

Electromechanical products - variable speed Atmospheres containing explosive dust Compabloc 2000 / LSMV PX FCR



**CATEGORY 2
ZONE 21**

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_S) in revolutions per minute (min^{-1}). The main characteristic of the 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 : 26, 27, 28, 29.
Rated output torque : from 800 N.m to 16 000 N.m.
Power rating : from 0.37 to 45 kW.
Reduction ratios : from 1.25 to 160.
Two and three reduction stages.
High efficiency : 95 % to 98 %.
Reversible.
Silent operation.

Gearboxes within the Compabloc 2000 range benefit from the ATEX **certifications** : INERIS n° 03 ATEX 0013 X. (Cbxxxx/LSPXxxxx geared motor), INERIS 03 ATEX 012X (FCR brake). Safety-related parameters : Frequency - 50 or 60 Hz ; other fixed values : between 1 and 200 Hz and special version with adapted parameters. The encoder supply is made by dispensation. The forced ventilation is forbidden from the frame sizes 71 to 160.

Construction

Description of Compabloc (Cb) gearboxes

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 baseplate or BS, BD..., BR flanges. They are compact and meet industrial application-related requirements
Gears	Steel Ni Cr Mo	- 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
Seals	Nitrile	<ul style="list-style-type: none"> - sealing rings between housing and flange - anti-dust lipseals according to DIN 3760 AS form
Shaft	Steel	<ul style="list-style-type: none"> - grinding of the sealing surfaces - key according to ISO R773 - diameter tolerance according to and NFE 22-051 and ISO R775 - Tapped holes at shaft end in accordance with DIN 332 version for mounting the connecting equipment.
End shields	Cast iron	- 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, it is fitted with drain, level and vent plugs
Mounting		MI : geared motor with integrated variable speed motor MU : geared motor with IEC variable speed motor, with universal mounting
Standard motors		LSMV PX : multi-voltage 220/380 V - 230/400 V - 240/415 V - sheet metal fan cover, fitted on request with a drip cover for operation in vertical position (shaft end facing down) - metal terminal box fitted with cable gland - IP 65 standard protection
Brake motors		FCR : failsafe brake asynchronous motor, ranging from 3 to 11kW, IP 65 protection
Other motors		See pages D07 to D09
Finish	Paint	Shade : RAL 1007 (yellow), system I (1 polyurethane vinyl layer of 25/30 μm)

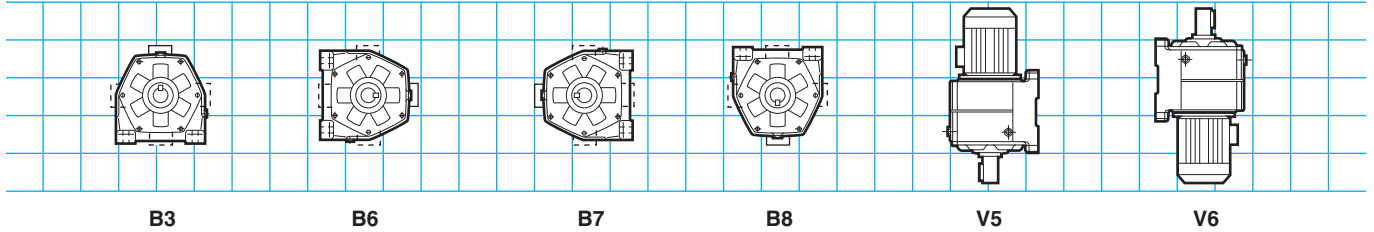
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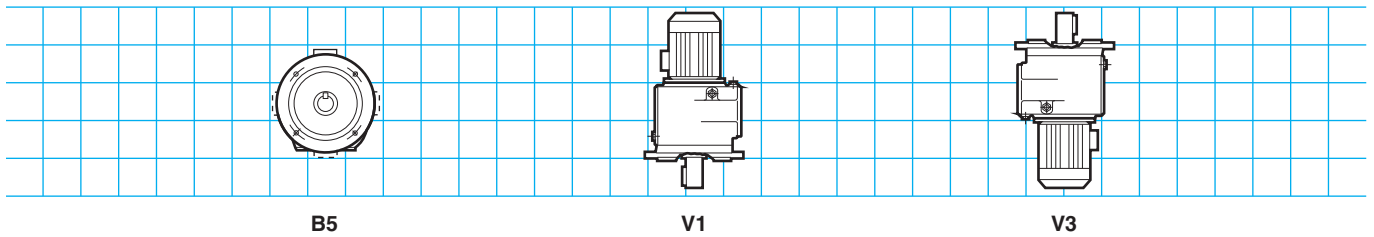
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Forms and operating positions

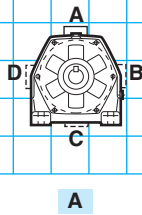
Positions for S form (with baseplate)



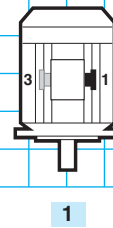
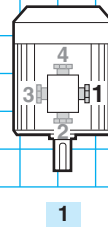
Positions for BS, BD, BR form



Terminal box position



Cable gland position



Non-brake motor

Brake motor

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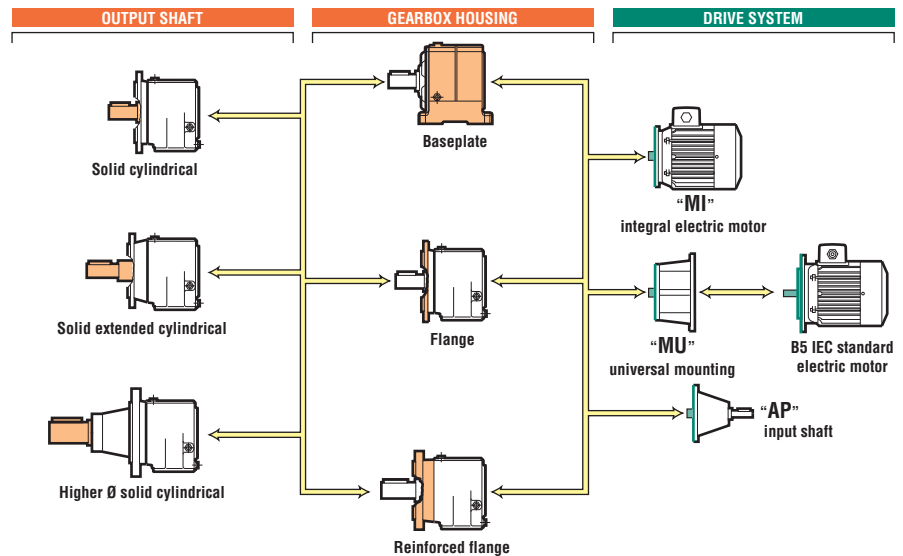
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Adaptation possibilities

Leroy-Somer offers several drives for its gearboxes which meet a diverserange 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.

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

- **fixed-speed 3-phase asynchronous motors :**
 - LSPX motor from 2.2 to 45 kW,
 - FCR brake LSPX motor from 2.2 to 15 kW,
 - FLSPX motor from 2.2 to 90 kW,
 - FCR brake FLSPX motor from 2.2 to 9 kW.
- **electronic variable speed motors :**
centralised system with separate drive
 - LSMV PX motor from 2.2 to 45 kW,
 - LSMV PX FCR brake motor from 2.2 to 11 kW.



Designation / Coding

ATEX II 2D T 125°C	Cb	2603	B5	BS	49.7	MI	4P	LSMV PX 132	7.5 kW	230/400 V 50 Hz
Specific application	Compabloc gearbox type	Manufacturer index and size	Operating position	Mounting type	Exact reduction	Input type Integral mounting	No. of poles	Series, frame size, manufacturer index	Rated power	Voltage and mains frequency

☞ *Codification example in ATEX zone 21 :*

Compabloc 2603 B5 BS 49,7 MI 4P, LSMV PX 132, -

7.5 kW 230/400 V - 50 Hz - II 2D T 125°C

All the products in this catalogue have a code.
The coding table is incorporated in the price list with the list of designations.
Each electromechanical product is classified first in order of power and then in order of speed.

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Selection

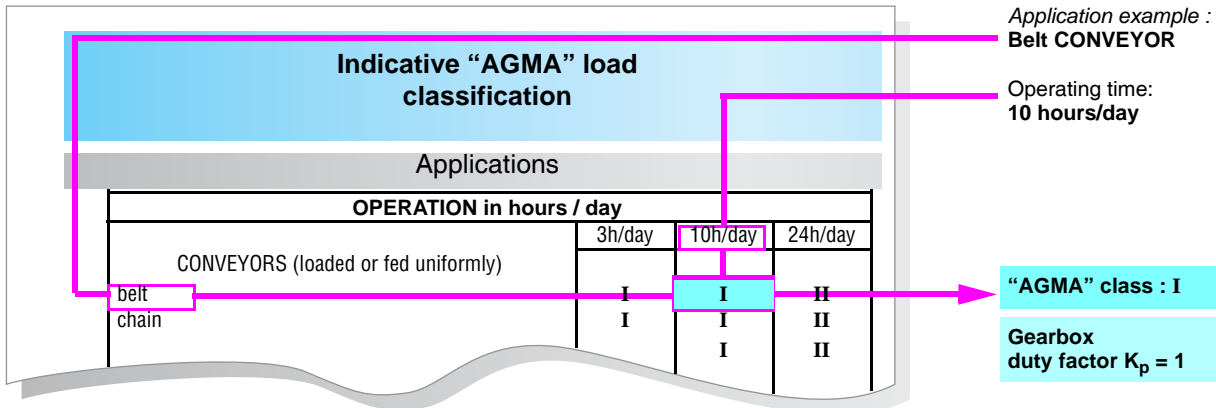
The selection of a gearbox or of a geared motor should take account of the application. Some of these applications are listed in the indicative "AGMA" load classification, page D0.10.

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

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Conditions

Cb 2000 : S, BS
LSPX MV, LSPX MV brake FCR - IP 65 - CI.F - 400 V - 50 Hz
 II 2D T 125°C - ZONE 21

Inputs		Maximum quantity by order			
		Cb 2602/2603	Cb 2702/2703	Cb 2803	Cb 2903
MI LSMV PX	0.37-4 kW				-
	5.5-7.5 kW				-
	9-45 kW				-
MI LSMV PX FCR	0.37-7.5	3	3	3	-
	9-11 kW				-
MU LSMV PX	0.37-7.5				-
	9-45 kW				-
MU LSMV PX FCR	0.37-9 kW	3	3	3	-
	11 kW				-

	Mechanical options			
	S	BS	BD1	BR
Cb 26../27../2803				
Cb 2903	-	-	-	-

Mounting	Page(s) of dimensions corresponding to mounting			
	S	BS	BD1	BR
MI	D3.13	D3.14	D3.15	D3.16
MU	D3.18-19	D3.18-19	D3.18-19	D3.18-19

Inputs 4p / MI-MU	Mains supply 230/400 V	Brake options and VV				
		DLRA	Drip cover	TRR	Encoder	VF
LSMV PX	0.37-3 kW		-	-	-	-
	4 kW		-	-	-	-
	5.5-15 kW		-	-	-	-
	18.5-90 kW		-	-	-	
LSMV PX FCR	0.37-9 kW			-	-	-
	11 kW			-	-	-



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AGMA I

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Cb 2000
LSMV PX, LSMV PX brake FCR - IP 65 - CI.F - 400 Y - 50 Hz
 II 2D T 125°C - ZONE 21

		Cb 2000						
		LSMV PX (kW)						
		1.5	2.2	3	4	5.5	7.5	9
		LSMV PX 4 p						
min ⁻¹	i	90 L	100 L	112 MG	132 SM	132 M		
9.38	160			2703				
12	125		2603				2703	2803
15	100						2703	
18.8	80				2603			
23.8	63						2603	
30	50						2603	
37.5	40							
46.9	31.5							
60	25							
75	20							
93.8	16							
120	12.5							
150	10							
188	8							
238	6.3							
300	5							
375	4							
469	3.15							
4p LSMV PX brake¹								
FCR¹		FCR J01	FCR J01	FCR J01	FCR J02	FCR J02		

1. See chapter C25.

Rated power kW	LSMV PX, LSMV PX brake - 4p 300 to 1 500 ⁻¹ with constant torque			
	Motors	J 10 ⁻³ kg.m2	Brake motors	J 10 ⁻³ kg.m2
1.5	LSMV PX 90 L	4.9	LSMV PX 90 L FCR J01	6.7
2.2	LSMV PX 100 L	5.1	LSMV PX 100 L FCR J01	6.9
3	LSMV PX 100 L	7.1	LSMV PX 100 L FCR J01	8.9
4	LSMV PX 112 MG	15	LSMV PX 112 MG FCR J01	19.3
5.5	LSMV PX 132 SM	33.4	LSMV PX 132 SM FCR J02	60.4
7.5	LSMV PX 132 M	35	LSMV PX 132 M FCR J02	62
9	LSMV PX 132 M	38.5	LSMV PX 132 M FCR J02	65.5

Exact reductions

Type	Reduction indices						
	160	125	100	80	63	50	40
Cb 2603	159	124	99	81.1	64.2	49.7	39.5
Cb 2703	159	124	99	81.1	49.7	49.7	39.5
Cb 2803		127	101	80.9	63.4	49.2	40.6