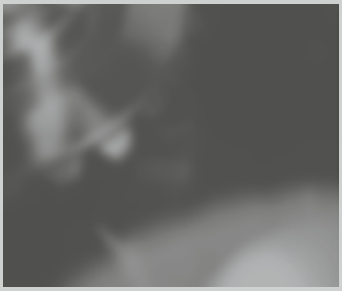
VOGEL
ANTRIEBSTECHNIK

Low backlash planetary gearboxes



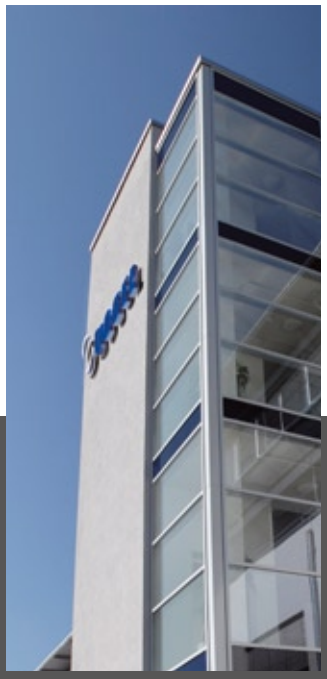
WELCOME TO VOGEL ANTRIEBSTECHNIK

We thank you for your interest in our low backlash planetary gearboxes. VOGEL Antriebstechnik has been highly regarded for more than 60 years offering a wide variety of products to a broad range of business sectors with applications that require innovative, dependable gearbox manufacturing technology.
We develop high quality products that are very convincing with their precision, long service life and a high power density. We take advantage of a continuous dialogue with our customers and of constant communication with research and scientific sources.

Our primary focus is to supply you, our customer and partner, with the most cost-effective and efficient product solutions for your needs, in order to safeguard your viability in future markets.

Allow our products and services to win you over.

CONTENTS



FUTURE IN MOTION

Continuity and development are mutually dependent cornerstones of our corporate tradition. For the past 60 years we have been constantly committed to products and markets with maximum quality consciousness. As a mid-sized, family owned company this sense of continuity is highly important to us; the executive management in its third generation accepts personal responsibility for this.

On the other hand we actively determine the future of gearbox manufacturing through our technological developments, thus ensuring market capability for our customers. Because the only valid constant is change.

PARTNERSHIP FOR TECHNOLOGY

Efficiency and safety from initial discussions of a project to the finished product and beyond – that is the target of our offensive with respect to quality and service management. We initially carry out a thorough, detailed consultation individually in accordance with the requirements of your application. Once the ideal solution is decided upon, we produce flexibly and on schedule, precisely in accordance with your requirements.

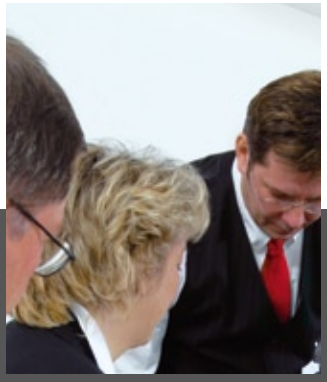
Our customers rightly expect smooth and uninterrupted manufacturing processes. You can count on an almost maintenance-free product over the entire life cycle when using VOGEL gearboxes.

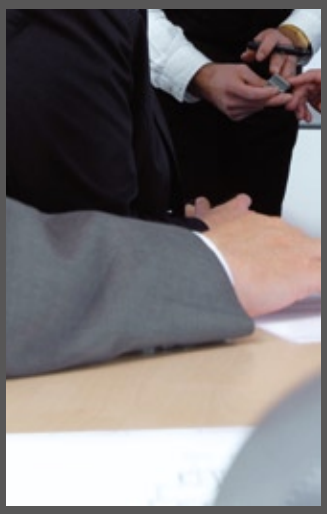
Should you still require our support at some stage, there is a world-wide service network available to assist you as soon as possible with a replacement gearbox or an on-site repair. To keep your production line running!

COMPETENCE IN THE MARKET

VOGEL Antriebstechnik is found everywhere where machinery is built, in all sectors and at all sites. Wherever you manufacture, we will be at your side.

Internationally, our customers are looked after by our distribution and service partner Lenze. That means we have a presence in the important markets and you benefit globally from direct access to our expertise and product ranges.





INDUSTRY SOLUTIONS

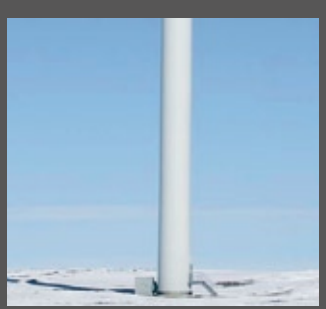
With VOGEL you stay flexible. For example our modular gearbox system offers you the widest variety of combination possibilities. On the basis of these product standards we can also offer you the desired modifications needed for your field of activity. It goes without saying that such services are cost-optimised and in accordance with your specifications. For unusual requirements we offer entirely individual solutions. In such cases we assess application conditions in cooperation with you, advise you reliably and construct special gearboxes for you, including gear manufacturing.

SUCCESSFUL APPLICATIONS

Our gearboxes have a broad and constantly increasing range of applications.

- Drive and automation engineering
- Robotics and handling
- Packaging machinery
- Plastics and film processing machines
- Printing machinery
- Paper processing
- Machine tools
- The food and pharmaceutical industry

and many more



PRODUCT RANGE

The range of VOGEL Antriebstechnik offers nominal output torques of between 10 Nm and 26000 Nm. Our range of standard solutions extends from classic machinery gearboxes, through compact technology for coaxial and right-angle applications, to our own high-precision servo products. Always in mind: dynamic development of all existing series with the aim of creating optimum drives for our customers, technologically and thus economically.

Low backlash planetary gearboxes

Ratio:
3 – 100
Output torque:
15 – 1000 Nm

- Universal application with especially compact design, symmetrical construction and an adaptable motor connection
- Less noise generated
- For high acceleration torques

Servo-bevel gearboxes

Ratio:
3 – 10
Output torque:
40 – 150 Nm

- For the toughest demands in dynamics
- Flexible
- Robust and durable
- For any mounting position due to flexible lubrication system

Bevel helical gearboxes

Ratio:
6 – 48
Output torque:
100 – 13000 Nm

- In eight sizes – universal application
- Easy handling
- Quiet running
- High power density
- Available in different types

Spiral bevel gearboxes

Ratio:
0,5 – 6
Output torque:
10 – 8500 Nm

- Universal application
- Easy to install and adapt
- Designed with the machine in mind
- Efficient and reliable
- Available in different types

All VOGEL gearboxes can be combined with each other. In this way you benefit from the advantages of various gearbox types.

Phase shifter gearboxes

Ratio:
1 – 3
Output torque:
50 – 2500 Nm

- Unbeatable for the printing industry
- Highest levels of reliability and precision
- For maximum flexibility
- Also available as a combination with a spiral bevel stage

Planetary gearboxes

Ratio:
3,4 – 245
Output torque:
bis 26000 Nm

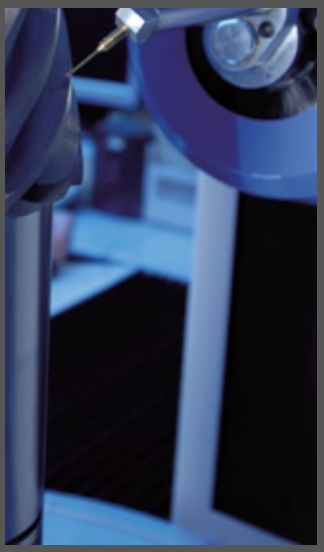
- For higher torque requirements with a compact design
- Compact drive technology for coaxial applications requiring especially high power densities
- Smooth-running even at high speeds

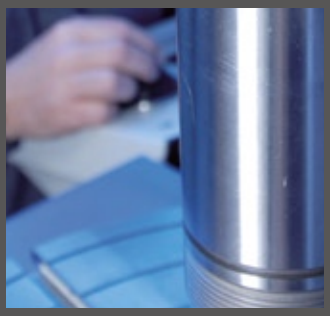
Customer-specific solutions

- Special spiral bevel gearboxes
- Special solution for mobile drive technology
- Special planetary gearboxes for high-speed applications
- Gearing technology

and many more

VOGEL ANTRIEBSTECHNIK





QUALITY

Our internal high standards of quality often far exceed those commonly found in the industry. Because of this extensive and consistent quality control, we are in a position to offer you especially reliable, low-maintenance and durable gearboxes, a factor confirmed again and again in dialogue with our long-term customers.
Our extensive manufacturing expertise within development and production, guarantees noise- and torque-optimised gearing technology at the highest standards. Upon request we can also supply inspection reports or certification for any gearbox, e.g. with respect to run-out error or backlash.


ZERTIFIKAT

VOGEL


IQNet

CERTIFICATE

In this way we ensure for you:

- Highest levels of precision and dynamics
- Long product life
- Maximum flexibility
- Maximum environmental compatibility
- Minimal effort for the complete life cycle
- Unbeatable efficiency
- Excellent energy efficiency

Quality Management

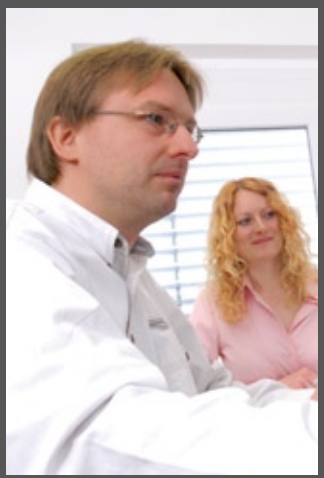
ISO 9001:2000

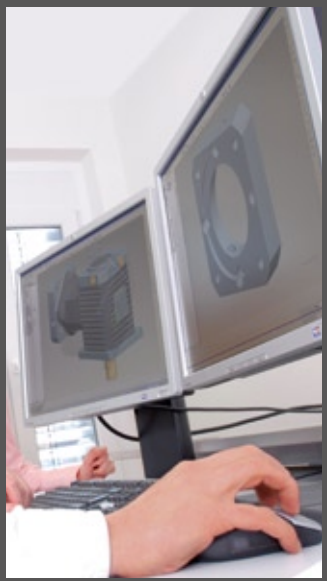
CONSULTATION

In every phase of collaboration with VOGEL you benefit from our unique sector-specific expertise, gathered over decades in close cooperation with our national and international partners. We develop concepts together with you for the cost-effective solutions of your application. In this respect we initially analyse and determine the most important environmental parameters such as application conditions, loads, duration of operation, speeds, motion sequences etc. in order to find the best product solution.

SERVICE

Together with our service and distribution partners we make sure that we are there when you need us, whether for supply of parts, repairs and service or technical support, both on a national scale and internationally.





COMMUNICATION

Up-to-date and comprehensive product information, service manuals, catalogues, technical documentation, contact data and quality documents are available to you in a variety of languages via our website. In addition we can provide you with the relevant information on CD-ROM.
For technical data exchange we offer over 100 different interfaces and guarantee support for all globally current CAD software programmes, thus shortening development cycles.

TRAINING

Upon request you can take advantage of individual product and service training as well as general educational courses on drive and automation technology. In addition, we are also always pleased to inform you of intelligent maintenance strategies that will optimise your manufacturing performance. Simply contact our service team.

SERVICES

PRECISION

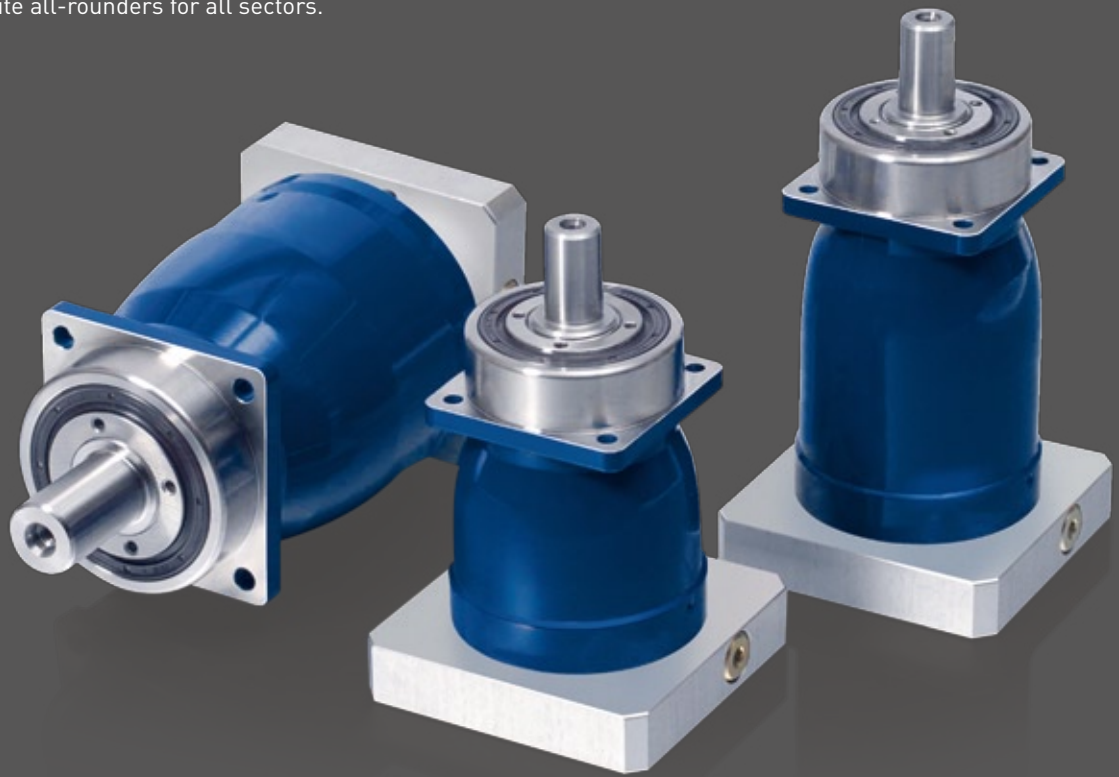
Maximum precision in every detail – that is what sets all VOGEL gearboxes apart. From optimised product geometry and highly precise, fine ground gear teeth to careful mounting. With improved design and minimised tolerances we achieve a remarkably high torsional and tilting rigidity with minimal noise emission and unbeatably quiet running.

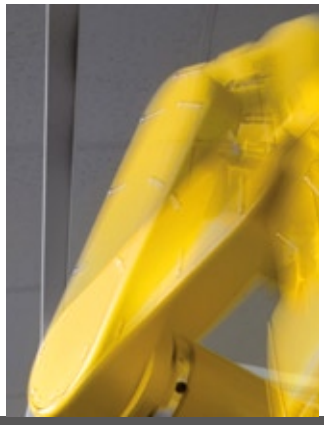
FLEXIBILITY

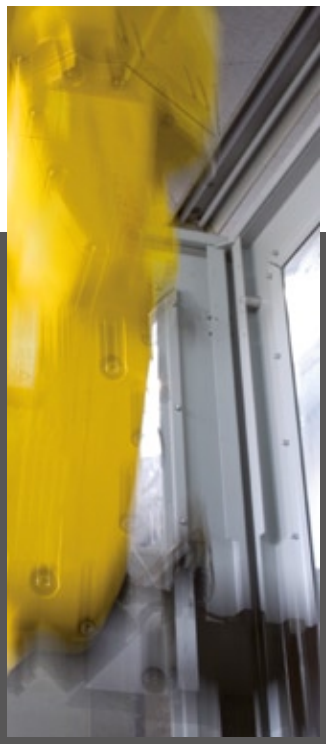
Thanks to their practical design and intelligent construction, our low backlash planetary gearboxes can be used variably across a very wide spectrum of applications. With a large selection of motor adapters, multiple drive combinations are possible. A large ratio range with fine increments renders them absolute all-rounders for all sectors.

COST-EFFICIENCY

A high level of efficiency for maximum cost-effectiveness. With optimised concentration on the smallest possible shaft diameter, we achieve efficient results without friction losses and therefore without loss of energy. Economically, VOGEL also convinces with extremely simple motor mounting – thus saving time, which in turn decisively aids your manufacturing processes.







DURABILITY

We place particular emphasis on high quality for all materials, components and parts used. In doing so we are able to guarantee maintenance-free, reliable operation as well as maximum service life even under very high operational stress. Optimal lubrication of gearboxes is guaranteed.

COMPACTNESS

A compact design, short overall lengths – VOGEL Antriebstechnik offers performance and efficiency on a highly compact scale. This is made possible in no small way by helical gear teeth, allowing greater torques with uniform and low-noise drive motion.

DYNAMICS

With strengthened bearings our gearboxes are able to withstand high forces – even with high speeds and in extreme cases when overloaded. This is possible by the implementation of full needle bearings. Low gearbox weight, combined with compact construction offers enhanced inertia values – further proof of the dynamics of our gearboxes.

PROTECTION

Our products are dust-tight and water-jet proof to IP65. We also offer you further protection features on an optional basis.

The planetary gearbox consists of the coaxial sun gear, planet carrier and outer gear sub-assemblies, and is combined with the planet gears rotating at constant centres about the planet carrier. The input is from the sun gear. The drive motion to the planet carrier is via the planet gears. The rolling contact of the planet gears with the outer gear provides the appropriate ratio. Multi-stage gearboxes are available by connecting the individual stages in sequence. Within the gear assembly the individual stages are sized to their torque requirement.

NEW

MPR (N) from page 22

	Gear stages			1					2											
	Ratio	i		3	4	5	7	10	12	16	20	25	28	35	40	50	70	100		
MPR 050	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	32	44	44	44	35	32	44	44	44	44	44	44	44	44	35		
	Max. input speed	$n_{1maxzul}$	min^{-1}	6000					6000											
	Max. backlash*	j	arcmin	standard ≤ 4 / reduced ≤ 2					standard ≤ 6 / reduced ≤ 4											
MPR 100	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	90	120	120	120	90	90	120	120	120	120	120	120	120	120	90		
	Max. input speed	$n_{1maxzul}$	min^{-1}	6000					6000											
	Max. backlash*	j	arcmin	standard ≤ 4 / reduced ≤ 2					standard ≤ 6 / reduced ≤ 4											
MPR 200	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	230	330	330	300	235	230	330	330	330	330	330	330	330	330	235		
	Max. input speed	$n_{1maxzul}$	min^{-1}	4500					4500											
	Max. backlash*	j	arcmin	standard ≤ 3 / reduced ≤ 1					standard ≤ 5 / reduced ≤ 3											
MPR 300	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	400	660	660	600	480	400	660	660	660	660	660	660	660	600	480		
	Max. input speed	$n_{1maxzul}$	min^{-1}	4000					4000											
	Max. backlash*	j	arcmin	standard ≤ 3 / reduced ≤ 1					standard ≤ 5 / reduced ≤ 3											

MPR (N) page 25 and from page 32

	Gear stages			1					2											
	Ratio	i		3	4	5	7	10	12	16	20	28	35	50	70	100				
MPR 04	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	880	1100	1100	1100	880	1100	1100	1100	1100	1100	1100	1100	880				
	Max. input speed	$n_{1maxzul}$	min^{-1}	4000					4000											
	Max. backlash*	j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5											
MPR 05	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	1500	1900	1900	1900	1500	1900	1900	1900	1900	1900	1900	1900	1500				
	Max. input speed	$n_{1maxzul}$	min^{-1}	3500					3500											
	Max. backlash*	j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5											

* measured with 2% nominal torque on output shaft

MPG from page 38

	Gear stages			1					2							
	Ratio	i		**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**28**	**35**	**50**	**70**	**100**
MPG 00	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	32	40	40	40	32	40	40	40	40	40	40	40	32
	Max. input speed	$n_{1maxzul}$	min^{-1}	8000					8000							
	Max. backlash*	j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5							
MPG 01	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	80	100	100	100	80	100	100	100	100	100	100	100	80
	Max. input speed	$n_{1maxzul}$	min^{-1}	6000					6000							
	Max. backlash*	j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5							
MPG 02	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	200	250	250	250	200	250	250	250	250	250	250	250	200
	Max. input speed	$n_{1maxzul}$	min^{-1}	4800					4800							
	Max. backlash*	j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5							
MPG 03	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	-	500	500	500	400	500	500	500	500	500	500	500	400
	Max. input speed	$n_{1maxzul}$	min^{-1}	4500					4500							
	Max. backlash*	j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5							
MPG 04	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	-	1100	1100	1100	880	1100	1100	1100	1100	1100	1100	1100	880
	Max. input speed	$n_{1maxzul}$	min^{-1}	4000					4000							
	Max. backlash*	j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5							
MPG 05	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	-	1900	1900	1900	1500	1900	1900	1900	1900	1900	1900	1900	1500
	Max. input speed	$n_{1maxzul}$	min^{-1}	3500					3500							
	Max. backlash*	j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5							

MPV from page 50

	Gear stages			1					2							
	Ratio	i		**3**	**4**	**5**	**7**	**10**	**12**	**16**	**20**	**28**	**35**	**50**	**70**	**100**
MPV 00	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	32	40	40	40	32	40	40	40	40	40	40	40	32
	Max. input speed	$n_{1maxzul}$	min^{-1}	8000					8000							
	Max. backlash*	j	arcmin	≤ 10					≤ 15							
MPV 01	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	80	100	100	100	80	100	100	100	100	100	100	100	80
	Max. input speed	$n_{1maxzul}$	min^{-1}	6000					6000							
	Max. backlash*	j	arcmin	≤ 10					≤ 15							
MPV 02	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	200	250	250	250	200	250	250	250	250	250	250	250	200
	Max. input speed	$n_{1maxzul}$	min^{-1}	4800					4800							
	Max. backlash*	j	arcmin	≤ 10					≤ 15							
MPV 03	Max. acceleration torque (max. 1000 cycles per hour)	T_{2nzul}	Nm	400	500	500	500	400	500	500	500	500	500	500	500	400
	Max. input speed	$n_{1maxzul}$	min^{-1}	4500					4500							
	Max. backlash*	j	arcmin	≤ 10					≤ 15							

* measured with 2% nominal torque on output shaft

DIMENSIONING AND SELECTION

Investigating a gearbox to determine suitability for an application can be carried out by comparison of maximum possible motor torques and gearbox data. In this case the applications are differentiated according to EN 60034-1 in continuous operation (S1) and cyclic operation (S4/S5) operating modes.
For cyclic operation, the maximum motor acceleration torque is used. For continuous operation the nominal motor torque is taken into consideration. If the maximum possible motor torque exceeds permissible values for the required gearbox, a recalculation involving torques actually required by the application must be carried out.

Mounting advice for continuous operation S1

All specifications are valid for the following ambient conditions:

- No thermal load of gearbox by the motor
- Mounting plate size / square = 2 x gearbox size
- Mounting plate material = steel
- Unobstructed thermal convection / no housing encloses gearbox
- Ambient temperature = maximum +30° C

Designations and units

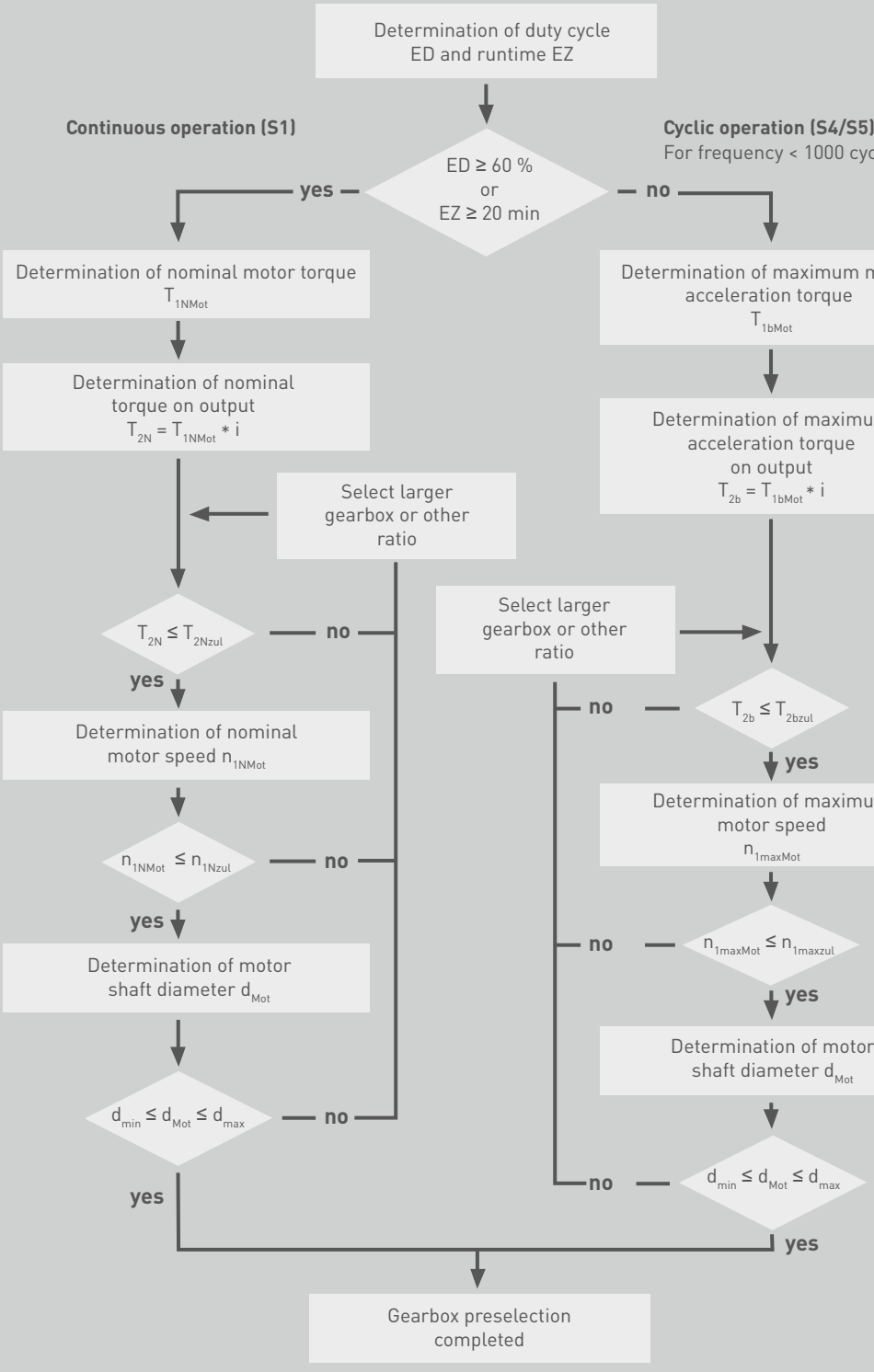
Designation	Unit	Symbol
Rigidity	Nm/arcmin	C
Duty cycle	%	ED
Runtime	min	EZ
Load	N	F
Dynamics factor	-	k
Ratio	-	i
Backlash	arcmin	j
Inertia	$kgcm^2$	J
Factor for bearing calculation	-	KL
Factor for bearing calculation	-	f
Life time	h	L_{10h}
Running noise	dB(A)	L_{PA}
Mass	kg	m
Tilting moment	Nm	MK
Speed	min^{-1}	n

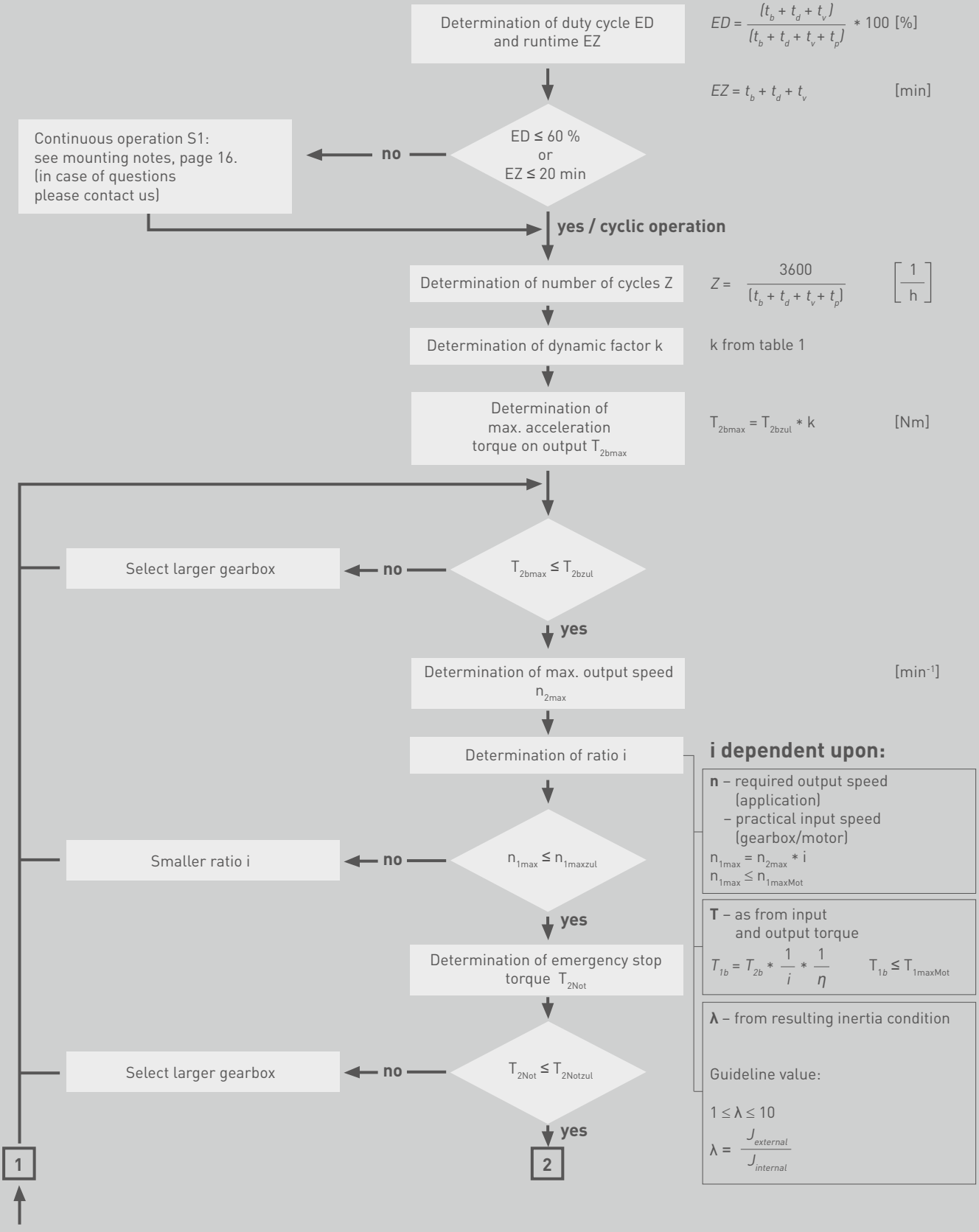
Designation	Unit	Symbol
Factor for bearing calculation	-	p
Efficiency	%	η
Time	s	t
Torque	Nm	T
Distance of lateral force to shaft collar	mm	x
Distance of axial force to gearbox centre	mm	y
Distance for bearing calculation	mm	a
No. of cycles	1/h	Z
Screw clamping torque	Nm	MA
Length	mm	L,l
Diameter	mm	D, d

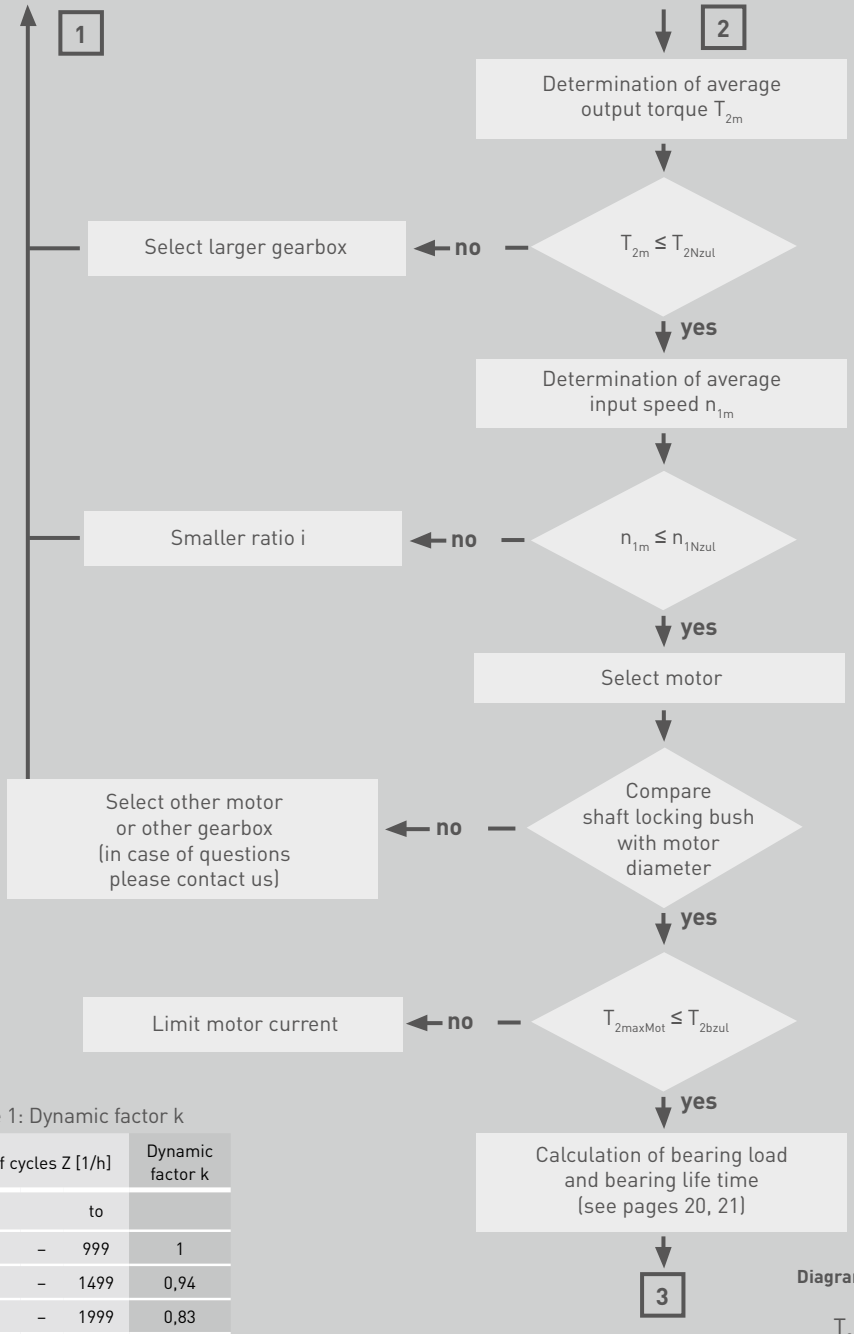
Designation	Indizes
Permissible values	zul
Input	1
Output	2
Axial	a
Acceleration	b
Hours	h
Average	m
Minimum	min
Maximum	max
Nominal	N
Emergency stop	Not
Radial	r
Motor	Mot
Output shaft	W
Output bearing	L

GEARBOX PRESELECTION

Gearbox preselection cannot be a substitute for a detailed gearbox selection.




Determination of duty cycle ED and runtime EZ
$ED = \frac{(t_b + t_d + t_v)}{(t_b + t_d + t_v + t_p)} * 100$ [%]
$EZ = t_b + t_d + t_v$ [min]
ED ≤ 60 % or EZ ≤ 20 min
no
Continuous operation S1: see mounting notes, page 16. (in case of questions please contact us)
yes / cyclic operation
Determination of number of cycles Z
$Z = \frac{3600}{(t_b + t_d + t_v + t_p)}$ $\left[\frac{1}{h}\right]$
Determination of dynamic factor k
k from table 1
Determination of max. acceleration torque on output T_{2bmax}
$T_{2bmax} = T_{2bzul} * k$ [Nm]
$T_{2bmax} \leq T_{2bzul}$
no
Select larger gearbox
yes
Determination of max. output speed n_{2max}
[min-1]
Determination of ratio i
i dependent upon:
n – required output speed (application)
– practical input speed (gearbox/motor)
$n_{1max} = n_{2max} * i$
$n_{1max} \leq n_{1maxMot}$
$n_{1max} \leq n_{1maxzul}$
no
Smaller ratio i
yes
T – as from input and output torque
$T_{1b} = T_{2b} * \frac{1}{i} * \frac{1}{\eta}$
$T_{1b} \leq T_{1maxMot}$
Determination of emergency stop torque T_{2Not}
λ – from resulting inertia condition
Guideline value:
$1 \leq \lambda \leq 10$
$\lambda = \frac{J_{external}}{J_{internal}}$
$T_{2Not} \leq T_{2Notzul}$
no
Select larger gearbox
yes
1
2



$$T_{2m} = \sqrt[3]{\frac{\left|n_{2b} * t_b * T_{2b}^{\,3}\right| + \ldots + \left|n_{2v} * t_v * T_{2v}^{\,3}\right|}{\left|n_{2b} * t_b\right| + \ldots + \left|n_{2v} * t_v\right|}} \quad [\text{Nm}]$$

$$n_{1m} = n_{2m} * i$$

$$n_{2m} = \frac{\left|n_{2b} * t_b\right| + \ldots + \left|n_{2v} * t_v\right|}{t_b + \ldots + t_v} \quad [\text{min}^{-1}]$$

include. idle time

$$d_{min} \le d_{Mot} \le d_{max}$$

The motor shaft must fit in the shaft locking bush. Motor shaft length: see dimensional drawings

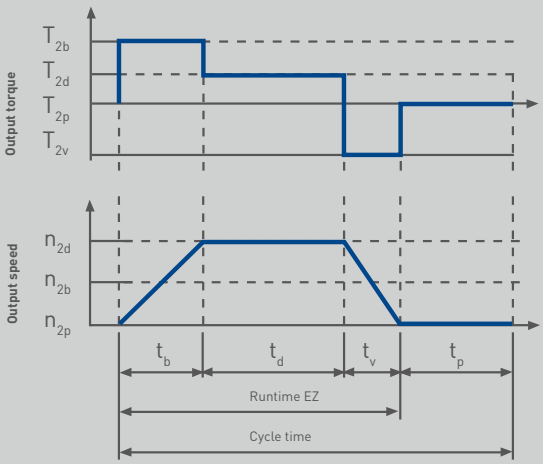
$$T_{2\,max\,Mot} = T_{1\,max\,Mot} * i * \eta_{\,Getriebe}$$

With motor at full load, the gearbox must not become damaged; limit motor current if applicable.

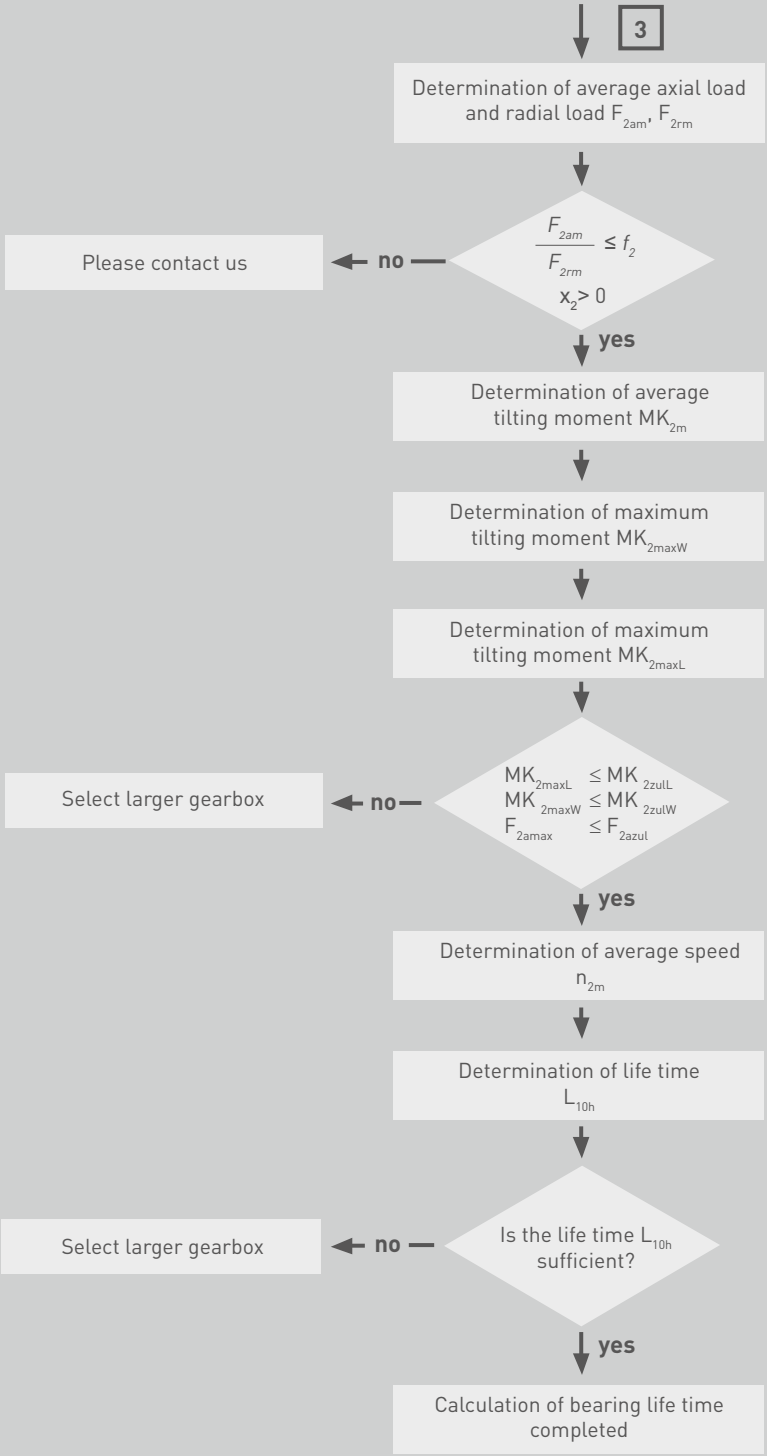
Table 1: Dynamic factor k

No. of cycles Z [1/h]			Dynamic factor k
from		to	
0	–	999	1
1000	–	1499	0,94
1500	–	1999	0,83
2000	–	2499	0,75
2500	–	2999	0,68
3000	–	3499	0,63
3500	–	3999	0,59
4000	–	4499	0,56
4500	–	4999	0,53
5000	–	5499	0,51
5500	–	5999	0,5
6000	–	6499	0,49
6500	–	6999	0,48
7000	–	7499	0,47
7500	–	~	0,46

Diagram 1: Load profile on output



DETAILED GEARBOX SELECTION
PERMISSIBLE LOAD ON OUTPUT



$$F_{2am} = \sqrt[3]{\frac{\left|n_{2b} * t_b * F_{2ab}\right|^3 + \ldots + \left|n_{2v} * t_v * F_{2av}\right|^3}{\left|n_{2b} * t_b\right| + \ldots + \left|n_{2v} * t_v\right|}} \text{ [N]}$$

$$F_{2rm} = \sqrt[3]{\frac{\left|n_{2b} * t_b * F_{2rb}\right|^3 + \ldots + \left|n_{2v} * t_v * F_{2rv}\right|^3}{\left|n_{2b} * t_b\right| + \ldots + \left|n_{2v} * t_v\right|}} \text{ [N]}$$

$$MK_{2m} = \frac{F_{2am} * y_2 + F_{2rm} * (a_2 + x_2)}{1000} \text{ [Nm]} \ ^{1)}$$

$$MK_{2max\,W} = \frac{F_{2a\,max} * y_2 + F_{2rmax} * x_2}{1000} \text{ [Nm]} \ ^{1), 2)}$$

$$MK_{2max\,L} = \frac{F_{2a\,max} * y_2 + F_{2rmax} * (a_2 + x_2)}{1000} \text{ [Nm]} \ ^{1)}$$

1) a_2, x_2, y_2 in mm, see page 21

2) calculation for MPR and MPV

$$n_{2m} = \frac{\left|n_{2b} * t_b\right| + \ldots + \left|n_{2v} * t_v\right|}{t_b + \ldots + t_v} \text{ [min}^{-1}\text{]}$$

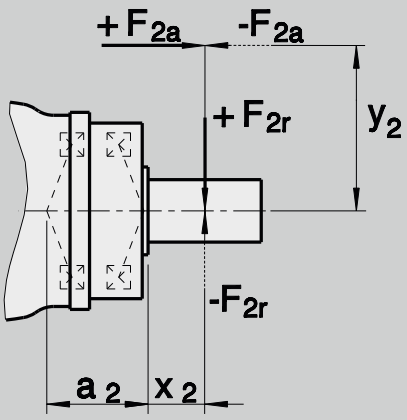
$$L_{10h} = \frac{16666}{n_{2m}} * \left[\frac{KL_2}{MK_{2m}}\right]^{P_2} \text{ [h]}$$

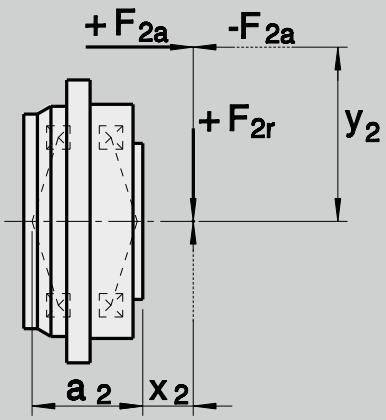
PERMISSIBLE LOAD ON OUTPUT

Gearbox type		MPR					
Gearbox size		**050**	**100**	**200**	**300**	**04**	**05**
f_2		0,40	0,40	0,40	0,40	0,40	0,40
a_2	mm	40,3	47,1	57,8	76,5	69,4	90,9
MK_{2zulL}	Nm	147	261	547	1111	1546	2581
MK_{2zulW}	Nm	38	72	183	388	574	945
KL_2		810	1230	2625	5360	5605	11750
p_2		3,33	3,33	3,33	3,33	3,33	3,33

Gearbox type		MPG					
Gearbox size		**00**	**01**	**02**	**03**	**04**	**05**
f_2		1,14	1,14	1,14	0,37	0,37	0,37
a_2	mm	53,5	73,0	86,0	79,2	96,0	107,9
MK_{2zulL}	Nm	109	198	293	974	2078	2617
KL_2		390	990	1690	3730	7725	9740
p_2		3,00	3,00	3,00	3,33	3,33	3,33

Gearbox type		MPV			
Gearbox size		**00**	**01**	**02**	**03**
f_2		0,24	0,24	0,24	0,24
a_2	mm	35,5	38,8	46,8	56,5
MK_{2zulL}	Nm	75	142	357	741
MK_{2zulW}	Nm	21	45	137	312
KL_2		350	440	1075	2165
p_2		3,00	3,00	3,00	3,00





M P R

T E C H N I C A L D A T A

Technical specifications on this page and in the tables on the following three pages are intended only for rough preselection.

Gear teeth:	MPR 050 - 300	helical gear
	MPR 04 - 05	spur gear
Direction of rotation:	input and output in the same direction	
Efficiency:	1-stage	$\eta \geq 97\ \%$
	2-stage	$\eta \geq 95\ \%$
Life time:	20000 h	
Permissible gearbox temperature at housing: :	-10 °C to +90 °C	

Lubrication:	lubricated for life
Mounting position:	MPR 050 - 300 any, can be changed at any time
	MPR 04 - 05 any, please specify when ordering
Surface protection:	Primer coat RAL 9005 black
Protection rating:	IP65

MPR 050 / MPR 100

TECHNICAL DATA

The following technical specifications in the table are intended only for rough preselection

MPR			050															
Gear stages			1					2										
Ratio	i		3	4	5	7	10	12	16	20	25	28	35	40	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	T_{2bzul}	Nm	32	44	44	44	35	32	44	44	44	44	44	44	44	44	35	
Nominal torque on output (with n_{1Nzul})	T_{2Nzul}	Nm	20	29	29	29	19	20	29	29	29	29	29	29	29	29	19	
Emergency stop torque (permissible 1000 times during gearbox life time)	$T_{2Notzul}$	Nm	80	110	110	107	88	80	110	110	110	110	110	110	110	107	88	
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)	n_{1mzul}	min^{-1}	3300	3300	3300	3700	4000	4000	4400	4400	4400	4400	4400	4400	4800	5500	5500	
Max. input speed	$n_{1maxzul}$	min^{-1}	6000					6000										
Max. backlash*	j	arcmin	standard ≤ 4 / reduced ≤ 2					standard ≤ 6 / reduced ≤ 4										
Torsional rigidity	C	Nm/arcmin	5					5										
Max. radial load (with reference to shaft centre on output shaft)	F_{2rzul}	N	2700					2700										
Max. axial load (with reference to shaft centre on output shaft)	F_{2azul}	N	2400					2400										
Weight	m	kg	2,1					2,7										
Running noise (with n_1 = 3000 min^{-1} without load)	L_{PA}	db(A)	≤ 64					≤ 64										
Inertia (with reference to input) Ø d 11	J_1	$kgcm^2$	0,33	0,24	0,20	0,18	0,16	0,21	0,21	0,18	0,18	0,17	0,17	0,16	0,16	0,16	0,16	
Inertia (with reference to input) Ø d 14	J_1	$kgcm^2$	0,36	0,27	0,23	0,21	0,19	0,25	0,24	0,21	0,21	0,20	0,20	0,19	0,19	0,19	0,19	
Inertia (with reference to input) Ø d 19	J_1	$kgcm^2$	0,53	0,44	0,40	0,34	0,33	-	-	-	-	-	-	-	-	-	-	

MPR			100															
Gear stages			1					2										
Ratio	i		3	4	5	7	10	12	16	20	25	28	35	40	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	T_{2bzul}	Nm	90	120	120	120	90	90	120	120	120	120	120	120	120	120	90	
Nominal torque on output (with n_{1Nzul})	T_{2Nzul}	Nm	56	83	83	83	58	56	83	83	83	83	83	76	83	83	58	
Emergency stop torque (permissible 1000 times during gearbox life time)	$T_{2Notzul}$	Nm	200	275	275	275	220	200	275	275	275	275	275	275	275	275	220	
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)	n_{1mzul}	min^{-1}	2800	2800	2800	2800	3100	3100	3500	3500	3500	3500	3500	3500	3800	4500	4500	
Max. input speed	$n_{1maxzul}$	min^{-1}	6000					6000										
Max. backlash*	j	arcmin	standard ≤ 4 / reduced ≤ 2					standard ≤ 6 / reduced ≤ 4										
Torsional rigidity	C	Nm/arcmin	11					11										
Max. radial load (with reference to shaft centre on output shaft)	F_{2rzul}	N	4000					4000										
Max. axial load (with reference to shaft centre on output shaft)	F_{2azul}	N	3350					3350										
Weight	m	kg	3,1					4,4										
Running noise (with n_1 = 3000 min^{-1} without load)	L_{PA}	db(A)	≤ 64					≤ 64										
Inertia (with reference to input) Ø d 11	J_1	$kgcm^2$	1,03	0,70	0,58	0,48	0,43	0,25	0,23	0,19	0,19	0,17	0,17	0,16	0,16	0,16	0,16	
Inertia (with reference to input) Ø d 14	J_1	$kgcm^2$	1,07	0,74	0,62	0,52	0,47	0,29	0,26	0,22	0,22	0,20	0,20	0,19	0,19	0,19	0,19	
Inertia (with reference to input) Ø d 19	J_1	$kgcm^2$	1,21	0,88	0,76	0,67	0,62	-	-	-	-	-	-	-	-	-	-	
Inertia (with reference to input) Ø d 24	J_1	$kgcm^2$	1,92	1,59	1,47	1,37	1,32	-	-	-	-	-	-	-	-	-	-	

* measured with 2% nominal torque on output shaft

MPR 200 / MPR 300

TECHNICAL DATA

MPR					200															
Gear stages					1					2										
Ratio			i		3	4	5	7	10	12	16	20	25	28	35	40	50	70	100
Max. acceleration torque (max. 1000 cycles per hour)			T_{2bzul}	Nm	230	330	330	300	235	230	330	330	330	330	330	330	330	330	235
Nominal torque on output (with n_{1Nzul})			T_{2Nzul}	Nm	135	200	195	190	135	135	200	195	195	200	195	200	195	190	135
Emergency stop torque (permissible 1000 times during gearbox life time)			$T_{2Notzul}$	Nm	500	690	675	640	550	500	690	675	675	690	675	690	675	640	550
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)			n_{1mzul}	min^{-1}	2500	2500	2500	2800	2800	2800	3100	3100	3100	3100	3100	3100	3500	4200	4200
Max. input speed			$n_{1maxzul}$	min^{-1}	4500					4500									
Max. backlash*			j	arcmin	standard ≤ 3 / reduced ≤ 1					standard ≤ 5 / reduced ≤ 3									
Torsional rigidity			C	Nm/arcmin	30					30									
Max. radial load (with reference to shaft centre on output shaft)			F_{2rzul}	N	6300					6300									
Max. axial load (with reference to shaft centre on output shaft)			F_{2azul}	N	5650					5650									
Weight			m	kg	7,3					8,3									
Running noise (with n_1 = 3000 min^{-1} without load)			L_{PA}	db(A)	≤ 66					≤ 64									
Inertia (with reference to input)	Ø d	11	J_1	$kgcm^2$	-	-	-	-	-	0,80	0,72	0,58	0,56	0,48	0,47	0,44	0,43	0,43	0,42
	Ø d	14	J_1	$kgcm^2$	-	-	-	-	-	0,84	0,76	0,61	0,60	0,52	0,51	0,47	0,46	0,46	0,46
	Ø d	19	J_1	$kgcm^2$	4,48	3,23	2,78	2,42	2,23	0,98	0,90	0,76	0,74	0,66	0,65	0,62	0,61	0,61	0,60
	Ø d	24	J_1	$kgcm^2$	5,00	3,75	3,30	2,94	2,75	-	-	-	-	-	-	-	-	-	-
	Ø d	28	J_1	$kgcm^2$	6,80	5,56	5,10	4,74	4,55	-	-	-	-	-	-	-	-	-	-
	Ø d	32	J_1	$kgcm^2$	7,09	5,84	5,39	5,02	4,83	-	-	-	-	-	-	-	-	-	-
	Ø d	38	J_1	$kgcm^2$	8,94	7,69	7,24	6,85	6,67	-	-	-	-	-	-	-	-	-	-

MPR					300															
Gear stages					1					2										
Ratio			i		3	4	5	7	10	12	16	20	25	28	35	40	50	70	100
Max. acceleration torque (max. 1000 cycles per hour)			T_{2bzul}	Nm	400	660	660	600	480	400	660	660	660	660	660	660	660	600	480
Nominal torque on output (with n_{1Nzul})			T_{2Nzul}	Nm	290	390	390	380	245	290	390	390	390	390	390	390	390	380	245
Emergency stop torque (permissible 1000 times during gearbox life time)			$T_{2Notzul}$	Nm	1000	1400	1400	1400	1100	1000	1400	1400	1400	1400	1400	1400	1400	1400	1100
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)			n_{1mzul}	min^{-1}	2100	2100	2100	2300	2600	2600	2900	2900	2900	2900	2900	2900	3200	3200	3900
Max. input speed			$n_{1maxzul}$	min^{-1}	4000					4000									
Max. backlash*			j	arcmin	standard ≤ 3 / reduced ≤ 1					standard ≤ 5 / reduced ≤ 3									
Torsional rigidity			C	Nm/arcmin	60					60									
Max. radial load (with reference to shaft centre on output shaft)			F_{2rzul}	N	9450					9450									
Max. axial load (with reference to shaft centre on output shaft)			F_{2azul}	N	9870					9870									
Weight			m	kg	17,3					19,0									
Running noise (with n_1 = 3000 min^{-1} without load)			L_{PA}	db(A)	≤ 66					≤ 65									
Inertia (with reference to input)	Ø d	19	J_1	$kgcm^2$	-	-	-	-	-	2,70	2,46	2,26	2,20	2,14	2,12	2,11	2,08	2,07	2,06
	Ø d	24	J_1	$kgcm^2$	13,54	9,72	8,27	7,14	6,46	3,22	2,98	2,78	2,72	2,66	2,63	2,62	2,59	2,58	2,58
	Ø d	28	J_1	$kgcm^2$	15,30	11,49	10,04	8,89	8,22	5,02	4,78	4,58	4,53	4,46	4,43	4,42	4,39	4,38	4,38
	Ø d	32	J_1	$kgcm^2$	15,61	11,79	10,34	9,20	8,53	5,30	5,07	4,87	4,81	4,74	4,71	4,71	4,68	4,66	4,66
	Ø d	38	J_1	$kgcm^2$	16,59	12,78	11,33	10,16	9,48	7,16	6,92	6,72	6,66	6,58	6,55	6,54	6,51	6,50	6,49
	Ø d	42	J_1	$kgcm^2$	23,09	19,27	17,82	16,66	15,98	-	-	-	-	-	-	-	-	-	-
	Ø d	48	J_1	$kgcm^2$	25,47	21,65	20,20	19,04	18,37	-	-	-	-	-	-	-	-	-	-

* measured with 2% nominal torque on output shaft

MPR 04 / MPR 05

TECHNICAL DATA

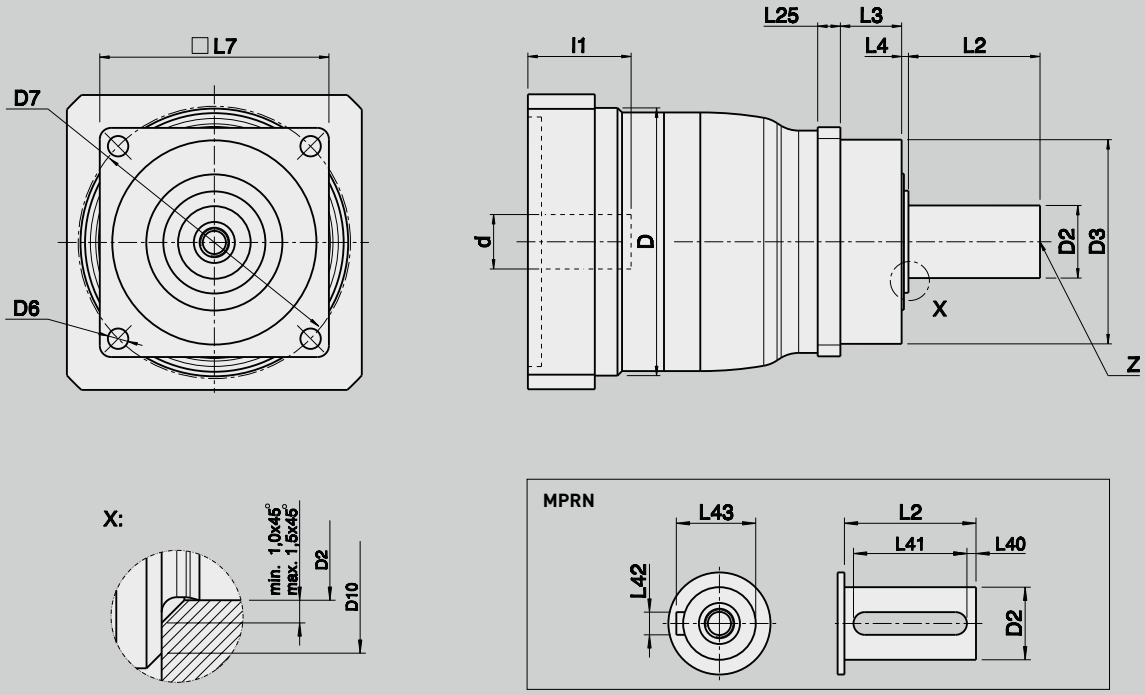
MPR				04													
Gear stages				1					2								
Ratio		i		3	4	5	7	10	12	16	20	28	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)		T_{2bzul}	Nm	880	1100	1100	1100	880	1100	1100	1100	1100	1100	1100	1100	880	
Nominal torque on output (with n_{1Nzul})		T_{2Nzul}	Nm	420	550	550	550	340	550	550	550	550	550	550	550	340	
Emergency stop torque (permissible 1000 times during gearbox life time)		$T_{2Notzul}$	Nm	2200	2750	2750	2750	2200	2750	2750	2750	2750	2750	2750	2750	2200	
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)		n_{1mzul}	min^{-1}	1400	1700	1700	2400	2400	2700	2700	2700	2900	2900	2900	3500	3500	
Max. input speed		$n_{1maxzul}$	min^{-1}	4000					4000								
Max. backlash*		j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5								
Torsional rigidity		C	Nm/arcmin	145					125								
Max. radial load (with reference to shaft centre on output shaft)		F_{2rzul}	N	14000					14000								
Max. axial load (with reference to shaft centre on output shaft)		F_{2azul}	N	13500					13500								
Weight		m	kg	29					32								
Running noise (with n_1 = 3000 min^{-1} without load)		L_{PA}	db(A)	≤ 70					≤ 70								
Inertia (with reference to input)	Ø d 28	J_1	$kgcm^2$	29,42	22,06	19,46	17,45	16,44	7,15	6,69	5,84	5,15	5,1	4,79	4,77	4,76	
	Ø d 38	J_1	$kgcm^2$	29,38	22,02	19,41	17,4	16,39	8,07	7,61	6,76	6,07	6,02	5,71	5,69	5,68	
	Ø d 42	J_1	$kgcm^2$	38,71	31,35	28,74	26,73	25,72	–	–	–	–	–	–	–	–	
	Ø d 48	J_1	$kgcm^2$	38,36	31	28,39	26,38	25,37	–	–	–	–	–	–	–	–	

MPR				05													
Gear stages				1					2								
Ratio		i		3	4	5	7	10	12	16	20	28	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)		T_{2bzul}	Nm	1500	1900	1900	1900	1500	1900	1900	1900	1900	1900	1900	1900	1500	
Nominal torque on output (with n_{1Nzul})		T_{2Nzul}	Nm	750	1000	1000	1000	620	1000	1000	1000	1000	1000	1000	1000	620	
Emergency stop torque (permissible 1000 times during gearbox life time)		$T_{2Notzul}$	Nm	3800	4750	4750	4750	3800	4750	4750	4750	4750	4750	4750	4750	3800	
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)		n_{1mzul}	min^{-1}	1200	1400	1400	2200	2200	2500	2500	2500	2500	2500	2500	3000	3000	
Max. input speed		$n_{1maxzul}$	min^{-1}	3500					3500								
Max. backlash*		j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5								
Torsional rigidity		C	Nm/arcmin	225					195								
Max. radial load (with reference to shaft centre on output shaft)		F_{2rzul}	N	18000					18000								
Max. axial load (with reference to shaft centre on output shaft)		F_{2azul}	N	22500					22500								
Weight		m	kg	50					53								
Running noise (with n_1 = 3000 min^{-1} without load)		L_{PA}	db(A)	≤ 70					≤ 70								
Inertia (with reference to input)	Ø d 28	J_1	$kgcm^2$	55,95	35,18	27,5	21,36	18,62	23,42	22,12	19,27	17,35	17,2	16,32	16,26	16,23	
	Ø d 38	J_1	$kgcm^2$	55,6	34,83	27,15	21,01	18,27	23,37	22,08	19,22	17,3	17,15	16,27	16,21	16,18	
	Ø d 42	J_1	$kgcm^2$	69,37	48,6	40,92	34,78	32,04	32,71	31,41	28,55	26,63	26,48	25,6	25,54	25,51	
	Ø d 48	J_1	$kgcm^2$	68,15	47,38	39,7	33,56	30,82	32,35	31,06	28,2	26,28	26,13	25,25	25,19	25,16	
	Ø d 55	J_1	$kgcm^2$	66,01	45,24	37,57	31,43	28,69	–	–	–	–	–	–	–	–	

* measured with 2% nominal torque on output shaft

MPR 050 – MPR 300

DIMENSIONS 1-STAGE

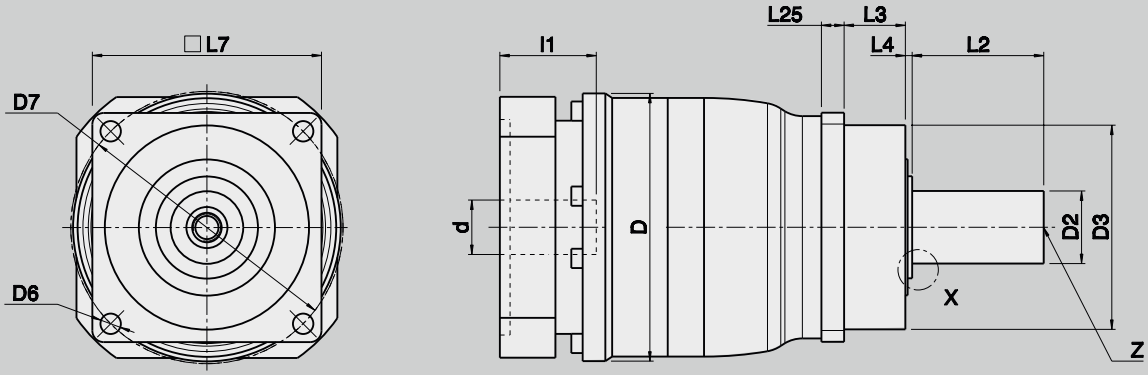


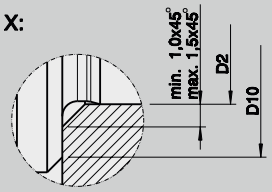
MPRN = with keyway

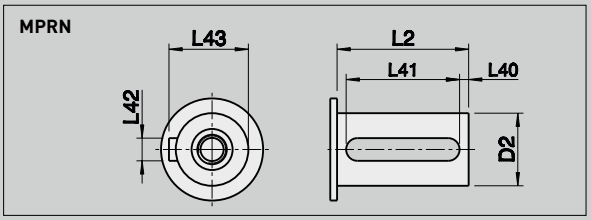
d	x	l1	Size	Ratio	D	D3	D6	D7	L3	L4	L7	L25	D2	x	L2	D10	Z	L40	L41	L42	L43
F7						g6							k6				DIN 332			h9	
11	x	23																			
14	x	30	**050**	3 - 10	72	60	5,5	68	18,0	2	62	6	16	x	28	22	D M5	2	25	5	18,0
19	x	40																			
11	x	23																			
14	x	30																			
19	x	40	**100**	3 - 10	94	70	6,6	85	17,5	2,5	76	7	22	x	36	27	D M8	2	32	6	24,5
24	x	50																			
19	x	40																			
24	x	50																			
28	x	60	**200**	3 - 10	120	90	9	120	27,0	3	101	10	32	x	58	42	D M12	4	50	10	35,0
32	x	60																			
38	x	80																			
24	x	50																			
28	x	60																			
32	x	60																			
38	x	80	**300**	3 - 10	154	130	11	165	27,0	3	141	12	40	x	82	61	D M16	5	70	12	43,0
42	x	110																			
48	x	110																			

MPR 050 – MPR 300

DIMENSIONS 2-STAGE





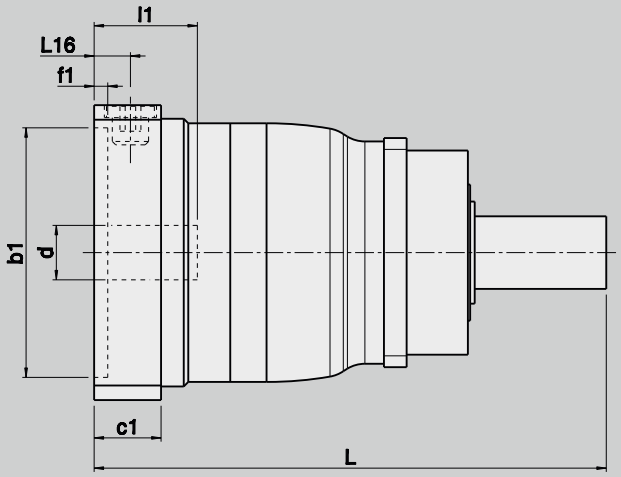


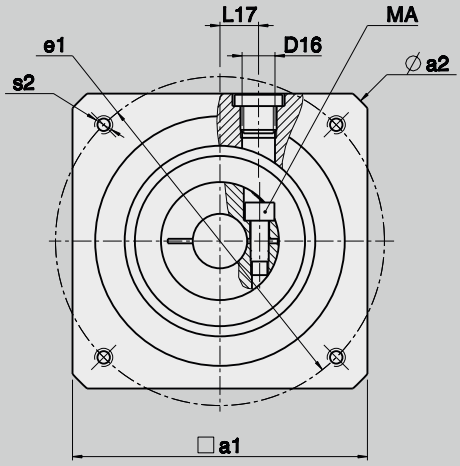
MPRN = with keyway

d	x	l1	Size	Ratio	D	D3	D6	D7	L3	L4	L7	L25	D2	x	L2	D10	Z	L40	L41	L42	L43
F7						g6							k6				DIN 332			h9	
11	x	23	**050**	12 - 100	72	60	5,5	68	18,0	2	62	6	16	x	28	22	D M5	2	25	5	18,0
14	x	30																			
11	x	23	**100**	12 - 100	94	70	6,6	85	17,5	2,5	76	7	22	x	36	27	D M8	2	32	6	24,5
14	x	30																			
11	x	23	**200**	12 - 100	120	90	9	120	27,0	3	101	10	32	x	58	42	D M12	4	50	10	35,0
14	x	30																			
19	x	40																			
19	x	40	**300**	12 - 100	152	130	11	165	27,0	3	141	12	40	x	82	61	D M16	5	70	12	43,0
24	x	50																			
28	x	60																			
32	x	60																			

MPR 050 – MPR 300

DIMENSIONS MOTOR MOUNTING 1-STAGE





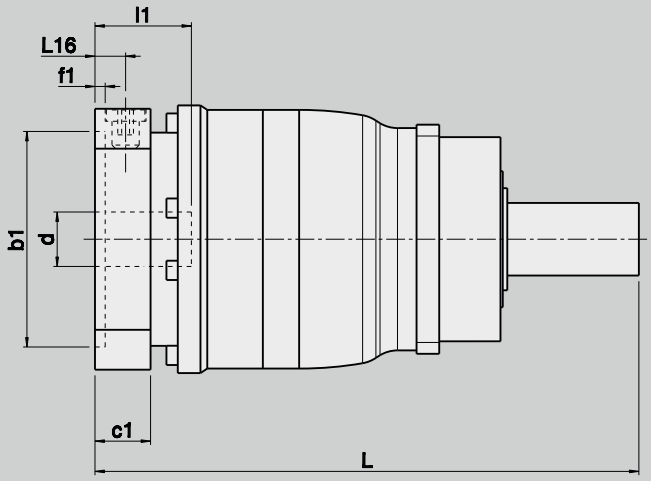
Gearbox dimensions											
d	x	l1	Size	L	L16	L17	c1	f1	D16	Screw type	MA
F7											[Nm]
11	x	23	050	137,0	10,5	10	18,5	4,5	M10x1	M5 / 12.9	9
14	x	30		137,0	10,5	10 - 12	18,5	4,5	M10x1	M5 / 12.9	9
19	x	40		146,0	10,5	12 - 16	18,5	4,5	M10x1	M6 / 12.9	16
11	x	23	100	168,5	13,5	10	24,5	4,5	M12x1,5	M5 / 12.9	9
14	x	30		168,5	13,5	10 - 12	24,5	4,5	M12x1,5	M5 / 12.9	9
19	x	40		168,5	13,5	12 - 16	24,5	4,5	M12x1,5	M6 / 12.9	16
24	x	50		178,5	13,5	16 - 21	24,5	4,5	M12x1,5	M8 / 12.9	40
19	x	40	200	225,8	16,0	12 - 16	29,5	6,0	M16x1,5	M6 / 12.9	16
24	x	50		225,8	16,0	16 - 21	29,5	6,0	M16x1,5	M8 / 12.9	40
28	x	60		225,8	16,0	21 - 24	29,5	6,0	M16x1,5	M10 / 12.9	80
32	x	60		225,8	16,0	21 - 24	29,5	6,0	M16x1,5	M10 / 12.9	80
38	x	80		250,8	16,0	24 - 26	29,5	6,0	M16x1,5	M10 / 12.9	80
24	x	50	300	295,5	20,5	16 - 21	36,5	6,0	M20x1,5	M8 / 12.9	40
28	x	60		295,5	20,5	21 - 24	36,5	6,0	M20x1,5	M10 / 12.9	80
32	x	60		295,5	20,5	21 - 24	36,5	6,0	M20x1,5	M10 / 12.9	80
38	x	80		295,5	20,5	24 - 26	36,5	6,0	M20x1,5	M10 / 12.9	80
42	x	110		329,5	20,5	26	36,5	6,0	M20x1,5	M12 / 12.9	135
48	x	110		329,5	20,5	26	36,5	6,0	M20x1,5	M12 / 12.9	135

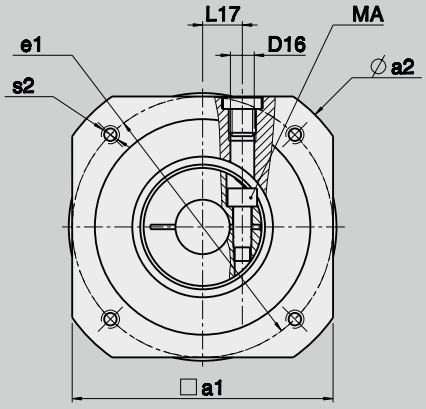
Motor dimensions

a1	75	75	75	95	95	75	75	95	75	95	95	95	120	115	120	120	130	130	150	140	150	160	150	160	200	250
a2	90	90	90	120	120	90	90	120	102	120	120	120	140	140	140	160	160	160	186	190	186	190	186	190	250	300
b1	40	40	50	50	50	60	60	60	60	70	70	80	80	95	95	95	110	110	110	110	110	110	130	130	180	230
e1	63	63	70	70	95	75	75	75	90	85	90	100	100	115	115	130	130	130	130	145	145	165	165	165	215	265
s2	M4 x8 -	M5 x10 -	M5 x10 -	M5 x10 -	M6 x12 -	M5 x10 -	M6 x12 -	M6 x12 -	M5 x10 -	M6 x12 Ø 7,0	M6 x12 -	M6 x12 Ø 7,0	M6 x12 -	M8 x16 -	M8 x16 -	M8 x16 -	M8 x16 Ø 9,0	M8 x16 -	M8 x16 -	M8 x16 -	M8 x16 -	M10 x20 -	M10 x20 -	M10 x20 Ø 11,0	M12 x24 -	M12 x24 -
	x x	x x	x x			x x	x x		x x	x		x x		x x			x									
				x x	x x			x x			x	x x		x x			x x						x			
													x		x	x		x x		x x		x x		x x x	x x x	x
																			x		x		x x x		x x x	x x x

MPR 050 – MPR 300

DIMENSIONS MOTOR MOUNTING 2-STAGE



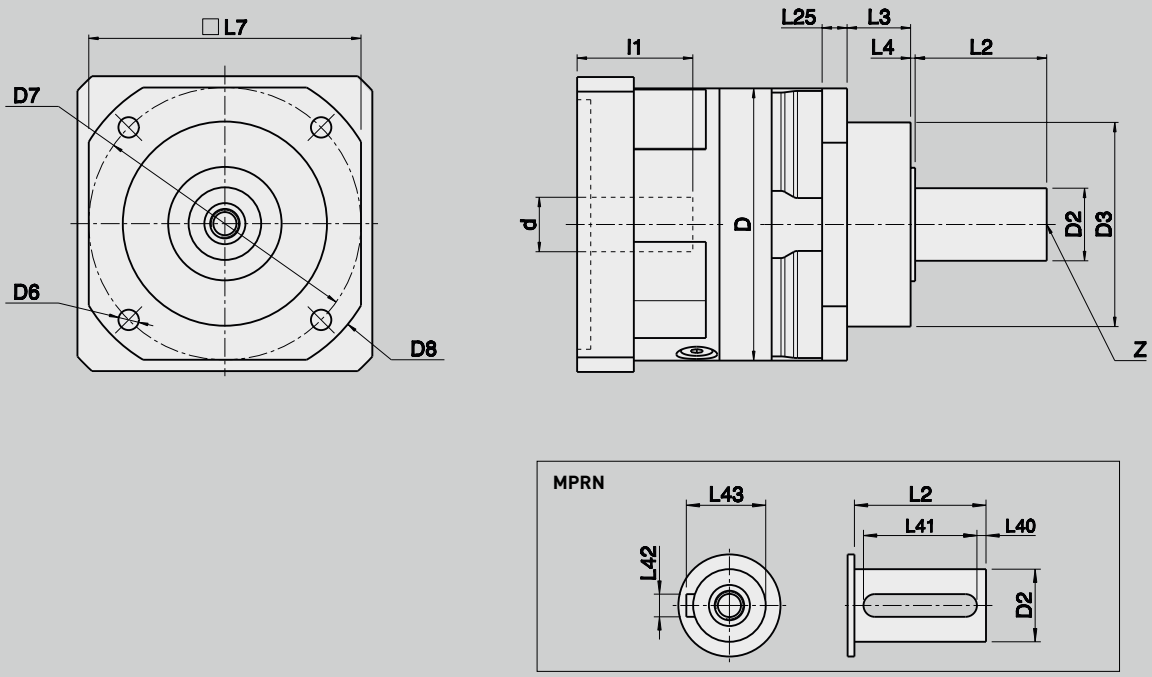


Gearbox dimensions											
d	**x**	**l1**	**Size**	**L**	**L16**	**L17**	**c1**	**f1**	**D16**	**Screw type**	**MA**
F7											[Nm]
11	x	23	**050**	165,5	10,5	10	18,5	4,5	M10x1	M5 / 12.9	9
14	x	30		165,5	10,5	10 - 12	18,5	4,5	M10x1	M5 / 12.9	9
11	x	23	**100**	188,5	10,5	10	18,5	4,5	M10x1	M5 / 12.9	9
14	x	30		188,5	10,5	10 - 12	18,5	4,5	M10x1	M5 / 12.9	9
11	x	23	**200**	239,8	13,5	10	24,5	4,5	M12x1,5	M5 / 12.9	9
14	x	30		239,8	13,5	10 - 12	24,5	4,5	M12x1,5	M5 / 12.9	9
19	x	40		239,8	13,5	12 - 16	24,5	4,5	M12x1,5	M6 / 12.9	16
19	x	40	**300**	314,0	16,0	12 - 16	29,5	6,0	M16x1,5	M6 / 12.9	16
24	x	50		314,0	16,0	16 - 21	29,5	6,0	M16x1,5	M8 / 12.9	40
28	x	60		314,0	16,0	21 - 24	29,5	6,0	M16x1,5	M10 / 12.9	80
32	x	60		314,0	16,0	16 - 24	29,5	6,0	M16x1,5	M10 / 12.9	80

Motor dimensions																						
a1	75	75	75	95	95	75	75	95	75	95	95	95	120	115	120	120	130	130	140	160	160	200
a2	90	90	90	120	120	90	90	120	102	120	120	120	140	140	140	160	160	160	190	190	190	250
b1	40	40	50	50	50	60	60	60	60	70	70	80	80	95	95	95	110	110	110	110	130	180
e1	63	63	70	70	95	75	75	75	90	85	90	100	100	115	115	130	130	130	145	165	165	215
s2	M4 x8 -	M5 x10 -	M5 x10 -	M5 x10 -	M6 x12 -	M5 x10 -	M6 x12 -	M6 x12 -	M5 x10 -	M6 x12 Ø 7,0	M6 x12 -	M6 x12 Ø 7,0	M6 x12 -	M8 x16 -	M8 x16 -	M8 x16 -	M8 x16 Ø 9,0	M8 x16 -	M8 x16 -	M10 x20 -	M10 x20 Ø 11,0	M12 x24 -
	x	x	x			x	x		x													
	x	x	x			x	x		x	x		x		x								
	x	x	x			x	x		x													
	x	x	x			x	x		x	x		x		x								
				x	x			x														
				x	x			x			x	x		x								
												x		x			x					
													x		x	x		x	x	x		
																		x	x	x	x	
																					x	x
																					x	x

MPR 04 / MPR 05

DIMENSIONS 1-STAGE

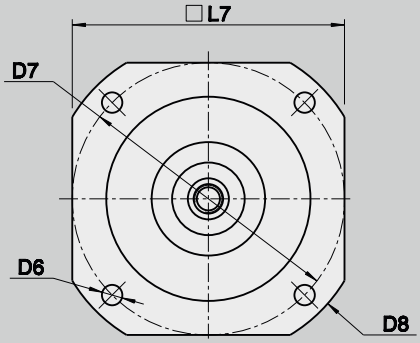


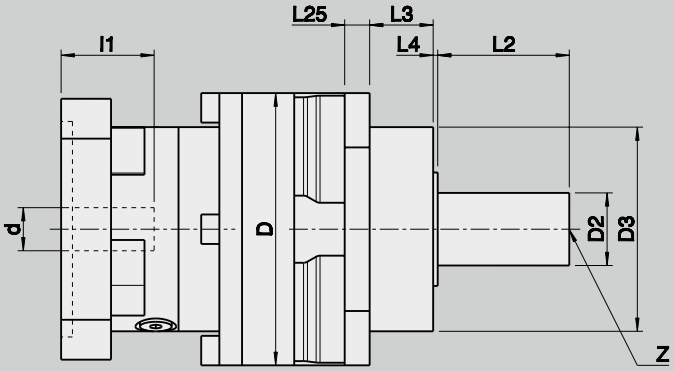
MPRN = with keyway

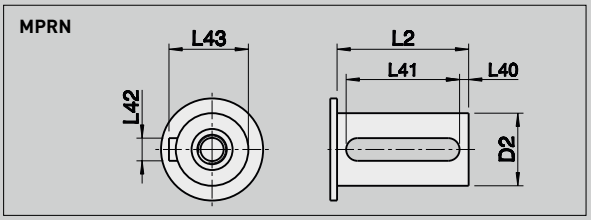
d	x	l1	Size	Ratio	D	D3	D6	D7	D8	L3	L4	L7	L25	D2	x	L2	Z	L40	L41	L42	L43
F7						g6								k6			DIN 332			h9	
28	x	60																			
32	x	60																			
38	x	80	**04**	3 - 10	185	160	13	215	245	27	3	180	15	55	x	82	D M20	5	70	16	59,0
42	x	110																			
48	x	110																			
28	x	60																			
32	x	60																			
38	x	80																			
42	x	110	**05**	3 - 10	215	180	17	250	280	35	3	215	17	75	x	105	D M20	7	90	20	79,5
48	x	110																			
55	x	110																			

MPR 04 / MPR 05

DIMENSIONS 2-STAGE





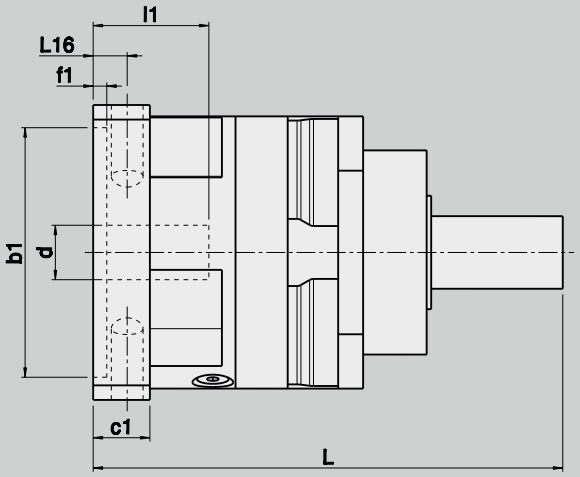


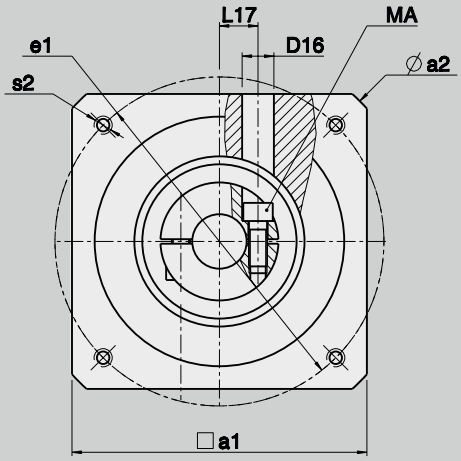
MPRN = with keyway

d	x	l1	Size	Ratio	D	D3	D6	D7	D8	L3	L4	L7	L25	D2	x	L2	Z	L40	L41	L42	L43
F7						g6								k6			DIN 332			h9	
28	x	60																			
32	x	60	**04**	12 - 100	185	160	13	215	245	27	3	180	15	55	x	82	D M20	5	70	16	59,0
38	x	80																			
28	x	60																			
32	x	60																			
38	x	80	**05**	12 - 100	215	180	17	250	280	35	3	215	17	75	x	105	D M20	7	90	20	79,5
42	x	110																			
48	x	110																			

MPR 04 – MPR 05

DIMENSIONS MOTOR MOUNTING 1-STAGE



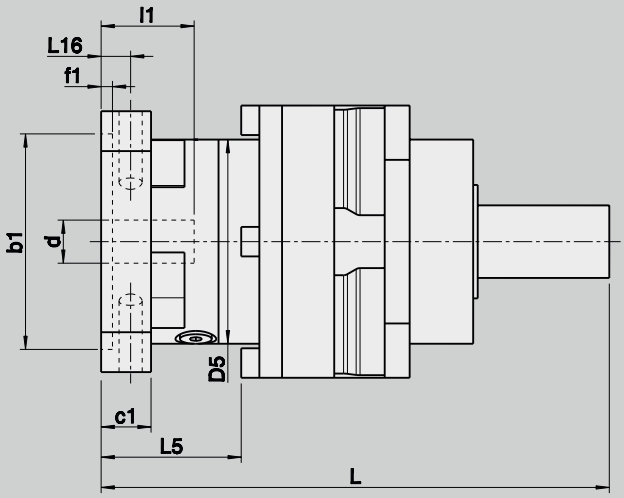


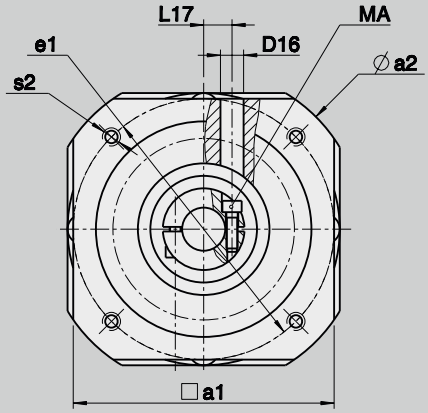
Motor dimensions					
a1	190	190	200	250	260
a2	220	220	250	300	350
b1	110	130	180	230	250
e1	130	165	215	265	300
s2	M8 x16	M10 x20	M12 x24	M12 x24	M16 x32
	-	-	Ø 14,0	Ø 14,0	-

Gearbox dimensions																	
d	**x**	**l1**	**Size**	**L**	**L16**	**L17**	**c1**	**f1**	**D16**	**Screw type**	**MA**						
F7											[Nm]						
28	x	60		303,5	22,0	23	38,0	6,0	25,0	M10 / 12.9	80		x	x	x	x	x
32	x	60		303,5	22,0	23	38,0	6,0	25,0	M10 / 12.9	80		x	x	x	x	x
38	x	80	**04**	303,5	22,0	23	38,0	6,0	25,0	M10 / 12.9	80		x	x	x	x	x
42	x	110		333,5	22,0	23	38,0	6,0	25,0	M12 / 12.9	135		x	x	x	x	x
48	x	110		333,5	22,0	23	38,0	6,0	25,0	M12 / 12.9	135		x	x	x	x	x
28	x	60		355,0	22,0	27	38,0	6,0	25,0	M10 / 12.9	80		x	x	x	x	x
32	x	60		355,0	22,0	27	38,0	6,0	25,0	M10 / 12.9	80		x	x	x	x	x
38	x	80	**05**	355,0	22,0	27	38,0	6,0	25,0	M10 / 12.9	80		x	x	x	x	x
42	x	110		385,0	53,0	37	38,0	6,0	25,0	M12 / 12.9	135		x	x	x	x	x
48	x	110		385,0	53,0	37	38,0	6,0	25,0	M12 / 12.9	135		x	x	x	x	x
55	x	110		385,0	53,0	37	38,0	6,0	25,0	M12 / 12.9	135		x	x	x	x	x

MPR 04 – MPR 05

DIMENSIONS MOTOR MOUNTING 2-STAGE



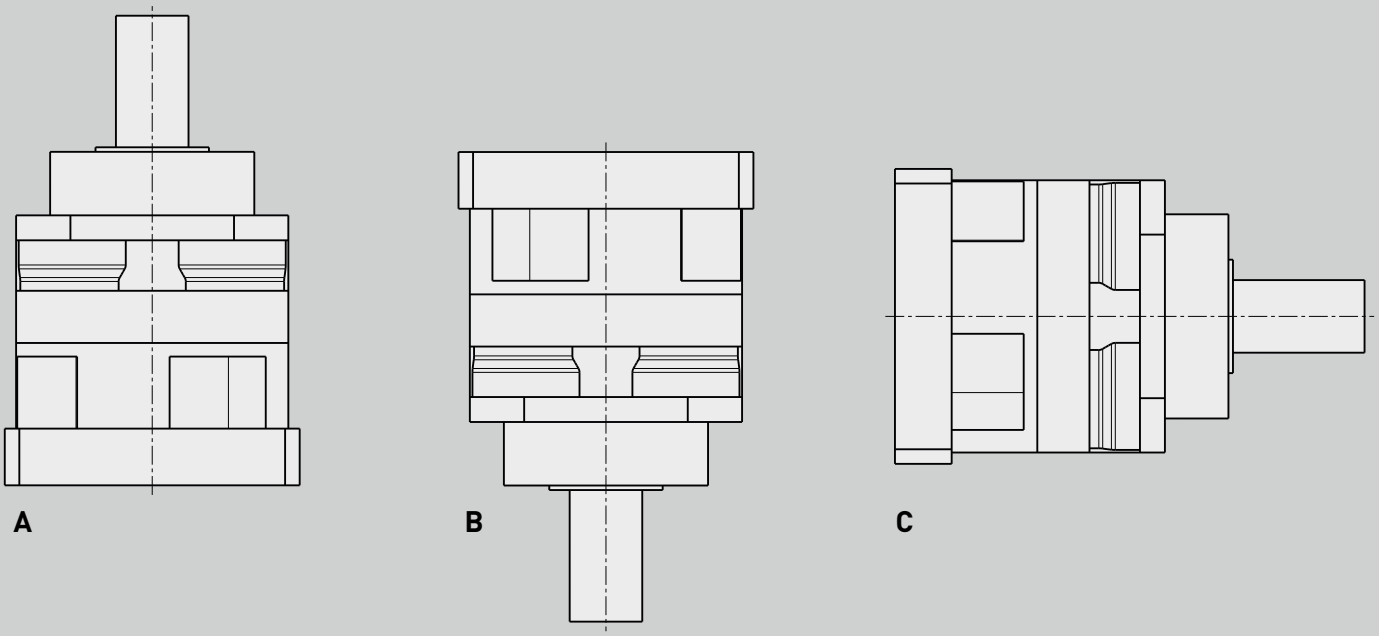


Motor dimensions							
a1	160	190	160	190	200	250	260
a2	180	220	190	220	250	300	350
b1	110	110	130	130	180	230	250
e1	130	130	165	165	215	265	300
s2	M8 x16	M8 x16	M10 x20	M10 x20	M12 x24	M12 x24	M16 x32
	Ø 9,0	-	Ø 11,0	-	Ø 14,0	Ø 14,0	-

Gearbox dimensions													Motor dimensions						
d	**x**	**l1**	**Size**	**L**	**L16**	**L17**	**c1**	**f1**	**D5**	**L5**	**D16**	**Screw type**	**MA**	**a1**						
F7													[Nm]							
28	x	60		323,5	18,0	23	30,0	6,0	155	81	17,5	M10 / 12.9	80		x		x		x		
32	x	60	**04**	323,5	18,0	23	30,0	6,0	155	81	17,5	M10 / 12.9	80		x		x		x		
38	x	80		343,5	38,0	23	50,0	6,0	155	101	17,5	M10 / 12.9	80		x		x		x		
28	x	60		408,0	22,0	27	38,0	6,0	185	118	25,0	M10 / 12.9	80			x		x	x	x	x
32	x	60		408,0	22,0	27	38,0	6,0	185	118	25,0	M10 / 12.9	80			x		x	x	x	x
38	x	80	**05**	408,0	22,0	27	38,0	6,0	185	118	25,0	M10 / 12.9	80			x		x	x	x	x
42	x	110		438,0	53,0	37	38,0	6,0	185	148	25,0	M12 / 12.9	135			x		x	x	x	x
48	x	110		438,0	53,0	37	38,0	6,0	185	148	25,0	M12 / 12.9	135			x		x	x	x	x

Note:
the following specifications are valid for gearboxes MPR 04, MPR 05

Mounting position:
(underside)



Lubrication

The planetary gearboxes are always oil-lubricated, and are supplied filled with oil. In our factories the gearboxes are filled with a synthetic poly-alpha-olefin-based gear oil.
The viscosity is 150 cSt. We supply gearboxes with a quantity of oil suitable for the mounting position given in the order.
If it is not clear from the order, gearboxes are supplied with a quantity of oil suitable for the vertical mounting position A.

Subsequent change of mounting position

If it is necessary to change the mounting position later, the oil should always be completely drained from the gearbox for safety reasons. The gearbox must then be refilled with the quantity of oil required for the new mounting position as given in our instructions (see following table).
One of the recommended grades of oil should be used (see following table).

	Oil quantities for mounting position [cm³]					
	A		B		C	
Ratio	3-10	12-100	3-10	12-100	3-10	12-100
MPR 04	550	800	550	800	200	350
MPR 05	800	1400	800	1400	600	850

Recommended oils

Mobil	Optimol
Mobil SHC 629	Optigear Synthetic A 150

Or equivalent oils from other manufacturers.

Caution!

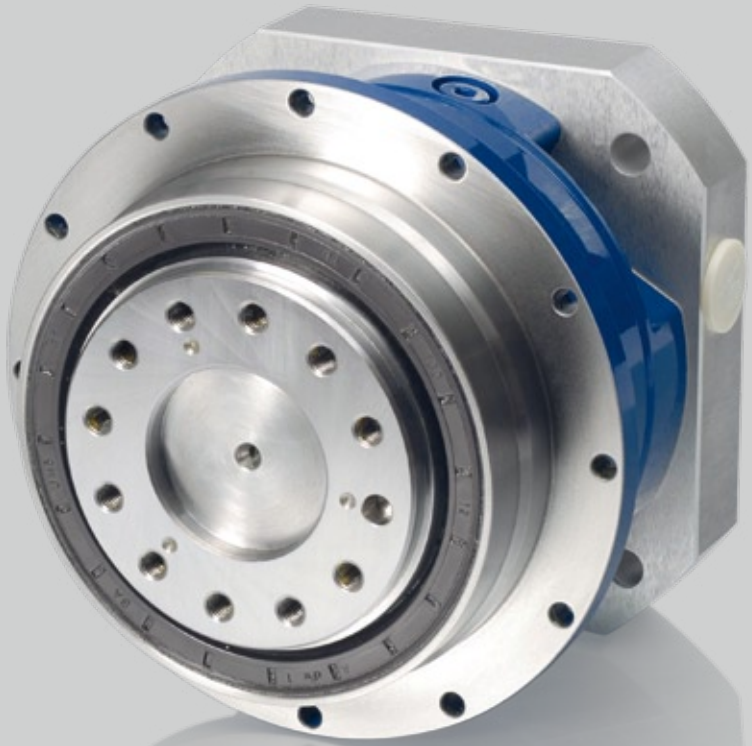
Do not mix mineral and/or synthetic oil grades. This could damage the gearbox.

M P G

T E C H N I C A L D A T A

Technical specifications on this page and in the tables on the following three pages are intended only for rough preselection.

Gear teeth:	spur gear
Direction of rotation:	input and output in the same direction
Efficiency:	1-stage $\eta \geq 97\ \%$ 2-stage $\eta \geq 95\ \%$
Life time:	20000 h
Permissible gearbox temperature at housing:	-10 °C to +90 °C
Lubrication:	lubricated for life
Mounting position:	any, please specify when ordering
Surface protection:	primer coat RAL 9005 black
Protection rating:	IP65



MPG 00 / MPG01

TECHNICAL DATA

The following technical specifications in the table are intended only for rough preselection

MPG				00												
Gear stages				1					2							
Ratio		i		3	4	5	7	10	12	16	20	28	35	50	70	100
Max. acceleration torque (max. 1000 cycles per hour)		T_{2bzul}	Nm	32	40	40	40	32	40	40	40	40	40	40	40	32
Nominal torque on output (with n_{1Nzul})		T_{2Nzul}	Nm	20	25	25	25	15	25	25	25	25	25	25	25	15
Emergency stop torque (permissible 1000 times during gearbox life time)		$T_{2Notzul}$	Nm	80	100	100	100	80	100	100	100	100	100	100	100	80
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)		n_{1mzul}	min^{-1}	2600	3300	3300	4000	4000	4400	4400	4400	4800	4800	4800	5500	5500
Max. input speed		$n_{1maxzul}$	min^{-1}	8000					8000							
Max. backlash*		j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5							
Torsional rigidity		C	Nm/arcmin	9					6							
Max. radial load (with reference to shaft centre on output shaft)		F_{2rzul}	N	1800					1800							
Max. axial load (with reference to shaft centre on output shaft)		F_{2azul}	N	2200					2200							
Weight		m	kg	1,3					1,6							
Running noise (with n_1 = 3000 min^{-1} without load)		L_{PA}	db(A)	≤ 68					≤ 68							
Inertia (with reference to input)	Ø d 9	J_1	$kgcm^2$	0,26	0,18	0,15	0,12	0,11	0,18	0,14	0,12	0,11	0,11	0,11	0,10	0,10
	Ø d 11	J_1	$kgcm^2$	0,26	0,18	0,15	0,12	0,11	0,18	0,14	0,12	0,11	0,11	0,11	0,10	0,10
	Ø d 14	J_1	$kgcm^2$	0,25	0,18	0,15	0,12	0,11	0,18	0,14	0,12	0,11	0,11	0,10	0,10	0,10
	Ø d 16	J_1	$kgcm^2$	0,24	0,18	0,15	0,15	0,23	0,17	0,15	0,14	0,15	0,14	0,14	0,14	0,14

MPG				01												
Gear stages				1					2							
Ratio		i		3	4	5	7	10	12	16	20	28	35	50	70	100
Max. acceleration torque (max. 1000 cycles per hour)		T_{2bzul}	Nm	80	100	100	100	80	100	100	100	100	100	100	100	80
Nominal torque on output (with n_{1Nzul})		T_{2Nzul}	Nm	56	70	70	70	45	70	70	70	70	70	70	70	45
Emergency stop torque (permissible 1000 times during gearbox life time)		$T_{2Notzul}$	Nm	200	250	250	215	200	250	250	250	250	250	250	215	200
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)		n_{1mzul}	min^{-1}	2300	2900	2900	3100	3100	3500	3500	3500	3800	3800	3800	4500	4500
Max. input speed		$n_{1maxzul}$	min^{-1}	6000					6000							
Max. backlash*		j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5							
Torsional rigidity		C	Nm/arcmin	30					16							
Max. radial load (with reference to shaft centre on output shaft)		F_{2rzul}	N	2500					2500							
Max. axial load (with reference to shaft centre on output shaft)		F_{2azul}	N	3600					3600							
Weight		m	kg	3,0					3,4							
Running noise (with n_1 = 3000 min^{-1} without load)		L_{PA}	db(A)	≤ 68					≤ 68							
Inertia (with reference to input)	Ø d 9	J_1	$kgcm^2$	1,06	0,71	0,57	0,45	0,39	0,30	0,16	0,14	0,12	0,12	0,11	0,11	0,11
	Ø d 11	J_1	$kgcm^2$	1,06	0,71	0,57	0,45	0,39	0,30	0,16	0,14	0,12	0,12	0,11	0,11	0,11
	Ø d 14	J_1	$kgcm^2$	1,06	0,71	0,57	0,45	0,39	0,30	0,16	0,13	0,11	0,11	0,10	0,10	0,10
	Ø d 19	J_1	$kgcm^2$	1,04	0,69	0,55	0,43	0,37	-	-	-	-	-	-	-	-
	Ø d 24	J_1	$kgcm^2$	1,28	0,93	0,79	0,67	0,61	-	-	-	-	-	-	-	-

* measured with 2% nominal torque on output shaft

MPG 02 / MPG 03

TECHNICAL DATA

MPG				02													
Gear stages				1					2								
Ratio		i		3	4	5	7	10	12	16	20	28	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)		T_{2bzul}	Nm	200	250	250	250	200	250	250	250	250	250	250	250	200	
Nominal torque on output (with n_{1Nzul})		T_{2Nzul}	Nm	135	170	170	170	110	170	170	170	170	170	170	170	110	
Emergency stop torque (permissible 1000 times during gearbox life time)		$T_{2Notzul}$	Nm	500	625	625	550	500	625	625	625	625	625	625	550	500	
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)		n_{1mzul}	min^{-1}	2000	2500	2500	2800	2800	3100	3100	3100	3500	3500	3500	4200	4200	
Max. input speed		$n_{1maxzul}$	min^{-1}	4800					4800								
Max. backlash*		j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5								
Torsional rigidity		C	Nm/arcmin	80					40								
Max. radial load (with reference to shaft centre on output shaft)		F_{2rzul}	N	3100					3100								
Max. axial load (with reference to shaft centre on output shaft)		F_{2azul}	N	4200					4200								
Weight		m	kg	5,3					6,0								
Running noise (with n_1 = 3000 min^{-1} without load)		L_{PA}	db(A)	≤ 70					≤ 70								
Inertia (with reference to input)	Ø d 14	J_1	$kgcm^2$	3,55	2,32	1,85	1,47	1,26	0,80	0,56	0,47	0,40	0,39	0,36	0,35	0,35	
	Ø d 19	J_1	$kgcm^2$	3,53	2,30	1,83	1,44	1,23	0,78	0,54	0,45	0,38	0,37	0,34	0,33	0,33	
	Ø d 24	J_1	$kgcm^2$	3,94	2,72	2,25	1,86	1,65	1,01	0,77	0,69	0,62	0,61	0,58	0,57	0,57	
	Ø d 32	J_1	$kgcm^2$	4,31	3,08	2,62	2,62	2,01	-	-	-	-	-	-	-	-	

MPG				03													
Gear stages				1					2								
Ratio		i		3	4	5	7	10	12	16	20	28	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)		T_{2bzul}	Nm	-	500	500	500	400	500	500	500	500	500	500	500	400	
Nominal torque on output (with n_{1Nzul})		T_{2Nzul}	Nm	-	360	360	360	220	360	360	360	360	360	360	360	220	
Emergency stop torque (permissible 1000 times during gearbox life time)		$T_{2Notzul}$	Nm	-	1250	1250	1100	1000	1250	1250	1250	1250	1250	1250	1100	1000	
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)		n_{1mzul}	min^{-1}	-	2100	2100	2600	2600	2900	2900	2900	3200	3200	3200	3900	3900	
Max. input speed		$n_{1maxzul}$	min^{-1}	4500					4500								
Max. backlash*		j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5								
Torsional rigidity		C	Nm/arcmin	165					85								
Max. radial load (with reference to shaft centre on output shaft)		F_{2rzul}	N	10500					10500								
Max. axial load (with reference to shaft centre on output shaft)		F_{2azul}	N	8000					8000								
Weight		m	kg	10,8					12,2								
Running noise (with n_1 = 3000 min^{-1} without load)		L_{PA}	db(A)	≤ 70					≤ 70								
Inertia (with reference to input)	Ø d 14	J_1	$kgcm^2$	-	-	-	-	-	2,87	1,91	1,58	1,33	1,30	1,18	1,16	1,16	
	Ø d 19	J_1	$kgcm^2$	-	5,78	4,35	3,17	2,54	2,85	1,89	1,56	1,30	1,27	1,15	1,14	1,13	
	Ø d 24	J_1	$kgcm^2$	-	7,03	5,60	4,41	3,78	3,27	2,31	1,98	1,72	1,69	1,57	1,55	1,55	
	Ø d 28	J_1	$kgcm^2$	-	8,39	6,96	7,00	5,12	3,40	2,44	2,11	1,85	1,81	1,69	1,68	1,58	
	Ø d 32	J_1	$kgcm^2$	-	8,28	6,85	5,65	5,01	3,63	2,68	2,34	2,08	2,05	1,93	1,92	1,91	
	Ø d 38	J_1	$kgcm^2$	-	8,14	6,71	5,5	4,87	-	-	-	-	-	-	-	-	

* measured with 2% nominal torque on output shaft

MPG 04 / MPG05

TECHNICAL DATA

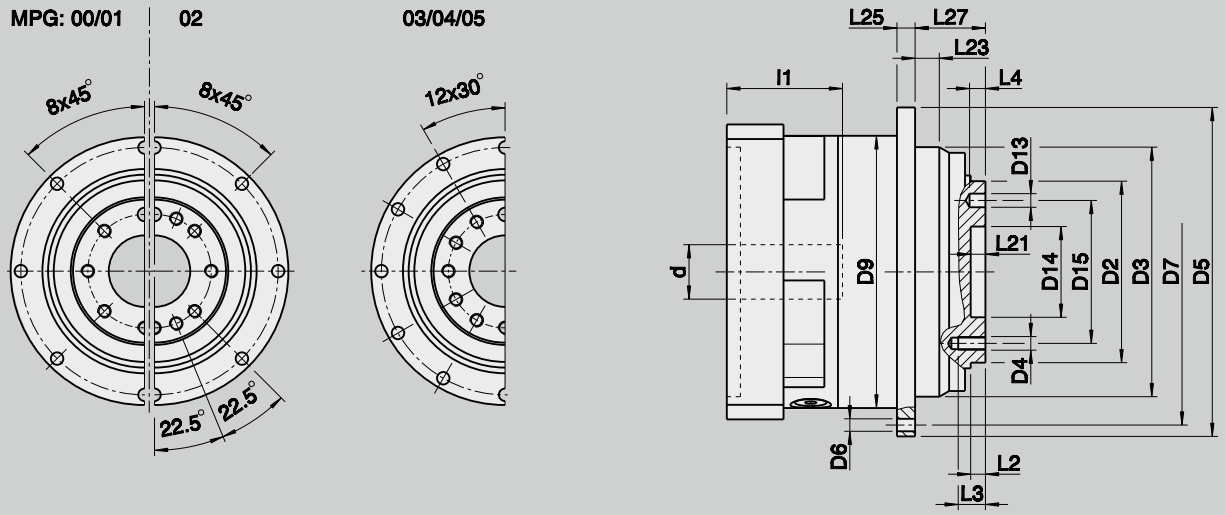
MPG			04													
Gear stages			1					2								
Ratio	i		3	4	5	7	10	12	16	20	28	35	50	70	100
Max. acceleration torque (max. 1000 cycles per hour)	T_{2bzul}	Nm	-	1100	1100	1100	880	1100	1100	1100	1100	1100	1100	1100	880
Nominal torque on output (with n_{1Nzul})	T_{2Nzul}	Nm	-	550	550	550	340	550	550	550	550	550	550	550	340
Emergency stop torque (permissible 1000 times during gearbox life time)	$T_{2Notzul}$	Nm	-	2750	2750	2750	2200	2750	2750	2750	2750	2750	2750	2750	2200
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)	n_{1mzul}	min^{-1}	-	1700	1700	2400	2400	2700	2700	2700	2900	2900	2900	3500	3500
Max. input speed	$n_{1maxzul}$	min^{-1}	4000					4000							
Max. backlash*	j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5							
Torsional rigidity	C	Nm/arcmin	145					125							
Max. radial load (with reference to shaft centre on output shaft)	F_{2rzul}	N	18070					18070							
Max. axial load (with reference to shaft centre on output shaft)	F_{2azul}	N	9100					9100							
Weight	m	kg	21					24							
Running noise (with n_1 = 3000 min^{-1} without load)	L_{PA}	db(A)	≤ 70					≤ 70							
Inertia (with reference to input) Ø d 28	J_1	$kgcm^2$	-	25,33	21,52	18,51	17,09	9,45	6,90	5,97	5,22	5,14	4,81	4,78	4,77
Ø d 38	J_1	$kgcm^2$	-	25,28	21,48	18,46	17,03	10,36	7,81	6,89	6,14	6,06	5,74	5,71	5,69
Ø d 42	J_1	$kgcm^2$	-	34,61	30,81	27,79	26,37	-	-	-	-	-	-	-	-
Ø d 48	J_1	$kgcm^2$	-	34,36	30,46	27,44	26,01	-	-	-	-	-	-	-	-

MPG			05													
Gear stages			1					2								
Ratio	i		3	4	5	7	10	12	16	20	28	35	50	70	100
Max. acceleration torque (max. 1000 cycles per hour)	T_{2bzul}	Nm	-	1900	1900	1900	1500	1900	1900	1900	1900	1900	1900	1900	1500
Nominal torque on output (with n_{1Nzul})	T_{2Nzul}	Nm	-	1000	1000	1000	620	1000	1000	1000	1000	1000	1000	1000	620
Emergency stop torque (permissible 1000 times during gearbox life time)	$T_{2Notzul}$	Nm	-	4750	4750	4750	3800	4750	4750	4750	4750	4750	4750	4750	3800
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)	n_{1mzul}	min^{-1}	-	1400	1400	2200	2200	2500	2500	2500	2500	2500	2500	3000	3000
Max. input speed	$n_{1maxzul}$	min^{-1}	3500					3500							
Max. backlash*	j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5							
Torsional rigidity	C	Nm/arcmin	225					195							
Max. radial load (with reference to shaft centre on output shaft)	F_{2rzul}	N	19550					19550							
Max. axial load (with reference to shaft centre on output shaft)	F_{2azul}	N	10050					10050							
Weight	m	kg	38					40							
Running noise (with n_1 = 3000 min^{-1} without load)	L_{PA}	db(A)	≤ 70					≤ 70							
Inertia (with reference to input) Ø d 28	J_1	$kgcm^2$	-	39,34	29,70	22,49	19,18	29,34	22,38	19,44	17,44	17,24	16,34	16,27	16,24
Ø d 38	J_1	$kgcm^2$	-	38,99	29,35	22,14	18,83	29,29	22,34	19,39	17,39	17,19	16,29	16,22	16,19
Ø d 42	J_1	$kgcm^2$	-	52,76	43,12	35,91	32,60	38,62	31,67	28,72	26,72	26,52	25,62	25,55	25,52
Ø d 48	J_1	$kgcm^2$	-	51,54	41,90	34,69	31,38	38,27	31,32	28,37	26,37	26,17	25,27	25,20	25,17
Ø d 55	J_1	$kgcm^2$	-	49,40	39,76	32,55	29,24	-	-	-	-	-	-	-	-

* measured with 2% nominal torque on output shaft

MPG 00 – MPG 05

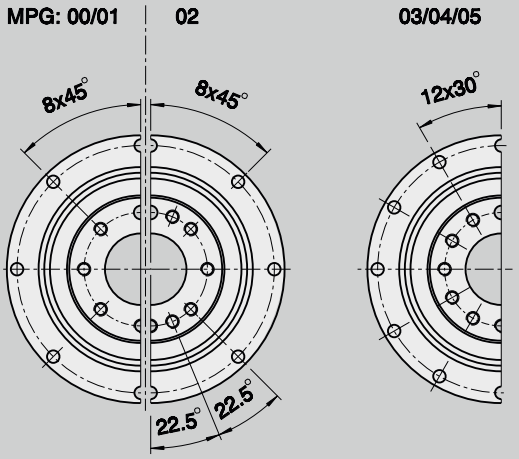
DIMENSIONS 1-STAGE

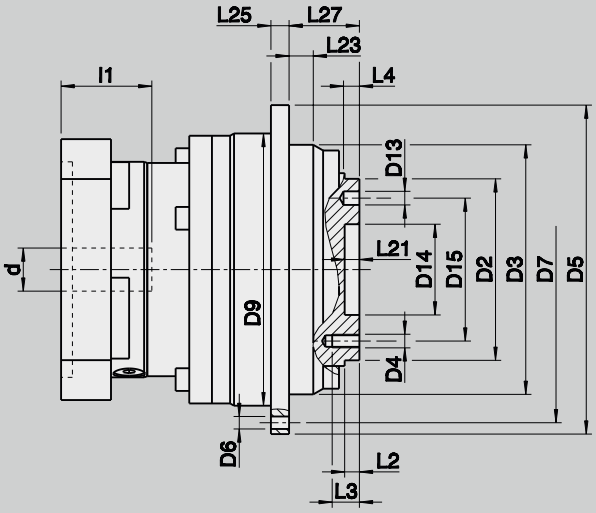


d	x	l1	Size	Ratio	D2	x	L2	D3	D4	D5	D6	D7	D9	D13	D14	D15	L3	L4	L21	L23	L25	L27
F7					h7			h6					h7	H7	H7							
9	x	20																				
11	x	23	**00**	3 - 10	40	x	3,0	64	M5	86	4,5	79	70	5	20,0	31,5	10	5	3,0	7	4	19,5
14	x	30																				
16	x	40																				
9	x	20																				
11	x	23																				
14	x	30	**01**	3 - 10	63	x	6,0	90	M6	118	5,5	109	95	6	31,5	50,0	12	6	6,0	7	7	30,0
19	x	40																				
24	x	50																				
14	x	30																				
19	x	40																				
24	x	50	**02**	3 - 10	80	x	6,5	110	M6	145	5,5	135	120	6	40,0	63,0	12	7	6,5	10	8	29,0
28	x	60																				
32	x	60																				
19	x	40																				
24	x	50																				
28	x	60	**03**	4 - 10	100	x	6,5	140	M8	179	6,6	168	152	8	50,0	80,0	16	7	6,5	12	10	38,0
32	x	60																				
38	x	80																				
28	x	60																				
32	x	60																				
38	x	80	**04**	4 - 10	130	x	7,0	170	M10	215	8,5	200	185	10	65,0	100,0	20	10	8,0	12	12	45,0
42	x	110																				
48	x	110																				
28	x	60																				
32	x	60																				
38	x	80	**05**	4 - 10	160	x	8,0	200	M10	247	8,5	233	215	10	80,0	125,0	20	10	8,0	15	12	50,0
42	x	110																				
48	x	110																				
55	x	110																				

MPG 00 – MPG 05

DIMENSIONS 2-STAGE

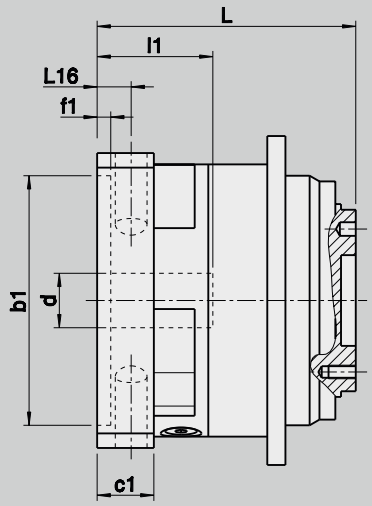


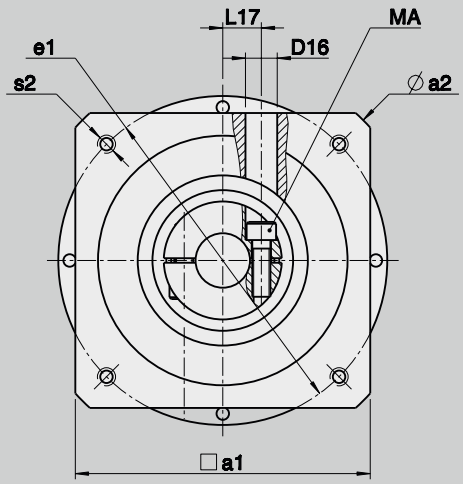


d	x	l1	Size	Ratio	D2	x	L2	D3	D4	D5	D6	D7	D9	D13	D14	D15	L3	L4	L21	L23	L25	L27
F7					h7			h6					h7	H7	H7							
9	x	20																				
11	x	23	00	12 - 100	40	x	3,0	64	M5	86	4,5	79	70	5	20,0	31,5	10	5	3,0	7	4	19,5
14	x	30																				
16	x	40																				
9	x	20																				
11	x	23	01	12 - 100	63	x	6,0	90	M6	118	5,5	109	95	6	31,5	50,0	12	6	6,0	7	7	30,0
14	x	30																				
16	x	40																				
9	x	20																				
11	x	23																				
14	x	30	02	12 - 100	80	x	6,5	110	M6	145	5,5	135	120	6	40,0	63,0	12	7	6,5	10	8	29,0
19	x	40																				
24	x	50																				
14	x	30																				
19	x	40																				
24	x	50	03	12 - 100	100	x	6,5	140	M8	179	6,6	168	152	8	50,0	80,0	16	7	6,5	12	10	38,0
28	x	60																				
32	x	60																				
28	x	60																				
32	x	60	04	12 - 100	130	x	7,0	170	M10	215	8,5	200	185	10	65,0	100,0	20	10	8,0	12	12	45,0
38	x	80																				
28	x	60																				
32	x	60																				
38	x	80	05	12 - 100	160	x	8,0	200	M10	247	8,5	233	215	10	80,0	125,0	20	10	8,0	15	12	50,0
42	x	110																				
48	x	110																				

MPG 00 – MPG 05

DIMENSIONS MOTOR MOUNTING 1-STAGE





Gearbox dimensions

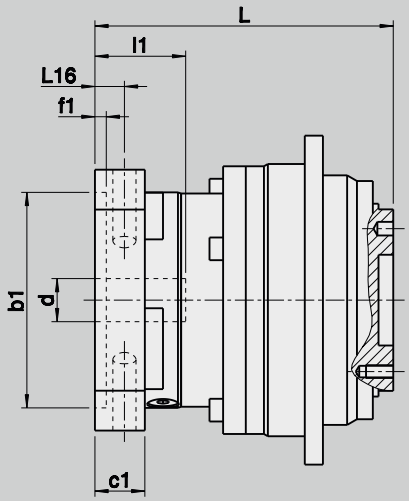
d	x	l1	Size	L	L16	L17	c1	f1	D16	Screw type	MA
F7											[Nm]
9	x	20	00	73,0	9,5	10	16	4,5	8,5	M5 / 8.8	5
11	x	23		73,0	9,5	10	16	4,5	8,5	M5 / 8.8	5
14	x	30		73,0	9,5	10	16	4,5	8,5	M5 / 8.8	5
16	x	40		93,0	30,0	11	36	4,5	8,5	M5 / 12.9	9
9	x	20	01	96,0	13,0	13	22	5,0	10,0	M5 / 8.8	5
11	x	23		96,0	13,0	13	22	5,0	10,0	M5 / 12.9	9
14	x	30		96,0	13,0	13	22	5,0	10,0	M5 / 12.9	9
19	x	40		96,0	13,0	13	22	5,0	10,0	M5 / 12.9	9
24	x	50		106,0	23,0	15	32	6,0	10,0	M5 / 12.9	9
14	x	30	02	112,0	15,0	17	25	6,0	14,0	M6 / 12.9	16
19	x	40		112,0	15,0	17	25	6,0	14,0	M6 / 12.9	16
24	x	50		112,0	15,0	17	25	6,0	14,0	M8 / 12.9	40
28	x	60		122,0	25,0	19	35	6,0	14,0	M8 / 12.9	40
32	x	60		122,0	25,0	19	35	6,0	14,0	M8 / 12.9	40
19	x	40	03	143,0	18,0	24	30	6,0	17,5	M6 / 12.9	16
24	x	50		143,0	18,0	24	30	6,0	17,5	M8 / 12.9	40
28	x	60		143,0	18,0	24	30	6,0	17,5	M10 / 12.9	80
32	x	60		143,0	18,0	24	30	6,0	17,5	M10 / 12.9	80
38	x	80		163,0	38,0	24	50	6,0	17,5	M10 / 12.9	80
28	x	60	04	182,0	22,0	35	38	6,0	25,0	M12 / 12.9	135
32	x	60		182,0	22,0	35	38	6,0	25,0	M12 / 12.9	135
38	x	80		182,0	22,0	35	38	6,0	25,0	M12 / 12.9	135
42	x	110		212,0	22,0	35	38	6,0	25,0	M12 / 12.9	135
48	x	110		212,0	22,0	35	38	6,0	25,0	M12 / 12.9	135
28	x	60	05	195,0	22,0	27	38	6,0	25,0	M10 / 12.9	80
32	x	60		195,0	22,0	27	38	6,0	25,0	M10 / 12.9	80
38	x	80		195,0	22,0	27	38	6,0	25,0	M10 / 12.9	80
42	x	110		225,0	53,0	37	38	6,0	25,0	M12 / 12.9	135
48	x	110		225,0	53,0	37	38	6,0	25,0	M12 / 12.9	135
55	x	110		225,0	53,0	37	38	6,0	25,0	M12 / 12.9	135

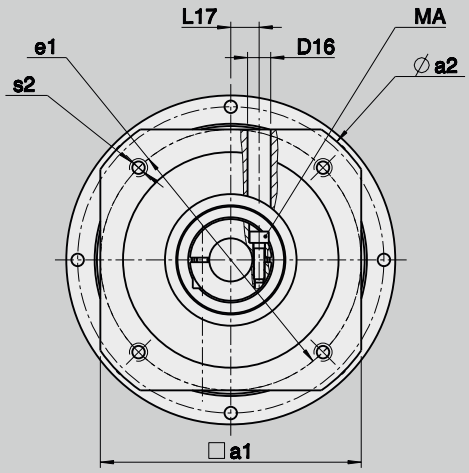
Motor dimensions

a1	75	95	125	90	95	75	95	125	75	95	125	90	95	125	90	95	125	115	125	130	160	190	140	160	190	200	250	260
a2	85	105	140	120	120	90	105	140	100	105	140	105	105	140	120	120	140	140	140	160	180	220	190	190	220	250	300	350
b1	50	50	50	50	50	60	60	60	70	70	70	70	70	70	80	80	80	95	95	110	110	110	130	130	130	180	230	250
e1	70	70	70	95	95	75	75	75	85	85	85	90	90	90	100	100	100	115	115	130	130	130	165	165	165	215	265	300
s2	M5 x10 -	M5 x10 -	M5 x10 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M5 x10 Ø 5,5	M5 x10 -	M5 x10 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M6 x12 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M6 x12 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M6 x12 -	M8 x16 Ø 9,0	M8 x16 Ø 9,0	M8 x16 Ø 9,0	M8 x16 Ø 9,0	M8 x16 -	M10 x20 Ø 11,0	M10 x20 Ø 11,0	M10 x20 -	M12 x24 Ø 13,0	M12 x24 Ø 13,0	M16 x32 -
	x			x		x			x			x			x													
	x			x		x			x			x			x													
	x			x		x			x			x			x													
	x			x		x			x			x			x													
		x			x		x			x			x			x		x		x			x					
		x			x		x			x			x			x		x		x			x					
		x			x		x			x			x			x		x		x			x					
		x			x		x			x			x			x		x		x			x					
		x			x		x			x			x			x		x		x			x					
			x					x			x			x			x		x	x			x			x		
			x					x			x			x			x		x	x			x			x		
			x					x			x			x			x		x	x			x			x		
			x					x			x			x			x		x	x			x			x		
			x					x			x			x			x		x	x			x			x		
																					x			x		x		
																					x			x		x		
																					x			x		x		
																					x			x		x		
																					x			x		x		
																						x			x	x	x	x
																						x			x	x	x	x
																						x			x	x	x	x
																						x			x	x	x	x
																						x			x	x	x	x
																						x			x	x	x	x
																						x			x	x	x	x
																						x			x	x	x	x
																						x			x	x	x	x
																						x			x	x	x	x
																						x			x	x	x	x

MPG 00 – MPG 05

DIMENSIONS MOTOR MOUNTING 2-STAGE



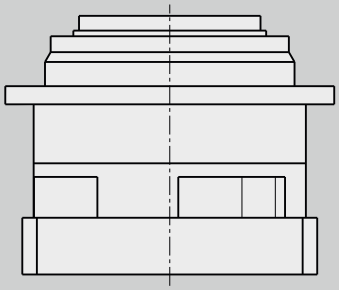


Gearbox dimensions											
d	x	l1	Size	L	L16	L17	c1	f1	D16	Screw type	MA
F7											[Nm]
9	x	20	00	95,5	9,5	10,0	16,0	4,5	8,5	M5 / 8.8	5
11	x	23		95,5	9,5	10,0	16,0	4,5	8,5	M5 / 8.8	5
14	x	30		95,5	9,5	10,0	16,0	4,5	8,5	M5 / 8.8	5
16	x	40		115,5	30,0	11,0	36,0	4,5	8,5	M5 / 12.9	9
9	x	20	01	107,5	9,5	10,0	16,0	4,5	8,5	M5 / 8.8	5
11	x	23		107,5	9,5	10,0	16,0	4,5	8,5	M5 / 8.8	5
14	x	30		107,5	9,5	10,0	16,0	4,5	8,5	M5 / 8.8	5
16	x	40		127,5	30,0	11,0	36,0	4,5	8,5	M5 / 8.8	5
9	x	20	02	129,5	13,0	13,0	22,0	6,0	10,0	M5 / 8.8	5
11	x	23		129,5	13,0	13,0	22,0	6,0	10,0	M5 / 12.9	9
14	x	30		129,5	13,0	13,0	22,0	6,0	10,0	M5 / 12.9	9
19	x	40		129,5	13,0	13,0	22,0	6,0	10,0	M5 / 12.9	9
24	x	50		139,5	23,0	15,0	32,0	5,0	10,0	M5 / 12.9	9
14	x	30	03	165,5	15,0	17,0	25,0	6,0	14,0	M6 / 12.9	16
19	x	40		165,5	15,0	17,0	25,0	6,0	14,0	M6 / 12.9	16
24	x	50		165,5	15,0	17,0	25,0	6,0	14,0	M8 / 12.9	40
28	x	60		175,5	15,0	19,0	35,0	6,0	14,0	M8 / 12.9	40
32	x	60		175,5	15,0	19,0	35,0	6,0	14,0	M8 / 12.9	40
28	x	60	04	202,0	18,0	23,0	30,0	6,0	17,5	M10 / 12.9	80
32	x	60		202,0	18,0	23,0	30,0	6,0	17,5	M10 / 12.9	80
38	x	80		222,0	38,0	23,0	50,0	6,0	17,5	M10 / 12.9	80
28	x	60	05	204,0	22,0	27,0	38,0	6,0	25,0	M12 / 12.9	135
32	x	60		204,0	22,0	27,0	38,0	6,0	25,0	M12 / 12.9	135
38	x	80		204,0	22,0	27,0	38,0	6,0	25,0	M12 / 12.9	135
42	x	110		278,0	53,0	37,0	38,0	6,0	25,0	M12 / 12.9	135
48	x	110		278,0	53,0	37,0	38,0	6,0	25,0	M12 / 12.9	135

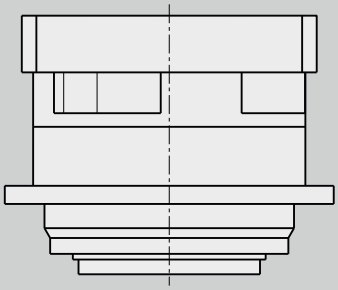
Motor dimensions

a1	75	95	125	90	95	75	95	125	75	95	125	90	95	125	90	95	125	115	125	130	160	190	140	160	190	200	250	260
a2	85	105	140	120	120	90	105	140	100	105	140	105	105	140	120	120	140	140	140	160	180	220	190	190	220	250	300	350
b1	50	50	50	50	50	60	60	60	70	70	70	70	70	70	80	80	80	95	95	110	110	110	130	130	130	180	230	250
e1	70	70	70	95	95	75	75	75	85	85	85	90	90	90	100	100	100	115	115	130	130	130	165	165	165	215	265	300
s2	M5 x10 -	M5 x10 -	M5 x10 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M5 x10 Ø 5,5	M5 x10 -	M5 x10 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M6 x12 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M6 x 2 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M6 x12 -	M8 x16 Ø 9,0	M8 x16 Ø 9,0	M8 x16 Ø 9,0	M8 x16 Ø 9,0	M8 x16 -	M10 x20 Ø 11,0	M10 x20 Ø 11,0	M10 x20 -	M12 x24 Ø 13,0	M12 x24 Ø 13,0	M16 x32 -
	x			x		x			x			x			x													
	x			x		x			x			x			x													
	x			x		x			x			x			x													
	x			x		x			x			x			x													
	x			x		x			x			x			x			x										
	x			x		x			x			x			x			x										
	x			x		x			x			x			x			x										
	x			x		x			x			x			x			x										
		x			x		x			x			x			x		x		x			x			x		
		x			x		x			x			x			x		x		x			x			x		
		x			x		x			x			x			x		x		x			x			x		
		x			x		x			x			x			x		x		x			x			x		
		x			x		x			x			x			x		x		x			x			x		
			x					x			x			x			x		x	x			x			x		
			x					x			x			x			x		x	x			x			x		
			x					x			x			x			x		x	x			x			x		
			x					x			x			x			x		x	x			x			x		
			x					x			x			x			x		x	x			x			x		
																					x			x		x		
																					x			x		x		
																					x			x		x		
																						x			x	x	x	x
																						x			x	x	x	x
																						x			x	x	x	x
																						x			x	x	x	x
																						x			x	x	x	x

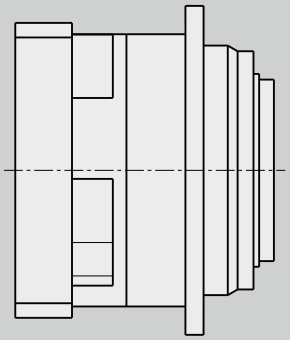
Mounting position:
(underside)



A



B



C

Lubrication

The planetary gearboxes are always oil-lubricated, and are supplied filled with oil. In our factories the gearboxes are filled with a synthetic poly-alpha-olefin-based gear oil.
The viscosity is 150 cSt. We supply gearboxes with a quantity of oil suitable for the mounting position given in the order.
If it is not clear from the order, gearboxes are supplied with a quantity of oil suitable for the vertical mounting position A.

Subsequent change of mounting position

If it is necessary to change the mounting position later, the oil should always be completely drained from the gearbox for safety reasons. The gearbox must then be refilled with the quantity of oil required in the new mounting position as given in our instructions (see following table).
Use one of the recommended grades of oil.
(see following table).

	Oil quantities for mounting position [cm³]					
	A		B		C	
Ratio	3-10	12-100	3-10	12-100	3-10	12-100
MPG 00	25	35	25	35	20	25
MPG 01	45	60	45	60	30	40
MPG 02	110	130	110	130	45	60
MPG 03	250	290	250	290	90	120
MPG 04	500	550	500	550	260	300
MPG 05	820	900	820	900	400	550

Recommended oils

Mobil	Optimol
Mobil SHC 629	Optigear Synthetic A 150

Or equivalent oils from other manufacturers.

Caution!

Do not mix mineral and/or synthetic oil grades. This could damage the gearbox.

M P V

T E C H N I C A L D A T A

Technical specifications on this page and in the tables on the following three pages are intended only for rough preselection.

Gear teeth:	spur gear
Direction of rotation:	input and output in the same direction
Efficiency:	1-stage $\eta \geq 97\ \%$ 2-stage $\eta \geq 95\ \%$
Life time:	20000 h
Permissible gearbox temperature at housing:	-10 °C to +90 °C
Lubrication:	Maintenance-free with life time grease lubrication Lubcon, Thermoplex ALN 250 EP
Mounting position:	Any, can be changed at any time
Surface protection:	Outer ring galvanised, flanges of untreated aluminium
Protection rating:	IP64

MPV 00 / MPV 01

TECHNICAL DATA

The following technical specifications in the table are intended only for rough preselection

MPV				00												
Gear stages			1					2								
Ratio	i		3	4	5	7	10	12	16	20	28	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	T_{2bzul}	Nm	32	40	40	40	32	40	40	40	40	40	40	40	32	
Nominal torque on output (with n_{1Nzul})	T_{2Nzul}	Nm	20	25	25	25	15	25	25	25	25	25	25	25	15	
Emergency stop torque (permissible 1000 times during gearbox life time)	$T_{2Notzul}$	Nm	80	100	100	100	80	100	100	100	100	100	100	100	80	
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)	n_{1mzul}	min^{-1}	2600	3300	3300	4000	4000	4400	4400	4400	4800	4800	4800	5500	5500	
Max. input speed	$n_{1maxzul}$	min^{-1}	8000					8000								
Max. backlash*	j	arcmin	≤ 10					≤ 15								
Torsional rigidity	C	Nm/arcmin	3,0					2,8								
Max. radial load (with reference to shaft centre on output shaft)	F_{2rzul}	N	1500					1500								
Max. axial load (with reference to shaft centre on output shaft)	F_{2azul}	N	1550					1550								
Weight	m	kg	1,7					2,3								
Running noise (with n_1 = 3000 min^{-1} without load)	L_{PA}	db(A)	≤ 70					≤ 70								
Inertia (with reference to input) Ø d 9	J_1	$kgcm^2$	0,22	0,16	0,14	0,12	0,11	0,14	0,14	0,12	0,11	0,11	0,11	0,10	0,10	
Ø d 11	J_1	$kgcm^2$	0,22	0,16	0,14	0,12	0,11	0,14	0,14	0,12	0,11	0,11	0,11	0,10	0,10	
Ø d 14	J_1	$kgcm^2$	0,21	0,15	0,13	0,11	0,10	0,14	0,14	0,12	0,11	0,11	0,10	0,10	0,10	
Ø d 16	J_1	$kgcm^2$	0,25	0,19	0,16	0,16	0,15	0,17	0,17	0,15	0,15	0,15	0,14	0,14	0,14	

MPV				01												
Gear stages			1					2								
Ratio	i		3	4	5	7	10	12	16	20	28	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	T_{2bzul}	Nm	80	100	100	100	80	100	100	100	100	100	100	100	80	
Nominal torque on output (with n_{1Nzul})	T_{2Nzul}	Nm	56	70	70	70	45	70	70	70	70	70	70	70	45	
Emergency stop torque (permissible 1000 times during gearbox life time)	$T_{2Notzul}$	Nm	200	250	250	215	200	250	250	250	250	250	250	215	200	
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)	n_{1mzul}	min^{-1}	2300	2900	2900	3100	3100	3500	3500	3500	3800	3800	3800	4500	4500	
Max. input speed	$n_{1maxzul}$	min^{-1}	6000					6000								
Max. backlash*	j	arcmin	≤ 10					≤ 15								
Torsional rigidity	C	Nm/arcmin	8,8					8,0								
Max. radial load (with reference to shaft centre on output shaft)	F_{2rzul}	N	2500					2500								
Max. axial load (with reference to shaft centre on output shaft)	F_{2azul}	N	1900					1900								
Weight	m	kg	3,4					3,6								
Running noise (with n_1 = 3000 min^{-1} without load)	L_{PA}	db(A)	≤ 72					≤ 72								
Inertia (with reference to input) Ø d 9	J_1	$kgcm^2$	0,84	0,59	0,49	0,40	0,37	0,17	0,15	0,13	0,12	0,11	0,11	0,11	0,11	
Ø d 11	J_1	$kgcm^2$	0,84	0,59	0,49	0,40	0,37	0,17	0,15	0,13	0,12	0,11	0,11	0,11	0,11	
Ø d 14	J_1	$kgcm^2$	0,84	0,59	0,49	0,40	0,36	0,16	0,15	0,13	0,11	0,11	0,10	0,10	0,10	
Ø d 19	J_1	$kgcm^2$	0,82	0,57	0,47	0,38	0,34	0,49	0,47	0,41	0,36	0,36	0,33	0,33	0,33	
Ø d 24	J_1	$kgcm^2$	1,05	0,81	0,71	0,62	0,58	0,72	0,71	0,65	0,60	0,59	0,57	0,57	0,57	

* measured with 2% nominal torque on output shaft

MPV 02

TECHNICAL DATA

MPV			02													
Gear stages			1					2								
Ratio	i		3	4	5	7	10	12	16	20	28	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	T_{2bzul}	Nm	200	250	250	250	200	250	250	250	250	250	250	250	200	
Nominal torque on output (with n_{1Nzul})	T_{2Nzul}	Nm	135	170	170	170	110	170	170	170	170	170	170	170	110	
Emergency stop torque (permissible 1000 times during gearbox life time)	$T_{2Notzul}$	Nm	500	625	625	550	500	625	625	625	625	625	625	550	500	
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)	n_{1mzul}	min^{-1}	2000	2500	2500	2800	2800	3100	3100	3100	3500	3500	3500	4200	4200	
Max. input speed	$n_{1maxzul}$	min^{-1}	4800					4800								
Max. backlash*	j	arcmin	≤ 10					≤ 15								
Torsional rigidity	C	Nm/arcmin	23					20								
Max. radial load (with reference to shaft centre on output shaft)	F_{2rzul}	N	4700					4700								
Max. axial load (with reference to shaft centre on output shaft)	F_{2azul}	N	4000					4000								
Weight	m	kg	7,3					7,7								
Running noise (with n_1 = 3000 min^{-1} without load)	L_{PA}	db(A)	≤ 74					≤ 74								
Inertia (with reference to input) Ø d 14	J_1	$kgcm^2$	2,99	2,04	1,66	1,37	1,21	0,60	0,54	0,46	0,39	0,39	0,36	0,35	0,35	
Ø d 19	J_1	$kgcm^2$	2,97	2,02	1,64	1,34	1,18	0,58	0,52	0,44	0,37	0,37	0,34	0,33	0,33	
Ø d 24	J_1	$kgcm^2$	3,39	2,44	2,06	1,76	1,60	1,81	1,75	1,61	1,52	1,51	1,48	1,48	1,48	
Ø d 28	J_1	$kgcm^2$	3,52	2,56	2,19	1,88	1,73	1,94	1,88	1,64	1,65	1,64	1,61	1,60	1,60	
Ø d 32	J_1	$kgcm^2$	4,04	3,08	2,71	2,40	2,25	2,46	2,40	2,26	2,17	2,16	2,13	2,12	2,12	

* measured with 2% nominal torque on output shaft

MPV 03

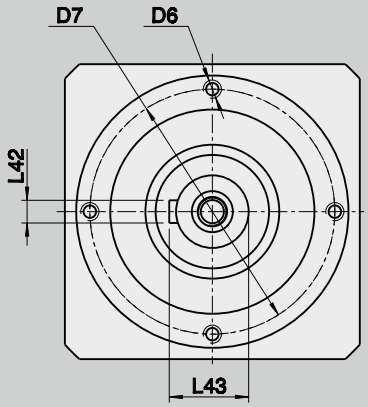
TECHNICAL DATA

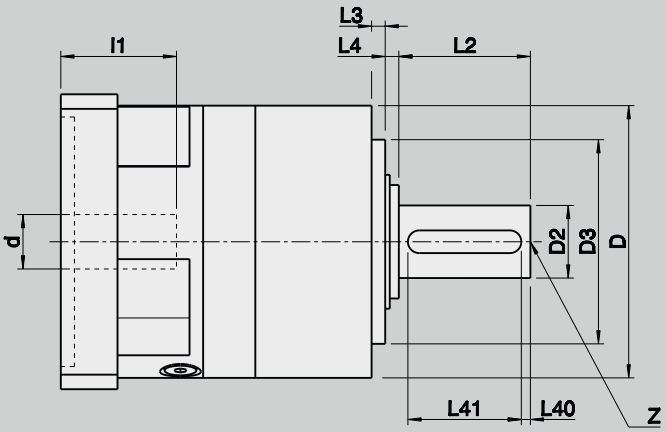
MPV				03													
Gear stages				1					2								
Ratio		i		3	4	5	7	10	12	16	20	28	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)		T_{2bzul}	Nm	400	500	500	500	400	500	500	500	500	500	500	500	400	
Nominal torque on output (with n_{1Nzul})		T_{2Nzul}	Nm	290	360	360	360	220	360	360	360	360	360	360	360	220	
Emergency stop torque (permissible 1000 times during gearbox life time)		$T_{2Notzul}$	Nm	1000	1250	1250	1100	1000	1250	1250	1250	1250	1250	1250	1100	1000	
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)		n_{1mzul}	min^{-1}	1700	2100	2100	2600	2600	2900	2900	2900	3200	3200	3200	3900	3900	
Max. input speed		$n_{1maxzul}$	min^{-1}	4500					4500								
Max. backlash*		j	arcmin	≤ 10					≤ 15								
Torsional rigidity		C	Nm/arcmin	47					42								
Max. radial load (with reference to shaft centre on output shaft)		F_{2rzul}	N	7600					7600								
Max. axial load (with reference to shaft centre on output shaft)		F_{2azul}	N	6000					6000								
Weight		m	kg	14,8					15,8								
Running noise (with n_1 = 3000 min^{-1} without load)		L_{PA}	db(A)	≤ 75					≤ 75								
Inertia (with reference to input)	Ø d 14	J_1	$kgcm^2$	-	-	-	-	-	2,07	1,87	1,56	1,31	1,29	1,17	1,16	1,16	
	Ø d 19	J_1	$kgcm^2$	8,22	5,11	3,90	2,94	2,42	2,05	1,85	1,53	1,29	1,26	1,15	1,14	1,13	
	Ø d 24	J_1	$kgcm^2$	9,47	6,37	5,16	4,18	3,66	2,47	2,27	1,95	1,70	1,68	1,56	1,55	1,55	
	Ø d 28	J_1	$kgcm^2$	10,83	7,72	6,51	5,52	5,01	7,10	6,90	5,75	5,13	5,10	4,80	4,79	4,79	
	Ø d 32	J_1	$kgcm^2$	10,73	7,62	6,41	5,41	4,90	6,99	6,79	5,64	5,02	5,00	4,69	4,69	4,68	
	Ø d 38	J_1	$kgcm^2$	11,75	8,64	7,43	6,44	5,93	8,01	7,82	6,66	6,05	6,03	5,72	5,71	5,71	

* measured with 2% nominal torque on output shaft

MPV 00 – MPV 03

DIMENSIONS 1-STAGE

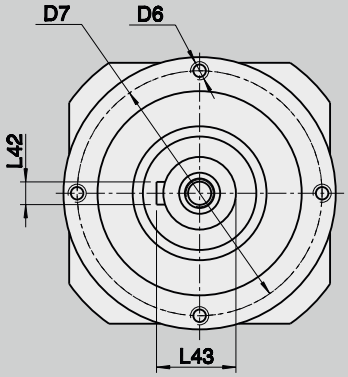


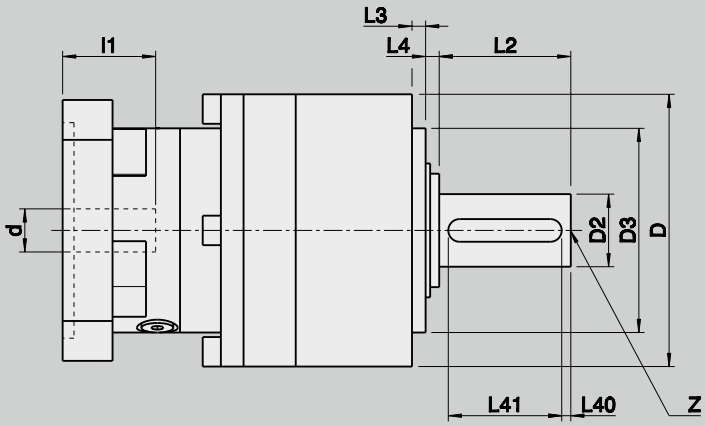


d	x	l1	Size	Ratio	D	D3	D6	D7	L3	L4	D2	x	L2	Z	L40	L41	L42	L43
F7						h6					k6			DIN 332			h9	
9	x	20																
11	x	23	**00**	3 - 10	70	52	M5 x 10	62	5	3	16	x	28	D M5	2	22	5	18,0
14	x	30																
16	x	40																
9	x	20																
11	x	23																
14	x	30	**01**	3 - 10	90	68	M6 x 12	80	5	5	22	x	36	D M8	2	32	6	24,5
19	x	40																
24	x	50																
14	x	30																
19	x	40																
24	x	50	**02**	3 - 10	120	90	M8 x 16	108	6	6	32	x	58	D M12	4	50	10	35,0
28	x	60																
32	x	60																
19	x	40																
24	x	50																
28	x	60	**03**	3 - 10	155	120	M10 x 20	140	8	7	40	x	82	D M16	4	70	12	43,0
32	x	60																
38	x	80																

MPV 00 – MPV 03

DIMENSIONS 2-STAGE

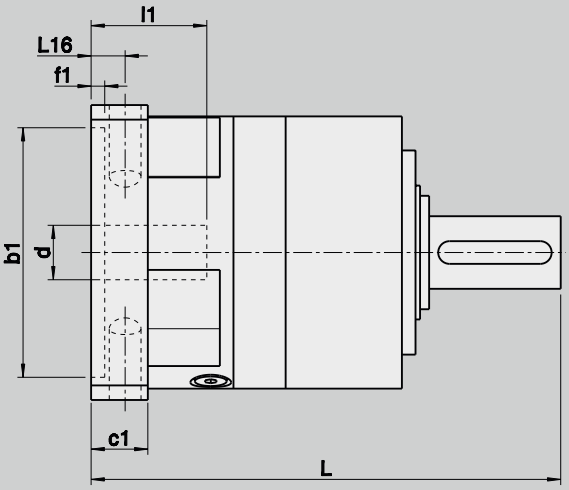


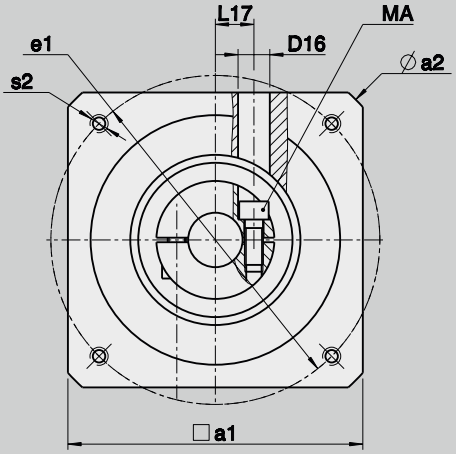


d	x	l1	Size	Ratio	D	D3	D6	D7	L3	L4	D2	x	L2	Z	L40	L41	L42	L43
F7						h6					k6			DIN 332			h9	
9	x	20																
11	x	23	**00**	12 - 100	70	52	M5 x 10	62	5	3	16	x	28	D M5	2	22	5	18,0
14	x	30																
16	x	40																
9	x	20																
11	x	23																
14	x	30	**01**	12 - 100	90	68	M6 x 12	80	5	5	22	x	36	D M8	2	32	6	24,5
19	x	40																
24	x	50																
9	x	20																
11	x	23																
14	x	30																
19	x	40	**02**	12 - 100	120	90	M8 x 16	108	6	6	32	x	58	D M12	4	50	10	35,0
24	x	50																
28	x	60																
32	x	60																
14	x	30																
19	x	40																
24	x	50	**03**	12 - 100	155	120	M10 x 20	140	8	7	40	x	82	D M16	4	70	12	43,0
28	x	60																
32	x	60																
38	x	80																

MPV 00 – MPV 03

DIMENSIONS MOTOR MOUNTING 1-STAGE





Gearbox dimensions

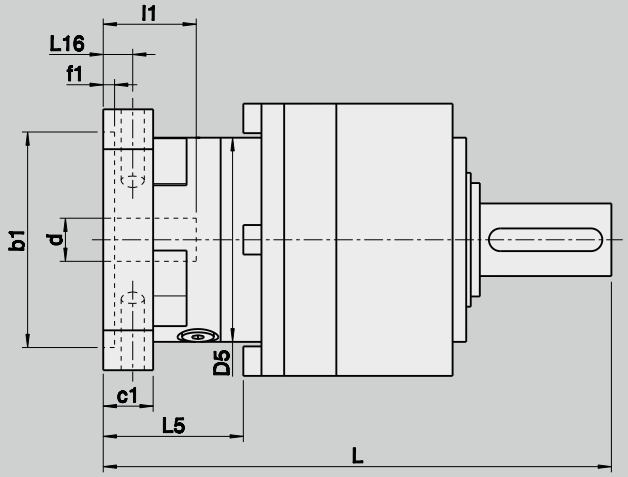
d	x	l1	Size	L	L16	L17	c1	f1	D16	Screw type	MA
F7											[Nm]
9	x	20	00	130,0	10,0	10	16,0	4,5	8,5	M5 / 8.8	5
11	x	23		130,0	10,0	10	16,0	4,5	8,5	M5 / 8.8	5
14	x	30		130,0	10,0	10	16,0	4,5	8,5	M5 / 8.8	5
16	x	40		150,0	30,0	11	36,0	4,5	8,5	M5 / 12.9	9
9	x	20	01	158,0	13,0	13	22,0	5,0	10,0	M5 / 8.8	5
11	x	23		158,0	13,0	13	22,0	5,0	10,0	M5 / 12.9	9
14	x	30		158,0	13,0	13	22,0	5,0	10,0	M5 / 12.9	9
19	x	40		158,0	13,0	13	22,0	5,0	10,0	M5 / 12.9	9
24	x	50		168,0	23,0	15	32,0	5,0	10,0	M5 / 12.9	9
14	x	30	02	207,0	15,0	17	25,0	6,0	14,0	M6 / 12.9	16
19	x	40		207,0	15,0	17	25,0	6,0	14,0	M6 / 12.9	16
24	x	50		207,0	15,0	17	25,0	6,0	14,0	M8 / 12.9	40
28	x	60		217,0	25,0	19	35,0	6,0	14,0	M8 / 12.9	40
32	x	60		217,0	25,0	19	35,0	6,0	14,0	M8 / 12.9	40
19	x	40	03	262,0	18,0	24	30,0	6,0	17,5	M6 / 12.9	16
24	x	50		262,0	18,0	24	30,0	6,0	17,5	M8 / 12.9	40
28	x	60		262,0	18,0	24	30,0	6,0	17,5	M10 / 12.9	80
32	x	60		262,0	18,0	24	30,0	6,0	17,5	M10 / 12.9	80
38	x	80		282,0	38,0	24	50,0	6,0	17,5	M10 / 12.9	80

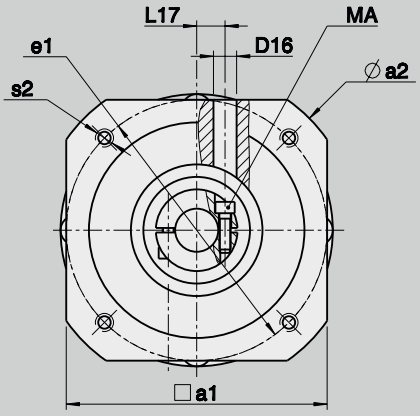
Motor dimensions

a1	75	95	125	90	95	75	95	125	75	95	125	90	95	125	90	95	125	115	125	130	160	140	160	200
a2	85	105	140	120	120	90	105	140	100	105	140	105	105	140	120	120	140	140	140	160	180	190	190	250
b1	50	50	50	50	50	60	60	60	70	70	70	70	70	70	80	80	80	95	95	110	110	130	130	180
e1	70	70	70	95	95	75	75	75	85	85	85	90	90	90	100	100	100	115	115	130	130	165	165	215
s2	M5 x10 -	M5 x10 -	M5 x10 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M5 x10 Ø 5,5	M5 x10 -	M5 x10 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M6 x12 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M6 x12 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M6 x12 -	M8 x16 Ø 9,0	M8 x16 Ø 9,0	M8 x 16 Ø 9,0	M8 x16 Ø 9,0	M10 x20 Ø 11,0	M10 x20 Ø 11,0	M12 x24 Ø 13,0
	x			x		x			x			x			x			x						
	x			x		x			x			x			x			x						
	x			x		x			x			x			x			x						
	x			x		x			x			x			x			x						
		x			x		x			x			x			x			x		x			
		x			x		x			x			x			x			x		x			
		x			x		x			x			x			x			x		x			
		x			x		x			x			x			x			x		x			
		x			x		x			x			x			x			x		x			
			x					x			x			x			x		x	x		x		x
			x					x			x			x			x		x	x		x		x
			x					x			x			x			x		x	x		x		x
			x					x			x			x			x		x	x		x		x
			x					x			x			x			x		x	x		x		x
																					x		x	x
																					x		x	x
																					x		x	x
																					x		x	x
																					x		x	x

MPV 00 – MPV 03

DIMENSIONS MOTOR MOUNTING 2-STAGE





Gearbox dimensions

d	x	l1	Size	L	L16	L17	c1	f1	D5	L5	D16	Screw type	MA
F7													[Nm]
9	x	20	00	152,0	10,0	10	16,0	4,5	70	-	8,5	M5 / 8.8	5
11	x	23		152,0	10,0	10	16,0	4,5	70	-	8,5	M5 / 8.8	5
14	x	30		152,0	10,0	10	16,0	4,5	70	-	8,5	M5 / 8.8	5
16	x	40		172,0	30,0	11	36,0	4,5	70	-	8,5	M5 / 12.9	9
9	x	20	01	170,0	10,0	10	16,0	4,5	70	48	8,5	M5 / 8.8	5
11	x	23		170,0	10,0	10	16,0	4,5	70	48	8,5	M5 / 8.8	5
14	x	30		170,0	10,0	10	16,0	4,5	70	48	8,5	M5 / 8.8	5
19	x	40		185,0	13,0	13	22,0	5,0	90	-	10,0	M5 / 12.9	9
24	x	50		195,0	23,0	15	32,0	5,0	90	-	10,0	M5 / 12.9	9
9	x	20	02	224,0	13,0	13	22,0	5,0	90	60	10,0	M5 / 8.8	5
11	x	23		224,0	13,0	13	22,0	5,0	90	60	10,0	M5 / 12.9	9
14	x	30		224,0	13,0	13	22,0	5,0	90	60	10,0	M5 / 12.9	9
19	x	40		224,0	13,0	13	22,0	5,0	90	60	10,0	M5 / 12.9	9
24	x	50		240,0	15,0	17	25,0	6,0	120	-	14,0	M8 / 12.9	40
28	x	60		250,0	25,0	21	35,0	6,0	120	-	14,0	M8 / 12.9	40
32	x	60		250,0	25,0	21	35,0	6,0	120	-	14,0	M8 / 12.9	40
14	x	30	03	285,5	15,0	17	25,0	6,0	120	76	14,0	M6 / 12.9	16
19	x	40		285,5	15,0	17	25,0	6,0	120	76	14,0	M6 / 12.9	16
24	x	50		285,5	15,0	17	25,0	6,0	120	76	14,0	M8 / 12.9	40
28	x	60		303,0	18,0	24	30,0	6,0	155	-	17,5	M10 / 12.9	80
32	x	60		303,0	18,0	24	30,0	6,0	155	-	17,5	M10 / 12.9	80
38	x	80		323,0	38,0	24	50,0	6,0	155	-	17,5	M10 / 12.9	80

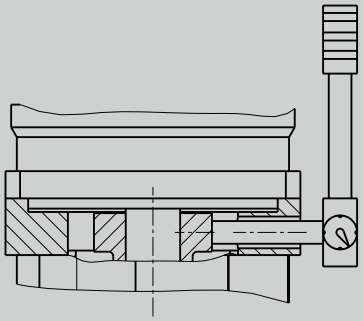
Motor dimensions																								
a1	75	95	125	90	95	75	95	125	75	95	125	90	95	125	90	95	125	115	125	130	160	140	160	200
a2	85	105	140	120	120	90	105	140	100	105	140	105	105	140	120	120	140	140	140	160	180	190	190	250
b1	50	50	50	50	50	60	60	60	70	70	70	70	70	70	80	80	80	95	95	110	110	130	130	180
e1	70	70	70	95	95	75	75	75	85	85	85	90	90	90	100	100	100	115	115	130	130	165	165	215
s2	M5 x10 -	M5 x10 -	M5 x10 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M5 x10 Ø 5,5	M5 x10 -	M5 x10 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M6 x12 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M6 x12 -	M6 x12 Ø 7,0	M6 x12 Ø 7,0	M6 x12 -	M8 x16 Ø 9,0	M8 x16 Ø 9,0	M8 x16 Ø 9,0	M8 x16 Ø 9,0	M10 x20 Ø 11,0	M10 x20 Ø 11,0	M12 x24 Ø 13,0
	x			x		x			x			x			x			x						
	x			x		x			x			x			x			x						
	x			x		x			x			x			x			x						
	x			x		x			x			x			x			x						
	x			x		x			x			x			x			x						
	x			x		x			x			x			x			x						
	x			x		x			x			x			x			x						
		x			x		x			x			x			x		x		x		x		
		x			x		x			x			x			x		x		x		x		
		x			x		x			x			x			x		x		x		x		x
		x			x		x			x			x			x		x		x		x		x
		x			x		x			x			x			x		x		x		x		x
		x			x		x			x			x			x		x		x		x		x
			x					x			x			x			x		x	x		x		x
			x					x			x			x			x		x	x		x		x
			x					x			x			x			x		x	x		x		x
			x					x			x			x			x		x	x		x		
			x					x			x			x			x		x	x		x		
			x					x			x			x			x		x	x		x		
																					x		x	x
																					x		x	x
																					x		x	x

MOTOR MOUNTING FOR ALL TYPES

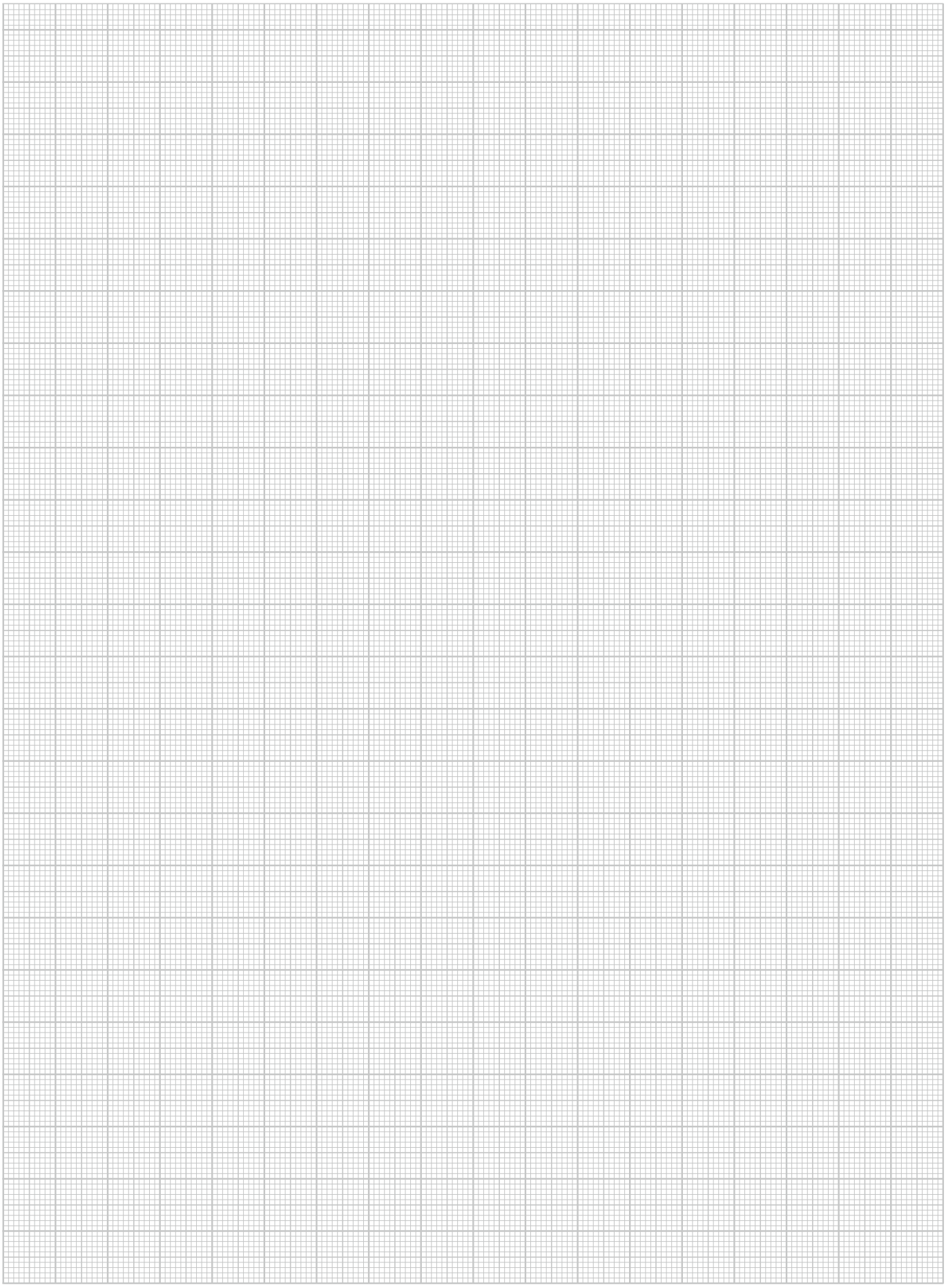
The connection between motor and gearbox is made using a shrink disc bush without a keyway. For maximum performance we recommend the use of motors with reduced shaft tolerance and concentricity according to DIN 42955 R standards.

When fitting the motor, position the gearbox vertically with the motor flange upwards. Before assembly, degrease the motor shaft and the blind hole in the gearbox. Remove the lock screw or two plastic plugs from the motor flange of the gearbox, and insert a long Allen key to reach the tangential clamping screw in the coupling. The coupling must first be turned to the correct position for the screw to be accessible. Lower the motor vertically with the motor shaft in the blind hole. Ensure that the motor shaft has completely entered the bore, and that the flanges of motor and gearbox are in contact with each other over their full surface. The motor flange screws can now be inserted (do not tighten them completely). Then tighten the screws of the coupling with the required tightening torque. Do this in 3 steps alternately with 20%, 50% and then 100%.

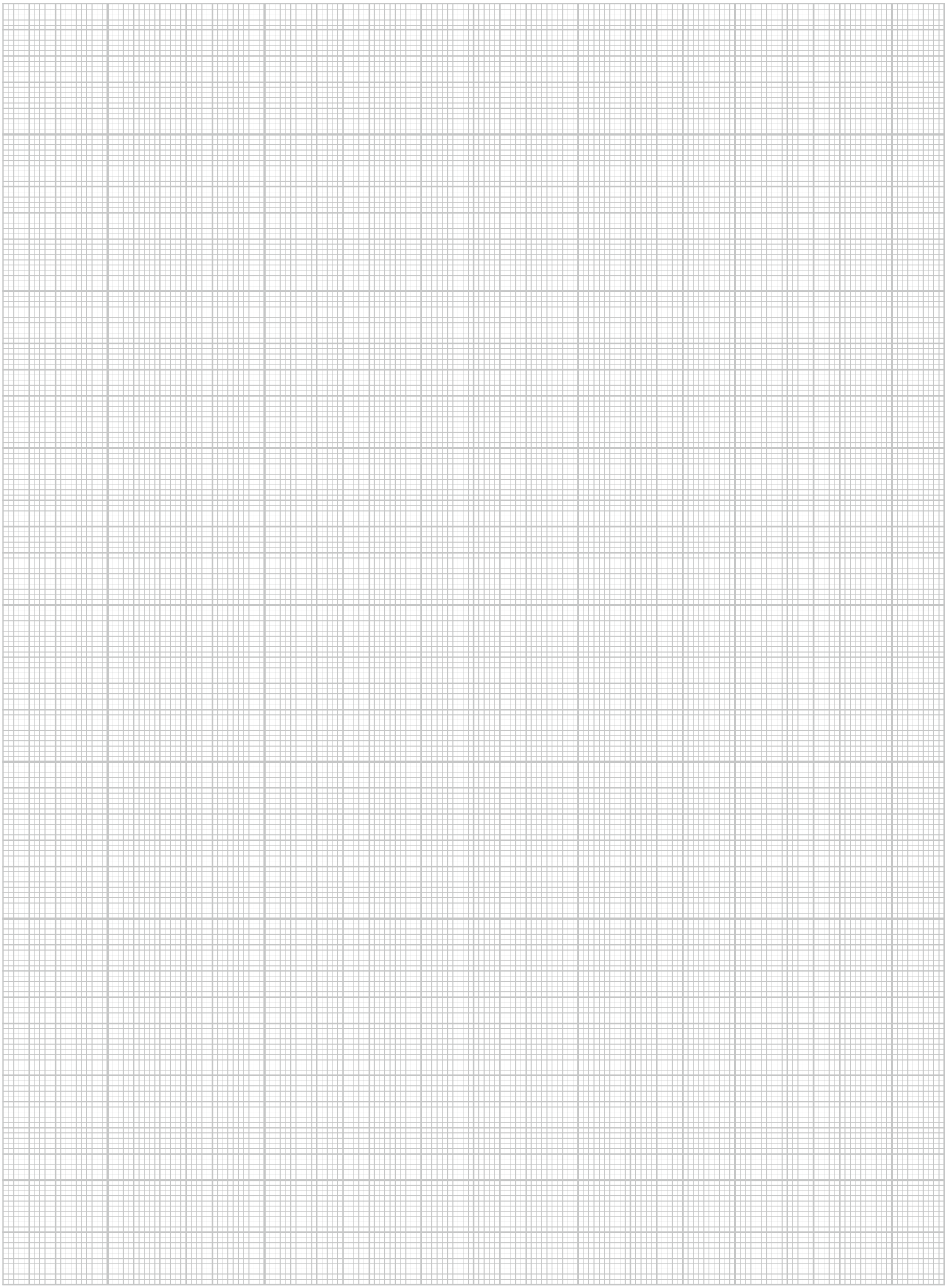
The torque values for motor mounting can be accessed in our motor mounting manual, which is offered separately. Finish tightening the motor flange screws. After assembly, it is important to reinsert the lock screw or plastic plugs into their holes.



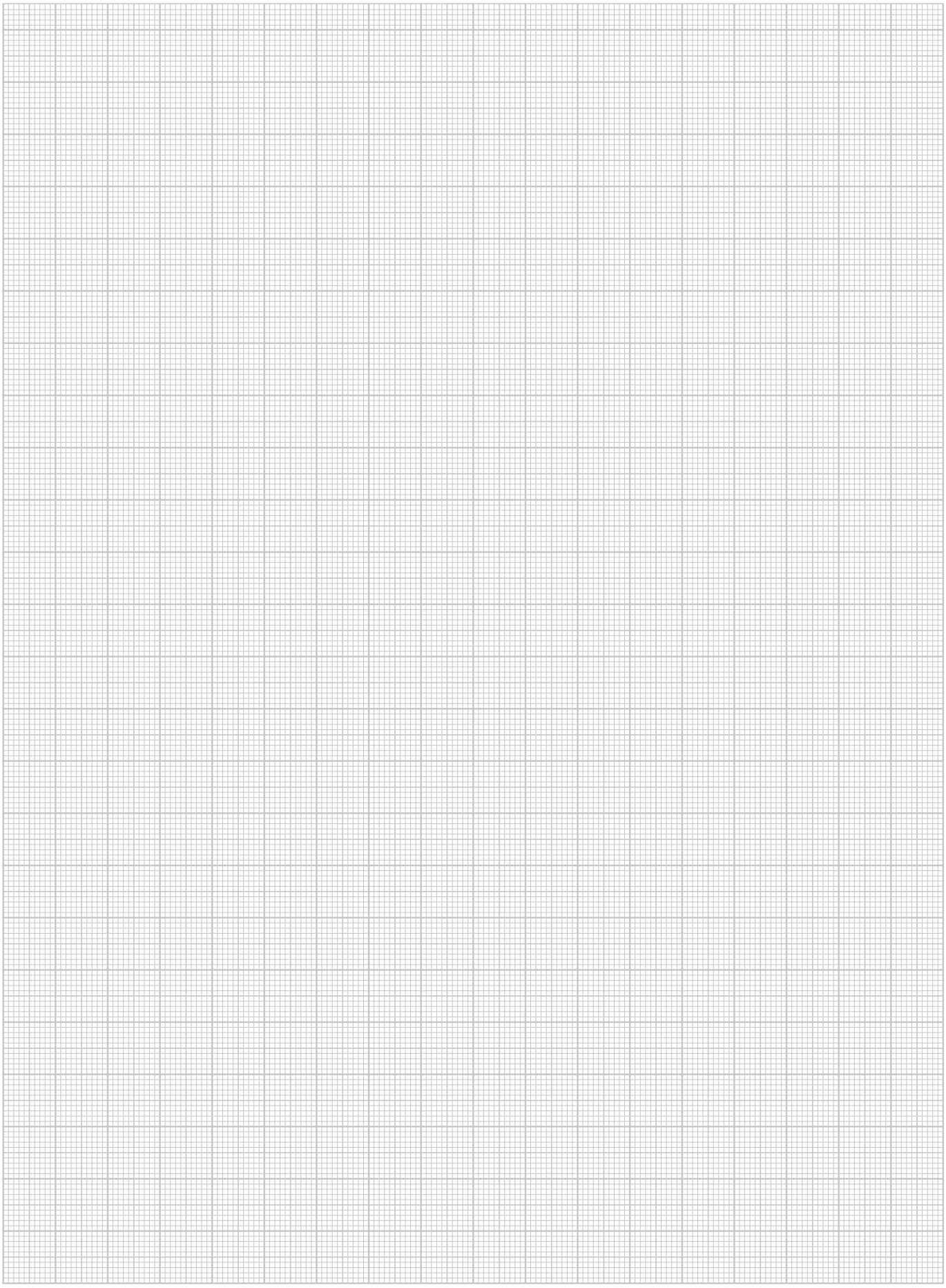
N O T E S



N O T E S



N O T E S



DISTRIBUTION PARTNERS

Germany

Region Nord
Lenze Vertrieb GmbH
Dornenpark 1
31840 HESSISCH OLDENDORF
Phone: +49 51 52 / 90 36-0
Telefax: +49 51 52 / 90 36-33
E-Mail: Region-Nord@lenze.de
Internet: www.lenze.de

Region West
Lenze Vertrieb GmbH
Kelvinstraße 7
47506 NEUKIRCHEN-VLUYN
Phone: +49 28 45 / 95 93-0
Telefax: +49 28 45 / 95 93-93
E-Mail: Region-West@lenze.de
Internet: www.lenze.de

Region Mitte - Ost
Lenze Vertrieb GmbH
Austraße 81
35745 HERBORN
Phone: +49 27 72 / 95 94-0
Telefax: +49 27 72 / 5 30-79
E-Mail: Region-Mitte@lenze.de
Internet: www.lenze.de

Vertriebsbüro Ost
Gertrud Caspari Straße 13
01109 DRESDEN
Phone: +49 351 / 81167-0
Telefax: +49 351/ 81167-66
E-Mail: Region-Ost@lenze.de
Internet: www.lenze.de

Region Südwest
Lenze Vertrieb GmbH
Schänzle 8
71332 WAIBLINGEN
Phone: +49 71 51 / 9 59 81-0
Telefax: +49 71 51 / 9 59 81-50
E-Mail: Region-Suedwest@lenze.de
Internet: www.lenze.de

Region Süd
Lenze Vertrieb GmbH
Fraunhoferstraße 16
82152 MARTINSRIED
Phone: +49 89 / 89 56 14-0
Telefax: +49 89 / 89 56 14-14
E-Mail: Region-Sued@lenze.de
Internet: www.lenze.de

Australia

FCR Motion Technology Pty. Ltd.
Unit 6 / Automation Place
38-40 Little Boundary Road
P.O. Box 359
LAVERTON NORTH. 3026 VICTORIA
Phone: +61 3 / 93 62 68 00
Telefax: +61 3 / 93 14 37 44
E-Mail: vicsales@fcrmotion.com
Internet: www.fcrmotion.com

Austria

Lenze Antriebstechnik GmbH
Ipf-Landesstraße 1
4481 ASTEN
Phone: +43 72 24 / 21 0-0
Telefax: +43 72 24 / 21 0-109
E-Mail: info@lenze.at
Internet: www.lenze.at

Office Dornbirn
Lustenauer Straße 64
6850 DORNBIRN
Phone: +43 72 24 / 21 0-0
Telefax: +43 72 24 / 21 0-7299
Internet: www.lenze.at

Office Wr. Neudorf
Triester Straße 14/109
2351 WR. NEUDORF
Phone: +43 72 24 / 21 0-0
Telefax: +43 72 24 / 21 0-7099
Internet: www.lenze.at

Office Graz
Seering 8
8141 UNTERPREMSTÄTTEN
Phone: +43 72 24 / 21 0-0
Telefax: +43 72 24 / 21 0-7199
Internet: www.lenze.at

Belgium

Lenze b. v. b. a.
Industriepark Noord, 19
9100 SINT-NIKLAAS
Phone: +32 3 / 54 26 20 0
Telefax: +32 3 / 54 13 75 4
E-Mail: lepeleire@lenze.be
Internet: www.lenze.be

Brazil

IMETEX Comercio
e Participacoes Ltda.
Rua Alexandre Dumas 1213
CEP 04717-902
CHACARA ST. ANTONIO - SANTO AMARO -SP
Phone: +55 11 / 51 80 17 77
Telefax: +5511 / 51 81 17 77
E-mail: contato@imetex.com.br
Internet: www.imetex.com.br

China

On Gear E & M Products Ltd.
Room 506-509, 5/F.,
CCT Telecom Building,
11 Wo Shing Street,
Fotan, N.T., HONG KONG
Phone: +8 52 / 26 90 33 20
Telefax: +8 52 / 26 90 23 26
E-Mail: emp@ongear.com.hk
Internet: www.ongear.com.cn

On Gear Trading (Shanghai)
Co. Ltd (Beijing Office)
Room 16C, Block B
Ying Te International Apartment
No. 28, Xibahe Xi Li
Chaoyang District
BEIJING, 100028
P.R. CHINA
Postal code: 100028
Phone: +010 / 64 47 60 11
Telefax: +010 / 64 47 60 10
E-Mail: bjoffice@ongear.com.hk
Internet: www.ongear.com.cn

On Gear E & M Products Ltd.
(Liaison office)
Room 16D, Zhabei Square
No. 99 Tian Mu Xi Road
SHANGHAI
Postal code: 200070
Phone: +86 21 / 63 80 31 45
Telefax: +86 21 / 63 80 36 81
E-Mail: shoffice@ongear.com.hk
Internet: www.ongear.com.cn

On Gear E & M Products Ltd.
(Liaison office)
Room C, 8/F., Sino Centre
No. 211 Changgang Zhong Road,
GUANGZHOU
Postal code: 510250
Phone: +86 20 / 34 33 29 95
Telefax: +86 20 / 34 33 29 90
E-Mail: gzoffice@ongear.com.hk
Internet: www.ongear.com.cn

Czech Republic

Lenze s.r.o.
Central Trade Park D1
396 01 HUMPOLEC
Phone: +42 0 36 73 50
Telefax: +42 0 36 73 99
E-Mail: info@lenze.cz
Internet: www.lenze.cz

Büro Cerveny Kostelec
Lenze, s.r.o.
17. listopadu 510
549 41 CERVENY KOSTELEC
Phone +42 0 4 91 46 71 11
Telefax +42 0 4 91 46 71 66
E-Mail: info-CK@lenze.cz
Internet: www.lenze.cz

Denmark

Lenze A/S
Vallensbaekvej 18A
2605 BRØNDBY
Phone: +45 / 46 96 66 66
Telefax: +45 / 46 96 66 60
E-Mail: lenze@lenze.dk
Internet: www.lenze.dk

Office Jylland
Lenze A/S
Niels Bohrs Vej 23
8660 SKANDERBORG
Phone: +45 / 46 96 66 88
Telefax: +45 / 46 96 66 80
Internet: www.lenze.dk

Finland

Lenze Drives
Tierankatu 8
20520 TURKU
Phone: +358 2 / 27 48 18 0
Telefax: +358 2 / 27 48 18 9
E-Mail: lenze@lenze.fi
Internet: www.lenze.fi

France

Lenze S. A.
Z.I. DES MARDELLES
44 RUE BLAISE PASCAL
93600 AULNAY SOUS BOIS
Phone: +33 8 25 08 60 36
Telefax: +33 8 25 08 63 46
E-Mail: info@lenze.fr
Internet: www.lenze.fr

Hungary

Lenze Antriebstechnik
Handels-GmbH
Gyar utca 2.
2040 BUDAÖRS
Phone: +36 23 / 50 13 20
Telefax: +36 23 / 50 13 39
E-Mail: info@lenze.hu
Internet: www.lenze.hu

India

Lenze Mechatronics Pvt. Ltd
Plot No. 46A, Sector-10
PCNTDA Industrial Area
Bhosari
PUNE-411 026, INDIA

Phone: +91-20-66318100
Telefax: +91-20-66318120
Enquiry: marketing@lenze.in
Service: service@lenze.in
Internet: www.lenze.in

Gefran India Pvt. Ltd.
Survey No.: 129/1, Nandan Park,
Plot No: 6, Chakankar Mala,
Baner-Balewadi Road, Baner
PUNE 411 045, MH, INDIA

Phone: +91-20-66400400
Telefax: +91-20-66400401
E-Mail: gefran.india@gefra.in

Iran

Tavan Ressan Co. Ltd.
P.O.Box: 19395 - 5177
No.44, Sh. Bakhtiary St.,
South Dastour Ave.
Sadr Exp Way
IRAN-TEHRAN 19396

Head office:
Phone: +98 21 / 22 64 89-14
Telefax: +98 21 / 22 00 90 03
Sales:
Phone: +98 21 / 22 60 26 55
Telefax: +98 21 / 22 00 28 83
E-Mail: info@tavanresan.com
Internet: www.tavanresan.com

Israel

Greenshpon RAM
Boaz 3
34487 HAIFA

Phone: +972 52 - 4 76 14 26
Telefax: +972 4 - 8 14 60 37
E-Mail: ram@greenshpon.de
Internet: www.greenshpon.co.il

Italy

Lenze Gerit S.r.l.
Viale Monza, 338
20128 MILANO

Phone: +39 02 / 27 09 81
Telefax: +39 02 / 27 09 82 90
E-Mail: mail@gerit.it
Internet: www.gerit.it

Korea

Dana Automation Inc.
#306. Hyundai Parkville
108. Kuro 5-Dong, Kuro-Ku
SEOUL (152-843)

Phone: +82-2-830-8701 (Rep)
Telefax: +82-2-830-8702
E-mail: tsmaing1@kornet.net
Internet: www.danaauto.co.kr

Lithuania/Latvia

Lenze UAB
Breslaujos g. 3,
44403 KAUNAS

Phone: +370 37 407174
Telefax: +370 37 407175
E-Mail: info@lenze.lt
Internet: www.lenze.lt

Netherlands

Lenze B. V.
Ploegweg 15
5232 BR`S-HERTOGENBOSCH

Phone: +31 73 / 64 56 50 0
Telefax: +31 73 / 64 56 51 0
E-Mail: lenze@lenze.nl
Internet: www.lenze.nl

New Zealand

Tranz Corporation
343 Church Street
Penrose
AUCKLAND

Phone: +64 9 / 63 45 51 1
Telefax: +64 9 / 63 45 51 8
E-Mail: sales@tranzcorp.co.nz
Internet: www.tranzcorp.co.nz

Norway

DtC-Lenze as
Stallbakken 5
2005 RAELINGEN

Phone: +47 / 64 80 25 10
Telefax: +47 / 64 80 25 11
E-Mail: dtc-lenze@dtc.no
Internet: www.dtc.no

Poland

Lenze-Rotiw SP. z o.o
ul. Rozdzienskiego 188B
40-203 KATOWICE

Phone: +48 32 / 20 39 77 3
Telefax: +48 32 / 78 10 18 0
E-Mail: lenze@lenze-rotiw.com.pl
Internet: www.lenze-rotiw.com.pl

Russia

Inteldrive
1 Buhvostova Street 12/11
Korpus 18 Office 213
MOSCOW 107258

Phone: +7 495 / 963 96 86
Telefax: +7 495 / 963 96 86
Phone: +7 495 / 748 78 27
Telefax: +7 495 / 748 78 27
E-Mail: info@inteldrive.ru
Internet: www.inteldrive.ru

Sweden

Lenze Transmissioner AB
Attorpsgatan 12
58110 LINKÖPING

Phone: +46 13-35 58 00
Telefax: +46 13-10 36 23
E-Mail: lenze@lenze.se
Internet: www.lenze.se

Slovenia

LENZE GmbH, Asten, Avstrija
Podružnica Celje
Kidričeva 24
3000 CELJE

Phone: +386 03 426 46 40
Telefax: +386 03 426 46 50
E-Mail: info@lenze.si
Internet: www.lenze.at

South Africa

S. A. Power Services (Pty.) Ltd.
Unit 14 Meadowbrook Business
Estates Jacaranda Ave
Olivedale, RANDBURG 2158
P. O. Box 1137
RANDBURG 2125

Phone: +27 11 462 8810
Telefax: +27 11 704 5775
E-Mail: sapower@iafrica.com
Internet: www.sapower.co.za

Spain

Lenze Transmisiones, S. A.
Mila i Fontanals, 135-139
08205 SABADELL (BARCELONA)

Phone: +34 93 / 72 07 68 0
Telefax: +34 93 / 71 22 54 1
E-Mail: lenze@lenze.es
Internet: www.lenze.es

Switzerland

Lenze Bachofen AG
Ackerstrasse 45
8610 USTER-ZÜRICH

Phone: +41 43 399 14 14
Telefax: +41 43 399 14 24
E-Mail: info@lenze-bachofen.ch
Internet: www.lenze-bachofen.ch

Vente Suisse Romande
Route de Prilly 25
1023 CRISSIER

Phone: +41 21 / 63 721 90
Telefax: + 41 21 / 63 721 99
Internet: www.lenze-bachofen.ch

Thailand

PSG-Wesco Co., Ltd.
119 , Moo 5 Soi 12,
Highway No. 36, Tumble Makhamkoo,
Amphur Nikhom Phattana
Rayong Province 21180

Phone: +66 38 917 164
Telefax: +66 38 893 139
E-Mail: krit@packsysglobal.com
Internet: www.packsysglobal.com

Turkey

LSE Elektrik Elektronik Makine
Otomasyon Mühendislik
San. Ve Tic. Ltd. Sti.
Atatürk Mah. Cumhuriyet Cad.
Yurt Sok. No. 7
ÜMRANIYE / ISTANBUL

Phone: +90 216 / 316 51 38
Telefax: +90 216 / 443 42 77
E-Mail: ckaraman@lenze.com.tr
Internet: www.lenze.com.tr

United Arab Emirates

LPT (FZC)
Lenze Power Transmission
X4 Bld. Number 37
Sharjah Airport International
Free Zone (Saif Zone)

Phone: +971 6 5573205
Telefax: +971 6 5573206
E-Mail: info@lenze.ae

United Kingdom / Eire

Lenze Ltd.
Caxton Road
BEDFORD MK 41 0HT

Phone: +44 1234 / 32 13 21
Telefax: +44 1234 / 35 52 99
E-Mail: sales@lenze.co.uk
Internet: www.lenze.co.uk

Ukraine

SV Altera, Ltd.
Ivana Lepse blvd., 4
030680 KYIV

Phone: +380-44-496-1888
Telefax: +380-44-496-1818
E-Mail: office@sv-altera.com
Internet: www.svaltera.ua

USA

Lenze - AC Tech
630 Douglas Street
UXBRIDGE, MA 01569

Phone: +1 508 / 278-9100
Telefax: +1 508 / 278-7873
E-Mail: marketing@lenze-actech.com
Internet: www.lenze-actech.com

ENQUIRY AND ORDER FORM

Customer / company

Customer number

Street

Postal code **City**

Country

Contact person

Telephone **Fax**

E-mail

Date

☐ **Enquiry**

☐ **Order**

☐ **Please contact me**

Custom design:

☐ **yes**

☐ **no**

Please note: with "yes", please fill in additional information on page 67

Validity of data is hereby confirmed:

Company stamp and signature:

Name in printed characters City Date

Customer drawing:

Quantity:

Gearbox type:

Size:

Ratio:

Construction type:

Backlash: ☐ Standard ☐ Reduced

Runtime h/day:

Starts/h:

Operating mode:

Ambient temperature: °C

Ambient air:
☐ Pure, free of particles
☐ Paper and textile fibres
☐ Dust
☐ Gas
☐ Other particles

Output torque: Nm

Output speed: rpm

Lubrication:
☐ Grease ☐ Oil
☐ Mineral ☐ Synthetic
☐ For use in the food industry

Underside:

Breather side:

Oil sight glass side:

Drainage side:

Motor data:

Motor type:

Motor power [kW]:

Speed [min^{-1}]:

Blind hole (Ød x l1):

Pitch circle Ø (e1):

Register Ø (b1):

Motor mounting (s2):

Square dimensions (a1):

Application area / usage _____

_____

Comments / supplementary information / requirements: _____

_____

Recorded by _____

Date _____

Return fax to Mr /Mrs _____

Fax: +49 7022 / 6001- _____

Return info by email to _____

VOGEL Service
We would be very pleased to show you our current gearbox models.
Our qualified consultants are happy to be of service.

Please select the service you require

☐ Consultation ☐ Catalogues ☐ CD-ROM

Your stamp:

Wilhelm Vogel GmbH Antriebstechnik
Stattmannstraße 1 · 72644 Oberboihingen · Germany
Telephone +49 70 22 / 60 01-0 · Fax Distribution +49 70 22 / 60 01-250 · Fax Purchasing +49 70 22 / 60 01-444
info@vogel-antriebe.de · www.vogel-antriebe.de