

Electromechanical products - variable speed Compabloc 2000 / LS VARMECA

General information



Compabloc 2000 geared motors with helical 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 gear box ($n_{\text{mini}}-n_{\text{maxi}}$) in revolutions per minute (min^{-1}).

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

$$M_{nS \text{ maxi}} = \frac{P \times 9\,550}{n_s} \times \text{efficiency}$$

A range of two sizes : 26, 27.
Rated output torque : from 30 N.m to 4820 N.m.
Selected powers : from 1.1 to 11 kW.
Reduction ratios : 2 to 160.
From two to three reduction stages : 2, 3.
High efficiency : 95 % to 98 %.
Reversible.
Silent operation.

Construction

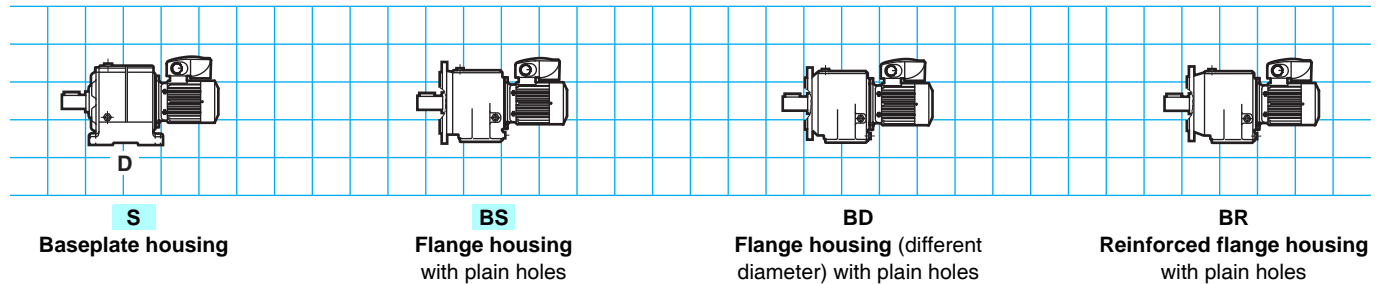
| Component | Materials | Remarks |
|----------------------------------|----------------|--|
| Housing | Cast iron | <ul style="list-style-type: none"> - use of FGL cast iron (flake graphite : tensile strength 150 MPa) single component perlite to ensure the complete sealing of the unit - monobloc with reinforced internal ribbing to absorb vibrations and noise, and to increase rigidity - with S base-mount or BS, BD..., BR flanges. They are compact and meet industrial application-related requirements |
| Gears | Steel Ni Cr Mo | <ul style="list-style-type: none"> - cut by gear hob, they are heat treated by cementation, then undergo a final machining. The quality and the precision of the gear cutting allow maximum torque with minimum noise level |
| Shaft | Steel | <ul style="list-style-type: none"> - grinding of the sealing surfaces - key according to ISO R773 - diameter tolerances in accordance with NFE 22-051 and ISO R 775 - tapped holes at the shaft end in accordance with DIN 332 version D for mounting connecting equipment |
| Seals | Acrylonitrile | <ul style="list-style-type: none"> - sealing rings between housing and flange - anti-dust lipseals according to DIN 3760 AS form |
| End shields | Cast iron | <ul style="list-style-type: none"> - reinforced by large ribs, it ensures the ruggedness of the gearbox under heavy loads |
| Lubrication | Oil | <ul style="list-style-type: none"> - in accordance with ISO 6743/6 - supplied with the quantity of oil corresponding to the operating position indicated on the control panel, it is fitted with drain, level and vent plugs |
| Mounting | | MI : geared motor with integrated motor MU : geared motor with IEC motor, with universal mounting |
| VARMECA variable speed motor | | VARMECA : power supply - single phase 200/240 V, 3-phase 200 V to 480 V LS motor : 3-phase 230/400 V <ul style="list-style-type: none"> - sheet metal fan cover, fitted on request with a drip cover for operation in vertical position (shaft end facing down) - aluminium VARMECA terminal box fitted with cable gland - VARMECA IP 65 protection - IP 55 motor protection, class F |
| VARMECA variable speed motor and | | FCR : failsafe brake, from 1.1 to 11 kW, IP 55 protection (LS 90 to 160 ; see C12) |
| Finish | Paint | Paint : RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 μm) |

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Forms and operating positions

Standard position : gearbox seen from side F, motor to the rear, side D facing the ground.

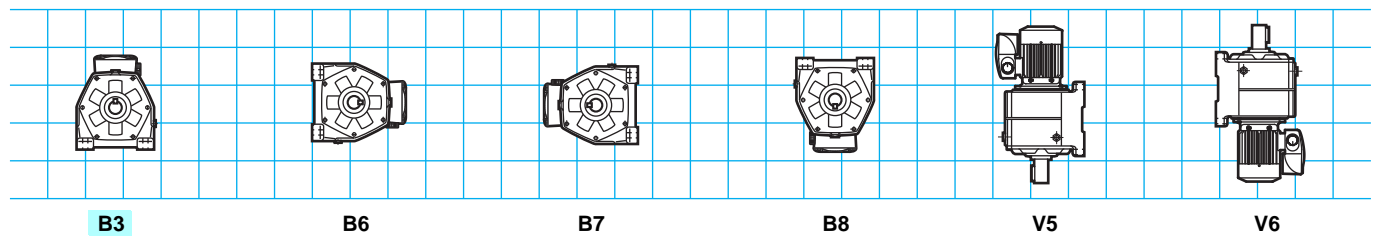
1 - Definition of mounting type : S, BS, BD, BR



2 - Definition of operating position

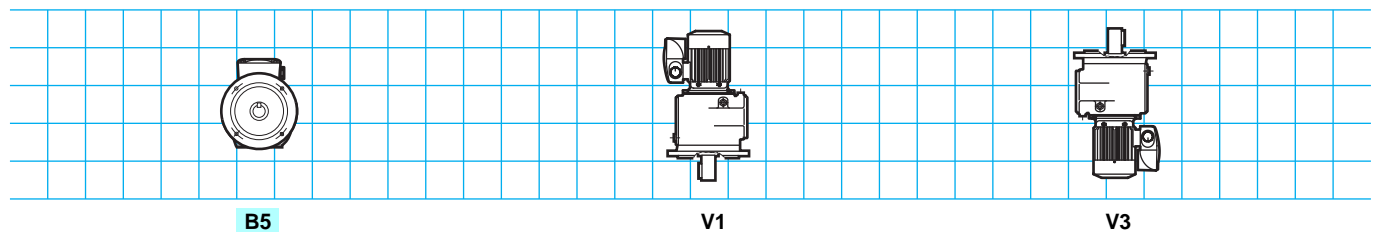
2.1 - Mounting with S baseplate

Compabloc multi-train : Cb 2602 to 2703

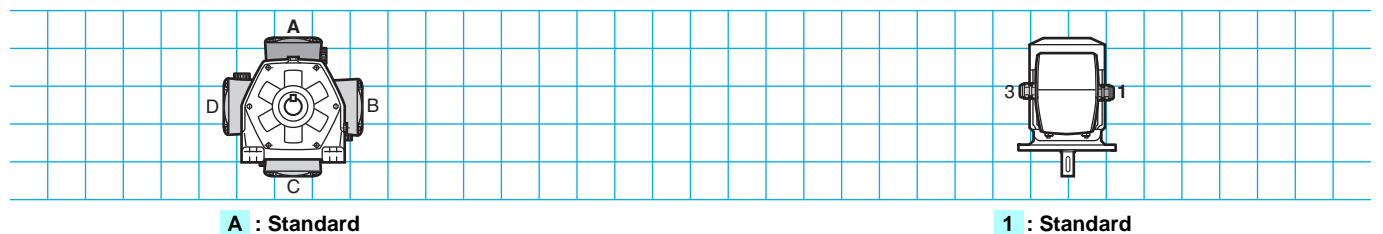


2.2 - Mounting with BS, BD, BR flange

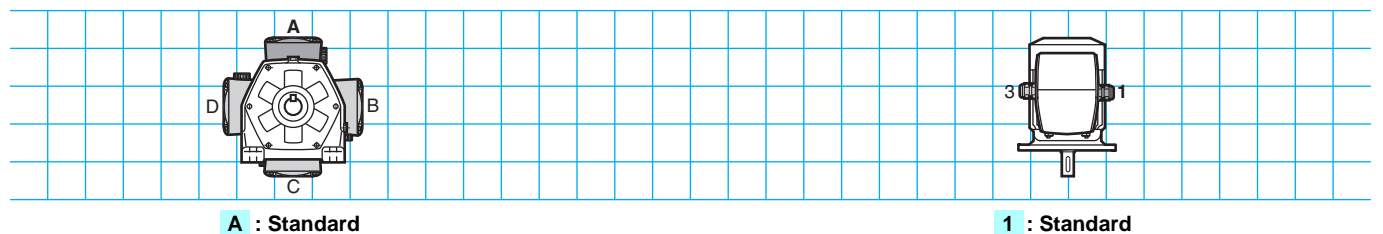
Compabloc multi-train : Cb 2602 to 2703



3 - Positions of VARMECA



4 - Positions of cable gland

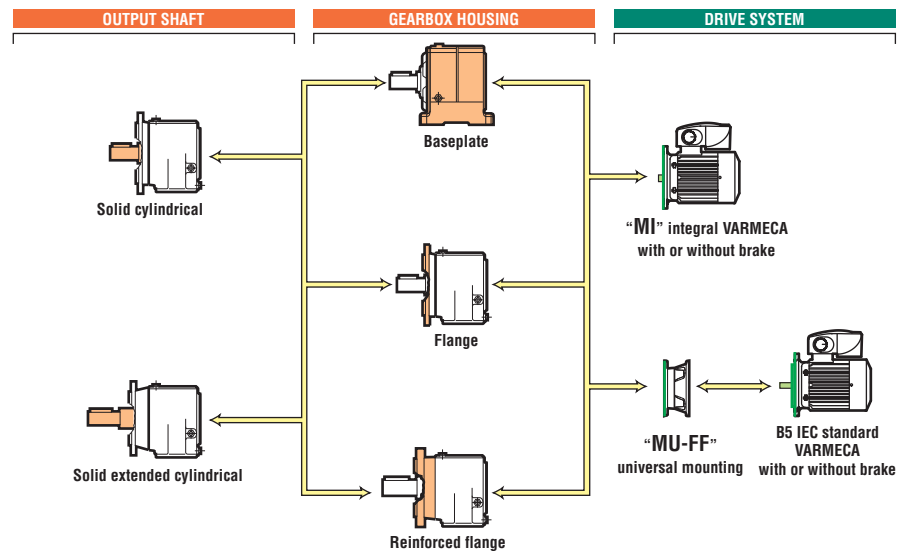


Electromechanical products - variable speed Compabloc 2000 / LS VARMECA

Adaptation possibilities

Leroy-Somer offers several drives for its gearboxes which meet a diverse range of needs. They are described below and offered in this catalogue.

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



Designation / Coding

| | | | | | | | | | | | |
|--------------|-----------------------------|--------------------|---------------|-----------------|------------|--------------|--|-------------------|--------------------|----------------------|------------|
| Cb | 2603 | B3 | S | 87.5 | MI | 4P | LS 132 L | 7.5 kW | VMA 33T 750 | A1 | BMA |
| Gearbox type | Manufacturer index and size | Operating position | Mounting type | Exact reduction | Input type | No. of poles | Series, frame size, manufacturer index | Rated power in kW | VARMECA rating | VARMECA position, PE | Option |

Example of selection :

| | |
|---|--------------------------------|
| Power : | 7.5 kW |
| Speed : | 3.6 to 25 min ⁻¹ |
| Duty factor necessary for the application : | kp = 1 |
| Mounting : | baseplate, horizontal position |
| PE position : | PE on the right |

Designation : Cb 2603 B3 S 87.5 MI - 4P LS 132 L 7.5 kW - VMA 33T750

Electromechanical products - variable speed Compabloc 2000 / LS VARMECA

Selection

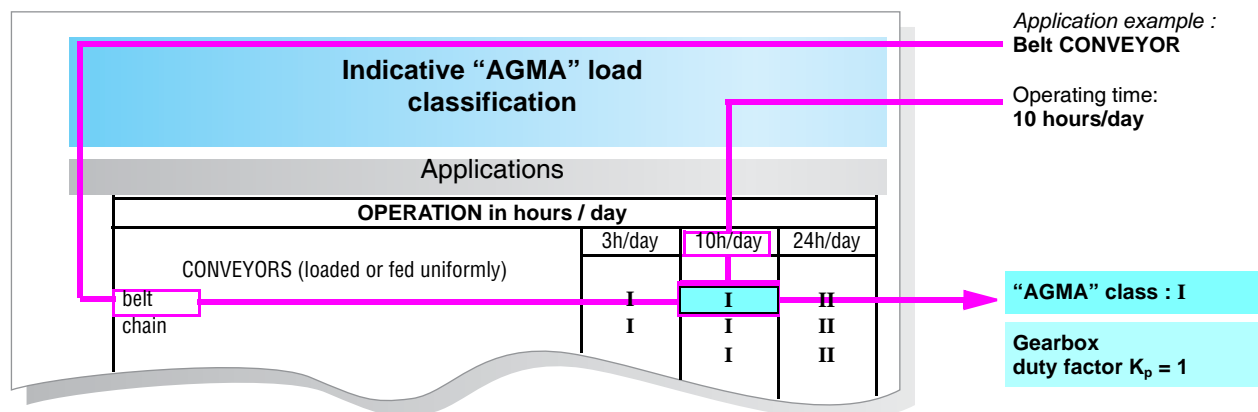
The selection of a gearbox or of a geared motor should take account of the application. Some of these applications are listed in the indicative "AGMA" load classification, page D0.10.

The opposite table summarises the relationship between the "AGMA" class and the gearbox duty factor K_p .

| "AGMA" class | Gearbox duty factor K_p |
|--------------|---------------------------|
| I | 1 |
| II | 1.4 |
| III | 2 |

1st case. – Your application is listed

Follow the indicative "AGMA" load classification table, page D0.10 of this catalogue. ▼



2nd case. – Your application is not listed

The "AGMA" selection class is defined by the daily operating time and by the application operating type, according to the table below. ▼

| Type of application | Daily operating time | "AGMA" class |
|-----------------------------|----------------------|--------------|
| Shock-free, few starts | 10 hours / day | I |
| Damped shocks | 10 hours / day | II |
| Shock-free, few starts | 24 hours / day | II |
| Violent shocks, many starts | 10 hours / day | III |
| Damped shocks | 24 hours / day | III |

Electromechanical products - variable speed Compabloc 2000 / LS VARMECA

Conditions

Cb 2000 : S, BS, BDn
LS VARMECA, LS VARMECA brake FCR IP 55 - CI.F - 50 Hz

| Maximum quantity by order | | | | |
|---------------------------|----------|------------|------------|---------|
| Inputs | | Cb 2602-03 | Cb 2702-03 | Cb 2803 |
| MI LS VMA 3-ph | 4-7.5 kW | 3 | 3 | |
| | 9-11 kW | | | |
| MI LS VMA 3-ph FCR | 4-7.5 kW | 3 | 3 | |
| | 9-11 kW | | | |
| MU LS VMA 3-ph | 4-9 kW | 3 | 3 | |
| | 11 kW | | | |
| MU LS VMA 3-ph FCR | 4-7.5 kW | 3 | 3 | |
| | 9 kW | 1 | 1 | |
| | 11 kW | | | |

| Mechanical options | | | | |
|--------------------|---|-------|-------|-------|
| Cb 26../27../28.. | S | BS | BD1 | BR |
| Mounting | Page(s) of dimensions corresponding to mounting | | | |
| MI | D13.7 | D13.8 | D13.8 | D13.8 |
| MU | D13.9 | D13.9 | D13.9 | D13.9 |

| Inputs | 4p / MI-MU | Brake options | | VARMECA options | | | | | | |
|-----------------|-------------|---------------|------------|-----------------|-----|--------|---------|-------------------|--------|---------|
| | | DLRA | Drip cover | B | BMA | BMAVAR | CVI VMA | CDC VMA PX LCD | PEGASE | LEC VMA |
| LS VMA 3-ph | 0.25-4 kW | - | - | | | | | | | |
| | 5.5-9 kW | - | - | | | | | | | |
| LS VMA 1-ph | 0.25-1.5 kW | - | - | | | | | | | |
| LS VMA 3-ph FCR | 0.25-9 kW | | | | | | | | | |
| LS VMA 1-ph FCR | 0.25-1.5 kW | | | | | | | | | |

| Outputs | 4p / MI-MU | VARMECA options | | | | | | | | | |
|-----------------|-------------|-----------------|------------------|--------|--------|-------------|---------------|--------------|---------------|------|--------|
| | | FLT | RF 100 FR 200 | RF 600 | SO VMA | VMA ESFR | VMA COM CB | POT 10K1T | POT 10K10T | 4 PE | PX KEY |
| LS VMA 3-ph | 0.25-4 kW | - | | - | | | | | | | - |
| | 5.5-9 kW | - | - | | | | | | | | - |
| LS VMA 1-ph | 0.25-1.5 kW | | | - | | | | | | | - |
| LS VMA 3-ph FCR | 0.25-4 kW | - | | - | | | | | | | - |
| | 5.5-9 kW | - | - | | | | | | | | - |
| LS VMA 1-ph FCR | 0.25-1.5 kW | | | - | | | | | | | - |



Electromechanical products - variable speed Compabloc 2000 / LS VARMECA

AGMA I

Cb 2000
LS VARMECA, LS VARMECA brake FCR IP 55 - CI.F - 50 Hz

| | | | Cb 2000 | | | | | | |
|--|--|-----------------|------------------------------------|---------|---------|---------|----------|---------|---------|
| | | | LS VARMECA (kW) | | | | | | |
| | | | 2.2 | 3 | 4 | 5.5 | 7.5 | 9 | 11 |
| | | | LS VARMECA 4p | | | | | | |
| | | | 100 L | 112 MG | 132 SM | 132 M | | 160MR | |
| | | | Type VMA ...T... 3-phase 400/480V | | | | | | |
| | | | 32T220 | 32T300 | 32T400 | 33T550 | 33T750 | 34T900' | 34T111' |
| | | | Type VMA ...TL... 3-phase 200/240V | | | | | | |
| | | | 32TL220 | 33TL300 | 33TL400 | 34TL500 | 34TL750' | | |
| Minimum output speed min ⁻¹ | Maximum output speed min ⁻¹ | Reduction index | | | | | | | |
| 2 | 14.5 | 160 | | | | | | | |
| 2.3 | 16.6 | 140 | | | | | | | |
| 2.6 | 18.6 | 125 | | | | | | | |
| 2.9 | 20.7 | 112 | | | | | | | |
| 3.2 | 23.2 | 100 | | | | | | | |
| 3.6 | 25.8 | 90 | | | | | | | |
| 4 | 29 | 80 | | | | | | | |
| 4.5 | 32.7 | 71 | | | | | | | |
| 5.1 | 36.8 | 63 | | | | | | | |
| 5.7 | 41.4 | 56 | | | | | | | |
| 6.4 | 46.4 | 50 | | | | | | | |
| 7.1 | 51.6 | 45 | | | | | | | |
| 8 | 58 | 40 | | | | | | | |
| 9 | 65.4 | 35.5 | | | | | | | |
| 10.2 | 73.7 | 31.5 | | | | | | | |
| 11.4 | 82.9 | 28 | | | | | | | |
| 12.8 | 92.8 | 25 | | | | | | | |
| 14.3 | 104 | 22.4 | | | | | | | |
| 16 | 116 | 20 | | | | | | | |
| 17.8 | 129 | 18 | | | | | | | |
| 20 | 145 | 16 | | | | | | | |
| 22.9 | 166 | 14 | | | | | | | |
| 25.6 | 186 | 12.5 | | | | | | | |
| 28.6 | 207 | 11.2 | | | | | | | |
| 32 | 232 | 10 | | | | | | | |
| 35.6 | 258 | 9 | | | | | | | |
| 40 | 290 | 8 | | | | | | | |
| 45 | 327 | 7.1 | | | | | | | |
| 4p LS VARMECA brake | | | | | | | | | |
| FCR² | | | 100 | 112 MG | 132 | | 132 | 160 | |

1. Attention : for combinations, in continuous duty and constant torque, as below, forced ventilation is necessary for brake or non-brake motors.
In these cases, the minimum delivery time moves to 18 working days.

| 4-pole geared motor | | |
|---------------------|------------------------------------|------------------|
| kW | T | TL |
| 7.5 | - | All motor speeds |
| 9 | Between 10 and 20 Hz for the motor | - |
| 11 | All motor speeds | - |

2. See chapter C12.

Exact reductions

| Type | Reduction indices | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|-------------------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 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 | |
| 2703 | 159 | 137 | 124 | 109 | 99 | 87.5 | 81.1 | 71.9 | 64.2 | 54.9 | 49.7 | 45.2 | 39.5 | 34.6 | | | | | | | | | | | | | | | |
| 2702 | | | | | | | | | | | | | | | | 32.4 | 27.8 | 25.7 | 22.3 | 20.6 | 18.4 | 16.1 | 13.9 | 12.5 | 11.3 | 10.3 | 8.99 | 8.1 | 7.23 |
| 2603 | 159 | 137 | 124 | 109 | 99 | 87.5 | 81.1 | 71.9 | 64.2 | 54.9 | 49.7 | 45.2 | 39.5 | 34.6 | 159 | 137 | 124 | 109 | 99 | 87.5 | 81.1 | 71.9 | 64.2 | 54.9 | 49.7 | 45.2 | 39.5 | 34.6 | |
| 2602 | | | | | | | | | | | | | | | | 31.5 | 27.6 | 25.1 | 22.2 | 20.6 | 18.2 | 16.3 | 13.9 | 12.6 | 11.5 | 10 | 9.17 | 8.07 | 7.13 |

Example of selection :

Power : 7.5 kW
 Speed : 3.6 to 25.8 min⁻¹
 Duty factor necessary for the application : kp = 1
 Mounting : baseplate, horizontal position
 PE position : PE on the right
Designation : Cb 2603 B3 S 87.5 MI - 4P LS 132 L 7.5 kW - VMA 33T750

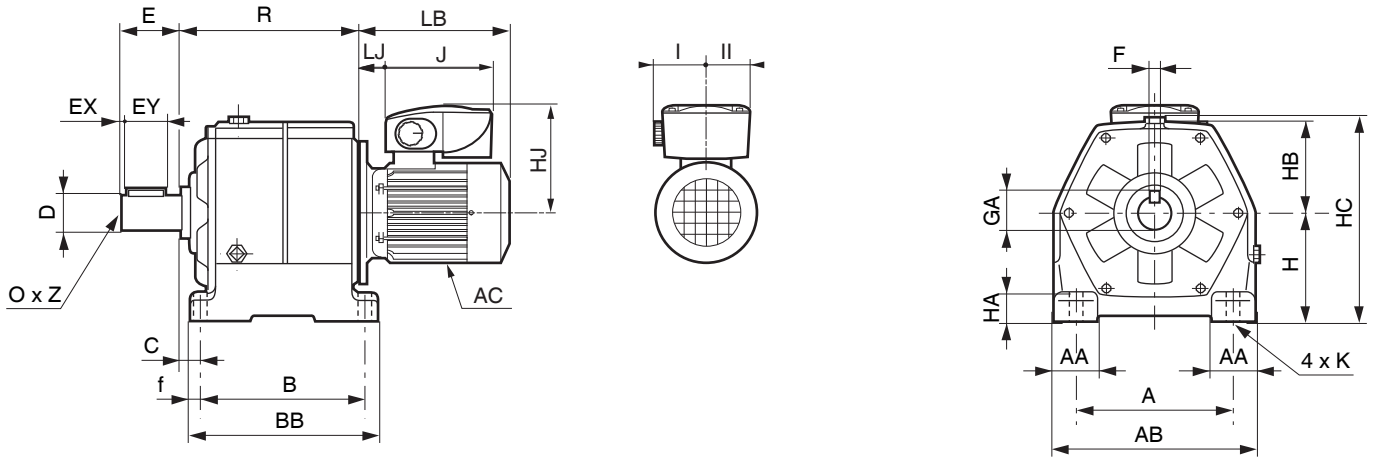
Electromechanical products - variable speed Compabloc 2000 / LS VARMECA

Dimensions

Dimensions of VARMECA variable speed geared motors with Compabloc (Cb), MI integral mounting, multi-train,
Cb 2602 to Cb 2703

Dimensions in millimetres

- S baseplate



| Type | Gearbox | | | | | | | | | | | | 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 2702-2703 | 420 | 110 | 500 | 390 | 450 | 65 | 30 | 250 | 55 | 224 | 486 | 26 | 414 | 90 m6 | 170 | 5 | 160 | 25 | 95 | M24 | 50 | 179 |
| Cb 2602-2603 | 355 | 95 | 435 | 355 | 405 | 60 | 25 | 225 | 50 | 200 | 437 | 24 | 379 | 70 m6 | 140 | 5 | 130 | 20 | 74.5 | M20 | 42 | 131 |

| Frame size | VARMECA variable speed motors | | | | | | | | | | | | | | | | Max weight kg |
|------------|-------------------------------|--------|-------|--------|--------|--------|--------|------------------|--------|-------|--------|--------|--------|--------|-----|------|---------------|
| | 3-phase LS | | | | | | | LS and FCR brake | | | | | | | | | |
| | AC | max HJ | max J | max LB | min LJ | max I' | max II | AC | max HJ | max J | max LB | min LJ | max I' | max II | | | |
| 90 | 190 | 215 | 231 | 265 | 32 | 94 | 75 | 19.4 | 184 | 215 | 231 | 330 | 39 | 94 | 75 | 28.4 | |
| 100 | 200 | 270 | 336 | 337 | 44 | 141 | 115 | 26.7 | 200 | 270 | 336 | 399 | 44 | 141 | 115 | 34.2 | |
| 112 | 235 | 280 | 336 | 462 | 49 | 141 | 115 | 42.6 | 235 | 280 | 336 | 462 | 49 | 141 | 115 | 48.7 | |
| 132 | 280 | 300 | 336 | 584 | 65 | 141 | 115 | 61 | 280 | 300 | 336 | 584 | 65 | 141 | 115 | 89 | |
| 160 | 316 | 311 | 336 | 821 | 50 | 141 | 115 | 96 | 316 | 311 | 336 | 821 | 50 | 141 | 115 | 111 | |

1. Dimension I includes the control knob ; for supply without knob, take the value of dimension II.

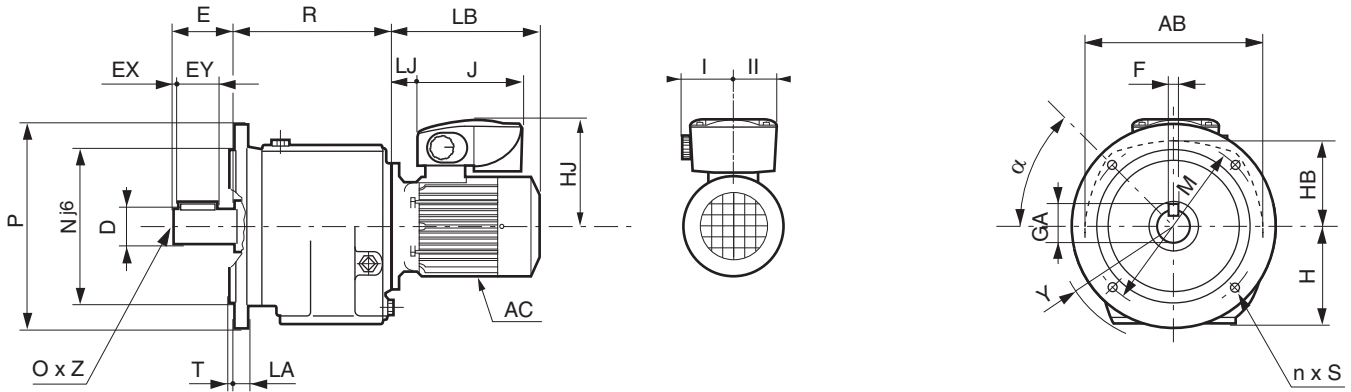
Electromechanical products - variable speed Compabloc 2000 / LS VARMECA

Dimensions

Dimensions of VARMECA variable speed geared motors with Compabloc (Cb), MI integral mounting, multi-trains,
Cb 2602 to Cb 2703

- BS, BD1, BR baseplate

Dimensions in millimetres



| Type | Gearbox | | | | | 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 2702-2703 | 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 2602-2603 | 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 |

| Type | BD1 flange | | | | | | | | Max weight kg | BR flange | | | | | | | | Max weight kg | | |
|---------------------|------------|-----|-----|-----|-----|----|---|----------|---------------|-----------|----|-----|-----|-----|-----|----|---|---------------|----------|-----|
| | LA | M | N | P | R | S | T | α | | n | LA | M | N | P | R | S | T | | α | n |
| Cb 2702-2703 | 20 | 400 | 350 | 450 | 469 | 18 | 5 | 22°30' | 8 | 175 | 20 | 400 | 350 | 450 | 469 | 18 | 5 | 22°30' | 8 | 179 |
| Cb 2602-2603 | 20 | 400 | 350 | 450 | 424 | 18 | 5 | 22°30' | 8 | 127 | 20 | 400 | 350 | 450 | 434 | 18 | 5 | 22°30' | 8 | 131 |

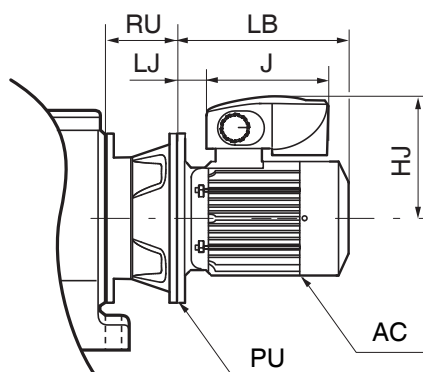
| Frame size | 3-phase LS | | | | | | | | Max weight kg | LS and FCR brake | | | | | | | | Max weight kg |
|------------|------------|--------|-------|--------|--------|--------|--------|------|---------------|------------------|-------|--------|--------|--------|--------|------|--|---------------|
| | AC | max HJ | max J | max LB | min LJ | max I' | max II | AC | | max HJ | max J | max LB | min LJ | max I' | max II | | | |
| 90 | 190 | 215 | 231 | 265 | 32 | 94 | 75 | 19.4 | 184 | 215 | 231 | 330 | 39 | 94 | 75 | 28.4 | | |
| 100 | 200 | 270 | 336 | 337 | 44 | 141 | 115 | 26.7 | 200 | 270 | 336 | 399 | 44 | 141 | 115 | 34.2 | | |
| 112 | 235 | 280 | 336 | 462 | 49 | 141 | 115 | 42.6 | 235 | 280 | 336 | 462 | 49 | 141 | 115 | 48.7 | | |
| 132 | 280 | 300 | 336 | 584 | 65 | 141 | 115 | 61 | 280 | 300 | 336 | 584 | 65 | 141 | 115 | 89 | | |
| 160 | 316 | 311 | 336 | 821 | 50 | 141 | 115 | 96 | 316 | 311 | 336 | 821 | 50 | 141 | 115 | 111 | | |

Electromechanical products - variable speed Compabloc 2000 / LS VARMECA

Dimensions

Dimensions of VARMECA variable speed geared motors with Compabloc (Cb), MU universal mounting,
Cb 2602 to Cb 2703

Dimensions in millimetres



VARMECA variable speed motors, MU universal mounting

| Frame size | U-mount | | | | | | | | | | | | | | | Compabloc (Cb) type | |
|------------|----------------|-----|-----|-----|----|-----|-----------|-----------------------|-----|-----|-----|----|-----|-----------|------|---------------------|--|
| | LS and VARMECA | | | | | | | LS, VARMECA and brake | | | | | | | 26-- | 27-- | |
| | AC | HJ | J | LB | LJ | PU | Weight kg | AC | HJ | J | LB | LJ | PU | Weight kg | RU | RU | |
| 90 | 190 | 215 | 231 | 265 | 32 | 200 | 19.4 | 184 | 215 | 231 | 324 | 12 | 200 | 31 | - | - | |
| 100 | 200 | 270 | 336 | 290 | 12 | 250 | 25 | 200 | 270 | 336 | 388 | 40 | 250 | 38 | 198 | 198 | |
| 112 | 235 | 280 | 336 | 425 | 42 | 250 | 37.5 | 235 | 280 | 336 | 425 | 42 | 250 | 53.5 | 198 | 198 | |
| 132 | 280 | 300 | 336 | 532 | 26 | 300 | 61 | 280 | 300 | 336 | 532 | 26 | 300 | 88.5 | 218 | 218 | |
| 160 | 316 | 311 | 336 | 747 | 38 | 350 | 95 | 316 | 311 | 336 | 747 | 38 | 350 | 110.5 | 248 | 248 | |

| | Compabloc (Cb) type | |
|--|---------------------|------|
| | 26-- | 27-- |
| Additional U-mount weight (kg) | 65 | 75 |
| Max permissible motor weight (kg) | 400 | 600 |

The gearbox dimensions are given on the previous pages.

