

Electromechanical products - variable speed Multibloc 2000 - LSMV

General information



Multibloc 2000 geared motors with worm and wheel 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 six sizes : 31, 22, 23, 24, 25, 26.
Rated output torque : from 20 N.m to 1500 N.m.

Power rating : from 0.18 to 9 kW.

Reduction ratios : from 5.2 to 100.

Efficiency : 55 % to 88 %.

Silent operation.

Construction

Description of Multibloc (Mb) gearboxes

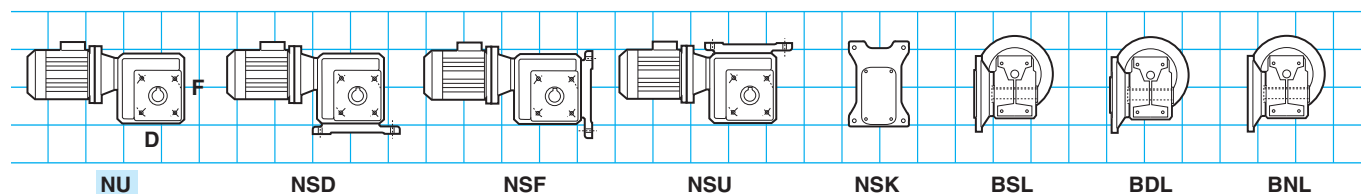
Component	Materials	Remarks
Housing	Cast iron	<ul style="list-style-type: none"> - use of FGL cast iron (flake graphite : tensile strength 150 MPa) single component perlite to ensure the complete sealing of the unit - monobloc with reinforced internal ribbing to absorb vibrations and noise and to increase rigidity - with NU housing, it becomes general-purpose for sizes 22, 23, 24, 25 by the adaptation of S baseplate or BS, BD flanges or R (+ Mb 31) torque arm kit. They are compact and meet industrial application-related requirements
Wheel	Bronze	- moulded on steel or cast iron inserts, blocked with respect to the worm, supported by two large-diameter bearings without intermediate shields (except Mb 26)
Worm	Steel	- cut on whirl lathe, tempered and ground
Shafts	Steel	<ul style="list-style-type: none"> - grinding of the sealing surfaces - hollow cylindrical or keyed output shaft according to ISO R773 - diameter tolerances h6 - tapped hole at output shaft end in accordance with DIN 332 form DR for mounting connecting equipment.
Seals	Nitrile	<ul style="list-style-type: none"> - anti-dust lipseals according to DIN 3760 form AS - ground sealing surfaces
End shields	Cast iron	- on size 26, reinforced by large ribs, ensuring 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 a multi-position operation, it is fitted with drain, level and vent plugs (excepting Mb 31)
Mounting		MU (FT or FF) : geared motor with variable speed IEC motor, with universal mounting
Standard motor		LSMV : - multi-voltage 220/380 V - 230/400 V - 240/415 V - pressed steel fan cover, on request fitted with a drip cover for operation in vertical position (shaft facing down) - metal terminal box with cable gland supplied - IP 55 standard protection
Brake motors		FCR : failsafe brake asynchronous motor, ranging from 0.18 to 9 kW, IP 55 protection
Other motors		See pages D0.7 to D0.9
Finish	Paint	Shade : RAL 6000 (green), system I (1 polyurethane vinyl layer of 25/30 μm)

Electromechanical products - variable speed Multibloc 2000 - LSMV

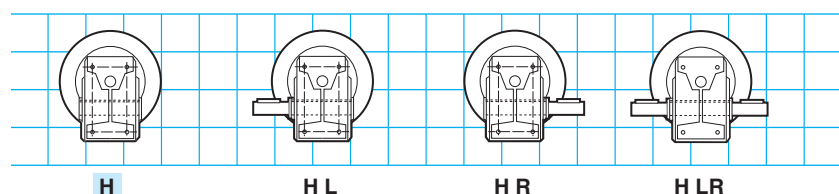
Forms and operating positions

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

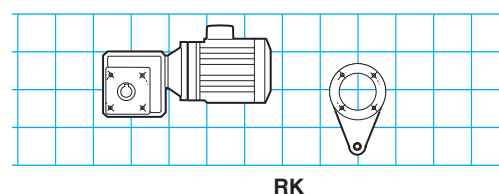
1 - Mounting types



2 - Output shaft

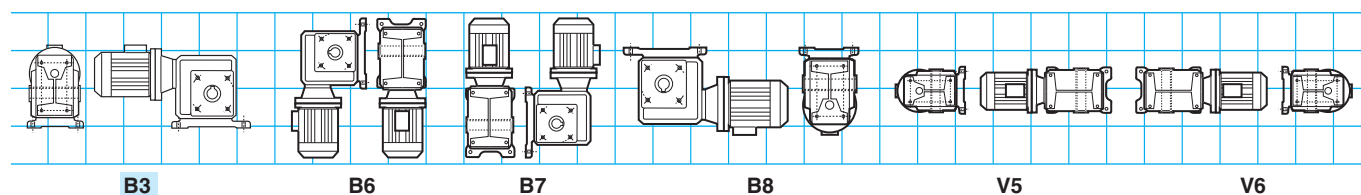


3 - Option

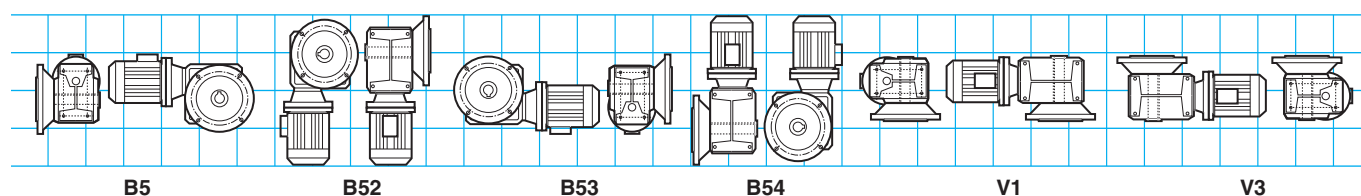


4 - Operating positions

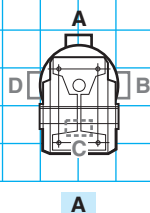
4.1 - NU, NS D, NS U, R mounting



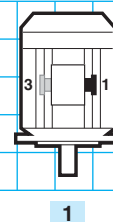
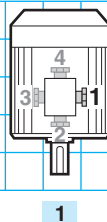
4.2 - BS, BN, BD mounting



Terminal box positions



Cable gland positions



Non-brake motor

Brake motor

Electromechanical products - variable speed Multibloc 2000 - LSMV

Adaptation possibilities

Leroy-Somer offers several drives for its gearboxes which meet a diverse range of needs. They are described below and detailed in the section relating to gearboxes within this catalogue.

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

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

• **3-phase asynchronous motors :**

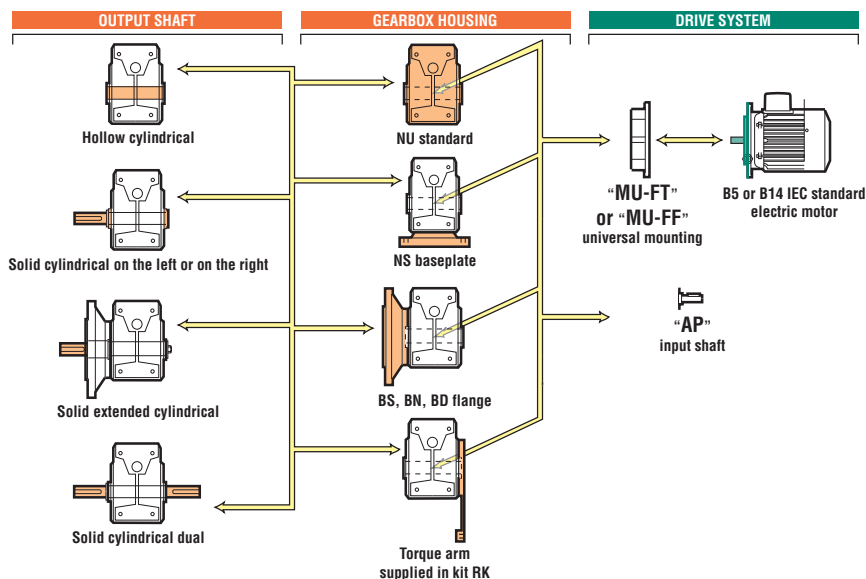
- LS motors from 0.18 to 9 kW,
- FCR brake LS motor from 0.18 to 9 kW,
- FLS motor from 0.55 to 9 kW,
- FCR brake FLS motor from 0.55 to 9 kW,

• **electronic variable speed motors :**
centralised system with separate drive

- LSMV motor from 0.25 to 9 kW,
- LSMV FCR brake motor from 0.25 to 9 kW.

decentralised system with integrated drive

- VARMECA from 0.25 to 9 kW.



Designation / Coding

Mb	2301	B3	NS	D	H	20	MU-FT	4P	LSMV 90 L	1.5 kW	230/400 V 50 Hz	UG
Gearbox type	Size	Operating position	Mounting type	Mounting position	Output shaft definition	Exact reduction	Input type	No. of poles	Series, frame size, manufacturer index	Rated power	Voltage and mains frequency	Use

☞ **Codification example :**

Multibloc Mb 2301 1.5 kW, 72 min⁻¹, class I

Designation

Mb 2301 B3 NS D H 20 MU-FT
4P, LSMV 90 1.5 kW

Code

-

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.

Electromechanical products - variable speed Multibloc 2000 - LSMV

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 .

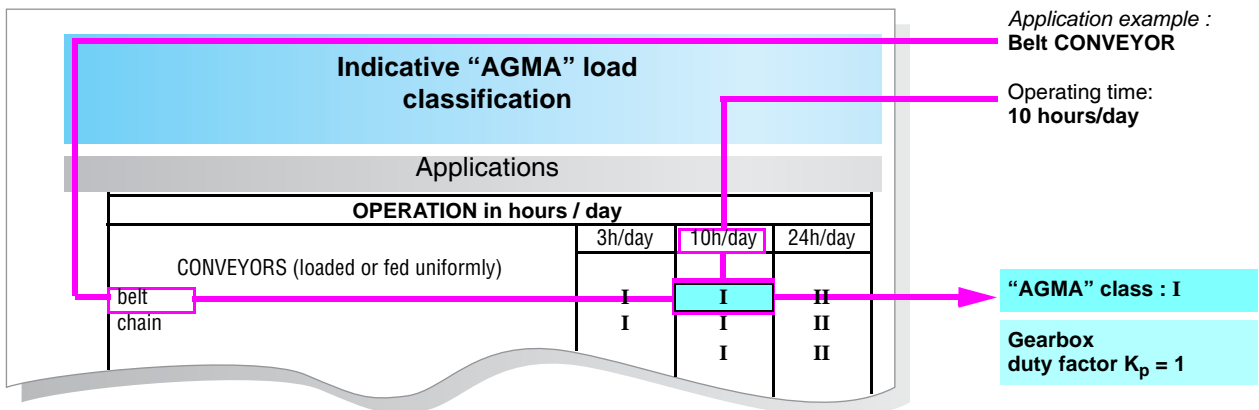
"AGMA" class	Gearbox duty factor K_p
I	1
II	1.4
III	2

REMARK : In the case of worm gear gearboxes such as Multibloc 2000, the operating factor must be taken into account, that is the operating time at full load in relation to the total daily operating time of the gearbox. In this catalogue, selection is made for an operating factor of 50 %.

For an operating factor of 100 %, class I becomes class II, and class II becomes class III. (K_p multiplied by 1.4).

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	III
Violent shocks, many starts	10 hours / day	III
Damped shocks	24 hours / day	III

Electromechanical products - variable speed Multibloc 2000 - LSMV

Conditions

Mb 3101, Mb 2000 : NU, BT, BS
LSMV, LSMV brake FCR - IP 55 - CI.F - 400 V Y - 50 Hz

Inputs		Maximum quantity by order					
MU B14 or B5 IEC		Mb 3101	Mb 2201	Mb 2301	Mb2401	Mb 2501	Mb 2601
MU-FT LSMV	0.25-9 kW	5	5	5	5	5	
MU-FF LSMV	0.25-4 kW	5	5	5	5	5	-
MU-FT LSMV FCR	0.25-4 kW	5	5	5	5	5	-
	5.5-9 kW	-	-	-	-	-	
MU-FF LSMV FCR	0.25-4 kW	5	5	5	5	5	-

	Mechanical options						
	NU H NU HL	NS H NS HL	BSL H BSL HL	BDL H BDL HL	BNL H BNL HL	RK	BT LR H
Mb 3101		-	-				-
Mb 2201							-
Mb 2301							-
Mb 2401							-
Mb 2501							-
Mb 2601	-					-	

Mounting		Page(s) of dimensions corresponding to mounting						
		NU H NU HL	NS H NS HL	BSL H BSL HL	BDL H BDL HL	BNL H BNL HL	RK	BT LR H
MU-FT	H shaft	D9.18	D9.22	D9.26	D9.30	D9.26	D9.34	D9.18
	HL, HR shaft	D9.20	D9.24	D9.28	D9.32	D9.28	-	-
MU-FF	H shaft	D9.19	D9.23	D9.27	D9.31	D9.27	D9.34	D9.19
	HL, HR shaft	D9.21	D9.25	D9.29	D9.33	D9.29	-	-

Inputs	4p / MU	Mains supply		Brake options			
		230/400 V	DLRA	Drip cover	TRR	Encoder	VF
LSMV	0.25-7.5 kW		-		-		
	5.5-9 kW		-		-		
LSMV FCR	0.25-9 kW				-		



Electromechanical products - variable speed Multibloc 2000 - LSMV

AGMA I

Mb 3101, Mb 2000 : NU, BT, BS
LSMV, LSMV brake FCR - IP 55 - CI.F - 400 V Y - 50 Hz

Mb 3101, Mb 2000

		LSMV (kW)									
		0.25	0.37	0.75	1.5	2.2	3	4	5.5	7.5	9
		LSMV 4p									
min ⁻¹	i	71 L	80 L	90 L	100 L	112 MG	132 SM	132 M			
25	60		2201	2401							
30	50										
37.5	40			2301							
50	30	3101 ¹			2401	2501					
60	25.5										
75	20			2201							
100	15				2301	2401				2601 ¹	
150	10.3										
		4 p LSMV brake ²									
FCR ²		FCR J01			FCR J01	FCR J01	FCR J01	FCR J01	FCR J02		

1. Mb 3101 - Mb 2601 : MUFT obligatory

2. See chapter C13.

Rated power kW	LSMV, LSMV brake - 4p 150 to 1 500 ⁻¹ with constant torque			
	Motors	J 10 ⁻³ kg.m ²	Brake motors	J 10 ⁻³ kg.m ²
0.25	LSMV 71 L	1.25	LSMV 71 L FCR J01	1.25
0.37	LSMV 71 L	1.5	LSMV 71 L FCR J01	1.5
0.75	LSMV 80 L	3.4	LSMV 80 L FCR J01	3.4
1.5	LSMV 90 L	6.7	LSMV 90 L FCR J01	6.7
2.2	LSMV 100 L	6.9	LSMV 100 L FCR J01	6.9
3	LSMV 100 L	8.9	LSMV 100 L FCR J01	8.9
4	LSMV 112 MG	19.3	LSMV 112 MG FCR J01	19.3
5.5	LSMV 132 SM	60.4	LSMV 132 SM FCR J02	60.4
7.5	LSMV 132 M	62	LSMV 132 M FCR J02	62
9	LSMV 132 M	65.5	LSMV 132 M FCR J02	65.5

Exact reductions

Type	Reduction indices							
	60	50	40	30	25.5	20	15	10.3
Mb 2601	60	50	40	30	25.5	20.5	15.5	10.3
Mb 2501	60	50	40	30	25.5	20.5	15.5	10.3
Mb 2401	60	50	40	30	25.5	19.5	14.5	10.3
Mb 2301	60	50	40	30	25.5	20	15	10.3
Mb 2201	60	50	40	30	25.5	20	15	10.3
Mb 3101	60	50	40	30	25	20	15	10