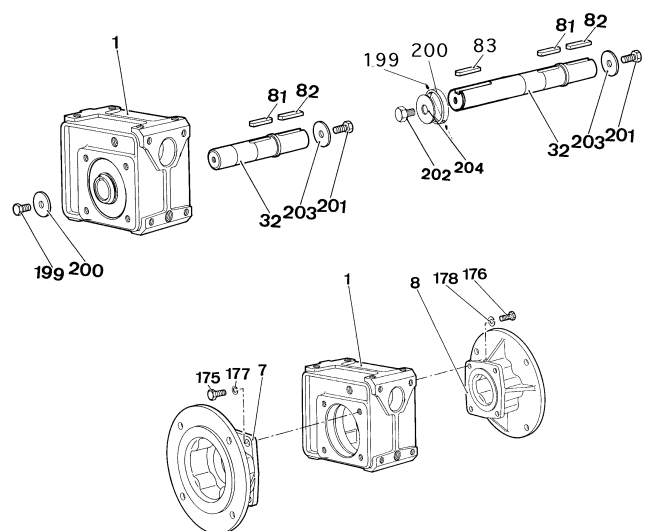


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en

This manual is to be given to
the end user



Mb 3101, Mb 2000, Mb IA Geared motors

Installation and maintenance

Mb 3101, Mb 2000, Mb IA

Geared motors

NOTE - CAUTION - CONTENTS

NOTE

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CAUTION



Throughout the manual, this symbol warns of consequences which may arise from inappropriate use of the Multibloc geared motor, since the risks may lead to material or physical damage.

Despite all the care taken in the manufacturing and inspection processes of our products, Leroy-Somer cannot guarantee 100% against lubricant leakage. In cases where these leaks could be serious, putting at risk the safety of people and property, it is the responsibility of the fitters to take all necessary precautions to avoid these eventualities occurring.

IMPORTANT!

Before commissioning: fit the breather plug at the highest point in place of an oil retention plug.

CONTENTS

1 - LUBRICATION	11
1.1 - Options	11
1.2 - Positions of the plugs depending on the gearbox operating position	11
1.3 - Lubrication	11
1.4 - Table of lubricants	11
1.5 - Maintenance, oil change	11
 2 - HOW TO ORDER	 11
 3 - EXPLODED VIEWS, PARTS LISTS	 12 to 14
3.1 - Output flange kit	12
3.2 - Input flange kit	12
3.3 - Output shaft kits L (G) or R (D) or LR (X)	12
3.4 - Torque arm kit	13
3.5 - Foot mounting kit	13
3.6 - Primary maintenance parts	13
3.7 - LS motor	14
3.8 - non-ventilated FLS motor	14
 4 - Mb IA	 15 to 16
4.1 - Exploded view of Mb IA	15
4.2 - Parts list for Mb IA	15
4.3 - Torque arm kit	15
4.4 - Torque arm kit with sealing cartridge	15
4.5 - Sealing cartridge kit	15
4.6 - Hollow shaft protection kit	16
4.7 - Mounting the cylindrical hollow shaft with the shaft of the driven machine	16

Mb 3101, Mb 2000, Mb IA

Geared motors

LUBRICATION

1 - LUBRICATION

For operation between -20 and +40°C, the Multibloc gearbox is delivered, as standard, lubricated with synthetic oil of the following type:

- for Mb 3101: PAG (polyalkyleneglycol) ISO VG 220 (Shell TIVELA WB, approved by our technical departments)

- for Mb 2201 to 2601: PAO (polyalphaolefin) ISO VG 460, (max. oil T°: 100°C in continuous operation).

⚠ It is essential to use an oil of the same type as that recommended. Polyglycol lubricants cannot be mixed with different types of mineral or synthetic lubricant. We recommend greasing the motor coupling with NLGI 2 PAO + Clay grease (Mobil temp SHC 100).

1.1 - Options

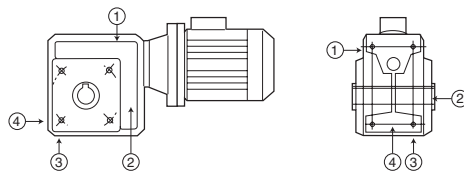
Duty factor $K \geq 1$, for operation between:

- 30 and -10°C: synthetic oil ISO VG 150 (max. oil T°: 90°C in continuous operation)
- 50 and -30°C: synthetic oil ISO VG 32 (max. oil T°: 40°C in continuous operation).

Grease lubrication: extreme pressure, type NLGI 00:

- for operation between -10 and +40°C, for a duty factor $K > 1.5$, gearbox under low load, and grease temperature in operation less than 70°C.

1.2 - Positions of the plugs according to the gearbox operating position



Operating positions

Plug	B3 or B5 (B)	B8 or B53 (P)	V5 or V1 (H)	V6 or V3 (T)	B7 or B54 (V)	B6 or B52 (W)
Filling	1	3 or 4	2	1	2	4 or 3
Breather	1	3	2	1	2	4
Draining	3	1	1	2	4	2

Mb	31	22 to 25	26
Plug with seal	1 x 1/8" BSP	3 x 1/8" BSP	3 x 3/8" BSP
Breather plug with valve	1 x 1/8" BSP	1 x 1/8" BSP	1 x 3/8" BSP

1.3 - Lubrication

Mb 3101, Mb 2201 to Mb 2601

Type	Multi-position	
	Grease	Oil
Mb 2601	3100 cm ³	N > 500 min ⁻¹ N < 500 min ⁻¹
Mb 2501	1400 cm ³	1 1.3
Mb 2401	900 cm ³	0.63 0.63
Mb 2301	420 cm ³	0.3 0.3
Mb 2201	300 cm ³	0.21 0.21
Mb 3101	-	0.12 0.12

Oil capacity: the quantities of oil indicated must be adhered to within ± 5%, regardless of the operating position.

Cb 3000 for Mb 2232 to Mb 2634

Combined gearboxes		Quantity of oil ¹ for Cbs for each operating position					
output	input	B5	B52	B53	B54	V1	V3
Mb 2634	Cb 3233	0.95	1.75	2.25	1.55	2.25	2.7
Mb 2632	Cb 3231	0.25	0.6	1	0.6	0.65	1.2
Mb 2534	Cb 3133	0.6	0.95	1.1	0.85	1.15	1.4
Mb 2532	Cb 3131	0.35	0.5	0.7	0.5	0.55	1
Mb 2433	Cb 3032	0.6	0.6	0.6	0.6	0.6	0.6
Mb 2333	Cb 3032	0.6	0.6	0.6	0.6	0.6	0.6
Mb 2232	Cb 3032	0.6	0.6	0.6	0.6	0.6	0.6

¹. Oil capacity and tolerance: ± 0.05 litre for quantity of oil < 5 litres

1.4 - Table of lubricants

Brands	Grease		Oils				
	Mineral + Lithium	Mineral	P.A.O.-H2	P.A.G.	P.A.O.-H1 ¹		
KLUBER	NLGI 00	ISO VG 220	ISO VG 460	ISO VG 150	ISO VG 32	ISO VG 220	ISO VG 460
MOBIL		MOBIL GEAR 630	SHC 634 (-20°C)	SHC 629 (-30°C)	SHC 624 (-50°C)		KLÜBEROIL
SHELL						TIVELA WB (-20°C)	
TOTAL		TOTAL MULTIS EP200 (-10°C)					

1. H1: Food processing applications : lubricants approved by Leroy-Somer:

1.5 - Maintenance, oil change

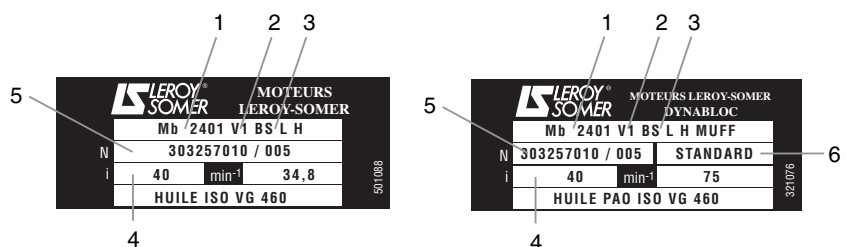
We recommend that the PAO ISO VG 460 oil is changed according to the operating temperature in continuous operation:

- 70°C ---> 25.000 hours
- 90°C ---> 6.000 hours
- 80°C ---> 12.000 hours
- 100°C ---> 3.000 hours

2 - HOW TO ORDER

When ordering, please indicate:

- gearbox type: 2401
 - operating position: V1 (H)
 - form: NU (00 or 33), NS (S-00 or 33), BSL (BS-50 or 53 etc), BDL (BD-50 or 53 etc)
 - exact reduction: 40
 - manufacturing number
 - play: standard (Dynabloc)
- number and description of spare part (for the slow speed shaft, please specify the dimensions)
- type, number of poles, power and FF (B5) or FT (B14) flange of the motor (refer to the nameplates).

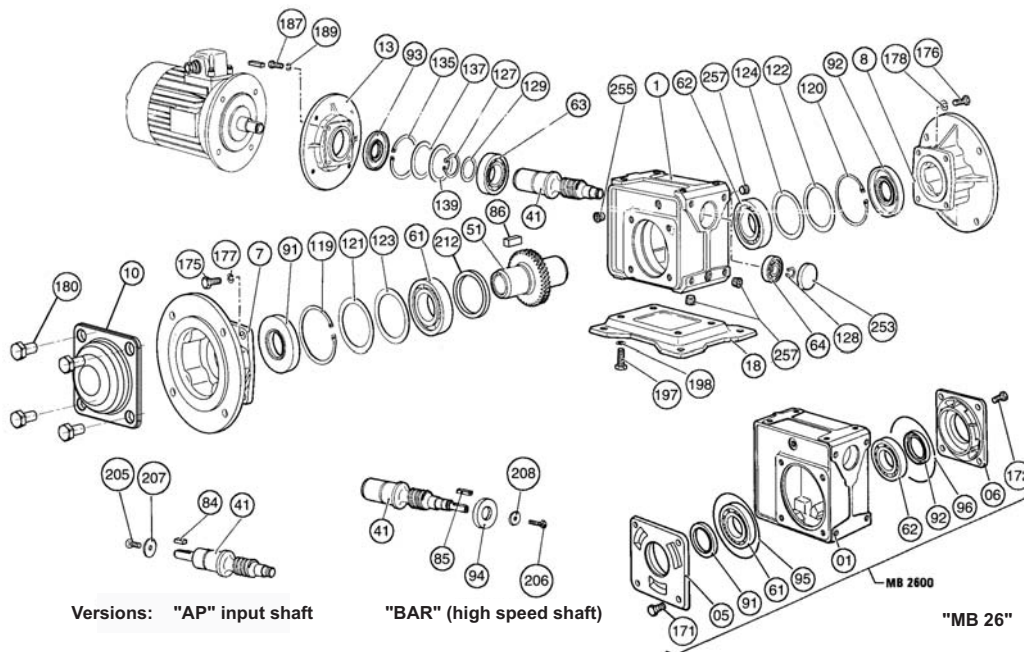


Mb 3101, Mb 2000, Mb IA

Geared motors

EXPLODED VIEWS, PARTS LISTS

3 - EXPLODED VIEWS, PARTS LISTS



Multibloc 3101, 22 to 26 parts list

Ref.	Description	Qty	Ref.	Description	Qty
001	frame	1	092	seal (right side)	1
005/006	end shield for Mb 26	2	093	input seal	1
010	hollow shaft protective cover	1	095/096	O ring seal (Mb 26)	2
041	worm	1	119	I circlip (left side)	1
051	bronze wheel	1	120	I circlip (right side) (Mb 22 to 26)	1
061	bearing (left side)	1	121	washer (left side) (Mb 22 to 26)	1
062	bearing (right side)	1	122	washer (right side) (Mb 22 to 26)	1
063	input bearing	1	123/124	adjusting shims (Mb 22 to 26)	1
064	DE bearing	1	127	E circlip (Mb 22 to 24)	1 or 2
086	key (Mb 31)	1	128	E circlip (Mb 22 to 26)	1 or 2
091	seal (left side)	1	129	cable gland washer (Mb 25-26)	1

Mb 22 to 26 "AP" parts list

Ref.	Description	Qty	Ref.	Description	Qty
135	I circlip	1	171/172	screws for 005/006 (Mb 25-26)	8
137	washer (Mb 25-26)	1	180	cover fixing screw (010)	4
139	adjusting shims (Mb 25-26)	1 set	212	spacer (Mb 31)	1
205	shaft extension screw	1	253	blanking plug	1
207	shaft extension washer	1	255	breather plug	1
			257	oil plug	2 to 4

Mb 22 to 26 "BAR" parts list

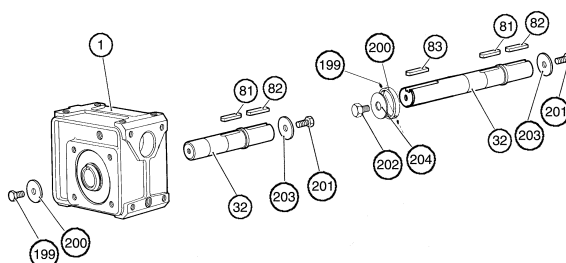
Ref.	Description	Qty
041	AP screw	1
084	AP key	1
206	shaft extension screw	1
208	shaft extension washer	1

3.1 - Output flange kit for Mb 3101, Mb 22 to 25

Ref.	Description	Qty
007	flange (left side)	1
175	fixing screws	4
177	lock washer	4
008	flange (right side)	1
176	fixing screws	4
178	lock washer	4

3.2 - Input flange kit for Mb 22 to 26

Ref.	Description	Qty
013	flange for motor	1
187	fixing screws	4
189	lock washer	4
209	motor fixing screws	4
210	washer	4



3.3 - Shaft kits for Mb 3101, Mb 22 to 26

Output shaft kit L (G) or R (D)

Ref.	Description	Qty
032	slow speed shaft	1
081	hub key	1
082	client key	1
199	shaft retaining screw	1
200	washer	1
201	shaft extension screw	1
203	washer	1

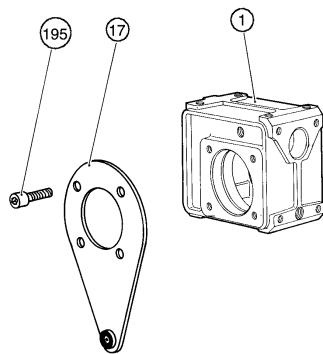
Output shaft kit LR (X)

Ref.	Description	Qty
032	slow speed shaft	1
081	hub key	1
082-3	keys	2
199	stop screw	2
200	locking collar	1
201-2	shaft extension screw	2
203-4	washer	2

Mb 3101, Mb 2000, Mb IA Geared motors

EXPLODED VIEWS, PARTS LISTS

3.4 - Torque arm kit for Mb 31, Mb 22 to 25



Ref.	Description	Qty
017	torque arm	1
195	fixing screws	4

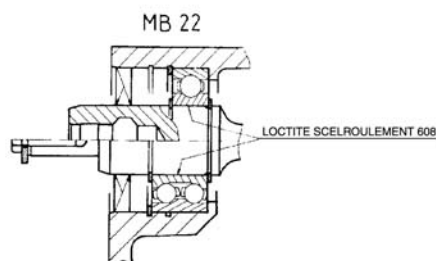
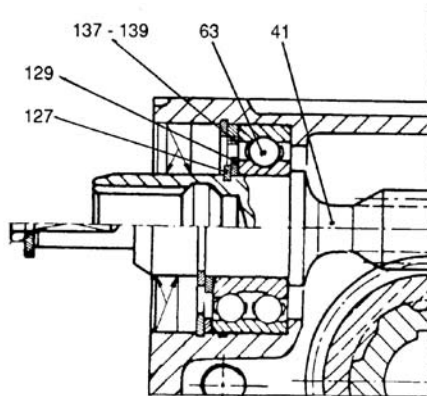
MOUNTING THE TORQUE ARM

The torque arm (17) should be fixed onto the frame using the 4 holes on the chosen side with cheese head screws (195) class 8.8 minimum (according to NFE 27-005).

These four screws should be locked with an anaerobic adhesive (Loctite 243 Removable Threadlocker for example) which should resist vibrations but still allow the screws to be removed if necessary.

Tightening torque of fixing screws

All four screws should be tightened gradually and simultaneously.



Mounting (06/1996), type Mb 22, Mb 23 and Mb 24.

The shoulder on the worm ref. 041 is replaced by a second circlip ref. 127. The bearing ref. 063 is fitted with Loctite 603 retaining compound. The cable gland washers ref. 129 and 137 are not used, nor are the adjusting shims ref. 139.

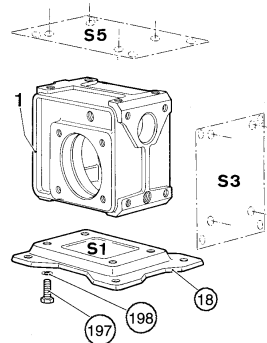
If a new worm is being fitted in an old frame, the cable gland washer ref. 137 and adjusting shims ref. 139 should still be used for mounting.

3.6 - Primary maintenance parts

Mb size	standard			AP		standard		
	061-062	063	064	063	064	093	094 (BAR)	091-092
2601	6213	3211*	6305	-	-	AS 55x100x13	A 25x62x10	AS 65x85x13
2501	6018	3210*	6304 2RS	3210	6304 2RS	AS 50x90x8	A 20x52x7	AS 90x140x13
2401	6212	6209 2RS	6303 2RS	3209 2RS*	6303 2RS	AS 45x85x8	A 17x47x7	AS 60x110x13
2301	6012	6207 2RS	6203 2RS	3207 2RS*	6203 2RS	AS 35x72x7	A 17x40x7	AS 60x95x10
2201	6208	6206 2RS	6301 2RS	3206 2RS*	6301 2RS	AS 30x62x7	A 12x37x7	AS 40x80x10
3101	-	-	-	-	-	-	-	-

*Without filling slot.

3.5 - Foot mounting kit for Mb 22 to 26



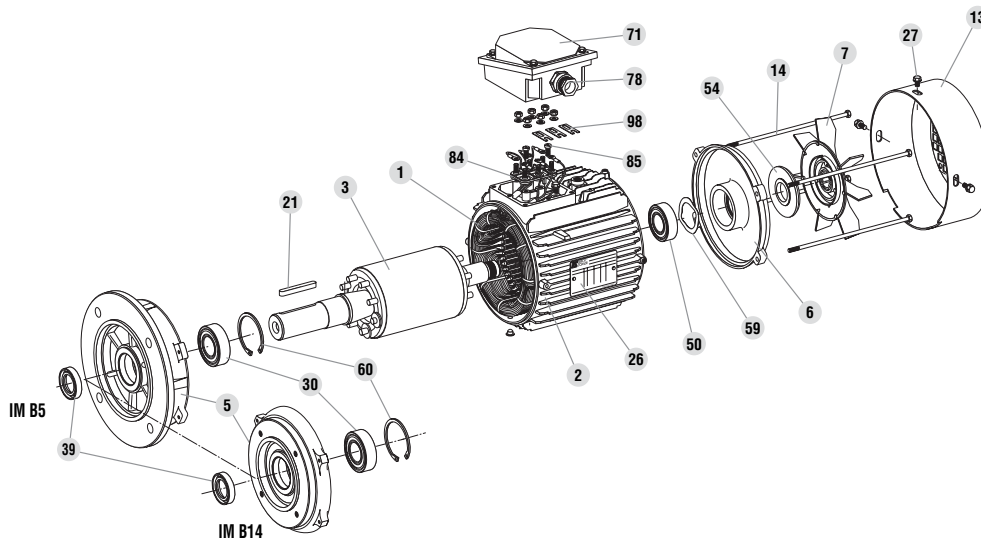
Ref.	Description	Qty
018	foot plate	1
197	fixing screws	4
198	washers	4

▲ All the fixing screws must be tightened up to 70% of their yield strength.

Mb 3101, Mb 2000, Mb IA Geared motors

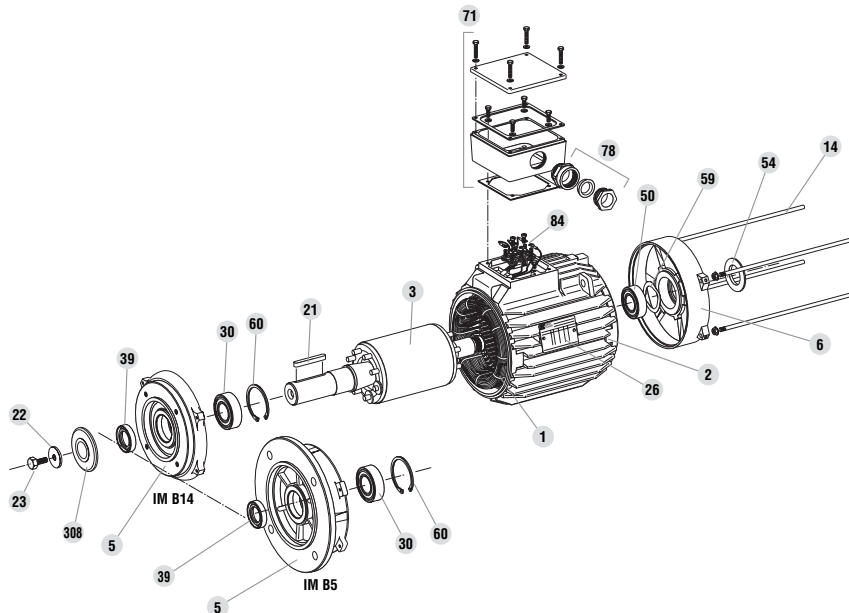
EXPLODED VIEWS, PARTS LISTS

3.7 - LS motor: frame size 71 to 132



Ref.	Description	Qty	Ref.	Description	Qty	Ref.	Description	Qty
001	Wound stator	1	021	Shaft extension key	1	060	Circlip	1
002	Frame	1	026	Nameplate	1	071	Terminal box	1
003	Rotor	1	027	Fan cover screw	4	078	Cable gland	1
005	DE shield	1	030	Drive end bearing	1	084	Terminal block	1
006	NDE shield	1	039	Drive end seal	1	085	Set screw	1
007	Fan	1	050	Non drive end bearing	1	098	Connectors	1
013	Fan cover	1	054	Non drive end seal	1			
014	Tie rods	4	059	Preloading (wavy) washer	1			

3.8 - Non-ventilated FLS motor: frame size 80 to 132



Ref.	Description	Qty	Ref.	Description	Qty	Ref.	Description	Qty
001	Wound stator	1	022	Shaft extension washer	1	059	Preloading (wavy) washer	1
002	Frame	1	023	Shaft extension screw	1	060	Circlip	1
003	Rotor	1	026	Nameplate	1	071	Terminal box	1
005	Drive end shield (DE)	1	030	Drive end bearing	1	078	Cable gland	1
006	Non-drive end shield (NDE)	1	039	Drive end seal	1	084	Terminal block	1
014	Tie rods	4	050	Non drive end bearing	1	308	Labyrinth seal	1
021	Shaft extension key	1	054	Non drive end seal	1			

Note: The above illustration of parts does not necessarily show details, forms and volumes accurately.

Mb 3101, Mb 2000, Mb IA

Geared motors

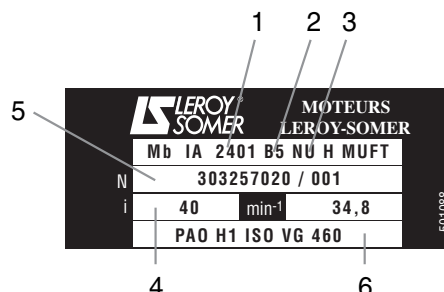
Mb IA

4 - Mb IA

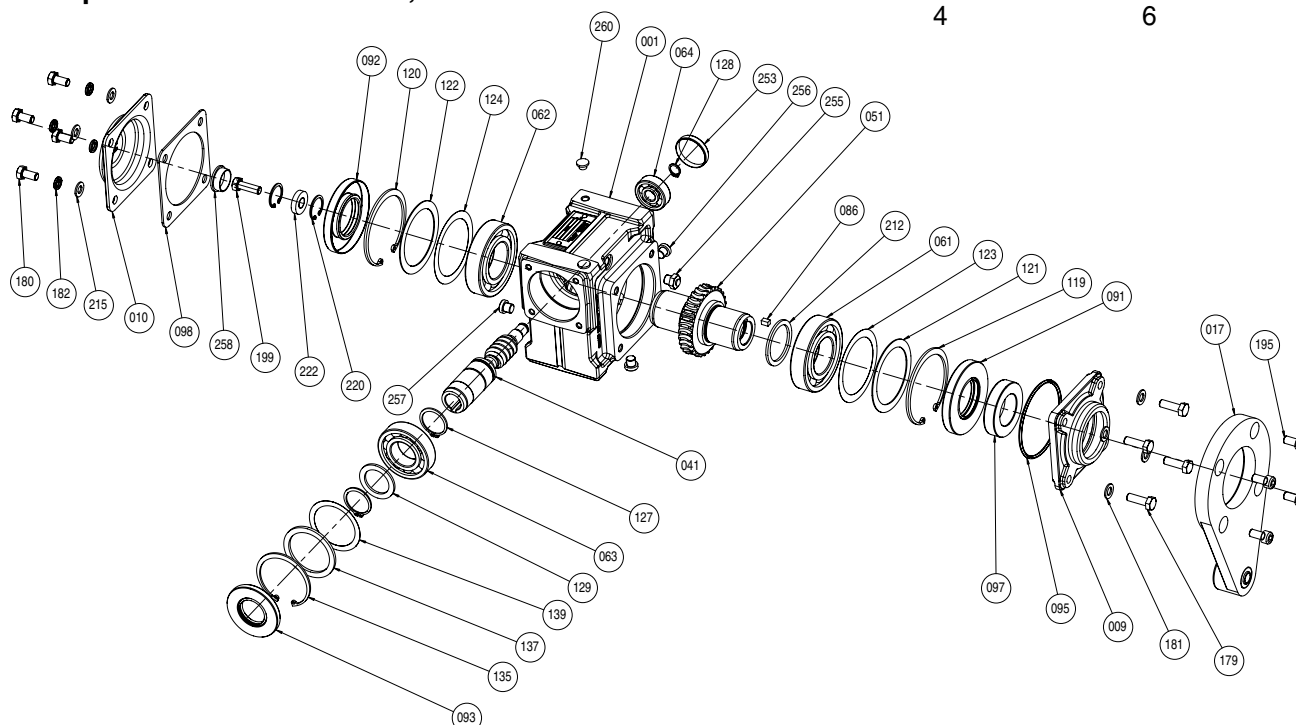
For applications in the food processing industry, we supply gearboxes conforming to the machinery directive 89/392/EEC and complying with the requirements of the USDA (United States Department of Agriculture) with the PAO H1 option: lubricant which can come into accidental contact with food. They are painted in white RAL 9010 epoxy and wrapped in specially-designed packaging to withstand normal transport and storage conditions. Avoid any abrupt movements.

Identification:

- 1 - gearbox type: **Mb IA 2401**
- 2 - operating position: **B5 (B)**
- 3 - mounting form: **NU(00), H (C)** hollow output shaft
- 4 - exact reduction: **40**
- 5 - manufacturing number: **303257020/001**
- 6 - lubricant



4.1 - Exploded view of Mb IA 31, Mb IA 22 to Mb IA 25



4.2 - Mb IA parts list

Ref.	Description	Qty	Ref.	Description	Qty	Ref.	Description	Qty	Ref.	Description	Qty
001	frame	1	064	DE bearing	1	121	washer (left side) (Mb IA 22 to 25)	1	137	washer (Mb IA 25)	1
010	hollow shaft protective cover	1	086	key (Mb IA 31)	1	122	washer (right side) (Mb IA 22 to 25)	1	139	adjusting shims (Mb IA 25)	1 set
041	worm	1	091	seal (left side)	1	123/124	adjusting shims (Mb IA 22 to 25)	8/6	180	st. steel cover fixing screw	4
051	bronze wheel	1	092	seal (right side)	1	127	E circlip (Mb IA 22 to 24)	1 or 2	180	st. steel cover fixing screw	4
061	bearing (left side)	1	093	input seal	1	128	E circlip (Mb IA 22 to 25)	1 or 2	212	spacer (Mb IA 31)	1
062	bearing (right side)	1	119	I circlip (left side)	1	129	cable gland washer (Mb IA 25)	1	253	blanking plug	1
063	input bearing	1	120	I circlip (right side) (Mb IA 22 to 25)	1	135	I circlip	1	255	breather plug	1
									256/257	oil plug	3

4.3 - Torque arm kit

Ref.	Description	Qty
017	torque arm	1
195	st. steel fixing screws	4

4.5 - Sealing cartridge kit

Ref.	Description	Qty
009	seal retainer	1
095	O ring seal	1
097	cartridge seal	1
179	st. steel fixing screw	1
181	st. steel washer	4

4.4 - Torque arm kit with sealing cartridge

Mb IA 31, Mb IA 22 to Mb IA 25

Ref.	Description	Qty
009	seal retainer	1
017	torque arm	1
095	O ring seal	1
097	cartridge seal	1
195	st. steel fixing screw	4

Mounting the torque arm: see section 3.4

Mb 3101, Mb 2000, Mb IA

Geared motors

Mb IA

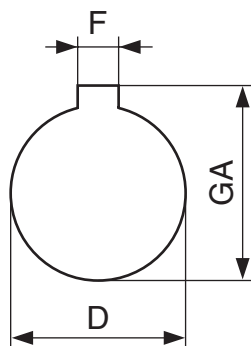
4.6 - Hollow shaft protection kit

Ref.	Description	Qty
010	hollow shaft protective cover	1
098	seal	1
180	st. steel cover fixing screw (010)	4
182	st. steel washers	4
199	st. steel screw	1
215	washer	4
220	circlip	2
222	washer	1
258	protective cap	1
999	tub of grease	1

Mounting the hollow shaft protection:

Place the seal (ref. 098) on the protective cover (ref. 010) and fix them on the frame using the 4 holes on the chosen side with the screws (ref. 180), not forgetting the washers (ref. 182), to avoid scratching the paint.

4.7 - Mounting the cylindrical hollow shaft, with the shaft of the driven machine



Type	Hollow output shaft			Client shaft						
	Ø DH7	F	GA	Ø Dg6	Length L		Ref. 097 ¹		Thread	
					Min.	Max.	ØJC	L1	O	Z
Mb 2601	50	14	53.8	50	-	-	-	-	-	-
Mb 2501	45	14	48.8	45	130	132	56 h8	25	M16	36
Mb 2401	35	10	38.3	35	105	109	45 h8	25	M12	28
Mb 2301	30	8	33.3	30	90	93	35 h8	21	M10	22
Mb 2201	25	8	28.3	25	85	90	35 h8	20	M10	22
Mb 3101	20	6	22.8	20	70	72	25 h8	17	M6	16

1. Cartridge seal Ø (ref. 097).

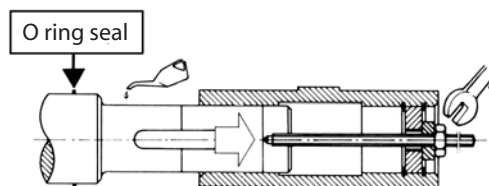
1 - Check that the cylindrical shaft GA has been machined in accordance with standard NF - E 22 - 175, with a slide fit: g6, (the hub is: H7).

2 - Check that the key is standard and the shaft is the minimum length L (see above table) tapped at the end (O.Z).

3 - Before mounting, degrease all the parts, taking care not to splash any solvent on the seals.

Use the supplied jar of grease (PAO compound) (ref. 999) to lubricate any parts in contact, to avoid corrosion.

Mounting:

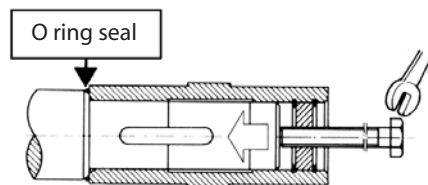


Mounting should be performed as described in the procedure above, without jolting.

The Mb IA gearbox is mounted on the machine shaft using a threaded rod, screwed into the shaft.

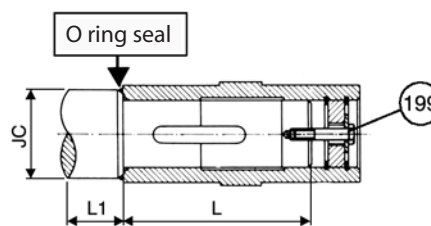
By screwing the nut down onto the washer (ref. 222), the shaft is smoothly inserted into the cylindrical hub of the Mb IA. Tighten with the screw (ref. 199).

Dismantling:



Use a spanner with a diameter corresponding to the washer thread (ref. 222) and turn the screw until the shaft comes out.

Fixing on a shouldered shaft:



Fixing on an untapped shaft:

