



alphira® – The basic precision



alpha

a WITTENSTEIN AG company

alphira® – The basic precision

Precision merged with high torques for simple servo applications

alphira® – the ideal gearhead for simple servo applications – merges outstanding precision with high torques. alpha – the inventor of a new performance class. alpha has never been more affordable.

Total reliability

alphira® guarantees absolute reliability thanks to its industry leading design and sizing methods, backed by extensive testing.

alphira® profits from alpha's broad experience in many areas of mechanical engineering, the manufacturing industry, the aerospace sector and medical technology.

Total flexibility

A wide range of motor types for any operating mode or installation position – **alphira®** could hardly be more flexible!

Even motors with large shafts can be mounted as standard.

Lightweight design

Thanks to the mature design, carefully selected materials and renowned alpha expertise in lightweight construction, **alphira®**'s power density is phenomenal.

Minimal no-load torque

alphira® – a gearhead solution that can be driven with even the smallest motor.

High efficiency

With an efficiency of more than 97% (single-stage at full load), **alphira®** is optimized for economical operation.

With its high potential speeds, it boosts your productivity.



alpha benefits at a glance:

alpha e-shop

Fast, flexible, efficient 24-hour online service

Record-breaking lifespan

Extremely long service life that results from intelligent design, proven sealing technology and incredibly strong output bearings

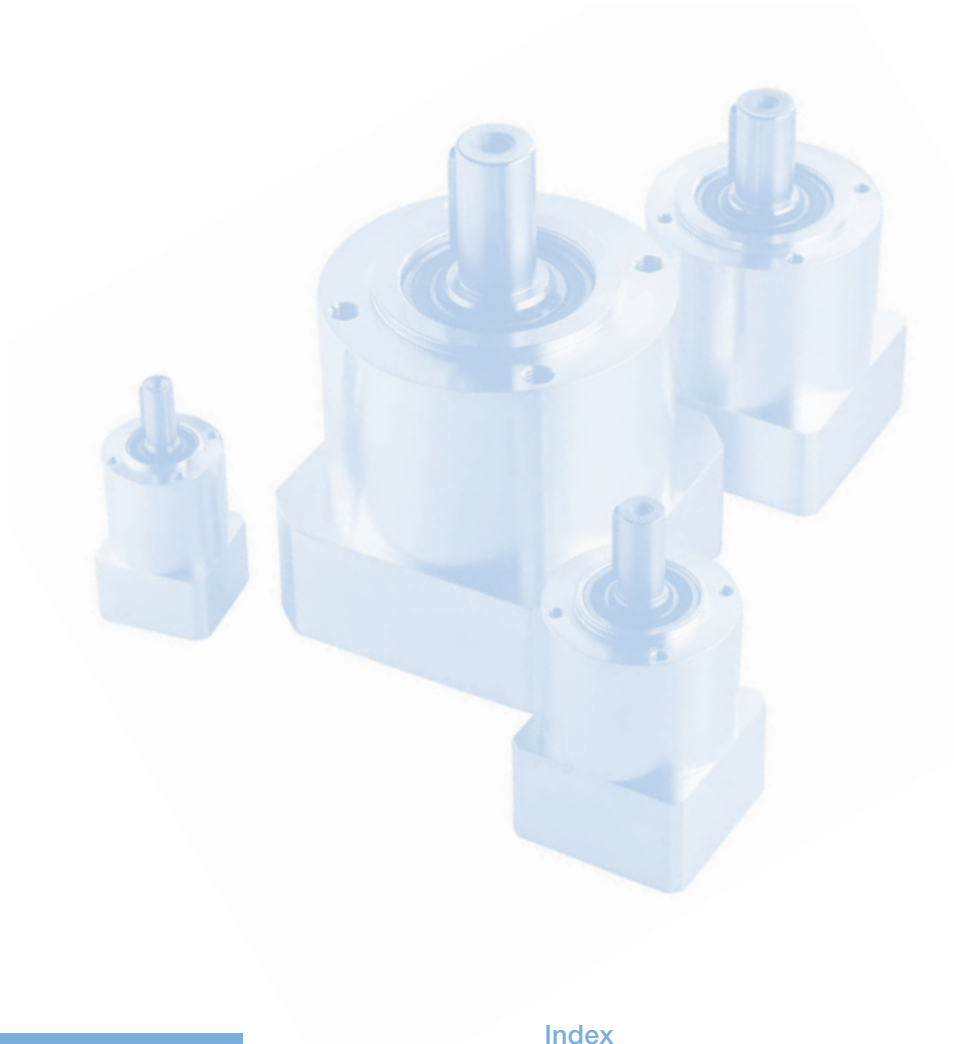
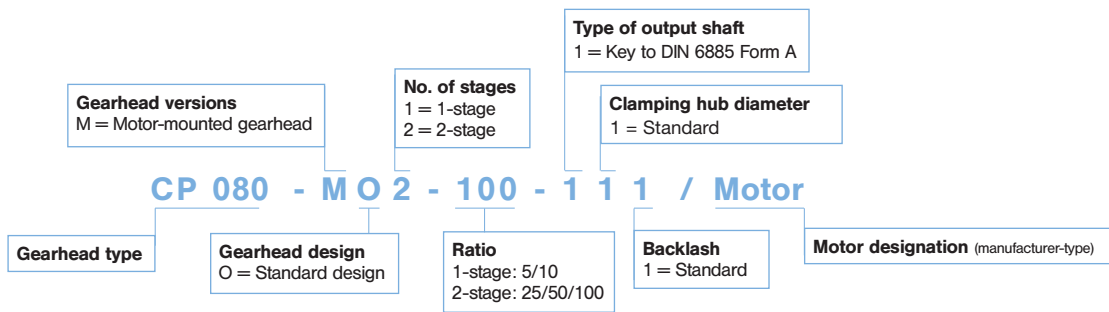
Easy motor mounting

Simple and reliable mounting to the motor in a single step

Top quality from alpha

In-house development and manufacture of all products combined with a pioneering spirit and an insatiable urge to improve

Ordering key for gearhead



Symbols and Index

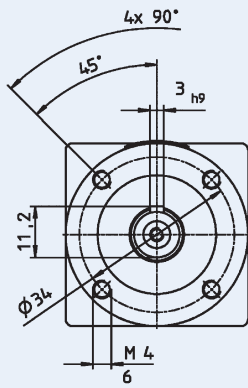
Symbol	Unit	Designation
c	Nm/arcmin	Rigidity
F	N	Force
i	-	Ratio
j	arcmin	Backlash
J	kgcm ²	Mass moment of inertia
L	h	Service life
M	Nm	Moment
n	rpm	Speed
η	%	Efficiency
T	Nm	Torque

Index

1	Input
2	Output
A/a	Axial
B/b	Acceleration
h	Hours
K/k	Tilt
m	Mass
Max/max	Maximum
Mot	Motor
N	Nominal
Not/not	Emergency stop
0	No-load running
R/r	Radial
t	Torsional

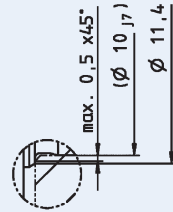
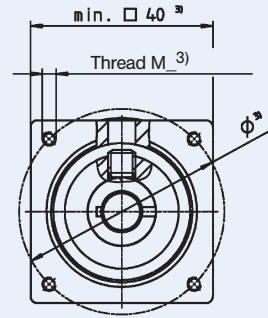
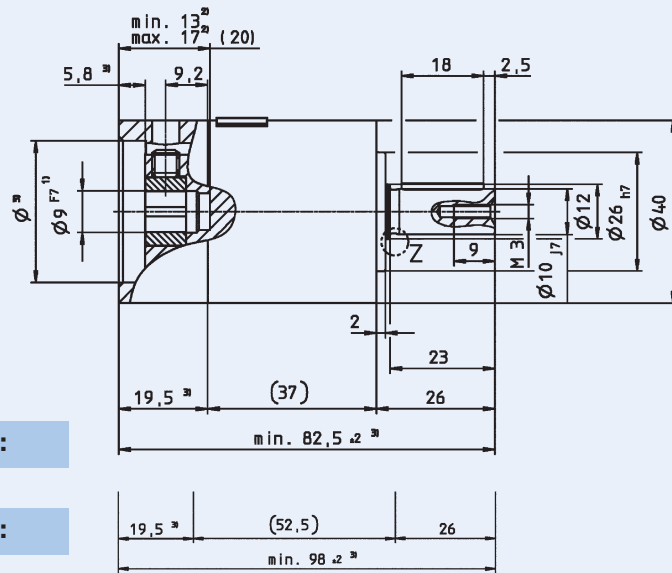
capital letters
small letters

Permissible values
Actual values



1-stage:

2-stage:



Technical data

			1-stage		2-stage		
Ratio	i		5	10	25	50	100
Max. acceleration torque at output	T_{2B}	Nm	11.5	10.5	11.5	11.5	10.5
Nominal output torque (in continuous duty)	T_{2N}	Nm	5.7	5.2	5.7	5.7	5.2
Emergency stop torque at output (permitted 100x during the gearhead service life)	T_{2Not}	Nm	26	26	26	26	26
Permissible mean input speed (at 20 °C ambient temperature) ⁵⁾	n_{1N}	min ⁻¹	4000	4000	4000	4000	4000
No-load torque ($n_1 = 3000$ rpm) (at 20 °C gearhead temperature)	T_{012}	Nm	≤ 0.05	≤ 0.05	≤ 0.05	≤ 0.05	≤ 0.05
Max. input speed	n_{1Max}	min ⁻¹	8000	8000	8000	8000	8000
Torsional backlash	j_t	arcmin	Standard ≤ 20		Standard ≤ 25		
Torsional stiffness	C_{t21}	Nm/arcmin	0.58	0.52	0.58	0.58	0.52
Max. axial force ⁶⁾	F_{2AMax}	N	230		230		
Max. radial force ⁶⁾	F_{2RMMax}	N	200		200		
Efficiency at full load	η	%	> 97		> 95		
Service life (see alpha's "Technical Basics" catalogue for calculation)	L_h	h	20 000		20 000		
Weight (incl. ADP)	m	kg	0.31		0.52		
Noise level ($n_1 = 3000$ rpm)	L_{PA}	dB(A)	≤ 66				
Max. permissible housing temperature		°C	+90				
Ambient temperature		°C	0 to +40				
Lubrication			Semi-fluid grease				
Paint			Aluminium, polished				
Mounting position			Any				
Type of protection			IP 64				
Mass moment of inertia (referred to input)	J_1	kgcm ²	0.041	0.041	0.041	0.041	0.041

Non-toleranced dimensions ±1 mm

- 1) Check motor shaft fit.
- 2) Min./max. permissible motor shaft length.
Longer motor shafts are possible on request: please contact alpha.
- 3) Dimensions depend on motor.
- 4) Smaller motor shaft diameters possible with bushing, adaptable.
- 5) Please reduce the n_{1N} speed at higher ambient temperatures.
- 6) Referred to the shaft centre at the output at 100 rpm.

⚠ Motor mounting in accordance with Operating Manual.

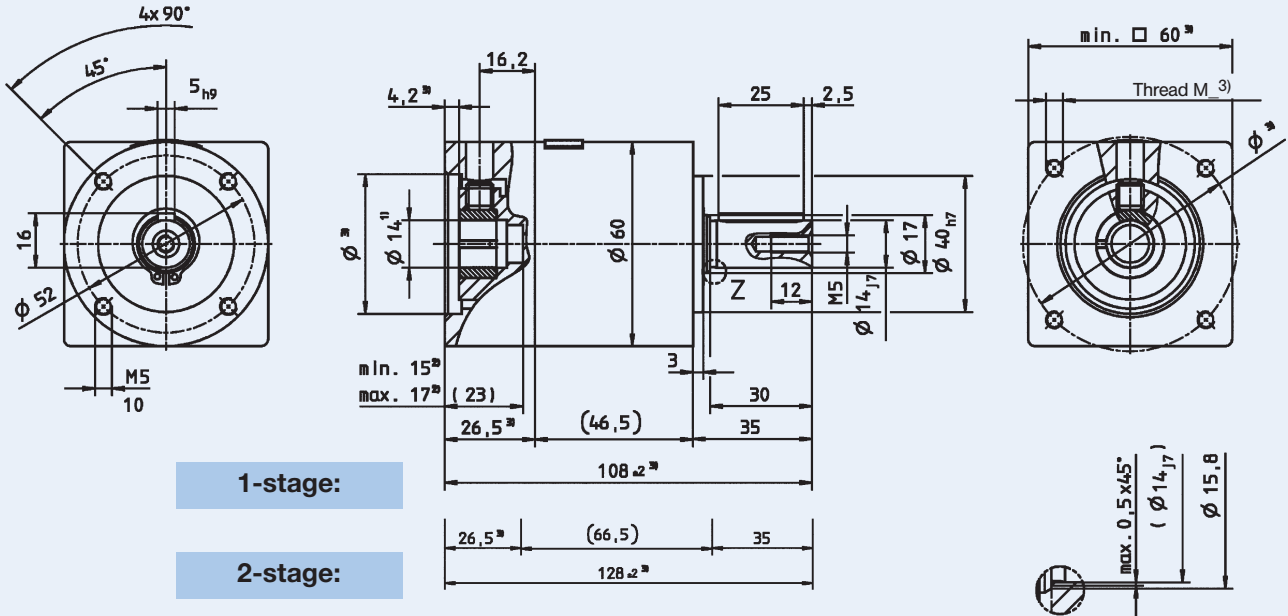
Conversion table

1 mm	= 0.039 in
1 Nm	= 8.85 in.lb
1 kgcm ²	= 8.85 x 10 ⁻⁴ in.lb.s ²
1 N	= 0.225 lb _f
1 kg	= 2.21 lb _m



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1-stage:

2-stage:

Technical data

			1-stage		2-stage		
Ratio	i		5	10	25	50	100
Max. acceleration torque at output	T_{2B}	Nm	32	29	32	32	29
Nominal output torque (in continuous duty)	T_{2N}	Nm	16	15	16	16	15
Emergency stop torque at output (permitted 1000x during the gearhead service life)	T_{2Not}	Nm	75	75	75	75	75
Permissible mean input speed (at 20 °C ambient temperature) ⁵⁾	n_{1N}	min ⁻¹	3700	3700	3700	3700	3700
No-load torque ($n_1 = 3000$ rpm) (at 20 °C gearhead temperature)	T_{012}	Nm	≤ 0.11	≤ 0.11	≤ 0.11	≤ 0.11	≤ 0.11
Max. input speed	n_{1Max}	min ⁻¹	6000	6000	6000	6000	6000
Torsional backlash	j_t	arcmin	Standard ≤ 20		Standard ≤ 25		
Torsional stiffness	C_{t21}	Nm/arcmin	2.1	1.9	2.1	2.1	1.9
Max. axial force ⁶⁾	F_{2AMax}	N	750		750		
Max. radial force ⁶⁾	F_{2RMax}	N	650		650		
Efficiency at full load	η	%	> 97		> 95		
Service life (see alpha's "Technical Basics" catalogue for calculation)	L_h	h	20 000		20 000		
Weight (incl. ADP)	m	kg	0.88		1.1		
Noise level ($n_1 = 3000$ rpm)	L_{PA}	dB(A)	≤ 68				
Max. permissible housing temperature		°C	+90				
Ambient temperature		°C	0 to +40				
Lubrication			Semi-fluid grease				
Paint			Aluminium, polished				
Mounting position			Any				
Type of protection			IP 64				
Mass moment of inertia (referred to input)	J_1	kgcm ²	0.17	0.17	0.17	0.17	0.17

Non-toleranced dimensions ±1 mm

- 1) Check motor shaft fit.
- 2) Min./max. permissible motor shaft length.
Longer motor shafts are possible on request; please contact alpha.
- 3) Dimensions depend on motor.
- 4) Smaller motor shaft diameters possible with bushing, adaptable.
- 5) Please reduce the n_{1N} speed at higher ambient temperatures.
- 6) Referred to the shaft centre at the output at 100 rpm.

⚠ Motor mounting in accordance with Operating Manual.

Conversion table

1 mm	= 0.039 in
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1 kgcm ²	= 8.85 x 10 ⁻⁴ in.lb.s ²
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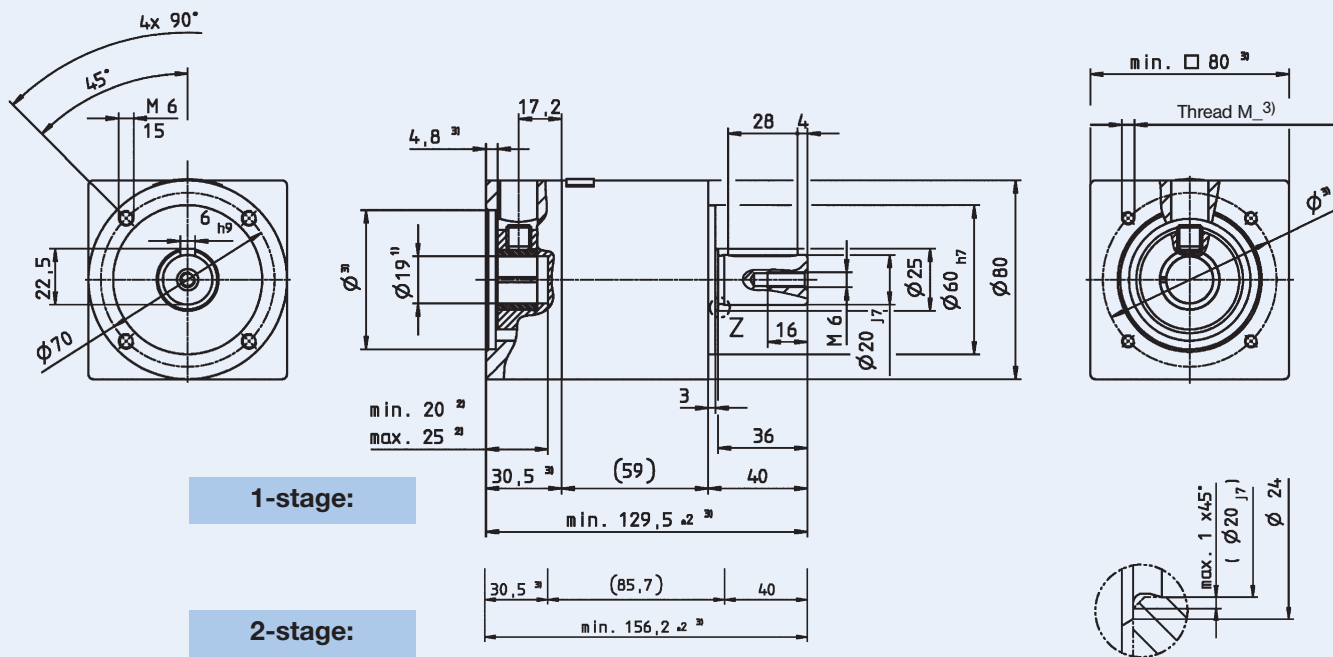


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1-stage:

2-stage:

Technical data

			1-stage		2-stage		
Ratio	i		5	10	25	50	100
Max. acceleration torque at output	T_{2B}	Nm	80	72	80	80	72
Nominal output torque (in continuous duty)	T_{2N}	Nm	40	35	40	40	35
Emergency stop torque at output (permitted 1000x during the gearhead service life)	T_{2Not}	Nm	190	190	190	190	190
Permissible mean input speed (at 20 °C ambient temperature) ⁵⁾	n_{1N}	min ⁻¹	3400	3400	3400	3400	3400
No-load torque ($n_1 = 3000$ rpm) (at 20 °C gearhead temperature)	T_{012}	Nm	≤ 0.28	≤ 0.28	≤ 0.28	≤ 0.28	≤ 0.28
Max. input speed	n_{1Max}	min ⁻¹	6000	6000	6000	6000	6000
Torsional backlash	j_t	arcmin	Standard ≤ 20		Standard ≤ 25		
Torsional stiffness	C_{t21}	Nm/arcmin	6.1	5.5	6.1	6.1	5.5
Max. axial force ⁶⁾	F_{2AMax}	N	1600		1600		
Max. radial force ⁶⁾	F_{2RMax}	N	1200		1200		
Efficiency at full load	η	%	> 97		> 95		
Service life (see alpha's "Technical Basics" catalogue for calculation)	L_h	h	20 000		20 000		
Weight (incl. ADP)	m	kg	2.1		2.8		
Noise level ($n_1 = 3000$ rpm)	L_{PA}	dB(A)	≤ 70				
Max. permissible housing temperature		°C	+90				
Ambient temperature		°C	0 to +40				
Lubrication			Semi-fluid grease				
Paint			Aluminium, polished				
Mounting position			Any				
Type of protection			IP 64				
Mass moment of inertia (referred to input)	J_1	kgcm ²	0.54	0.54	0.54	0.54	0.54

Non-toleranced dimensions ±1 mm

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- 4) Smaller motor shaft diameters possible with bushing, adaptable.
- 5) Please reduce the n_{1N} speed at higher ambient temperatures.
- 6) Referred to the shaft centre at the output at 100 rpm.

△ Motor mounting in accordance with Operating Manual.

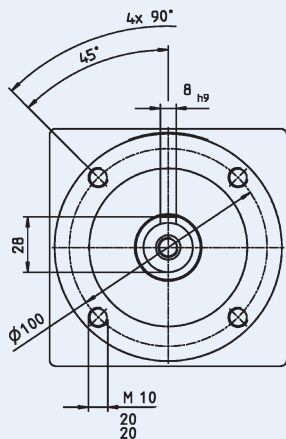
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1 kg	= 2.21 lb _m



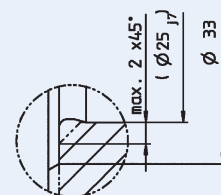
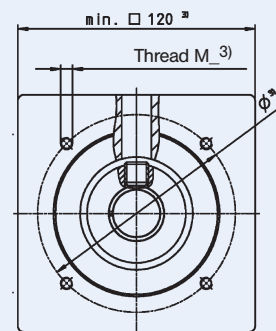
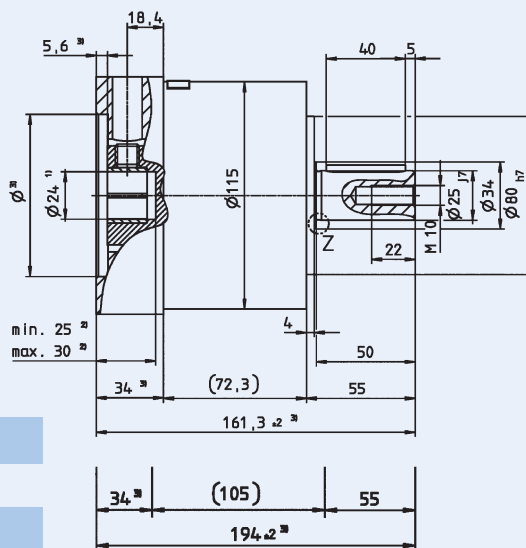
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1-stage:

2-stage:



Technical data

			1-stage		2-stage		
Ratio	i		5	10	25	50	100
Max. acceleration torque at output	T_{2B}	Nm	200	180	200	200	180
Nominal output torque (in continuous duty)	T_{2N}	Nm	100	90	100	100	90
Emergency stop torque at output (permitted 1000x during the gearhead service life)	T_{2Not}	Nm	480	480	480	480	480
Permissible mean input speed (at 20 °C ambient temperature) ⁵⁾	n_{1N}	min ⁻¹	2600	2600	2600	2600	2600
No-load torque ($n_1 = 3000$ rpm) (at 20 °C gearhead temperature)	T_{012}	Nm	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Max. input speed	n_{1Max}	min ⁻¹	4800	4800	4800	4800	4800
Torsional backlash	j_t	arcmin	Standard ≤ 20		Standard ≤ 25		
Torsional stiffness	C_{121}	Nm/arcmin	16.5	14.5	16.5	16.5	14.5
Max. axial force ⁶⁾	F_{2AMax}	N	2100		2100		
Max. radial force ⁶⁾	F_{2RMMax}	N	1550		1550		
Efficiency at full load	η	%	> 97		> 95		
Service life (see alpha's "Technical Basics" catalogue for calculation)	L_h	h	20 000		20 000		
Weight (incl. ADP)	m	kg	5.2		6.9		
Noise level ($n_1 = 3000$ rpm)	L_{PA}	dB(A)	≤ 72				
Max. permissible housing temperature		°C	+90				
Ambient temperature		°C	0 to +40				
Lubrication			Semi-fluid grease				
Paint			Aluminium, polished				
Mounting position			Any				
Type of protection			IP 64				
Mass moment of inertia (referred to input)	J_1	kgcm ²	1.82	1.82	1.82	1.82	1.82

Non-toleranced dimensions ±1 mm

- 1) Check motor shaft fit.
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- 4) Smaller motor shaft diameters possible with bushing, adaptable.
- 5) Please reduce the n1N speed at higher ambient temperatures.
- 6) Referred to the shaft centre at the output at 100 rpm.

⚠ Motor mounting in accordance with Operating Manual.

Conversion table

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