

Electromechanical products

Atmospheres containing explosive dust

Multibloc 2000



**CATEGORY 2
ZONE 21**

General information



The Multibloc 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.

Gearboxes within the Multibloc 2000 range benefit from the ATEX **certification** : INERIS n° 03 ATEX 3005 X.
For geared motors, this certification becomes : INERIS n° 03 ATEX 0013 X

Construction

Description of Multibloc (Mb) gearboxes - Zone 21



II 2D T 125 °C

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 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 (excepting 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 output with key in accordance with ISO R773 - diameter tolerances h6 - tapped holes in 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		<ul style="list-style-type: none"> AP : input shaft gearbox (excepting Mb 31) MU (FT or FF) : geared motor with IEC motor, with universal mounting
Standard motor		<ul style="list-style-type: none"> LSPX : - 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 fitted with cable gland - IP 65 standard protection
Brake motors		FCR (see C.15) : failsafe brake asynchronous motor, ranging from 0.18 to 9 kW, IP 65 protection
Finish	Paint	Shade : RAL 1007 (yellow), system I (1 polyurethane vinyl layer of 25/30 μm)

Electromechanical products

Atmospheres containing explosive dust

Multibloc 2000

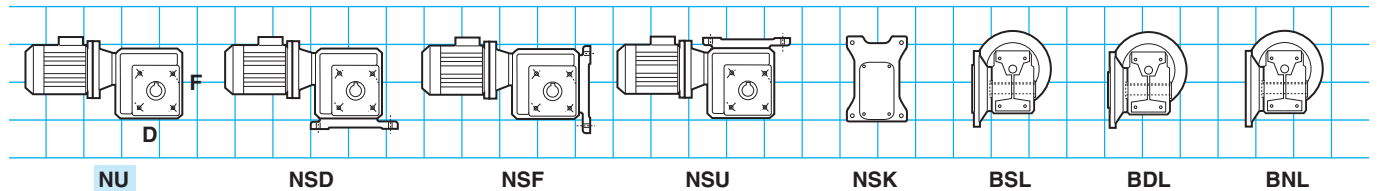


CATEGORY 2
ZONE 21

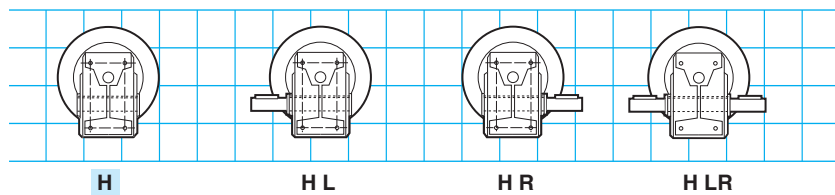
Forms and operating positions

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

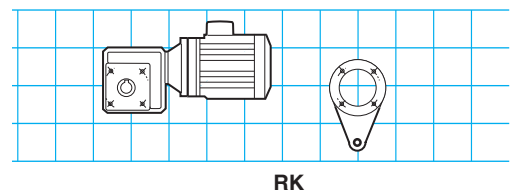
1 - Mounting



2 - Output shaft

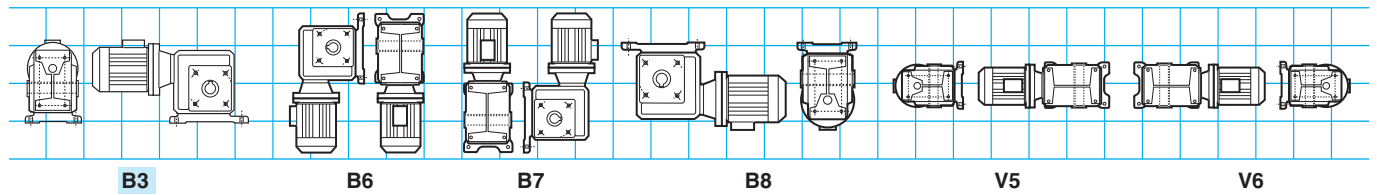


3 - Option

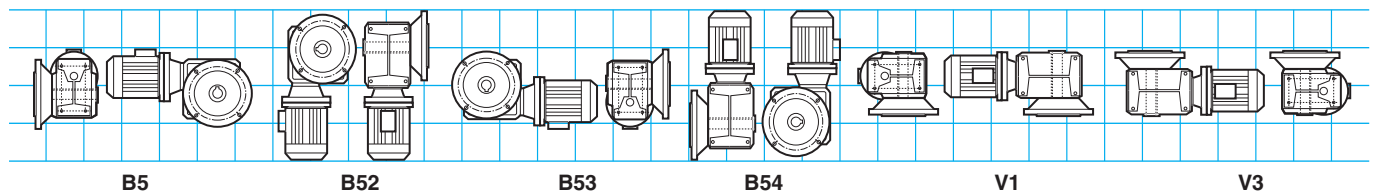


4 - Position

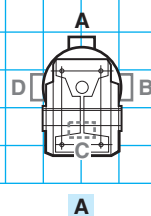
4.1 - Mounting : NU, NS D, NS U, R



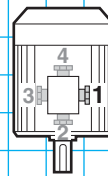
4.2 - Mounting : BS, BN, BD



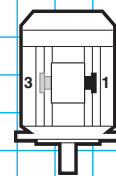
Terminal box positions



Cable gland positions



Non-brake motor



Brake motor



Electromechanical products Atmospheres containing explosive dust Multibloc 2000

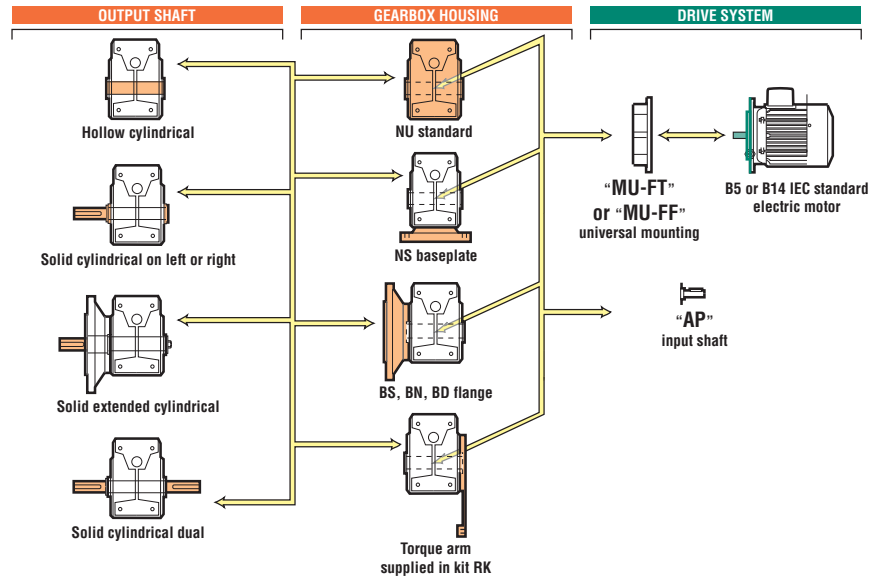
**CATEGORY 2
ZONE 21**

Adaptation possibilities

Leroy-Somer offers several drives for its gearboxes which meet a diverse range of needs. They are described below and in the section of this catalogue relating to gearboxes.. 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 :**
 - LSPX motors from 0.18 to 9 kW,
 - FCR brake motor from 0.18 to 9 kW,
- **electronic variable speed motors :**
centralised system with separate drive
 - LSMV PX motor from 0.25 to 9 kW,
 - LSMV PX brake motor from 0.25 to 9 kW.
- **decentralised system with built-in drive**
 - VARMECA from 0.25 to 4 kW.



Designation / Coding

ATEX II 2D T 125°C	Mb	2301	B3	NS	D	H	20	MU-FT	4P	LSPX 90 L	1.1 kW	230/400 V 50 Hz	UG
Specific application	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 1.1 kW, 72 min⁻¹, class II
Zone ATEX 21

Designation Mb 2301 B3 NS D H 20 MU-FT 4P, LSPX 90 1.1 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

Atmospheres containing explosive dust

Multibloc 2000



CATEGORY 2
ZONE 21

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. ▼

Classification indicative des charges selon "AGMA"

Applications

	FONCTIONNEMENT en heures / jour		
	3h/jour	10h/jour	24h/jour
CONVOYEURS (chargés ou alimentés uniformément)			
à bandes	I	I	II
à chaînes	I	I	II

Exemple d'application : CONVOYEUR à bande

Temps de fonctionnement : 10 heures/jour

Classe "AGMA" : I

Facteur de service K_p du réducteur = 1

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

Atmospheres containing explosive dust

Multibloc 2000

CATEGORY 2
ZONE 21

Conditions

Mb 3101, Mb 2000 : NU, NS, BS, BN, BD
LSPX, LSPX brake FCR - IP 65 - Cl.F - 400 Y - 400 Δ - 50 Hz - U.G.
II 2D T 125°C - ZONE 21

Inputs ¹		Maximum quantity by order					
		Mb 3101	Mb 2201	Mb 2301	Mb 2401	Mb 2501	Mb 2601
LSPX	0.25-0.55 kW					-	-
	0.75-4 kW	5	5	5	5	5	2
	5.5-9 kW	-	-	-	5	5	2
LSPX FCR	0.25-2.2 kW	5	5	5	5	5	2
	3-4 kW	-	-	5	5	5	2
	5.5-9 kW ²	-	-	-	-		
FLS PX	0.55-9 kW						
FLS PX FCR	0.55-9 kW						

1. MU-FT (B14) ; MU-FF (B5). 2. MU-FF only.

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

Mounting		Page(s) of dimensions corresponding to mounting						
		NU H	NS H	BSL H	BDL H	BNL H	RK	BT LR H
		NU HL	NS HL	BSL HL	BDL HL	BNL HL		
AP	H shaft	D9.10	D9.14	D9.16	D9.16	D9.14	D9.34	-
	HL, HR shaft	D9.11	D9.13	D9.15	D9.17	D9.15	-	D9.11
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	Electrical options				Brake options			
		230/400 V	400 V Δ	PTO/CTP	DLRA	Drip cover	TRR	Different Mf	J01
LSPX	0.25-0.55 kW				-	-	-	-	-
	0.75-3 kW				-	-	-	-	-
	4-9 kW				-	-	-	-	-
FLS PX, FLS PX FCR	0.55-9 kW								
LSPX FCR	0.25-3 kW								
	4-5.5 kW								
	7.5-9 kW								

Electromechanical products

Atmospheres containing explosive dust

Multibloc 2000



CATEGORY 2
ZONE 21

Service S1

Mb 3101, Mb 2000
LSPX, LSPX brake FCR - IP 65 - Cl.F - 400 Y - 400 Δ - 50 Hz - U.G.
 II 2D T 125°C - ZONE 21

Mb 3101, Mb 2000

		LSPX IM B14 or IM B5 IEC (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	9	
		LSPX 4 p														
min ⁻¹	i	71			80			90			100		112		132	
14.3	100															
17.9	80		2301													
23.8	60								2601							
28.6	50	2201					2501									
35.8	40				2401 ³											
47.7	30			2301												
56.1	25.5				2301						2601					
71.5	20					2301										
95.3	15		3101 ¹		2201 ²											
124.3	11.5						2301									
138.8	10.3				<			2401		2501		2601				
195.9	7.33				<	<	2201 <									
275	5.2					2301										
Brake motors LSPX B14 IEC or B5																
FCR		71			80			90			100		112		132 ⁴	

1. 3101 < LSPX 80 : B14 FT 85, ba 14 x 30 obligatory.
2. 2201 < LSPX 90 : B5 FF 130, ba 19 x 40 obligatory.
3. 2401 > LSPX 80 : B14 FT 100, ba 19 x 40 obligatory.
4. LSPX 132 B5 only.

Exact reductions

Type	Reduction indices													
	100	80	60	50	40	30	25.5	20	15	11.5	10.3	7.3	5.2	
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	11.5	10.3	7.5	5.2	
Mb 2201	100	80	60	50	40	30	25.5	20	15	11.5	10.3	7.33		
Mb 3101	100	80	60	50	40	30	25	20	15	12.5	10	7.5		

Electromechanical products

Atmospheres containing explosive dust

Multibloc 2000



CATEGORY 2
ZONE 21

Service S4 - 40 %

Mb 3101, Mb 2000
LSPX, LSPX brake FCR - IP 65 - Cl. F - 400 Y - 400 Δ - 50 Hz - U.G.
 II 2D T 125°C - ZONE 21

Mb 3101, Mb 2000

		LSPX IM B14 or IM B5 IEC (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	9	
		LSPX 4 p														
min ⁻¹	i	71			80			90			100		112		132	
14.3	100															
17.9	80															
23.8	60			2401												
28.6	50		2201						2601							
35.8	40			2301	2401											
47.7	30			2201				2501								
56.1	25.5					2301					2601					
71.5	20				2201 ²		2401									
95.3	15		3101 ¹		<	2201		2401								
124.3	11.5				<	<	2301									
138.8	10.3				<	<	2201	<	2401		2501		2601			
195.9	7.33				<	<										
275	5.2						2301									
Brake motors LSPX B14 IEC or B5																
FCR		71			80			90			100		112		132 ⁴	

1. 3101 < LSPX 80 : B14 FT 85, ba 14 x 30 obligatory.
2. 2201 < LSPX 90 : B5 FF 130, ba 19 x 40 obligatory.
3. 2401 > LSPX 80 : B14 FT 100, ba 19 x 40 obligatory.
4. LSPX 132 B5 only.

Exact reductions

Type	Reduction indices													
	100	80	60	50	40	30	25.5	20	15	11.5	10.3	7.3	5.2	
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	11.5	10.3	7.5	5.2	
Mb 2201	100	80	60	50	40	30	25.5	20	15	11.5	10.3	7.33		
Mb 3101	100	80	60	50	40	30	25	20	15	12.5	10	7.5		

Electromechanical products

Atmospheres containing explosive dust

Multibloc 2000



CATEGORY 2
ZONE 21

Service S4 - 20 %

Mb 3101, Mb 2000
LSPX, LSPX brake FCR - IP 65 - Cl. F - 400 Y - 400 Δ - 50 Hz - U.G.
 II 2D T 125°C - ZONE 21

Mb 3101, Mb 2000

		LSPX IM B14 or IM B5 IEC (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	9	
		LSPX 4 p														
min ⁻¹	i	71			80			90			100		112		132	
14.3	100															
17.9	80															
23.8	60									2601						
28.6	50		2201	2301												
35.8	40															
47.7	30			2201	2301		2401		2501							
56.1	25.5					2301					2601					
71.5	20				2201 ²											
95.3	15		3101 ¹		<	2201	2301									
124.3	11.5				<	<	<									
138.8	10.3				<	<	2201	<	2301		2401	2501		2601		
195.9	7.33				<	<	<	<								
275	5.2						2301									
Brake motorsn LSPX B14 IEC or B5																
FCR		71			80			90			100		112		132 ³	

1. 3101 < LSPX 80 : B14 FT 85, ba 14 x 30 obligatory.
2. 2201 < LSPX 90 : B5 FF 130, ba 19 x 40 obligatory.
3. LSPX 132 B5 only.

Exact reductions

Type	Reduction indices													
	100	80	60	50	40	30	25.5	20	15	11.5	10.3	7.3	5.2	
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	11.5	10.3	7.5	5.2	
Mb 2201	100	80	60	50	40	30	25.5	20	15	11.5	10.3	7.33		
Mb 3101	100	80	60	50	40	30	25	20	15	12.5	10	7.5		