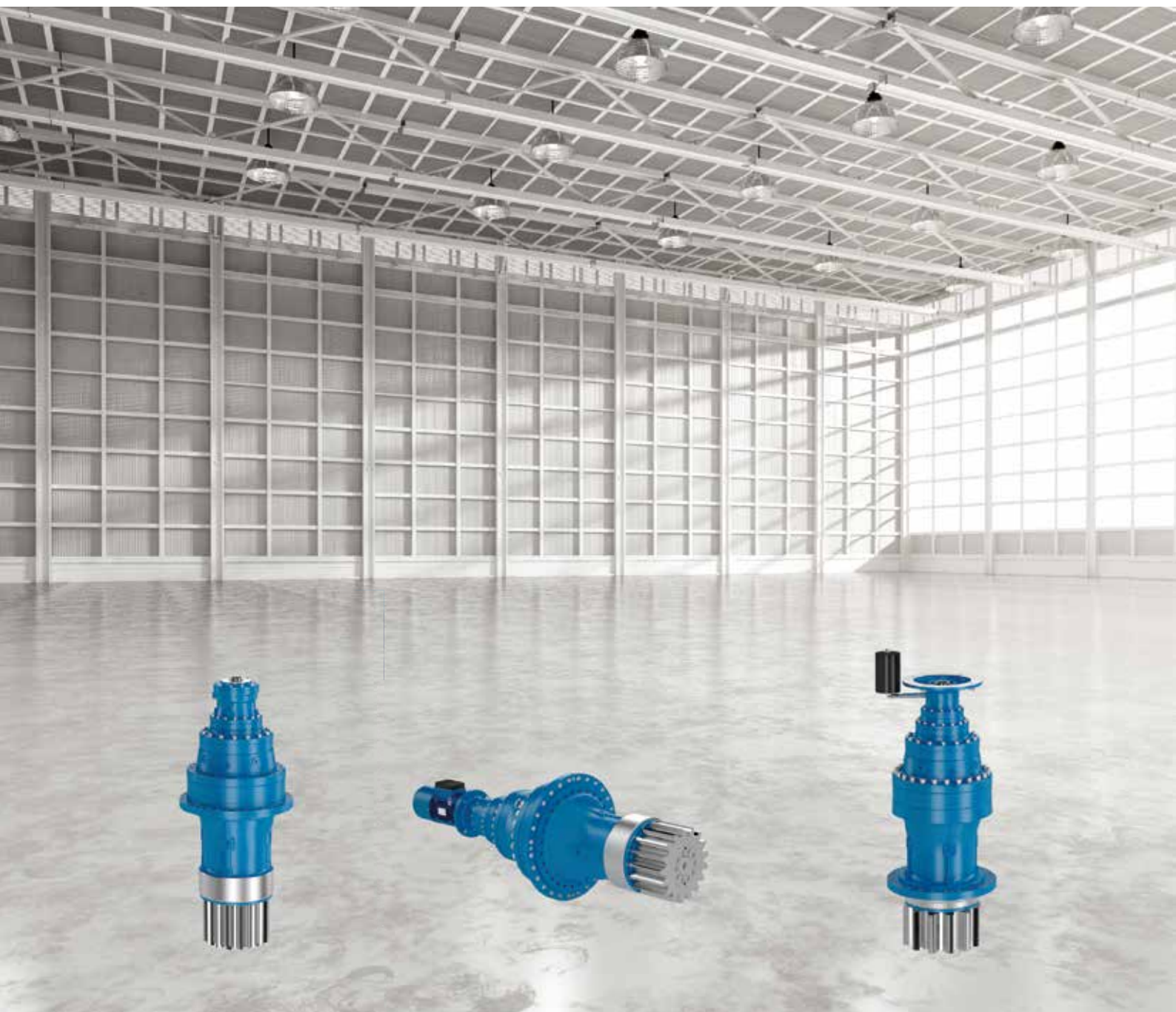


# EP series



**Slewing drives**



# Contents

Overview	4
1 - Designation	10
2 - Selection and verifications	14
3 - Selection tables - In Line Gear Reducers	16
4 - Data and performance summary	26
5 - Main dimensions	36
6 - Pinion gears	41
7 - Multi-disc parking brakes	42
8 - Motor adapters	44
9 - Further options	50
10 - Installation	52
11 - Lubrication	53
List of modifications Edition 2581.01.03	53
12 - Application data template	54

## Your worldwide partner for high quality solutions

### Who we are

In brief:

1953 Founded as a family business and still privately owned today



Rossi in the 70's

70's First in Italy to adopt a completely modular system for helical and bevel helical gear reducers; first in Italy to adopt a case hardened, tempered, ground gear pairs on helical and bevel helical gear reducers

80's Worm gear reducers and gearmotors with universal mounting, single-piece housing and ZI involute profile; Extension of the direct sales organization abroad with the addition of German, English, French and Spanish subsidiaries.

90's Helical and bevel helical gear reducers and gearmotors with universal mounting and single-piece housing; first transmission manufacturer in Italy and second in Europe to obtain Quality System Certification ISO 9001.

1994 The only manufacturer to offer 3-year-warranty

1997 Acquisition of Seimec (Rossi Motor Division)

2002 Acquisition of SMEI (Rossi Planetary Division, WIND)



Rossi Planetary Gear Reducer Division

2003 ISO 9001 - 2000 (Vision 2000)

2004 New affiliated company in U.S.A.  
Habasit acquires important share in Rossi, to reinforce global presence and develop growth strategy

2009 (July) Habasit Holding owns 100% Rossi

2010 Logo and Company name change: from "Rossi Motoriduttori" to "Rossi S.p.A."



Rossi Industrial Gear Reducer Division, today

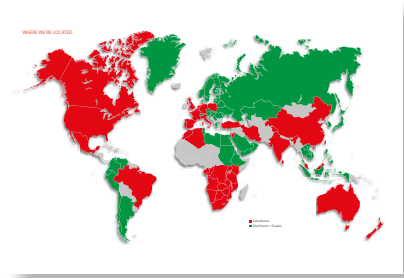
2014-'16 Our US, UK, Brazil and China subsidiaries move to new facilities, striving to improve our customer service thanks to our modern structures and technologies

For more than 60 years we have been developing our business for the most demanding applications in order to become one of the world's leading gearbox and gearmotor manufacturers. Even in the toughest environment, we are recognized for providing state of the art technology, solid value and commitment to our customers.



## Where you can find us

Close to you, with facilities on six continents and each with a direct sales system to provide excellent service. Visit our website to find your nearest facility. We are where you need us to be.



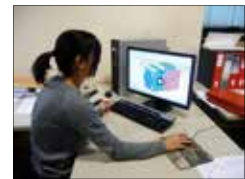
## What we believe in

Choosing the drive with the right technical specifications is vital for reliability and economy. We believe in integrity, ethical behavior, experience, creativity, innovation, good teamwork and above all customer focus: this what we at Rossi believe in. We strive to be a reliable company with the right flexibility and know-how to respond to all market requests, all over the world, in all application fields, without ignoring our commitment to the environment and value on all human safety



## What we can do for you

Rossi employs highly skilled specialists in different fields, there to provide you with the support and experience needed to find the best solution for your application and commercial demands, and to accompany you step by step through the entire supply process.



## What you can do for us, to help us improve

You are at the center of all we do, that is why we want your feedback and suggestions on how we can improve. You know your business better than anyone and by knowing what works for you will allow us to improve our service offering to you. We regard every relationship as a partnership and look for mutual benefits that will enhance our partnership at all times.



## Who you can contact

A well-organized Global after-sale service with the sole purpose of getting our customers back up and running quickly and cost effectively. Our online Rossi for You portal, allowing you to have 24/7/365 day access to all the documentations concerning our supplies, order tracking, and news in real time.









## What we do









Our wide standard product range and design allows us to provide the customer with the right engineered solution for every application including a 3 year worldwide warranty.





### Gearmotors

Type of gear		Catalog
Worm gearmotors		A
Standardfit worm gearmotors		AS
Coaxial gearmotors		E
Standardfit coaxial gearmotors		ES
Helical and bevel helical gear reducers		G
Planetary (in-line and bevel helical) gearmotors		EP


### Gear reducers

Type of gear		Catalog
Worm gear reducers		A
Helical gear reducers		G
Bevel Helical gear reducers		G
Heavy duty helical gear reducers		H
Heavy duty bevel helical gear reducers		H
Planetary (in-line and bevel helical) gear reducers		EP
Right angle shaft gear reducers		L
Shaft mounted helical gear units		P





## Motors

Type		Catalog
Asynchronous three-phase high efficiency and premium efficiency motors		TX
Standard and high efficiency brake motors		TX

## Motion control

Type		Catalog
Worm, coaxial, helical and bevel helical servo gear reducers		SR

## Specific industrial segments

Type		Catalog
Extruders, Parallel shaft gear reducers and gearmotors		GX
Combined units		
Slewing drives		EP
Heavy duty gear reducers on swing bases		RE

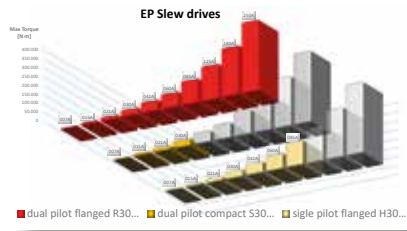
# Features

# Benefits

Product range

Slew drive gear reducers, ranging from 9 kNm to 400 kNm Maximum Output Torque over 10 primary sizes and 3 output reinforced support configurations:  
 - R: dual pilot flanged  
 - S: dual pilot compact  
 - H: single pilot front flanged

From nominal ratio 12,5 to 2800

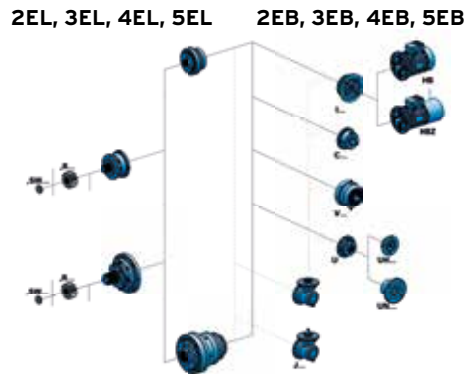


→ Wide choice of the drives allows always highest performances along with cost effective solutions

Modularity

IEC and NEMA electric motor adapter and primary hydraulic motor adapter

Further option not included in the catalog:  
 - In line EL and bevel EB configuration  
 - 5 stages in line and bevel  
 - Torque limiter MLA on electric motor configuration  
 - 4 additional standard sizes: 004A-006A-009A-012A-018A



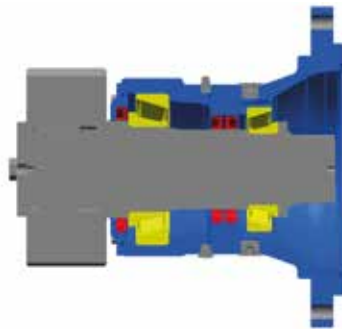
→ Wide range of Motor adapter IEC Nema or Hydraulic for global players

→ Enable to benefit of the wider range of options of the EP industrial catalog

Output support features

Double seal and labyrinth options  
 Eccentricity  
 Heavy duty bearing  
 Improved lubrication system  
 Multiple lubrication ports at 90° angle, two greasers at opposite site

Output pinion involute profile and helix modification manufactured to the actual operating load conditions



→ Enhanced seal life  
 → High precision and reduced shock loads  
 → Maximum load capacity  
 Easy maintenance  
 → Oil and grease ports always easy to reach, possibility to install oil and temperature probes

→ Improvement in contact patterns and nominal rating, achieving an optimal ring gear-pinion engagement

Gear reducer features

Four planets built-in final stage  
 Ground gears

Modular design concept



→ Lower backlash  
 → Enhanced Stiffness  
 → Over 16 months maintenance intervals with PAO oils

→ Delivery flexibility and reliability  
 → Prompt service worldwide

# Features

# Benefits

Brake motors and Brakes

Rossi IEC electrical brake motors wound and set for the specific application  
 Anti-sticking design of the parking brake motor  
 Braking torque adjustment

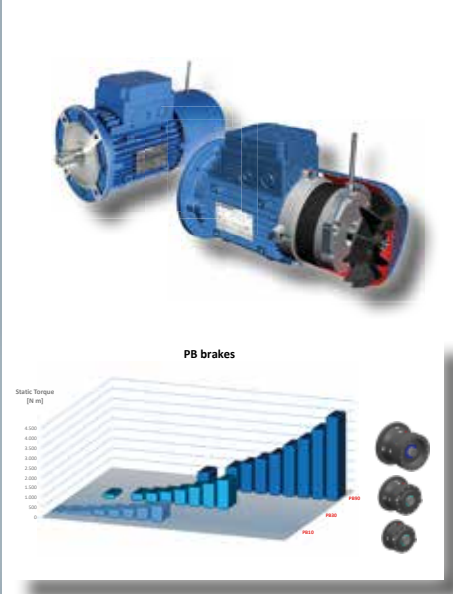
Hydraulic parking brakes ranging from 75 Nm to 4250 Nm static torque over 3 main sizes

Hydraulic brakes PB

Multiple lubrication ports at 90° angle, two greaser at opposite site

Enhanced lubrication system

Possibility to install a pre-reduction stage



→ Optimized slew drives for application and for multi-drive systems taking advantage from the European made wide range of electric motor

→ Wide range of hydraulic brakes for a fine tuned application and cost effectiveness

→ Oil and grease ports always easy to reach, possibility to install oil and temperature probes

→ To allow higher thermal capability.

→ Enhanced thermal capability for continuous duty at high speed


Certifications

Standard C3 coating ISO 12944, up to C5M class paint on request

Product/Parts certification

F.E.M. 1.001 L2-T5-M5 ratings with different input/output speed

ATEX directive 94/9/EC

zone 1, 2, 21, 22:  II 2 GD ck

zone 2,22:  II 3 GD ck;

zone 1, 2:  II 2 G ck



→ Out-door environment ready marine paints

→ On request, customized solution in compliance with regulations and standards of the marine, oil and gas, or other Regulations

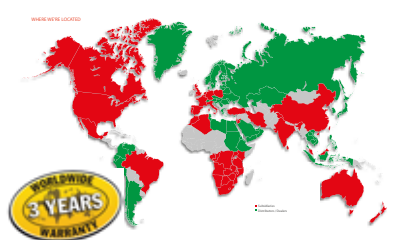
→ Easy selection according to class of mechanism

→ On request, suitable to be specified for offshore platforms, petrochemical plants, mines, and flour mills, and other potentially explosive atmosphere application.

Worldwide sales and service

• Global service

• 3 year warranty

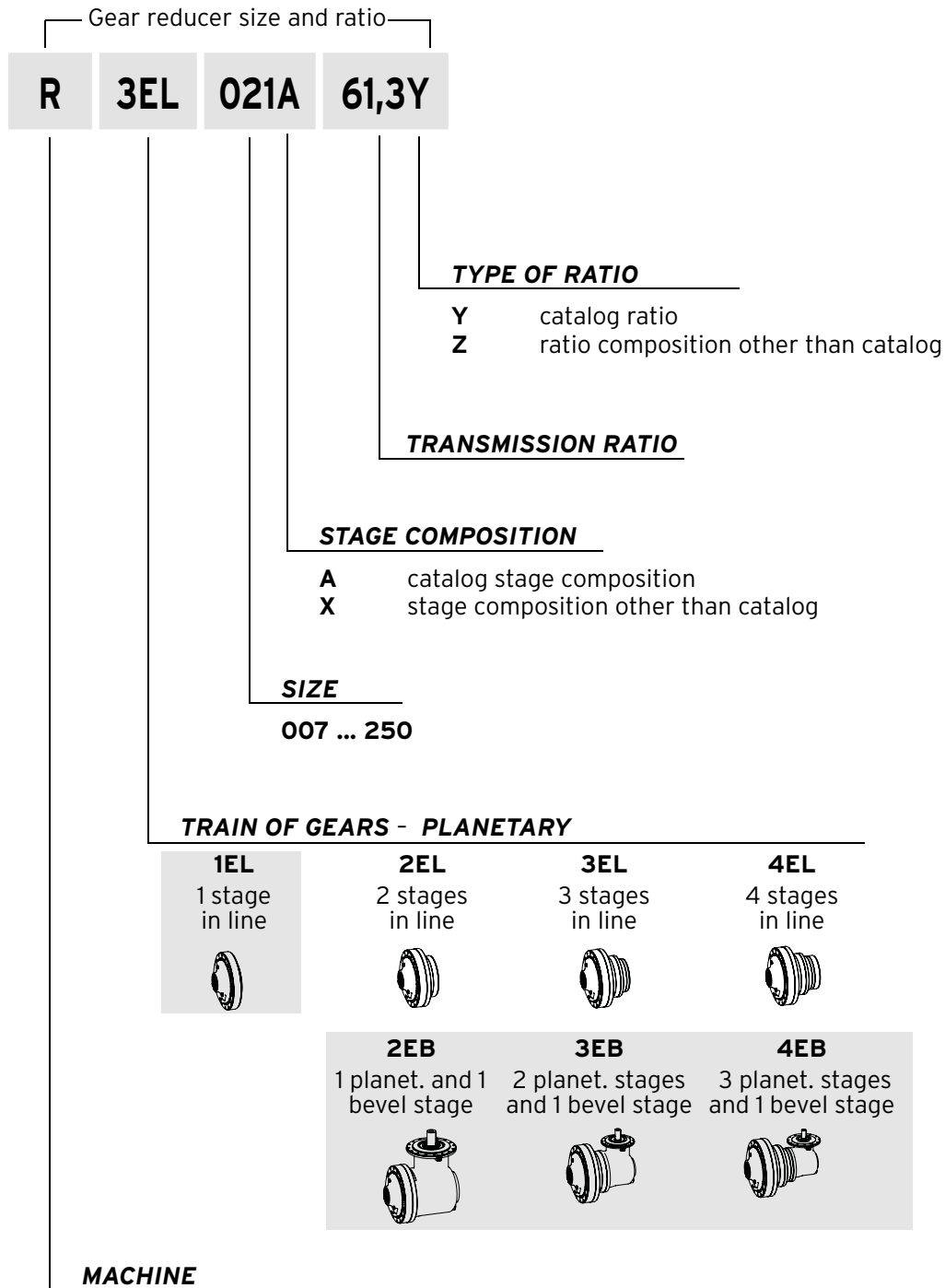


→ Direct worldwide sales and service network

→ The reliability of a quality product engineered to last

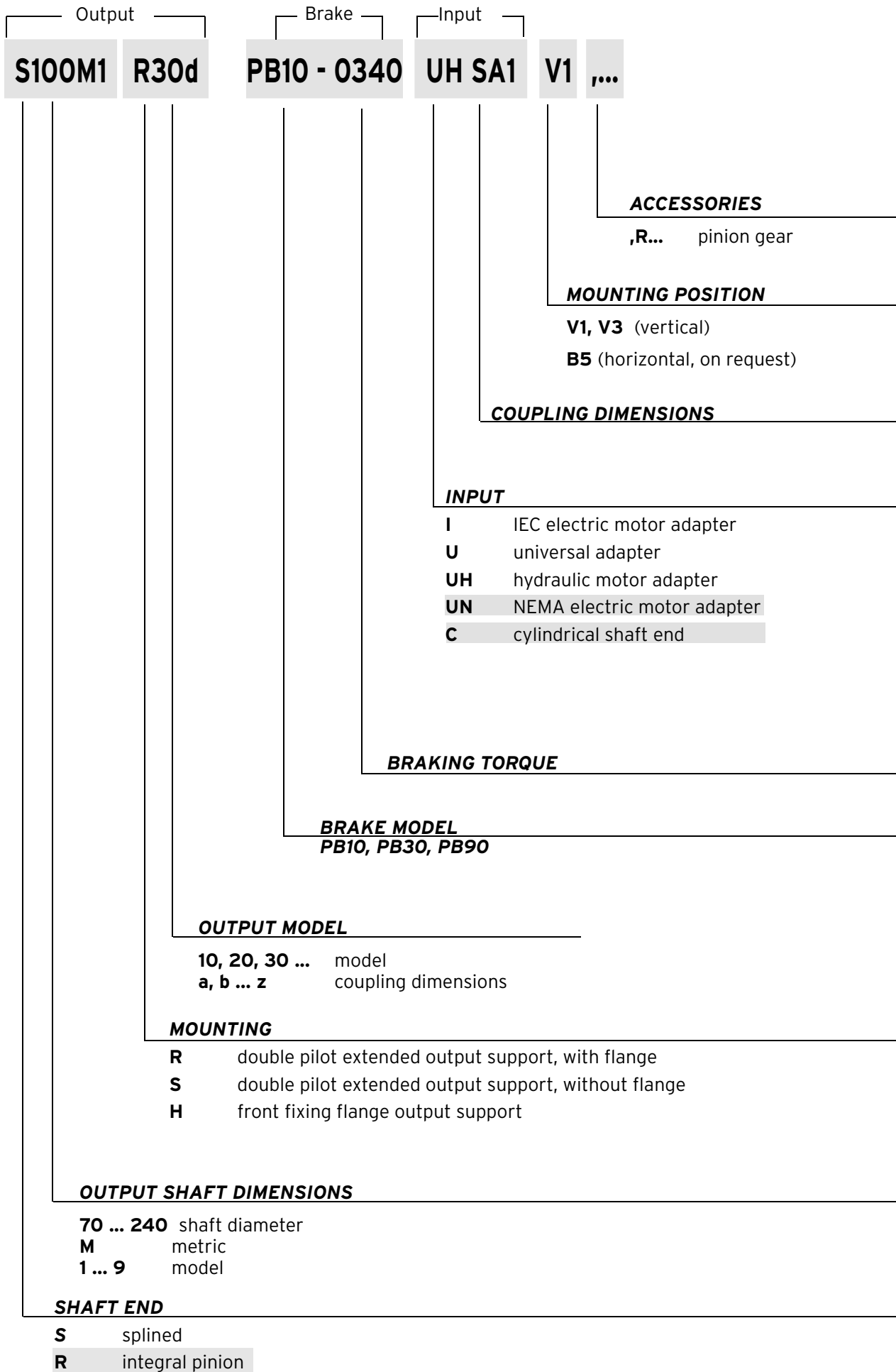
→ 3 year warranty since 1997

# 1 - Designation



For technical data and main dimensions contact Rossi.

# 1 - Designation



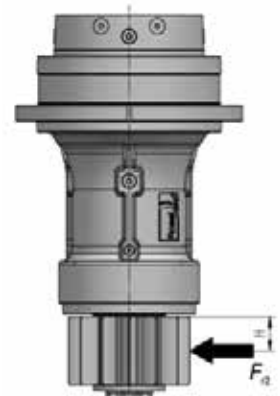


## 2 - Selection and verification

### Quick selection:

Output torques and radial loads according to F.E.M. (1.001 3rd edition - Revised 1998.10.01)  
Load classification L2-T5-M5 ( $n_2=15 \text{ min}^{-1}$ )

Size	$M_{N_2}$ FEM N m	$M_2$ max N m	Output					
			Sxxx Rxxx		Sxxx Sxxx		Sxxx Hxxx	
			$F_{r_2}$ FEM N	$F_{r_2}$ stat N	$F_{r_2}$ FEM N	$F_{r_2}$ stat N	$F_{r_2}$ FEM N	$F_{r_2}$ stat N
007A	7 500	9 000	126 400	180 000	126 400	180 000	126 400	180 000
015A	17 000	20 000	189 400	265 000	189 400	265 000	172 700	236 000
021A	21 200	28 000	363 900	425 000	363 900	425 000	363 900	425 000
030A	35 500	47 500	412 900	500 000	412 900	500 000	412 900	500 000
042A	50 000	67 000	435 900	560 000	435 900	560 000	435 900	560 000
060A	71 000	95 000	633 900	800 000	633 900	800 000	633 900	800 000
085A	112 000	150 000	735 800	1 060 000	735 800	1 060 000	735 800	1 060 000
125A	160 000	212 000	973 500	1 400 000	973 500	1 400 000	973 500	1 400 000
180A	224 000	300 000	1 073 400	1 600 000	1 073 400	1 600 000	1 073 400	1 600 000
250A	315 000	425 000	1 293 600	2 000 000	1 293 600	2 000 000	1 293 600	2 000 000



$M_{N_2}$  FEM (Nm) is the nominal output torque related to a given load classification and output speed.

In the table it is shown the maximum value for each gearbox size, see the following pages for the actual values for every reduction ratio.

$M_2$  max (Nm) is the maximum torque admissible on gear reducer low speed shaft.

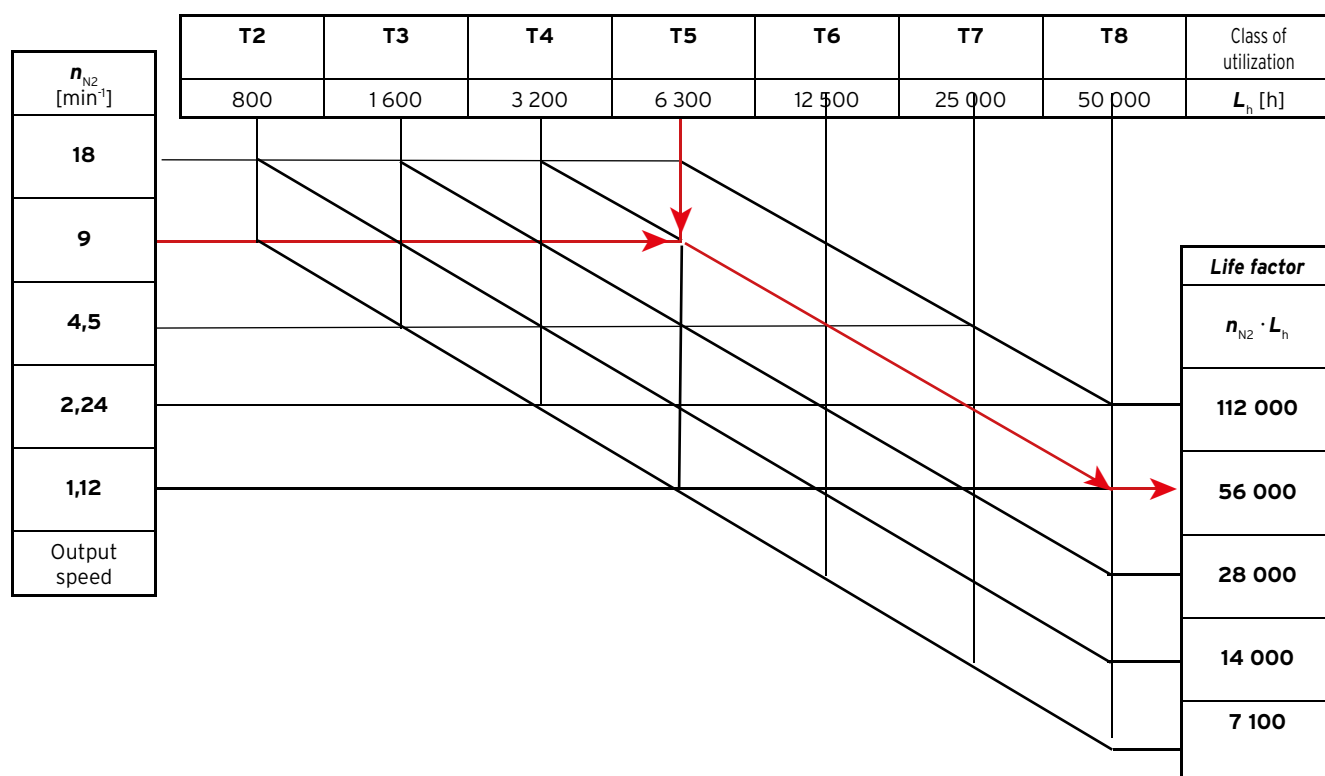
In the table it is shown the maximum value for each gearbox size, see the following pages for the actual values for every reduction ratio.

$F_{r_2}$  FEM (N) is the radial load admissible for a given load classification and point of application on the low speed shaft.

$F_{r_2}$  stat (N) is the maximum static radial load admissible for a given point of application on the low speed shaft.

### Life factor

For nominal output speed values different from  $n_2 = 15$  r.p.m. the gearbox selection can be based on the Life factor  $n_2 \times L_h$  obtained from the following graph.



## 2 - Selection and verification

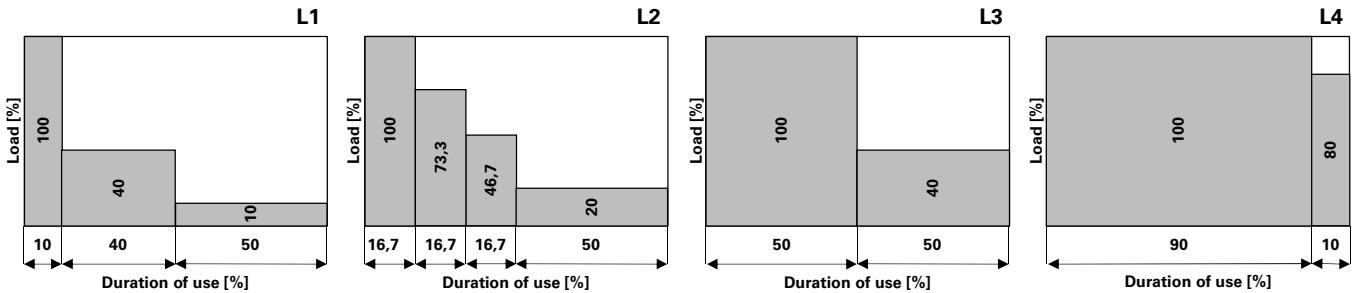
### Application factors KA and mechanism groups

For load classification different from L2-T5-M5 the gearbox selection can be based on the application factor obtained from the following Table 2.  
See formula a) at page 14.

Table 2

Class of load spectrum	Class of utilization						
	T2 400h<T2≤800h	T3 800h<T3≤1600h	T4 1600h<T4≤3200h	T5 3200h<T5≤6300h	T6 6300h<T6≤12500h	T7 12500h<T7≤25000h	T8 25000h<T8≤50000h
<b>L1</b>	M1	M2	M3	M4	M5	M6	M7
$0 < k_m \leq 0,125$	0,80	0,85	0,90	0,95	1,00	1,06	1,18
<b>L2</b>	M2	M3	M4	M5	M6	M7	M8
$0,125 < k_m \leq 0,250$	0,85	0,90	0,95	1,00	1,06	1,18	1,40
<b>L3</b>	M3	M4	M5	M6	M7	M8	M8
$0,25 < k_m \leq 0,5$	0,95	1,00	1,06	1,12	1,25	1,40	1,60
<b>L4</b>	M4	M5	M6	M7	M8	M8	M8
$0,5 < k_m \leq 1$	1,06	1,12	1,18	1,32	1,50	1,60	1,80

### Load spectra (examples)



### Group classification guidance

Type of appliance Designation	Particulars concerning nature of use	Type of mechanism				
		Slewing	Hoisting	Luffing	Travers	Travel
Erection cranes	-	M2-M3	M2-M3	M1-M2	M1-M2	M2-M3
Stocking and reclaiming transporter	Hook duty	M4	M5-M6	-	M4-M5	M5-M6
Stocking and reclaiming transporter	Grab or magnet	M6	M7-M8	-	M6-M7	M7-M8
Workshop cranes	-	M4	M6	-	M4	M5
Overhead travelling cranes, pigbreaking cranes, scrapyard cranes	Grab or magnet	M6	M8	-	M6-M7	M7-M8
Bridge cranes for unloading, bridge cranes for containers Other bridge cranes (with crab and/or slewing jib crane)	a) Hook or spreaded duty b) Hook duty	M5-M6 M4-M5	M6-M7 M4-M5	M3-M4 -	M6-M7 M4-M5	M4-M5 M4-M5
Bridge cranes for unloading, bridge cranes (with crab and/or slewing jib crane)	Grab or magnet	M5-M6	M8	M3-M4	M7-M8	M4-M5
Drydock cranes, shipyard jib cranes, jib cranes for dismantling	Hook duty	M4-M5	M5-M6	M4-M5	M4-M5	M5-M6
Dockside cranes (slewing, on gantry, etc.), floating cranes and pontoon derricks	Hook duty	M5-M6	M6-M7	M5-M6	-	M3-M4
Dockside cranes (slewing, on gantry, etc.), floating cranes and pontoon derricks	-	M6-M7	M7-M8	M6-M7	-	M4-M5
Floating cranes and pontoon derricks for very heavy loads (usually greater than 100t)	-	M3-M4	M3-M4	M3-M4	-	-
Deck cranes	Hook duty	M3-M4	M4	M3-M4	M2	M3
Deck cranes	Grab or magnet	M3-M4	M5-M6	M3-M4	M4-M5	M3-M4
Tower cranes for building	-	M5	M5	M4	M3	M3
Derricks	-	M1-M2	M2-M3	M1-M2	-	-
Railway cranes allowed to run in train	-	M2-M3	M3-M4	M2-M3	-	-
Mobile cranes	Hook	M2-M3	M3-M4	M2-M3	-	-

## 2- Selection and verification

### Selection according to F.E.M. (1.001 3rd edition - Revised 1998.10.01)<sup>1)</sup>

#### Required application data

- Class of load spectrum L1 ... L4
- Class of utilization T2 ... T8
- Running conditions: accelerations-decelerations, frictional forces, wind effect.
- External drive data: pinion and ring gear module, number of teeth and pressure angle.
- Gear reducer input speed (depending on motor type) and output speed required.

#### Required torque

Starting from running conditions (accelerations-decelerations, frictional forces, wind effect) and load spectrum determine the maximum loading:

$$S_M = \max (S_{M \max I} ; S_{M \max II})$$

where:

$$S_{M \max I} = (S_{MF} + S_{MA}) \cdot \gamma_m$$

is the maximum torque (combination of the most unfavourable actual values) during normal service without wind

$$S_{M \max II} = (S_{MF} + S_{MA} + S_{MW8}) \cdot \gamma_m$$

$$S_{M \max II} = (S_{MF} + S_{MW25}) \cdot \gamma_m$$

is the maximum of the two torque values (each one as a combination of the most unfavourable actual values) during normal service with wind, and:

$S_{MF}$  is mean torque generated by friction;

$S_{MA}$  is mean torque generated by acceleration or deceleration;

$S_{MW8}$  is mean torque corresponding to a 80 N/m<sup>2</sup> wind;

$S_{MW25}$  is mean torque corresponding to a 250 N/m<sup>2</sup> wind;

$\gamma_m$  load amplification factor depending on mechanism group according to the following table:

Load amplification factor	Mechanism group							
	M1	M2	M3	M4	M5	M6	M7	M8
$\gamma_m$	1	1,04	1,08	1,12	1,16	1,2	1,25	1,3

Determine the gear reducer required output torque, as follows:

$$M_{2 \text{ required}} = S_M / (i_e \cdot \eta_e)$$

where:

$i_e$  is the external drive gear ratio (given by  $z_2 / z_1$ , being  $z_1$  and  $z_2$  the number of teeth of the pinion and of the ring gear respectively)

$\eta_e$  is the the external drive efficiency (approx. 0,85)

1) For complete selection please refer to FEM section I 3<sup>rd</sup> edition.

#### Gear reducer size and transmission ratio selection

► Verify that the calculation of the  $M_2$  required torque at gearbox shaft has been made taking in account the amplification factor.

Choose in the selection tables a gear reducer in terms of size, train of gears and transmission ratio  $i$  at the same time, such as:

$$M_{N2 \text{ FEM}} / K_A \geq M_{2 \text{ required}} \quad \text{a)}$$

$$i \geq i_{\text{required}}$$

where:

$M_{N2 \text{ FEM}}$  [N m] is the gear reducer nominal torque referred to FEM load spectrum class  $L_2$  and utilization class T5;

$K_A$  is the application factor to convert the gear reducer nominal torque according to the actual class of utilization and load spectrum, see Table 2;

► Verify that  $M_{N2 \text{ FEM}} / K_A \leq M_{N2 \text{ FEM max}}$ , if not  $M_{N2 \text{ FEM max}}$  should be used in the above formula a)

The value of  $M_{N2 \text{ FEM max}}$  for each gearbox size and ratio is shown at ch. 4 Data and performance summary.

$i_{\text{required}}$  is the gear reducer required transmission ratio ( $n_1 / n_2$ );

$n_1$  [min<sup>-1</sup>] is the maximum gear reducer input speed (depending on motor type; eg.: for a IEC 4 poles motor,  $n_1 = 1400 \text{ min}^{-1}$ );

$n_2$  [min<sup>-1</sup>] is the maximum speed required at the gear reducer low speed shaft.

## 2- Selection and verification

### Radial load verifications

Verify that the radial load on the gear reducer output pinion shaft is less than the reference value  $F_{r2\text{FEM}}$  for the chosen gear reducer

$$\frac{M_{2\text{ required}} \cdot K_A \cdot 2000}{D_p \cdot \cos\alpha} \leq F_{r2\text{FEM}}$$

where:

$D_p$  [mm] is the pinion pitch diameter;

$\alpha$  [rad] is the pinion tooth pressure angle;

$F_{r2\text{FEM}}$  [N] is the permissible radial load (for L2 T5,  $n_2 = 15 \text{ min}^{-1}$ ) acting in the middle of the pinion facewidth and without axial load.

### Dynamic overloads

Overloads are normally generated when:

- starting or braking on full load (especially for high inertias and low transmission ratios);
- the low speed shaft becomes driving member due to driven machine inertia;
- the applied motor power is higher than required;
- other static or dynamic causes occur.

The maximum peak torque caused by overloads must be lower than  $M_{2\text{max}}$ .

### Starting torque verifications:

$$M_{2\text{ start}} = \left( \frac{M_{\text{start}}}{M_N} \cdot M_{2\text{ available}} - M_{2\text{ required}} \right) \cdot \frac{J}{J+J_0} + M_{2\text{ required}} \leq M_{2\text{max}}$$

where:

$M_{2\text{ required}}$  [N m] is the torque absorbed by the machine through work and frictions

$M_{2\text{ available}}$  [N m] is the output torque due to the motor's nominal power;

$M_{\text{start}} / M_N$  is the ratio of motor peak;

$J_0$  [kg m<sup>2</sup>] is the moment of inertia (of mass) of the motor;

$J$  [kg m<sup>2</sup>] is the external moment of inertia (of mass) for gear reducer, coupling, driven machine referred to the motor shaft;

NOTE: when seeking to verify that starting torque is sufficiently high for starting, take into account starting friction, if any, in evaluating

$M_{2\text{ required}}$ \*

### Stopping machines with high kinetic energy (high moments of inertia combined with high speeds) with brake motor:

$$M_{2\text{ brake}} = \left( \frac{M_f}{\eta} \cdot i + M_{2\text{ required}} \right) \cdot \frac{J}{J+J_0} - M_{2\text{ required}} \leq M_{2\text{max}}$$

where:

$M_f$  [N m] is the braking torque at the gear reducer input shaft;

$\eta$  is the gear reducer efficiency.

Efficiency	Train of gears		
	2EL	3EL	4EL
$\eta$	0,94	0,91	0,89

### Static load verifications

Verify that static braking torque and static overhung load (referred to the gear reducer low speed shaft) are lower than the values admitted by the gear reducer:

$$M_f \cdot i / \eta \leq M_{2\text{ max}} \quad \frac{M_f \cdot i \cdot 2000}{\eta \cdot D_p \cdot \cos\alpha} \leq F_{r2\text{ stat}}$$

### Angular backlash

A rough guide for the angular backlash  $\Delta\phi$  (high speed shaft being locked) is given in the table.

On request, gear reducers with **reduced backlash** are available.

Size	Pinion fitted on output shaft		One piece pinion-shaft	
	$\Delta\phi$ ['] Average	$\Delta\phi$ ['] Max	$\Delta\phi$ ['] Average	$\Delta\phi$ ['] Average
<b>007A</b>	23,7	33,9	17,6	23,9
<b>015A</b>	17,7	25,1	14,2	19,0
<b>021A</b>	15,9	22,3	12,6	16,9
<b>030A</b>	18,1	23,5	15,2	19,0
<b>042A</b>	16,6	21,4	13,9	17,3
<b>060A</b>	15,6	20,0	12,9	15,9
<b>085A</b>	13,6	16,9	11,2	13,4
<b>125A</b>	12,2	15,1	10,2	12,1
<b>180A</b>	13,3	16,1	11,2	13,1
<b>250A</b>	11,7	14,2	9,8	11,5

### 3 - Selection tables - In line gear reducers

According to FEM 1.001 L2/T5/M5 conditions

$n_{N2} \cdot L_h$ min <sup>-1</sup> · h	$i_N$	Gear reducer size										$i_N$	$n_1$ min <sup>-1</sup>	$n_{N2}$ min <sup>-1</sup>			
		Output speed $n_2$ min <sup>-1</sup>															
		Nominal output torque $M_{N2\ FEM}$ N m Train of gears / ratio															
007A	015A	021A	030A	042A	060A	085A	125A	180A	250A								
112 000	2800	6 000 4EL/2947	11 800 4EL/2921	-	-	-	-	-	-	-	-	-	-	-	-	-	
	2500	6 185 4EL/2399	12 530 4EL/2636	15 000 4EL/2377	-	-	-	-	-	-	-	-	-	-	-	-	
	2240	-	12 420 4EL/2145	18 000 4EL/2145	28 570 4EL/2338	-	-	-	-	-	-	-	-	-	-	-	-
	2000	6 235 4EL/2043	-	-	28 320 4EL/1902	-	-	-	-	-	-	-	-	-	-	-	-
	1800	6 204 4EL/1730	12 520 4EL/1827	18 000 4EL/1827	-	43 730 4EL/1673	54 870 4EL/1796	87 130 4EL/1808	115 810 4EL/1852	-	-	-	-	-	-	-	-
	1600	7 500 4EL/1611	17 000 4EL/1691	18 000 4EL/1525	28 540 4EL/1621	43 800 4EL/1509	54 960 4EL/1621	87 200 4EL/1621	114 790 4EL/1507	172 790 4EL/1670	-	-	-	-	-	-	-
	1400	7 500 4EL/1344	16 940 4EL/1441	18 000 4EL/1318	35 500 4EL/1482	43 840 4EL/1361	55 010 4EL/1462	87 350 4EL/1471	115 430 4EL/1423	-	-	-	-	-	-	-	-
	1250	6 214 4EL/1248	12 490 4EL/1267	18 000 4EL/1267	34 800 4EL/1263	43 780 4EL/1291	54 730 4EL/1245	99 710 4EL/1278	115 510 4EL/1284	172 100 4EL/1283	246 500 4EL/1283	-	-	-	-	-	-
	1120	7 500 4EL/1122	16 970 4EL/1172	21 200 4EL/1172	35 500 4EL/1206	44 120 4EL/1160	54 790 4EL/1124	86 940 4EL/1124	115 640 4EL/1160	172 160 4EL/1150	246 600 4EL/1150	-	-	-	-	-	-
	1000	7 500 4EL/970	16 870 4EL/999	21 200 4EL/999	35 470 4EL/1028	43 840 4EL/1051	69 720 4EL/1028	99 840 4EL/1040	115 680 4EL/1046	191 880 4EL/984	288 950 4EL/990	-	-	-	-	-	-
	900	7 500 4EL/916	16 790 4EL/846	21 200 4EL/846	35 320 4EL/876	43 640 4EL/895	69 430 4EL/876	99 410 4EL/886	140 830 4EL/914	192 180 4EL/888	289 090 4EL/888	-	-	-	-	-	-
	800	7 500 4EL/838	16 900 4EL/788	21 200 4EL/788	35 500 4EL/836	50 000 4EL/828	70 040 4EL/836	100 300 4EL/846	141 090 4EL/825	192 760 4EL/800	289 750 4EL/806	-	-	-	-	-	-
	710	7 500 4EL/732	16 940 4EL/720	21 200 4EL/720	35 460 4EL/713	50 000 4EL/706	69 710 4EL/713	99 820 4EL/721	140 720 4EL/706	192 970 4EL/722	289 820 4EL/722	-	-	-	-	-	-
	630	7 500 4EL/611	16 970 4EL/657	21 200 4EL/657	35 500 4EL/659	50 000 4EL/595	69 360 4EL/607	100 640 4EL/659	140 740 4EL/634	200 770 4EL/624	281 020 4EL/635	-	-	-	-	-	-
	560	7 500 4EL/566	16 910 4EL/568	21 200 4EL/568	35 410 4EL/562	50 000 4EL/556	69 610 4EL/562	100 360 4EL/562	140 830 4EL/572	205 700 4EL/563	289 350 4EL/563	-	-	-	-	-	-
	500	7 500 4EL/517	16 940 4EL/518	21 200 4EL/518	35 210 4EL/479	50 000 4EL/489	69 230 4EL/479	100 020 4EL/479	140 580 4EL/500	205 020 4EL/479	288 590 4EL/485	-	-	-	-	-	-
	450	7 500 4EL/452	16 890 4EL/448	21 200 4EL/448	35 360 4EL/443	50 000 4EL/453	69 510 4EL/443	100 270 4EL/443	140 710 4EL/451	205 520 4EL/444	289 090 4EL/444	-	-	-	-	-	-
	400	7 500 4EL/422	16 910 4EL/404	21 200 4EL/404	35 210 4EL/377	50 000 4EL/386	69 220 4EL/377	99 110 4EL/382	140 390 4EL/386	205 010 4EL/378	288 570 4EL/382	-	-	-	-	-	-
	355	7 500 4EL/357	16 910 4EL/358	21 200 4EL/358	28 370 4EL/344	50 000 4EL/325	54 630 4EL/344	86 690 4EL/344	140 720 4EL/356	200 900 4EL/353	281 190 4EL/360	-	-	-	-	-	-
	315	7 500 4EL/317	16 940 4EL/323	21 200 4EL/318	35 450 4EL/318	50 000 4EL/304	63 490 4EL/318	100 420 4EL/318	140 960 4EL/325	205 840 4EL/319	289 750 4EL/322	-	-	-	-	-	-
280	7 500 4EL/296	17 000 4EL/301	21 200 4EL/303	35 500 4EL/297	50 000 4EL/274	70 010 4EL/297	100 710 4EL/297	141 230 4EL/300	206 420 4EL/298	290 370 4EL/298	-	-	-	-	-	-	
250	7 500 4EL/250	16 910 4EL/255	21 200 4EL/255	35 380 4EL/251	50 000 4EL/256	69 550 4EL/251	100 310 4EL/251	140 800 4EL/256	205 600 4EL/251	289 200 4EL/251	-	-	-	-	-	-	
250	6 184 3EL/239	12 470 3EL/251	18 000 3EL/251	28 410 3EL/249	43 010 3EL/232	54 710 3EL/249	86 370 3EL/237	114 810 3EL/243	-	-	-	-	-	-	-	-	
224	6 390 3EL/221	12 410 3EL/214	18 000 3EL/214	28 290 3EL/212	43 870 3EL/219	54 480 3EL/212	86 450 3EL/212	-	171 310 3EL/219	-	-	-	-	-	-	-	
200	7 500 4EL/207	16 990 4EL/211	21 200 4EL/211	35 500 4EL/211	50 000 4EL/216	70 010 4EL/211	100 710 4EL/211	141 360 4EL/216	206 170 4EL/212	-	-	-	-	-	-	-	

### 3 - Selection tables - In line gear reducers

According to FEM 1.001 L2/T5/M5 conditions

$n_{N2} \cdot L_h$ min <sup>1</sup> · h	$i_N$	Gear reducer size										$i_N$	$\eta$ min <sup>1</sup>	$n_{N2}$ min <sup>1</sup>	
		Output speed $n_2$ min <sup>1</sup>													
		Nominal output torque $M_{N2 FEM}$ N m													
Train of gears / ratio															
		007A	015A	021A	030A	042A	060A	085A	125A	180A	250A				
112 000	200	6 229 3EL/203	16 880 3EL/198	18 000 3EL/204	28 500 3EL/203	43 940 3EL/198	54 880 3EL/203	86 640 3EL/193	115 180 3EL/198	-	-				
	180	7 158 4EL/175	16 910 4EL/178	20 550 4EL/178	35 430 4EL/178	50 000 4EL/182	63 490 4EL/178	-	-	-	-				
	180	16,7 3EL/189	18,1 3EL/174	18,1 3EL/174	- 3EL/173	- 3EL/178	- 3EL/183	57 560 3EL/187	80 550 3EL/186	115 880 3EL/178	171 860 3EL/178	-	180	3 150	18
	160	17,8 3EL/157	16,6 3EL/169	16,6 3EL/169	16,9 3EL/165	16,6 3EL/169	17,2 3EL/163	- 3EL/167	- 3EL/168	- 3EL/168	- 3EL/168	247 640 3EL/168	160	2 800	
	140	18,4 3EL/136	18,2 3EL/137	18,2 3EL/137	18,6 3EL/135	18,2 3EL/138	18,6 3EL/135	- 3EL/136	- 3EL/136	- 3EL/133	- 3EL/136	- 3EL/144	140	2 500	
	125	18 3EL/124	19,1 3EL/117	19,1 3EL/117	17,2 3EL/130	17,7 3EL/127	17,6 3EL/127	17,3 3EL/129	18,7 3EL/120	- 3EL/129	- 3EL/129	- 3EL/130	125	2 240	
	112	18,4 3EL/109	18,5 3EL/108	18,5 3EL/108	17,4 3EL/115	17,1 3EL/117	17,4 3EL/115	17,2 3EL/116	18,5 3EL/108	17,2 3EL/116	17,2 3EL/116	17,2 3EL/116	112	2 000	
	100	17,2 3EL/105	18,3 3EL/98,6	18,3 3EL/98,6	17 3EL/106	16,6 3EL/108	17 3EL/106	17 3EL/106	17,6 3EL/102	17,9 3EL/102	17,6 3EL/100	17,6 3EL/102	100	1 800	
	90	17,4 3EL/92	17,3 3EL/92,2	17,3 3EL/92,2	17,7 3EL/90,4	17,3 3EL/92,4	17,7 3EL/90,4	17,7 3EL/90,4	17,3 3EL/90,4	17,7 3EL/90,6	17,5 3EL/91,6	17,5 3EL/91,6	90	1 600	
	80	18,4 3EL/76,2	18 3EL/77,7	18 3EL/77,7	18,4 3EL/76,2	18 3EL/77,9	18,4 3EL/76,2	18,2 3EL/77,1	16,4 3EL/85,2	18,1 3EL/77,2	16,8 3EL/83,5	16,8 3EL/83,5	80	1 400	
	71	17,2 3EL/72,5	17,2 3EL/72,7	17,2 3EL/72,7	17,5 3EL/71,3	17,2 3EL/72,9	17,5 3EL/71,3	17,5 3EL/71,3	17,2 3EL/72,9	17,5 3EL/71,4	17,5 3EL/71,4	17,5 3EL/71,4	71	1 250	
	63	18,3 3EL/61,1	18,3 3EL/61,3	18,3 3EL/61,3	18,6 3EL/60,1	18,2 3EL/61,4	18,6 3EL/60,1	18,6 3EL/60,1	18,2 3EL/61,4	18,6 3EL/61,4	18,6 3EL/60,2	-	63	1 120	
	50	17,8 3EL/50,6	17,4 3EL/51,6	17,4 3EL/51,6	17,8 3EL/50,6	17,4 3EL/51,7	17,8 3EL/50,6	-	-	-	-	-	50	900	
	45	-	17,9 2EL/44,8	17,9 2EL/44,8	-	-	-	-	-	-	-	-	45	800	
	40	17,6 2EL/40,4	17,6 2EL/40,4	17,6 2EL/40,4	17,7 2EL/40,1	17,7 2EL/40,1	17,7 2EL/40,1	-	-	-	-	-	40	710	
	35,5	19,1 2EL/32,9	19,1 2EL/32,9	19,1 2EL/32,9	19,3 2EL/32,6	16,9 2EL/37,3	19,3 2EL/32,6	-	-	-	-	-	35,5	630	
	31,5	17,6 2EL/31,9	17,6 2EL/31,9	-	17,9 2EL/31,2	18,4 2EL/30,4	18,2 2EL/30,8	18,1 2EL/31	17,6 2EL/31,8	-	-	-	31,5	560	
	28	17,8 2EL/28	17,8 2EL/28	17,8 2EL/28	18 2EL/27,8	17,4 2EL/28,7	18 2EL/27,8	18 2EL/27,8	19,3 2EL/25,9	17,5 2EL/28,6	17,4 2EL/28,7	17,4 2EL/28,7	28	500	
25	6 218 2EL/28	12 470 2EL/28	18 000 2EL/28	28 420 2EL/27,8	44 070 2EL/28,7	54 730 2EL/27,8	86 850 2EL/27,8	114 340 2EL/25,9	172 100 2EL/28,6	246 540 2EL/28,7	246 540 2EL/28,7	25	450		
22,4	6 416 2EL/25,9	16 940 2EL/25,9	18 060 2EL/25,9	35 430 2EL/25,4	44 090 2EL/25,9	57 050 2EL/24	79 830 2EL/24,4	119 260 2EL/25	154 450 2EL/24,5	235 780 2EL/24,5	235 780 2EL/24,5	22,4	400		
20	18,1 2EL/22,1	18,1 2EL/22,1	18,1 2EL/22,1	18,5 2EL/21,7	18,1 2EL/22,1	18,5 2EL/21,7	18,3 2EL/21,9	18,1 2EL/22,1	18,2 2EL/22	18,1 2EL/22,1	18,1 2EL/22,1	20	355		
18	-	-	-	-	17,4 2EL/20,4	-	-	17,4 2EL/20,4	17,8 2EL/20	17,4 2EL/20,4	17,4 2EL/20,4	18	315		
16	16,9 2EL/18,6	16,9 2EL/18,6	16,9 2EL/18,6	17,1 2EL/18,5	18 2EL/17,5	17,1 2EL/18,5	-	18 2EL/17,5	-	18 2EL/17,5	18 2EL/17,5	16	280		
14	16,1 2EL/17,4	16,1 2EL/17,4	16,1 2EL/17,4	16,4 2EL/17,1	-	16,4 2EL/17,1	16,4 2EL/17,1	-	16,4 2EL/17,1	-	-	14	250		
12,5	7 500 2EL/17,4	17 000 2EL/17,4	21 200 2EL/17,4	35 500 2EL/17,1	-	70 180 2EL/17,1	100 860 2EL/17,1	-	206 730 2EL/17,1	-	-	12,5	224		
	17 2EL/14,7	17 2EL/14,7	17 2EL/14,7	17,4 2EL/14,4	17 2EL/14,7	17,4 2EL/14,4	-	-	-	-	-	14	250		
	-	18,1 2EL/12,4	18,1 2EL/12,4	-	-	-	-	-	-	-	-	12,5	224		

### 3 - Selection tables - In line gear reducers

According to FEM 1.001 L2/T5/M5 conditions

$n_{N2} \cdot L_h$ min <sup>-1</sup> · h	$\dot{n}_N$	Gear reducer size										$\dot{n}_N$	$n_1$ min <sup>-1</sup>	$n_{N2}$ min <sup>-1</sup>
		Output speed $n_2$ min <sup>-1</sup>												
		Nominal output torque $M_{N2 FEM}$ N m												
		Train of gears / ratio $\dots / i$												
007A	015A	021A	030A	042A	060A	085A	125A	180A	250A					
<b>56 000</b>	2800	6 447 <b>4EL/2947</b>	11 800 <b>4EL/2921</b>	-	-	-	-	-	-	-	-			
	2500	6 650 <b>4EL/2399</b>	13 200 <b>4EL/2636</b>	15 000 <b>4EL/2377</b>	-	-	-	-	-	-	-			
	2240	-	13 200 <b>4EL/2145</b>	18 000 <b>4EL/2145</b>	30 660 <b>4EL/2338</b>	-	-	-	-	-	-			
	2000	6 691 <b>4EL/2043</b>	-	-	30 350 <b>4EL/1902</b>	-	-	-	-	-	-			
	1800	6 657 <b>4EL/1730</b>	13 200 <b>4EL/1827</b>	18 000 <b>4EL/1827</b>	-	46 840 <b>4EL/1673</b>	58 750 <b>4EL/1796</b>	93 240 <b>4EL/1808</b>	123 920 <b>4EL/1852</b>	-	-			
	1600	7 500 <b>4EL/1611</b>	17 000 <b>4EL/1691</b>	18 000 <b>4EL/1525</b>	30 630 <b>4EL/1621</b>	46 980 <b>4EL/1509</b>	58 930 <b>4EL/1621</b>	93 470 <b>4EL/1621</b>	123 020 <b>4EL/1507</b>	184 980 <b>4EL/1670</b>	-			
	1400	7 500 <b>4EL/1344</b>	17 000 <b>4EL/1441</b>	18 000 <b>4EL/1318</b>	35 500 <b>4EL/1482</b>	47 030 <b>4EL/1361</b>	58 990 <b>4EL/1462</b>	93 620 <b>4EL/1471</b>	123 710 <b>4EL/1423</b>	-	-			
	1250	6 678 <b>4EL/1248</b>	13 200 <b>4EL/1267</b>	18 000 <b>4EL/1267</b>	35 500 <b>4EL/1263</b>	47 030 <b>4EL/1291</b>	58 690 <b>4EL/1245</b>	104 750 <b>4EL/1278</b>	123 800 <b>4EL/1284</b>	184 300 <b>4EL/1283</b>	263 930 <b>4EL/1283</b>			
	1120	7 500 <b>4EL/1122</b>	17 000 <b>4EL/1172</b>	21 200 <b>4EL/1172</b>	35 500 <b>4EL/1206</b>	47 330 <b>4EL/1160</b>	58 760 <b>4EL/1124</b>	93 190 <b>4EL/1124</b>	123 940 <b>4EL/1160</b>	184 370 <b>4EL/1150</b>	264 030 <b>4EL/1150</b>			
	1000	7 500 <b>4EL/970</b>	17 000 <b>4EL/999</b>	21 200 <b>4EL/999</b>	35 500 <b>4EL/1028</b>	47 090 <b>4EL/1051</b>	71 000 <b>4EL/1028</b>	104 830 <b>4EL/1040</b>	123 970 <b>4EL/1046</b>	205 760 <b>4EL/984</b>	301 500 <b>4EL/990</b>			
	900	7 500 <b>4EL/916</b>	17 000 <b>4EL/846</b>	21 200 <b>4EL/846</b>	35 500 <b>4EL/876</b>	46 880 <b>4EL/895</b>	71 000 <b>4EL/876</b>	104 570 <b>4EL/886</b>	146 890 <b>4EL/914</b>	206 080 <b>4EL/888</b>	301 650 <b>4EL/888</b>			
	800	7 500 <b>4EL/838</b>	17 000 <b>4EL/788</b>	21 200 <b>4EL/788</b>	35 500 <b>4EL/836</b>	50 000 <b>4EL/828</b>	71 000 <b>4EL/836</b>	105 030 <b>4EL/846</b>	147 040 <b>4EL/825</b>	206 410 <b>4EL/800</b>	302 070 <b>4EL/806</b>			
	710	7 500 <b>4EL/732</b>	17 000 <b>4EL/720</b>	21 200 <b>4EL/720</b>	35 500 <b>4EL/713</b>	50 000 <b>4EL/706</b>	71 000 <b>4EL/713</b>	104 770 <b>4EL/721</b>	146 710 <b>4EL/706</b>	206 760 <b>4EL/722</b>	302 260 <b>4EL/722</b>			
	630	7 500 <b>4EL/611</b>	17 000 <b>4EL/657</b>	21 200 <b>4EL/657</b>	35 500 <b>4EL/659</b>	50 000 <b>4EL/595</b>	71 000 <b>4EL/607</b>	104 960 <b>4EL/659</b>	146 800 <b>4EL/634</b>	214 430 <b>4EL/624</b>	301 650 <b>4EL/635</b>			
	560	7 500 <b>4EL/566</b>	17 000 <b>4EL/568</b>	21 200 <b>4EL/568</b>	35 500 <b>4EL/562</b>	50 000 <b>4EL/556</b>	71 000 <b>4EL/562</b>	104 660 <b>4EL/562</b>	146 900 <b>4EL/572</b>	214 570 <b>4EL/563</b>	301 920 <b>4EL/563</b>			
	500	7 500 <b>4EL/517</b>	17 000 <b>4EL/518</b>	21 200 <b>4EL/518</b>	35 500 <b>4EL/479</b>	50 000 <b>4EL/489</b>	71 000 <b>4EL/479</b>	104 310 <b>4EL/479</b>	146 630 <b>4EL/500</b>	213 860 <b>4EL/479</b>	301 120 <b>4EL/485</b>			
	450	7 500 <b>4EL/452</b>	17 000 <b>4EL/448</b>	21 200 <b>4EL/448</b>	35 500 <b>4EL/443</b>	50 000 <b>4EL/453</b>	71 000 <b>4EL/443</b>	104 560 <b>4EL/443</b>	146 770 <b>4EL/451</b>	214 380 <b>4EL/444</b>	301 650 <b>4EL/444</b>			
	400	7 500 <b>4EL/422</b>	17 000 <b>4EL/404</b>	21 200 <b>4EL/404</b>	35 500 <b>4EL/377</b>	50 000 <b>4EL/386</b>	71 000 <b>4EL/377</b>	104 380 <b>4EL/382</b>	146 440 <b>4EL/386</b>	213 850 <b>4EL/378</b>	301 110 <b>4EL/382</b>			
	355	8,8 <b>4EL/357</b>	8,8 <b>4EL/358</b>	8,8 <b>4EL/358</b>	9,2 <b>4EL/344</b>	9,7 <b>4EL/325</b>	9,2 <b>4EL/344</b>	- <b>4EL/344</b>	- <b>4EL/356</b>	- <b>4EL/353</b>	- <b>4EL/360</b>	355	3 150	<b>9</b>
	315	8,8 <b>4EL/317</b>	8,7 <b>4EL/323</b>	8,8 <b>4EL/318</b>	8,8 <b>4EL/318</b>	9,2 <b>4EL/304</b>	8,8 <b>4EL/318</b>	8,8 <b>4EL/318</b>	8,6 <b>4EL/325</b>	8,8 <b>4EL/319</b>	- <b>4EL/322</b>	315	2 800	
	280	8,5 <b>4EL/296</b>	8,3 <b>4EL/301</b>	8,3 <b>4EL/303</b>	8,4 <b>4EL/297</b>	9,1 <b>4EL/274</b>	8,4 <b>4EL/297</b>	8,4 <b>4EL/297</b>	8,4 <b>4EL/300</b>	8,4 <b>4EL/298</b>	- <b>4EL/298</b>	280	2 500	
	250	9 <b>4EL/250</b>	8,8 <b>4EL/255</b>	8,8 <b>4EL/255</b>	8,9 <b>4EL/251</b>	8,7 <b>4EL/256</b>	8,9 <b>4EL/251</b>	8,9 <b>4EL/251</b>	8,7 <b>4EL/256</b>	8,9 <b>4EL/251</b>	8,9 <b>4EL/251</b>	250	2 240	
	250	9,4 <b>3EL/239</b>	8,9 <b>3EL/251</b>	8,9 <b>3EL/251</b>	9 <b>3EL/249</b>	9,7 <b>3EL/232</b>	9 <b>3EL/249</b>	9,5 <b>3EL/237</b>	9,2 <b>3EL/243</b>	-	-	250	2 240	
	224	9 <b>3EL/221</b>	9,3 <b>3EL/214</b>	9,3 <b>3EL/214</b>	9,4 <b>3EL/212</b>	9,1 <b>3EL/219</b>	9,4 <b>3EL/212</b>	9,4 <b>3EL/212</b>	9,1 <b>3EL/219</b>	-	-	224	2 000	
	200	8,7 <b>4EL/207</b>	8,5 <b>4EL/211</b>	8,5 <b>4EL/211</b>	8,5 <b>4EL/211</b>	8,3 <b>4EL/216</b>	8,5 <b>4EL/211</b>	8,5 <b>4EL/211</b>	8,3 <b>4EL/216</b>	8,5 <b>4EL/212</b>	-	200	1 800	



### 3 - Selection tables - In line gear reducers

According to FEM 1.001 L2/T5/M5 conditions

$n_{N2} \cdot L_h$ min <sup>-1</sup> · h	$i_N$	Gear reducer size										$i_N$	$n_1$ min <sup>-1</sup>	$n_{N2}$ min <sup>-1</sup>
		Output speed $n_2$ min <sup>-1</sup>												
		Nominal output torque $M_{N2,FEM}$ N m					Train of gears / ratio							
007A	015A	021A	030A	042A	060A	085A	125A	180A	250A					
<b>56 000</b>	200	8,9 6 685 <b>3EL/203</b>	9,1 17 000 <b>3EL/198</b>	8,8 18 000 <b>3EL/204</b>	8,9 30 550 <b>3EL/203</b>	9,1 47 070 <b>3EL/198</b>	8,9 58 770 <b>3EL/203</b>	9,3 92 740 <b>3EL/193</b>	9,1 123 270 <b>3EL/198</b>	-	-	200	1 800	
	180	9,2 7 456 <b>4EL/175</b>	9 17 000 <b>4EL/178</b>	9 21 200 <b>4EL/178</b>	9 35 500 <b>4EL/178</b>	8,8 50 000 <b>4EL/182</b>	9 63 490 <b>4EL/178</b>	-	-	-	-	180	1 600	
	180	8,5 7 500 <b>3EL/189</b>	9,2 13 200 <b>3EL/174</b>	9,2 18 000 <b>3EL/174</b>	9,3 30 420 <b>3EL/173</b>	9 47 140 <b>3EL/178</b>	8,7 59 520 <b>3EL/183</b>	8,6 86 320 <b>3EL/187</b>	8,6 123 990 <b>3EL/186</b>	9 183 770 <b>3EL/178</b>	-	180	1 600	
	160	8,9 7 500 <b>3EL/157</b>	8,3 17 000 <b>3EL/169</b>	8,3 21 200 <b>3EL/169</b>	8,5 35 500 <b>3EL/165</b>	8,3 47 250 <b>3EL/169</b>	8,6 58 970 <b>3EL/163</b>	8,4 105 050 <b>3EL/167</b>	8,3 124 380 <b>3EL/168</b>	8,3 185 060 <b>3EL/168</b>	8,3 265 000 <b>3EL/168</b>	160	1 400	
	140	9,2 7 500 <b>3EL/136</b>	9,1 17 000 <b>3EL/137</b>	9,1 21 200 <b>3EL/137</b>	9,3 35 500 <b>3EL/135</b>	9,1 46 800 <b>3EL/138</b>	9,3 71 000 <b>3EL/135</b>	9,2 104 460 <b>3EL/136</b>	9,4 127 370 <b>3EL/133</b>	9,2 183 350 <b>3EL/136</b>	9,4 254 080 <b>3EL/144</b>	140	1 250	
	125	9 7 500 <b>3EL/124</b>	9,6 17 000 <b>3EL/117</b>	9,6 21 200 <b>3EL/117</b>	8,6 30 380 <b>3EL/130</b>	8,8 47 220 <b>3EL/127</b>	8,8 59 520 <b>3EL/127</b>	8,7 93 450 <b>3EL/129</b>	9,4 146 290 <b>3EL/120</b>	8,7 206 820 <b>3EL/129</b>	8,6 302 440 <b>3EL/130</b>	125	1 120	
	112	9,2 7 500 <b>3EL/109</b>	9,2 17 000 <b>3EL/108</b>	9,2 21 200 <b>3EL/108</b>	8,7 35 500 <b>3EL/115</b>	8,5 47 110 <b>3EL/117</b>	8,7 71 000 <b>3EL/115</b>	8,6 104 860 <b>3EL/116</b>	9,3 146 390 <b>3EL/108</b>	8,6 207 040 <b>3EL/116</b>	8,6 302 510 <b>3EL/116</b>	112	1 000	
	100	8,6 7 484 <b>3EL/105</b>	9,1 13 200 <b>3EL/98,6</b>	9,1 18 000 <b>3EL/98,6</b>	8,5 35 500 <b>3EL/106</b>	8,3 50 000 <b>3EL/108</b>	8,5 66 710 <b>3EL/106</b>	8,5 104 960 <b>3EL/106</b>	8,8 146 850 <b>3EL/102</b>	9 214 450 <b>3EL/100</b>	8,8 301 690 <b>3EL/102</b>	100	900	
	90	8,7 7 500 <b>3EL/92</b>	8,7 17 000 <b>3EL/92,2</b>	8,7 21 200 <b>3EL/92,2</b>	8,8 35 500 <b>3EL/90,4</b>	8,7 50 000 <b>3EL/92,4</b>	8,8 71 000 <b>3EL/90,4</b>	8,8 104 690 <b>3EL/90,4</b>	8,7 146 980 <b>3EL/92,4</b>	8,8 214 650 <b>3EL/90,6</b>	8,7 302 240 <b>3EL/91,6</b>	90	800	
	80	9,3 7 500 <b>3EL/76,2</b>	9,1 17 000 <b>3EL/77,7</b>	9,1 21 200 <b>3EL/77,7</b>	9,3 35 500 <b>3EL/76,2</b>	9,1 50 000 <b>3EL/77,9</b>	9,3 63 490 <b>3EL/76,2</b>	9,2 104 440 <b>3EL/77,1</b>	8,3 147 320 <b>3EL/85,2</b>	9,2 205 660 <b>3EL/77,2</b>	8,5 264 610 <b>3EL/83,5</b>	80	710	
	71	8,7 7 500 <b>3EL/72,5</b>	8,7 17 000 <b>3EL/72,7</b>	8,7 21 200 <b>3EL/72,7</b>	8,8 35 500 <b>3EL/71,3</b>	8,6 50 000 <b>3EL/72,9</b>	8,8 71 000 <b>3EL/71,3</b>	8,8 104 700 <b>3EL/71,3</b>	8,6 147 000 <b>3EL/72,9</b>	8,8 214 660 <b>3EL/71,4</b>	8,8 302 050 <b>3EL/71,4</b>	71	630	
	63	9,2 7 455 <b>3EL/61,1</b>	9,1 17 000 <b>3EL/61,3</b>	9,1 21 200 <b>3EL/61,3</b>	9,3 35 500 <b>3EL/60,1</b>	9,1 50 000 <b>3EL/61,4</b>	9,3 63 490 <b>3EL/60,1</b>	9,3 104 360 <b>3EL/60,1</b>	9,1 146 520 <b>3EL/61,4</b>	9,3 213 970 <b>3EL/60,2</b>	-	63	560	
	50	8,9 7 469 <b>3EL/50,6</b>	8,9 17 000 <b>3EL/51,6</b>	8,9 21 200 <b>3EL/51,6</b>	8,9 35 500 <b>3EL/50,6</b>	8,7 50 000 <b>3EL/51,7</b>	8,9 63 490 <b>3EL/50,6</b>	-	-	-	-	50	450	
	45	-	8,9 11 800 <b>2EL/44,8</b>	8,9 15 000 <b>2EL/44,8</b>	-	-	-	-	-	-	-	45	400	
	40	8,8 6 424 <b>2EL/40,4</b>	8,8 13 200 <b>2EL/40,4</b>	8,8 17 870 <b>2EL/40,4</b>	8,9 30 560 <b>2EL/40,1</b>	-	8,9 45 790 <b>2EL/40,1</b>	-	-	-	-	40	355	
	35,5	9,6 6 633 <b>2EL/32,9</b>	9,6 13 200 <b>2EL/32,9</b>	9,6 18 000 <b>2EL/32,9</b>	9,7 30 290 <b>2EL/32,6</b>	8,4 34 850 <b>2EL/37,3</b>	9,7 58 280 <b>2EL/32,6</b>	-	-	-	-	35,5	315	
	31,5	8,8 5 190 <b>2EL/31,9</b>	8,8 14 430 <b>2EL/31,9</b>	-	9 29 510 <b>2EL/31,2</b>	9,2 45 050 <b>2EL/30,4</b>	9,1 58 630 <b>2EL/30,8</b>	9 93 050 <b>2EL/31</b>	8,8 123 670 <b>2EL/31,8</b>	-	-	31,5	280	
	28	8,9 6 682 <b>2EL/28</b>	8,9 13 200 <b>2EL/28</b>	8,9 18 000 <b>2EL/28</b>	9 30 510 <b>2EL/27,8</b>	8,7 47 280 <b>2EL/28,7</b>	9 58 690 <b>2EL/27,8</b>	9 93 090 <b>2EL/27,8</b>	9,7 122 540 <b>2EL/25,9</b>	8,7 184 300 <b>2EL/28,6</b>	8,7 263 970 <b>2EL/28,7</b>	28	250	
	25	8,6 6 896 <b>2EL/25,9</b>	8,6 17 000 <b>2EL/25,9</b>	8,6 19 230 <b>2EL/25,9</b>	8,8 35 500 <b>2EL/25,4</b>	8,7 47 310 <b>2EL/25,9</b>	9,3 59 520 <b>2EL/24</b>	9,2 85 730 <b>2EL/24,4</b>	8,9 128 050 <b>2EL/25</b>	9,1 165 820 <b>2EL/24,5</b>	9,1 252 850 <b>2EL/24,5</b>	25	224	
	22,4	9,1 7 500 <b>2EL/22,1</b>	9,1 17 000 <b>2EL/22,1</b>	9,1 21 200 <b>2EL/22,1</b>	9,2 35 500 <b>2EL/21,7</b>	9 46 830 <b>2EL/22,1</b>	9,2 71 000 <b>2EL/21,7</b>	9,1 104 500 <b>2EL/21,9</b>	9 123 370 <b>2EL/22,1</b>	9,1 205 860 <b>2EL/22</b>	9 301 610 <b>2EL/22,1</b>	22,4	200	
	20	-	-	-	-	8,8 47 220 <b>2EL/20,4</b>	-	-	8,8 146 820 <b>2EL/20,4</b>	9 183 750 <b>2EL/20</b>	8,8 263 660 <b>2EL/20,4</b>	20	180	
	18	8,6 6 708 <b>2EL/18,6</b>	8,6 13 200 <b>2EL/18,6</b>	8,6 18 000 <b>2EL/18,6</b>	8,7 30 620 <b>2EL/18,5</b>	9,2 50 000 <b>2EL/17,5</b>	8,7 58 910 <b>2EL/18,5</b>	-	9,2 146 470 <b>2EL/17,5</b>	-	9,2 301 340 <b>2EL/17,5</b>	18	160	
	16	8 7 500 <b>2EL/17,4</b>	8 17 000 <b>2EL/17,4</b>	8 21 200 <b>2EL/17,4</b>	8,2 35 500 <b>2EL/17,1</b>	-	8,2 71 000 <b>2EL/17,1</b>	8,2 105 180 <b>2EL/17,1</b>	-	8,2 215 650 <b>2EL/17,1</b>	-	16	140	
	14	8,5 7 488 <b>2EL/14,7</b>	8,5 17 000 <b>2EL/14,7</b>	8,5 21 200 <b>2EL/14,7</b>	8,7 35 500 <b>2EL/14,4</b>	8,5 50 000 <b>2EL/14,7</b>	8,7 63 490 <b>2EL/14,4</b>	-	-	-	-	14	125	
	12,5	-	9,1 12 500 <b>2EL/12,4</b>	9,1 16 000 <b>2EL/12,4</b>	-	-	-	-	-	-	-	12,5	112	

### 3 - Selection tables - In line gear reducers

According to FEM 1.001 L2/T5/M5 conditions

$n_{N2} \cdot L_h$ min <sup>-1</sup> · h	$\dot{n}$	Gear reducer size										$\dot{n}$	$n_1$ min <sup>-1</sup>	$n_{N2}$ min <sup>-1</sup>			
		Output speed $n_2$ min <sup>-1</sup>															
		Nominal output torque $M_{N2,FEM}$ N m															
		Train of gears / ratio $\dots / i$															
007A	015A	021A	030A	042A	060A	085A	125A	180A	250A								
28 000	2800	6 926 4EL/2947	11 800 4EL/2921	-	-	-	-	-	-	-	-	-	-	-	-	-	
	2500	7 060 4EL/2399	13 200 4EL/2636	15 000 4EL/2377	-	-	-	-	-	-	-	-	-	-	-	-	
	2240	-	13 200 4EL/2145	18 000 4EL/2145	32 420 4EL/2338	-	-	-	-	-	-	-	-	-	-	-	
	2000	7 093 4EL/2043	-	-	32 170 4EL/1902	-	-	-	-	-	-	-	-	-	-	-	
	1800	7 066 4EL/1730	13 200 4EL/1827	18 000 4EL/1827	-	47 500 4EL/1673	62 130 4EL/1796	98 540 4EL/1808	130 700 4EL/1852	-	-	-	-	-	-	-	
	1600	7 500 4EL/1611	17 000 4EL/1691	18 000 4EL/1525	32 360 4EL/1621	47 500 4EL/1509	62 210 4EL/1621	98 610 4EL/1621	129 990 4EL/1507	194 430 4EL/1670	-	-	-	-	-	-	
	1400	7 500 4EL/1344	17 000 4EL/1441	18 000 4EL/1318	35 500 4EL/1482	47 500 4EL/1361	62 280 4EL/1462	98 780 4EL/1471	130 500 4EL/1423	-	-	-	-	-	-	-	
	1250	7 083 4EL/1248	13 200 4EL/1267	18 000 4EL/1267	35 500 4EL/1263	50 000 4EL/1291	62 080 4EL/1245	109 240 4EL/1278	130 620 4EL/1284	194 050 4EL/1283	277 700 4EL/1283	-	-	-	-	-	
	1120	7 500 4EL/1122	17 000 4EL/1172	21 200 4EL/1172	35 500 4EL/1206	47 500 4EL/1160	62 130 4EL/1124	98 500 4EL/1124	130 710 4EL/1160	194 110 4EL/1150	277 780 4EL/1150	-	-	-	-	-	
	1000	7 500 4EL/970	17 000 4EL/999	21 200 4EL/999	35 500 4EL/1028	50 000 4EL/1051	71 000 4EL/1028	109 330 4EL/1040	130 730 4EL/1046	220 650 4EL/984	314 600 4EL/990	-	-	-	-	-	
	900	7 500 4EL/916	17 000 4EL/846	21 200 4EL/846	35 500 4EL/876	50 000 4EL/895	71 000 4EL/876	109 050 4EL/886	153 210 4EL/914	220 980 4EL/888	314 760 4EL/888	-	-	-	-	-	
	800	7 500 4EL/838	17 000 4EL/788	21 200 4EL/788	35 500 4EL/836	50 000 4EL/828	71 000 4EL/836	109 530 4EL/846	153 370 4EL/825	221 340 4EL/800	315 000 4EL/806	-	-	-	-	-	
	710	4,3	4,37	4,37	4,42	4,46	4,42	-	-	-	-	-	710	3 150	4,5	-	-
		7 500 4EL/732	17 000 4EL/720	21 200 4EL/720	35 500 4EL/713	50 000 4EL/706	71 000 4EL/713	109 260 4EL/721	153 030 4EL/706	221 720 4EL/722	315 000 4EL/722	-	-	-		-	-
	630	4,58	4,26	4,26	4,25	4,71	4,61	4,25	4,42	4,49	-	-	630	2 800	-	-	-
		7 500 4EL/611	17 000 4EL/657	21 200 4EL/657	35 500 4EL/659	50 000 4EL/595	71 000 4EL/607	109 450 4EL/659	153 120 4EL/634	223 680 4EL/624	315 000 4EL/635	-	-	-	-	-	
	560	4,42	4,4	4,4	4,45	4,49	4,45	4,45	4,37	4,44	-	-	560	2 500	-	-	-
		7 500 4EL/566	17 000 4EL/568	21 200 4EL/568	35 500 4EL/562	50 000 4EL/556	71 000 4EL/562	109 140 4EL/562	153 220 4EL/572	223 830 4EL/563	315 000 4EL/563	-	-	-	-	-	
	500	4,34	4,32	4,32	4,68	4,58	4,68	4,68	4,48	4,67	4,62	-	500	2 240	-	-	-
		7 500 4EL/517	17 000 4EL/518	21 200 4EL/518	35 500 4EL/479	50 000 4EL/489	71 000 4EL/479	108 810 4EL/479	152 990 4EL/500	223 140 4EL/479	314 290 4EL/485	-	-	-	-	-	
	450	4,42	4,47	4,47	4,52	4,42	4,52	4,52	4,44	4,51	4,51	-	450	2 000	-	-	-
		7 500 4EL/452	17 000 4EL/448	21 200 4EL/448	35 500 4EL/443	50 000 4EL/453	71 000 4EL/443	109 050 4EL/443	153 090 4EL/451	223 630 4EL/444	314 750 4EL/444	-	-	-	-	-	
	400	4,27	4,46	4,46	4,77	4,67	4,77	4,72	4,67	4,71	4,71	-	400	1 800	-	-	-
		7 500 4EL/422	17 000 4EL/404	21 200 4EL/404	35 500 4EL/377	50 000 4EL/386	71 000 4EL/377	108 760 4EL/382	152 610 4EL/386	222 880 4EL/378	313 920 4EL/382	-	-	-	-	-	
	355	4,49	4,47	4,47	4,65	4,92	4,65	4,65	4,5	4,53	4,45	-	355	1 600	-	-	-
		7 500 4EL/357	17 000 4EL/358	21 200 4EL/358	32 210 4EL/344	50 000 4EL/325	61 920 4EL/344	98 170 4EL/344	152 950 4EL/356	223 550 4EL/353	315 000 4EL/360	-	-	-	-	-	
	315	4,41	4,33	4,4	4,4	4,6	4,4	4,4	4,31	4,39	4,34	-	315	1 400	-	-	-
		7 500 4EL/317	17 000 4EL/323	21 200 4EL/318	35 500 4EL/318	50 000 4EL/304	63 490 4EL/318	109 210 4EL/318	153 360 4EL/325	223 970 4EL/319	315 000 4EL/322	-	-	-	-	-	
	280	4,23	4,15	4,13	4,2	4,56	4,2	4,2	4,17	4,19	4,19	-	280	1 250	-	-	-
		7 500 4EL/296	17 000 4EL/301	21 200 4EL/303	35 500 4EL/297	50 000 4EL/274	71 000 4EL/297	109 520 4EL/297	153 660 4EL/300	224 000 4EL/298	315 000 4EL/298	-	-	-	-	-	
	250	4,48	4,39	4,39	4,47	4,37	4,47	4,47	4,37	4,46	4,46	-	250	1 120	-	-	-
		7 500 4EL/250	17 000 4EL/255	21 200 4EL/255	35 500 4EL/251	50 000 4EL/256	71 000 4EL/251	109 120 4EL/251	153 220 4EL/256	223 770 4EL/251	314 960 4EL/251	-	-	-	-	-	
	250	4,68	4,46	4,46	4,5	4,83	4,5	4,73	4,62	-	-	-	250	1 120	-	-	-
		7 059 3EL/239	13 200 3EL/251	18 000 3EL/251	32 300 3EL/249	45 050 3EL/232	62 090 3EL/249	98 050 3EL/237	130 170 3EL/243	-	-	-	-	-	-	-	
	224	4,52	4,67	4,67	4,71	4,57	4,71	4,71	4,57	-	-	-	224	1 000	-	-	-
		7 288 3EL/221	13 200 3EL/214	18 000 3EL/214	32 180 3EL/212	47 500 3EL/219	61 870 3EL/212	98 080 3EL/212	193 390 3EL/219	-	-	-	-	-	-	-	
	200	4,34	4,26	4,26	4,26	4,17	4,26	4,26	4,17	4,25	-	-	200	900	-	-	-
		7 500 4EL/207	17 000 4EL/211	21 200 4EL/211	35 500 4EL/211	50 000 4EL/216	71 000 4EL/211	109 430 4EL/211	153 670 4EL/216	224 000 4EL/212	-	-	-	-	-	-	

### 3 - Selection tables - In line gear reducers

According to FEM 1.001 L2/T5/M5 conditions

$n_{N2} \cdot L$ min <sup>-1</sup> · h	$\dot{n}$	Gear reducer size										$\dot{n}$	$n_1$ min <sup>-1</sup>	$n_{N2}$ min <sup>-1</sup>
		Output speed $n_2$ min <sup>-1</sup>												
		Nominal output torque $M_{N2 FEM}$ N m Train of gears / ratio												
007A	015A	021A	030A	042A	060A	085A	125A	180A	250A					
<b>28 000</b>	200	4,44 7 088 <b>3EL/203</b>	4,54 17 000 <b>3EL/198</b>	4,4 18 000 <b>3EL/204</b>	4,44 32 330 <b>3EL/203</b>	4,55 47 500 <b>3EL/198</b>	4,44 62 150 <b>3EL/203</b>	4,67 98 140 <b>3EL/193</b>	4,55 130 280 <b>3EL/198</b>	-	-	200	900	
	180	4,58 7 500 <b>4EL/175</b>	4,49 17 000 <b>4EL/178</b>	4,49 21 200 <b>4EL/178</b>	4,49 35 500 <b>4EL/178</b>	4,4 50 000 <b>4EL/182</b>	4,49 63 490 <b>4EL/178</b>	-	-	-	-	180	800	
	180	4,24 7 500 <b>3EL/189</b>	4,59 13 200 <b>3EL/174</b>	4,59 18 000 <b>3EL/174</b>	4,63 32 220 <b>3EL/173</b>	4,49 47 500 <b>3EL/178</b>	4,37 59 520 <b>3EL/183</b>	4,29 92 660 <b>3EL/187</b>	4,29 130 750 <b>3EL/186</b>	4,5 193 630 <b>3EL/178</b>	-	180	800	
	160	4,51 7 500 <b>3EL/157</b>	4,21 17 000 <b>3EL/169</b>	4,21 21 200 <b>3EL/169</b>	4,29 35 500 <b>3EL/165</b>	4,2 50 000 <b>3EL/169</b>	4,35 62 240 <b>3EL/163</b>	4,24 109 460 <b>3EL/167</b>	4,22 130 880 <b>3EL/168</b>	4,23 194 510 <b>3EL/168</b>	4,23 278 350 <b>3EL/168</b>	160	710	
	140	4,63 7 500 <b>3EL/136</b>	4,59 17 000 <b>3EL/137</b>	4,59 21 200 <b>3EL/137</b>	4,68 35 500 <b>3EL/135</b>	4,58 50 000 <b>3EL/138</b>	4,68 71 000 <b>3EL/135</b>	4,63 108 890 <b>3EL/136</b>	4,75 136 580 <b>3EL/133</b>	4,64 193 200 <b>3EL/136</b>	4,38 272 130 <b>3EL/144</b>	140	630	
	125	4,51 7 500 <b>3EL/124</b>	4,79 17 000 <b>3EL/117</b>	4,79 21 200 <b>3EL/117</b>	4,29 32 690 <b>3EL/130</b>	4,42 47 500 <b>3EL/127</b>	4,41 59 520 <b>3EL/127</b>	4,33 98 700 <b>3EL/129</b>	4,68 152 590 <b>3EL/120</b>	4,35 221 780 <b>3EL/129</b>	4,32 315 000 <b>3EL/130</b>	125	560	
	112	4,6 7 500 <b>3EL/109</b>	4,62 17 000 <b>3EL/108</b>	4,62 21 200 <b>3EL/108</b>	4,36 35 500 <b>3EL/115</b>	4,27 50 000 <b>3EL/117</b>	4,36 71 000 <b>3EL/115</b>	4,31 109 350 <b>3EL/116</b>	4,63 152 690 <b>3EL/108</b>	4,3 222 020 <b>3EL/116</b>	4,3 315 000 <b>3EL/116</b>	112	500	
	100	4,3 7 500 <b>3EL/105</b>	4,56 13 200 <b>3EL/98,6</b>	4,56 18 000 <b>3EL/98,6</b>	4,24 35 500 <b>3EL/106</b>	4,15 50 000 <b>3EL/108</b>	4,24 71 000 <b>3EL/106</b>	4,24 109 460 <b>3EL/106</b>	4,39 153 170 <b>3EL/102</b>	4,48 223 700 <b>3EL/100</b>	4,4 315 000 <b>3EL/102</b>	100	450	
	90	4,35 7 500 <b>3EL/92</b>	4,34 17 000 <b>3EL/92,2</b>	4,34 21 200 <b>3EL/92,2</b>	4,42 35 500 <b>3EL/90,4</b>	4,33 50 000 <b>3EL/92,4</b>	4,42 71 000 <b>3EL/90,4</b>	4,42 109 180 <b>3EL/90,4</b>	4,33 153 310 <b>3EL/92,4</b>	4,42 223 900 <b>3EL/90,6</b>	4,37 315 000 <b>3EL/91,6</b>	90	400	
	80	4,66 7 500 <b>3EL/76,2</b>	4,57 17 000 <b>3EL/77,7</b>	4,57 21 200 <b>3EL/77,7</b>	4,66 35 500 <b>3EL/76,2</b>	4,56 50 000 <b>3EL/77,9</b>	4,66 63 490 <b>3EL/76,2</b>	4,61 108 920 <b>3EL/77,1</b>	4,17 153 670 <b>3EL/85,2</b>	4,6 220 540 <b>3EL/77,2</b>	4,25 278 230 <b>3EL/83,5</b>	80	355	
	71	4,35 7 500 <b>3EL/72,5</b>	4,33 17 000 <b>3EL/72,7</b>	4,33 21 200 <b>3EL/72,7</b>	4,42 35 500 <b>3EL/71,3</b>	4,32 50 000 <b>3EL/72,9</b>	4,42 71 000 <b>3EL/71,3</b>	4,42 109 190 <b>3EL/71,3</b>	4,32 153 320 <b>3EL/72,9</b>	4,41 223 920 <b>3EL/71,4</b>	4,41 315 000 <b>3EL/71,4</b>	71	315	
	63	4,58 7 500 <b>3EL/61,1</b>	4,57 17 000 <b>3EL/61,3</b>	4,57 21 200 <b>3EL/61,3</b>	4,66 35 500 <b>3EL/60,1</b>	4,56 50 000 <b>3EL/61,4</b>	4,66 63 490 <b>3EL/60,1</b>	4,66 108 840 <b>3EL/60,1</b>	4,56 152 830 <b>3EL/61,4</b>	4,65 223 190 <b>3EL/60,2</b>	-	63	280	
	50	4,42 7 500 <b>3EL/50,6</b>	4,34 17 000 <b>3EL/51,6</b>	4,34 21 200 <b>3EL/51,6</b>	4,43 35 500 <b>3EL/50,6</b>	4,33 50 000 <b>3EL/51,7</b>	4,43 63 490 <b>3EL/50,6</b>	-	-	-	-	50	224	
	45	-	4,46 11 800 <b>2EL/44,8</b>	4,46 15 000 <b>2EL/44,8</b>	-	-	-	-	-	-	-	45	200	
	40	4,45 6 892 <b>2EL/40,4</b>	4,45 13 200 <b>2EL/40,4</b>	4,45 18 000 <b>2EL/40,4</b>	4,49 32 300 <b>2EL/40,1</b>	-	4,49 49 060 <b>2EL/40,1</b>	-	-	-	-	40	180	
	35,5	4,86 7 038 <b>2EL/32,9</b>	4,86 13 200 <b>2EL/32,9</b>	4,86 18 000 <b>2EL/32,9</b>	4,9 32 080 <b>2EL/32,6</b>	4,29 37 340 <b>2EL/37,3</b>	4,9 61 680 <b>2EL/32,6</b>	-	-	-	-	35,5	160	
	31,5	4,39 5 577 <b>2EL/31,9</b>	4,39 15 500 <b>2EL/31,9</b>	-	4,48 31 670 <b>2EL/31,2</b>	4,61 45 050 <b>2EL/30,4</b>	4,55 62 030 <b>2EL/30,8</b>	4,51 98 390 <b>2EL/31</b>	4,41 130 540 <b>2EL/31,8</b>	-	-	31,5	140	
	28	4,46 7 086 <b>2EL/28</b>	4,46 13 200 <b>2EL/28</b>	4,46 18 000 <b>2EL/28</b>	4,5 32 300 <b>2EL/27,8</b>	4,36 47 500 <b>2EL/28,7</b>	4,5 62 080 <b>2EL/27,8</b>	4,5 98 420 <b>2EL/27,8</b>	4,83 129 750 <b>2EL/25,9</b>	4,37 194 050 <b>2EL/28,6</b>	4,36 277 730 <b>2EL/28,7</b>	28	125	
	25	4,32 7 288 <b>2EL/25,9</b>	4,32 17 000 <b>2EL/25,9</b>	4,32 19 230 <b>2EL/25,9</b>	4,41 35 500 <b>2EL/25,4</b>	4,33 47 500 <b>2EL/25,9</b>	4,67 59 520 <b>2EL/24</b>	4,58 92 030 <b>2EL/24,4</b>	4,47 137 430 <b>2EL/25</b>	4,57 177 950 <b>2EL/24,5</b>	4,57 271 030 <b>2EL/24,5</b>	25	112	
	22,4	4,53 7 500 <b>2EL/22,1</b>	4,53 17 000 <b>2EL/22,1</b>	4,53 21 200 <b>2EL/22,1</b>	4,62 35 500 <b>2EL/21,7</b>	4,52 50 000 <b>2EL/22,1</b>	4,62 71 000 <b>2EL/21,7</b>	4,56 108 980 <b>2EL/21,9</b>	4,52 130 340 <b>2EL/22,1</b>	4,55 220 750 <b>2EL/22</b>	4,52 314 710 <b>2EL/22,1</b>	22,4	100	
	20	-	-	-	-	4,41 47 500 <b>2EL/20,4</b>	-	-	4,41 153 140 <b>2EL/20,4</b>	4,5 193 620 <b>2EL/20</b>	4,41 277 490 <b>2EL/20,4</b>	20	90	
	18	4,3 7 100 <b>2EL/18,6</b>	4,3 13 200 <b>2EL/18,6</b>	4,3 18 000 <b>2EL/18,6</b>	4,33 32 390 <b>2EL/18,5</b>	4,58 50 000 <b>2EL/17,5</b>	4,33 62 260 <b>2EL/18,5</b>	-	4,58 152 780 <b>2EL/17,5</b>	-	4,58 314 430 <b>2EL/17,5</b>	18	80	
	16	4,08 7 500 <b>2EL/17,4</b>	4,08 17 000 <b>2EL/17,4</b>	4,08 21 200 <b>2EL/17,4</b>	4,16 35 500 <b>2EL/17,1</b>	-	4,16 71 000 <b>2EL/17,1</b>	4,16 109 590 <b>2EL/17,1</b>	-	4,15 224 000 <b>2EL/17,1</b>	-	16	71	
	14	4,29 7 500 <b>2EL/14,7</b>	4,29 17 000 <b>2EL/14,7</b>	4,29 21 200 <b>2EL/14,7</b>	4,38 35 500 <b>2EL/14,4</b>	4,28 50 000 <b>2EL/14,7</b>	4,38 63 490 <b>2EL/14,4</b>	-	-	-	-	14	63	
	12,5	-	4,53 12 500 <b>2EL/12,4</b>	4,53 16 000 <b>2EL/12,4</b>	-	-	-	-	-	-	-	12,5	56	

### 3 - Selection tables - In line gear reducers

According to FEM 1.001 L2/T5/M5 conditions

$n_{N2} \cdot L_h$ min <sup>-1</sup> · h	$i_N$	Gear reducer size										$i_N$	$n_1$ min <sup>-1</sup>	$n_{N2}$ min <sup>-1</sup>
		Output speed $n_2$ min <sup>-1</sup>												
		Nominal output torque $M_{N2 FEM}$ N m Train of gears / ratio ... / i												
007A	015A	021A	030A	042A	060A	085A	125A	180A	250A					
14 000	2800	7 100 4EL/2947	11 800 4EL/2921	-	-	-	-	-	-	-	-			
	2500	7 100 4EL/2399	13 200 4EL/2636	15 000 4EL/2377	-	-	-	-	-	-	-			
	2240	-	13 200 4EL/2145	18 000 4EL/2145	33 500 4EL/2338	-	-	-	-	-	-			
	2000	7 100 4EL/2043	-	-	33 500 4EL/1902	-	-	-	-	-	-			
	1800	7 100 4EL/1730	13 200 4EL/1827	18 000 4EL/1827	-	47 500 4EL/1673	65 480 4EL/1796	103 770 4EL/1808	137 460 4EL/1852	-	-			
	1600	7 500 4EL/1611	17 000 4EL/1691	18 000 4EL/1525	33 500 4EL/1621	47 500 4EL/1509	65 570 4EL/1621	103 840 4EL/1621	136 410 4EL/1507	204 580 4EL/1670	-			
	1400	2,34 4EL/1344	2,19 4EL/1441	2,39 4EL/1318	2,12 4EL/1482	2,31 4EL/1361	2,16 4EL/1462	- 4EL/1471	- 4EL/1423	-	-	1 400	3 150	2,24
	1250	2,24 4EL/1248	2,21 4EL/1267	2,21 4EL/1267	2,22 4EL/1263	2,17 4EL/1291	2,25 4EL/1245	2,19 4EL/1278	2,18 4EL/1284	2,18 4EL/1283	- 4EL/1283	1 250	2 800	
	1120	2,23 4EL/1122	2,13 4EL/1172	2,13 4EL/1172	2,07 4EL/1206	2,16 4EL/1160	2,22 4EL/1124	2,22 4EL/1124	2,16 4EL/1160	2,17 4EL/1150	- 4EL/1150	1 120	2 500	
	1000	2,31 4EL/970	2,24 4EL/999	2,24 4EL/999	2,18 4EL/1028	2,13 4EL/1051	2,18 4EL/1028	2,15 4EL/1040	2,14 4EL/1046	2,28 4EL/984	2,26 4EL/990	1 000	2 240	
	900	2,18 4EL/916	2,37 4EL/846	2,37 4EL/846	2,28 4EL/876	2,23 4EL/895	2,28 4EL/876	2,26 4EL/886	2,19 4EL/914	2,25 4EL/888	2,25 4EL/888	900	2 000	
	800	2,15 4EL/838	2,29 4EL/788	2,29 4EL/788	2,15 4EL/836	2,17 4EL/828	2,15 4EL/836	2,13 4EL/846	2,18 4EL/825	2,25 4EL/800	2,23 4EL/806	800	1 800	
	710	2,19 4EL/732	2,22 4EL/720	2,22 4EL/720	2,25 4EL/713	2,27 4EL/706	2,25 4EL/713	2,22 4EL/721	2,27 4EL/706	2,22 4EL/722	2,22 4EL/722	710	1 600	
	630	2,29 4EL/611	2,13 4EL/657	2,13 4EL/657	2,12 4EL/659	2,35 4EL/595	2,31 4EL/607	2,12 4EL/659	2,21 4EL/634	2,24 4EL/624	2,2 4EL/635	630	1 400	
	560	2,21 4EL/566	2,2 4EL/568	2,2 4EL/568	2,23 4EL/562	2,25 4EL/556	2,23 4EL/562	2,23 4EL/562	2,19 4EL/572	2,22 4EL/563	2,22 4EL/563	560	1 250	
	500	2,17 4EL/517	2,16 4EL/518	2,16 4EL/518	2,34 4EL/479	2,29 4EL/489	2,34 4EL/479	2,34 4EL/479	2,24 4EL/500	2,34 4EL/479	2,31 4EL/485	500	1 120	
	450	2,21 4EL/452	2,23 4EL/448	2,23 4EL/448	2,26 4EL/443	2,21 4EL/453	2,26 4EL/443	2,26 4EL/443	2,22 4EL/451	2,25 4EL/444	2,25 4EL/444	450	1 000	
	400	2,13 4EL/422	2,23 4EL/404	2,23 4EL/404	2,39 4EL/377	2,33 4EL/386	2,39 4EL/377	2,36 4EL/382	2,33 4EL/386	2,38 4EL/378	2,35 4EL/382	400	900	
	355	2,24 4EL/357	2,24 4EL/358	2,24 4EL/358	2,33 4EL/344	2,46 4EL/325	2,33 4EL/344	2,33 4EL/344	2,25 4EL/356	2,27 4EL/353	2,22 4EL/360	355	800	
	315	2,24 4EL/317	2,2 4EL/323	2,23 4EL/318	2,23 4EL/318	2,33 4EL/304	2,23 4EL/318	2,23 4EL/318	2,18 4EL/325	2,23 4EL/319	2,2 4EL/322	315	710	
	280	2,13 4EL/296	2,09 4EL/301	2,08 4EL/303	2,12 4EL/297	2,3 4EL/274	2,12 4EL/297	2,12 4EL/297	2,1 4EL/300	2,11 4EL/298	2,11 4EL/298	280	630	
	250	2,24 4EL/250	2,2 4EL/255	2,2 4EL/255	2,23 4EL/251	2,19 4EL/256	2,23 4EL/251	2,23 4EL/251	2,23 4EL/256	2,19 4EL/251	2,23 4EL/251	250	560	
	250	2,34 3EL/239	2,23 3EL/251	2,23 3EL/251	2,25 3EL/249	2,41 3EL/232	2,25 3EL/249	2,36 3EL/237	2,31 3EL/243	-	-	250	560	
	224	2,26 3EL/221	2,34 3EL/214	2,34 3EL/214	2,36 3EL/212	2,28 3EL/219	2,36 3EL/212	2,36 3EL/212	2,36 3EL/212	2,29 3EL/219	203 480 3EL/219	224	500	
	200	2,17 4EL/207	2,13 4EL/211	2,13 4EL/211	2,13 4EL/211	2,08 4EL/216	2,13 4EL/211	2,13 4EL/211	2,08 4EL/216	2,13 4EL/212	-	200	450	

### 3 - Selection tables - In line gear reducers

According to FEM 1.001 L2/T5/M5 conditions

$n_{N2} \cdot L_n$ min <sup>-1</sup> · h	$\dot{n}$	Gear reducer size										$\dot{n}$	$n_1$ min <sup>-1</sup>	$n_{N2}$ min <sup>-1</sup>									
		Output speed $n_2$ min <sup>-1</sup>																					
		Nominal output torque $M_{N2 FEM}$ N m																					
Train of gears / ratio																							
										007A	015A	021A	030A	042A	060A	085A	125A	180A	250A				
14 000	200	2,22 7 100 3EL/203	2,27 17 000 3EL/198	2,2 18 000 3EL/204	2,22 33 500 3EL/203	2,28 47 500 3EL/198	2,22 65 500 3EL/203	2,34 103 350 3EL/193	2,28 136 820 3EL/198	-	-	200	450										
	180	2,29 7 500 4EL/175	2,25 17 000 4EL/178	2,25 21 200 4EL/178	2,25 35 500 4EL/178	2,2 50 000 4EL/182	2,25 63 490 4EL/178	-	-	-	-	180	400										
	180	2,12 7 500 3EL/189	2,3 13 200 3EL/174	2,3 18 000 3EL/174	2,32 33 500 3EL/173	2,24 47 500 3EL/178	2,18 59 520 3EL/183	2,14 99 460 3EL/187	2,15 137 540 3EL/186	2,25 203 740 3EL/178	-	180	400										
	160	2,25 7 500 3EL/157	2,1 17 000 3EL/169	2,1 21 200 3EL/169	2,15 35 500 3EL/165	2,1 50 000 3EL/169	2,18 65 600 3EL/163	2,12 112 000 3EL/167	2,11 137 740 3EL/168	2,11 204 670 3EL/168	2,11 292 680 3EL/168	160	355										
	140	2,31 7 500 3EL/136	2,29 17 000 3EL/137	2,29 21 200 3EL/137	2,34 35 500 3EL/135	2,29 50 000 3EL/138	2,34 71 000 3EL/135	2,31 112 000 3EL/136	2,38 146 590 3EL/133	2,32 203 280 3EL/136	2,19 291 690 3EL/144	140	315										
	125	2,26 7 500 3EL/124	2,39 17 000 3EL/117	2,39 21 200 3EL/117	2,15 35 170 3EL/130	2,21 47 500 3EL/127	2,2 59 520 3EL/127	2,16 103 940 3EL/129	2,34 159 660 3EL/120	2,17 224 000 3EL/129	2,16 315 000 3EL/130	125	280										
	112	2,3 7 500 3EL/109	2,31 17 000 3EL/108	2,31 21 200 3EL/108	2,18 35 500 3EL/115	2,13 50 000 3EL/117	2,18 71 000 3EL/115	2,15 112 000 3EL/116	2,31 159 810 3EL/108	2,15 224 000 3EL/116	2,15 315 000 3EL/116	112	250										
	100	2,14 7 500 3EL/105	2,27 13 200 3EL/98,6	2,27 18 000 3EL/98,6	2,11 35 500 3EL/106	2,07 50 000 3EL/108	2,11 71 000 3EL/106	2,11 112 000 3EL/106	2,19 160 000 3EL/102	2,23 224 000 3EL/100	2,19 315 000 3EL/102	100	224										
	90	2,18 7 500 3EL/92	2,17 17 000 3EL/92,2	2,17 21 200 3EL/92,2	2,21 35 500 3EL/90,4	2,16 50 000 3EL/92,4	2,21 71 000 3EL/90,4	2,21 112 000 3EL/90,4	2,16 160 000 3EL/92,4	2,21 224 000 3EL/90,6	2,18 315 000 3EL/91,6	90	200										
	80	2,36 7 500 3EL/76,2	2,32 17 000 3EL/77,7	2,32 21 200 3EL/77,7	2,36 35 500 3EL/76,2	2,31 50 000 3EL/77,9	2,36 63 490 3EL/76,2	2,34 112 000 3EL/77,1	2,11 160 000 3EL/85,2	2,33 224 000 3EL/77,2	2,16 292 250 3EL/83,5	80	180										
	71	2,21 7 500 3EL/72,5	2,2 17 000 3EL/72,7	2,2 21 200 3EL/72,7	2,24 35 500 3EL/71,3	2,2 50 000 3EL/72,9	2,24 71 000 3EL/71,3	2,24 112 000 3EL/71,3	2,2 160 000 3EL/72,9	2,24 224 000 3EL/71,4	2,24 315 000 3EL/71,4	71	160										
	63	2,29 7 500 3EL/61,1	2,28 17 000 3EL/61,3	2,28 21 200 3EL/61,3	2,33 35 500 3EL/60,1	2,28 50 000 3EL/61,4	2,33 63 490 3EL/60,1	2,33 112 000 3EL/60,1	2,28 160 000 3EL/61,4	2,33 224 000 3EL/60,2	-	63	140										
	50	2,21 7 500 3EL/50,6	2,17 17 000 3EL/51,6	2,17 21 200 3EL/51,6	2,21 35 500 3EL/50,6	2,16 50 000 3EL/51,7	2,16 63 490 3EL/50,6	-	-	-	-	50	112										
	45	-	2,23 11 800 2EL/44,8	2,23 15 000 2EL/44,8	-	-	-	-	-	-	-	45	100										
	40	2,23 7 100 2EL/40,4	2,23 13 200 2EL/40,4	2,23 18 000 2EL/40,4	2,24 33 500 2EL/40,1	-	2,24 52 640 2EL/40,1	-	-	-	-	40	90										
	35,5	2,43 7 100 2EL/32,9	2,43 13 200 2EL/32,9	2,43 18 000 2EL/32,9	2,45 33 500 2EL/32,6	2,14 37 940 2EL/37,3	2,45 65 010 2EL/32,6	-	-	-	-	35,5	80										
	31,5	2,23 5 983 2EL/31,9	2,23 16 190 2EL/31,9	-	2,27 31 750 2EL/31,2	2,34 45 050 2EL/30,4	2,31 65 310 2EL/30,8	2,29 103 500 2EL/31	2,24 137 040 2EL/31,8	-	-	31,5	71										
	28	2,25 7 100 2EL/28	2,25 13 200 2EL/28	2,25 18 000 2EL/28	2,27 33 500 2EL/27,8	2,2 47 500 2EL/28,7	2,27 65 400 2EL/27,8	2,27 103 580 2EL/27,8	2,43 136 020 2EL/25,9	2,2 204 060 2EL/28,6	2,2 291 860 2EL/28,7	28	63										
	25	2,16 7 288 2EL/25,9	2,16 17 000 2EL/25,9	2,16 19 230 2EL/25,9	2,2 35 500 2EL/25,4	2,16 47 500 2EL/25,9	2,33 59 520 2EL/24	2,29 98 790 2EL/24,4	2,24 147 500 2EL/25	2,29 190 960 2EL/24,5	2,28 290 520 2EL/24,5	25	56										
	22,4	2,26 7 500 2EL/22,1	2,26 17 000 2EL/22,1	2,26 21 200 2EL/22,1	2,31 35 500 2EL/21,7	2,26 50 000 2EL/22,1	2,31 71 000 2EL/21,7	2,28 112 000 2EL/21,9	2,26 136 920 2EL/22,1	2,28 224 000 2EL/22	2,26 315 000 2EL/22,1	22,4	50										
	20	-	-	-	-	2,21 47 500 2EL/20,4	-	-	2,21 160 000 2EL/20,4	2,25 203 730 2EL/20	2,21 291 780 2EL/20,4	20	45										
	18	2,15 7 100 2EL/18,6	2,15 13 200 2EL/18,6	2,15 18 000 2EL/18,6	2,17 33 500 2EL/18,5	2,29 50 000 2EL/17,5	2,17 65 620 2EL/18,5	-	2,29 159 950 2EL/17,5	-	2,29 315 000 2EL/17,5	18	40										
	16	2,04 7 500 2EL/17,4	2,04 17 000 2EL/17,4	2,04 21 200 2EL/17,4	2,08 35 500 2EL/17,1	-	2,08 71 000 2EL/17,1	2,08 112 000 2EL/17,1	-	2,08 224 000 2EL/17,1	-	16	36										
	14	2,15 7 500 2EL/14,7	2,15 17 000 2EL/14,7	2,15 21 200 2EL/14,7	2,19 35 500 2EL/14,4	2,14 50 000 2EL/14,7	2,19 63 490 2EL/14,4	-	-	-	-	14	32										
	12,5	-	2,26 12 500 2EL/12,4	2,26 16 000 2EL/12,4	-	-	-	-	-	-	-	12,5	28										

### 3 - Selection tables - In line gear reducers

According to FEM 1.001 L2/T5/M5 conditions

$n_{N2} \cdot L_h$ min <sup>-1</sup> · h	$\dot{n}$	Gear reducer size										$\dot{n}_N$	$n_1$ min <sup>-1</sup>	$n_{N2}$ min <sup>-1</sup>
		Output speed $n_2$ min <sup>-1</sup>												
		Nominal output torque $M_{N2 FEM}$ N m												
		Train of gears / ratio $\dots / i$												
007A	015A	021A	030A	042A	060A	085A	125A	180A	250A					
7 100	2800	1,07 7 100 <b>4EL/2947</b>	1,08 11 800 <b>4EL/2921</b>	-	-	-	-	-	-	-	2 800	3 150	1,12	
	2500	1,17 7 100 <b>4EL/2399</b>	1,06 13 200 <b>4EL/2636</b>	1,18 15 000 <b>4EL/2377</b>	-	-	-	-	-	-	2 500	2 800		
	2240	-	1,17 13 200 <b>4EL/2145</b>	1,17 18 000 <b>4EL/2145</b>	1,07 33 500 <b>4EL/2338</b>	-	-	-	-	-	2 240	2 500		
	2000	1,1 7 100 <b>4EL/2043</b>	-	-	1,18 33 500 <b>4EL/1902</b>	-	-	-	-	-	2 000	2 240		
	1800	1,16 7 100 <b>4EL/1730</b>	1,09 13 200 <b>4EL/1827</b>	1,09 18 000 <b>4EL/1827</b>	-	1,2 47 500 <b>4EL/1673</b>	1,11 67 000 <b>4EL/1796</b>	1,11 106 000 <b>4EL/1808</b>	1,08 144 940 <b>4EL/1852</b>	-	-	1 800		2 000
	1600	1,12 7 500 <b>4EL/1611</b>	1,06 17 000 <b>4EL/1691</b>	1,18 18 000 <b>4EL/1525</b>	1,11 33 500 <b>4EL/1621</b>	1,19 47 500 <b>4EL/1509</b>	1,11 67 000 <b>4EL/1621</b>	1,11 106 000 <b>4EL/1621</b>	1,19 143 870 <b>4EL/1507</b>	1,08 212 000 <b>4EL/1670</b>	-	1 600		1 800
	1400	1,19 7 500 <b>4EL/1344</b>	1,11 17 000 <b>4EL/1441</b>	1,21 18 000 <b>4EL/1318</b>	1,08 35 500 <b>4EL/1482</b>	1,18 47 500 <b>4EL/1361</b>	1,09 67 000 <b>4EL/1462</b>	1,09 106 000 <b>4EL/1471</b>	1,12 144 510 <b>4EL/1423</b>	-	-	1 400		1 600
	1250	1,12 7 100 <b>4EL/1248</b>	1,11 13 200 <b>4EL/1267</b>	1,11 18 000 <b>4EL/1267</b>	1,11 35 500 <b>4EL/1263</b>	1,08 50 000 <b>4EL/1291</b>	1,12 67 000 <b>4EL/1245</b>	1,1 112 000 <b>4EL/1278</b>	1,09 144 840 <b>4EL/1284</b>	1,09 212 000 <b>4EL/1283</b>	1,09 300 000 <b>4EL/1283</b>	1 250		1 400
	1120	1,11 7 500 <b>4EL/1122</b>	1,07 17 000 <b>4EL/1172</b>	1,07 21 200 <b>4EL/1172</b>	1,04 35 500 <b>4EL/1206</b>	1,08 47 500 <b>4EL/1160</b>	1,11 67 000 <b>4EL/1124</b>	1,11 106 000 <b>4EL/1124</b>	1,08 144 960 <b>4EL/1160</b>	1,09 212 000 <b>4EL/1150</b>	1,09 300 000 <b>4EL/1150</b>	1 120		1 250
	1000	1,16 7 500 <b>4EL/970</b>	1,12 17 000 <b>4EL/999</b>	1,12 21 200 <b>4EL/999</b>	1,09 35 500 <b>4EL/1028</b>	1,07 50 000 <b>4EL/1051</b>	1,09 71 000 <b>4EL/1028</b>	1,08 112 000 <b>4EL/1040</b>	1,07 145 040 <b>4EL/1046</b>	1,14 224 000 <b>4EL/984</b>	1,13 315 000 <b>4EL/990</b>	1 000		1 120
	900	1,09 7 500 <b>4EL/916</b>	1,18 17 000 <b>4EL/846</b>	1,18 21 200 <b>4EL/846</b>	1,14 35 500 <b>4EL/876</b>	1,12 50 000 <b>4EL/895</b>	1,14 71 000 <b>4EL/876</b>	1,13 112 000 <b>4EL/886</b>	1,09 160 000 <b>4EL/914</b>	1,13 224 000 <b>4EL/888</b>	1,13 315 000 <b>4EL/888</b>	900		1 000
	800	1,07 7 500 <b>4EL/838</b>	1,14 17 000 <b>4EL/788</b>	1,14 21 200 <b>4EL/788</b>	1,08 35 500 <b>4EL/836</b>	1,09 50 000 <b>4EL/828</b>	1,08 71 000 <b>4EL/836</b>	1,06 112 000 <b>4EL/846</b>	1,09 160 000 <b>4EL/825</b>	1,12 224 000 <b>4EL/800</b>	1,12 315 000 <b>4EL/806</b>	800		900
	710	1,09 7 500 <b>4EL/732</b>	1,11 17 000 <b>4EL/720</b>	1,11 21 200 <b>4EL/720</b>	1,12 35 500 <b>4EL/713</b>	1,13 50 000 <b>4EL/706</b>	1,12 71 000 <b>4EL/713</b>	1,11 112 000 <b>4EL/721</b>	1,11 160 000 <b>4EL/706</b>	1,13 224 000 <b>4EL/722</b>	1,11 315 000 <b>4EL/722</b>	710		800
	630	1,16 7 500 <b>4EL/611</b>	1,08 17 000 <b>4EL/657</b>	1,08 21 200 <b>4EL/657</b>	1,08 35 500 <b>4EL/659</b>	1,19 50 000 <b>4EL/595</b>	1,17 71 000 <b>4EL/607</b>	1,08 112 000 <b>4EL/659</b>	1,12 160 000 <b>4EL/634</b>	1,14 224 000 <b>4EL/624</b>	1,12 315 000 <b>4EL/635</b>	630		710
	560	1,11 7 500 <b>4EL/566</b>	1,11 17 000 <b>4EL/568</b>	1,11 21 200 <b>4EL/568</b>	1,12 35 500 <b>4EL/562</b>	1,13 50 000 <b>4EL/556</b>	1,12 71 000 <b>4EL/562</b>	1,12 112 000 <b>4EL/562</b>	1,1 160 000 <b>4EL/572</b>	1,12 224 000 <b>4EL/563</b>	1,12 315 000 <b>4EL/563</b>	560		630
	500	1,08 7 500 <b>4EL/517</b>	1,08 17 000 <b>4EL/518</b>	1,08 21 200 <b>4EL/518</b>	1,17 35 500 <b>4EL/479</b>	1,14 50 000 <b>4EL/489</b>	1,17 71 000 <b>4EL/479</b>	1,17 112 000 <b>4EL/479</b>	1,12 160 000 <b>4EL/500</b>	1,17 224 000 <b>4EL/479</b>	1,15 315 000 <b>4EL/485</b>	500		560
	450	1,11 7 500 <b>4EL/452</b>	1,12 17 000 <b>4EL/448</b>	1,12 21 200 <b>4EL/448</b>	1,13 35 500 <b>4EL/443</b>	1,1 50 000 <b>4EL/453</b>	1,13 71 000 <b>4EL/443</b>	1,13 112 000 <b>4EL/443</b>	1,11 160 000 <b>4EL/451</b>	1,13 224 000 <b>4EL/444</b>	1,13 315 000 <b>4EL/444</b>	450		500
	400	1,07 7 500 <b>4EL/422</b>	1,11 17 000 <b>4EL/404</b>	1,11 21 200 <b>4EL/404</b>	1,19 35 500 <b>4EL/377</b>	1,17 50 000 <b>4EL/386</b>	1,19 71 000 <b>4EL/377</b>	1,18 112 000 <b>4EL/382</b>	1,17 160 000 <b>4EL/386</b>	1,19 224 000 <b>4EL/378</b>	1,18 315 000 <b>4EL/382</b>	400		450
	355	1,12 7 500 <b>4EL/357</b>	1,12 17 000 <b>4EL/358</b>	1,12 21 200 <b>4EL/358</b>	1,16 33 500 <b>4EL/344</b>	1,23 50 000 <b>4EL/325</b>	1,16 67 000 <b>4EL/344</b>	1,16 106 000 <b>4EL/344</b>	1,13 160 000 <b>4EL/356</b>	1,13 224 000 <b>4EL/353</b>	1,11 315 000 <b>4EL/360</b>	355		400
	315	1,12 7 500 <b>4EL/317</b>	1,1 17 000 <b>4EL/323</b>	1,12 21 200 <b>4EL/318</b>	1,12 35 500 <b>4EL/318</b>	1,17 50 000 <b>4EL/304</b>	1,12 63 490 <b>4EL/318</b>	1,12 112 000 <b>4EL/318</b>	1,09 160 000 <b>4EL/325</b>	1,11 224 000 <b>4EL/319</b>	1,1 315 000 <b>4EL/322</b>	315		355
	280	1,07 7 500 <b>4EL/296</b>	1,04 17 000 <b>4EL/301</b>	1,04 21 200 <b>4EL/303</b>	1,06 35 500 <b>4EL/297</b>	1,15 50 000 <b>4EL/274</b>	1,06 71 000 <b>4EL/297</b>	1,06 112 000 <b>4EL/297</b>	1,05 160 000 <b>4EL/300</b>	1,06 224 000 <b>4EL/298</b>	1,06 315 000 <b>4EL/298</b>	280		315
	250	1,12 7 500 <b>4EL/250</b>	1,1 17 000 <b>4EL/255</b>	1,1 21 200 <b>4EL/255</b>	1,12 35 500 <b>4EL/251</b>	1,09 50 000 <b>4EL/256</b>	1,12 71 000 <b>4EL/251</b>	1,12 112 000 <b>4EL/251</b>	1,09 160 000 <b>4EL/256</b>	1,11 224 000 <b>4EL/251</b>	1,11 315 000 <b>4EL/251</b>	250		280
	250	1,17 7 100 <b>3EL/239</b>	1,11 13 200 <b>3EL/251</b>	1,11 18 000 <b>3EL/251</b>	1,12 33 500 <b>3EL/249</b>	1,21 45 050 <b>3EL/232</b>	1,12 67 000 <b>3EL/249</b>	1,18 106 000 <b>3EL/237</b>	1,15 144 230 <b>3EL/243</b>	-	-	250		280
	224	1,13 7 288 <b>3EL/221</b>	1,17 13 200 <b>3EL/214</b>	1,17 18 000 <b>3EL/214</b>	1,18 33 500 <b>3EL/212</b>	1,14 47 500 <b>3EL/219</b>	1,18 67 000 <b>3EL/212</b>	1,18 106 000 <b>3EL/212</b>	-	1,14 212 000 <b>3EL/219</b>	-	224		250
200	1,08 7 500 <b>4EL/207</b>	1,06 17 000 <b>4EL/211</b>	1,06 21 200 <b>4EL/211</b>	1,06 35 500 <b>4EL/211</b>	1,04 50 000 <b>4EL/216</b>	1,06 71 000 <b>4EL/211</b>	1,06 112 000 <b>4EL/211</b>	1,04 160 000 <b>4EL/216</b>	1,06 224 000 <b>4EL/212</b>	-	200	224		

### 3 - Selection tables - In line gear reducers

According to FEM 1.001 L2/T5/M5 conditions

$n_{N2} \cdot L_i$ min <sup>-1</sup> · h	$\dot{n}_N$	Gear reducer size										$\dot{n}_N$	$n_1$ min <sup>-1</sup>	$n_{N2}$ min <sup>-1</sup>	
		Output speed $n_2$ min <sup>-1</sup>													
		Nominal output torque $M_{N2 FEM}$ N m					Train of gears / ratio $i$								
007A	015A	021A	030A	042A	060A	085A	125A	180A	250A						
<b>7 100</b>	200	1,11 7 100 <b>3EL/203</b>	1,13 17 000 <b>3EL/198</b>	1,1 18 000 <b>3EL/204</b>	1,1 33 500 <b>3EL/203</b>	1,13 47 500 <b>3EL/198</b>	1,1 67 000 <b>3EL/203</b>	1,16 106 000 <b>3EL/193</b>	1,13 144 430 <b>3EL/198</b>	-	-	200	224		
	180	1,14 7 500 <b>4EL/175</b>	1,12 17 000 <b>4EL/178</b>	1,12 21 200 <b>4EL/178</b>	1,12 35 500 <b>4EL/178</b>	1,1 50 000 <b>4EL/182</b>	1,12 63 490 <b>4EL/178</b>	-	-	-	-	180	200		
	180	1,06 7 500 <b>3EL/189</b>	1,15 13 200 <b>3EL/174</b>	1,15 18 000 <b>3EL/174</b>	1,16 33 500 <b>3EL/173</b>	1,12 47 500 <b>3EL/178</b>	1,09 59 520 <b>3EL/183</b>	1,07 105 660 <b>3EL/187</b>	1,07 145 010 <b>3EL/186</b>	1,12 212 000 <b>3EL/178</b>	-	180	200		
	160	1,14 7 500 <b>3EL/157</b>	1,07 17 000 <b>3EL/169</b>	1,07 21 200 <b>3EL/169</b>	1,09 35 500 <b>3EL/165</b>	1,06 50 000 <b>3EL/169</b>	1,1 67 000 <b>3EL/163</b>	1,08 112 000 <b>3EL/167</b>	1,07 145 040 <b>3EL/168</b>	1,07 212 000 <b>3EL/168</b>	1,07 300 000 <b>3EL/168</b>	160	180		
	140	1,18 7 500 <b>3EL/136</b>	1,17 17 000 <b>3EL/137</b>	1,17 21 200 <b>3EL/137</b>	1,19 35 500 <b>3EL/135</b>	1,16 50 000 <b>3EL/138</b>	1,19 71 000 <b>3EL/135</b>	1,17 112 000 <b>3EL/136</b>	1,21 155 980 <b>3EL/133</b>	1,18 212 000 <b>3EL/136</b>	1,11 309 220 <b>3EL/144</b>	140	160		
	125	1,13 7 500 <b>3EL/124</b>	1,2 17 000 <b>3EL/117</b>	1,2 21 200 <b>3EL/117</b>	1,07 35 500 <b>3EL/130</b>	1,1 47 500 <b>3EL/127</b>	1,1 59 520 <b>3EL/127</b>	1,08 106 000 <b>3EL/129</b>	1,17 160 000 <b>3EL/120</b>	1,09 224 000 <b>3EL/129</b>	1,08 315 000 <b>3EL/130</b>	125	140		
	112	1,15 7 500 <b>3EL/109</b>	1,15 17 000 <b>3EL/108</b>	1,15 21 200 <b>3EL/108</b>	1,09 35 500 <b>3EL/115</b>	1,07 50 000 <b>3EL/117</b>	1,09 71 000 <b>3EL/115</b>	1,08 112 000 <b>3EL/116</b>	1,16 160 000 <b>3EL/108</b>	1,08 224 000 <b>3EL/116</b>	1,08 315 000 <b>3EL/116</b>	112	125		
	100	1,07 7 500 <b>3EL/105</b>	1,14 13 200 <b>3EL/98,6</b>	1,14 18 000 <b>3EL/98,6</b>	1,06 35 500 <b>3EL/106</b>	1,03 50 000 <b>3EL/108</b>	1,06 71 000 <b>3EL/106</b>	1,06 112 000 <b>3EL/106</b>	1,09 160 000 <b>3EL/102</b>	1,12 224 000 <b>3EL/100</b>	1,1 315 000 <b>3EL/102</b>	100	112		
	90	1,09 7 500 <b>3EL/92</b>	1,08 17 000 <b>3EL/92,2</b>	1,08 21 200 <b>3EL/92,2</b>	1,11 35 500 <b>3EL/90,4</b>	1,08 50 000 <b>3EL/92,4</b>	1,11 71 000 <b>3EL/90,4</b>	1,11 112 000 <b>3EL/90,4</b>	1,08 160 000 <b>3EL/92,4</b>	1,1 224 000 <b>3EL/90,6</b>	1,09 315 000 <b>3EL/91,6</b>	90	100		
	80	1,18 7 500 <b>3EL/76,2</b>	1,16 17 000 <b>3EL/77,7</b>	1,16 21 200 <b>3EL/77,7</b>	1,18 35 500 <b>3EL/76,2</b>	1,16 50 000 <b>3EL/77,9</b>	1,18 63 490 <b>3EL/76,2</b>	1,17 112 000 <b>3EL/77,1</b>	1,06 160 000 <b>3EL/85,2</b>	1,17 224 000 <b>3EL/77,2</b>	1,08 300 000 <b>3EL/83,5</b>	80	90		
	71	1,1 7 500 <b>3EL/72,5</b>	1,1 17 000 <b>3EL/72,7</b>	1,1 21 200 <b>3EL/72,7</b>	1,12 35 500 <b>3EL/71,3</b>	1,1 50 000 <b>3EL/72,9</b>	1,12 71 000 <b>3EL/71,3</b>	1,12 112 000 <b>3EL/71,3</b>	1,1 160 000 <b>3EL/72,9</b>	1,12 224 000 <b>3EL/71,4</b>	1,12 315 000 <b>3EL/71,4</b>	71	80		
	63	1,16 7 500 <b>3EL/61,1</b>	1,16 17 000 <b>3EL/61,3</b>	1,16 21 200 <b>3EL/61,3</b>	1,18 35 500 <b>3EL/60,1</b>	1,16 50 000 <b>3EL/61,4</b>	1,18 63 490 <b>3EL/60,1</b>	1,18 112 000 <b>3EL/60,1</b>	1,16 160 000 <b>3EL/61,4</b>	1,18 224 000 <b>3EL/60,2</b>	-	63	71		
	50	1,11 7 500 <b>3EL/50,6</b>	1,08 17 000 <b>3EL/51,6</b>	1,08 21 200 <b>3EL/51,6</b>	1,11 35 500 <b>3EL/50,6</b>	1,08 50 000 <b>3EL/51,7</b>	1,11 63 490 <b>3EL/50,6</b>	-	-	-	-	50	56		
	45	-	1,12 11 800 <b>2EL/44,8</b>	1,12 15 000 <b>2EL/44,8</b>	-	-	-	-	-	-	-	45	50		
	40	1,11 7 100 <b>2EL/40,4</b>	1,11 13 200 <b>2EL/40,4</b>	1,11 18 000 <b>2EL/40,4</b>	1,12 33 500 <b>2EL/40,1</b>	-	1,12 56 340 <b>2EL/40,1</b>	-	-	-	-	40	45		
	35,5	1,22 7 100 <b>2EL/32,9</b>	1,22 13 200 <b>2EL/32,9</b>	1,22 18 000 <b>2EL/32,9</b>	1,23 33 500 <b>2EL/32,6</b>	1,07 37 940 <b>2EL/37,3</b>	1,23 67 000 <b>2EL/32,6</b>	-	-	-	-	35,5	40		
	31,5	1,11 6 073 <b>2EL/31,9</b>	1,11 16 190 <b>2EL/31,9</b>	-	1,14 31 750 <b>2EL/31,2</b>	1,17 45 050 <b>2EL/30,4</b>	1,15 67 000 <b>2EL/30,8</b>	1,14 106 000 <b>2EL/31</b>	1,12 144 580 <b>2EL/31,8</b>	-	-	31,5	36		
	28	1,12 7 100 <b>2EL/28</b>	1,12 13 200 <b>2EL/28</b>	1,12 18 000 <b>2EL/28</b>	1,13 33 500 <b>2EL/27,8</b>	1,1 47 500 <b>2EL/28,7</b>	1,13 67 000 <b>2EL/27,8</b>	1,13 106 000 <b>2EL/27,8</b>	1,22 143 670 <b>2EL/25,9</b>	1,1 212 000 <b>2EL/28,6</b>	1,1 300 000 <b>2EL/28,7</b>	28	32		
	25	1,08 7 288 <b>2EL/25,9</b>	1,08 17 000 <b>2EL/25,9</b>	1,08 19 230 <b>2EL/25,9</b>	1,1 35 500 <b>2EL/25,4</b>	1,08 47 500 <b>2EL/25,9</b>	1,17 59 520 <b>2EL/24</b>	1,15 105 120 <b>2EL/24,4</b>	1,12 156 900 <b>2EL/25</b>	1,14 203 050 <b>2EL/24,5</b>	1,14 308 650 <b>2EL/24,5</b>	25	28		
	22,4	1,13 7 500 <b>2EL/22,1</b>	1,13 17 000 <b>2EL/22,1</b>	1,13 21 200 <b>2EL/22,1</b>	1,15 35 500 <b>2EL/21,7</b>	1,13 50 000 <b>2EL/22,1</b>	1,15 71 000 <b>2EL/21,7</b>	1,14 112 000 <b>2EL/21,9</b>	1,13 144 460 <b>2EL/22,1</b>	1,14 224 000 <b>2EL/22</b>	1,13 315 000 <b>2EL/22,1</b>	22,4	25		
	20	-	-	-	-	1,1 47 500 <b>2EL/20,4</b>	-	-	1,1 160 000 <b>2EL/20,4</b>	1,12 212 000 <b>2EL/20</b>	1,1 300 000 <b>2EL/20,4</b>	20	22		
	18	1,07 7 100 <b>2EL/18,6</b>	1,07 13 200 <b>2EL/18,6</b>	1,07 18 000 <b>2EL/18,6</b>	1,08 33 500 <b>2EL/18,5</b>	1,15 50 000 <b>2EL/17,5</b>	1,08 67 000 <b>2EL/18,5</b>	-	1,15 160 000 <b>2EL/17,5</b>	-	1,15 315 000 <b>2EL/17,5</b>	18	20		
	16	1,03 7 500 <b>2EL/17,4</b>	1,03 17 000 <b>2EL/17,4</b>	1,03 21 200 <b>2EL/17,4</b>	1,05 35 500 <b>2EL/17,1</b>	-	1,05 71 000 <b>2EL/17,1</b>	1,05 112 000 <b>2EL/17,1</b>	-	1,05 224 000 <b>2EL/17,1</b>	-	16	18		
	14	1,09 7 500 <b>2EL/14,7</b>	1,09 17 000 <b>2EL/14,7</b>	1,09 21 200 <b>2EL/14,7</b>	1,11 35 500 <b>2EL/14,4</b>	1,09 50 000 <b>2EL/14,7</b>	1,11 63 490 <b>2EL/14,4</b>	-	-	-	-	14	16		
	12,5	-	1,13 12 500 <b>2EL/12,4</b>	1,13 16 000 <b>2EL/12,4</b>	-	-	-	-	-	-	-	12,5	14		



# 4 - Data and performance summary

## 007A

According to FEM 1.001 L2/T5/M5 conditions

		007A												
		$n_1 \text{ min}^{-1}$								$M_{N2 \text{ FEM max}}$ N m	$M_{2 \text{ max}}$ N m	$n_{1 \text{ max}}$ $\text{min}^{-1}$	$n_{1 \text{ peak}}$ $\text{min}^{-1}$	
		2 800		1 400		900		500						
	$i_n$	$i_{\text{eff}}$	$n_2$ $\text{min}^{-1}$	$M_{N2 \text{ FEM}}$ N m	$n_2$ $\text{min}^{-1}$	$M_{N2 \text{ FEM}}$ N m	$n_2$ $\text{min}^{-1}$	$M_{N2 \text{ FEM}}$ N m	$n_2$ $\text{min}^{-1}$	$M_{N2 \text{ FEM}}$ N m				
2EL	12,5													
	14	<b>14,7</b>	191	5 790	95,4	6 480	61,3	6 650	34,1	6 890	7 500	9 000	2 800	3 150
	16	<b>17,4</b>	161	5 980	80,4	7 160	51,7	7 490	28,7	7 500	7 500	9 000	3 150	4 000
	18	<b>18,6</b>	150	4 980	75,2	5 350	48,3	5 610	26,9	5 960	7 100	8 500	2 800	3 150
	20													
	22,4	<b>22,1</b>	127	6 180	63,4	6 650	40,7	6 970	22,6	7 420	7 500	9 000	3 150	4 000
	25	<b>25,9</b>	108	5 310	54,0	5 710	34,7	5 970	19,3	6 350	7 290	8 580	3 150	4 000
	28	<b>28</b>	99,9	5 200	50,0	5 590	32,1	5 850	17,8	6 220	7 100	8 500	3 150	4 000
	31,5	<b>31,9</b>	87,8	4 090	43,9	4 390	28,2	4 600	15,7	4 890	6 070	7 290	3 150	4 000
	35,5	<b>32,9</b>	85,1	5 290	42,6	5 680	27,4	5 950	15,2	6 320	7 100	8 500	3 150	4 000
40	<b>40,4</b>	69,3	5 190	34,6	5 570	22,3	5 830	12,4	6 200	7 100	8 500	3 150	4 000	
45														
3EL	50	<b>50,6</b>	55,3	6 690	27,6	6 980	17,8	7 160	9,87	7 420	7 500	9 000	2 800	3 150
	63	<b>61,1</b>	45,8	6 770	22,9	7 060	14,7	7 250	8,18	7 500	7 500	9 000	3 150	4 000
	71	<b>72,5</b>	38,6	7 500	19,3	7 500	12,4	7 500	6,90	7 500	7 500	9 000	3 150	4 000
	80	<b>76,2</b>	36,7	7 050	18,4	7 500	11,8	7 500	6,56	7 500	7 500	9 000	2 800	3 150
	90	<b>92</b>	30,5	7 190	15,2	7 500	9,79	7 500	5,44	7 500	7 500	9 000	3 150	4 000
	100	<b>105</b>	26,8	6 990	13,4	7 290	8,60	7 480	4,78	7 500	7 500	9 000	3 150	4 000
	112	<b>109</b>	25,8	7 320	12,9	7 500	8,28	7 500	4,60	7 500	7 500	9 000	3 150	4 000
	125	<b>124</b>	22,6	7 500	11,3	7 500	7,25	7 500	4,03	7 500	7 500	9 000	3 150	4 000
	140	<b>136</b>	20,6	7 490	10,3	7 500	6,61	7 500	3,67	7 500	7 500	9 000	3 150	4 000
	160	<b>157</b>	17,8	7 500	8,89	7 500	5,72	7 500	3,18	7 500	7 500	9 000	3 150	4 000
	180	<b>189</b>	14,8	7 500	7,42	7 500	4,77	7 500	2,65	7 500	7 500	9 000	3 150	4 000
	200	<b>203</b>	13,8	6 380	6,91	6 840	4,44	7 090	2,47	7 100	7 100	8 500	3 150	4 000
	224	<b>221</b>	12,6	6 630	6,32	7 120	4,06	7 290	2,26	7 290	7 290	8 580	3 150	4 000
	250	<b>239</b>	11,7	6 500	5,85	6 930	3,76	7 100	2,09	7 100	7 100	8 500	3 150	4 000
4EL	180	<b>175</b>	16,0	7 210	8,01	7 500	5,15	7 500	2,86	7 500	7 500	9 000	2 800	3 150
	200	<b>207</b>	13,5	7 500	6,75	7 500	4,34	7 500	2,41	7 500	7 500	9 000	2 800	3 150
	250	<b>250</b>	11,2	7 500	5,60	7 500	3,60	7 500	2,00	7 500	7 500	9 000	3 150	4 000
	280	<b>296</b>	9,47	7 500	4,73	7 500	3,04	7 500	1,69	7 500	7 500	9 000	3 150	4 000
	315	<b>317</b>	8,83	7 500	4,41	7 500	2,84	7 500	1,58	7 500	7 500	9 000	3 150	4 000
	355	<b>357</b>	7,85	7 500	3,93	7 500	2,52	7 500	1,40	7 500	7 500	9 000	3 150	4 000
	400	<b>422</b>	6,64	7 500	3,32	7 500	2,13	7 500	1,19	7 500	7 500	9 000	3 150	4 000
	450	<b>452</b>	6,19	7 500	3,09	7 500	1,99	7 500	1,11	7 500	7 500	9 000	3 150	4 000
	500	<b>517</b>	5,42	7 500	2,71	7 500	1,74	7 500	0,968	7 500	7 500	9 000	3 150	4 000
	560	<b>566</b>	4,94	7 500	2,47	7 500	1,59	7 500	0,883	7 500	7 500	9 000	3 150	4 000
	630	<b>611</b>	4,58	7 500	2,29	7 500	1,47	7 500	0,819	7 500	7 500	9 000	3 150	4 000
	710	<b>732</b>	3,83	7 500	1,91	7 500	1,23	7 500	0,683	7 500	7 500	9 000	3 150	4 000
	800	<b>838</b>	3,34	7 500	1,67	7 500	1,07	7 500	0,597	7 500	7 500	9 000	3 150	4 000
	900	<b>916</b>	3,06	7 500	1,53	7 500	0,983	7 500	0,546	7 500	7 500	9 000	3 150	4 000
	1000	<b>970</b>	2,89	7 500	1,44	7 500	0,928	7 500	0,516	7 500	7 500	9 000	3 150	4 000
	1120	<b>1122</b>	2,50	7 500	1,25	7 500	0,802	7 500	0,446	7 500	7 500	9 000	3 150	4 000
	1250	<b>1248</b>	2,24	7 100	1,12	7 100	0,721	7 100	0,401	7 100	7 100	8 500	3 150	4 000
	1400	<b>1344</b>	2,08	7 500	1,04	7 500	0,669	7 500	0,372	7 500	7 500	9 000	3 150	4 000
	1600	<b>1611</b>	1,74	7 500	0,869	7 500	0,559	7 500	0,310	7 500	7 500	9 000	3 150	4 000
	1800	<b>1730</b>	1,62	7 100	0,809	7 100	0,520	7 100	0,289	7 100	7 100	8 500	3 150	4 000
2000	<b>2043</b>	1,37	7 100	0,685	7 100	0,440	7 100	0,245	7 100	7 100	8 500	3 150	4 000	
2240														
2500	<b>2399</b>	1,17	7 100	0,584	7 100	0,375	7 100	0,208	7 100	7 100	8 500	3 150	4 000	
2800	<b>2947</b>	0,950	7 100	0,475	7 100	0,305	7 100	0,170	7 100	7 100	8 500	3 150	4 000	

# 4 - Data and performance summary

## 015A

According to FEM 1.001 L2/T5/M5 conditions

		015A												
		$n_1$ min <sup>-1</sup>												
		2 800		1 400		900		500						
$i_N$	$i_{eff}$	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$M_{N2 FEM max}$ N m	$M_{2max}$ N m	$n_{1max}$ min <sup>-1</sup>	$n_{1peak}$ min <sup>-1</sup>	
2EL	12,5	<b>12,4</b>	-	-	113	12 500	72,8	12 500	40,4	12 500	12 500	15 000	2 500	2 800
	14	<b>14,7</b>	-	-	95,4	14 200	61,3	14 900	34,1	15 800	17 000	20 000	2 500	2 800
	16	<b>17,4</b>	161	13 500	80,4	14 500	51,7	15 100	28,7	16 100	17 000	20 000	2 800	3 550
	18	<b>18,6</b>	-	-	75,2	10 800	48,3	11 300	26,9	12 000	13 200	16 000	2 500	2 800
	20													
	22,4	<b>22,1</b>	127	13 800	63,4	14 800	40,7	15 500	22,6	16 500	17 000	20 000	2 800	4 000
	25	<b>25,9</b>	108	14 000	54,0	15 100	34,7	15 800	19,3	16 800	17 000	20 000	2 800	4 000
	28	<b>28</b>	99,9	10 400	50,0	11 200	32,1	11 700	17,8	12 500	13 200	16 000	2 800	4 000
	31,5	<b>31,9</b>	87,8	11 400	43,9	12 200	28,2	12 800	15,7	13 600	16 200	19 200	2 800	4 000
	35,5	<b>32,9</b>	85,1	10 600	42,6	11 400	27,4	11 900	15,2	12 700	13 200	16 000	2 800	4 000
40	<b>40,4</b>	69,3	10 800	34,6	11 600	22,3	12 200	12,4	13 000	13 200	16 000	2 800	4 000	
45	<b>44,8</b>	62,5	11 800	31,3	11 800	20,1	11 800	11,2	11 800	11 800	14 000	2 800	4 000	
3EL	50	<b>51,6</b>	54,2	15 100	27,1	16 200	17,4	16 900	9,68	17 000	17 000	20 000	2 800	3 150
	63	<b>61,3</b>	45,7	15 300	22,8	16 500	14,7	17 000	8,16	17 000	17 000	20 000	3 150	4 000
	71	<b>72,7</b>	38,5	15 600	19,3	16 800	12,4	17 000	6,88	17 000	17 000	20 000	3 150	4 000
	80	<b>77,7</b>	36,0	15 700	18,0	16 900	11,6	17 000	6,43	17 000	17 000	20 000	3 150	4 000
	90	<b>92,2</b>	30,4	16 000	15,2	17 000	9,76	17 000	5,42	17 000	17 000	20 000	3 150	4 000
	100	<b>98,6</b>	28,4	11 900	14,2	12 800	9,13	13 200	5,07	13 200	13 200	16 000	3 150	4 000
	112	<b>108</b>	25,9	16 300	12,9	17 000	8,31	17 000	4,62	17 000	17 000	20 000	3 150	4 000
	125	<b>117</b>	23,9	16 400	12,0	17 000	7,69	17 000	4,27	17 000	17 000	20 000	3 150	4 000
	140	<b>137</b>	20,4	16 700	10,2	17 000	6,55	17 000	3,64	17 000	17 000	20 000	3 150	4 000
	160	<b>169</b>	16,6	17 000	8,30	17 000	5,33	17 000	2,96	17 000	17 000	20 000	3 150	4 000
	180	<b>174</b>	16,1	12 600	8,04	13 200	5,17	13 200	2,87	13 200	13 200	16 000	3 150	4 000
	200	<b>198</b>	14,1	17 000	7,07	17 000	4,54	17 000	2,52	17 000	17 000	20 000	3 150	4 000
224	<b>214</b>	13,1	12 900	6,54	13 200	4,21	13 200	2,34	13 200	13 200	16 000	3 150	4 000	
250	<b>251</b>	11,1	13 100	5,57	13 200	3,58	13 200	1,99	13 200	13 200	16 000	3 150	4 000	
4EL	180	<b>178</b>	15,7	17 000	7,86	17 000	5,05	17 000	2,81	17 000	17 000	20 000	2 800	3 150
	200	<b>211</b>	13,2	17 000	6,62	17 000	4,26	17 000	2,37	17 000	17 000	20 000	2 800	3 150
	250	<b>255</b>	11,0	17 000	5,49	17 000	3,53	17 000	1,96	17 000	17 000	20 000	3 150	4 000
	280	<b>301</b>	9,29	17 000	4,64	17 000	2,99	17 000	1,66	17 000	17 000	20 000	3 150	4 000
	315	<b>323</b>	8,66	17 000	4,33	17 000	2,78	17 000	1,55	17 000	17 000	20 000	3 150	4 000
	355	<b>358</b>	7,83	17 000	3,91	17 000	2,52	17 000	1,40	17 000	17 000	20 000	3 150	4 000
	400	<b>404</b>	6,94	17 000	3,47	17 000	2,23	17 000	1,24	17 000	17 000	20 000	2 800	3 150
	450	<b>448</b>	6,25	17 000	3,13	17 000	2,01	17 000	1,12	17 000	17 000	20 000	3 150	4 000
	500	<b>518</b>	5,40	17 000	2,70	17 000	1,74	17 000	0,965	17 000	17 000	20 000	3 150	4 000
	560	<b>568</b>	4,93	17 000	2,46	17 000	1,58	17 000	0,880	17 000	17 000	20 000	3 150	4 000
	630	<b>657</b>	4,26	17 000	2,13	17 000	1,37	17 000	0,761	17 000	17 000	20 000	3 150	4 000
	710	<b>720</b>	3,89	17 000	1,94	17 000	1,25	17 000	0,694	17 000	17 000	20 000	3 150	4 000
	800	<b>788</b>	3,56	17 000	1,78	17 000	1,14	17 000	0,635	17 000	17 000	20 000	3 150	4 000
	900	<b>846</b>	3,31	17 000	1,66	17 000	1,06	17 000	0,591	17 000	17 000	20 000	3 150	4 000
	1000	<b>999</b>	2,80	17 000	1,40	17 000	0,901	17 000	0,501	17 000	17 000	20 000	3 150	4 000
	1120	<b>1172</b>	2,39	17 000	1,19	17 000	0,768	17 000	0,426	17 000	17 000	20 000	3 150	4 000
	1250	<b>1267</b>	2,21	13 200	1,11	13 200	0,710	13 200	0,395	13 200	13 200	16 000	3 150	4 000
	1400	<b>1441</b>	1,94	17 000	0,972	17 000	0,625	17 000	0,347	17 000	17 000	20 000	3 150	4 000
	1600	<b>1691</b>	1,66	17 000	0,828	17 000	0,532	17 000	0,296	17 000	17 000	20 000	3 150	4 000
	1800	<b>1827</b>	1,53	13 200	0,766	13 200	0,492	13 200	0,274	13 200	13 200	16 000	3 150	4 000
2000														
2240	<b>2145</b>	1,31	13 200	0,653	13 200	0,420	13 200	0,233	13 200	13 200	16 000	3 150	4 000	
2500	<b>2636</b>	1,06	13 200	0,531	13 200	0,341	13 200	0,190	13 200	13 200	16 000	3 150	4 000	
2800	<b>2921</b>	0,959	11 800	0,479	11 800	0,308	11 800	0,171	11 800	11 800	14 000	3 150	4 000	

# 4 - Data and performance summary

## 021A

According to FEM 1.001 L2/T5/M5 conditions

		021A													
		$n_1 \text{ min}^{-1}$													
		2 800		1 400		900		500							
	$\dot{n}_N$	$i_{\text{eff}}$	$n_2$ min <sup>-1</sup>	$M_{N2 \text{ FEM}}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 \text{ FEM}}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 \text{ FEM}}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 \text{ FEM}}$ N m	$M_{N2 \text{ FEM max}}$ N m	$M_{2\text{max}}$ N m	$n_{1\text{max}}$ min <sup>-1</sup>	$n_{1\text{peak}}$ min <sup>-1</sup>	
2EL	12,5	<b>12,4</b>	-	-	113	15 700	72,8	16 000	40,4	16 000	16 000	20 000	2 500	2 800	
	14	<b>14,7</b>	-	-	95,4	18 600	61,3	19 100	34,1	19 800	21 200	25 500	2 500	2 800	
	16	<b>17,4</b>	161	18 900	80,4	20 200	51,7	21 200	28,7	21 200	21 200	28 000	2 800	3 550	
	18	<b>18,6</b>	-	-	75,2	17 900	48,3	18 000	26,9	18 000	18 000	28 000	2 500	2 800	
	20														
	22,4	<b>22,1</b>	127	17 700	63,4	19 000	40,7	19 900	22,6	21 200	21 200	28 000	2 800	4 000	
	25	<b>25,9</b>	108	14 900	54,0	16 100	34,7	16 800	19,3	17 900	19 200	22 700	2 800	4 000	
	28	<b>28</b>	99,9	17 400	50,0	18 000	32,1	18 000	17,8	18 000	18 000	28 000	2 800	4 000	
	31,5														
	35,5	<b>32,9</b>	85,1	17 700	42,6	18 000	27,4	18 000	15,2	18 000	18 000	28 000	2 800	4 000	
40	<b>40,4</b>	69,3	14 500	34,6	15 500	22,3	16 200	12,4	17 200	18 000	24 400	2 800	4 000		
45	<b>44,8</b>	62,5	14 700	31,3	15 000	20,1	15 000	11,2	15 000	15 000	21 200	2 800	4 000		
3EL	50	<b>51,6</b>	54,2	19 200	27,1	20 000	17,4	20 600	9,68	21 200	21 200	25 500	2 800	3 150	
	63	<b>61,3</b>	45,7	21 200	22,8	21 200	14,7	21 200	8,16	21 200	21 200	28 000	2 800	3 150	
	71	<b>72,7</b>	38,5	21 200	19,3	21 200	12,4	21 200	6,88	21 200	21 200	28 000	3 150	4 000	
	80	<b>77,7</b>	36,0	20 200	18,0	21 200	11,6	21 200	6,43	21 200	21 200	28 000	2 800	3 150	
	90	<b>92,2</b>	30,4	20 500	15,2	21 200	9,76	21 200	5,42	21 200	21 200	28 000	3 150	4 000	
	100	<b>98,6</b>	28,4	18 000	14,2	18 000	9,13	18 000	5,07	18 000	18 000	28 000	3 150	4 000	
	112	<b>108</b>	25,9	21 200	12,9	21 200	8,31	21 200	4,62	21 200	21 200	28 000	3 150	4 000	
	125	<b>117</b>	23,9	21 000	12,0	21 200	7,69	21 200	4,27	21 200	21 200	28 000	3 150	4 000	
	140	<b>137</b>	20,4	21 200	10,2	21 200	6,55	21 200	3,64	21 200	21 200	28 000	3 150	4 000	
	160	<b>169</b>	16,6	21 000	8,30	21 200	5,33	21 200	2,96	21 200	21 200	28 000	3 150	4 000	
	180	<b>174</b>	16,1	18 000	8,04	18 000	5,17	18 000	2,87	18 000	18 000	28 000	3 150	4 000	
	200	<b>204</b>	13,7	18 000	6,85	18 000	4,40	18 000	2,45	18 000	18 000	28 000	3 150	4 000	
	224	<b>214</b>	13,1	18 000	6,54	18 000	4,21	18 000	2,34	18 000	18 000	28 000	3 150	4 000	
250	<b>251</b>	11,1	18 000	5,57	18 000	3,58	18 000	1,99	18 000	18 000	28 000	3 150	4 000		
4EL	180	<b>178</b>	15,7	20 700	7,86	21 200	5,05	21 200	2,81	21 200	21 200	25 500	2 800	3 150	
	200	<b>211</b>	13,2	21 200	6,62	21 200	4,26	21 200	2,37	21 200	21 200	28 000	2 800	3 150	
	250	<b>255</b>	11,0	21 200	5,49	21 200	3,53	21 200	1,96	21 200	21 200	28 000	3 150	4 000	
	280	<b>303</b>	9,25	21 200	4,63	21 200	2,97	21 200	1,65	21 200	21 200	28 000	3 150	4 000	
	315	<b>318</b>	8,80	21 200	4,40	21 200	2,83	21 200	1,57	21 200	21 200	28 000	2 800	3 150	
	355	<b>358</b>	7,83	21 200	3,91	21 200	2,52	21 200	1,40	21 200	21 200	28 000	3 150	4 000	
	400	<b>404</b>	6,94	21 200	3,47	21 200	2,23	21 200	1,24	21 200	21 200	28 000	2 800	3 150	
	450	<b>448</b>	6,25	21 200	3,13	21 200	2,01	21 200	1,12	21 200	21 200	28 000	3 150	4 000	
	500	<b>518</b>	5,40	21 200	2,70	21 200	1,74	21 200	0,965	21 200	21 200	28 000	3 150	4 000	
	560	<b>568</b>	4,93	21 200	2,46	21 200	1,58	21 200	0,880	21 200	21 200	28 000	3 150	4 000	
	630	<b>657</b>	4,26	21 200	2,13	21 200	1,37	21 200	0,761	21 200	21 200	28 000	3 150	4 000	
	710	<b>720</b>	3,89	21 200	1,94	21 200	1,25	21 200	0,694	21 200	21 200	28 000	3 150	4 000	
	800	<b>788</b>	3,56	21 200	1,78	21 200	1,14	21 200	0,635	21 200	21 200	28 000	3 150	4 000	
	900	<b>846</b>	3,31	21 200	1,66	21 200	1,06	21 200	0,591	21 200	21 200	28 000	3 150	4 000	
	1000	<b>999</b>	2,80	21 200	1,40	21 200	0,901	21 200	0,501	21 200	21 200	28 000	3 150	4 000	
	1120	<b>1172</b>	2,39	21 200	1,19	21 200	0,768	21 200	0,426	21 200	21 200	28 000	3 150	4 000	
	1250	<b>1267</b>	2,21	18 000	1,11	18 000	0,710	18 000	0,395	18 000	18 000	28 000	3 150	4 000	
	1400	<b>1318</b>	2,12	18 000	1,06	18 000	0,683	18 000	0,379	18 000	18 000	28 000	3 150	4 000	
	1600	<b>1525</b>	1,84	18 000	0,918	18 000	0,590	18 000	0,328	18 000	18 000	28 000	3 150	4 000	
	1800	<b>1827</b>	1,53	18 000	0,766	18 000	0,492	18 000	0,274	18 000	18 000	28 000	3 150	4 000	
2000															
2240	<b>2145</b>	1,31	18 000	0,653	18 000	0,420	18 000	0,233	18 000	18 000	28 000	3 150	4 000		
2500	<b>2377</b>	1,18	15 000	0,589	15 000	0,379	15 000	0,210	15 000	15 000	21 200	3 150	4 000		
2800															

## 4 - Data and performance summary

### 030A

According to FEM 1.001 L2/T5/M5 conditions

		030A												
		$n_1$ min <sup>-1</sup>								$M_{N2\ FEM\ max}$ N m	$M_{2\ max}$ N m	$n_{1\ max}$ min <sup>-1</sup>	$n_{1\ peak}$ min <sup>-1</sup>	
		2 800		1 400		900		500						
	$i_N$	$i_{Eff}$	$n_2$ min <sup>-1</sup>	$M_{N2\ FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2\ FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2\ FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2\ FEM}$ N m				
2EL	12,5													
	14	<b>14,4</b>	-	-	97,3	29 800	62,5	31 200	34,7	33 100	35 500	47 500	2 240	2 800
	16	<b>17,1</b>	-	-	82,0	30 300	52,7	31 700	29,3	33 700	35 500	47 500	2 240	3 150
	18	<b>18,5</b>	-	-	75,8	24 500	48,7	25 700	27,1	27 300	33 500	45 000	2 240	2 800
	20													
	22,4	<b>21,7</b>	-	-	64,6	31 000	41,6	32 500	23,1	34 500	35 500	47 500	2 240	3 550
	25	<b>25,4</b>	-	-	55,1	31 600	35,4	33 000	19,7	35 100	35 500	44 400	2 240	3 550
	28	<b>27,8</b>	-	-	50,4	25 600	32,4	26 800	18,0	28 400	33 500	45 000	2 240	3 550
	31,5	<b>31,2</b>	-	-	44,8	25 100	28,8	26 200	16,0	27 800	31 700	37 700	2 240	3 550
	35,5	<b>32,6</b>	-	-	42,9	26 000	27,6	27 200	15,3	28 900	33 500	45 000	2 240	3 550
40	<b>40,1</b>	-	-	34,9	26 600	22,4	27 800	12,5	29 500	33 500	45 000	2 240	3 550	
45														
3EL	50	<b>50,6</b>	-	-	27,7	33 900	17,8	35 400	9,88	35 500	35 500	47 500	2 500	2 800
	63	<b>60,1</b>	-	-	23,3	34 500	15,0	35 500	8,33	35 500	35 500	47 500	2 500	2 800
	71	<b>71,3</b>	39,3	32 700	19,6	35 100	12,6	35 500	7,02	35 500	35 500	47 500	2 800	3 550
	80	<b>76,2</b>	36,8	32 900	18,4	35 300	11,8	35 500	6,56	35 500	35 500	47 500	2 800	4 000
	90	<b>90,4</b>	31,0	33 500	15,5	35 500	9,96	35 500	5,53	35 500	35 500	47 500	2 800	4 000
	100	<b>106</b>	26,4	34 000	13,2	35 500	8,48	35 500	4,71	35 500	35 500	47 500	2 800	4 000
	112	<b>115</b>	24,4	34 300	12,2	35 500	7,85	35 500	4,36	35 500	35 500	47 500	2 800	4 000
	125	<b>130</b>	21,5	27 600	10,7	29 700	6,90	31 100	3,83	33 100	35 500	47 500	2 800	4 000
	140	<b>135</b>	20,8	34 900	10,4	35 500	6,69	35 500	3,72	35 500	35 500	47 500	2 800	4 000
	160	<b>165</b>	16,9	35 000	8,47	35 500	5,44	35 500	3,02	35 500	35 500	47 500	2 800	4 000
	180	<b>173</b>	16,2	28 700	8,11	30 800	5,21	31 900	2,89	33 400	33 500	45 000	2 800	4 000
	200	<b>203</b>	13,8	29 200	6,91	31 200	4,44	32 300	2,47	33 500	33 500	45 000	2 800	4 000
	224	<b>212</b>	13,2	29 300	6,60	31 400	4,24	32 400	2,36	33 500	33 500	45 000	2 800	4 000
250	<b>249</b>	11,2	29 800	5,62	31 700	3,61	32 800	2,01	33 500	33 500	45 000	2 800	4 000	
4EL	180	<b>178</b>	15,7	35 500	7,87	35 500	5,06	35 500	2,81	35 500	35 500	47 500	2 800	3 150
	200	<b>211</b>	13,3	35 500	6,63	35 500	4,26	35 500	2,37	35 500	35 500	47 500	2 800	3 150
	250	<b>251</b>	11,2	35 500	5,58	35 500	3,59	35 500	1,99	35 500	35 500	47 500	3 150	4 000
	280	<b>297</b>	9,41	35 500	4,71	35 500	3,03	35 500	1,68	35 500	35 500	47 500	3 150	4 000
	315	<b>318</b>	8,81	35 500	4,40	35 500	2,83	35 500	1,57	35 500	35 500	47 500	3 150	4 000
	355	<b>344</b>	8,14	30 800	4,07	32 500	2,62	33 500	1,45	33 500	33 500	45 000	3 150	4 000
	400	<b>377</b>	7,42	35 500	3,71	35 500	2,39	35 500	1,33	35 500	35 500	47 500	3 150	4 000
	450	<b>443</b>	6,32	35 500	3,16	35 500	2,03	35 500	1,13	35 500	35 500	47 500	3 150	4 000
	500	<b>479</b>	5,85	35 500	2,93	35 500	1,88	35 500	1,04	35 500	35 500	47 500	3 150	4 000
	560	<b>562</b>	4,98	35 500	2,49	35 500	1,60	35 500	0,890	35 500	35 500	47 500	3 150	4 000
	630	<b>659</b>	4,25	35 500	2,12	35 500	1,36	35 500	0,758	35 500	35 500	47 500	3 150	4 000
	710	<b>713</b>	3,93	35 500	1,96	35 500	1,26	35 500	0,702	35 500	35 500	47 500	3 150	4 000
	800	<b>836</b>	3,35	35 500	1,67	35 500	1,08	35 500	0,598	35 500	35 500	47 500	3 150	4 000
	900	<b>876</b>	3,20	35 500	1,60	35 500	1,03	35 500	0,571	35 500	35 500	47 500	3 150	4 000
	1000	<b>1028</b>	2,72	35 500	1,36	35 500	0,876	35 500	0,486	35 500	35 500	47 500	3 150	4 000
	1120	<b>1206</b>	2,32	35 500	1,16	35 500	0,746	35 500	0,414	35 500	35 500	44 400	3 150	4 000
	1250	<b>1263</b>	2,22	35 500	1,11	35 500	0,713	35 500	0,396	35 500	35 500	47 500	3 150	4 000
	1400	<b>1482</b>	1,89	35 500	0,944	35 500	0,607	35 500	0,337	35 500	35 500	44 400	3 150	4 000
	1600	<b>1621</b>	1,73	33 500	0,864	33 500	0,555	33 500	0,308	33 500	33 500	45 000	3 150	4 000
	1800													
2000	<b>1902</b>	1,47	33 500	0,736	33 500	0,473	33 500	0,263	33 500	33 500	45 000	3 150	4 000	
2240	<b>2338</b>	1,20	33 500	0,599	33 500	0,385	33 500	0,214	33 500	33 500	45 000	3 150	4 000	
2500														
2800														

## 4 - Data and performance summary

### 042A

According to FEM 1.001 L2/T5/M5 conditions

		042A												
		$n_1$ min <sup>-1</sup>												
		2 800		1 400		900		500						
	$i_N$	$i_{eff}$	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$M_{N2 FEM max}$ N m	$M_{2max}$ N m	$n_{1max}$ min <sup>-1</sup>	$n_{1peak}$ min <sup>-1</sup>
2EL	12,5													
	14	<b>14,7</b>	-	-	95,2	45 000	61,2	47 000	34,0	49 900	50 000	60 800	2 240	2 800
	16													
	18	<b>17,5</b>	-	-	80,2	45 800	51,6	47 900	28,6	50 000	50 000	67 000	2 240	3 150
	20	<b>20,4</b>	-	-	68,6	38 400	44,1	40 100	24,5	42 600	47 500	67 000	2 240	3 150
	22,4	<b>22,1</b>	-	-	63,2	38 300	40,7	40 100	22,6	42 600	50 000	64 900	2 240	3 550
	25	<b>25,9</b>	-	-	54,1	39 300	34,8	41 100	19,3	43 600	47 500	67 000	2 240	3 550
	28	<b>28,7</b>	-	-	48,8	39 700	31,4	41 500	17,4	44 100	47 500	66 400	2 240	3 550
	31,5	<b>30,4</b>	-	-	46,1	39 400	29,6	41 200	16,5	43 700	45 100	53 100	2 240	3 550
	35,5	<b>37,3</b>	-	-	37,5	29 900	24,1	31 300	13,4	33 200	37 900	45 100	2 240	3 550
40														
45														
3EL	50	<b>51,7</b>	-	-	27,1	50 000	17,4	50 000	9,66	50 000	50 000	60 800	2 500	2 800
	63	<b>61,4</b>	45,6	48 500	22,8	50 000	14,7	50 000	8,14	50 000	50 000	60 800	2 800	3 550
	71	<b>72,9</b>	38,4	49 300	19,2	50 000	12,4	50 000	6,86	50 000	50 000	67 000	2 800	3 550
	80	<b>77,9</b>	36,0	49 600	18,0	50 000	11,6	50 000	6,42	50 000	50 000	60 800	2 800	4 000
	90	<b>92,4</b>	30,3	50 000	15,2	50 000	9,74	50 000	5,41	50 000	50 000	67 000	2 800	4 000
	100	<b>108</b>	25,8	50 000	12,9	50 000	8,30	50 000	4,61	50 000	50 000	67 000	2 800	4 000
	112	<b>117</b>	23,9	42 400	11,9	45 500	7,68	47 600	4,27	50 000	50 000	64 900	2 800	4 000
	125	<b>127</b>	22,1	43 000	11,0	46 200	7,10	47 500	3,94	47 500	47 500	67 000	2 800	4 000
	140	<b>138</b>	20,4	43 100	10,2	46 300	6,54	48 400	3,63	50 000	50 000	64 900	2 800	4 000
	160	<b>169</b>	16,6	44 000	8,28	47 300	5,32	49 500	2,96	50 000	50 000	64 900	2 800	4 000
	180	<b>178</b>	15,7	44 500	7,85	47 500	5,05	47 500	2,81	47 500	47 500	66 400	2 800	4 000
	200	<b>198</b>	14,2	45 000	7,08	47 500	4,55	47 500	2,53	47 500	47 500	67 000	2 800	4 000
224	<b>219</b>	12,8	45 500	6,39	47 500	4,11	47 500	2,28	47 500	47 500	66 400	2 800	4 000	
250	<b>232</b>	12,1	45 100	6,03	45 100	3,88	45 100	2,16	45 100	45 100	53 100	2 800	4 000	
4EL	180	<b>182</b>	15,4	50 000	7,69	50 000	4,95	50 000	2,75	50 000	50 000	60 800	2 800	3 150
	200	<b>216</b>	13,0	50 000	6,48	50 000	4,17	50 000	2,32	50 000	50 000	60 800	3 150	4 000
	250	<b>256</b>	10,9	50 000	5,46	50 000	3,51	50 000	1,95	50 000	50 000	67 000	3 150	4 000
	280	<b>274</b>	10,2	50 000	5,11	50 000	3,29	50 000	1,83	50 000	50 000	60 800	3 150	4 000
	315	<b>304</b>	9,21	50 000	4,60	50 000	2,96	50 000	1,64	50 000	50 000	67 000	3 150	4 000
	355	<b>325</b>	8,61	50 000	4,31	50 000	2,77	50 000	1,54	50 000	50 000	67 000	3 150	4 000
	400	<b>386</b>	7,26	50 000	3,63	50 000	2,33	50 000	1,30	50 000	50 000	67 000	3 150	4 000
	450	<b>453</b>	6,18	50 000	3,09	50 000	1,99	50 000	1,10	50 000	50 000	67 000	3 150	4 000
	500	<b>489</b>	5,72	50 000	2,86	50 000	1,84	50 000	1,02	50 000	50 000	67 000	3 150	4 000
	560	<b>556</b>	5,03	50 000	2,52	50 000	1,62	50 000	0,899	50 000	50 000	67 000	3 150	4 000
	630	<b>595</b>	4,71	50 000	2,35	50 000	1,51	50 000	0,841	50 000	50 000	60 800	3 150	4 000
	710	<b>706</b>	3,97	50 000	1,98	50 000	1,28	50 000	0,709	50 000	50 000	67 000	3 150	4 000
	800	<b>828</b>	3,38	50 000	1,69	50 000	1,09	50 000	0,604	50 000	50 000	67 000	3 150	4 000
	900	<b>895</b>	3,13	50 000	1,56	50 000	1,01	50 000	0,559	50 000	50 000	64 900	3 150	4 000
	1000	<b>1051</b>	2,67	50 000	1,33	50 000	0,857	50 000	0,476	50 000	50 000	64 900	3 150	4 000
	1120	<b>1160</b>	2,41	47 500	1,21	47 500	0,776	47 500	0,431	47 500	47 500	66 400	3 150	4 000
	1250	<b>1291</b>	2,17	50 000	1,08	50 000	0,697	50 000	0,387	50 000	50 000	64 900	3 150	4 000
	1400	<b>1361</b>	2,06	47 500	1,03	47 500	0,661	47 500	0,367	47 500	47 500	66 400	3 150	4 000
1600	<b>1509</b>	1,86	47 500	0,928	47 500	0,596	47 500	0,331	47 500	47 500	67 000	3 150	4 000	
1800	<b>1673</b>	1,67	47 500	0,837	47 500	0,538	47 500	0,299	47 500	47 500	66 400	3 150	4 000	
2000														
2240														
2500														
2800														

## 4 - Data and performance summary

### 060A

According to FEM 1.001 L2/T5/M5 conditions

		060A												
		$n_1$ min <sup>-1</sup>												
		2 800		1 400		900		500						
$i_N$	$i_{eff}$	$n_2$	$M_{N2 FEM}$	$n_2$	$M_{N2 FEM}$	$n_2$	$M_{N2 FEM}$	$n_2$	$M_{N2 FEM}$	$M_{N2 FEM max}$	$M_{2max}$	$n_{1max}$	$n_{1peak}$	
		min <sup>-1</sup>	N m	min <sup>-1</sup>	N m	min <sup>-1</sup>	N m	min <sup>-1</sup>	N m	N m	N m	min <sup>-1</sup>	min <sup>-1</sup>	
2EL	12,5													
	14	<b>14,4</b>	-	-	97,3	58 700	62,5	61 400	34,7	63 500	63 500	79 400	2 000	2 800
	16	<b>17,1</b>	-	-	82,0	59 700	52,7	62 400	29,3	66 200	71 000	95 000	2 000	2 800
	18	<b>18,5</b>	-	-	75,8	47 300	48,7	49 500	27,1	52 500	67 000	90 000	2 000	2 800
	20													
	22,4	<b>21,7</b>	-	-	64,6	61 200	41,6	63 900	23,1	67 800	71 000	95 000	2 000	2 800
	25	<b>24</b>	-	-	58,3	50 800	37,5	53 100	20,8	56 400	59 500	84 100	2 000	2 800
	28	<b>27,8</b>	-	-	50,4	49 300	32,4	51 600	18,0	54 700	67 000	90 000	2 000	2 800
	31,5	<b>30,8</b>	-	-	45,5	49 900	29,2	52 100	16,2	55 300	67 000	90 000	2 000	2 800
	35,5	<b>32,6</b>	-	-	42,9	50 100	27,6	52 400	15,3	55 600	67 000	86 600	2 000	2 800
40	<b>40,1</b>	-	-	34,9	39 800	22,4	41 700	12,5	44 200	60 100	71 300	2 000	2 800	
45														
3EL	50	<b>50,6</b>	-	-	27,7	62 100	17,8	63 500	9,88	63 500	63 500	79 400	2 500	2 800
	63	<b>60,1</b>	46,6	63 200	23,3	63 500	15,0	63 500	8,33	63 500	63 500	79 400	2 800	3 550
	71	<b>71,3</b>	39,3	64 300	19,6	68 900	12,6	71 000	7,02	71 000	71 000	95 000	2 800	3 550
	80	<b>76,2</b>	36,8	59 200	18,4	63 500	11,8	63 500	6,56	63 500	63 500	79 400	2 800	4 000
	90	<b>90,4</b>	31,0	65 900	15,5	70 600	9,96	71 000	5,53	71 000	71 000	95 000	2 800	4 000
	100	<b>106</b>	26,4	59 300	13,2	63 700	8,48	66 700	4,71	70 900	71 000	90 000	2 800	4 000
	112	<b>115</b>	24,4	67 400	12,2	71 000	7,85	71 000	4,36	71 000	71 000	95 000	2 800	4 000
	125	<b>127</b>	22,0	56 100	11,0	59 500	7,08	59 500	3,94	59 500	59 500	84 100	2 800	4 000
	140	<b>135</b>	20,8	68 500	10,4	71 000	6,69	71 000	3,72	71 000	71 000	95 000	2 800	4 000
	160	<b>163</b>	17,2	55 000	8,59	59 000	5,52	61 100	3,07	63 900	67 000	90 000	2 800	4 000
	180	<b>183</b>	15,3	58 300	7,64	59 500	4,91	59 500	2,73	59 500	59 500	84 100	2 800	4 000
	200	<b>203</b>	13,8	56 200	6,91	60 100	4,44	62 100	2,47	65 000	67 000	86 600	2 800	4 000
224	<b>212</b>	13,2	56 500	6,60	60 300	4,24	62 400	2,36	65 200	67 000	90 000	2 800	4 000	
250	<b>249</b>	11,2	57 400	5,62	61 000	3,61	63 100	2,01	66 000	67 000	86 600	2 800	4 000	
4EL	180	<b>178</b>	15,7	63 500	7,87	63 500	5,06	63 500	2,81	63 500	63 500	79 400	2 800	3 150
	200	<b>211</b>	13,3	71 000	6,63	71 000	4,26	71 000	2,37	71 000	71 000	95 000	2 800	3 150
	250	<b>251</b>	11,2	71 000	5,58	71 000	3,59	71 000	1,99	71 000	71 000	95 000	2 800	3 150
	280	<b>297</b>	9,41	71 000	4,71	71 000	3,03	71 000	1,68	71 000	71 000	95 000	3 150	4 000
	315	<b>318</b>	8,81	63 500	4,40	63 500	2,83	63 500	1,57	63 500	63 500	79 400	3 150	4 000
	355	<b>344</b>	8,14	59 300	4,07	62 600	2,62	64 700	1,45	67 000	67 000	90 000	3 150	4 000
	400	<b>377</b>	7,42	71 000	3,71	71 000	2,39	71 000	1,33	71 000	71 000	95 000	3 150	4 000
	450	<b>443</b>	6,32	71 000	3,16	71 000	2,03	71 000	1,13	71 000	71 000	95 000	3 150	4 000
	500	<b>479</b>	5,85	71 000	2,93	71 000	1,88	71 000	1,04	71 000	71 000	95 000	3 150	4 000
	560	<b>562</b>	4,98	71 000	2,49	71 000	1,60	71 000	0,890	71 000	71 000	95 000	3 150	4 000
	630	<b>607</b>	4,61	71 000	2,31	71 000	1,48	71 000	0,824	71 000	71 000	95 000	3 150	4 000
	710	<b>713</b>	3,93	71 000	1,96	71 000	1,26	71 000	0,702	71 000	71 000	95 000	3 150	4 000
	800	<b>836</b>	3,35	71 000	1,67	71 000	1,08	71 000	0,598	71 000	71 000	95 000	3 150	4 000
	900	<b>876</b>	3,20	71 000	1,60	71 000	1,03	71 000	0,571	71 000	71 000	95 000	3 150	4 000
	1000	<b>1028</b>	2,72	71 000	1,36	71 000	0,876	71 000	0,486	71 000	71 000	95 000	3 150	4 000
	1120	<b>1124</b>	2,49	64 900	1,25	67 000	0,801	67 000	0,445	67 000	67 000	90 000	3 150	4 000
	1250	<b>1245</b>	2,25	65 400	1,12	67 000	0,723	67 000	0,402	67 000	67 000	90 000	3 150	4 000
	1400	<b>1462</b>	1,92	66 200	0,958	67 000	0,616	67 000	0,342	67 000	67 000	90 000	3 150	4 000
	1600	<b>1621</b>	1,73	66 800	0,864	67 000	0,555	67 000	0,308	67 000	67 000	90 000	3 150	4 000
	1800	<b>1796</b>	1,56	67 000	0,779	67 000	0,501	67 000	0,278	67 000	67 000	90 000	3 150	4 000
2000														
2240														
2500														
2800														

## 4 - Data and performance summary

### 085A

According to FEM 1.001 L2/T5/M5 conditions

		085A												
		$n_1$ min <sup>-1</sup>												
		2 800		1 400		900		500						
$i_n$	$i_{eff}$	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$M_{N2 FEM max}$ N m	$M_{2max}$ N m	$n_{1max}$ min <sup>-1</sup>	$n_{1peak}$ min <sup>-1</sup>	
2EL	12,5													
	14													
	16	17,1	-	-	82,0	88 100	52,7	92 100	29,3	97 400	112 000	150 000	2 000	2 800
	18													
	20													
	22,4	21,9	-	-	63,9	87 400	41,1	91 400	22,8	97 100	112 000	150 000	2 000	2 800
	25	24,4	-	-	57,3	71 100	36,8	74 400	20,5	79 000	112 000	150 000	2 000	2 800
	28	27,8	-	-	50,4	78 300	32,4	81 900	18,0	86 800	106 000	140 000	2 000	2 800
	31,5	31,0	-	-	45,1	79 200	29,0	82 800	16,1	87 800	106 000	140 000	2 000	2 800
	35,5													
40														
45														
3EL	50													
	63	60,1	-	-	23,3	98 700	15,0	101 000	8,33	105 000	112 000	150 000	2 240	2 800
	71	71,3	-	-	19,6	99 800	12,6	102 000	7,02	106 000	112 000	150 000	2 240	3 150
	80	77,1	-	-	18,2	99 300	11,7	103 000	6,49	107 000	112 000	150 000	2 240	2 800
	90	90,4	-	-	15,5	101 000	9,96	104 000	5,53	108 000	112 000	150 000	2 240	3 550
	100	106	-	-	13,2	102 000	8,48	105 000	4,71	109 000	112 000	150 000	2 240	3 550
	112	116	-	-	12,1	103 000	7,76	106 000	4,31	109 000	112 000	150 000	2 240	3 550
	125	129	-	-	10,8	91 400	6,95	95 300	3,86	99 500	106 000	140 000	2 240	3 150
	140	136	-	-	10,3	104 000	6,61	107 000	3,67	110 000	112 000	150 000	2 240	3 550
	160	167	-	-	8,37	105 000	5,38	108 000	2,99	112 000	112 000	150 000	2 240	3 550
	180	187	-	-	7,50	87 500	4,82	91 600	2,68	97 200	112 000	150 000	2 240	3 550
	200	193	-	-	7,27	95 000	4,67	98 100	2,59	103 000	106 000	140 000	2 240	3 550
	224	212	-	-	6,60	95 600	4,24	98 900	2,36	103 000	106 000	140 000	2 240	3 550
250	237	-	-	5,91	96 400	3,80	99 700	2,11	104 000	106 000	140 000	2 240	3 550	
4EL	180													
	200	211	-	-	6,63	107 000	4,26	109 000	2,37	112 000	112 000	150 000	2 500	2 800
	250	251	11,2	103 000	5,58	108 000	3,59	111 000	1,99	112 000	112 000	150 000	2 800	3 550
	280	297	9,41	104 000	4,71	109 000	3,03	112 000	1,68	112 000	112 000	150 000	2 800	3 550
	315	318	8,81	105 000	4,40	109 000	2,83	112 000	1,57	112 000	112 000	150 000	2 800	4 000
	355	344	-	-	4,07	99 200	2,62	102 000	1,45	106 000	106 000	140 000	2 500	2 800
	400	382	7,33	106 000	3,67	110 000	2,36	112 000	1,31	112 000	112 000	150 000	2 800	3 550
	450	443	6,32	107 000	3,16	111 000	2,03	112 000	1,13	112 000	112 000	150 000	2 800	4 000
	500	479	5,85	107 000	2,93	112 000	1,88	112 000	1,04	112 000	112 000	150 000	2 800	4 000
	560	562	4,98	108 000	2,49	112 000	1,60	112 000	0,890	112 000	112 000	150 000	2 800	4 000
	630	659	4,25	109 000	2,12	112 000	1,36	112 000	0,758	112 000	112 000	150 000	2 800	4 000
	710	721	3,88	110 000	1,94	112 000	1,25	112 000	0,694	112 000	112 000	150 000	2 800	4 000
	800	846	3,31	111 000	1,65	112 000	1,06	112 000	0,591	112 000	112 000	150 000	2 800	4 000
	900	886	3,16	111 000	1,58	112 000	1,02	112 000	0,564	112 000	112 000	150 000	2 800	4 000
	1000	1040	2,69	112 000	1,35	112 000	0,865	112 000	0,481	112 000	112 000	150 000	2 800	4 000
	1120	1124	2,49	103 000	1,25	106 000	0,801	106 000	0,445	106 000	106 000	140 000	2 800	4 000
	1250	1278	2,19	112 000	1,10	112 000	0,704	112 000	0,391	112 000	112 000	150 000	2 800	4 000
	1400	1471	1,90	105 000	0,951	106 000	0,612	106 000	0,340	106 000	106 000	140 000	2 800	4 000
1600	1621	1,73	106 000	0,864	106 000	0,555	106 000	0,308	106 000	106 000	140 000	2 800	4 000	
1800	1808	1,55	106 000	0,774	106 000	0,498	106 000	0,277	106 000	106 000	140 000	2 800	4 000	
2000														
2240														
2500														
2800														



## 4 - Data and performance summary

### 125A

According to FEM 1.001 L2/T5/M5 conditions

		125A												
		$n_1$ min <sup>-1</sup>												
		2 800		1 400		900		500						
		$n_2$	$M_{N2 FEM}$	$n_2$	$M_{N2 FEM}$	$n_2$	$M_{N2 FEM}$	$n_2$	$M_{N2 FEM}$	$M_{N2 FEM max}$	$M_{2max}$	$n_{1max}$	$n_{1peak}$	
$i_N$	$i_{eff}$	min <sup>-1</sup>	N m	min <sup>-1</sup>	N m	min <sup>-1</sup>	N m	min <sup>-1</sup>	N m	N m	N m	min <sup>-1</sup>	min <sup>-1</sup>	
2EL	12,5													
	14													
	16													
	18	<b>17,5</b>	-	-	80,2	126 000	51,6	132 000	28,6	137 000	160 000	212 000	2 000	2 800
	20	<b>20,4</b>	-	-	68,6	128 000	44,1	133 000	24,5	138 000	160 000	212 000	2 000	2 800
	22,4	<b>22,1</b>	-	-	63,2	102 000	40,7	106 000	22,6	113 000	150 000	200 000	2 000	2 800
	25	<b>25,0</b>	-	-	55,9	106 000	35,9	111 000	20,0	118 000	160 000	212 000	2 000	2 800
	28	<b>25,9</b>	-	-	54,1	103 000	34,8	108 000	19,3	114 000	150 000	200 000	2 000	2 800
	31,5	<b>31,8</b>	-	-	44,1	105 000	28,3	110 000	15,7	117 000	150 000	200 000	2 000	2 800
	35,5													
40														
45														
3EL	50													
	63	<b>61,4</b>	-	-	22,8	139 000	14,7	142 000	8,14	148 000	160 000	212 000	2 240	2 800
	71	<b>72,9</b>	-	-	19,2	140 000	12,4	144 000	6,86	149 000	160 000	212 000	2 240	3 150
	80	<b>85,2</b>	-	-	16,4	141 000	10,6	145 000	5,87	150 000	160 000	212 000	2 240	3 150
	90	<b>92,4</b>	-	-	15,2	142 000	9,74	146 000	5,41	151 000	160 000	212 000	2 240	3 550
	100	<b>102</b>	-	-	13,7	143 000	8,79	147 000	4,88	152 000	160 000	212 000	2 240	3 550
	112	<b>108</b>	-	-	13,0	143 000	8,33	147 000	4,63	153 000	160 000	212 000	2 240	3 550
	125	<b>120</b>	-	-	11,7	144 000	7,52	148 000	4,18	154 000	160 000	212 000	2 240	3 550
	140	<b>133</b>	-	-	10,6	126 000	6,79	132 000	3,77	140 000	160 000	212 000	2 240	3 550
	160	<b>168</b>	-	-	8,33	124 000	5,35	129 000	2,97	134 000	150 000	200 000	2 240	3 550
	180	<b>186</b>	-	-	7,51	126 000	4,83	130 000	2,68	135 000	150 000	200 000	2 240	3 550
	200	<b>198</b>	-	-	7,08	126 000	4,55	130 000	2,53	136 000	150 000	200 000	2 240	3 550
224														
250	<b>243</b>	-	-	5,77	128 000	3,71	132 000	2,06	138 000	150 000	200 000	2 240	3 550	
4EL	180													
	200	<b>216</b>	-	-	6,48	150 000	4,17	154 000	2,32	160 000	160 000	212 000	2 500	2 800
	250	<b>256</b>	10,9	145 000	5,46	151 000	3,51	155 000	1,95	160 000	160 000	212 000	2 800	3 550
	280	<b>300</b>	9,35	146 000	4,67	153 000	3,00	157 000	1,67	160 000	160 000	212 000	2 800	3 550
	315	<b>325</b>	8,61	147 000	4,31	153 000	2,77	158 000	1,54	160 000	160 000	212 000	2 800	4 000
	355	<b>356</b>	7,88	148 000	3,94	154 000	2,53	159 000	1,41	160 000	160 000	212 000	2 800	3 550
	400	<b>386</b>	7,26	149 000	3,63	155 000	2,33	160 000	1,30	160 000	160 000	212 000	2 800	4 000
	450	<b>451</b>	6,21	150 000	3,10	156 000	2,00	160 000	1,11	160 000	160 000	212 000	2 800	4 000
	500	<b>500</b>	5,60	151 000	2,80	157 000	1,80	160 000	1,00	160 000	160 000	212 000	2 800	3 550
	560	<b>572</b>	4,90	152 000	2,45	159 000	1,57	160 000	0,874	160 000	160 000	212 000	2 800	4 000
	630	<b>634</b>	4,42	153 000	2,21	160 000	1,42	160 000	0,789	160 000	160 000	212 000	2 800	4 000
	710	<b>706</b>	3,97	154 000	1,98	160 000	1,28	160 000	0,709	160 000	160 000	212 000	2 800	4 000
	800	<b>825</b>	3,39	156 000	1,70	160 000	1,09	160 000	0,606	160 000	160 000	212 000	2 800	4 000
	900	<b>914</b>	3,06	157 000	1,53	160 000	0,984	160 000	0,547	160 000	160 000	212 000	2 800	4 000
	1000	<b>1046</b>	2,68	135 000	1,34	143 000	0,860	147 000	0,478	150 000	150 000	200 000	2 800	4 000
	1120	<b>1160</b>	2,41	136 000	1,21	144 000	0,776	149 000	0,431	150 000	150 000	200 000	2 800	4 000
	1250	<b>1284</b>	2,18	137 000	1,09	145 000	0,701	150 000	0,389	150 000	150 000	200 000	2 800	4 000
	1400	<b>1423</b>	1,97	139 000	0,984	146 000	0,632	150 000	0,351	150 000	150 000	200 000	2 800	4 000
	1600	<b>1507</b>	1,86	139 000	0,929	147 000	0,597	150 000	0,332	150 000	150 000	200 000	2 800	4 000
	1800	<b>1852</b>	1,51	141 000	0,756	149 000	0,486	150 000	0,270	150 000	150 000	200 000	2 800	4 000
2000														
2240														
2500														
2800														

## 4 - Data and performance summary

### 180A

According to FEM 1.001 L2/T5/M5 conditions

		180A												
		$n_1$ min <sup>-1</sup>												
		2 800		1 400		900		500						
	$i_n$	$i_{eff}$	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$M_{N2 FEM max}$ N m	$M_{2max}$ N m	$n_{1max}$ min <sup>-1</sup>	$n_{1peak}$ min <sup>-1</sup>
2EL	12,5													
	14													
	16	<b>17,1</b>	-	-	81,8	159 000	52,6	182 000	29,2	198 000	224 000	300 000	1 800	2 500
	18													
	20	<b>20,0</b>	-	-	70,0	150 000	45,0	157 000	25,0	166 000	212 000	280 000	1 800	2 500
	22,4	<b>22,0</b>	-	-	63,8	169 000	41,0	177 000	22,8	188 000	224 000	300 000	1 800	2 500
	25	<b>24,5</b>	-	-	57,2	138 000	36,7	144 000	20,4	153 000	224 000	300 000	1 800	2 500
	28	<b>28,6</b>	-	-	48,9	155 000	31,4	162 000	17,5	172 000	212 000	280 000	1 800	2 500
	31,5													
	35,5													
40														
45														
3EL	50													
	63	<b>60,2</b>	-	-	23,3	202 000	15,0	208 000	8,31	215 000	224 000	300 000	2 000	2 800
	71	<b>71,4</b>	-	-	19,6	204 000	12,6	210 000	7,00	218 000	224 000	300 000	2 000	2 800
	80	<b>77,2</b>	-	-	18,1	192 000	11,7	201 000	6,48	213 000	224 000	300 000	2 000	2 800
	90	<b>90,6</b>	-	-	15,5	207 000	9,94	213 000	5,52	221 000	224 000	300 000	2 000	2 800
	100	<b>100</b>	-	-	13,9	206 000	8,97	214 000	4,98	222 000	224 000	300 000	2 000	2 800
	112	<b>116</b>	-	-	12,0	200 000	7,74	209 000	4,30	222 000	224 000	300 000	2 000	2 800
	125	<b>129</b>	-	-	10,9	202 000	6,99	211 000	3,88	224 000	224 000	300 000	2 000	2 800
	140	<b>136</b>	-	-	10,3	181 000	6,62	188 000	3,68	197 000	212 000	280 000	2 000	2 800
	160	<b>168</b>	-	-	8,33	185 000	5,36	191 000	2,98	200 000	212 000	280 000	2 000	2 800
	180	<b>178</b>	-	-	7,87	186 000	5,06	192 000	2,81	200 000	212 000	280 000	2 000	2 800
	200													
224	<b>219</b>	-	-	6,40	189 000	4,12	195 000	2,29	203 000	212 000	280 000	2 000	2 800	
250														
4EL	180													
	200	<b>212</b>	-	-	6,62	218 000	4,25	224 000	2,36	224 000	224 000	300 000	2 500	2 800
	250	<b>251</b>	11,1	212 000	5,57	221 000	3,58	224 000	1,99	224 000	224 000	300 000	2 800	3 550
	280	<b>298</b>	9,39	214 000	4,70	223 000	3,02	224 000	1,68	224 000	224 000	300 000	2 800	3 550
	315	<b>319</b>	8,79	215 000	4,39	224 000	2,83	224 000	1,57	224 000	224 000	300 000	2 800	4 000
	355	<b>353</b>	-	-	3,97	224 000	2,55	224 000	1,42	224 000	224 000	300 000	2 500	2 800
	400	<b>378</b>	7,41	217 000	3,70	224 000	2,38	224 000	1,32	224 000	224 000	300 000	2 800	4 000
	450	<b>444</b>	6,31	219 000	3,16	224 000	2,03	224 000	1,13	224 000	224 000	300 000	2 800	4 000
	500	<b>479</b>	5,84	220 000	2,92	224 000	1,88	224 000	1,04	224 000	224 000	300 000	2 800	4 000
	560	<b>563</b>	4,97	222 000	2,49	224 000	1,60	224 000	0,888	224 000	224 000	300 000	2 800	4 000
	630	<b>624</b>	4,49	224 000	2,24	224 000	1,44	224 000	0,802	224 000	224 000	300 000	2 800	4 000
	710	<b>722</b>	3,88	224 000	1,94	224 000	1,25	224 000	0,692	224 000	224 000	300 000	2 800	4 000
	800	<b>800</b>	3,50	224 000	1,75	224 000	1,12	224 000	0,625	224 000	224 000	300 000	2 800	4 000
	900	<b>888</b>	3,15	224 000	1,58	224 000	1,01	224 000	0,563	224 000	224 000	300 000	2 800	4 000
	1000	<b>984</b>	2,85	224 000	1,42	224 000	0,915	224 000	0,508	224 000	224 000	300 000	2 800	4 000
	1120	<b>1150</b>	2,44	203 000	1,22	212 000	0,783	212 000	0,435	212 000	212 000	280 000	2 800	4 000
	1250	<b>1283</b>	2,18	204 000	1,09	212 000	0,702	212 000	0,390	212 000	212 000	280 000	2 800	4 000
	1400													
1600	<b>1670</b>	1,68	208 000	0,838	212 000	0,539	212 000	0,299	212 000	212 000	280 000	2 800	4 000	
1800														
2000														
2240														
2500														
2800														

## 4 - Data and performance summary

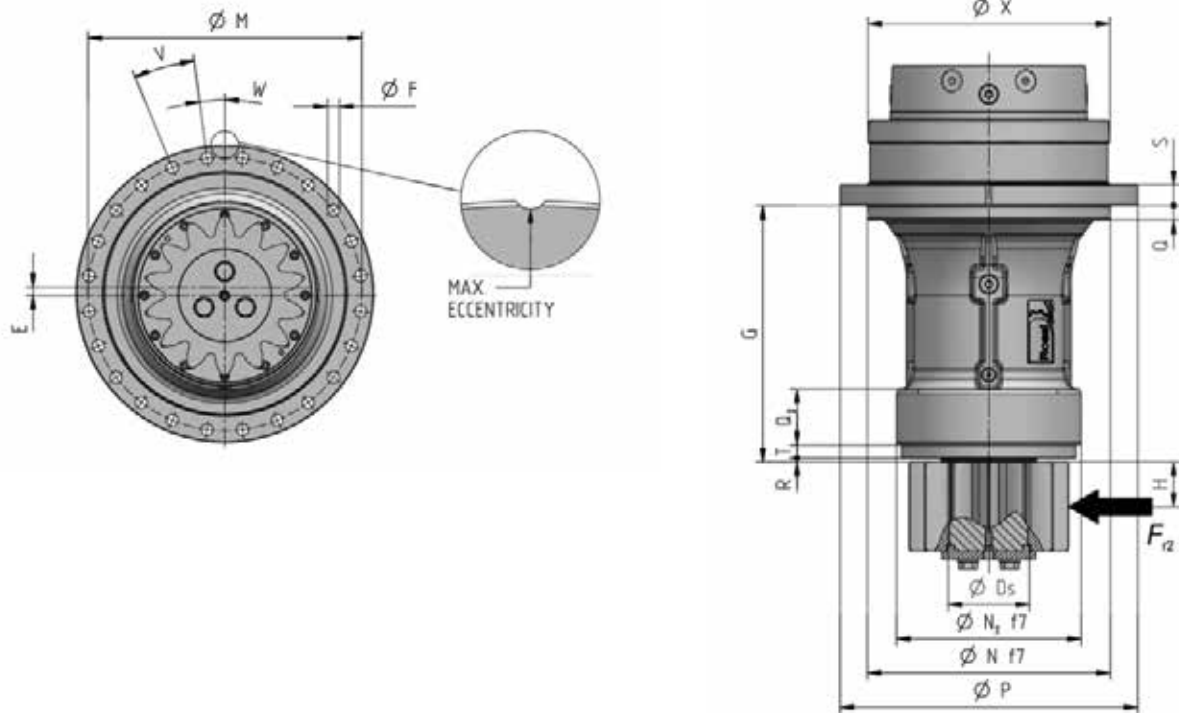
### 250A

According to FEM 1.001 L2/T5/M5 conditions

		250A												
		$n_1$ min <sup>-1</sup>												
		2 800		1 400		900		500						
$i_N$	$i_{eff}$	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$n_2$ min <sup>-1</sup>	$M_{N2 FEM}$ N m	$M_{N2 FEM max}$ N m	$M_{2max}$ N m	$n_{1max}$ min <sup>-1</sup>	$n_{1peak}$ min <sup>-1</sup>	
2EL	12,5													
	14													
	16													
	18	<b>17,5</b>	-	-	80,2	221 000	51,6	253 000	28,6	281 000	315 000	425 000	1 400	2 500
	20	<b>20,4</b>	-	-	68,6	215 000	44,1	225 000	24,5	238 000	300 000	400 000	1 400	2 500
	22,4	<b>22,1</b>	-	-	63,2	238 000	40,7	272 000	22,6	285 000	315 000	425 000	1 400	2 500
	25	<b>24,5</b>	-	-	57,1	210 000	36,7	220 000	20,4	233 000	315 000	425 000	1 400	2 500
	28	<b>28,7</b>	-	-	48,8	223 000	31,4	233 000	17,4	247 000	300 000	400 000	1 400	2 500
	31,5													
	35,5													
3EL	40													
	45													
	50													
	63													
	71	<b>71,4</b>	-	-	19,6	288 000	12,6	296 000	7,00	306 000	315 000	425 000	2 000	2 800
	80	<b>83,5</b>	-	-	16,8	247 000	10,8	258 000	5,99	271 000	300 000	400 000	2 000	2 800
	90	<b>91,6</b>	-	-	15,3	292 000	9,82	300 000	5,46	311 000	315 000	425 000	2 000	2 800
	100	<b>102</b>	-	-	13,7	288 000	8,80	302 000	4,89	313 000	315 000	425 000	2 000	2 800
	112	<b>116</b>	-	-	12,0	296 000	7,74	304 000	4,30	315 000	315 000	425 000	2 000	2 800
	125	<b>130</b>	-	-	10,8	298 000	6,94	307 000	3,86	315 000	315 000	425 000	2 000	2 800
	140	<b>144</b>	-	-	9,74	251 000	6,26	263 000	3,48	279 000	315 000	425 000	2 000	2 800
	160	<b>168</b>	-	-	8,33	265 000	5,36	274 000	2,98	286 000	300 000	400 000	2 000	2 800
	180													
4EL	200													
	250	<b>251</b>	-	-	5,57	311 000	3,58	315 000	1,99	315 000	315 000	425 000	2 240	2 800
	280	<b>298</b>	-	-	4,70	314 000	3,02	315 000	1,68	315 000	315 000	425 000	2 240	3 150
	315	<b>322</b>	-	-	4,34	315 000	2,79	315 000	1,55	315 000	315 000	425 000	2 240	2 800
	355	<b>360</b>	-	-	3,89	315 000	2,50	315 000	1,39	315 000	315 000	425 000	2 240	2 800
	400	<b>382</b>	-	-	3,66	315 000	2,35	315 000	1,31	315 000	315 000	425 000	2 240	3 150
	450	<b>444</b>	-	-	3,16	315 000	2,03	315 000	1,13	315 000	315 000	425 000	2 240	3 550
	500	<b>485</b>	-	-	2,89	315 000	1,86	315 000	1,03	315 000	315 000	425 000	2 240	3 550
	560	<b>563</b>	-	-	2,49	315 000	1,60	315 000	0,888	315 000	315 000	425 000	2 240	3 550
	630	<b>635</b>	-	-	2,20	315 000	1,42	315 000	0,787	315 000	315 000	425 000	2 240	3 550
	710	<b>722</b>	-	-	1,94	315 000	1,25	315 000	0,692	315 000	315 000	425 000	2 240	3 550
	800	<b>806</b>	-	-	1,74	315 000	1,12	315 000	0,620	315 000	315 000	425 000	2 240	3 550
	900	<b>888</b>	-	-	1,58	315 000	1,01	315 000	0,563	315 000	315 000	425 000	2 240	3 550
	1000	<b>990</b>	-	-	1,41	315 000	0,909	315 000	0,505	315 000	315 000	425 000	2 240	3 550
	1120	<b>1150</b>	-	-	1,22	300 000	0,783	300 000	0,435	300 000	300 000	400 000	2 240	3 550
	1250	<b>1283</b>	-	-	1,09	300 000	0,702	300 000	0,390	300 000	300 000	400 000	2 240	3 550
	1400													
1600														
1800														
2000														
2240														
2500														
2800														

## 5 - Main dimensions

### Double pilot extended output support, with flange



Standard configuration: pinion fitted on output shaft with spline DIN 5482 or DIN 5480.  
 One piece pinion-shaft on demand.  
 Pinion characteristics (m, z, b, x and profile modifications) to be defined according to customer's requirements.

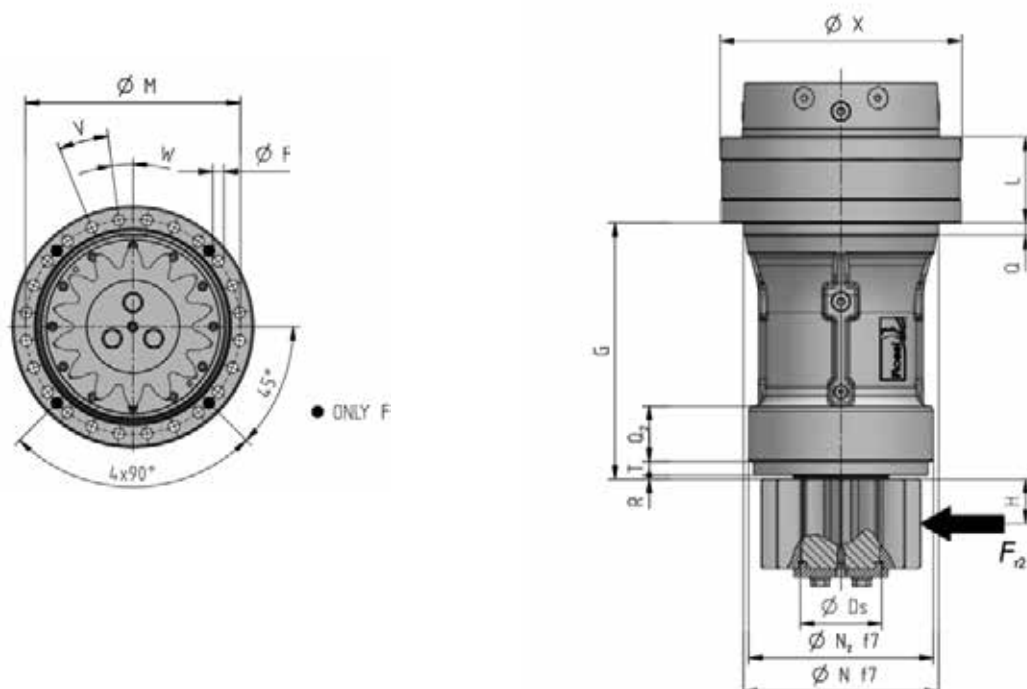
Size	Ordering code	X	P	N	N <sub>2</sub>	G	H	Q	Q <sub>2</sub>	S	R	T	M	F	V	W	E	D <sub>s</sub>
007A	S070M1 R30b	234	290	195	180	175	45	15	45	25	4	11	265	13	12x30°	0°	1,5	B70x64
015A	S090M1 R30c	282	360	250	200	230	45	13	65	25	5	12	325	17,5	10x36°	0°	2,5	B90x84
021A	S100M1 R30d	330	420	280	250	300	55	18	70	30	5	13	380	17,5	24x15°	7,5°	2,5	B100x94
030A	S120M1 R30e	353	435	355	270	375	65	18	75	30	6	19	400	17,5	24x15°	7,5°	2,5	120x3x30x38
030A	* S120M1 R32e	353	500	410	270	375	55	25	75	25	6	25	460	22	24x15°	7,5°	2	120x3x30x38
042A	S130M1 R30f	410	500	425	300	350	65	20	90	30	5	17	460	22	24x15°	7,5°	2,5	130x3x30x42
042A	* S130M1 R31f	410	500	425	300	350	65	20	93	30	5	17	460	22	24x15°	0°	0	130x3x30x42
060A	S150M1 R30g	445	555	400	340	425	75	17,5	110	35	5	15	510	22	24x15°	7,5°	2,5	150x5x30x28
085A	S170M1 R30h	506	640	470	370	470	85	20	125	35	5	15	600	22	24x15°	7,5°	2,5	170x5x30x32
085A	* S170M1 R31h	506	640	470	410	470	110	20	100	35	5	20	600	22	24x15°	0°	2,5	170x5x30x32
125A	S200M2 R30i	570	690	580	400	515	100	21	140	35	5	15	640	26	24x15°	7,5°	2,5	200x5x30x38
180A	S220M2 R30j	630	755	630	460	610	120	23	150	40	6	29	700	26	28x12,857°	6,429°	4	220x5x30x42
250A	S240M2 R30k	715	865	740	490	700	130	17	166	45	8	32	800	33	28x12,857°	6,429°	5	240x5x30x46
250A	* S240M2 R31k	715	865	740	490	875	130	20	170	45	30	40	800	33	28x12,857°	6,429°	5	240x5x30x46

\* Consult Rossi for actual performances.

Different designs available on request.

## 5 - Main dimensions

### Double pilot extended output support, without flange



Standard configuration: pinion fitted on output shaft with spline DIN 5482 or DIN 5480.  
 One piece pinion-shaft on demand.  
 Pinion characteristics (m, z, b, x and profile modifications) to be defined according to customer's requirements.

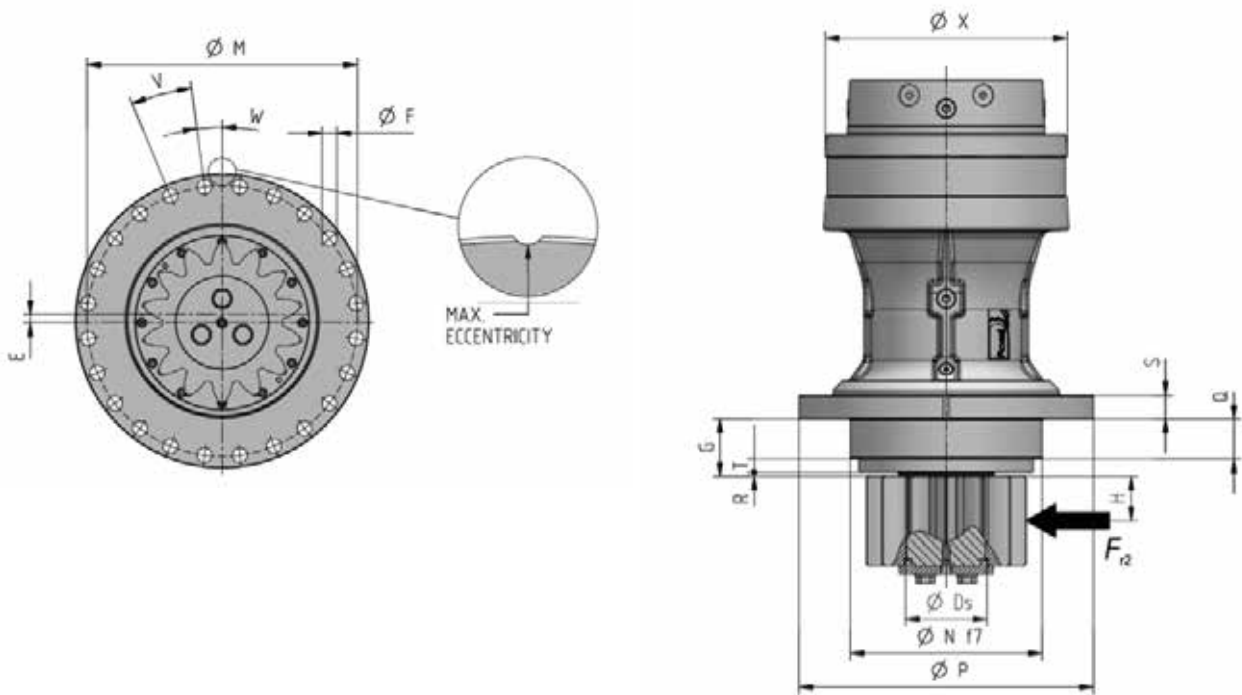
Size	Ordering code	X	N	N <sub>2</sub>	G	H	L	Q	Q <sub>2</sub>	R	T	M	F	V	W	E	D <sub>s</sub>
007A	S070M1 S30b	234	195	180	175	45	78	15	45	4	11	213	10,5	16x22,5°	11,25°	0	B70x64
015A	S090M1 S30c	282	235	200	235	45	100	18	65	5	12	255	12,5	16x22,5°	11,25°	0	B90x84
021A	* S100M1 S10d	330	275	218	300	55	-	20	67	7	23	300	17,5	24x15°	7,5°	0,75	B100x94
021A	* S100M1 S11d	330	275	250	235	52,5	-	15	59	5	26	300	17,5	24x15°	7,5°	0,75	B100x94
021A	S100M1 S30d	330	270	250	300	55	112	18	70	5	13	300	14,5	16x22,5°	11,25°	0	B100x94
030A	S120M1 S30e	353	285	270	375	65	125	16,5	75	6	19	314	16,5	24x15°	7,5°	0	120x3x30x38
042A	S130M1 S30f	410	340	300	350	65	145	20	90	5	17	370	16,5	28x12,857°	6,429°	0	130x3x30x42
060A	S150M1 S30g	445	365	340	425	75	172	18	110	5	15	400	21	24x15°	7,5°	0	150x5x30x28
085A	S170M1 S30h	506	425	370	470	85	185	20	125	5	15	460	22	28x12,857°	6,429°	0	170x5x30x32
125A	S200M2 S30i	570	470	400	515	100	175	25	140	5	15	515	25	28x12,857°	6,429°	0	200x5x30x38
180A	S220M2 S30j	630	530	460	610	120	195	23	150	6	29	575	25	32x11,25°	5,625°	0	220x5x30x42
250A	S240M2 S30k	715	595	490	700	130	223	25	168	8	32	650	32	28x12,857°	6,429°	0	240x5x30x46

\* Consult Rossi for actual performances.

Different designs available on request.

## 5 - Main dimensions

### Front fixing flange output support



Standard configuration: pinion fitted on output shaft with spline DIN 5482 or DIN 5480.  
 One piece pinion-shaft on demand.  
 Pinion characteristics (m, z, b, x and profile modifications) to be defined according to customer's requirements.

Size	Ordering code	X	P	N	G	H	Q	S	R	T	M	F	V	W	E	D <sub>s</sub>
007A	S070M1 H30b	234	272	175	41	45	15	25	4	22	245	18	10x36°	0°	1,5	B70x64
015A	S090M1 H30c	282	280	200	40	45	14,5	20	2,5	23	250	17	12x30°	0°	1	B90x84
015A	* S090M1 R10c	280	280	200	45	47,5	19	20	16	25	250	17	12x30°	0°	1	B90x84
021A	S100M1 H30d	330	400	310	80	55	18	30	5	57	360	22	12x30°	15°	2,5	B100x94
030A	S120M1 H30e	353	430	280	84	65	59	35	6	19	395	22	24x15°	7,5°	2,5	120x3x30x38
042A	S130M1 H30f	410	435	300	83	65	61	30	5	17	395	22	24x15°	7,5°	2,5	130x3x30x42
042A	* S130M1 H31f	410	430	300	83	75	40	30	5	43	395	22	24x15°	7,5°	2,5	130x3x30x42
060A	S150M1 H30g	445	490	365	83	75	23	37	5	55	445	22	24x15°	7,5°	2,5	150x5x30x28
085A	S170M1 H30h	506	540	435	100	85	25	41	5	65	485	33	24x15°	7,5°	2,5	170x5x30x32
125A	S200M2 H30i	570	565	470	140	100	21	35	5	15	515	26	28x12,857°	6,429°	2,5	200x5x30x38
180A	S220M2 H30j	630	630	520	165	120	24	40	6	135	575	26	32x11,25°	5,625°	4	220x5x30x42
250A	S240M2 H30k	715	715	585	180	130	25	45	4	147	650	33	28x12,857°	6,429°	5	240x5x30x46

DIN5482

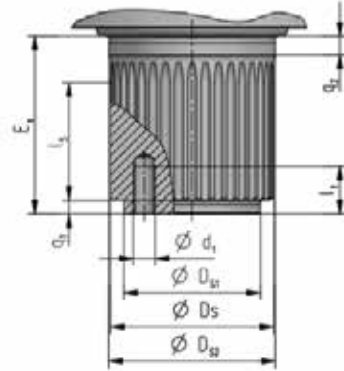
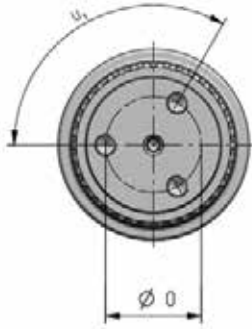
DIN5480

\* Consult Rossi for actual performances.

Different designs available on request.

## 5 - Main dimensions

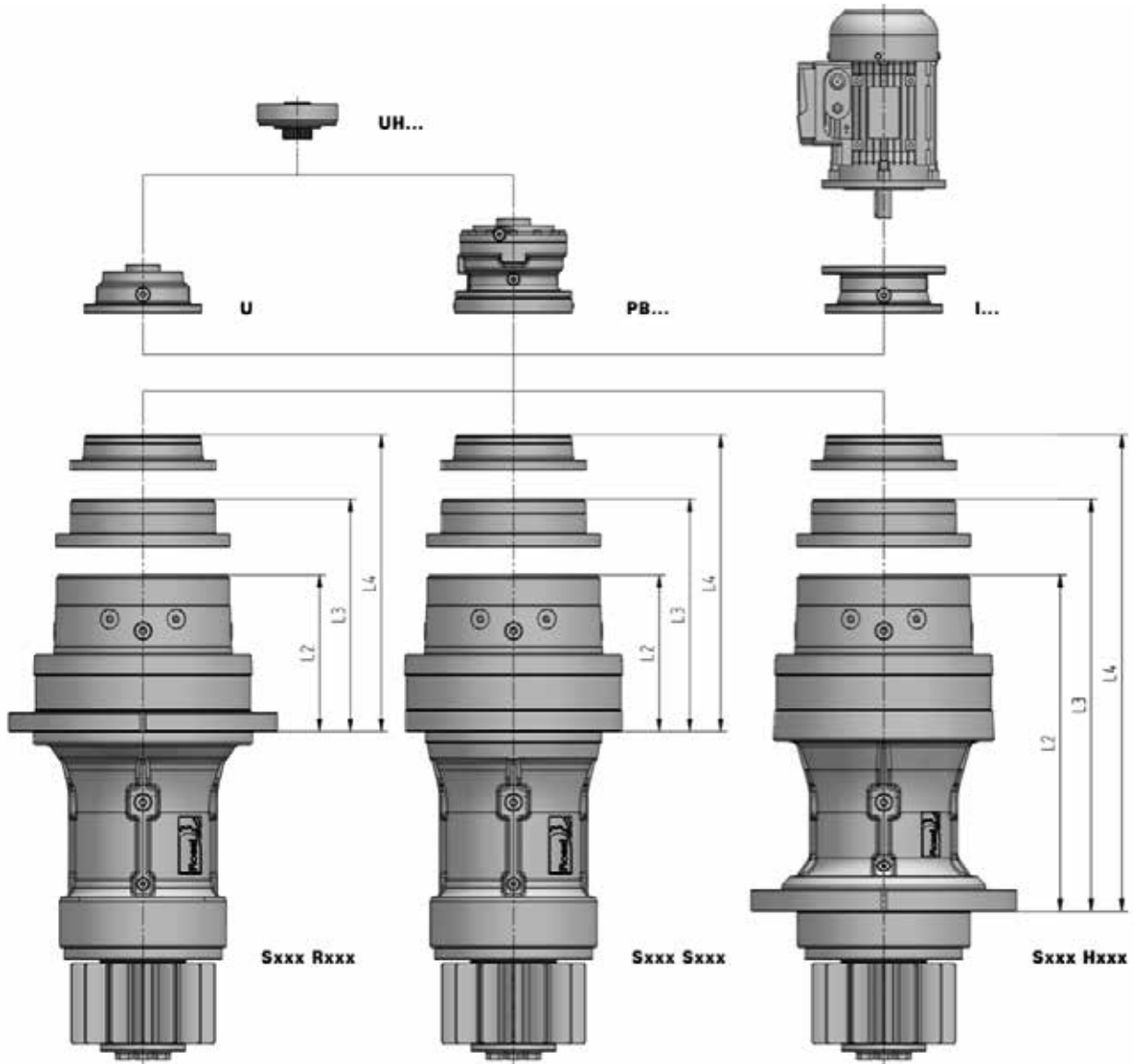
### Output side details



Size	Ordering code	D <sub>s</sub>		Es	D <sub>s1</sub>	D <sub>s2</sub>	d <sub>1</sub>	l <sub>1</sub>	O	u <sub>1</sub>	l <sub>s</sub>	q <sub>1</sub>	q <sub>2</sub>
007A	S070M1 ...	B70x64-e9	DIN5482	90	62 f7	72 f7	M10	21	45	3x120°	50	10	10
015A	S090M1 ...	B90x84-e9		90	80 f7	95 f7	M14	29	55	3x120°	50	10	10
021A	S100M1 ...	B100x94-e9		110	85 f7	105 f7	M14	30	65	3x120°	66	12	10,5
030A	S120M1 ...	120x3x30x38-8f	DIN5480	130	100 f7	122 f7	M16	35	70	3x120°	86	10	13,5
042A	S130M1 ...	130x3x30x42-8f		130	110 f7	132 f7	M16	33	80	3x120°	88	10	13,5
060A	S150M1 ...	150x5x30x28-8f		150	125 f7	151 f7	M16	33	95	3x120°	107	12	14
085A	S170M1 ...	170x5x30x32-8f		170	150 f7	172 f7	M16	35	115	4x90°	115	17	22
125A	S200M2 ...	200x5x30x38-8f		200	100 f7	200 f6	M20	42	150	10x36°	135	33	25
180A	S220M2 ...	220x5x30x42-8f		240	110 f7	220 f6	M20	40	170	10x36°	145	40	45
250A	S240M2 ...	240x5x30x46-8f		260	125 f7	240 f6	M24	48	185	10x36°	165	42	43

## 5 - Main dimensions

### Overall dimensions



Size	Ordering code	L2	L3	L4	Ordering code	L2	L3	L4	Ordering code	L2	L3	L4
007A	S070M1 R30b	124	154	184	S070M1 S30b	124	154	184	S070M1 H30b	258	288	318
015A	S090M1 R30c	171	230	260	S090M1 S30c	166	225	255	S090M1 H30c	336	395	425
021A	S100M1 R30d	175	234	264	S100M1 S30d	175	234	264	S100M1 H30d	395	454	484
030A	S120M1 R30e	253	326	380	S120M1 S30e	253	326	380	S120M1 H30e	544	617	671
042A	S130M1 R30f	273	356	415	S130M1 S30f	273	356	415	S130M1 H30f	540	623	682
060A	S150M1 R30g	312,5	395,5	454,5	S150M1 S30g	312,5	395,5	454,5	S150M1 H30g	654,5	737,5	796,5
085A	S170M1 R30h	450	503	576	S170M1 S30h	450	503	576	S170M1 H30h	820	873	946
125A	S200M2 R30i	470,5	523,5	606,5	S200M1 S30i	470,5	523,5	606,5	S200M1 H30i	845,5	898,5	981,5
180A	S220M2 R30j	556	609	692	S220M1 S30j	556	609	692	S220M1 H30j	1001	1054	1137
250A	S240M2 R30k	622	793	846	S240M1 S30k	622	689	846	S240M1 H30k	1142	1313	1366



## 6 - Pinion gears

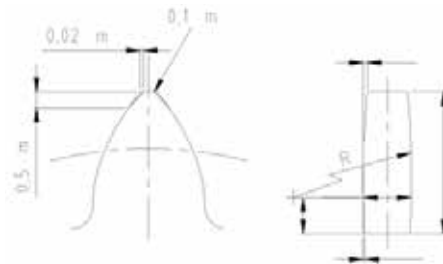
### Design features

Standard configuration: pinion fitted on output shaft with spline DIN 5482 or DIN 5480

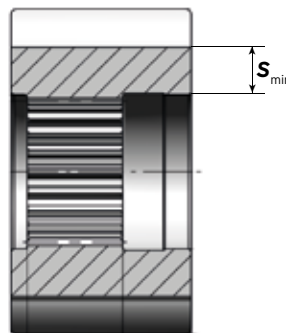
- Addendum modification coefficient  $x = 0,5$
- Gear quality DIN 9
- Ground finish (on demand)
- Tip relief (on demand)
- Full helix modification (on demand)
- Material: tempered high alloy steel (case hardened on demand)

Only for integral pinion (on demand)

- Addendum modification coefficient  $x = 0,5$
- Gear quality DIN 6
- Ground finish
- Tip relief
- Full helix modification
- Material: case hardened high alloy steel



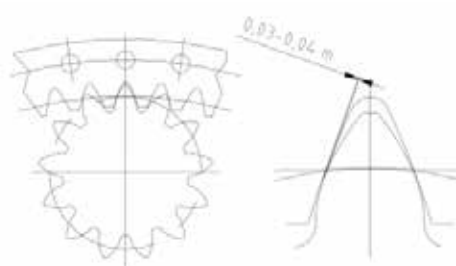
If not supplied by Rossi, the recommended minimum  $S$  value is  $S_{\min} \text{ (mm)} \geq 2,2 m$  where  $m$  is the pinion module



### Meshing with the Slew Gear

When the pinion is supplied by Rossi, all the relevant information related to the gear geometry are given in order to allow the verification of correct pinion/gear meshing.

In particular we recommend to check the value of backlash with the corresponding slewing bearing or rack to achieve a clearance of 0,03 - 0,04 m between gear teeth as shown in the following picture, taking advantage when available of the eccentric design of the gearbox output support.



## 7 - Multi-disc parking brakes

### Features

The parking brakes of PB series are Spring Applied and Hydraulic Released multi-disc brakes, to be used in combination with planetary gear reducers of EP series.

**They are not service brakes and they cannot be used in dynamic conditions.**

They are used to hold the load from application or to stop the machine in case of emergency.

The values of static braking torque  $M_{Bstat}$  given in the following table should be considered as nominal values and are valid for a brand new brake with correct lubrication. Values of  $M_{Bstat}$  are given with a tolerance of  $\pm 10\%$ .

After some braking cycles, values of static braking torque could reduce by 5% and 10%, due to the adjustment of discs.

**ATTENTION:** always verify that the static braking torque  $M_{Bstat}$  referred to the gear reducer low speed shaft is lower than the value of  $M_{2MAX}$  allowed by the gear reducer itself.

### Speed limits

The presence of a SAHR brake does not limit the values of  $n_{imax}$  and  $n_{ipeak}$  of the gear reducer stated in the selection tables.

**ATTENTION:** a continuous or frequent duty at high speed may generate an overheating of the group.

### Operating conditions

Brakes are designed for industrial applications, at ambient temperature  $-20\text{ °C} \div +50\text{ °C}$ , maximum altitude 1000 m.

### Lubrication

PB series brakes **require lubrication** and are supplied **without oil**, as specified by the relevant adhesive label.

Before putting the brakes into service fill them with mineral oil ISO VG 32, unless otherwise prescribed by specific documentation.

Hydraulic mineral based oils HLP according to DIN 51524 are suitable, recommended viscosity class ISO VG 32.

Consult Rossi when intending to use Fire Resistant fluids (HFA-HFB-HFC-HFD) and Environmentally Acceptable hydraulic fluids (HFE) as per ISO 6743.

Connect a fitting of the system hydraulic circuit to the brake release hole.

Before first use it is necessary to bleed. Slightly loosen the fitting on the release hole, keeping the pressure until all air has been bled, then tighten again the fitting.

The brake lubrication is separate from the gearbox lubrication to prevent premature lubricant contamination in the gear reducer, increasing gears and bearings life.

## 7 - Multi-disc parking brakes

### Technical data

PB10-...			0075	0150	0225	0340	0420	0525	0650	0815	
Static braking torque	$M_{Bstat}$	[N m]	72	156	224	345	421	531	660	818	
Min release pressure	$p_{min}$	[bar]	4,4	9,5	10,2	15,7	15,4	19,4	20,1	24,9	
Release pressure	$p$	[bar]	6,9	14,9	16,1	24,7	24,2	30,4	31,6	39,1	
Max release pressure	$p_{max}$	[bar]	300								
Maximum speed	$n_{1max}$	[min <sup>-1</sup> ]	According to gear reducer $n_{1max}$ and $n_{1peak}$								
Oil volume for brake release	$V$	[l]	0,10								

PB30-...			0250	0400	0500	0630	0800	1000	1250	1500	1700
Static braking torque	$M_{Bstat}$	[N m]	265	407	509	637	809	1010	1281	1529	1741
Min release pressure	$p_{min}$	[bar]	7,6	11,8	11,8	14,7	15,6	19,4	24,7	25,2	28,7
Release pressure	$p$	[bar]	12,0	18,5	18,5	23,1	24,5	30,5	38,7	39,6	45,1
Max release pressure	$p_{max}$	[bar]	300								
Maximum speed	$n_{1max}$	[min <sup>-1</sup> ]	According to gear reducer $n_{1max}$ and $n_{1peak}$								
Oil volume for brake release	$V$	[l]	0,12								

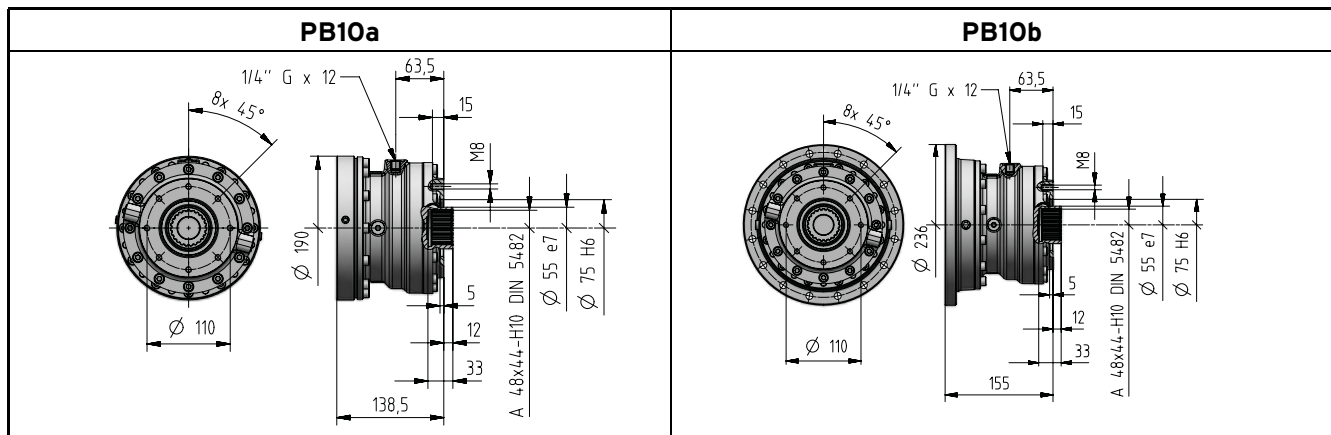
PB90-...			0850	1250	1500	1800	2100	2600	3000	3550	4250
Static braking torque	$M_{Bstat}$	[N m]	869	1304	1552	1811	2173	2680	3063	3560	4305
Min release pressure	$p_{min}$	[bar]	10,2	15,3	18,2	18,2	21,9	27,0	27,0	31,4	37,9
Release pressure	$p$	[bar]	15,3	23,0	27,4	27,4	32,8	40,5	40,5	47,1	56,9
Max release pressure	$p_{max}$	[bar]	300								
Maximum speed	$n_{1max}$	[min <sup>-1</sup> ]	According to gear reducer $n_{1max}$ and $n_{1peak}$								
Oil volume for brake release	$V$	[l]	0,25								

Different braking torques on request.

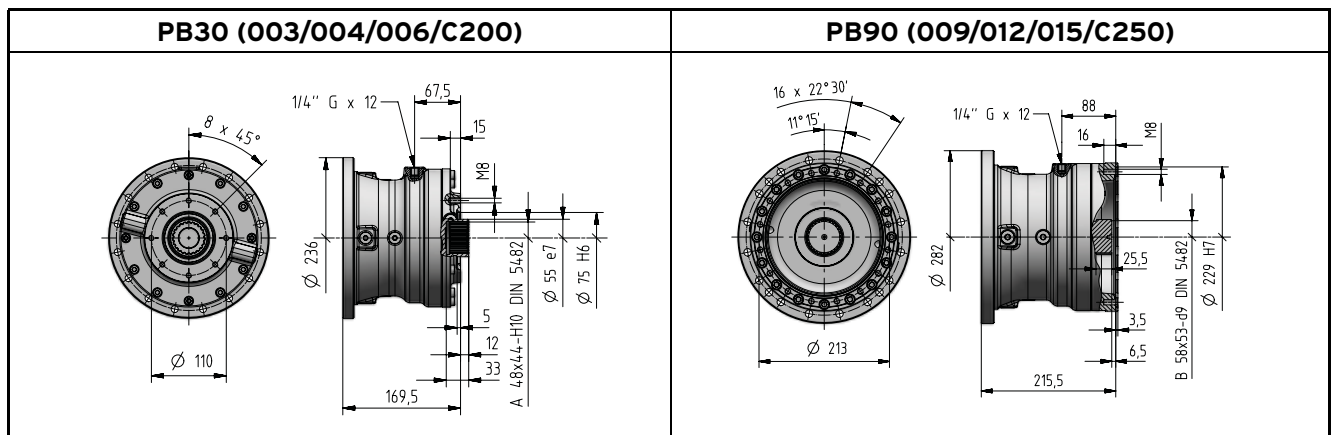
**Max back pressure allowed 0,5 bar.**

# 7 - Multi-disc parking brakes

## Dimensions



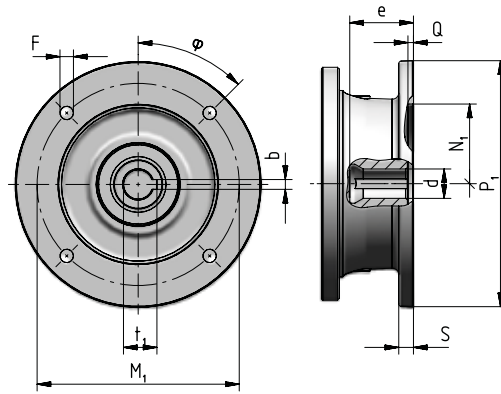
	1EL	2EL	3EL	4EL	2EB	3EB	4EB	Mass [kg]
<b>PB10a</b>		007A	007A...021A	007A...060A	007A	007A...021A	007A...060A	18
<b>PB10b</b>	007A	015A, 021A	030A...060A	085A...180A	015A	030A, 042A	085A, 125A	25



	1EL	2EL	3EL	4EL	2EB	3EB	4EB	Mass [kg]
<b>PB30</b>	007A	015A, 021A	030A...060A	085A...180A	015A	030A, 042A	085A, 125A	25
<b>PB90</b>	015A	030A, 042A	085A, 125A	250A	021A, 030A	060A, 085A	180A, 250A	53

# 8 - Motor adapters

## IEC Electric motor adapters



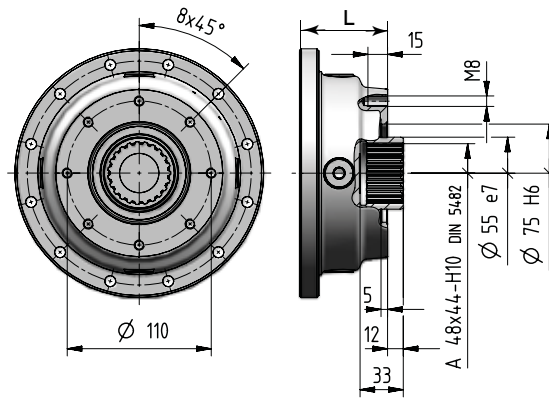
Motor size IEC	dxP	P Ø	S	d Ø	e max	b F9	t <sub>1</sub>	M <sub>1</sub>	F Ø		N1 Ø G7	Q	Code
71	14x160	160	-	14 F6	32	5	16,3	130	M8x16 (n.4)	45°	110	4,5	I14x160
80	19x200	200	12	19 F6	41,5	6	21,8	165	11 (n.4)	45°	130	4,5	I19x200
90	24x200	200	12	24 F6	52	8	27,3	165	11 (n.4)	45°	130	4,5	I24x200
100	28x250	250	14	28 F6	62	8	31,3	215	14 (n.4)	45°	180	5	I28x250
112	28x250	250	14	28 F6	62	8	31,3	215	14 (n.4)	45°	180	5	I28x250
132	38x300	300	14	38 F6	82	10	41,3	265	14 (n.4)	45°	230	5	I38x300
160	42x350	350	15	42 F6	113	12	45,3	300	18 (n.4)	45°	250	6	I42x350
180	48x350	350	15	48 F6	113	14	51,8	300	18 (n.4)	45°	250	6	I48x350
200	55x400	400	15	55 E6	113	16	59,3	350	18 (n.4)	45°	300	6	I55x400
225	60x450	450	18	60 E6	143	18	64,4	400	18 (n.8)	22,5°	350	6	I60x450
250	65x550	550	18	65 E6	142	18	69,4	500	18 (n.8)	22,5°	450	6	I65x550
280	75x550	550	18	75 E6	142	20	79,9	500	18 (n.8)	22,5°	450	6	I75x550

Motor size IEC	h														
	007A			015A			021A			030A			042A		
	2EL	3EL	4EL	2EL	3EL	4EL	2EL	3EL	4EL	2EL	3EL	4EL	2EL	3EL	4EL
71	52	52	52	-	52	52	-	52	52	-	-	52	-	-	52
80	72	72	72	-	72	72	-	72	72	-	-	72	-	-	72
90	72	72	72	-	72	72	-	72	72	-	-	72	-	-	72
100	82	82	82	103	82	82	103	82	82	-	103	82	-	103	82
112	82	82	82	103	82	82	103	82	82	-	103	82	-	103	82
132	102	102	102	120	102	102	120	102	102	133,5	120	102	133,5	120	102
160	135	135	135	153	135	135	153	135	135	159	153	135	159	153	135
180	135	135	135	153	135	135	153	135	135	159	153	135	159	153	135
200	-	-	-	153	-	-	153	-	-	159	153	-	159	153	-
225	-	-	-	-	-	-	-	-	-	189	-	-	189	-	-
250	-	-	-	-	-	-	-	-	-	189	-	-	189	-	-
280	-	-	-	-	-	-	-	-	-	189	-	-	189	-	-

Motor size IEC	h														
	060A			085A			125A			180A			250A		
	2EL	3EL	4EL	2EL	3EL	4EL	2EL	3EL	4EL	2EL	3EL	4EL	2EL	3EL	4EL
71	-	-	52	-	-	-	-	-	-	-	-	-	-	-	-
80	-	-	72	-	-	-	-	-	-	-	-	-	-	-	-
90	-	-	72	-	-	-	-	-	-	-	-	-	-	-	-
100	-	103	82	-	-	103	-	-	103	-	-	103	-	-	-
112	-	103	82	-	-	103	-	-	103	-	-	103	-	-	-
132	-	120	102	-	133,5	120	-	133,5	120	-	-	120	-	-	133,5
160	159	153	135	111	159	153	111	159	153	-	159	153	-	111	159
180	159	153	135	111	159	153	111	159	153	-	159	153	-	111	159
200	159	153	-	111	159	153	111	159	153	-	159	153	-	111	159
225	189	-	-	141	189	-	141	189	-	-	189	-	-	141	189
250	189	-	-	141	189	-	141	189	-	-	189	-	-	141	189
280	189	-	-	141	189	-	141	189	-	-	189	-	-	141	189

# 8 - Motor adapters

## Universal flange adapters

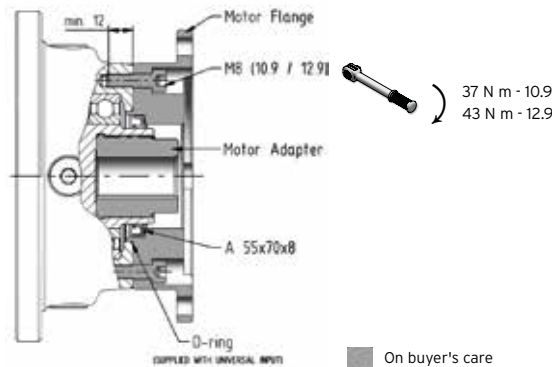


	007A			015A			021A			030A			042A		
	2EL	3EL	4EL	2EL	3EL	4EL	2EL	3EL	4EL	2EL	3EL	4EL	2EL	3EL	4EL
<b>U</b>	64	64	64	62	64	64	62	64	64	-	62	64	-	62	64

	060A			085A			125A			180A			250A		
	2EL	3EL	4EL	2EL	3EL	4EL	2EL	3EL	4EL	2EL	3EL	4EL	2EL	3EL	4EL
<b>U</b>	-	62	64	-	-	62	-	-	62	-	-	62	-	-	-

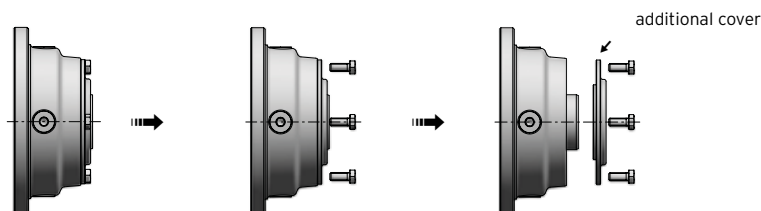
The universal input flange allows the customers to make their flanges and couplings suitable for the main motorization types. It's very important to observe the information shown in the drawing below to obtain a correct gear reducer oil sealing.



The universal input flange can be used for motors up to 1 000 Nm maximum torque. It must be checked if the total weight of the flange+motor and the distance of their center of gravity are compliant with the following diagram. In case of high vibrations or dynamic stress, please contact Rossi. Severe or fatal injury and damage to property may occur.



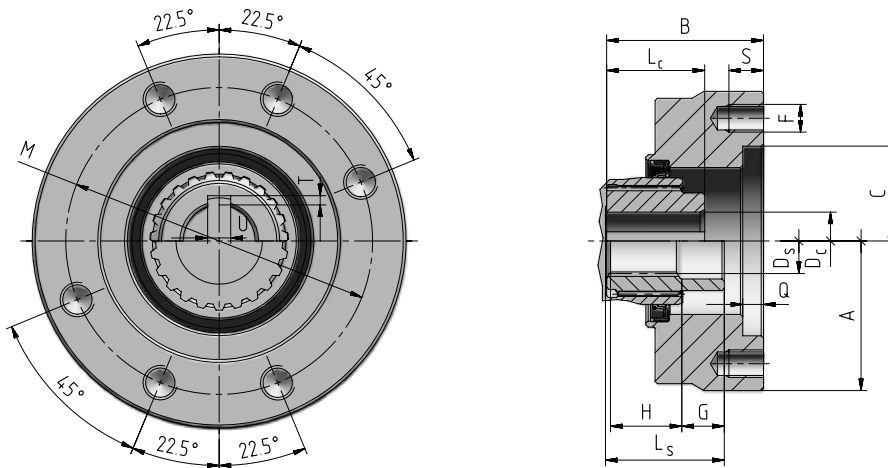
Gearboxes with "U" input (not "UN" and "UH") are supplied with an additional cover as shown below. When a flange made by customer have to be used, please remove it. Pay attention for gearboxes supplied with oil. Removing the cover oil may leak.





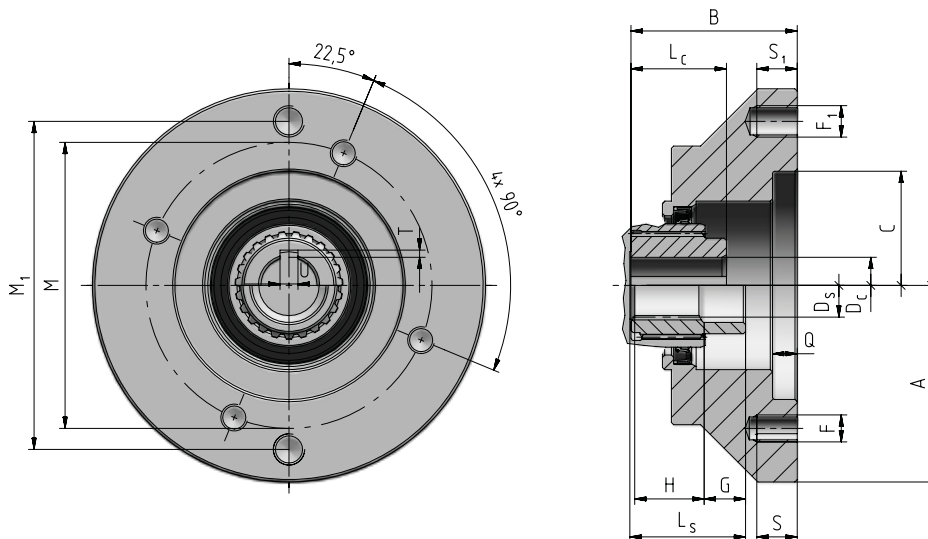
## 8 - Motor adapters

### Similar to SAE J744c (SAE - A) standards



A	B	C	D <sub>c</sub>	D <sub>s</sub>	F	G	H	L <sub>c</sub>	L <sub>s</sub>	S	Q	M	U	T	Code	
∅		G7 ∅	∅	∅												
130	56	82,55	25	E8	-	M12	-	-	42,5	-	15	9	106,4	8	3,2	UH SA1
130	56	82,55	-	1" 6B	M12	0	29	-	29	15	9	106,4	-	-	UH SA2	
130	68	82,55	-	12/24-14T	M12	19	32	-	51	15	9	106,4	-	-	UH SA4	
130	68	82,55	32	G7	-	M12	-	-	55,5	-	15	9	106,4	10	3,4	UH SA5
130	68	82,55	31,75	G6	-	M12	-	-	51	-	15	9	106,4	8	3,4	UH SA6
130	56	82,55	-	1"6B	M12	0	25	-	25	15	9	106,4	-	-	UH SA10	
130	68	82,55	25,4	E6	-	M12	-	-	53	-	15	9	106,4	6,38	3	UH SA11
130	68	82,55	31,75	G6	-	M12	-	-	56	-	15	9	106,4	8	3,8	UH SA12
130	68	82,55	25,4	E6	-	M12	-	-	58	-	15	9	106,4	6,38	3	UH SA13

### Similar to SAE J744c (SAE - B) standards

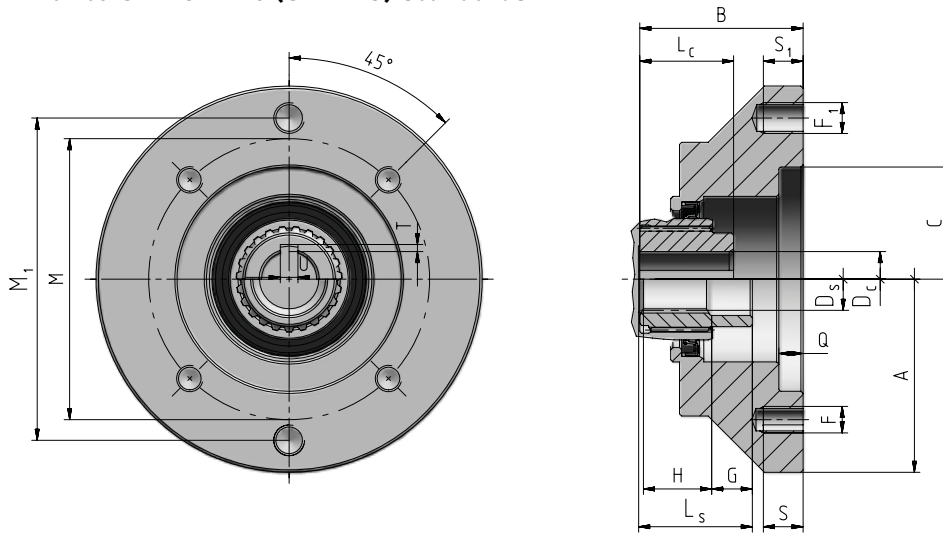


A	B	C	D <sub>c</sub>	D <sub>s</sub>	F	F <sub>1</sub>	G	H	L <sub>c</sub>	L <sub>s</sub>	S	S <sub>1</sub>	Q	M	M <sub>1</sub>	U	T	Code	
∅		H6 ∅	∅	∅															
175	77	101,6	-	16/32-13T	M12	M14	-	31	-	67	18	18	11	127,3	146	-	-	-	UH SB3
175	77	101,6	-	16/32-13T	M12	M14	-	31	-	47	18	18	11	127,3	146	-	-	-	UH SB11
175	69	101,6	31,75	G6	-	M12	-	-	56	-	18	18	11	127,3	146	8	3,8	-	UH SB12
175	69	101,6	25,4	E6	-	M12	-	-	58	-	18	18	11	127,3	146	6,38	3	-	UH SB13
175	77	101,6	31,75	G6	-	M12	-	-	56	-	18	18	11	127,3	146	8	3,8	-	UH SB14



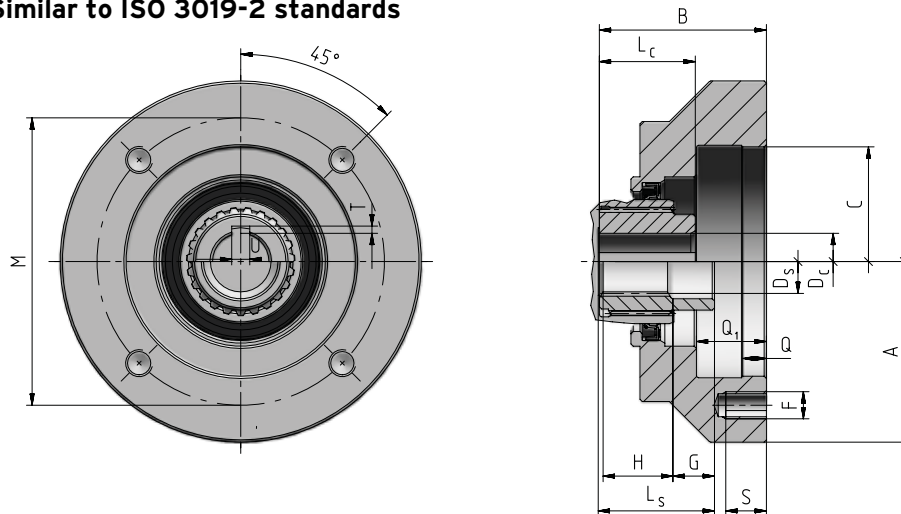
## 8 - Motor adapters

Similar to SAE J744c (SAE - C) standards



A	B	C	D <sub>c</sub>	D <sub>s</sub>	F	F <sub>1</sub>	G	H	L <sub>c</sub>	L <sub>s</sub>	S	S <sub>1</sub>	Q	M	M <sub>1</sub>	U	T	Code
∅		G7 ∅	∅	∅														
207	60,5	127	-	12/24-14T	M14	M16	19	32	-	51	15	15	17,5	162	181	-	-	UH SC4
207	68	127	-	12/24-17T	M14	M16	-	30	-	30	15	15	17,5	162	181	-	-	UH SC5
207	60,5	127	31,75 G6	-	M14	M16	-	-	51	-	15	15	17,5	162	181	8	3,8	UH SC6

Similar to ISO 3019-2 standards



A	B	C	D <sub>c</sub>	D <sub>s</sub>	F	G	H	L <sub>c</sub>	L <sub>s</sub>	S	Q	Q <sub>1</sub>	M	U	T	Code
∅		∅	∅	DIN 5480 ∅												
130	61	80 H7	20 E6	-	M8	-	-	40	-	20	7	20	100	6	2,8	UH IA1
130	61	80 H7	25 E6	-	M8	-	-	40	-	20	7	20	100	8	3,3	UH IA2
130	61	80 H7	-	20x1,25x14	M8	11	24	-	40	20	7	20	100	-	-	UH IA3
130	61	80 H7	-	25x1,25x18	M8	5	24	-	40	20	7	20	100	-	-	UH IA4
149	63	100 H6	-	30x2x14	M10	-	35	-	35	15	9	25	125	-	-	UH IB1
149	63	100 H6	25 E6	-	M10	-	-	50	-	15	9	25	125	8	3,3	UH IB3
149	75,5	100 H6	25 E6	-	M10	-	-	50	-	15	9	25	125	8	3,3	UH IB6
179	74	125 H6	-	30x2x14	M12	-	35	-	35	25	8	31,5	160	-	-	UH IC1
179	74	125 H6	-	35x2x16	M12	-	40	-	40	25	8	31,5	160	-	-	UH IC2
184	115	125 H6	40 H6	-	M12	-	-	78	-	18	10	51	160	12	3,3	UH IC3
206	74	140 H7	-	35x2x16	M12	-	40	-	40	15	11	29	180	-	-	UH ID1
206	78,5	140 H7	-	40x2x18	M12	-	37,5	-	37,5	15	11	29	180	-	-	UH ID2
206	108	140 H7	40 H6	-	M12	-	-	78	-	15	11	29	180	12	3,3	UH ID4
238	91	160 G7	-	45x2x21	M16	-	42	-	42	24	12	40	200	-	-	UH IE1
257	96	180 H7	-	50x2x24	M16	-	44	-	44	26	11	40	224	-	-	UH IF1

## 9 - Further options

EP Slewing drives combined with other gearboxes from Rossi product portfolio to allow for optimized performances on a broad spectrum of application needs.

### EP Slewing Drives combined with worm gear reducers and gearmotors (catalog A04)



	007A	015A	021A	030A	042A	060A	085A	125A	180A	250A	Ratio range
2EL	UNIV.+KIT			IEC+B5				-	-		125÷2 250
3EL	UNIV.+KIT					IEC+B5					500÷12 500
4EL	UNIV.+KIT								IEC+B5		1 800÷31 500

### EP Slewing Drives combined with coaxial gear reducers and gearmotors (catalog E04)



	007A	015A	021A	030A	042A	060A	085A	125A	180A	250A	Ratio range
2EL	IEC+B5										90÷1 250
3EL	IEC+B5										355÷7 100
4EL	IEC+B5										1 250÷20 000

### EP Slewing Drives combined with helical and bevel helical gear reducers and gearmotors (catalog G)



	007A	015A	021A	030A	042A	060A	085A	125A	180A	250A	Ratio range
2EL	IEC+B5						EP KIT				71÷8 000
3EL	IEC+B5										250÷20 000
4EL	IEC+B5										1 000÷35 000

UNIV.+KIT  
IEC+B5  
EP KIT

EP with Universal flange adaptor and additional Kit to combine with A04 R/MR, only for sizes from 32 to 100  
EP with IEC electric motor adapter, A04/E04 with B5 flange.  
EP with specific input to combine with G R/MR

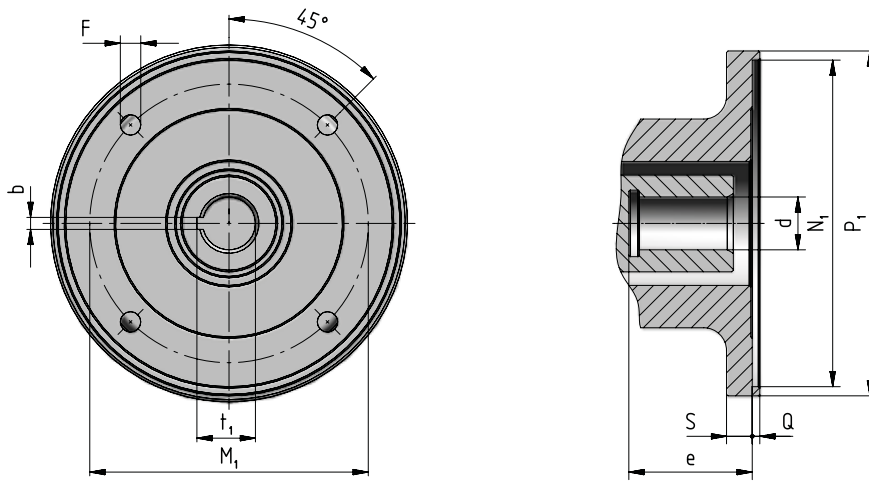
### Example: Double input drive (Main + Auxiliary) with combined Planetary and Bevel gears



## 9 - Further options

### Other input designs available

#### NEMA C-Face electric motor adapter



NEMA c-face	P <sub>1</sub> Ø	S	d Ø E6	e	b 0 / +0,050	t <sub>1</sub> 0 / +0,100	M <sub>1</sub>	F	N <sub>1</sub> Ø H7	Q	Code
143/145 TC	168	9	22,23 (7/8")	50	4,78 (3/16")	24,4	149,22 (5-7/8")	10,5	114,3 (4-1/2")	5	UN N14
182/184 TC	228	16	28,58 (1-1/8")	71	6,35 (1/4")	31,5	184,15 (7-1/4")	13,5	215,9 (8-1/2")	5	UN N18
213/215 TC	228	17	34,93 (1-3/8")	81,5	7,94 (5/16")	38,7	184,15 (7-1/4")	13,5	215,9 (8-1/2")	5	UN N21
254/256 TC	228	17	41,28 (1-5/8")	97,5	9,53 (3/8")	45,6	184,15 (7-1/4")	13,5	215,9 (8-1/2")	5	UN N25
284/286 TC	277	17	47,63 (1-7/8")	113	12,7 (1/2")	53,2	228,6 (9")	13,5	266,7 (10-1/2")	5	UN N28

#### Flanged housing, with or without bell housing and coupling

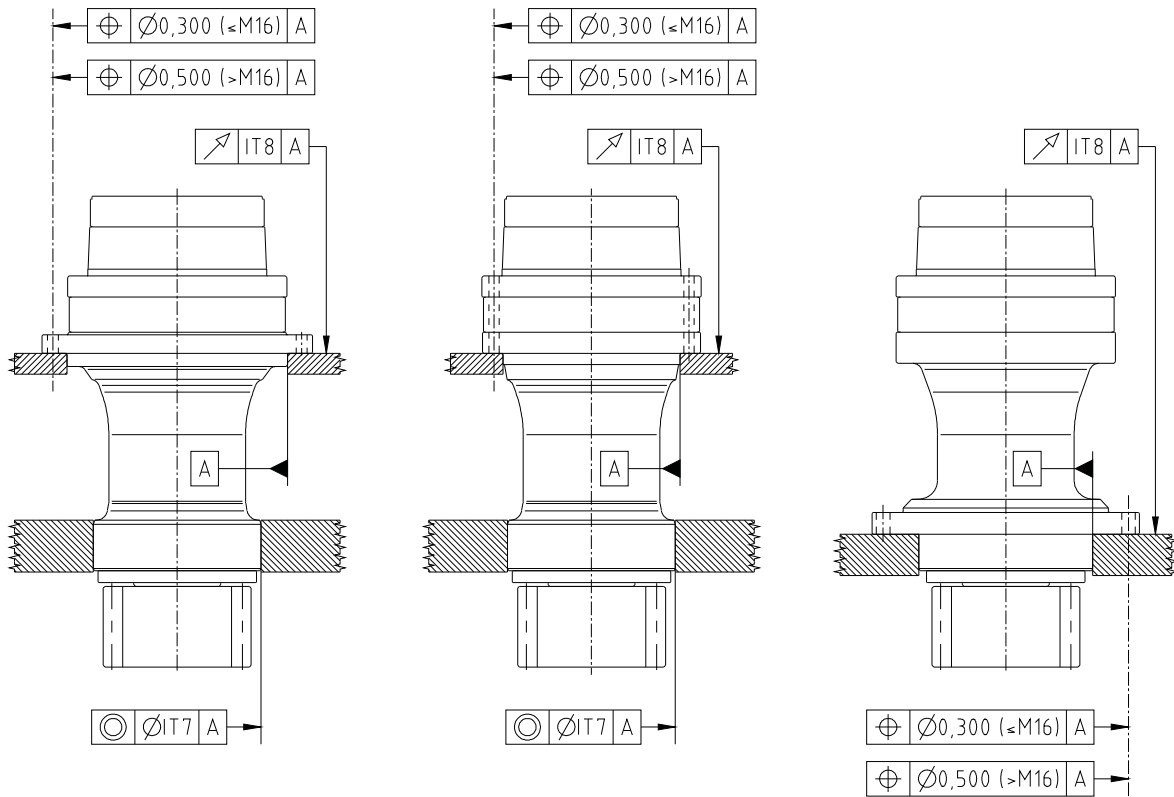


#### Wheel flange at input for clarifier / thickener lower drive



# 10 - Installation

To ensure proper functioning and optimum transfer of power between the gear reducer and the driven gear, the gear reducer requires a rigid connection construction that is resistant to torsion. The form and position tolerances listed below must be met.



# 11 - Lubrication

Gear pairs are oil-bath lubricated, bearings are either oil bathed or splashed or lubricated for life with grease. For some mounting positions with continuous duty at high speed, an expansion tank could be required: consult us. **Sizes 007A ... 021A:** gear reducers are supplied **filled with PAO synthetic oil** having ISO viscosity grade 320 cSt (at 40° C). **Important!** Verify the mounting position, keeping in mind that if gear reducer is installed in a mounting position differing from the one stated on name plate, it could need the addition of the difference between the two lubricant quantities. In any case, always check the correct oil quantities through the level plug. **Sizes 030A ... 250A:** gear reducers are supplied **without oil**; before putting into service, fill to the specified level with synthetic or mineral oil (see table below).

The main lubricant manufacturers as well as the ISO viscosity grade to be used are stated in the following tables. Use only lubricants with **EP** (extreme pressure) **additives**. In case of mineral lubricant choice, follow the instructions about the service factor (EP catalog).

Manufacturer	PAO synthetic oil ISO VG 320	Mineral oil ISO VG 150...460
ADDINOL	Eco Gear S	Eco Gear M
AGIP	Blasia SX	Blasia
ARAL	Degol PAS	Degol BG
BP	Energyn EPX	Energol GR XP
CASTROL	Alphasyn T	Alpha SP
KLÜBER	Klübersynth GEM4	Klüberoil GEM1
MOBIL	Mobil SHC Gear	Mobilgear 600 XP
SHELL	Omala S4 GX	Omala S2 G

ISO viscosity grade  
Mean kinematic viscosity [cSt] at 40 °C

Speed $n_2$ min <sup>-1</sup>	Ambient temperature [°C] mineral oil	
	-10 ÷ 20	10 ÷ 40
<b>&gt;140</b>	150	220
<b>140 ÷ 2,0</b>	220	320
<b>&lt; 2,0</b>	320	460

TOTAL	Carter SH	Carter EP
-------	-----------	-----------

Consider the lubrication interval stated in the table for all re-lubrication operations, emptying the gear reducers from the exhausted oil, executing a wash with clean oil of the same type to be used also for the re-filling of the gear reducer up to level.

Use only lubricants of the same type stated on lubrication nameplate.

Oil temperature [°C]	Oil-change interval [h]	
	synthetic oil	mineral oil
≤ 65	12 500	5 600
65 ÷ 80	10 000	2 800
80 ÷ 95	6 300	1 400

Oil-change intervals assume pollution-free surroundings. When heavy overloads are present, halve the values.

Independently from running times, change the oil:

every 2 ÷ 4 years, for synthetic oil;

every 1 ÷ 2 years, for mineral oil;

Never mix different makes of synthetic oil; if oil-change involves switching to a type different from that used hitherto, then give the gear reducer a through clean-out. Polyglycol basis synthetic lubricants must not be used.

Output seals and bearing are lubricated with grease. Re-grease every 5 600 h or once a year by using the greaser provided.

#### **Bearings with independent lubrication**

Usually the bearings are automatically and continuously lubricated (oil-bathed or splashed) with the same lubricant of gear reducer. However for certain gear reducer in vertical mounting positions the upper bearings have independent lubrication, with special grease for long life lubrication in absence of external pollution.

#### **Multi-disc parking brakes lubrication**

See chapter 7 Multi-disc parking brakes.

### **List of modifications of Edition 2581.01.03**

page 36      modified G dimension for size 250A



# 12 - Application data template



**Pinion / Slew Ring data:**

Centre distance (Pinion - Slew Ring) a: \_\_\_\_\_ [mm]

Pinion One piece solid   
 Fitted on splined shaft

Slew Ring (Ring Bearing) Internal tothing   
 External tothing

For information only

**m** modulus \_\_\_\_\_ [mm]

**m** modulus \_\_\_\_\_ [mm]

**Z<sub>1</sub>** N°. of teeth \_\_\_\_\_ [-]

**Z<sub>2</sub>** N°. of teeth \_\_\_\_\_ [-]

**x·m** profile correction \_\_\_\_\_ [mm]

**x·m** profile correction \_\_\_\_\_ [mm]

**Profile modification** yes  no

**b<sub>2</sub>** facewidth \_\_\_\_\_ [mm]

**b<sub>1</sub>** facewidth \_\_\_\_\_ [mm]

**Material** \_\_\_\_\_

**Material** high alloy steel tempered   
 high alloy steel case hardened

**Heat treatment** \_\_\_\_\_

other \_\_\_\_\_

**Hardness** \_\_\_\_\_

**Hardness** \_\_\_\_\_

**Electric Motor:**

Power: \_\_\_\_\_ [kW]; Voltage: \_\_\_\_\_ [V]; Frequency: \_\_\_\_\_ [Hz]; N° poles: \_\_\_\_\_ [-];

Frequency Control device: yes  no

Motor brake: yes  no

If equipped with brake: Static braking torque: \_\_\_\_\_ [N m]

**Parking Brake:** yes  no

If parking brake required: Static braking torque: \_\_\_\_\_ [N m]

**Hydraulic Motor:**

Brand and type: \_\_\_\_\_

Displacement: \_\_\_\_\_ [cc]; Max pressure: \_\_\_\_\_ [MPa]; Working pressure: \_\_\_\_\_ [MPa];

Motor interface dimensions: \_\_\_\_\_

Notes and Remarks: \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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