Maximum output speed min ⁻¹	Exact reduction	21M025	21M037	21M055	21M075	22M090	22M110	22M150	NA	NA	NA	NA	NA	NA
39.6	279	8.08	10.86	7.02	4.59	3.31	2.74								
46.3	325	6.92	12.68	8.19	5.35	3.87	3.20	2.60	1.89	1.57	1.28				
50.7	357	6.31	13.90	8.99	5.87	4.24	3.51	2.85	2.08	1.72	1.41				
56	394	5.71	15.34	9.92	6.48	4.68	3.87	3.15	2.29	1.90	1.55	1.13			
65.6	462	4.88	17.99	11.63	7.60	5.48	4.54	3.69	2.69	2.23	1.82	1.33	0.99		
73.9	519	4.33	20.23	13.08	8.55	6.17	5.11	4.15	3.02	2.51	2.05	1.49	1.12		
82.2	578	3.89	22.51	14.55	9.51	6.87	5.68	4.62	3.36	2.79	2.28	1.66	1.24		
93.3	656	3.43	25.57	16.53	10.80	7.80	6.45	5.25	3.82	3.17	2.59	1.89	1.41		
104	729	3.09	28.40	18.36	12.00	8.66	7.17	5.83	4.24	3.52	2.87	2.10	1.57		
118	827	2.72		20.84	13.62	9.83	8.13	6.61	4.81	4.00	3.26	2.38	1.78		
126	884	2.55		22.27	14.55	10.50	8.69	7.07	5.14	4.27	3.48	2.54	1.90		
145	1019	2.21		25.24	16.49	11.91	9.85	8.01	5.83	4.84	3.95	2.88	2.16		
165	1161	1.94			17.94	12.95	10.72	8.71	6.34	5.26	4.29	3.14	2.35		
183	1286	1.75										3.18	2.38		
207	1453	1.55										3.43	2.56		
220	1550	1.45										3.33	2.49		
260	1831	1.23										3.60	2.70		

NA not available

Selection example:

Required power: 3 kW - 3-ph 400 V

Required speeds: 56 to 394 min⁻¹

Duty factor necessary for the application: kp = 1

Mounting: foot, horizontal position

CG position: cable gland on right

Designation: Cb 3231 B3 S 5.71 MI - 4P LS 100 L 3 kW - VMA 22T 300

Variable speed geared motors VARMECA + COMPABLOC 3000

D6 - Selection (kp factor for AGMA class I, II, III)

Compabloc 3233 (Cb) gearbox: S foot mounted form, BT faceplate, BS, BDN...flange form

VARMECA variable speed motors: LS 4-pole, IP 65, class F

- 3-phase T: 400 V -10% to 480 V +10%, 50-60 Hz ±10%
- 3-phase TL: 200 V -10% to 240 V +10%, 50-60 Hz ±10%
- Single-phase M: 200 V -10% to 240 V +10%, 50-60 Hz ±10%

Variable speed brake motors: 4-pole, class F

FCR J01: IP 55, from 0.25 to 4 kW

Integral mounting MI

Universal mounting MU-FF

Cb 3233 from 11 to 581 min⁻¹

VARMECA variable speed motors, power kW

0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
------	------	------	------	-----	-----	-----	-----	-----	---	---	-----	-----

3-phase 4-pole LS motor and frame size

71 L	80 L	90 L	100 L	112 MG	132 SM	132 M
------	------	------	-------	--------	--------	-------

3-phase 4-pole LS FCR J01 brake motor and frame size

71 L FCR	80 L FCR	90 L FCR	100 L FCR	112MG FCR	NA	NA
----------	----------	----------	-----------	-----------	----	----

3-phase VMA -- T --- 400/480 V

21T025	21T037	21T055	21T075	21T090	21T110	22T150	22T180	22T220	22T300	22T400	14-550	14-750
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

3-phase VMA -- TL --- 200/240 V

21TL025	21TL037	21TL055	21TL075	22TL090	22TL110	22TL150	22TL180	22TL220	NA	NA	NA	NA
---------	---------	---------	---------	---------	---------	---------	---------	---------	----	----	----	----

Single phase VMA -- M --- 200/240 V

21M025	21M037	21M055	21M075	22M090	22M110	22M150	NA	NA	NA	NA	NA	NA
--------	--------	--------	--------	--------	--------	--------	----	----	----	----	----	----

Minimum output speed min ⁻¹	Maximum output speed min ⁻¹	Exact reduction	0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
1.57	11	204	2.51	1.62	1.06										
1.83	12.9	174	2.93	1.89	1.24										
2.01	14.1	159	3.21	2.07	1.36										
2.22	15.6	144	3.54	2.29	1.50										
2.6	18.3	123	4.15	2.68	1.75	1.27	1.05								
2.93	20.6	109	4.67	3.02	1.97	1.42	1.18								
3.26	22.9	98.2	5.20	3.36	2.20	1.58	1.31								
3.7	26	86.5	5.90	3.81	2.49	1.80	1.49								
4.11	28.9	77.9	6.55	4.24	2.77	2.00	1.65								
4.66	32.8	68.6	7.43	4.80	3.14	2.27	1.87								
4.98	35	64.2	7.93	5.12	3.35	2.42	2.00	1.63	1.18	0.98					
5.75	40.4	55.7	9.11	5.89	3.85	2.78	2.30	1.87	1.36	1.13					
6.38	44.8	50.2	9.98	6.45	4.22	3.04	2.52								
6.55	46	48.9						2.12	1.55	1.28	1.05				
7.44	52.4	43	11.61	7.51	4.91	3.54	2.93	2.38	1.73	1.44	1.17				
8.16	57.4	39.2	12.71	8.21	5.37	3.87	3.21	2.61	1.90	1.58	1.28				
9.01	63.4	35.5	13.99	9.04	5.91	4.27	3.53	2.87	2.09	1.73	1.41	1.03			
10.6	74.3	30.3		10.46	6.84	4.94	4.08	3.32	2.42	2.01	1.64	1.20			
11.9	83.6	26.9		11.65	7.61	5.49	4.55	3.70	2.69	2.23	1.82	1.33			
13.2	93	24.2		12.57	8.22	5.93	4.91	3.99	2.90	2.41	1.97	1.44			
15	106	21.3			8.96	6.47	5.35	4.35	3.17	2.63	2.14	1.57	1.17		
16.7	117	19.2			9.61	6.94	5.74	4.67	3.40	2.82	2.30	1.68	1.26		
18.9	133	16.9			10.47	7.56	6.26	5.09	3.70	3.07	2.51	1.83	1.37		
20.2	142	15.8			10.94	7.90	6.54	5.31	3.87	3.21	2.62	1.91	1.43		
23.3	164	13.7				8.70	7.20	5.85	4.26	3.54	2.88	2.11	1.58		
26	183	12.3		14.56											
26.6	187	12				9.47	7.84	6.37	4.64	3.85	3.14	2.29	1.72		
29.4	207	10.9										2.46	1.84		
29.6	208	10.8			10.80	7.80	6.45	5.25	3.82	3.17	2.59				
32.9	231	9.72			12.00	8.66	7.17	5.83	4.24	3.52	2.87				
33.3	234	9.62										2.66	1.99		
35.5	249	9.02										2.78	2.08		
37.4	263	8.57			13.62	9.83	8.14	6.61	4.81	4.00	3.26				
39.9	281	8.02			14.55	10.51	8.69	7.07	5.14	4.27	3.48				
41.9	295	7.63										3.09	2.31		
46	323	6.96				12.11	10.02	8.15	5.93	4.92	4.02	2.93	2.19		
52.4	369	6.1				13.80	11.42	9.29	6.76	5.61	4.58	3.34	2.50		
58	408	5.51										3.68	2.76		
65.6	461	4.88										4.12	3.08		
70	492	4.57										4.37	3.27		
82.7	581	3.87										4.82	3.60		

NA not available

Selection example:

Required power: 2.2 kW - 3-ph 400 V

Required speeds: 7.5 to 52 min⁻¹

Duty factor necessary for the application: kp = 1

Mounting: foot, horizontal position

CG position: cable gland on right

Designation: Cb 3233 B3 S 43 MI - 4P LS 100 L 2.2 kW - VMA 22T 220

Variable speed geared motors VARMECA + COMPABLOC 3000

D6 - Selection (kp factor for AGMA class I, II, III)

Compabloc 3331 (Cb) gearbox: S foot mounted form, BT faceplate, BS, BDn...flange form

VARMECA variable speed motors: LS 4-pole, IP 65, class F

- 3-phase: • VMA 21 and 22 T: 400 V -10% to 480 V +10%, 50-60 Hz ±10%
• VMA 14: 400 V -10% to 440 V +10%, 50-60 Hz ±10%
- 3-phase TL: 200 V -10% to 240 V +10%, 50-60 Hz ±10%
- Single-phase M: 200 V -10% to 240 V +10%, 50-60 Hz ±10%

Variable speed brake motors: 4-pole, class F

FCR J01: IP 55, from 0.25 to 4 kW

Integral mounting MI

Universal mounting MU-FF

Cb 3331 from 287 to 1781 min⁻¹

VARMECA variable speed motors, power kW

0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
------	------	------	------	-----	-----	-----	-----	-----	---	---	-----	-----

3-phase 4-pole LS motor and frame size

71 L	80 L	90 L	100 L	112 MG	132 SM	132 M
------	------	------	-------	--------	--------	-------

3-phase 4-pole LS FCR J01 brake motor and frame size

71 L FCR	80 L FCR	90 L FCR	100 L FCR	112MG FCR	NA	NA
----------	----------	----------	-----------	-----------	----	----

3-phase VMA -- T --- 400/480 V

21T025	21T037	21T055	21T075	21T090	21T110	22T150	22T180	22T220	22T300	22T400	14-550	14-750
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

3-phase VMA -- TL --- 200/240 V

21TL025	21TL037	21TL055	21TL075	22TL090	22TL110	22TL150	22TL180	22TL220	NA	NA	NA	NA
---------	---------	---------	---------	---------	---------	---------	---------	---------	----	----	----	----

Single phase VMA -- M --- 200/240 V

21M025	21M037	21M055	21M075	22M090	22M110	22M150	NA	NA	NA	NA	NA	NA
--------	--------	--------	--------	--------	--------	--------	----	----	----	----	----	----

Minimum output speed min ⁻¹	Maximum output speed min ⁻¹	Exact reduction	21M025	21M037	21M055	21M075	22M090	22M110	22M150	NA	NA	NA	NA	NA	NA
40.9	287	7.83	21.45	13.76	8.95	6.44	5.32	4.32	3.14	2.61	2.13				
45.2	318	7.08	23.74	15.23	9.90	7.13	5.89	4.79	3.48	2.89	2.35				
50.5	355	6.33	26.53	17.02	11.06	7.97	6.59	5.35	3.89	3.23	2.63	1.92	1.44		
58.2	409	5.5	> 30	19.57	12.73	9.17	7.58	6.15	4.47	3.71	3.03	2.21	1.65		
65.8	462	4.87	> 30	21.91	14.24	10.26	8.48	6.89	5.01	4.15	3.39	2.47	1.85	1.34	0.98
71.5	503	4.47	> 30	22.91	14.89	10.73	8.87	7.20	5.23	4.34	3.54	2.59	1.93	1.40	1.03
81	569	3.95	> 30	25.16	16.36	11.78	9.74	7.91	5.75	4.77	3.89	2.84	2.12	1.54	
90.9	639	3.52		26.13	16.99	12.24	10.11	8.21	5.97	4.96	4.04	2.95	2.21	1.60	1.17
101	712	3.16		26.97	17.54	12.63	10.44	8.48	6.16	5.11	4.17	3.04	2.28	1.65	1.21
110	773	2.91		> 30	20.82	14.99	12.39	10.06	7.32	6.07	4.95	3.61	2.70	1.96	1.44
124	871	2.58		> 30	24.23	17.45	14.42	11.71	8.52	7.07	5.76	4.21	3.15	2.28	1.67
142	1000	2.25			23.66	17.04	14.08	11.44	8.31	6.90	5.63	4.11	3.07	2.23	1.63
157	1105	2.04										4.32	3.23	2.34	1.72
180	1268	1.77										4.07	3.05	2.21	1.62
199	1401	1.61												2.21	1.62
220	1544	1.46										4.14	3.09	2.24	1.64
253	1781	1.26												2.36	1.73

NA not available

Selection example:

Required power:	5.5 kW - 3-ph 400 V
Required speeds:	58 to 409 min ⁻¹
Duty factor necessary for the application:	kp = 1
Mounting:	foot, horizontal position
CG position:	cable gland on right
Designation:	Cb 3331 B3 S 5.5 MI - 4P LS 132 SM 5.5 kW - 14-550

Variable speed geared motors VARMECA + COMPABLOC 3000

D6 - Selection (kp factor for AGMA class I, II, III)

Compabloc 3333 (Cb) gearbox: S foot mounted form, BT faceplate, BS, BDn...flange form
VARMECA variable speed motors: LS 4-pole, IP 65, class F
 - 3-phase: • VMA 21 and 22 T: 400 V -10% to 480 V +10%, 50-60 Hz ±10%
 • VMA 14: 400 V -10% to 440 V +10%, 50-60 Hz ±10%
 - 3-phase TL: 200 V -10% to 240 V +10%, 50-60 Hz ±10%
 - Single-phase M: 200 V -10% to 240 V +10%, 50-60 Hz ±10%
Variable speed brake motors: 4-pole, class F
FCR J01: IP 55, from 0.25 to 4 kW

Integral mounting MI

Universal mounting MU-FF

Cb 3333 from 11.2 to 566 min⁻¹

VARMECA variable speed motors, power kW

0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
------	------	------	------	-----	-----	-----	-----	-----	---	---	-----	-----

3-phase 4-pole LS motor and frame size

71 L	80 L	90 L	100 L	112 MG	132 SM	132 M
------	------	------	-------	--------	--------	-------

3-phase 4-pole LS FCR J01 brake motor and frame size

71 L FCR	80 L FCR	90 L FCR	100 L FCR	112MG FCR	NA	NA
----------	----------	----------	-----------	-----------	----	----

3-phase VMA -- T --- 400/480 V

21T025	21T037	21T055	21T075	21T090	21T110	22T150	22T180	22T220	22T300	22T400	14-550	14-750
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

3-phase VMA -- TL --- 200/240 V

21TL025	21TL037	21TL055	21TL075	22TL090	22TL110	22TL150	22TL180	22TL220	NA	NA	NA	NA
---------	---------	---------	---------	---------	---------	---------	---------	---------	----	----	----	----

Single phase VMA -- M --- 200/240 V

21M025	21M037	21M055	21M075	22M090	22M110	22M150	NA	NA	NA	NA	NA	NA
--------	--------	--------	--------	--------	--------	--------	----	----	----	----	----	----

Minimum output speed min ⁻¹	Maximum output speed min ⁻¹	Exact reduction	0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
1.6	11.2	200	4.76	3.06	1.99	1.43	1.18								
1.77	12.4	181	5.27	3.38	2.20	1.58	1.31								
1.97	13.9	162	5.89	3.78	2.46	1.77	1.46								
2.27	16	141	6.78	4.35	2.83	2.04	1.68								
2.57	18.1	125	7.67	4.92	3.20	2.30	1.90								
2.8	19.7	114	8.34	5.35	3.48	2.50	2.07	1.68	1.22	1.01					
3.16	22.2	101	9.44	6.05	3.94	2.84	2.34	1.90	1.38	1.15					
3.55	25	90.1	10.59	6.79	4.42	3.18	2.63	2.14	1.55	1.29	1.05				
3.96	27.8	80.9	11.80	7.57	4.92	3.54	2.93	2.38	1.73	1.44	1.17				
4.3	30.2	74.4	12.81	8.22	5.34	3.85	3.18	2.58	1.88	1.56	1.27				
4.84	34	66.1	14.40	9.24	6.01	4.33	3.58	2.90	2.11	1.75	1.43	1.04			
5.56	39.1	57.6			6.88	4.95	4.09	3.32	2.42	2.01	1.63	1.19			
6.57	46.2	48.7	18.74	12.02	7.81	5.63	4.65	3.78	2.75	2.28	1.86				
7.28	51.2	44	20.74	13.30	8.65	6.23	5.15	4.18	3.04	2.52	2.06				
8.13	57.2	39.4		14.86	9.66	6.96	5.75	4.67	3.40	2.82	2.30	1.68	1.25		
9.36	65.8	34.2		17.12	11.13	8.01	6.62	5.38	3.91	3.25	2.65	1.93	1.44		
10.6	74.4	30.2		19.34	12.58	9.06	7.49	6.08	4.42	3.67	2.99	2.18	1.63	1.18	
11.5	80.9	27.8			13.68	9.85	8.14	6.61	4.81	3.99	3.25	2.38	1.78	1.29	
13	91.6	24.6			15.44	11.12	9.19	7.46	5.43	4.50	3.67	2.68	2.00	1.45	
14.6	103	21.9			17.18	12.37	10.23	8.31	6.04	5.01	4.08	2.98	2.23	1.62	1.18
16.3	115	19.6				13.56	11.21	9.10	6.62	5.49	4.48	3.27	2.44	1.77	1.30
17.7	125	18.1				14.51	12.00	9.74	7.08	5.88	4.79	3.50	2.62	1.90	1.39
19.9	140	16.1				15.82	13.08	10.62	7.72	6.41	5.22	3.81	2.85	2.07	1.51
22.9	161	14					14.56	11.83	8.60	7.14	5.82	4.25	3.18	2.30	1.69
25.3	178	12.7										4.65	3.48	2.52	1.85
25.7	181	12.5				15.49	11.15	9.22	7.49	5.44	4.52	3.68			
28.9	203	11.1				17.38	12.52	10.35	8.40	6.11	5.07	4.13			
29	204	11											4.99	3.73	2.70
32	225	9.98												2.96	2.16
32.2	226	9.95													
34.9	246	9.16				13.95	11.53	9.36	6.81	5.65	4.61	3.36	2.51		
35.3	249	9.06				15.15	12.52	10.17	7.39	6.14	5.00				
39.3	277	8.14										5.82	4.35	3.16	2.31
40.8	287	7.85				17.06	14.10	11.45	8.33	6.91	5.63	4.11	3.08		
45.2	318	7.09												3.46	2.53
49.9	351	6.41				16.19	13.15	9.56	7.93	6.47		4.72	3.53	2.56	1.88
57.3	403	5.59										5.22	3.90	2.83	2.07
63.3	445	5.06										5.99	4.48	3.25	2.38
69.7	490	4.59												3.59	2.63
80.4	566	3.98										7.29	5.45	3.96	2.90
														4.56	3.34

See VARMECA + Cb 2000 offer, p 44

NA not available

Selection example:

Required power: 1.8 kW - 3-ph 400 V

Required speeds: 3 to 22 min⁻¹

Duty factor necessary for the application: kp = 1

Mounting: foot, horizontal position

CG position: cable gland on right

Designation: Cb 3333 B3 S 101 MI - 4P LS 90 L 1.8 kW - VMA 22T 180

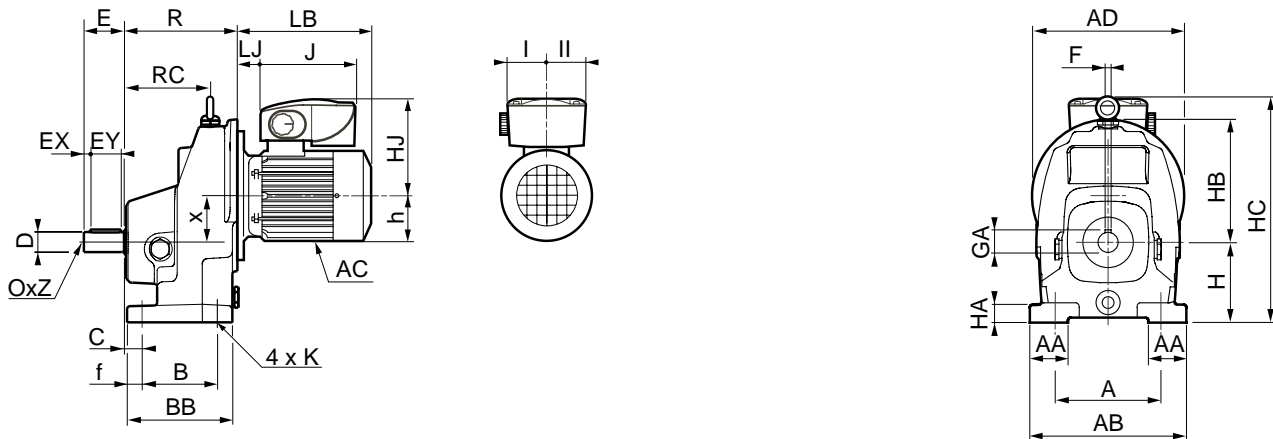
Variable speed geared motors VARMECA + COMPABLOC 3000

D7 - Dimensions

Dimensions of VARMECA + Compabloc (Cb) gearboxes, MI integral mounting, 1 stage,
Cb 3031 to Cb 3331

S foot mounted form

Dimensions in millimetres



Type	Gearboxes														Solid output shaft								Max. weight kg		
	A	AA	AB	AD	B	BB	C	f	H	HA	HB	HC	K	R	RC	x	D	E	EX	EY	F	GA		O	Z
Cb 3331	190	55	240	230	100	145	27.5	22	112	25	185	343	16	136	106	70	35k6	70	5	60	10	38	M12	38	15.5
Cb 3231	140	37	180	185	80	115	20.5	17.5	90	20	155	-	14	117	-	63	25j6	50	5	40	8	28	M10	22	8.3
Cb 3131	120	35	156	157	75	105	18	15	80	16	122	246	11	113	86	46.5	20j6	40	7	30	6	22.5	M6	16	6.9
Cb 3031	125	25	150	140	70	90	21	10	75	13	105	-	9	79	-	35.5	16j6	40	7	25	5	18	M6	16	2.3

Frame size	VARMECA variable speed motors																	Max. weight kg							
	LS 3-phase							LS and FMC brake							LS and FCR brake										
	AC	HJ	J	LB	LJ	I	II	AC	HJ	J	LB	LJ	I	II	AC	HJ	h		J	LB	LJ	I	II		
71	140	195	218	240	27	75	75	12.5	140	181	218	279	27	75	75	13.4	140	195	70	218	302	27	75	75	15.2
80	170	205	231	274	43	75	75	15.1	-	-	-	-	-	-	-	-	172	205	80	231	324	43	75	75	22.2
90	190	215	231	310	73.5	75	75	19.4	-	-	-	-	-	-	-	-	184	215	90	231	370	73.5	75	75	28.4
100	200	220	231	335	53.5	75	75	26.7	-	-	-	-	-	-	-	-	200	220	98	231	398	53.5	75	75	34.2
112	235	229	231	459	54	75	75	42.6	-	-	-	-	-	-	-	-	235	229	110	231	459	54	75	75	48.7
132 ¹	280	264	324	438	67	112	112	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. In frame size 132, dimension I includes the control button supplied as standard.

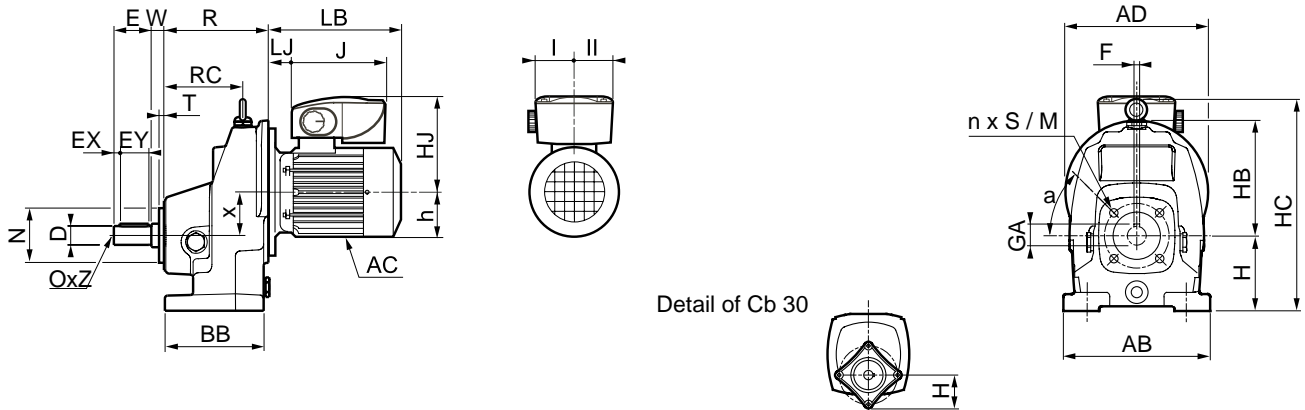
Variable speed geared motors VARMECA + COMPABLOC 3000

D7 - Dimensions

Dimensions of VARMECA + Compabloc (Cb) gearboxes, MI integral mounting, 1 stage,
Cb 3031 to Cb 3331

BT faceplate form

Dimensions in millimetres



Type	Gearboxes										BT form					Solid output shaft							Max. weight kg		
	AB	AD	BB	H	HB	HC	R	RC	W	x	M	N	n	S	T	a	D	E	EX	EY	F	GA		O	Z
Cb 3331	240	230	135	112	185	343	131	101	15	70	120	100	6	M10x22	3	60°	35k6	70	5	60	10	38	M12	38	15.5
Cb 3231	180	185	115	90	155	-	109	-	15	63	83	70	4	M10x22	5	45°	25j6	50	5	40	8	28	M10	22	8.3
Cb 3131	156	157	105	80	122	246	106	79	15	46.5	83	70	4	M10x22	5	45°	20j6	40	7	30	6	22.5	M6	16	6.9
Cb 3031	-	140	-	57	105	-	67	-	12	35.5	100	60	4	-	18	0°	16j6	40	7	25	5	18	M6	16	2.3

1. Cb 30 BT with 4 clearance holes $\varnothing 5.65 \times 18$ for M6 self-tapping screw.

Frame size	VARMECA variable speed motors																	Max. weight kg							
	LS 3-phase					LS and FMC brake					LS and FCR brake					Max. weight kg									
	AC	HJ	J	LB	LJ	I	II	AC	HJ	J	LB	LJ	I	II	AC		HJ		h	J	LB	LJ	I	II	
71	140	195	218	240	27	75	75	12.5	140	181	218	279	27	75	75	13.4	140	195	70	218	302	27	75	75	15.2
80	170	205	231	274	43	75	75	15.1	-	-	-	-	-	-	-	-	172	205	80	231	324	43	75	75	22.2
90	190	215	231	310	73.5	75	75	19.4	-	-	-	-	-	-	-	-	184	215	90	231	370	73.5	75	75	28.4
100	200	220	231	335	53.5	75	75	26.7	-	-	-	-	-	-	-	-	200	220	98	231	398	53.5	75	75	34.2
112	235	229	231	459	54	75	75	42.6	-	-	-	-	-	-	-	-	235	229	110	231	459	54	75	75	48.7
132 ¹	280	264	324	438	67	112	112	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. In frame size 132, dimension I includes the control button supplied as standard.

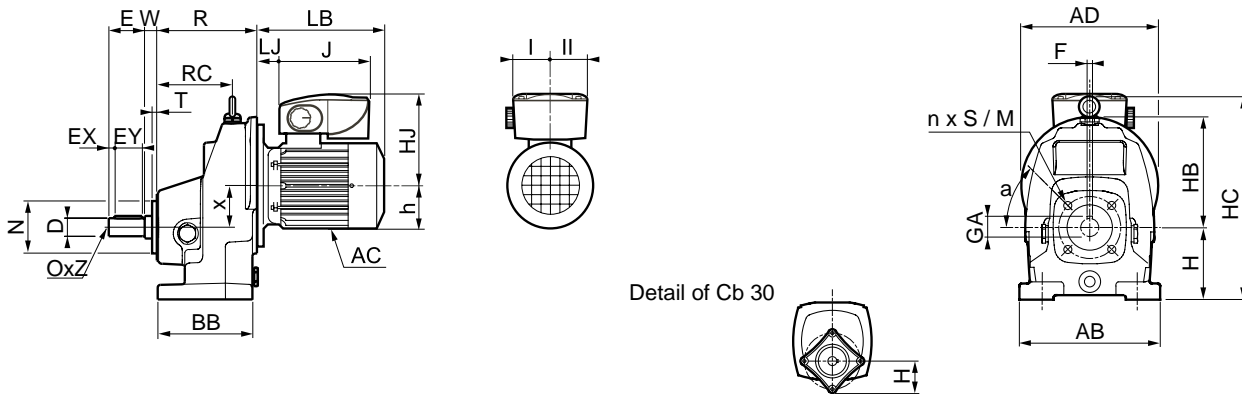
Variable speed geared motors VARMECA + COMPABLOC 3000

D7 - Dimensions

Dimensions of VARMECA + Compabloc (Cb) gearboxes, MI integral mounting, 1 stage,
Cb 3031 to Cb 3331

BS, BDn flange form

Dimensions in millimetres



Type	Gearboxes										BS form								Solid output shaft								Max. weight kg
	AB	AD	BB	H	HB	HC	R	RC	x		LA	M	N	P	S	T	a	n	D	E	EX	EY	F	GA	O	Z	
Cb 3331	240	230	145	112	185	343	146	116	70		12	215	180	250	14	3.5	45°	4	35k6	70	5	60	10	38	M12	38	19.4
Cb 3231	180	185	115	90	155	-	134	-	63		9	165	130	200	11	3.5	45°	4	25j6	50	5	40	8	28	M10	22	10.3
Cb 3131	156	157	105	80	122	246	121	94	46.5		10	130	110	160	9	3	45°	4	20j6	40	7	30	6	22.5	M6	16	8.1
Cb 3031	-	140	-	90	105	-	79	-	35.5		8	115	95	140	9	3	45°	4	16j6	40	7	25	5	18	M6	16	2.5

Type	BD1 flange								Max. weight kg	BD2 flange								Max. weight kg	BD3 flange								Max. weight kg
	LA	M	N	P	S	T	a	n		LA	M	N	P	S	T	a	n		LA	M	N	P	S	T	a	n	
Cb 3331	12	165	130	200	11	3.5	45°	4	18.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cb 3231	9	130	110	160	9	3.5	45°	4	9.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cb 3131	10	115	95	140	9	3	45°	4	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cb 3031	10	100	80	120	7	3	45°	4	2.5	10	130	110	160	9	2	45°	4	2.5	12	165	130	200	11	3.5	45°	4	2.5

Frame size	VARMECA variable speed motors																	Max. weight kg							
	LS 3-phase							Max. weight kg	LS and FMC brake							Max. weight kg	LS and FCR brake						Max. weight kg		
	AC	HJ	J	LB	LJ	I	II		AC	HJ	J	LB	LJ	I	II		AC		HJ	h	J	LB		LJ	I
71	140	195	218	240	27	75	75	12.5	140	181	218	279	27	75	75	13.4	140	195	70	218	302	27	75	75	15.2
80	170	205	231	274	43	75	75	15.1	-	-	-	-	-	-	-	-	172	205	80	231	324	43	75	75	22.2
90	190	215	231	310	73.5	75	75	19.4	-	-	-	-	-	-	-	-	184	215	90	231	370	73.5	75	75	28.4
100	200	220	231	335	53.5	75	75	26.7	-	-	-	-	-	-	-	-	200	220	98	231	398	53.5	75	75	34.2
112	235	229	231	459	54	75	75	42.6	-	-	-	-	-	-	-	-	235	229	110	231	459	54	75	75	48.7
132 ¹	280	264	324	438	67	112	112	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. In frame size 132, dimension I includes the control button supplied as standard.

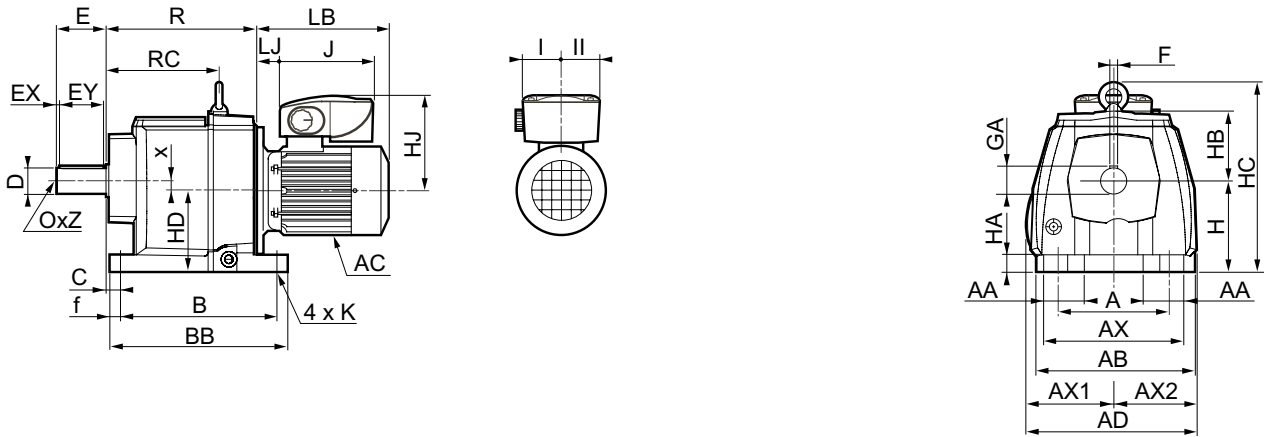
Variable speed geared motors VARMECA + COMPABLOC 3000

D7 - Dimensions

Dimensions of VARMECA + Compabloc (Cb) gearboxes, MI integral mounting, multi-stage,
Cb 3032 to Cb 3333

S foot mounted form

Dimensions in millimetres



Type	Gearboxes																			Max. weight kg	
	A	AA	AB	AD	AX	AX1	AX2	B	BB	C	f	H	HA	HB	HC	HD	K	R	RC		x
Cb 3333	170	65	245	257	222	128.5	128.5	240	272	19.5	16	140	27	107	292	120.5	18	222.5	169.5	19.5	30
Cb 3233	135	65	208	222	195	115	107	192	216	13	11.5	115	21	89	240	105	14	182.5	135.5	10	18.5
Cb 3133	110	35	160	172	145	86	86	165	195	16	15	90	20	73	-	81.5	9	165.5	-	8.5	13
Cb 3033	125	28	150	150	150	75	75	125	145	22	10	75	13	78	-	82	9	128	-	7	4.9
Cb 3032	125	28	150	150	150	75	75	105	125	22	10	75	13	78	-	82	9	108	-	7	4.8

Solid output shaft							
Type	D	E	EX	EY	F	GA	O Z
Cb 3333	40k6	80	9	60	12	43	M16 36
Cb 3233	30j6	60	6	45	8	33	M10 22
Cb 3133	25j6	50	5	40	8	28	M10 22
Cb 3033	20j6	40	7	25	6	22.5	M6 16
Cb 3032	20j6	40	7	25	6	22.5	M6 16

Frame size	VARMECA variable speed motors																			Max. weight kg					
	LS 3-phase							Max. weight kg	LS and FMC brake							Max. weight kg	LS and FCR brake							Max. weight kg	
	AC	HJ	J	LB	LJ	I	II		AC	HJ	J	LB	LJ	I	II		AC	HJ	h		J	LB	LJ		I
71	140	195	218	240	27	75	75	12.5	140	181	218	279	27	75	75	13.4	140	195	70	218	302	27	75	75	15.2
80	170	205	231	274	43	75	75	15.1	-	-	-	-	-	-	-	-	172	205	80	231	324	43	75	75	22.2
90	190	215	231	310	73.5	75	75	19.4	-	-	-	-	-	-	-	-	184	215	90	231	370	73.5	75	75	28.4
100	200	220	231	335	53.5	75	75	26.7	-	-	-	-	-	-	-	-	200	220	98	231	398	53.5	75	75	34.2
112	235	229	231	459	54	75	75	42.6	-	-	-	-	-	-	-	-	235	229	110	231	459	54	75	75	48.7
132 ¹	280	264	324	438	67	112	112	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. In frame size 132, dimension I includes the control button supplied as standard.

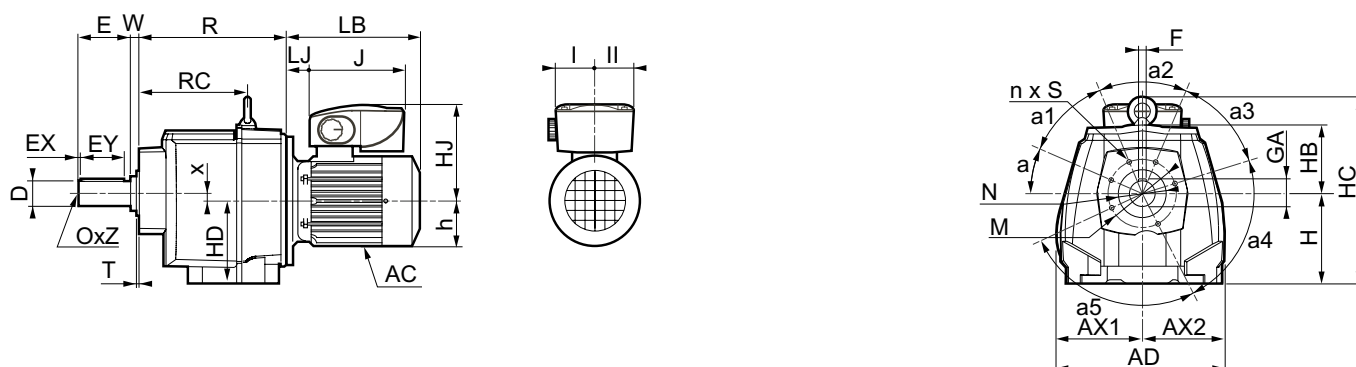
Variable speed geared motors VARMECA + COMPABLOC 3000

D7 - Dimensions

Dimensions of VARMECA + Compabloc (Cb) gearboxes, MI integral mounting, multi-stage,
Cb 3032 to Cb 3333

BT faceplate form

Dimensions in millimetres



Type	Gearboxes										BT form										Max. weight kg		
	AD	AX1	AX2	H	HB	HC	HD	R	RC	W	x	a	a1	a2	a3	a4	a5	M	N	n		S	T
Cb 3333	257	128.5	128.5	140	107	292	120.5	227.5	174.5	23	19.5	23°	44°	46°	44°	68°	90°	123	100	6	M12x22	-3.5	30
Cb 3233	222	115	107	115	89	240	105	177.5	130.5	14.5	10	23°	44°	46°	50°	80°	92°	100	82	6	M10x22	3.5	18.5
Cb 3133	172	86	86	90	73	-	81.5	158.5	-	15	8.5	45°	-	-	-	-	-	83	70	4 ¹	M10x22	5	13
Cb 3033	140	70	70	63	78	-	70	115	-	13	7	0°	-	-	-	-	-	100	60	4	M6x16	10	4.9
Cb 3032	140	70	70	63	78	-	70	95	-	13	7	0°	-	-	-	-	-	100	60	4	M6x16	10	4.8

1. Cb 31, 4 equidistant holes at 45°.

Type	Solid output shaft							
	D	E	EX	EY	F	GA	O	Z
Cb 3333	40k6	80	9	60	12	43	M16	36
Cb 3233	30j6	60	6	45	8	33	M10	22
Cb 3133	25j6	50	5	40	8	28	M10	22
Cb 3033	20j6	40	7	25	6	22.5	M6	16
Cb 3032	20j6	40	7	25	6	22.5	M6	16

Frame size	VARMECA variable speed motors																								
	LS 3-phase							Max. weight kg	LS and FMC brake							Max. weight kg	LS and FCR brake					Max. weight kg			
	AC	HJ	J	LB	LJ	I	II		AC	HJ	J	LB	LJ	I	II		AC	HJ	h	J	LB		LJ	I	II
71	140	195	218	240	27	75	75	12.5	140	181	218	279	27	75	75	13.4	140	195	70	218	302	27	75	75	15.2
80	170	205	231	274	43	75	75	15.1	-	-	-	-	-	-	-	-	172	205	80	231	324	43	75	75	22.2
90	190	215	231	310	73.5	75	75	19.4	-	-	-	-	-	-	-	-	184	215	90	231	370	73.5	75	75	28.4
100	200	220	231	335	53.5	75	75	26.7	-	-	-	-	-	-	-	-	200	220	98	231	398	53.5	75	75	34.2
112	235	229	231	459	54	75	75	42.6	-	-	-	-	-	-	-	-	235	229	110	231	459	54	75	75	48.7
132 ¹	280	264	324	438	67	112	112	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

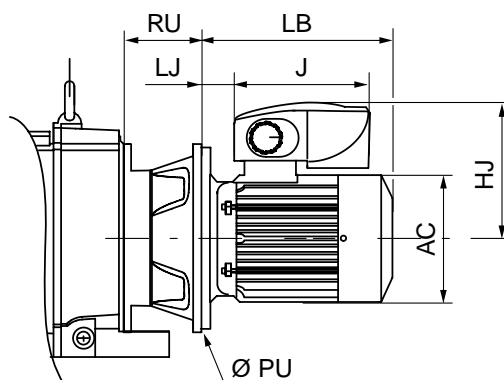
1. In frame size 132, dimension I includes the control button supplied as standard.

Variable speed geared motors VARMECA + COMPABLOC 3000

D7 - Dimensions

Dimensions of VARMECA + Compabloc (Cb) gearboxes, MU universal mounting,
Cb 30 to Cb 33

Dimensions in millimetres



VARMECA variable speed motors, MU universal mounting

Frame size	U-mounts																					
	LS and VARMECA							LS, VARMECA and brake							Compabloc (Cb) type							
	max.		max.		Weight			max.		max.		Weight			30--	31--	32--	33--	34--	35--	36--	
	AC	HJ	J	LB	LJ	PU	kg	AC	HJ	J	LB	LJ	PU	kg	RU	RU	RU	RU	RU	RU	RU	
71	140	175	218	183	8	160	12.5	140	175	218	271	8	160	15	60	122	122	118	-	-	-	-
80	170	189	231	215	12	200	15.1	172	189	231	292	12	200	22	-	130	130	126	-	-	-	-
90	190	199	231	265	32	200	19.4	184	199	231	324	32	200	30	-	130	130	126	-	-	-	-
100	200	204	231	290	12	250	25	200	204	231	372	12	250	36	-	144	144	140	-	-	-	-
112	235	213	231	425	20	250	37.5	235	213	231	425	20	250	48	-	144	144	140	-	-	-	-
132	280	282	324	387	16	300	60.8	-	-	-	-	-	-	-	-	-	-	162	-	-	-	-

	Compabloc (Cb) type						
	30--	31--	32--	33--	34--	35--	36--
Additional U-mount weight (kg)	3	4	8	14	-	-	-
Max. permissible motor weight (kg)	30	65	70	120	-	-	-

Gearbox dimensions are given on the previous pages.

Frame size	Universal mounting (MU-FF)						
	Compabloc (Cb) type						
	30--	31--	32--	33--	34--	35--	36--
71	FF130 - 14x30	FF130 - 14x30	FF130 - 14x30	FF130 - 14x30	-	-	-
80	FF165 - 19x40	FF165 - 19x40	FF165 - 19x40	FF165 - 19x40	-	-	-
90	-	FF165 - 24x50	FF165 - 24x50	FF165 - 24x50	-	-	-
100-112	-	FF215 - 28x60	FF215 - 28x60	FF215 - 28x60	-	-	-
132	-	-	-	FF265 - 38x80	-	-	-

Variable speed geared motors VARMECA + COMPABLOC 2000

E1 - General



Compabloc 2000 speed reducers with parallel gears are used to adapt the speed of the electronic variable speed drive to that of the driven machine.

Their size is therefore determined by the variable speed drive power (P) expressed in kilowatts (kW) and the output rotation speeds of the gearbox (n_{\min} - n_{\max}) in revolutions per minute (min^{-1}).

The main characteristic of speed reducers is the maximum rated output torque ($M_{nS \text{ max}}$) expressed in newton-metres (N.m):

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

Four selected sizes: 24, 25, 26, 27.

Rated output torque: from 30 N.m to 4820 N.m.

Selected power ratings: from 1.1 to 7.5 kW.

Reduction ratios: 2 to 160.

From one to three reduction stages: 1, 2, 3.

High efficiency: 95% to 98%.

Reversible.

Quiet operation.

E2 - Construction

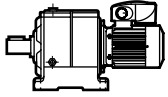
Component	Materials	Remarks
Frame	Cast iron	<ul style="list-style-type: none"> - use of GL cast iron (flake graphite: 150 MPa tensile strength) single component perlite to ensure unit is fully sealed - monobloc ribbed with internal reinforcements to absorb vibrations and noise, and increase its rigidity - foot mounted S or with flanges BS, BD..., BR. They are compact and meet industrial requirements
Gears	Steel Ni Cr Mo	<ul style="list-style-type: none"> - cut by the gear hob, they are heat treated and then undergo final machining. The quality and precision of the gear cutting allow maximum torque with minimum noise level
Shaft	Steel	<ul style="list-style-type: none"> - grinding of sealing surfaces - key in accordance with ISO R773 - tolerance of diameters in accordance with NF E 22-051 and ISO R775 - tapped holes at the shaft end for fixing connecting devices in accordance with DIN 332 version D
Lipseals	Acrylonitrile	<ul style="list-style-type: none"> - sealing rings between housing and flange - antidust lipseal in accordance with DIN 3760 form AS
End shield	Cast iron	<ul style="list-style-type: none"> - reinforced by ribs, this ensures ruggedness of the gearbox under heavy loads
Lubrication	Oil	<ul style="list-style-type: none"> - in accordance with ISO 6743/6 - delivered with the quantity of oil corresponding to the operating position indicated on the order, it is fitted with drain, level and breather plugs
Mounting		<p>MI: geared motor with integrated motor MU: geared motor with IEC motor, manufactured with universal mounting</p>
VARMECA variable speed motor		<p>VARMECA: single-phase power supply 200/240 V, 3-phase 200 V to 480 V LS motor: 3-phase 230/400 V</p> <ul style="list-style-type: none"> - pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down) - VARMECA casing in aluminium with cable gland supplied - VARMECA protection IP 65 - motor protection IP 55, class F
VARMECA variable speed motor and brake		<p>FCR: failsafe brake, from 1.1 to 4 kW, IP 55 protection (LS 90 to 112)</p>
Finish	Paint	<p>Shade: RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 μm)</p>

Variable speed geared motors VARMECA + COMPABLOC 2000

E3 - Mounting arrangements

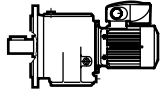
Standard position: gearbox view from side F, motor behind, side D on the floor.

1 - Definition of mounting form: S, BS, BD, BR



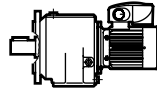
S

Foot mounted housing
flange



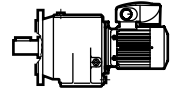
BS

Flange mounted housing



BD

Flange mounted housing (different)



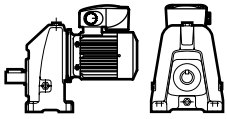
BR

Housing with reinforced

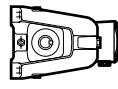
2 - Definition of operating position:

2.1 - S foot mounted

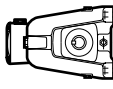
1-stage Compabloc: Cb 2501



B3



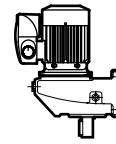
B6



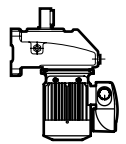
B7



B8



V5

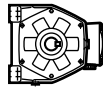


V6

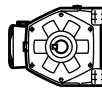
Multi-stage Compabloc: Cb 2403 to 2703



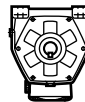
B3



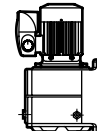
B6



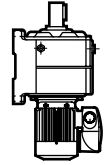
B7



B8



V5



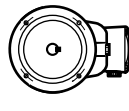
V6

2.2 - With BS or BD flange

1-stage Compabloc: Cb 2501



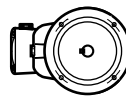
B5



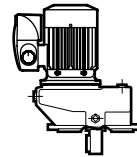
B52



B53



B54



V1

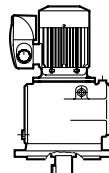
V3: prohibited

With BS, BD, BR or BL flange

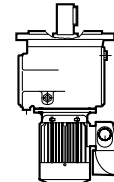
Multi-stage Compabloc: Cb 2403 to 2703



B5

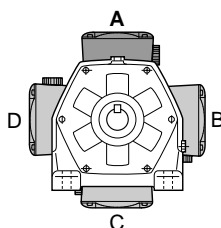


V1



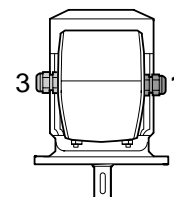
V3

3 - VARMECA positions



A: Standard

4 - Cable gland positions

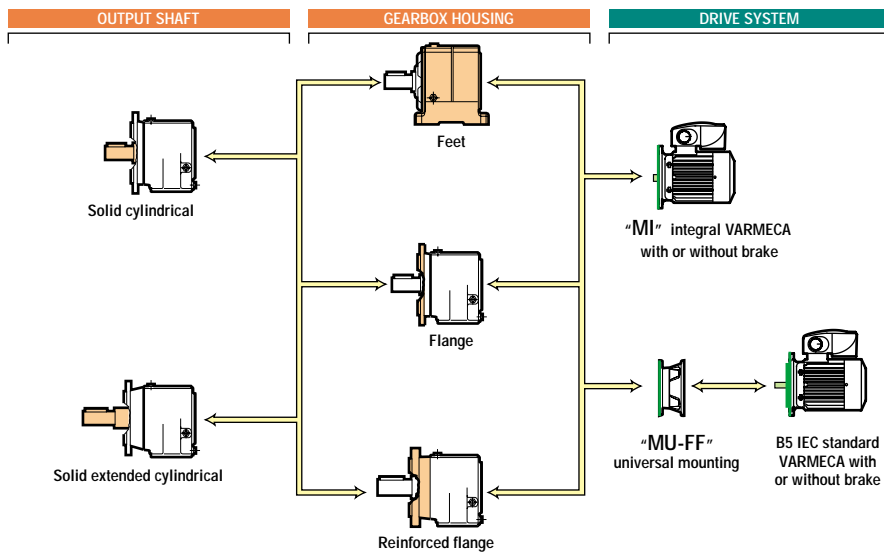


1: Standard

Variable speed geared motors VARMECA + COMPABLOC 2000

E4 - Adaptation possibilities

Leroy-Somer offers several adaptations for its gearboxes which respond to very wide-ranging needs. They are described below and offered in the Leroy-Somer configurator.
For other drives, consult the Leroy-Somer technical specialists who will be glad to assist.



E5 - Designation / Coding

Cb	2403	B3	S	87	MI	4P	LS 100L	3 kW	VMA 22T 300	A1	BMA
Gearbox type	Size and manufacturer code	Operating position	Mounting form	Exact reduction	Input type	No. of poles	Series, frame size and manufacturer code	Rated power in kW	VARMECA rating	VARMECA, CG position	Option

Selection example:

Required power:	3 kW
Required speeds:	3.6 to 25 min ⁻¹
Duty factor necessary for the application:	kp = 1
Mounting:	foot, horizontal position
CG position:	cable gland on right

Designation: Cb 2403 B3 S 87 MI - 4P LS 100 L 3 kW - VMA 22T 300

Variable speed geared motors VARMECA + COMPABLOC 2000

E6 - Selection

Compabloc (Cb) gearbox: S foot mounted form, or BS, BDn...flange form

VARMECA variable speed motors: LS 4-pole, IP 65, class F

- 3-phase T: 400 V -10% to 480 V +10%, 50-60 Hz ±10%
- 3-phase TL: 200 V -10% to 240 V +10%, 50-60 Hz ±10%
- Single-phase M: 200 V -10% to 240 V +10%, 50-60 Hz ±10%

Variable speed brake motors: 4-pole, class F

FCR: IP 55, from 0.25 to 4 kW

Integral mounting MI

Universal mounting MU-FF

Class I
(Kp=1)

from 14 to 1125 min⁻¹

VARMECA variable speed motors, power kW

1.1	1.5	1.8	2.2	3	4	5.5	7.5
3-phase 4-pole LS motor and frame size							
90 L			100 L		112 MG	132 SM	132 M
3-phase 4-pole LS FCR J01 brake motor and frame size							
90 L FCR			100 L FCR		112 MG FCR	NA	NA
3-phase VMA T 400/480 V							
21T110	22T150	22T180	22T220	22T300	22T400	14-550	14-750
3-phase VMA TL 200/240 V							
22TL110	22TL150	22TL180	22TL220	NA	NA	NA	NA
Single phase VMA M 230 V							
22M110	22M150	NA	NA	NA	NA	NA	NA

Minimum output speed min ⁻¹	Maximum output speed min ⁻¹	Reduction index
2	14	160
2.3	16	140
2.6	18	125
2.9	20	112
3.2	22	100
3.6	25	90
4	28	80
4.5	31	71
5.1	35	63
5.7	40	56
6.4	45	50
7.1	50	45
8	56	40
9	63	35.5
10.2	71	31.5
11.4	80	28
12.8	90	25
14.3	100	22.4
16	113	20
17.8	125	18
20	141	16
22.9	161	14
25.6	180	12.5
28.6	201	11.2
32	225	10
35.6	250	9
40	281	8
45	317	7.1
51	357	6.3
57	402	5.6
64	450	5
71	500	4.5
80	563	4
90	634	3.55
102	714	3.15
114	804	2.8
128	900	2.5
143	1004	2.24
160	1125	2

See VARMECA + Cb 3032 to Cb 3333 offer p27, 29, 31, 33

See VARMECA + Cb 3131 to Cb 3331 offer p26, 28, 30, 32

• Geared motors available only with MU universal mounting.

Exact reduction	Indices																														
	Type	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	5.6
2703	159	137	124	109	99	87.5	81.1	71.9	64.2	54.9	49.7	45.2	39.5	34.6																	
2603	159	137	124	109	99	87.5	81.1	71.9	64.2	54.9	49.7	45.2	39.5	34.6																	
25 -	158	137	124	109	98.8	87.3	80.9	71.8	64.1	54.8	49.6	45.1	40.2	34.7	31.5	27.6	25.1	22.2	20.5	18.2	16.3	13.9	12.6	11.5	9.99	8.77	7.92	6.85	6.21	5.44	
2403	158	145	124	114	98.9	87	78.2	69.2	62.3	56.4	49	44.9																			

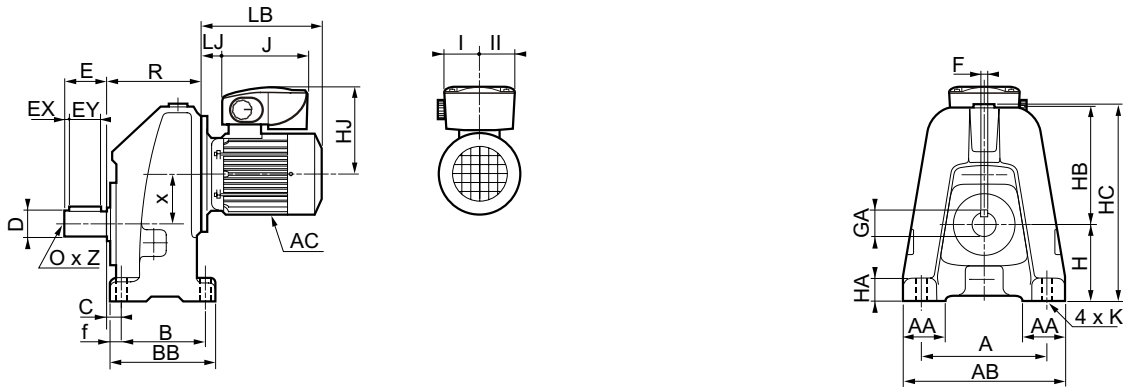
Variable speed geared motors VARMECA + COMPABLOC 2000

E7 - Dimensions

Dimensions of VARMECA + Compabloc (Cb) gearboxes, MI integral mounting, 1 stage,
Cb 2501

S foot mounted form

Dimensions in millimetres



Type	Foot mounted gearboxes														Solid output shaft							Max. weight kg	
	A	AA	AB	B	BB	C	f	H	HA	HB	HC	K	R	x	D	E	EX	EY	F	GA	O		Z
Cb 2501	260	70	320	160	215	30	27	160	45	268	428	20	165	110	45 k6	90	12	66	14	48.5	M16	36	36

Frame size	VARMECA variable speed motors							Max. weight kg
	LS 3-phase							
	AC	HJ	max. J	max. LB	min. LJ	I	II	
132	280	264	324	439	56	112	112	61

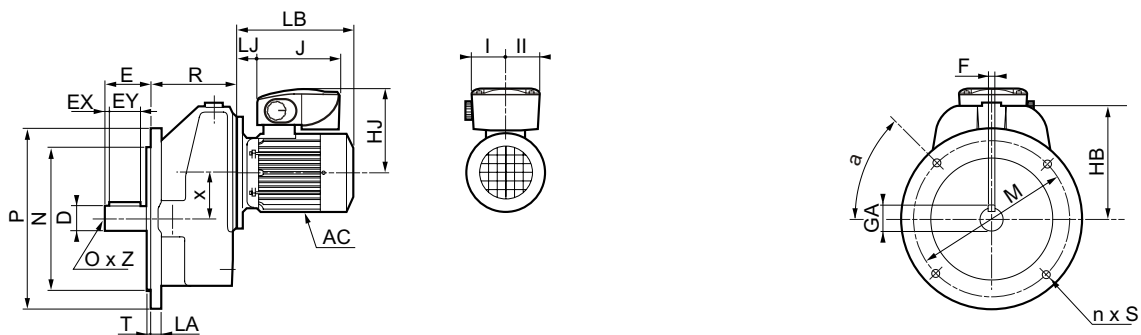
Variable speed geared motors VARMECA + COMPABLOC 2000

E7 - Dimensions

Dimensions of VARMECA + Compabloc (Cb) gearboxes, MI integral mounting, 1 stage,
Cb 2501

BS, BD2 flange form

Dimensions in millimetres



Type	Gearboxes with BS flange											Solid output shaft								Max. weight kg
	HB	LA	M	N	P	R	S	T	a	n	x	D	E	EX	EY	F	GA	O	Z	
Cb 2501	260	15	300	250	350	165	18	5	45°	4	110	45 k6	90	12	66	14	48.5	M16	36	36

Type	Other possible flange							
	BD2 flange							
	M	N	P	n	a	S	LA	T
Cb 2501	265	230	300	4	45°	14	15	4

Frame size	VARMECA variable speed motors							Max. weight kg
	LS 3-phase							
	AC	HJ	max. J	max. LB	min. LJ	I	II	
132	280	264	324	439	56	112	112	61

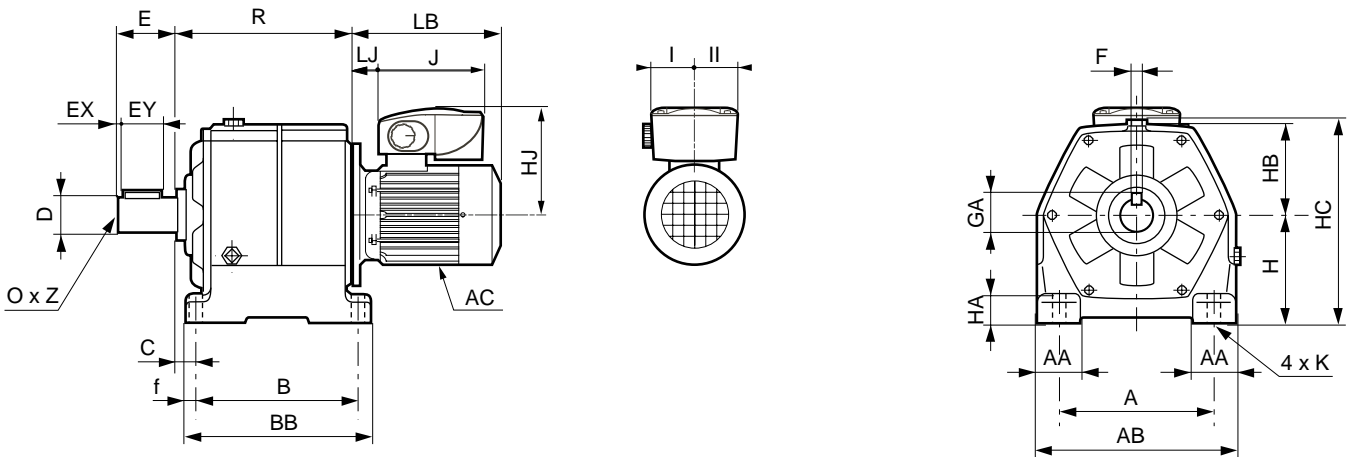
Variable speed geared motors VARMECA + COMPABLOC 2000

E7 - Dimensions

Dimensions of VARMECA + Compabloc (Cb) gearboxes, MI integral mounting, multi-stage,
Cb 2403 to Cb 2703

S foot mounted form

Dimensions in millimetres



Type	Gearboxes												Solid output shaft								Max. weight kg	
	A	AA	AB	B	BB	C	f	H	HA	HB	HC	K	R	D	E	EX	EY	F	GA	O		Z
Cb 2703	420	110	500	390	450	65	30	250	55	224	486	26	414	90 m6	170	5	160	25	95	M24	50	179
Cb 2603	355	95	435	355	405	60	25	225	50	200	437	24	379	70 m6	140	5	130	20	74.5	M20	42	131
Cb 2502-2503	280	82	360	280	330	28	25	200	45	164	372	24	290	60 m6	120	14	92	18	64	M20	42	82
Cb 2403	230	67	300	235	280	25	22	160	38	135	303	18	245	50 k6	100	14	70	14	53.5	M16	36	45

Frame size	VARMECA variable speed motors																Max. weight kg
	LS 3-phase								LS and FCR brake								
	AC	HJ	max. J	max. LB	min. LJ	I	II	Max. weight kg	AC	HJ	h	max. J	max. LB	min. LJ	I	II	
90	190	215	231	265	32	75	75	19.4	184	215	90	231	324	32	75	75	28.4
100	200	220	231	337	44	75	75	26.7	200	220	98	231	399	44	75	75	34.2
112	235	229	231	462	49	75	75	38.4	235	229	110	231	462	49	75	75	48.7
132¹	280	264	324	439	56	112	112	61	-	-	-	-	-	-	-	-	-

1. In frame size 132, dimension I includes the control button supplied as standard.

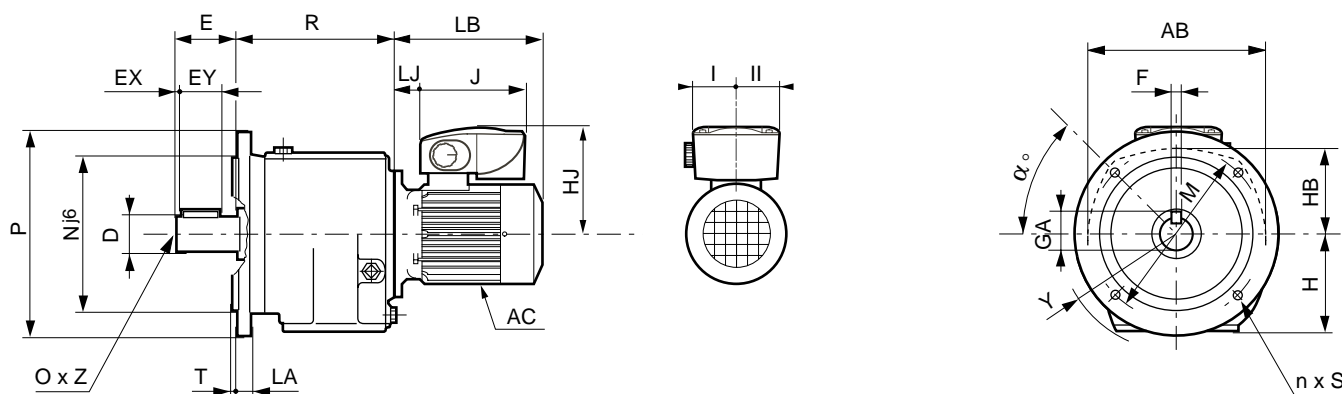
Variable speed geared motors VARMECA + COMPABLOC 2000

E7 - Dimensions

Dimensions of VARMECA + Compabloc (Cb) gearboxes, MI integral mounting, multi-stage,
Cb 2403 to Cb 2703

BS, BDn flange form

Dimensions in millimetres



Type	Gearboxes					BS flange								Solid output shaft								Max. weight kg
	AB	H	HB	R	Y	LA	M	N	P	S	T	α	n	D	E	EX	EY	F	GA	O	Z	
Cb 2703	500	250	224	414	295	20	500	450	550	18	5	22°30'	8	90 m6	170	5	160	25	95	M24	50	179
Cb 2603	435	225	200	379	255	19	500	450	550	18	5	22°30'	8	70 m6	140	5	130	20	74.5	M20	42	131
Cb 2502-2503	360	200	164	290	225	18	350	300	400	18	5	45°	4	60 m6	120	14	92	18	64	M20	42	82
Cb 2403	300	160	135	245	187	15	300	250	350	18	4	45°	4	50 k6	100	14	70	14	53.5	M16	36	46

Type	Other possible flanges										Max. weight kg	Other possible flanges										Max. weight kg						
	BD1 flange					BD2 flange						BD1 flange					BD2 flange											
Type	LA	M	N	P	R	S	T	α	n	LA	M	N	P	R	S	T	α	n	LA	M	N	P	R	S	T	α	n	
Cb 2703	20	400	350	450	469	18	5	22°30'	8	175	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cb 2603	20	400	350	450	424	18	5	22°30'	8	127	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Cb 2502-2503	18	300	250	350	321	18	5	45°	4	80	18	265	230	300	321	14	5	45°	4	18	265	230	300	321	14	5	45°	4
Cb 2403	15	265	230	300	275	14	4	45°	4	45	15	215	180	250	275	14	4	45°	4	15	215	180	250	275	14	4	45°	4

Frame size	VARMECA variable speed motors								Max. weight kg	VARMECA variable speed motors								Max. weight kg								
	LS 3-phase				LS and FCR brake					LS 3-phase				LS and FCR brake												
Frame size	AC	HJ	J	LB	LJ	I	II	Max. weight kg	AC	HJ	h	J	LB	LJ	I	II	Max. weight kg	AC	HJ	h	J	LB	LJ	I	II	Max. weight kg
90	190	215	231	265	32	75	75	19.4	184	215	90	231	324	32	75	75	28.4	184	215	90	231	324	32	75	75	28.4
100	200	220	231	337	44	75	75	26.7	200	220	98	231	399	44	75	75	34.2	200	220	98	231	399	44	75	75	34.2
112	235	229	231	462	49	75	75	38.4	235	229	110	231	462	49	75	75	48.7	235	229	110	231	462	49	75	75	48.7
132 ¹	280	264	324	439	56	112	112	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

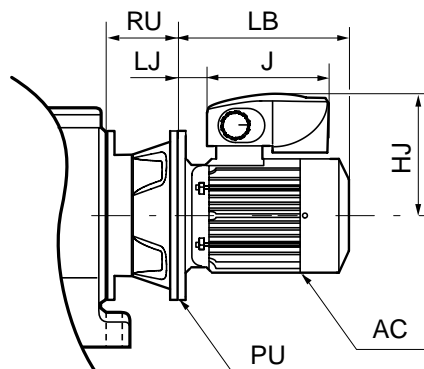
1. In frame size 132, dimension I includes the control button supplied as standard.

Variable speed geared motors VARMECA + COMPABLOC 2000

E7 - Dimensions

Dimensions of VARMECA + Compabloc (Cb) gearboxes, MU universal mounting,
Cb 2403 to Cb 2703

Dimensions in millimetres



VARMECA variable speed motors, MU universal mounting

Frame size	U-mounts																	
	LS and VARMECA							LS, VARMECA and brake							Compabloc (Cb) type			
	AC	max. HJ	J	max. LB	LJ	PU	Weight kg	AC	max. HJ	J	max. LB	LJ	PU	Weight kg	24-- RU	25-- RU	26-- RU	27-- RU
90	190	199	231	265	32	200	19.4	184	199	231	324	32	200	30	89	111	-	-
100	200	204	231	290	12	250	25	200	204	231	372	12	250	36	99	121	198	198
112	235	213	231	425	20	250	37.5	235	213	231	425	20	250	48	99	121	198	198
132	280	282	324	387	16	300	60.8	-	-	-	-	-	-	-	119	141	218	218

	Compabloc (Cb) type			
	24--	25--	26--	27--
Additional U-mount weight (kg)	16	28	65	75
Max. permissible motor weight (kg)	150	250	400	600

Gearbox dimensions are given on the previous pages.

Variable speed geared motors VARMECA + COMPABLOC 2000



Variable speed geared motors VARMECA + ORTHOBLOC 2000

F1 - General



Orthobloc 2000 speed reducers with helical bevel 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 speeds of the gearbox (n_{\min} - n_{\max}) in revolutions per minute (min^{-1}).

The main characteristic of speed reducers is the maximum rated output torque ($M_n \text{ max.}$) expressed in newton-metres (N.m):

$$M_{n \text{ max.}} = \frac{P \times 9550}{n_{\text{max.}}} \times \text{efficiency}$$

Six selected sizes: 22, 23, 24, 25, 26, 27.
Rated output torque: from 10 N.m to 3850 N.m.
Selected power ratings: from 0.25 to 7.5 kW.
Reduction ratios: 6.3 to 125.
Three reduction stages: 1, 2, 3.
High efficiency: 95%.
Reversible.
Quiet operation.

F2 - Construction

Component	Materials	Remarks
Frame	Cast iron	<ul style="list-style-type: none"> - use of GL cast iron (flake graphite: 150 MPa tensile strength) single component perlite to ensure unit is fully sealed - monobloc ribbed with internal reinforcements to absorb vibrations and noise, and increase its rigidity - foot mounted S (NSN for Ot 2203) or with flanges BS, BD..., BT (B14), BR. They are compact and meet industrial requirements
Gears	Steel Ni Cr Mo	<ul style="list-style-type: none"> - cut by the gear hob, they are heat treated and then undergo final machining. The quality and precision of the gear cutting allow maximum torque with minimum noise level
Shaft	Steel	<ul style="list-style-type: none"> - grinding of sealing surfaces - hollow or cylindrical output with key in accordance with ISO R 773, or hollow with SD shrink disc - tolerance of diameters in accordance with NFE 22-051 and ISO R775 - tapped holes at the solid shaft end for fixing connecting devices in accordance with DIN 332 version D
Lipseals	Acrylonitrile	<ul style="list-style-type: none"> - sealing rings between housing and flange - antidust lipseal in accordance with DIN 3760 form AS
End shield	Cast iron	<ul style="list-style-type: none"> - reinforced by large ribs, this ensures ruggedness of the gearbox under heavy loads
Lubrication	Oil	<ul style="list-style-type: none"> - in accordance with ISO 6743/6 - delivered with the quantity of oil corresponding to the operating position indicated on the order, it is fitted with drain, level and breather plugs
Mounting		<ul style="list-style-type: none"> MI: geared motor with integrated motor MU: geared motor with IEC motor, manufactured with universal mounting
VARMECA variable speed motor		<ul style="list-style-type: none"> VARMECA: single-phase power supply 200/240 V, 3-phase 200 V to 480 V LS motor: 3-phase 230/400 V - pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down) - VARMECA casing in aluminium with cable gland supplied - VARMECA protection IP 65 - motor protection IP 55, class F
VARMECA variable speed motor and brake		<ul style="list-style-type: none"> FCR: failsafe brake, from 0.25 to 4 kW, IP 55 protection (LS 71 to 112)
Finish	Paint	<ul style="list-style-type: none"> Shade: RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 μm)

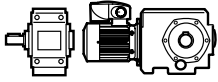
Variable speed geared motors VARMECA + ORTHOBLOC 2000

F3 - Mounting arrangements

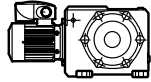
Standard position: gearbox view from side F (S3), motor behind, side D (S1) on the floor.

1 - Definition of mounting form: S foot mounted

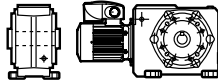
flange: BS (BP), BT (B14), BD or BR



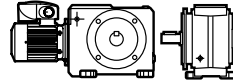
Ot 22: NU (N00)
Left and right sides
with tapped holes



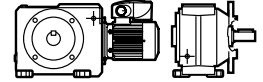
Ot 22: N SD (NS1)
Ot 23-- to 27--: S D (S1)
feet on side D (S1)



Ot 22 to 27--: BT L (B14 44)
end shield with flange
with tapped holes, on left

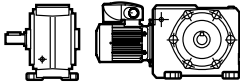


Ot 22: BS L (BS50)
Ot 23-- to 27--: BS L (BP53)
or BD L (BD53)
end shield with flange
with clearance holes, on left

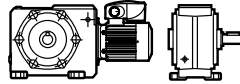


Ot 23-- to 27--: BR R (BR35)
end shield with flange
reinforced with clearance
holes, on right

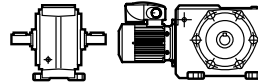
2 - Definition of output shaft



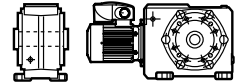
L (G)
cylindrical solid shaft on left



R (D)
cylindrical solid shaft on right



LR (X)
two cylindrical solid shafts
(left and right)



H (C)
cylindrical hollow shaft

3 - Options: SD (F) shrink disc

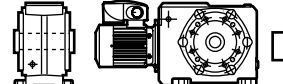


SD R (FD)
hollow + disc on right



SD L (FG)
hollow + disc on left

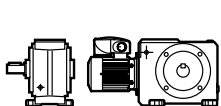
R (R) torque arm



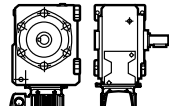
R K (00 R0)
torque arm not fitted, supplied in a kit

4 - Definition of operating position:

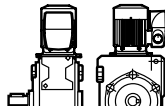
4.1 - SD (S1) or NSD (NS1), SF (S3) or NSF (NS3) foot mounted, S BT (43), S BS (53), S BD (53) foot and flange mounted or R (R) torque



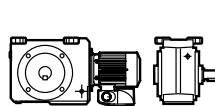
B3 (B--)



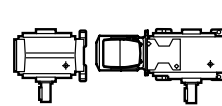
B6 (W--)



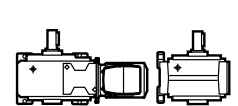
B7 (V--)



B8 (P--)

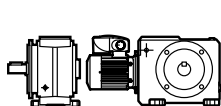


V5 (H--)

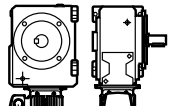


V6 (T--)

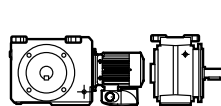
4.2 - With BS (BP), BT (B14), BD or BR flange



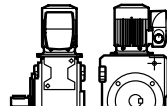
B5 (B--)



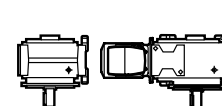
B52 (W--)



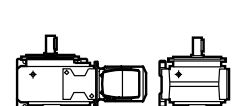
B53 (P--)



B54 (V--)



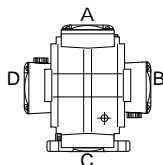
V1 (H--)



V3 (T--)

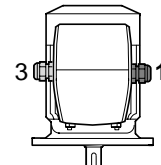
WARNING!
In this position,
Ot 2603 and 2703 are fitted
with a lubricating pump
(no pump for output
speed < 10 min⁻¹)

5 - VARMECA positions



A: Standard

6 - Cable gland positions



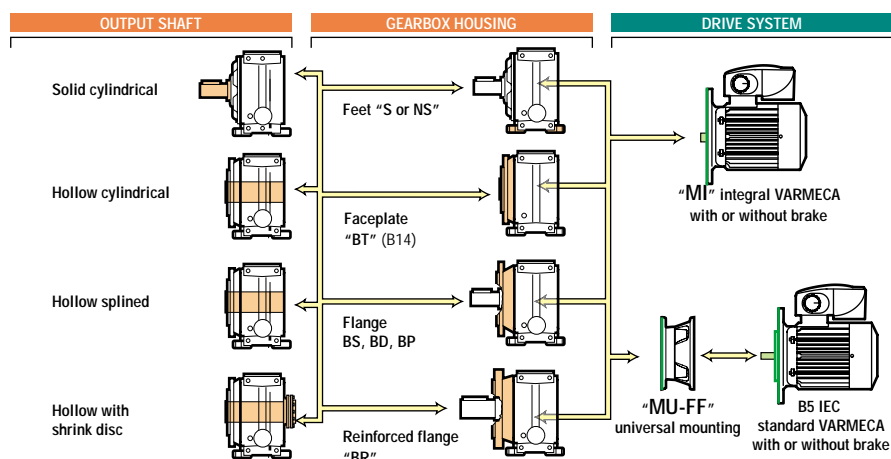
1: Standard

Variable speed geared motors VARMECA + ORTHOBLOC 2000

F4 - Adaptation possibilities

Leroy-Somer offers several adaptations for its gearboxes which respond to very wide-ranging needs. They are described below and offered in the Leroy-Somer configurator.

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



F5 - Designation / Coding

Ot	2303	B3 (B)	SD (33)	H (G)	79.4	MI	4P	LS 90L	1.5 kW	VMA 22T 150	A1	BMA
Gearbox type	Size and manufacturer code	Operating position	Mounting form and position	Definition of output shaft	Exact reduction	Type of input "Integral mounting"	No. of poles	Series, frame size and manufacturer code	Rated power in kW	VARMECA rating	VARMECA, CG position	Option

Selection example:

Required power:	1.5 kW
Required speeds:	4 to 28 min ⁻¹
Duty factor necessary for the application:	kp = 1
Mounting:	foot, horizontal position, shaft on left
CG position:	cable gland on right

Designation: Ot 2303 B3 SD H 79.4 MI - 4P LS 90 L 1.5 kW - VMA 22T 150

Variable speed geared motors VARMECA + ORTHOBLOC 2000

F6 - Selection

Orthobloc (Ot) gearbox: foot mounted or BT (B14) faceplate form

VARMECA variable speed motors: LS 4-pole, IP 65, class F

- 3-phase T: 400 V -10% to 480 V +10%, 50-60 Hz ±10%
- 3-phase TL: 200 V -10% to 240 V +10%, 50-60 Hz ±10%
- Single-phase M: 200 V -10% to 240 V +10%, 50-60 Hz ±10%

Variable speed brake motors: 4-pole, class F

FCR: IP 55, from 0.25 to 4 kW

Integral mounting MI

Universal mounting MU-FF

Class I
(Kp=1)

18 to 357 min⁻¹

VARMECA variable speed motors, power kW

0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
------	------	------	------	-----	-----	-----	-----	-----	---	---	-----	-----

3-phase 4-pole LS motor and frame size

71 L	80 L	90 L	100 L	112 MG	132 SM	132 M
------	------	------	-------	--------	--------	-------

3-phase 4-pole LS FCR J01 brake motor and frame size

71 L FCR	80 L FCR	90 L FCR	100 L FCR	112MG FCR	NA	NA
----------	----------	----------	-----------	-----------	----	----

3-phase VMA T 400/480 V

21T025	21T037	21T055	21T075	21T090	21T110	22T150	22T180	22T220	22T300	22T400	14-550	14-750
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

3-phase VMA TL 200/240 V

21TL025	21TL037	21TL055	21TL075	22TL090	22TL110	22TL150	22TL180	22TL220	NA	NA	NA	NA
---------	---------	---------	---------	---------	---------	---------	---------	---------	----	----	----	----

Single phase VMA M 230 V

21M025	21M037	21M055	21M075	22M090	22M110	22M150	NA	NA	NA	NA	NA	NA
--------	--------	--------	--------	--------	--------	--------	----	----	----	----	----	----

Minimum output speed min ⁻¹	Maximum output speed min ⁻¹	Reduction index	0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
2.6	18	125													2703
2.9	20	112													2603
3.2	23	100													
3.6	25	90													
4	28	80													
4.5	32	71												2503	
5.1	36	63													
5.7	40	56													
6.4	45	50													
7.1	50	45													
8	56	40													
9	63	35.5												2403	
10.2	71	31.5													
11.4	80	28													
12.8	90	25						2203							
14.3	100	22.4													
16	113	20													
20	141	16	•	•	•										
25.6	180	12.5	•	•	•										
28.6	201	11.2													
32	225	10													
40	281	8													
50.8	357	6.3													

• Geared motors available only with MU universal mounting.

Type	Exact reduction															Indices									
	125	112	100	90	80	71	63	56	50	45	40	35.5	31.5	28	25	22.4	20	16	12.5	11.2	10	9	8	6.3	5
2203	128	111	98.4	87.6	79.6	72.8	61.7	57.2	49.5	44.1	38.9	35.9	32	28.6	25.6	22.3	19.7	16.1	12.5	11.1	9.83		8.02	6.22	
2303				85.4	79.4	69.4	61.3	54.6	49	44.2	39.5	34.8	31.9	27.6	24.5	22.2	20.1	16.5	12.3	11.4	10.1	9.14	8.27	6.8	5.07
2403	124	113	102	89	80.9	71.6	63.2	56.3	50.5	45	40.8	35.5	32.5	28.4	25.7	23.3	20.2	16.8	12.7	11.4	10.3	9.4	8.1	6.7	5.1
2503	127	116	99.2	91	79.1	69.6	62.5	55.3	49.8	45.1	39.2	35.9	31.5	28.1	26	22.3	20.4	16.3	12.5	11	10.1		8.1	6.2	
2603		110	99.5	87.1	79.1	69.9	64.8	57.7	51.4	43.9	39.8	36.2	31.6	27.7	25.5	22.5	19.9	15.7	12.4	11.3	9.99		7.87	6.2	
2703	127	110	99.5	87.1	79.1	69.9	64.8	57.5	51.4	43.9	39.8	36.2	31.6	27.7	25.5	22.5	19.9	15.7	12.4						
2803			102	87.4	81	70.2	64.8	57.9	50.8	43.7	39.4	35.7	32.5	28.3	25.5	22.8	20.1	15.7	12.7						

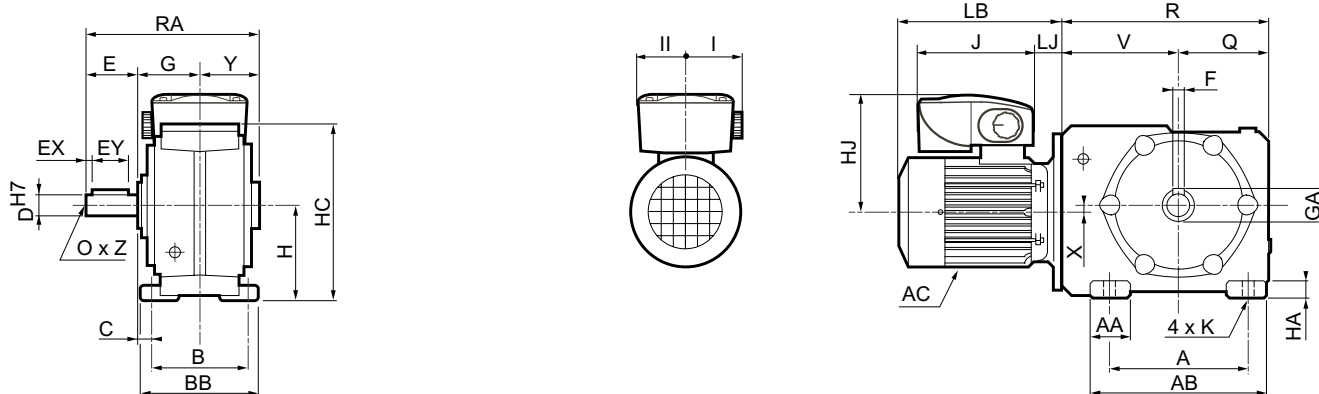
Variable speed geared motors VARMECA + ORTHOBLOC 2000

F7 - Dimensions

Dimensions of VARMECA + Orthobloc (Ot) gearboxes, MI integral mounting,
Ot 2203 to Ot 2703

SD (S1 33) or NSD (NS1) foot mounted form, shaft output on left L¹ (G)

Dimensions in millimetres



Gearboxes																		Max. weight kg
Type	A ²	AA	AB	B	BB	C	G	H	HA	HC	K	Q	R	RA	V	x	y	
Ot 2703	420	100	490	270	320	35	170	250	45	480	24	255	565	515	310	30	175	210
Ot 2603	355	90	425	240	290	35	155	225	40	430	22	222	512	447	290	11	153	140
Ot 2503	280	70	350	230	280	33	148	200	40	375	24	185	417	415	232	21	147	73
Ot 2403	230	50	280	195	235	28.5	126	160	30	304	18	150	336	331	186	16	105	47
Ot 2303	170	43	216	155	190	27.5	105	125	20	242	14	120	294	278	174	13.5	92.5	26
Ot 2203	130 ¹	30	160	120	144	14	75	112	15	189	11	67	216	206	149	23	71	19

1. R (D): shaft extension identical to L (G). LR (X): both shaft extensions identical.

2. Ot 2203 with A = 130 ie. 95 + 35 respectively on left and right of the output shaft extension.

Solid output shaft								
Type	D	E	EX	EY	F	GA	O	Z
Ot 2703	90 m6	170	5	160	25	95	M24	50
Ot 2603	70 m6	140	5	130	20	74.5	M20	42
Ot 2503	60 m6	120	14	92	18	64	M20	42
Ot 2403	50 k6	100	14	70	14	53.5	M16	36
Ot 2303	40 k6	80	9	60	12	43	M16	36
Ot 2203	30 j6	60	11	40	8	33	M10	22

VARMECA variable speed motors																	
Frame size	LS 3-phase								LS and FCR brake								
	AC	HJ	max. J	max. LB	min. LJ	I	II	Max. weight kg	AC	HJ	h	max. J	max. LB	min. LJ	I	II	Max. weight kg
71	140	179	218	219	29	75	75	12.5	140	179	70	218	271	29	75	75	15.2
80	170	189	231	247	39	75	75	15.1	172	189	80	231	297	39	75	75	22.2
90	190	199	231	270	32	75	75	19.4	184	199	90	231	329	32	75	75	28.4
100	200	204	231	331	44	75	75	26.7	200	204	98	231	393	44	75	75	34.2
112	235	213	231	462	54	75	75	38.4	235	213	110	231	462	54	75	75	48.7
132 ¹	280	282	324	439	56	112	112	61	-	-	-	-	-	-	-	-	-

1. In frame size 132, dimension I includes the control button supplied as standard.

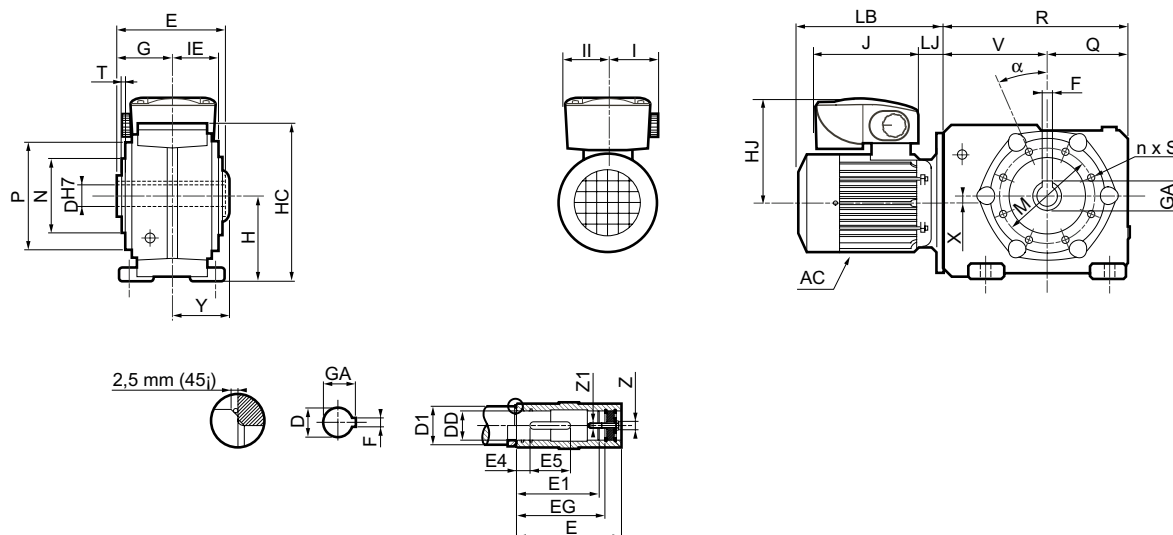
Variable speed geared motors VARMECA + ORTHOBLOC 2000

F7 - Dimensions

Dimensions of VARMECA + Orthobloc (Ot) gearboxes, MI integral mounting,
Ot 2203 to Ot 2703

BT (B14 -44 or B14 -40) faceplate form, H (C) cylindrical hollow shaft

Dimensions in millimetres



Type	Gearboxes with flange								BT (B14 -44C) faceplate								Max. weight kg
	G	H	HC	Q	R	V	x	Y	IE	M	N	P	n	α	S	T	
Ot 2703	170	250	480	255	565	310	30	196	163	350	300 j6	400	8 ¹	22°30'	M16x22.5	5	249
Ot 2603	155	225	430	222	512	290	11	177	148	300	250 j6	350	8 ¹	22°30'	M16x22.5	5	166
Ot 2503	148	200	375	185	417	232	21	156	142	265	230 j6	300	8	22°30'	M12x23	4	94
Ot 2403	126	160	304	150	336	186	16	136	120	215	180 j6	250	4	45°	M12x25	4	57
Ot 2303	105	125	242	120	294	174	13.5	116	100	165	130 j6	200	4	45°	M10x18	3.5	35
Ot 2203	74	111	188	67	216	149	23	78	71	95	-	-	6	60°	M6x12	-	18.5

1. $\alpha = 7^\circ 30'$ in position V.

Type	Hollow output shaft						Driven shaft					
	D	E	EG	F	GA	Z	D1 min.	DD	E1	E4	E5	Z1
Ot 2703	80	340	300	22	85.4	M30	95	80 j6	290	35	160	M20
Ot 2603	70	310	270	20	74.9	M30	85	70 j6	260	35	130	M20
Ot 2503	60	296	257	18	64.4	M24	72	60 j6	250	32	130	M20
Ot 2403	50	252	219	14	53.8	M20	62	50 j6	210	28	100	M16
Ot 2303	38	210	183	10	41.3	M16	50	38 j6	180	25	70	M12
Ot 2203	35	148	121.5	10	38.3	M14	50	35 j6	116	-	148	M10

Frame size	VARMECA variable speed motors																
	LS 3-phase								LS and FCR brake								
	AC	HJ	max. J	max. LB	min. LJ	I	II	Max. weight kg	AC	HJ	h	max. J	max. LB	min. LJ	I	II	Max. weight kg
71	140	179	218	219	29	75	75	12.5	140	179	70	218	271	29	75	75	15.2
80	170	189	231	247	39	75	75	15.1	172	189	80	231	297	39	75	75	22.2
90	190	199	231	270	32	75	75	19.4	184	199	90	231	329	32	75	75	28.4
100	200	204	231	331	44	75	75	26.7	200	204	98	231	393	44	75	75	34.2
112	235	213	231	462	54	75	75	38.4	235	213	110	231	462	54	75	75	48.7
132 ¹	280	282	324	439	56	112	112	61	-	-	-	-	-	-	-	-	-

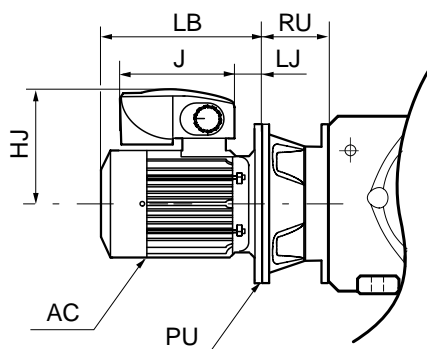
1. In frame size 132, dimension I includes the control button supplied as standard.

Variable speed geared motors VARMECA + ORTHOBLOC 2000

F7 - Dimensions

Dimensions of VARMECA + Orthobloc (Ot) gearboxes, MU universal mounting,
Ot 2203 to Ot 2703

Dimensions in millimetres



VARMECA variable speed motors, MU universal mounting

Frame size	U-mounts												Orthobloc (Ot) type							
	LS and VARMECA						LS, VARMECA and brake						Orthobloc (Ot) type							
	AC	HJ	J	LB	LJ	PU	Weight kg	AC	HJ	J	LB	LJ	PU	Weight kg	2203 RU	2303 RU	2403 RU	2503 RU	2603 RU	2703 RU
71	140	175	218	183	8	160	12.5	140	175	218	271	8	160	15	116.5	116.5	79	79	-	-
80	170	189	231	215	12	200	15.1	172	189	231	292	12	200	22	126.5	126.5	89	89	111	-
90	190	199	231	265	32	200	19.4	184	199	231	324	32	200	30	126.5	126.5	89	89	111	-
100	200	204	231	290	12	250	26.7	200	204	231	372	12	250	36	136.5	136.5	99	99	121	198
112	235	213	231	425	20	250	29	235	213	231	425	20	250	48	136.5	136.5	99	99	121	198
132	280	282	324	387	16	300	61	-	-	-	-	-	-	-	-	-	119	119	141	218

	Orthobloc (Ot) type					
	2203	2303	2403	2503	2603	2703
Additional U-mount weight (kg)	6	6	8	16	28	75
Max. permissible motor weight (kg)	70	70	120	150	250	350

Gearbox dimensions are given on the previous pages.

Variable speed geared motors VARMECA + ORTHOBLOC 2000

F

Variable speed geared motors VARMECA + MANUBLOC 2000

G1 - General



Manubloc 2000 speed reducers 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 speeds of the gearbox (n_{\min} - n_{\max}) in revolutions per minute (min^{-1}).

The main characteristic of speed reducers is the maximum rated output torque ($M_n \text{ max.}$) expressed in newton-metres (N.m):

$$M_{n \text{ max.}} = \frac{P \times 9550}{n_{\text{max.}}} \times \text{efficiency}$$

Six selected sizes: 21, 22, 23, 24, 25, 26.
Rated output torque: from 10 N.m to 4770 N.m.
Selected power ratings: from 0.25 to 7.5 kW.
Reduction ratios: 4.5 to 225.
From two to three reduction stages.
High efficiency: 95% to 97%.
Reversible.
Quiet operation.

G2 - Construction

Component	Materials	Remarks
Frame	Cast iron	<ul style="list-style-type: none"> - use of GL cast iron (flake graphite: 150 MPa tensile strength) single component perlite to ensure unit is fully sealed - monobloc ribbed with internal reinforcements to absorb vibrations and noise, and increase its rigidity - foot mounted NU (N) or with flanges BT (B14) or BS (B5). They are compact and meet industrial requirements
Gears	Steel Ni Cr Mo	<ul style="list-style-type: none"> - cut by the gear hob, they are heat treated and then undergo final machining. The quality and precision of the gear cutting allow maximum torque with minimum noise level
Shaft	Steel	<ul style="list-style-type: none"> - grinding of sealing surfaces - hollow or cylindrical output with key in accordance with ISO R 773, or hollow with taper bush - tolerance of diameters in accordance with NFE 22-051 and ISO R775 - tapped holes at the shaft end for fixing connecting devices in accordance with DIN 332 version D
Lipseals	Acrylonitrile	<ul style="list-style-type: none"> - antidust lipseal in accordance with DIN 3760 form AS
End shield	Cast iron	<ul style="list-style-type: none"> - reinforced by large ribs, this ensures ruggedness of the gearbox under heavy loads
Lubrication	Oil	<ul style="list-style-type: none"> - in accordance with ISO 6743/6 - delivered with the quantity of oil corresponding to the operating position indicated on the order, it is fitted with drain, level and breather plugs
Mounting		<ul style="list-style-type: none"> MI: geared motor with integrated motor MU: geared motor with IEC motor, manufactured with universal mounting
VARMECA variable speed motor		<ul style="list-style-type: none"> VARMECA: single-phase power supply 200/240 V, 3-phase 200 V to 480 V LS motor: 3-phase 230/400 V - pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down = V1) - VARMECA casing in aluminium with cable gland supplied - VARMECA protection IP 65 - motor protection IP 55, class F
VARMECA variable speed motor and brake		<ul style="list-style-type: none"> FCR: failsafe brake, from 0.25 to 4 kW, IP 55 protection (LS 71 to 112)
Finish	Paint	<ul style="list-style-type: none"> Shade: RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 μm)



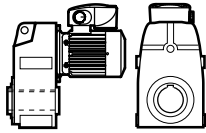
Variable speed geared motors VARMECA + MANUBLOC 2000

G3 - Mounting arrangements

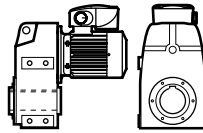
Standard position: gearbox view from side F (S3), motor behind, side D (S1) on the floor.

1 - Definition of mounting form: NU (N)

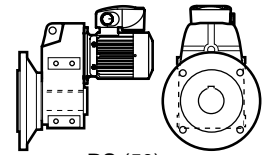
flange: BT (B14) or BS (B5)



NU (N00)
housing without holes (shaft mounting)

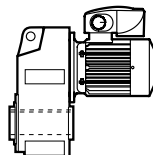


BT (40)
face mounted housing

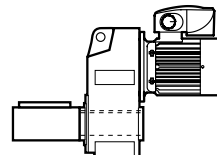


BS (50)
flange mounted
(on housing with tapped holes)

2 - Definition of output shaft: H (C) or S (P)

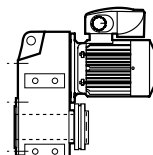


H (C)
cylindrical hollow output shaft



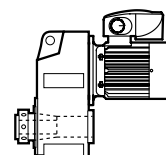
S (P)
cylindrical solid output shaft

3 - Options: SD (F) shrink disc



SD (F)
hollow output shaft with shrink disc

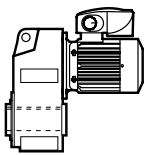
TB (B) taper bush



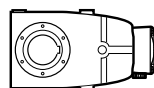
TB (B)
hollow output shaft with taper bush

4 - Definition of operating position

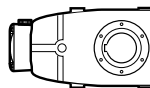
4.1 - Mounting on NU (N) housing



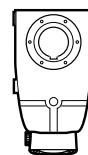
B3 (P3)



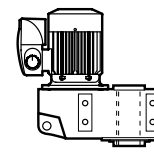
B6 (P6)



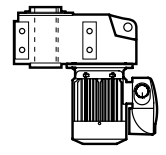
B7 (P7)



B8 (P8)

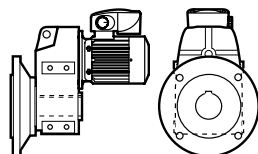


V5 (PV5)

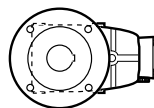


V6 (PV6)

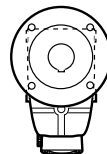
4.2 - With BT (B14), or BS (B5) flange



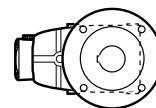
B5 (P3)



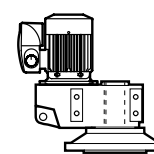
B52 (P6)



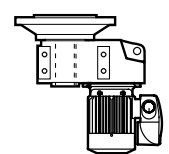
B53 (P8)



B54 (P7)

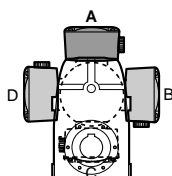


V1 (PV5)



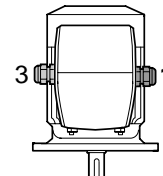
V3 (PV6)

5 - VARMECA positions



A: Standard

6 - Cable gland positions

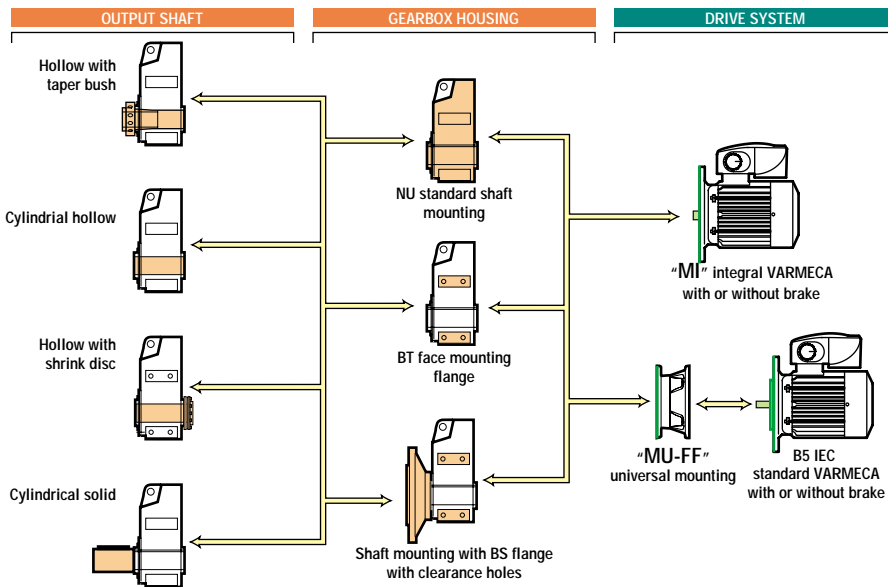


1: Standard

Variable speed geared motors VARMECA + MANUBLOC 2000

G4 - Adaptation possibilities

Leroy-Somer offers several adaptations for its gearboxes which respond to very wide-ranging needs. They are described below and offered in the Leroy-Somer configurator.
For other drives, consult the Leroy-Somer technical specialists who will be glad to assist.



G5 - Designation / Coding

Mub	2203	B5 (P3)	BT (40)	H (C)	67.3	MI	4P	LS 80L	0.75 kW	VMA 21T 075	A1	BMA
Gearbox type	Size and manufacturer code	Operating position	Mounting form and position	Definition of the output shaft	Exact reduction	Type of input	No. of poles	Series, frame size and manufacturer code	Rated power in kW	VARMECA rating	VARMECA, CG position	Option

Selection example:

Required power:	0.75 kW
Required speeds:	5.1 to 35 min ⁻¹
Duty factor necessary for the application:	kp = 1
Mounting:	foot, horizontal position, shaft on left
CG position:	cable gland on right
Designation: Mub 2203 B5 BT H (40C) 67.3 MI - 4P LS 80 L 0.75 kW - VMA 21T 075	

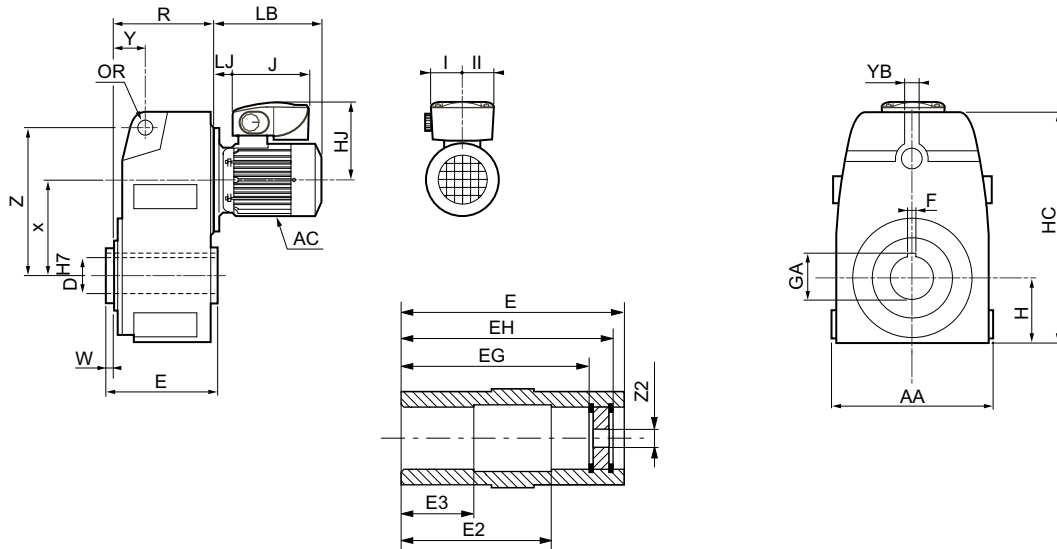
Variable speed geared motors VARMECA + MANUBLOC 2000

G7 - Dimensions

Dimensions of VARMECA + Manubloc (Mub) gearboxes, MI integral mounting,
Mub 2102 to Mub 2603

NU (00) housing form, H (C) cylindrical hollow output shaft

Dimensions in millimetres



Details of the hollow output shaft

Type	Gearboxes										Hollow output shaft								Max. weight kg	
	AA	H	HC	OR	R	W	x	Y	Z	YB	D	E	E2	E3	EG	EH	F	GA		Z2
Mub 2603	415	190	675	33	307	8	285	75	410	40	70	365	225	140	325	348	20	74.9	M30	225
Mub 2503	350	150	565	24	236	5	256	62	346	30	60	288	208	80	243	267	18	64.4	M24	119
Mub 2402-2403	272	138	450	22	203	4	208	50	278	25	50	253.5	183	70	220.5	240.5	14	53.8	M20	59
Mub 2302-2303	264	126	400	14	159.5	4	178	39	250	20	40	193.5	130	60	155	168.5	12	43.3	M20	40
Mub 2202-2203	208	93	305	14	138	3.5	135	32	170	25	30	174	134	40	149.5	160.5	8	33.3	M14	22
Mub 2102	184	95	295	14	110	3.5	125	32	170	15	30	113	83	30	91	102	8	33.3	M14	17

VARMECA variable speed motors

Frame size	LS 3-phase								LS and FCR brake								Max. weight kg
	AC	HJ	max. J	max. LB	min. LJ	I	II	Max. weight kg	AC	HJ	h	max. J	max. LB	min. LJ	I	II	
71	140	179	218	219	29	75	75	12.5	140	179	70	218	261	29	75	75	15.2
80	170	189	231	247	39	75	75	15.1	172	189	80	231	297	39	75	75	22.2
90	190	199	231	270	32	75	75	19.4	184	199	90	231	330	32	75	75	28.4
100	200	204	231	337	44	75	75	26.7	200	204	98	231	399	44	75	75	34.2
112	235	213	231	462	49	75	75	38.4	235	213	110	231	462	49	75	75	48.7
132 ¹	280	282	324	439	56	112	112	61	-	-	-	-	-	-	-	-	-

1. In frame size 132, dimension I includes the control button supplied as standard.

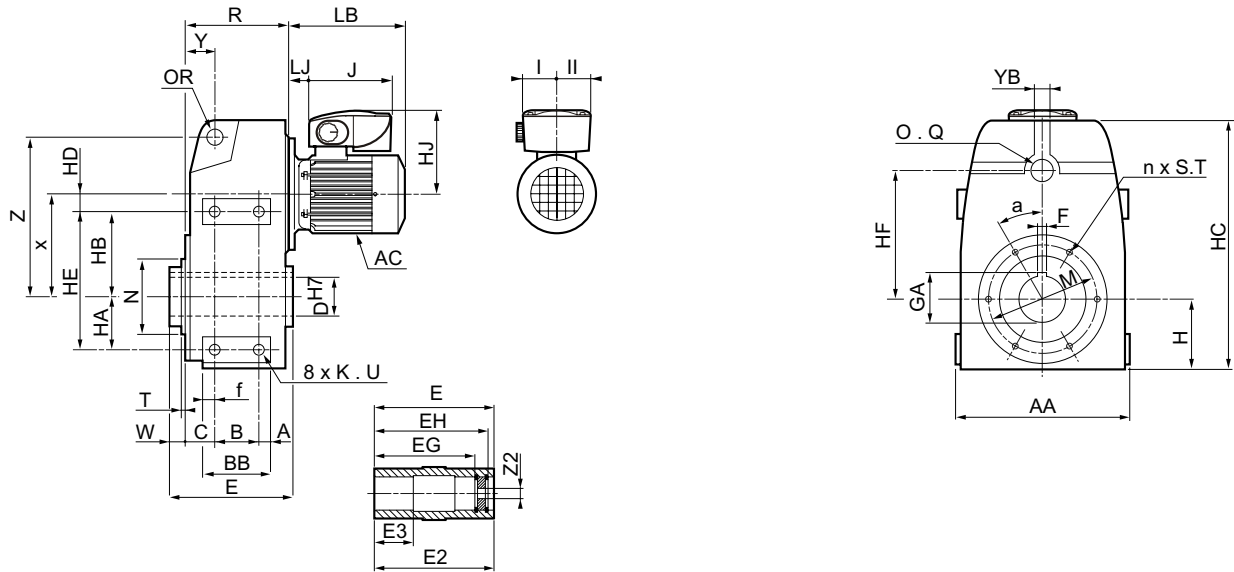
Variable speed geared motors VARMECA + MANUBLOC 2000

G7 - Dimensions

Dimensions of VARMECA + Manubloc (Mub) gearboxes, MI integral mounting,
Mub 2102 to Mub 2603

BT (40) face mounted housing form, H (C) cylindrical hollow output shaft

Dimensions in millimetres



Type	Gearboxes with faceplate													Hollow output shaft										Max. weight kg	
	A	AA	B	BB	C	f	H	HC	OR	R	x	Y	YB	Z	D	E	E2	E3	EG	EH	F	GA	W		Z2
Mub 2603	34	400	165	215	45	16	190	675	33	292	285	60	40	410	70	365	225	140	325	348	20	74.9	15	M30	220
Mub 2503	22	340	165	205	30	18	150	565	24	226	256	52	30	346	60	288	208	80	243	267	18	64.4	10	M24	119
Mub 2402-2403	35	265	100	155	35	20	138	450	22	195	208	42	25	278	50	253.5	183	70	220.5	240.5	14	53.8	8	M20	59
Mub 2302-2303	10	256	110	130	20	10	126	400	14	150	178	31.5	20	250	40	193.5	130	60	155	168.5	12	43.3	7.5	M20	40
Mub 2202-2203	40	192	70	120	17	10	93	305	14	131	135	26.5	25	170	30	174	134	40	149.5	160.5	8	33.3	7	M14	22
Mub 2102	-	184	*	*	*	*	90	290	14	102.5	125	25	15	170	30	113	83	30	91	102	8	33.3	7.5	M14	17

* Non-machined sides.

Type	Housing and BT (B14) flange drill holes												
	HA	HB	HD	HE	HF	K.U	M	N	ON.Q	T	a	n x S.T	
Mub 2603	70	245	40	315	320	M16.25	300	250	M30.45	5	22°5	8 ¹ x M16.25	
Mub 2503	100	200	56	300	265	M16.24	215	180	M24.45	5	30°	6 ² x M12.20	
Mub 2402-2403	85	155	53	240	215	M16.24	180	160	M24.45	4	30°	6 x M12.20	
Mub 2302-2303	62	138	40	200	193	M12.18	165	130	M24.30	3.5	30°	6 x M10.18	
Mub 2202-2203	56	94	41	150	135	M8.14	130	110	M16.34	3.5	45°	4 x M8.16	
Mub 2102	-	-	-	-	-	-	115	95	-	3.5	45°	4 x M8.12	

1. 7 equidistant holes at 45° + 1 hole top right at 35°.
2. 5 equidistant holes at 60° + 1 hole top right at 45°.

Frame size	VARMECA variable speed motors													Max. weight kg			
	LS 3-phase							LS and FCR brake									
	AC	HJ	max. J	max. LB	min. LJ	I	II	AC	HJ	h	J	max. LB	min. LJ		I	II	
71	140	179	218	219	29	75	75	12.5	140	179	70	218	261	29	75	75	15.2
80	170	189	231	247	39	75	75	15.1	172	189	80	231	297	39	75	75	22.2
90	190	199	231	270	32	75	75	19.4	184	199	90	231	330	32	75	75	28.4
100	200	204	231	337	44	75	75	26.7	200	204	98	231	399	44	75	75	34.2
112	235	213	231	462	49	75	75	38.4	235	213	110	231	462	49	75	75	48.7
132 ¹	280	282	324	439	56	112	112	61	-	-	-	-	-	-	-	-	-

1. In frame size 132, dimension I includes the control button supplied as standard.

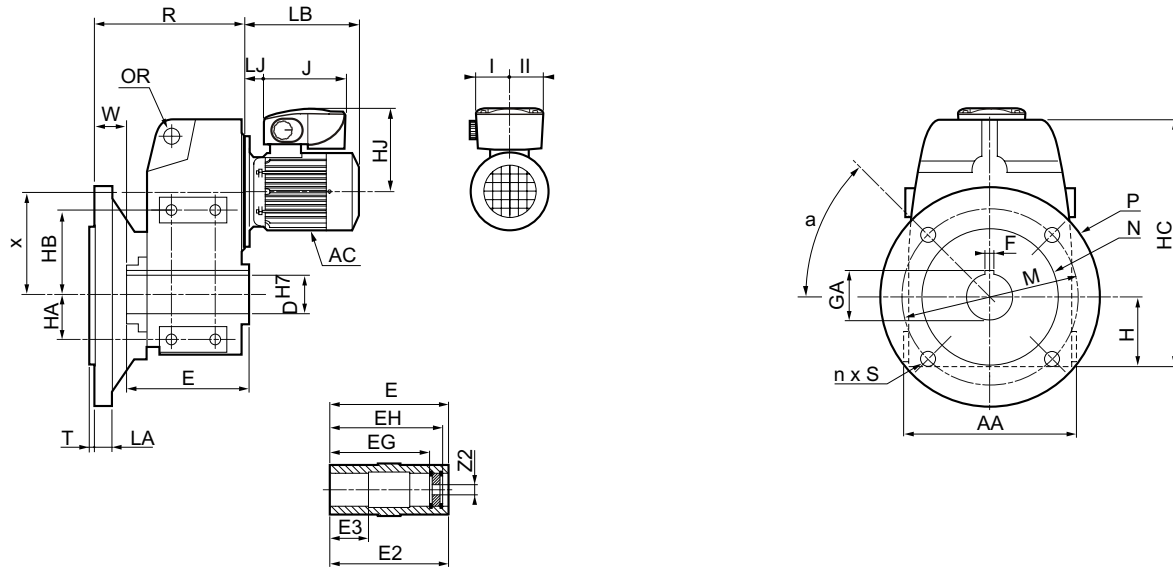
Variable speed geared motors VARMECA + MANUBLOC 2000

G7 - Dimensions

Dimensions of VARMECA + Manubloc (Mub) gearboxes, MI integral mounting,
Mub 2202 to Mub 2603

BS, BD1 (50) flange mounting housing form, H (C) cylindrical hollow output shaft

Dimensions in millimetres



Type	Gearboxes with flange											Hollow output shaft										Max. weight kg	
	AA	H	HC	LA	M	N	P	R	T	a	n x S	x	D	E	E2	E3	EG	EH	F	GA	W		Z2
Mub 2603	400	190	675	20	400	350	450	352	5	22°30'	8 x 18	285	70	365	225	140	325	348	20	74.9	45	M30	240
Mub 2503	340	150	565	20	300	250	350	313	5	45°	4 x 18	256	60	288	208	80	243	267	18	64.4	77	M24	134
Mub 2402-2403	265	138	450	15	265	230	300	240	3	45°	4 x 14	208	50	253.5	183	70	220.5	240.5	14	53.8	37	M20	69
Mub 2302-2303	256	126	400	15	265	230	300	195	3	45°	4 x 14	178	40	193.5	130	60	155	168.5	12	43.3	37.5	M20	48
Mub 2202-2203	192	93	305	15	215	180	250	166.5	3	45°	4 x 14	135	30	174	134	40	149.5	160.5	8	33.3	28	M14	27

Type	Other possible flange											
	BD1 flange											
Type	AA	H	HC	LA	M	N	P	R	T	a	n x S	x
Mub 2402-2403	265	138	450	15	215	180	250	261	3	45°	4 x 14	208
Mub 2302-2303	256	126	400	15	215	180	250	216	3	45°	4 x 14	178
Mub 2102	192	93	305	15	165	130	200	189	3	45°	4 x 14	135

Frame size	VARMECA variable speed motors								Max. weight kg	LS and FCR brake							Max. weight kg
	LS 3-phase				LS and FCR brake					AC	HJ	h	J	LB	LJ	I	
	AC	HJ	max. J	max. LB	min. LJ	I	II		max. J	max. LB	min. LJ	I	II				
71	140	179	218	219	29	75	75	12.5	140	179	70	218	261	29	75	75	15.2
80	170	189	231	247	39	75	75	15.1	172	189	80	231	297	39	75	75	22.2
90	190	199	231	270	32	75	75	19.4	184	199	90	231	330	32	75	75	28.4
100	200	204	231	337	44	75	75	26.7	200	204	98	231	399	44	75	75	34.2
112	235	213	231	462	49	75	75	38.4	235	213	110	231	462	49	75	75	48.7
132 ¹	280	282	324	439	56	112	112	61	-	-	-	-	-	-	-	-	-

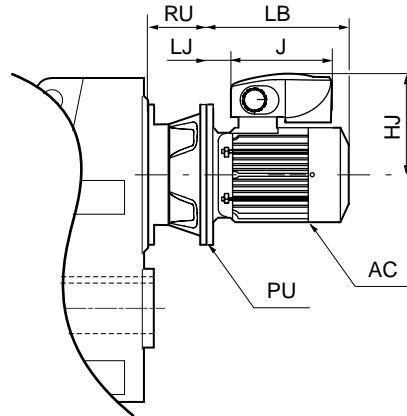
1. In frame size 132, dimension I includes the control button supplied as standard.

Variable speed geared motors VARMECA + MANUBLOC 2000

G7 - Dimensions

Dimensions of VARMECA + Manubloc (Mub) gearboxes, MU universal mounting,
Mub 2102 to Mub 2603

Dimensions in millimetres



VARMECA variable speed motors, MU-FF universal mounting

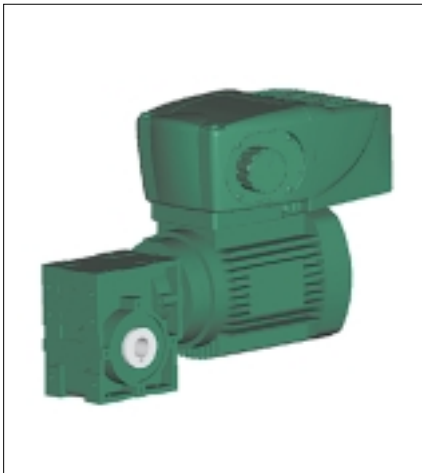
Frame size	U-mounts												Manubloc (Mub) type							
	LS and VARMECA						LS, VARMECA and brake													
	max.		max.		Weight		max.		max.		Weight		2102	22--	23--	24--	25--	26--		
	AC	HJ	J	LB	LJ	PU	kg	AC	HJ	J	LB	LJ	PU	kg	RU	RU	RU	RU	RU	RU
71	140	179	218	183	8	160	12.5	140	179	218	271	8	160	15	116.5	116.5	79	79	-	-
80	170	189	231	215	12	200	15.1	172	189	231	292	12	200	22	126.5	126.5	89	89	111	-
90	190	199	231	265	32	200	19.4	184	199	231	324	32	200	30	126.5	126.5	89	89	111	-
100	200	204	231	290	12	250	26.7	200	204	231	372	12	250	36	136.5	136.5	99	99	121	198
112	235	213	231	425	20	250	37.5	235	213	231	425	20	250	48	136.5	136.5	99	99	121	198
132	280	282	324	387	16	300	60.8	-	-	-	-	-	-	-	-	-	119	119	141	218

	Manubloc (Mub) type					
	21--	22--	23--	24--	25--	26--
Additional U-mount weight (kg)	4	6	8	16	28	65
Max. permissible motor weight (kg)	65	70	120	150	250	400

Gearbox dimensions are given on the previous pages.

Variable speed geared motors VARMECA + MULTIBLOC 2100

H1 - General



Multibloc 2100 geared motors with worm 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 (min^{-1}).

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

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

Rated output torque: from 5 N.m to 55 N.m.
Power ratings: from 0.25 to 0.55 kW.
Reduction ratios: from 7.5 to 100.
Efficiency: 45% to 84%.
Quiet operation.

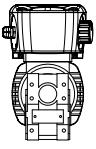
H2 - Construction

Component	Materials	Remarks
Frame	Aluminium	<ul style="list-style-type: none"> - monobloc - multi-position - die-cast aluminium - heavily ribbed to improve the mechanical resistance and thermal dissipation
Worm	Steel	<ul style="list-style-type: none"> - worm in tempered steel, ground sides
Wheel	Bronze	<ul style="list-style-type: none"> - wheel in centrifuged bronze
Shaft	Steel	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - monobloc housing, shaft seals ensure dust and damp protection - no hole opening into the housing
Lubrication	Synthetic oil	<ul style="list-style-type: none"> - delivered with the quantity of oil corresponding to multi-position operation - maintenance-free, lubricated for the lifetime of the gearbox - no drain, level or fill plug - vent hole on request
Mounting		MU: geared motor with IEC motor, manufactured with universal mounting
VARMECA variable speed motor		VARMECA: single-phase power supply 230 V, 3-phase 230 V to 480 V LS motor: 3-phase 230/400 V <ul style="list-style-type: none"> - pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down = V1) - VARMECA casing in aluminium with cable gland supplied - VARMECA protection IP 65 - motor protection IP 55, class F
VARMECA variable speed motor and brake		FMC: 3-phase or single-phase failsafe brake induction motor, from 0.25 to 0.37 kW FCR: 3-phase failsafe brake induction motor, from 0.25 to 0.55 kW
Finish	Paint	Shade: RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 μm)

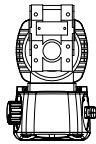
Variable speed geared motors VARMECA + MULTIBLOC 2100

H3 - Mounting arrangements

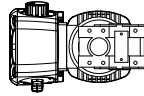
Standard Multibloc 2101 N multi-position M00



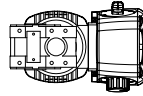
B00



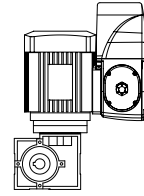
P00



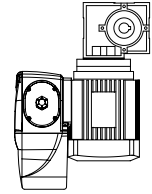
H00



T00



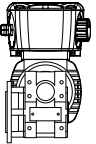
V00



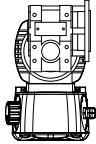
W00

Positions to be specified only if it is necessary to provide vent, fill, level or drain hole.

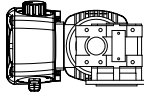
Standard Multibloc 2101 with BS flanges multi-position M50 or M05 or M55



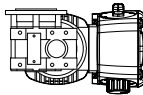
B50



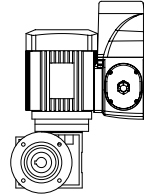
P50



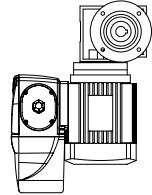
H50



T50



V50

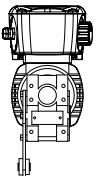


W50

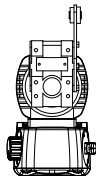
Other flange positions: on the right (eg.: B05, on both sides (eg.: B55).

Positions to be specified only if it is necessary to provide vent, fill, level or drain hole.

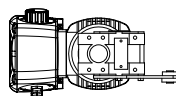
Standard Multibloc 2101 with torque arm multi-position M70 or M07



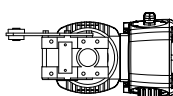
B70



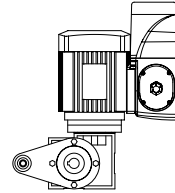
P70



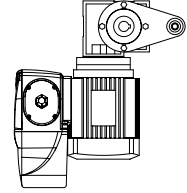
H70



T70



V70

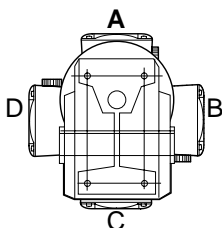


W70

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

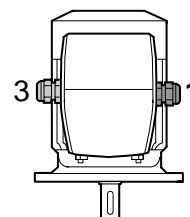
Positions to be specified only if it is necessary to provide vent, fill, level or drain hole.

5 - VARMECA positions



A: Standard

6 - Cable gland positions

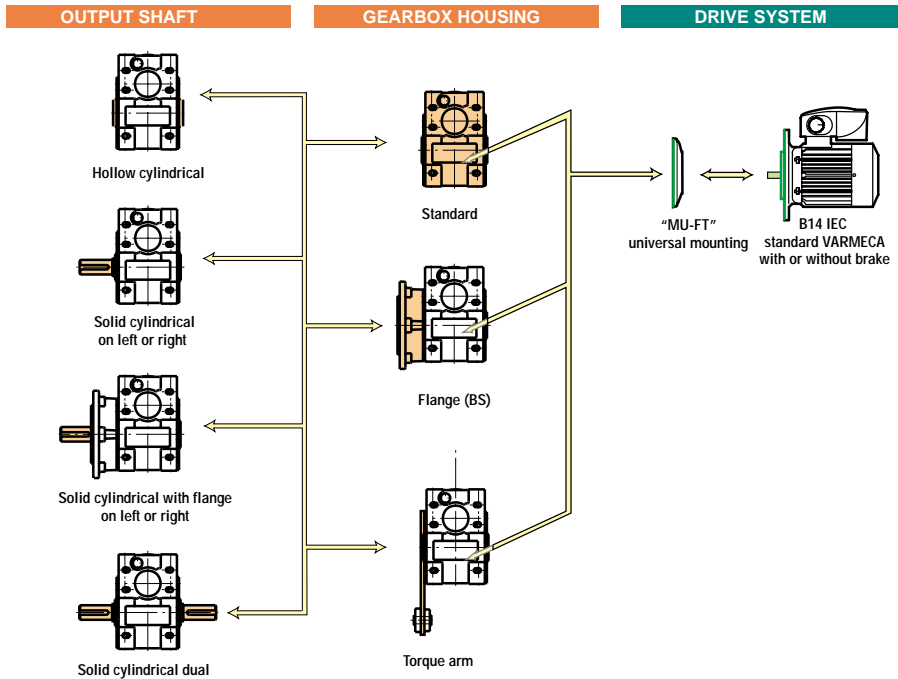


1: Standard

Variable speed geared motors VARMECA + MULTIBLOC 2100

H4 - Adaptation possibilities

Leroy-Somer offers several adaptations for its gearboxes which respond to very wide-ranging needs. They are described below and offered in the Leroy-Somer configurator.
For other drives, consult the Leroy-Somer technical specialists who will be glad to assist.



H5 - Designation / Coding

Mb	2101	M	00	C	25	MU-FT	4P	LS 71	0.37 kW	VMA 21M 037	A1	BMA
Gearbox type	Size and manufacturer code	Operating position	Mounting form	Definition of the output shaft	Exact reduction	Universal mounting	No. of poles	Series, frame size	Rated power in kW	VARMECA rating	VARMECA, CG position	Option

Selection example:

Required power:	0.37 kW
Required speeds:	13.9 to 92.8 min ⁻¹
Duty factor necessary for the application:	kp = 1
Mounting:	foot
CG position:	cable gland on right

Designation: Mb 2101 M00C 25 MU - 4P LS 71 0.37 kW - VMA 21M 037

Variable speed geared motors VARMECA + MULTIBLOC 2100

H6 - Selection

Multibloc (Mb) gearbox: S (M00) or BS L (M50) or with BS R (M05) flange

VARMECA variable speed motors: LS 4-pole, IP 65, class F

- 3-phase T: 400 V -10% to 480 V +10%, 50-60 Hz $\pm 10\%$

- 3-phase TL: 200 V -10% to 240 V +10%, 50-60 Hz $\pm 10\%$

- Single-phase M: 200 V -10% to 240 V +10%, 50-60 Hz $\pm 10\%$

Variable speed brake motors: 4-pole, class F

FCR: IP 55, from 0.25 to 0.37 kW

FMC : IP 44, from 0.25 to 0.37 kW

Universal mounting MU-FT

Class I
($K_p=1$)

Mb 2101 from 23.2 to 309 min⁻¹

VARMECA variable speed motors, power kW

0.25	0.37
3-phase 4-pole LS motor and frame size	
71	
3-phase 4-pole LS brake motor and frame size	
71 FMC ou 71 L FCR	
3-phase VMA -- T --- 400/480 V	
21T025	21T037
3-phase VMA -- TL --- 200/240 V	
21TL025	21TL037
Single phase VMA -- M --- 200/240 V	
21M025	21M037

Minimum output speed min ⁻¹	Maximum output speed min ⁻¹	Exact reduction		
3.48	23.2	100		
4.35	29	80		
5.8	38.7	60		
6.96	46.4	50		
8.7	58	40		
11.6	77.3	30		
13.9	92.8	25		
17.4	116	20		
23.2	155	15		
27.8	186	12.5		
34.8	232	10		
45.8	309	7.5		



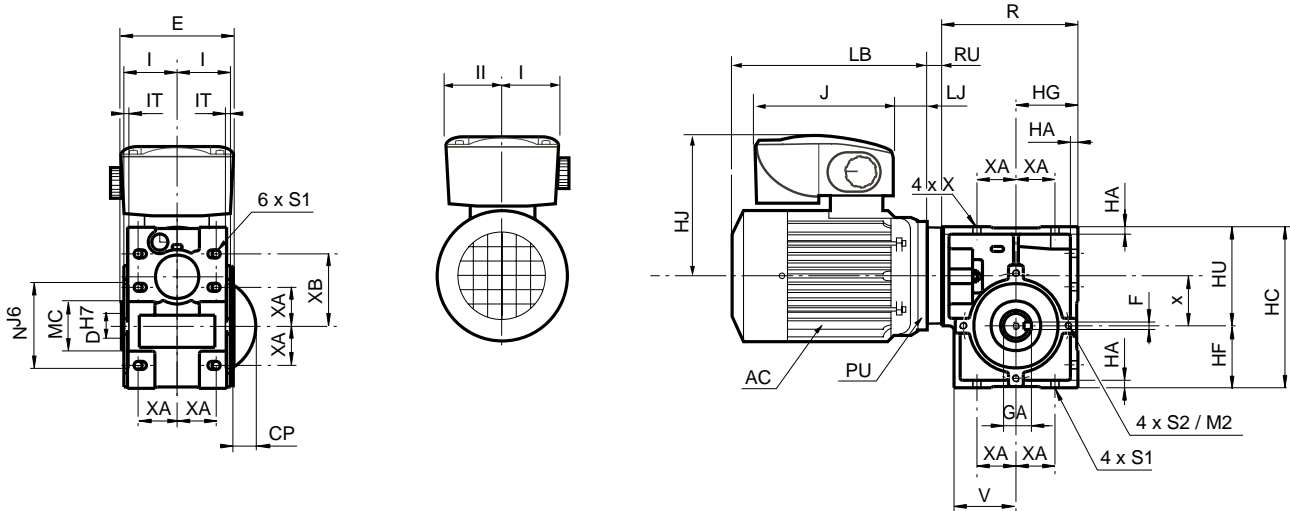
Variable speed geared motors VARMECA + MULTIBLOC 2100

H7 - Dimensions

Dimensions of VARMECA + Multibloc (Mb) gearbox,
MU-FT universal mounting IM3601 (IM B14),
Mb 2101

(M00) standard form, (C) hollow output shaft.

Dimensions in millimetres



Type	Gearboxes																	Hollow output shaft						Max. weight kg		
	HA	HC	HF	HG	HU	IE	IN	IT	M2	PU	R	RU	S1	S2	V	XA	XB	XC	x	D	E	F	GA		MC	CP
Mb 2101	6	130	50	50	80	43	68	3	85	105	110	15	6.5	M6x15	50	31.5	58.5	31.5	40	20	90	6	22.8	40	20	3

Frame size	VARMECA variable speed motors																	Max. weight kg						
	LS 3-phase							Max. weight kg	LS and FMC brake						Max. weight kg	LS and FCR brake				Max. weight kg				
	AC	LB	LJ	J	HJ	I	II		max.	min.	I	II	max.	min.		I	II							
LS 71	140	193	8	217	195	75	75	9.5	140	195	217	243	8	75	75	10.5	140	195	217	245	8	75	75	14.2

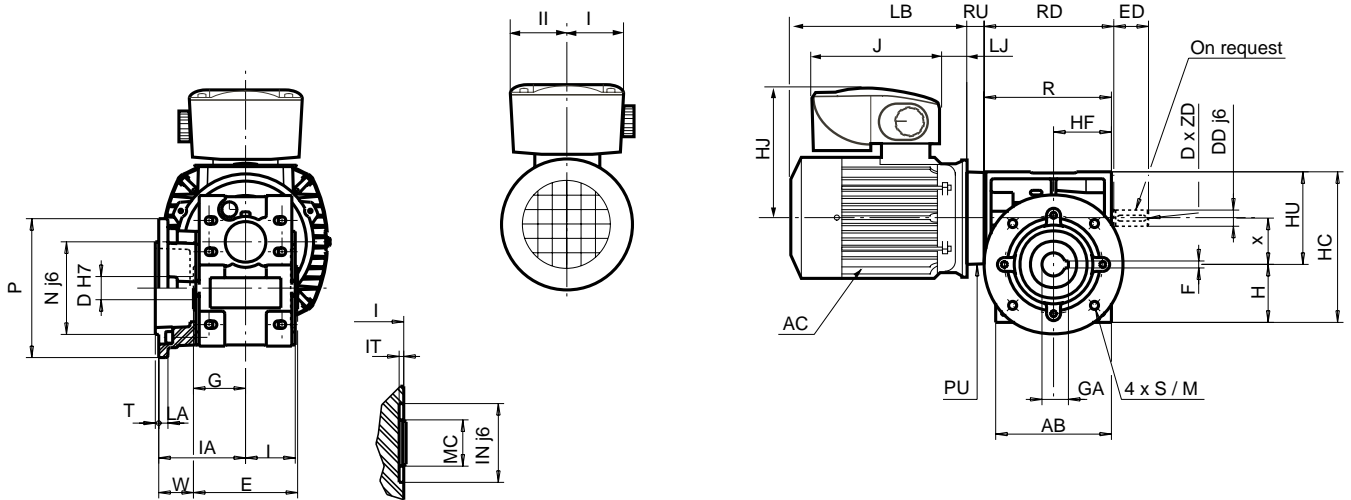
Variable speed geared motors VARMECA + MULTIBLOC 2100

H7 - Dimensions

Dimensions of VARMECA + Multibloc (Mb) gearbox, MU-FT universal mounting IM3601 (IM B14), Mb 2101

(M50), (M05) flange form, (C) hollow output shaft.

Dimensions in millimetres



Type	Gearboxes													BS flange					Max. weight kg	
	R	RB	AB	PU	RD	RU	HF	x	HU	HG	IE	IA	V	M	N	P	S	LA		T
Mb 2101	110	130	100	105	112	15	50	40	80	50	43	75	70	100	80	120	7	8	3	3.3

Type	Other possible flanges ¹											
	BD1 flange						BD2 flange					
	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 numbered to distinguish them from the letters on the standard flange diagram.

Type	Hollow output shaft				
	D	E	GA	F	CP
Mb 2101	20	90	22.8	6	20.5

Frame size	VARMECA variable speed motors																							
	LS 3-phase							Max. weight kg	LS and FMC brake						Max. weight kg	LS and FCR brake				Max. weight kg				
	AC	LB	LJ	J	HJ	I	II		max.	min.	I	II	max.	min.		I	II							
LS 71	140	193	8	217	195	75	75	9.5	140	195	217	243	8	75	75	10.5	140	195	217	245	8	75	75	14.2

Variable speed geared motors VARMECA + MULTIBLOC 2000

I1 - General



Multibloc 2000 speed reducers 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 rotation speeds of the gearbox (n_{\min} - n_{\max}) in revolutions per minute (min^{-1}).

The main characteristic of speed reducers is the maximum rated output torque ($M_{n \text{ max.}}$) expressed in newton-metres (N.m):

$$M_{n \text{ max.}} = \frac{P \times 9550}{n_{\text{max.}}} \times \text{efficiency}$$

Six selected sizes: 31, 22, 23, 24, 25, 26.
Rated output torque: from 20 N.m to 570 N.m.
Selected power ratings: from 0.25 to 7.5 kW.
Reduction ratios: 7.3 to 100.
From two to three reduction stages.
High efficiency: 55% to 88%.
Quiet operation.

I2 - Construction

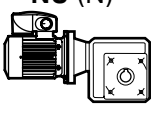
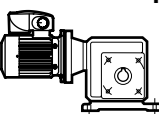
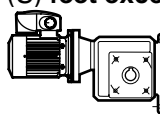
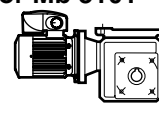




Component	Materials	Remarks
Frame	Cast iron	<ul style="list-style-type: none"> - use of GL cast iron (flake graphite: 150 MPa tensile strength) single component perlite to ensure unit is fully sealed - monobloc ribbed with internal reinforcements to absorb vibrations and noise, and increase its rigidity - with NU (N) housing, it can be adapted for sizes 22, 23, 24, 25 by using the foot mounting kit S or flanges BS, BD or torque arm R. They are compact and meet industrial requirements
Wheel	Bronze	- moulded on a steel or cast iron insert, wedged against the worm, supported by two large-diameter bearings without intermediate shields (except Mb 26).
Worm	Steel	- cut on a whirl lathe, toughened and ground
Shaft	Steel	<ul style="list-style-type: none"> - grinding of sealing surfaces - hollow or cylindrical output with key in accordance with ISO R 773, normal key and protective cover - tolerance of diameters h6 - tapped hole at the shaft end for fixing connecting devices in accordance with DIN 332 version DR
Lipseals	Nitrile	<ul style="list-style-type: none"> - antidust lipseal in accordance with DIN 3760 form AS - ground and toughened sealing surfaces on worm
End shield	Cast iron	- on size 26, reinforced by large ribs, this ensures ruggedness of the gearbox under heavy loads
Lubrication	Oil	<ul style="list-style-type: none"> - in accordance with ISO 6743/6 - delivered with the quantity of oil corresponding to multi-position operation, it is fitted with drain, level and breather plugs (except Mb 31)
Mounting		MU: geared motor with IEC motor
VARMECA variable speed motor		VARMECA: single-phase power supply 200/240 V, 3-phase 200 V to 480 V LS motor: 3-phase 230/400 V <ul style="list-style-type: none"> - pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down = V1) - VARMECA casing in aluminium with cable gland supplied - VARMECA protection IP 65 - motor protection IP 55, class F
VARMECA variable speed motor and brake		FCR: failsafe brake, from 0.25 to 4 kW, IP 55 protection
Finish	Paint	Shade: RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 μm)

Variable speed geared motors VARMECA + MULTIBLOC 2000





I3 - Mounting arrangements

Standard position: gearbox view from side F (S3), motor behind, side D (S1) on the floor.

1 - Definition of mounting form:

					flange mounted		
NU (N) all sides with tapped holes [except Mb 3101: side F (3) option, except side U (5) and Mb 26-- except sides L (G) and R (D)]	NS D (S1 00 - S1 33 for Mb26) feet fixed on side D (1)	NS F (S3 00 - S3 33 for Mb26) feet fixed on side F (3)	NS U (S5 00 - S5 33 for Mb26) feet fixed on side U (5)	NS K (S0) feet not fitted supplied in a kit			
					BS L (BS50- BS53 for Mb26) flange with clearance holes on left	BD L (BD50) flange with clearance holes (different diameter) on left	BN L (BN50) flange with clearance holes on left Other flange position on right R (05 - 35 for Mb 26), supplied in a kit -K

2 - Definition of output shaft

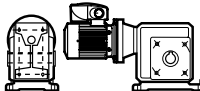
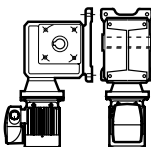
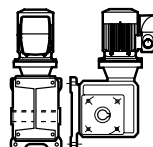
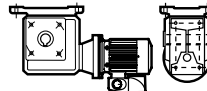
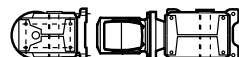

			
H (C) hollow cylindrical shaft	HL (G) solid cylindrical shaft output on left	HR (D) solid cylindrical shaft output on right	HLR (X) 2 solid cylindrical shafts output on left and right

3 - Option: R (R) torque arm

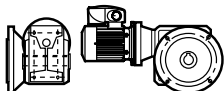
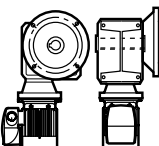

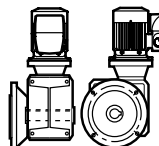


	
RK (00 R0) torque arm not fitted supplied in a kit	

4 - Definition of operating position

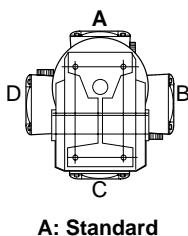
4.1 - NU (N) housing, NSD (S1), NSF (S3), NSU (S5) foot mounted, or R (R) torque arm

					
B3 (B--)	B6 (W--)	B7 (V--)	B8 (P--)	V5 (H--)	V6 (T--)

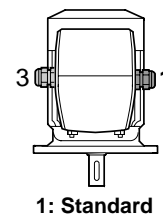
4.2 - With BS, BN or BD flange

					
B5 (B--)	B52 (W--)	B53 (P--)	B54 (V--)	V1 (H--)	V3 (T--)

5 - VARMECA positions



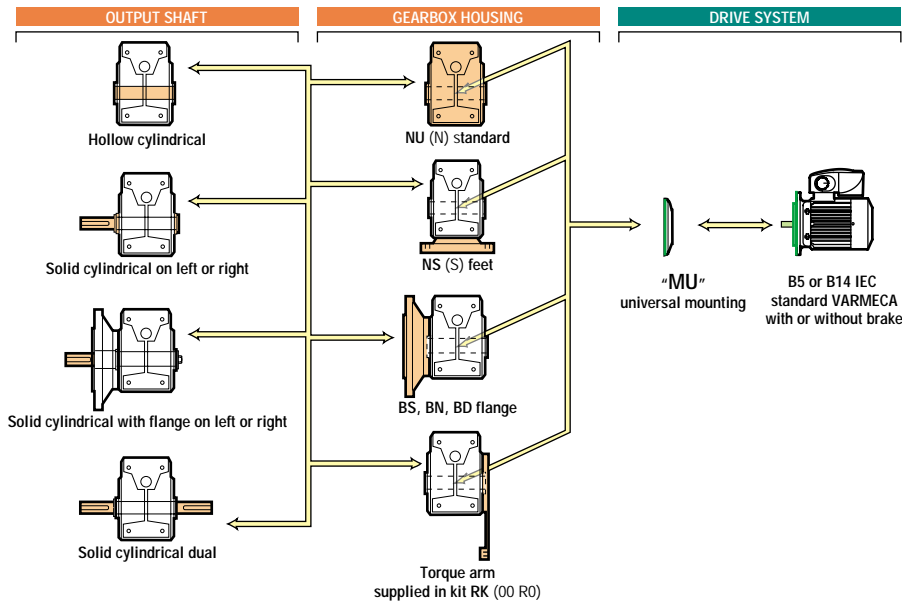
6 - Cable gland positions



Variable speed geared motors VARMECA + MULTIBLOC 2000

14 - Adaptation possibilities

Leroy-Somer offers several adaptations for its gearboxes which respond to very wide-ranging needs. They are described below and offered in the Leroy-Somer configurator.
For other drives, consult the Leroy-Somer technical specialists who will be glad to assist.



15 - Designation / Coding

Mb	2401	B3 (B)	NS (S)	D (1)	H (C)	50	MU-FT (MU B14)	4P	LS 90 L	1.5 kW	VMA 22T 150	A1	BMA
Gearbox type	Size and manufacturer code	Operating position	Mounting form	Mounting position	Definition of the output shaft	Exact reduction	Type of input	No. of poles	Series, frame size and manufacturer code	Rated power in kW	VARMECA rating	VARMECA, CG position	Option

Selection example:

Required power:	1.5 kW
Required speeds:	6.4 to 45 min ⁻¹
Duty factor required by the application:	kp = 1
Mounting:	foot, on floor, hollow shaft
CG position:	cable gland on right

Designation: Mb 2401 B3 NSD H 50 MU-FT - 4P LS 90 L 1.5 kW - VMA 22T 150 A1
(Mb 2401 S1 B00C 50 MU B14 - 4P LS 90 1.5 kW - VMA 12 150 BD)

Variable speed geared motors VARMECA + MULTIBLOC 2000

I6 - Selection

Multibloc (Mb) gearbox: NU (N) standard, NS (S) foot mounted or BS, BD or BN flange form

VARMECA variable speed motors: LS 4-pole, IP 65, class F

- 3-phase T: 400 V -10% to 480 V +10%, 50-60 Hz $\pm 10\%$
- 3-phase TL: 200 V -10% to 240 V +10%, 50-60 Hz $\pm 10\%$
- Single-phase M: 200 V -10% to 240 V +10%, 50-60 Hz $\pm 10\%$

Universal mounting MU-FT or MU-FF

Variable speed brake motors: 4-pole, class F

FCR: IP 55, from 0.25 to 4 kW

Class I
(Kp=1)

23 to 308 min⁻¹

VARMECA variable speed motors, power kW

0.25	0.37	0.55	0.75	0.9	1.1	1.5	1.8	2.2	3	4	5.5	7.5
------	------	------	------	-----	-----	-----	-----	-----	---	---	-----	-----

3-phase 4-pole LS motor and frame size

71 L	80 L	90 L	100 L	112 MG ¹	132 SM ¹	132 M ¹
------	------	------	-------	---------------------	---------------------	--------------------

3-phase 4-pole LS FCR J01 brake motor and frame size

71 L FCR	71 L FCR	80 L FCR	90 L FCR	100 L FCR	112MG FCR	NA	NA
----------	----------	----------	----------	-----------	-----------	----	----

3-phase VMA T 400/480 V

21T025	21T037	21T055	21T075	21T090	21T110	22 T150	22T180	22T220	22T300	22T400	14-550	14-750
--------	--------	--------	--------	--------	--------	---------	--------	--------	--------	--------	--------	--------

3-phase VMA TL 200/240 V

21TL025	21TL037	21TL055	21TL075	22TL090	22TL110	22TL150	22TL180	22TL220	NA	NA	NA	NA
---------	---------	---------	---------	---------	---------	---------	---------	---------	----	----	----	----

Single phase VMA M 230 V

21M025	21M037	21M055	21M075	22M090	22M110	22M150	NA	NA	NA	NA	NA	NA
--------	--------	--------	--------	--------	--------	--------	----	----	----	----	----	----

Minimum output speed min ⁻¹	Maximum output speed min ⁻¹	Reduction index	21M025	21M037	21M055	21M075	22M090	22M110	22M150	NA	NA	NA	NA	NA	NA
3.3	23	100		2201								2601			
4	28	80					2401								
5.4	38	60			2201										
6.4	45	50										2501			
8	56	40				2201									<
10.7	75	30				<				2401					<
12.6	88	25.5		3101		<	2201		2301						2601 <
16.1	113	20				<	<	<				<			<
21.5	150	15				<	<	<	<	<			2401		<
31.1	218	10.3				<	<	<	2201 <	<	<				<
44	308	7.3				<	<	<	<	<	<				<

3101 < Motor with frame size 80 mounted on Mb 3101 with flange B14 face-mounted 85 and shaft extension 14 x 30, obligatory.

2201 < Motor with frame size 90 mounted on Mb 2201 with flange B5 flange-mounted 130 and shaft extension 19 x 40, adapted.

2301 < Motors with frame size 100 and 112 mounted on Mb 2301 with flange B5 flange-mounted 165 and shaft extension 24 x 50, adapted.

2601 < Motor with frame size 132 mounted on Mb 2601 with flange B5 flange-mounted 165 and shaft extension 28 x 60, adapted.

1. Variable speed motors available with preferential delivery terms with B5 mounting only.

Exact reduction	Indices											
	Type	100	80	60	50	40	30	25.5	20	15	10.3	7.3
Mb 2601	100	80	60	50	40	30	25.5	20.5	15.5	10.3	7.5	
Mb 2501	100	80	60	50	40	30	25.5	20.5	15.5	10.3	7.25	
Mb 2401	100	80	60	50	40	30	25.5	19.5	14.5	10.3	7.25	
Mb 2301	100	80	60	50	40	30	25.5	20	15	10.3	7.5	
Mb 2201	100	80	60	50	40	30	25.5	20	15	10.3	7.33	
Mb 3101	100	80	60	50	40	30	25	20	15	10	7.5	

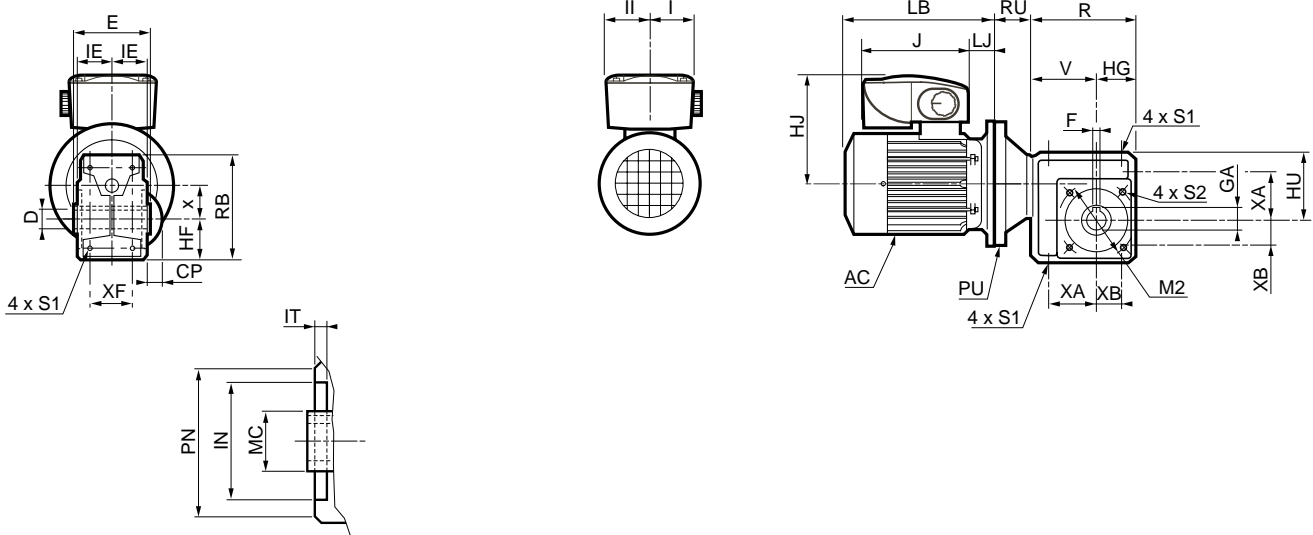
Variable speed geared motors VARMECA + MULTIBLOC 2000

I7 - Dimensions

Dimensions of VARMECA with Multibloc (Mb) variable speed geared motors,
MU-FF universal mounting, IM 3001 (IM B5), Mb 2201 to Mb 2601

NU (N) standard form, H (C) hollow shaft

Dimensions in millimetres



Type	Gearboxes															Hollow output shaft				Max. weight kg
	CP	HF	HG	HU	IE	M2	R	RB	S1	S2	V	XA	XB	XF	x	D	E	F	GA	
Mb 2601	33	100	100	160	93.5	- ¹	260	260	M14 x 20	- ¹	160	125	65	100	100	50	188	14	53.8	51.5
Mb 2501	28.5	90	90	135	78	180	225	225	M12 x 20	M12 x 20	135	110	65	90	80	45	168	14	48.8	46.5
Mb 2401	24.5	75	75	115	64	130	190	190	M10 x 15	M10 x 15	115	101	61	86	63	35	138	10	38.3	29.5
Mb 2301	22.5	63	63	97	54	115	160	160	M8 x 12	M8 x 12	97	77	43	70	55	30	118	8	33.3	17
Mb 2201	23.5	56	56	84	49	105	140	140	M8 x 12	M8 x 12	84	67	38	60	45	25	108	8	28.3	12.5

1. Option on Mb 2601: M2 = 165, S2 = 6 x M10 x 15.

Type	Spigot on housing			
	IN	IT	MC	PN
Mb 2601	130 ¹	4 ¹	65	- ¹
Mb 2501	140	4.5	90	166
Mb 2401	110	3.5	60	132
Mb 2301	95	3.5	60	114
Mb 2201	80	3	40	98

1. Option on Mb 2601: Ø 186

Frame size	VARMECA variable speed motors																											
	LS 3-phase					LS and FCR brake					Gearboxes																	
	AC	HJ	J	max. LB	max. LJ	I	II	Max. weight kg	AC	HJ	J	max. LB	max. LJ	min. I	II	Max. weight kg	2201		2301		2401		2501		2601			
71	140	179	217	183	8	75	75	12.5	140	195	217	271	34	75	75	15.2	RU	PU	RU	PU	RU	PU	RU	PU	RU	PU	-	-
80	170	189	231	215	12	75	75	15	172	205	231	292	39	75	75	22.2	31	200	31	200	50	200	50	200	50	200	59	200 ³
90	190	199	231	265	32	75	75	19.4	190	215	231	344	52	75	75	30.9	31	200 ²	31	200	50	200	50	200	50	200	59	200
100	200	204	231	290	12	75	75	25	200	220	231	399	32	75	75	36.2	-	-	31	200 ²	50	250	50	250	50	250	51	250
112	235	229	231	450	20	75	75	41.4	235	229	231	450	40	75	75	48.7	-	-	31	200 ²	50	250	50	250	50	250	51	250
132 ¹	280	282	324	387	16	112	112	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. In frame size 132, dimension I includes the control button supplied as standard. 2. Warning: motor with smaller IEC flange and shaft extension. 3. Warning: motor with larger IEC flange and shaft extension.

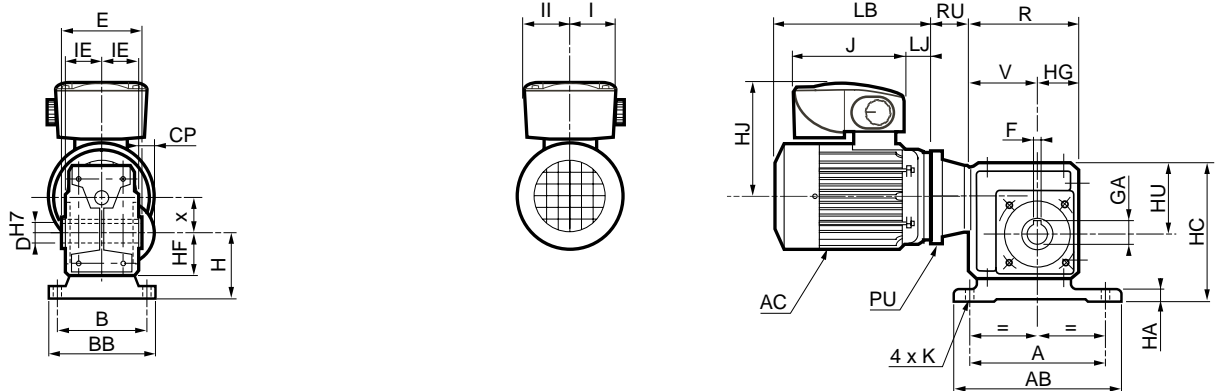
Variable speed geared motors VARMECA + MULTIBLOC 2000

I7 - Dimensions

Dimensions of VARMECA with Multibloc (Mb) variable speed geared motors,
MU-FT universal mounting, IM 3601 (IM B14), Mb 2201 to Mb 2601

NSD (S1) [NSF (S3) or NSU (S5)] foot mounted form, H (C) hollow shaft

Dimensions in millimetres



Type	Foot mounted gearboxes																Hollow output shaft				Max. weight kg
	A	AB	B	BB	CP	H	HA	HC	HF	HG	HU	IE	K	R	V	x	D	E	F	GA	
Mb 2601	250	296	180	216	33	125	20	285	100	100	160	93.5	18	260	160	100	50	188	14	53.8	55
Mb 2501	220	270	156	188	28.5	112	16	247	90	90	135	78	16	225	135	80	45	168	14	48.8	48.5
Mb 2401	202	235	156	187	24.5	90	15	205	75	75	115	64	14	190	115	63	35	138	10	38.3	29.5
Mb 2301	154	184	128	156	22.5	80	6	177	63	63	97	54	11	160	97	55	30	118	8	33.3	17
Mb 2201	134	164	125	153	23.5	71	6	155	56	56	84	49	11	140	84	45	25	108	8	28.3	12.5

Frame size	VARMECA variable speed motors																									
	LS 3-phase							Max. weight kg	LS and FCR brake						Gearboxes											
	AC	HJ	max. J	max. LB	min. LJ	I	II		AC	HJ	max. J	max. LB	min. LJ	I	II	2201		2301		2401		2501		2601		
71	140	179	218	193	8	75	75	12.5	140	179	218	245	8	75	75	14.2	31	105	35	105	50	120 ²	50	120 ²	-	-
80	172	189	231	215	12	75	75	15	172	189	231	265	12	75	75	21.2	33	120	36	120	50	120	50	120	-	-
90	190	199	231	245	32	75	75	20	190	199	231	304	32	75	75	28.2	33	120 ²	38	140	50	140	50	140	-	-
100	200	204	231	290	12	75	75	25	200	204	231	352	12	75	75	33.2	-	-	35	140 ²	50	160	50	160	-	-
112	235	213	231	396	20	75	75	38.4	235	213	231	396	20	75	75	45.2	-	-	35	140 ²	50	160	50	160	-	-
132 ¹	280	282	324	387	16	112	112	61	-	-	-	-	-	-	-	-	-	-	-	50	160 ²	50	160 ²	51	250	

1. In frame size 132, dimension I includes the control button supplied as standard. 2. Warning: motor with smaller IEC flange and shaft extension. 3. Warning: motor with larger IEC flange and shaft extension.

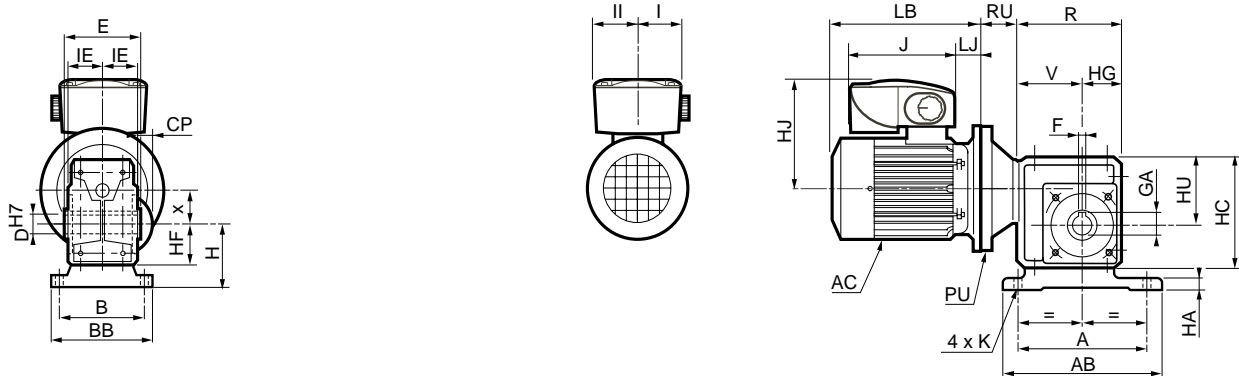
Variable speed geared motors VARMECA + MULTIBLOC 2000

17 - Dimensions

Dimensions of VARMECA with Multibloc (Mb) variable speed geared motors,
MU-FF universal mounting, IM 3001 (IM B5), Mb 2201 to Mb 2601

NSD (S1) [NSF (S3) or NSU (S5)] foot mounted form, H (C) hollow shaft

Dimensions in millimetres



Type	Foot mounted gearboxes																Hollow output shaft				Max. weight kg
	A	AB	B	BB	CP	H	HA	HC	HF	HG	HU	IE	K	R	V	x	D	E	F	GA	
Mb 2601	250	296	180	216	33	125	20	285	100	100	160	93.5	18	260	160	100	50	188	14	53.8	56.5
Mb 2501	220	270	156	188	28.5	112	16	247	90	90	135	78	16	225	135	80	45	168	14	48.8	50
Mb 2401	202	235	156	187	24.5	90	15	205	75	75	115	64	14	190	115	63	35	138	10	38.3	31
Mb 2301	154	184	128	156	22.5	80	6	177	63	63	97	54	11	160	97	55	30	118	8	33.3	18
Mb 2201	134	164	125	153	23.5	71	6	155	56	56	84	49	11	140	84	45	25	108	8	28.3	13.5

Frame size	VARMECA variable speed motors																									
	LS 3-phase							Max. weight kg	LS and FCR brake						Gearboxes											
	AC	HJ	max. J	max. LB	min. LJ	I	II		AC	HJ	max. J	max. LB	min. LJ	I	II	2201		2301		2401		2501		2601		
71	140	179	217	183	8	75	75	12.5	140	195	217	271	8	75	75	15.2	RU	PU	RU	PU	RU	PU	RU	PU	RU	PU
80	170	189	231	215	12	75	75	15	172	205	231	292	12	75	75	22.2	24	160	24	160	50	200 ³	50	200 ³	-	-
90	190	199	231	265	32	75	75	19.4	190	215	231	344	32	75	75	30.9	31	200 ²	31	200	50	200	50	200	59	200
100	200	204	231	290	12	75	75	25	200	220	231	399	12	75	75	36.2	-	-	31	200 ²	50	250	50	250	51	250
112	235	229	231	450	20	75	75	41.4	235	229	231	450	20	75	75	48.7	-	-	31	200 ²	50	250	50	250	51	250
132 ¹	280	282	324	387	16	112	112	61	-	-	-	-	-	-	-	-	-	-	-	-	50	250 ²	50	250 ²	-	-

1. In frame size 132, dimension I includes the control button supplied as standard. 2. Warning: motor with smaller IEC flange and shaft extension. 3. Warning: motor with larger IEC flange and shaft extension.

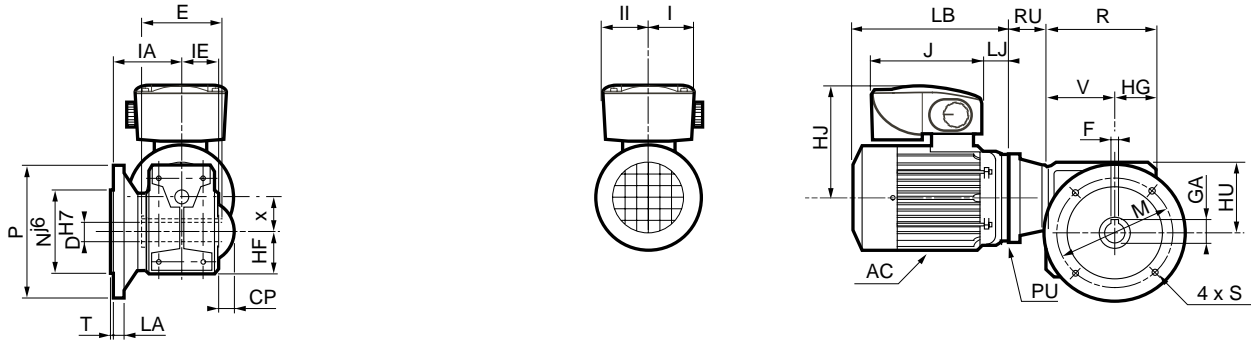
Variable speed geared motors VARMECA + MULTIBLOC 3101, MULTIBLOC 2000

I7 - Dimensions

Dimensions of VARMECA with Multibloc (Mb) variable speed geared motors,
MU-FT universal mounting, IM 3601 (IM B14), Mb 3101, Mb 2201 to Mb 2601

Dimensions in millimetres

Form with standard BS L (BS G) flange [or BN L (BN G) flange without spigot], H (C) hollow shaft



Type	Gearboxes									BS flange						Max. weight kg
	CP	HF	HG	HU	IA	IE	R	V	x	M	N	P	LA	S	T	
Mb 2601	33	100	100	160	153	93.5	260	160	100	300	250	350	14	18	4	56.5
Mb 2501	28.5	90	90	135	126	78	225	135	80	265	230	300	12	14	4	50.5
Mb 2401	24.5	75	75	115	126	64	190	115	63	215	180	250	12	14	4	32.5
Mb 2301	22.5	63	63	97	106	54	160	97	55	165	130	200	10	11	3.5	19
Mb 2201	23.5	56	56	84	100	49	140	84	45	165	130	200	10	11	3.5	14.5
Mb 3101	22.5	50 ¹	45	77	77	41	120 ¹	75 ¹	40	100	-	120	7	7 ²	-	6

1. See details of Mb 3101 page 73. 2. 4 radial slots.

Type	Hollow output shaft			
	D	E	F	GA
Mb 2601	50	188	14	53.8
Mb 2501	45	168	14	48.8
Mb 2401	35	138	10	38.3
Mb 2301	30	118	8	33.3
Mb 2201	25	108	8	28.3
Mb 3101	20	90	6	22.8

Frame size	VARMECA variable speed motors																													
	LS 3-phase								LS and FCR brake								Gearboxes													
	AC	HJ	max. J	max. LB	min. LJ	I	II	Max. weight kg	AC	HJ	max. J	max. LB	min. LJ	I	II	Max. weight kg	3101		2201		2301		2401		2501		2601			
71	140	179	218	193	8	75	75	12.5	140	179	218	245	8	75	75	14.2	RU	PU	RU	PU	RU	PU	RU	PU	RU	PU	RU	PU	-	-
80	172	189	231	215	12	75	75	15	172	189	231	265	12	75	75	21.2	0	105 ²	33	120	36	120	50	120	50	120	-	-	-	-
90	190	199	231	245	32	75	75	20	190	199	231	304	32	75	75	28.2	0	-	33	120 ²	38	140	50	140	50	140	-	-	-	-
100	200	204	231	290	12	75	75	25	200	204	231	352	12	75	75	33.2	-	-	-	-	35	140 ²	50	160	50	160	-	-	-	-
112	235	213	231	396	20	75	75	38.4	235	213	231	396	20	75	75	45.2	-	-	-	-	35	140 ²	50	160	50	160	-	-	-	-
132 ¹	280	282	324	387	16	112	112	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	160 ²	50	160 ²	51	250	-	-

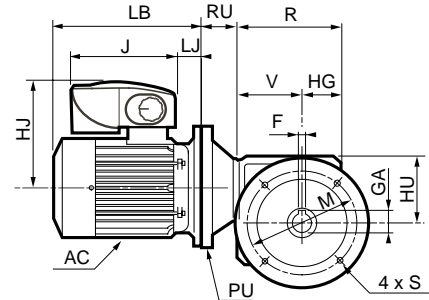
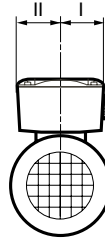
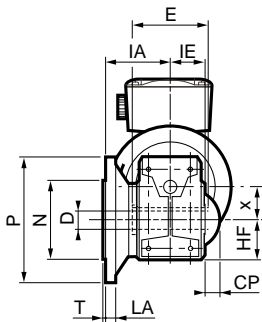
1. In frame size 132, dimension I includes the control button supplied as standard. 2. Warning: motor with smaller IEC flange and shaft extension. 3. Warning: motor with larger IEC flange and shaft extension.

Variable speed geared motors VARMECA + MULTIBLOC 2000

I7 - Dimensions

Dimensions of VARMECA with Multibloc (Mb) variable speed geared motors,
MU-FF universal mounting, IM 3001 (IM B5), Mb 2201 to Mb 2601

Form with standard BS L (BS G) flange [or BN L (BN G) flange without spigot], H (C) hollow shaft Dimensions in millimetres



Type	Gearboxes									BS flange						Max. weight kg
	CP	HF	HG	HU	IA	IE	R	V	x	M	N	P	LA	S	T	
Mb 2601	33	100	100	160	153	93.5	260	160	100	300	250	350	14	18	4	58
Mb 2501	28.5	90	90	135	126	78	225	135	80	265	230	300	12	14	4	52
Mb 2401	24.5	75	75	115	126	64	190	115	63	215	180	250	12	14	4	34
Mb 2301	22.5	63	63	97	106	54	160	97	55	165	130	200	10	11	3.5	20
Mb 2201	23.5	56	56	84	100	49	140	84	45	165	130	200	10	11	3.5	15.5

Type	Hollow output shaft			
	D	E	F	GA
Mb 2601	50	188	14	53.8
Mb 2501	45	168	14	48.8
Mb 2401	35	138	10	38.3
Mb 2301	30	118	8	33.3
Mb 2201	25	108	8	28.3

Frame size	VARMECA variable speed motors																									
	LS 3-phase								LS and FCR brake								Gearboxes									
	AC	HJ	max. J	max. LB	min. LJ	I	II	Max. weight kg	AC	HJ	max. J	max. LB	min. LJ	I	II	Max. weight kg	2201	2301	2401	2501	2601					
71	140	179	217	183	8	75	75	12.5	140	195	217	271	34	75	75	15.2	24	160	24	160	50	200 ³	50	200 ³	-	-
80	170	189	231	215	12	75	75	15	172	205	231	292	39	75	75	22.2	31	200	31	200	50	200	50	200	59	200 ²
90	190	199	231	265	32	75	75	19.4	190	215	231	344	52	75	75	30.9	31	200 ²	31	200	50	200	50	200	59	200
100	200	204	231	290	12	75	75	25	200	220	231	399	32	75	75	36.2	-	-	31	200 ²	50	250	50	250	51	250
112	235	229	231	450	20	75	75	41.4	235	229	231	450	40	75	75	48.7	-	-	31	200 ²	50	250	50	250	51	250
132¹	280	282	324	387	16	112	112	61	-	-	-	-	-	-	-	-	-	-	-	-	50	250 ²	50	250 ²	-	-

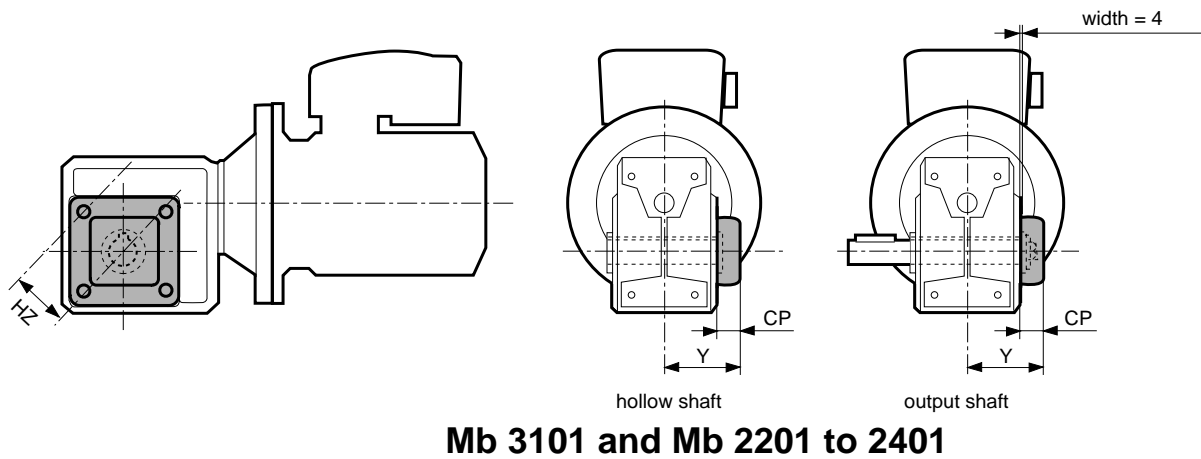
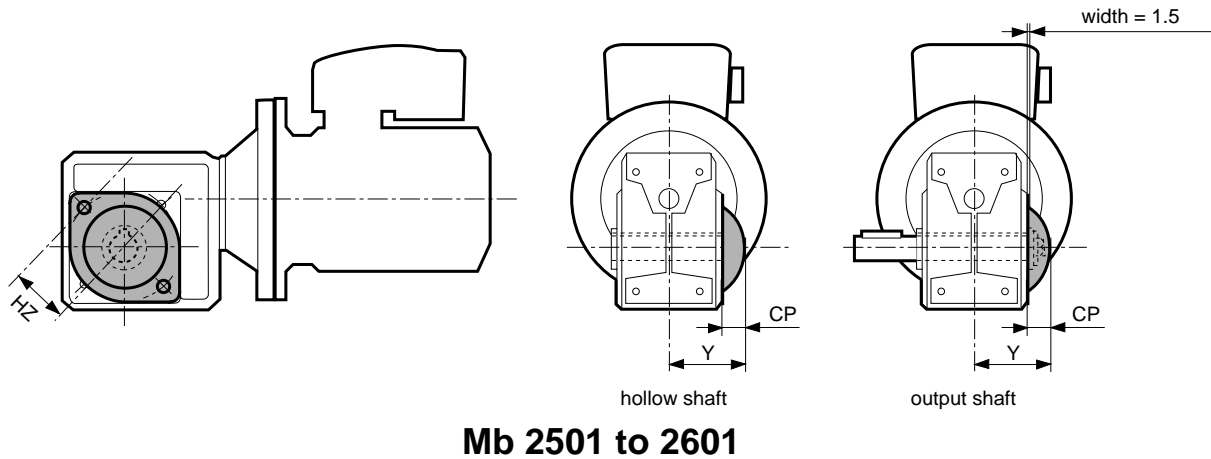
1. In frame size 132, dimension I includes the control button supplied as standard. 2. Warning: motor with smaller IEC flange and shaft extension. 3. Warning: motor with larger IEC flange and shaft extension.

Variable speed geared motors VARMECA + MULTIBLOC 3101, MULTIBLOC 2000

17 - Dimensions

Dimensions of the protective cover for hollow shaft and side opposite the output shaft, Mb 3101 and Mb 2201 to Mb 2601

Dimensions in millimetres



Type	Protective cover		
	CP	HZ	Y
Mb 2601	33	-	127
Mb 2501	28.5	90	106.5
Mb 2401	28	65	92
Mb 2301	22.5	57.2	76.5
Mb 2201	23.5	52.5	72.5
Mb 3101	22.5	42.5	63.5

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).

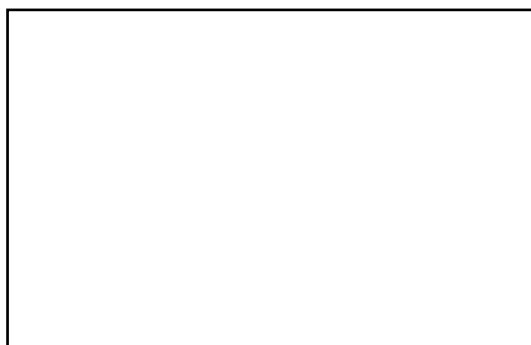


WORLD LEADER IN INDUSTRIAL DRIVE SYSTEMS

**ELECTRIC MOTORS - GEARBOXES - ELECTRONICS
ALTERNATORS - ASYNCHRONOUS GENERATORS - DC MACHINES**



**37 PRODUCTION UNITS
470 SALES & SERVICE CENTRES WORLDWIDE**



LEROI-SOMER 16015 ANGOULÊME CEDEX - FRANCE

RCS ANGOULÊME N° B 671 820 223
S.A. au capital de 62 779 000 €

www.leroy-somer.com