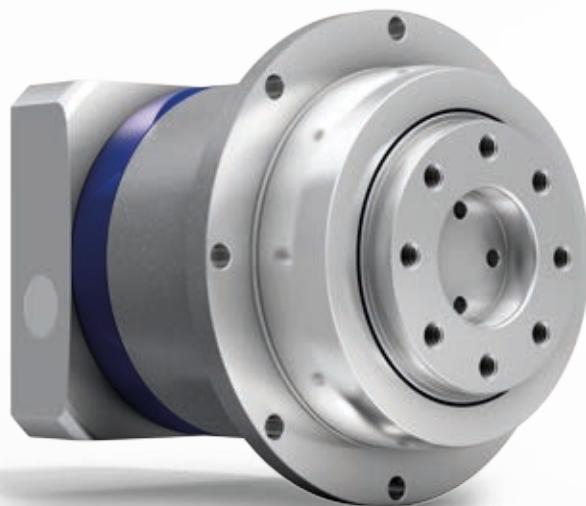




alpha

alpha Value Line - NPT Sizing and Technical Data

Efficient
Flexible
Reliable





alpha Value Line	NP	NPS	NPL	NPT	NPR
Ratios	3-100				
Torsional backlash [arcmin]	≤ 8				
Output type					
Smooth output shaft	•	•	•	-	•
Grooved output shaft	•	•	•	-	•
Output shaft with involute toothing	-	•	•	-	•
Output flange	-	-	-	•	-
Input type	Motor attachment version				
Application					
For high axial and radial forces	-	•	•	-	•
In continuous operation	•	•	•	•	-
In cyclic operation	•	•	•	•	•
Options					
HIGH TORQUE version	•	•	•	•	•
Foodgrade lubrication	•	•	•	•	•
With coupling at output	•	•	•	•	•
As linear system	•	•	•	-	•
With mounted pinion at output	•	•	•	-	•
With screwed on B5 flange	•	-	-	-	-
Further technical data					
Max. torque T_{2a}	Nm	800	800	800	800
	in.lb	7100	7100	7100	7100
Max. input speed	rpm	10000	8000	8000	10000
Efficiency	%	97%	97%	97%	97%
Max. radial force F_{2R}	N	8000	9900	9900	4800
	lb _f	1800	2200	2200	1080

Contents

WITTENSTEIN alpha adapted for any axis

The perfect drive solution whatever
the requirements are

WITTENSTEIN alpha develops complete, single-supplier solutions for driving any axis. They can be used in virtually any application – from high-precision axes in machine tools and manufacturing systems to packaging machinery where maximum productivity is a must.

The name WITTENSTEIN alpha is synonymous with premium quality and optimal reliability, high precision and synchronization accuracy, maximum power density, a long lifetime and very simple motor mounting.

The alpha Value Line is a new product family that unites these characteristics – which are specially adapted for applications in the value segment or high-end secondary axes – in a class-appropriate way.

Benefits of the alpha Value Line:

- Rapid availability regardless of the batch size
- Optimal flexibility
- Ability to react promptly to changing customer requirements
- Assembly to order

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NPT 025S	10
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NPT 045S	14
Glossary	16
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WITTENSTEIN

alpha

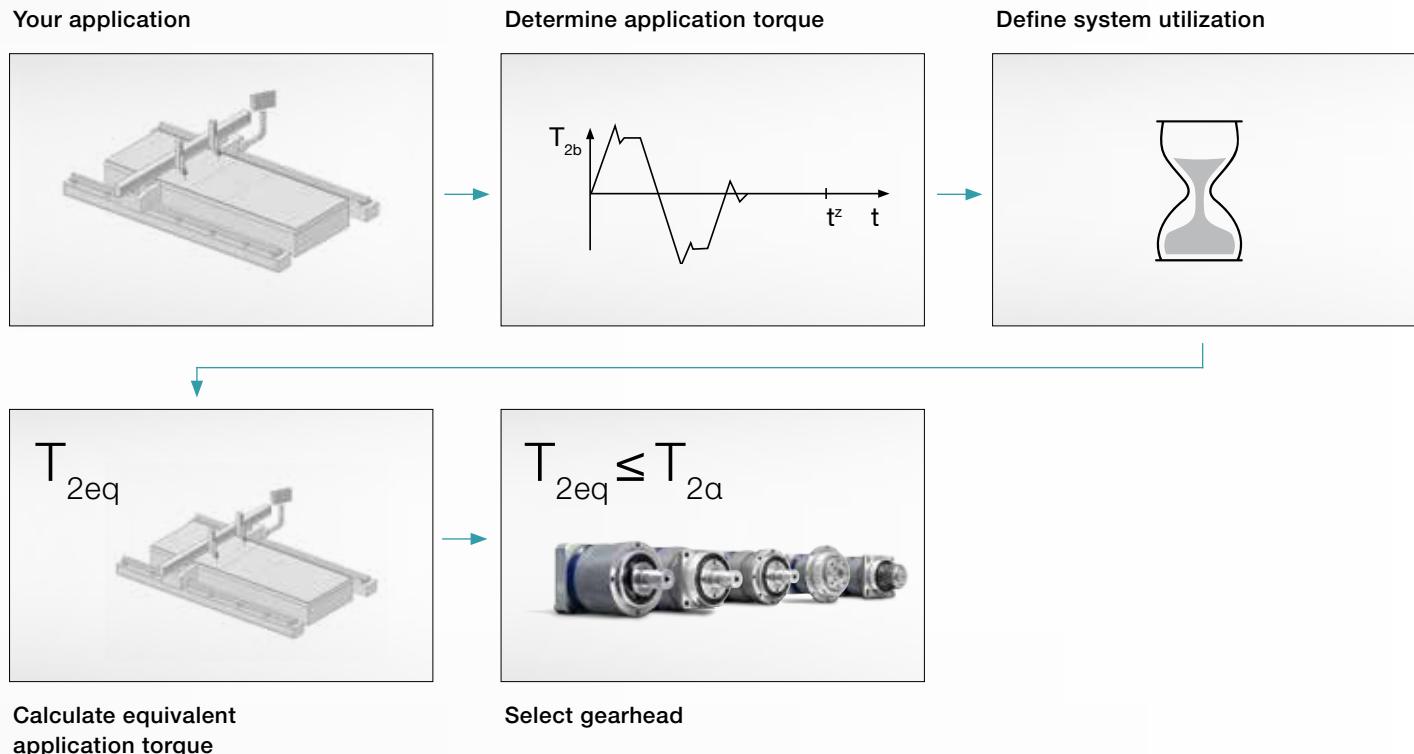
alpha Value Line

Efficient sizing

The new sizing method

The new alpha Value Line from WITTENSTEIN alpha commits the cymex® sizing software to paper. Using a quick select structure, you can define your drive train in just a few simple steps.

- Quick and easy gearhead selection based on your application.
- Maximum transmissible torque T_{2a} as the starting point for selecting the gearhead (definition $T_{2a} \neq T_{2B}$).
No restriction on T_{2a} due to a maximum number of cycles per hour.
- Optional: Quick selection based on the maximum motor torque.



Your Benefits:

- Perfect-fit sizing of your drive
- Efficient and reliable gearhead selection
- Huge time saving
- Computational work for simple applications reduced to a minimum*
- Consideration of radial and axial forces if necessary

*We recommend our cymex® sizing software for complex applications

Sizing of the alpha Value Line – NPT

A: Simplified sizing for servo motors based on the maximum motor torque: $M_{max} * i \leq T_{2\alpha}$

B: Sizing based on the application

Step 1:

Determine the maximum application torque: $T_{2b} = \underline{\hspace{2cm}}$ [Nm]

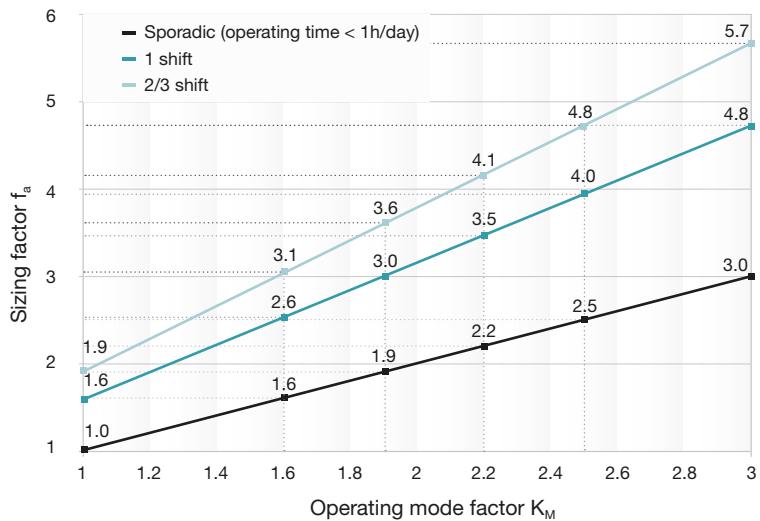
Step 2:

Determine the operating mode factor $K_M = \underline{\hspace{2cm}}$

Typical applications	Cycle	Torque characteristic	Operating mode factor K_M
Format changing, e.g. in packaging machines, drives for processing equipment, actuators, etc.	S5 operation: Low duty cycle Small number of cycles Low dynamics		1,0
Tool changers with low dynamics, pick & place gantry axes, tire building machines, etc.	S5 operation: Medium duty cycle Small number of cycles Medium dynamics		1,6
Linear modules, linear axes in woodworking machines, ball screw drives, etc.	S5 operation: Medium duty cycle Medium number of cycles Medium dynamics		1,9
Roller drives in printing presses, star drives in racking, etc.	S1 operation: High duty cycle		2,2
Linear axes in plasma, laser or water jet cutters, portals, tool changers with high dynamics	S5 operation: Medium duty cycle Medium number of cycles High dynamics		2,5
SCARA robots, gantry robots, machining spindles, etc.	S5 operation: High duty cycle High number of cycles High dynamics		3,0

Step 3:

Determine the sizing factor with the operating mode factor K_M $f_a = \underline{\hspace{2cm}}$



Step 4:

Compare the equivalent application torque with the maximum gearhead $T_{2\alpha}$ (see table, Step 5)

$$T_{2\text{eq}} = f_a * T_{2b} \leq T_{2\alpha}$$

$$T_{2\text{eq}} = \underline{\hspace{2cm}} * \underline{\hspace{2cm}} \leq T_{2\alpha}$$

$$T_{2\text{eq}} = \underline{\hspace{2cm}} [\text{Nm}] \leq \underline{\hspace{2cm}} [\text{Nm}]$$

Step 5: Quick selection of the technical data

			NPT 005		NPT 015		NPT 025		NPT 035		NPT 045	
			1-stage	2-stage	1-stage	2-stage	1-stage	2-stage	1-stage	2-stage	1-stage	2-stage
Ratio a)	i		4-10	16-100	3-10	12-100	3-10	9-100	3-10	9-100	5-10	25-100
Maximum torque a)	MF	$T_{2\alpha}$	Nm in.lb	18-22 160-200	51-60 450-530	128-160 1130-1420	320-365 2800-3200	640-700 5700-6200				
Maximum torque a)	MA	$T_{2\alpha}$	Nm in.lb	- -	60-62 530-550	168-185 1490-1640	370-380 3300-3400	- -				
Max. input speed	n_{1max}	min ⁻¹	10000	10000	8000	10000	7000	8000	6000	7000	4000	6000
Nominal input speed	n_{1N}	min ⁻¹	3800	4000	3300	3800	3100	3300	2300	3100	2000	2300
Max. radial force	F_{2RMax}	N lb _r	600 140		1200 270		2000 450		3000 680		4400 1000	
Mean operating noise	L_{PA}	dB(A)	≤ 58		≤ 58		≤ 60		≤ 63		≤ 66	
Paint												
Direction of rotation												
Protection class												
Page			6		8		10		12		14	

a) The maximum torques depend on the ratio

You can select a suitable adapter plate using the online configurator on www.wittenstein-alpha.com

For application-specific sizing with cymex®, see www.cymex.com Please refer to the product pages for detailed information on individual gearhead sizes

Account must be taken of the radial and axial forces at the output:

Please also carry out steps 6 and 7 if forces are present at the output (e.g. if timing belt pulleys, pinions or levers are mounted there).

Step 6 (if external forces are present):

Determine the forces acting on the output and check the boundary conditions

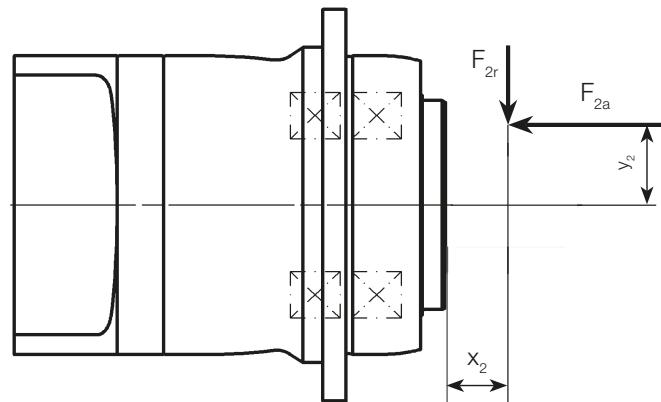
Radial force $F_{2r} = \underline{\hspace{2cm}} [N]$

Radial force distance $x_2 = \underline{\hspace{2cm}} [mm]$

Axial force $F_{2a} = \underline{\hspace{2cm}} [N]$

Axial force distance $y_2 = \underline{\hspace{2cm}} [mm]$

(required if F_{2a} is present)



Conditions if axial force F_{2a} is present:

$$1. F_{2a} \leq 0.25 * F_{2r} \Rightarrow (\underline{\hspace{2cm}} \leq 0.25 * \underline{\hspace{2cm}}) \quad \square \text{ Met} \quad \square \text{ Not met: Sizing with cymex®}$$

$$2. y_2 \leq x_2 \Rightarrow (\underline{\hspace{2cm}} \leq \underline{\hspace{2cm}}) \quad \square \text{ Met} \quad \square \text{ Not met: Sizing with cymex®}$$

Step 7:

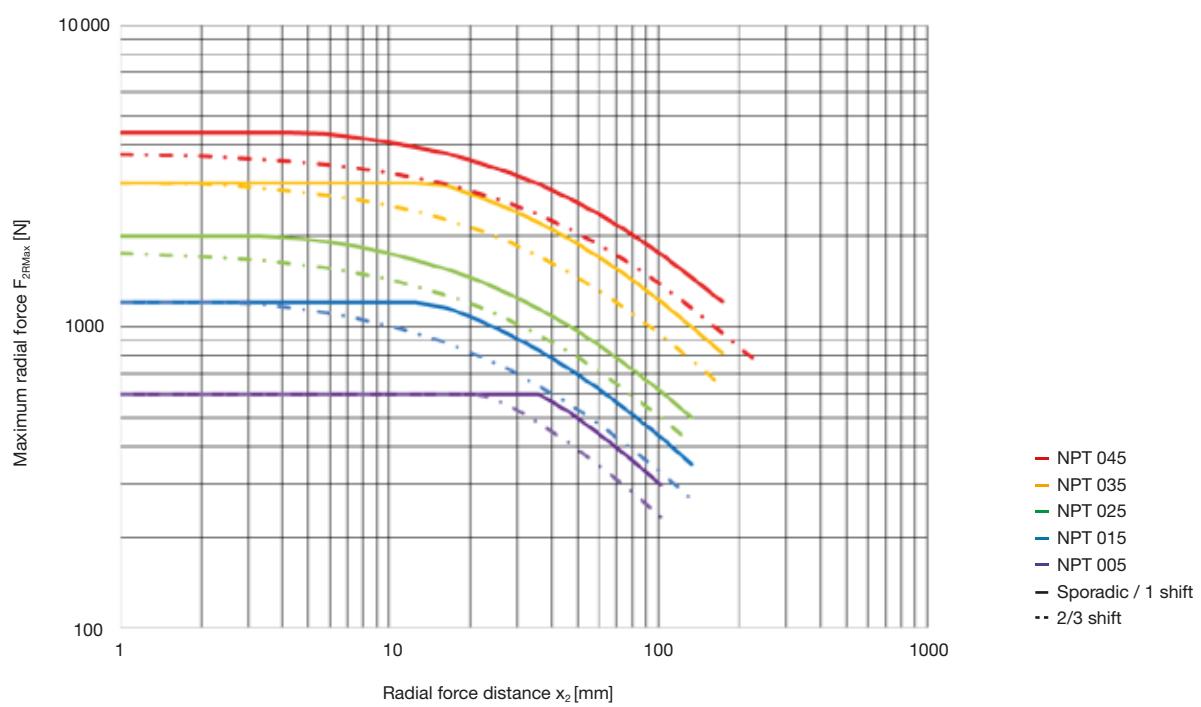
Determine the maximum equivalent force acting on the output F_{2_eq}

$$F_{2_eq} = F_{2r} + 0.25 * F_{2a} \leq F_{2RMax} \quad (F_{2RMax} \text{ can be determined from the diagram below})$$

$$F_{2_eq} = \underline{\hspace{2cm}} + 0.25 * \underline{\hspace{2cm}} \leq \underline{\hspace{2cm}}$$

$$F_{2_eq} = \underline{\hspace{2cm}} [N] \leq \underline{\hspace{2cm}} [N] \quad \square \text{ Met}$$

Not met: Higher axial and radial forces with the NPS, NPL and NPR.



NPT 005S

				1-stage						2-stage								
Ratio ^{a)}	i			4	5	7	8	10	16	20	25	28	35	40	50	64	70	100
Maximum Torque	MF	$T_{2\alpha}$	Nm	18	22	22	21	21	18	18	22	18	22	18	22	21	22	21
			in.lb	160	200	200	180	184	160	160	200	160	200	160	200	180	200	180
Emergency stop torque ^{b)}		T_{2Not}	Nm									26						
			in.lb									230						
Nominal input speed ^{c)}		n_{IN}	min ⁻¹	3800		4300			4000				4300					
Max. input speed		n_{IMax}	min ⁻¹		10000								10000					
Max. torsional backlash		j_t	arcmin		Standard ≤ 10								Standard ≤ 13					
Max. axial force ^{d)}	F_{2AMax}	N										600						
		lb _f										140						
Max. radial force ^{d)}	F_{2RMax}	N										600						
		lb _f										140						
Weight incl. standard adapter plate ^{e)}	m	kg		0.9 - 1.4								1.1 - 1.7						
		lb _m		2 - 3.1								2.4 - 3.8						
Operating noise ^{f)}		L_{PA}	dB(A)		≤ 58							≤ 58						
Max. permitted housing temperature		°C										90						
		F										194						
Ambient temperature		°C										-15 to +40						
		F										5 to 104						
Lubrication												Lubricated for life						
Paint												Housing: pearl dark grey / Drive-Side: Innovation Blue						
Direction of rotation												Motor and gearhead same direction						
Type of protection												IP 64						
Moment of inertia (related to the drive)		kgcm ²		0.02 to 0.14								0.03 to 0.13						
		10 ⁻³ in.lb.s ²		0.02 to 0.13								0.02 to 0.12						
Clamping hub diameter	Standard		mm	8(Z) 9(A) 11(B)								8(Z) 9(A) 11(B)						
	big			14(C)								14(C)						

^{a)} Other ratios available on request.

^{b)} Permitted 1000 times during the service life of the gearhead. If $T_{2\alpha} > T_{2Not}$, then T_{2Not} is the maximum permitted value.

^{c)} At T_{2N} and 20°C ambient temperature. Higher speeds possible if calculated using cymex®.

^{d)} Refers to the center of the output shaft at $n_2 = 150$ rpm.

^{e)} Depending on the clamping hub diameter and the selected adapter plate.

^{f)} At $i=10$ and $n_1=3000$ rpm at no load.

You can select a suitable adapter plate using the online configurator on www.wittenstein-alpha.com

Quick gearhead selection based on the motor characteristic*:

Max. torque $T_{2\alpha} \geq T_{max\ motor} * i$

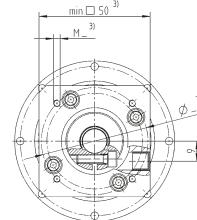
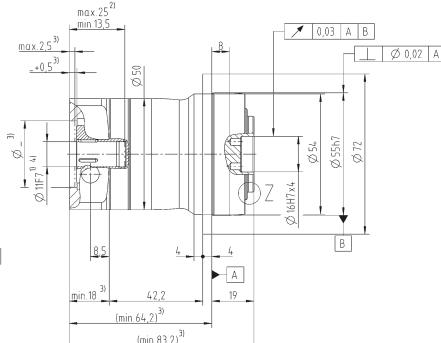
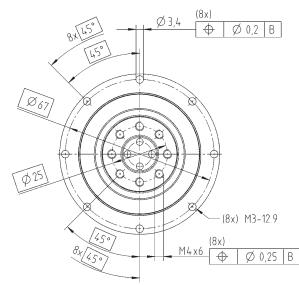
*Please refer to catalog pages 4 and 5 for detailed information on manual selection based on the application.

For application-specific sizing with cymex®, see www.cymex.com

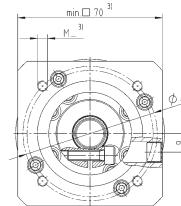
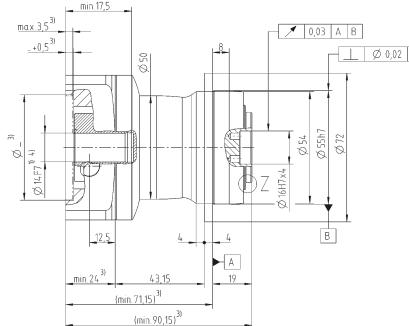
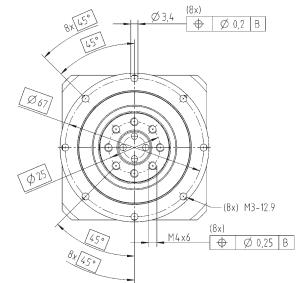
Motor shaft diameter [mm]

1-stage

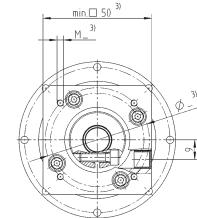
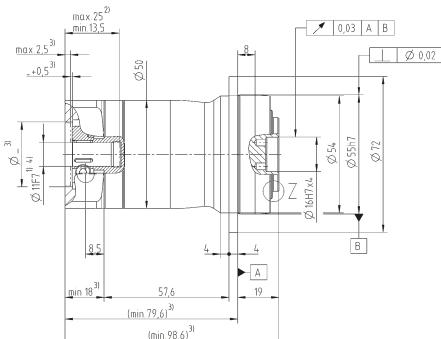
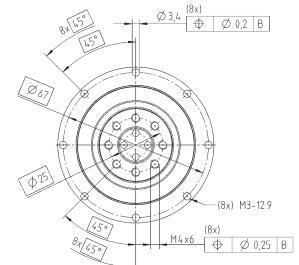
Up to 11⁴⁾ (B)
clamping hub
diameter



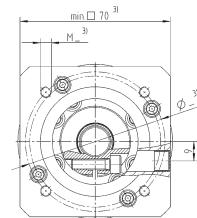
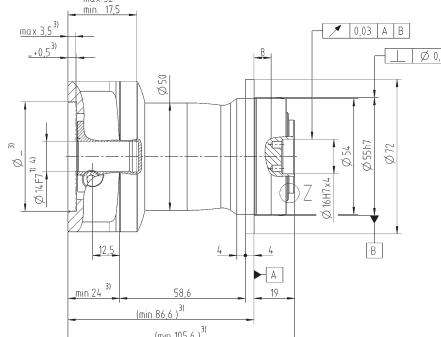
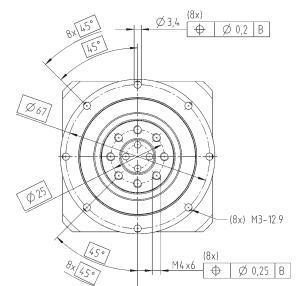
Up to 14⁴⁾ (C)
clamping hub
diameter



Up to 11⁴⁾ (B)
clamping hub
diameter



Up to 14⁴⁾ (C)
clamping hub
diameter



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./max. permissible motor shaft length.
Longer motor shafts are adaptable; please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameters are compensated by a bushing with a minimum thickness of 1 mm.

 Motor mounting according to operating manual

				1-stage						2-stage															
Ratio ^{a)}		i		3	4	5	7	8	10	12	15	16	20	25	28	30	32	35	40	50	64	70	100		
Maximum torque	MF	$T_{2\alpha}$	Nm	51	56	60	60	56	56	51	51	56	56	60	56	51	56	60	56	60	56	60	56		
			in.lb	450	500	530	530	500	500	450	450	500	500	530	500	450	500	530	500	530	500	530	500		
Maximum torque	HIGH TORQUE – MA	$T_{2\alpha}$	Nm	62	62	-	-	-	-	62	62	62	62	-	62	62	-	-	62	-	-	-	-		
			in.lb	550	550	-	-	-	-	550	550	550	550	-	550	550	-	-	550	-	-	550	-		
Emergency stop torque ^{b)}		T_{2Not}	Nm													75									
			in.lb														660								
Nominal input speed ^{c)}		n_{IN}	min ⁻¹		3300			4000							3800							4300			
Max. input speed		n_{IMax}	min ⁻¹			8000															10000				
Max. torsional backlash		j_t	arcmin				Standard ≤ 8													Standard ≤ 10					
Max. axial force ^{d)}		F_{2AMax}	N													1380									
			lb _f														310								
Max. radial force ^{d)}		F_{2RMax}	N													1200									
			lb _f														270								
Weight incl. standard adapter plate ^{e)}		m	kg		2 - 3.2												2.1 - 3.1								
			lb _m		4.4 - 7.1													4.6 - 6.9							
Operating noise ^{f)}		L_{PA}	dB(A)			≤ 59												≤ 58							
Max. permitted housing temperature			°C													90									
			F														194								
Ambient temperature			°C													-15 to +40									
			F														5 to 104								
Lubrication																	Lubricated for life								
Paint																	Housing: pearl dark grey / Drive-Side: Innovation Blue								
Direction of rotation																	Motor and gearhead same direction								
Type of protection																	IP 64								
Moment of inertia (related to the drive)			kgcm ²		0.1 to 0.6												0.02 to 0.15								
			10 ³ in.lb.s ²		0.1 to 0.5												0.02 to 0.13								
Clamping hub diameter		Standard	mm		9(A) 11(B) 14(C)												8(Z) 9(A) 11(B)								
				big	16(D) 19(E)												14(C)								

^{a)} Other ratios available on request.

^{b)} Permitted 1000 times during the service life of the gearhead. If $T_{2\alpha} > T_{2Not}$, then T_{2Not} is the maximum permitted value.

^{c)} At T_{2N} and 20°C ambient temperature. Higher speeds possible if calculated using cymex®.

^{d)} Refers to the center of the output shaft at $n_2 = 150$ rpm.

^{e)} Depending on the clamping hub diameter and the selected adapter plate.

^{f)} At $i=10$ and $n_1=3000$ rpm at no load.

You can select a suitable adapter plate using the online configurator on www.wittenstein-alpha.com

Quick gearhead selection based on the motor characteristic*:

Max. torque $T_{2\alpha} \geq T_{max\ motor} * i$

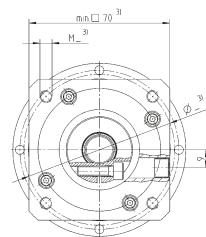
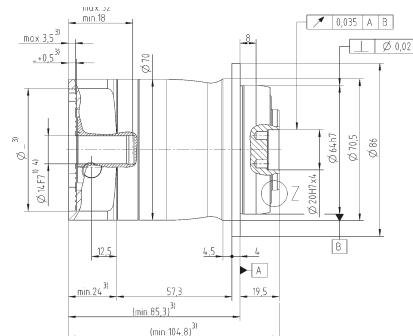
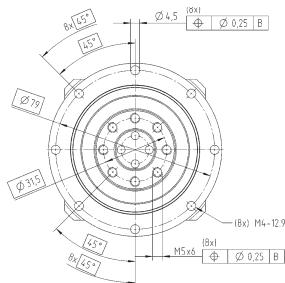
*Please refer to catalog pages 4 and 5 for detailed information on manual selection based on the application.

For application-specific sizing with cymex®, see www.cymex.com

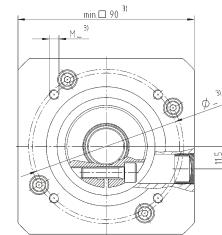
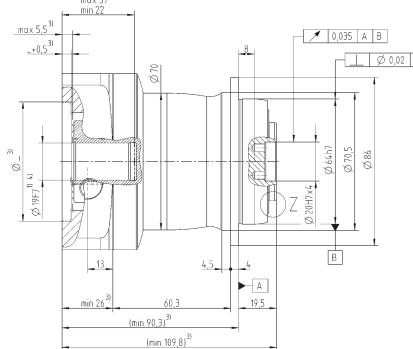
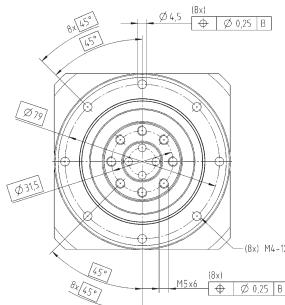
Motor shaft diameter [mm]

1-stage

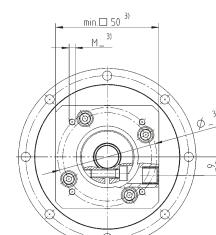
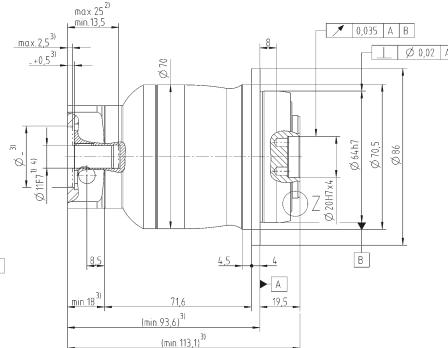
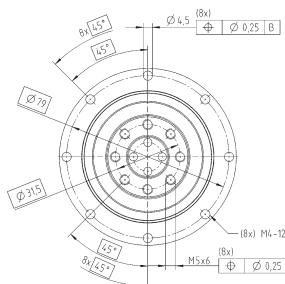
Up to 14⁴⁾ (C)
clamping hub
diameter



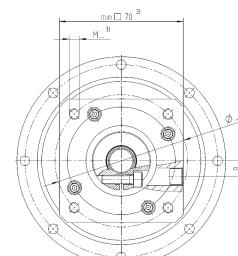
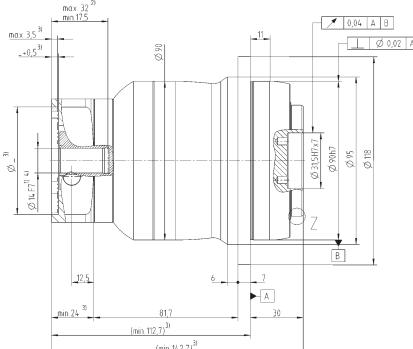
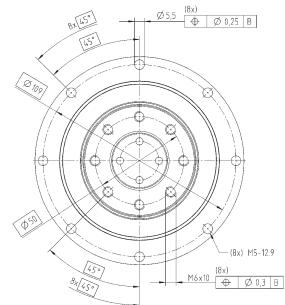
Up to 19⁴⁾ (E)
clamping hub
diameter



Up to 11⁴⁾ (B)
clamping hub
diameter



Up to 14⁴⁾ (C)
clamping hub
diameter



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./max. permissible motor shaft length.
Longer motor shafts are adaptable; please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameters are compensated by a bushing with a minimum thickness of 1 mm.

 Motor mounting according to operating manual

				1-stage							2-stage																																		
Ratio ^{a)}		i		3	4	5	7	8	10	9	12	15	16	20	25	28	30	32	35	40	50	64	70	100																					
Maximum torque	MF	$T_{2\alpha}$	Nm	128	152	160	160	144	144	128	128	128	152	152	160	152	128	152	160	152	160	144	160	144																					
			in.lb	1130	1350	1420	1420	1270	1270	1130	1130	1130	1350	1350	1420	1350	1130	1350	1420	1350	1420	1270	1420	1270																					
Maximum torque	HIGH TORQUE – MA	$T_{2\alpha}$	Nm	185	185	-	-	-	-	185	185	185	184	184	-	184	168	-	-	184	-	-	-	-																					
			in.lb	1640	1640	-	-	-	-	1640	1640	1640	1630	1630	-	1630	1490	-	-	1630	-	-	-	-																					
Emergency stop torque ^{b)}		T_{2Not}	Nm	190												1700																													
			in.lb																																										
Nominal input speed ^{c)}		n_{IN}	min ⁻¹	3100		3600		3300				4000																																	
Max. input speed		n_{IMax}	min ⁻¹	7000				8000																																					
Max. torsional backlash		j_t	arcmin	Standard ≤ 8				Standard ≤ 10																																					
Max. axial force ^{d)}	F_{2AMax}		N	1900												430																													
			lb _f																																										
Max. radial force ^{d)}	F_{2RMax}		N	2000												450																													
			lb _f																																										
Weight incl. standard adapter plate ^{e)}	m		kg	4.4 - 6.7				4.7 - 6.7				10.4 - 14.8																																	
			lb _m	9.7 - 14.8																																									
Operating noise ^{f)}		L_{PA}	dB(A)	≤ 61				≤ 59																																					
Max. permitted housing temperature			°C	+90												+194																													
			F																																										
Ambient temperature			°C	-15 to +40												5 to 104																													
			F																																										
Lubrication				Lubricated for life																																									
Paint				Housing: pearl dark grey / Drive-Side: Innovation Blue																																									
Direction of rotation				Motor and gearhead same direction																																									
Type of protection				IP 64																																									
Moment of inertia (related to the drive)			kgcm ²	0.3 to 2.0				0.2 to 0.6																																					
			10 ³ in.lb.s ²	0.2 to 1.8				0.2 to 0.5																																					
Clamping hub diameter	Standard		mm	14(C) 16(D) 19(E)				9(A) 11(B) 14(C)																																					
			big	24(G) 28(H)				16 (D) 19(E)																																					

^{a)} Other ratios available on request.

^{b)} Permitted 1000 times during the service life of the gearbox. If $T_{2\alpha} > T_{2Not}$, then T_{2Not} is the maximum permitted value.

^{c)} At T_{2N} and 20°C ambient temperature. Higher speeds possible if calculated using cymex®.

^{d)} Refers to the center of the output shaft at $n_2 = 150$ rpm.

^{e)} Depending on the clamping hub diameter and the selected adapter plate.

^{f)} At $i=10$ and $n_1=3000$ rpm at no load.

You can select a suitable adapter plate using the online configurator on www.wittenstein-alpha.com

Quick gearhead selection based on the motor characteristic*:

Max. torque $T_{2\alpha} \geq T_{max\ motor} * i$

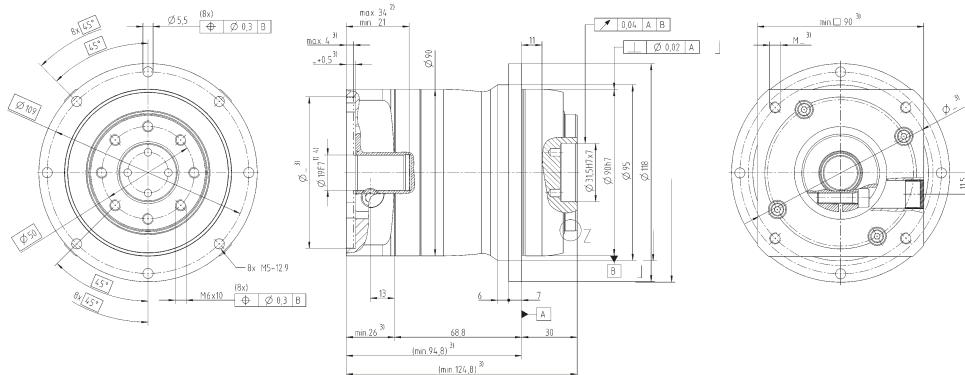
*Please refer to catalog pages 4 and 5 for detailed information on manual selection based on the application.

For application-specific sizing with cymex®, see www.cymex.com

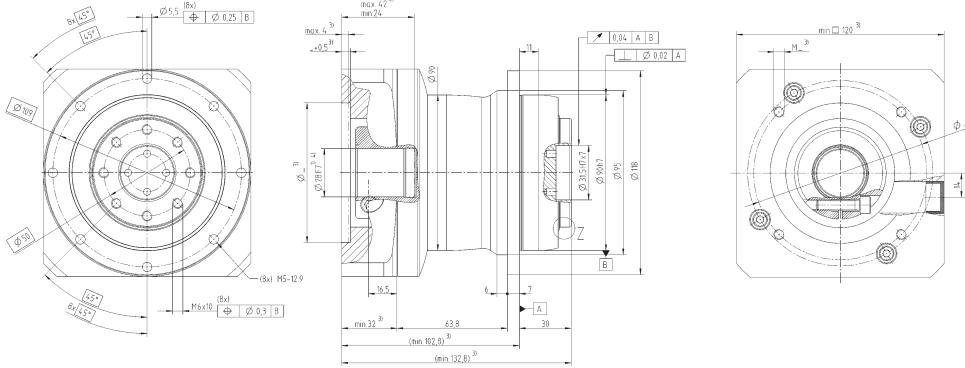
Motor shaft diameter [mm]

1-stage

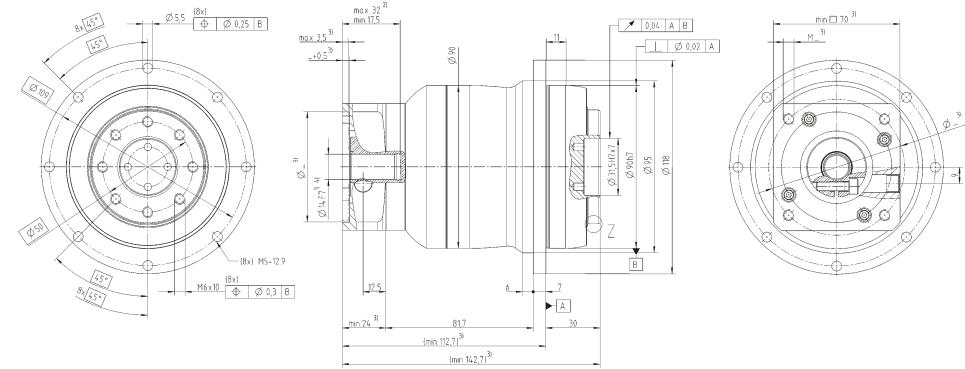
Up to 19⁴⁾(E)
clamping hub
diameter



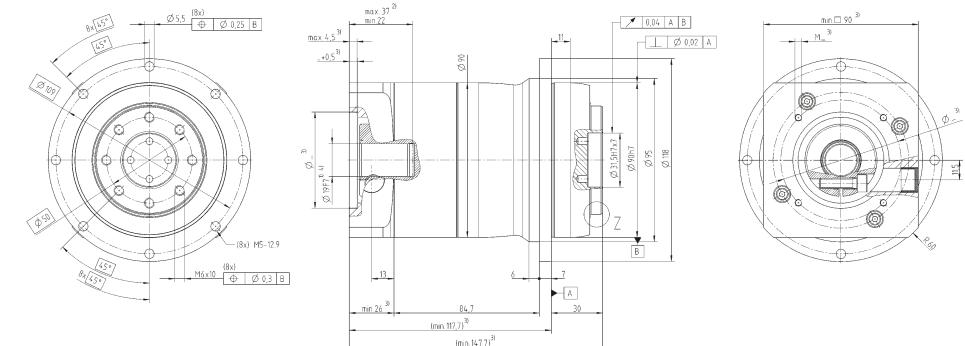
Up to 28⁴⁾(H)
clamping hub
diameter



Up to 14⁴⁾(C)
clamping hub
diameter



Up to 19⁴⁾(E)
clamping hub
diameter



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./max. permissible motor shaft length.
Longer motor shafts are adaptable; please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameters are compensated by a bushing with a minimum thickness of 1 mm.

 Motor mounting according to operating manual

				1-stage							2-stage																
Ratio ^{a)}		i		3	4	5	7	8	10	9	12	15	16	20	25	28	30	32	35	40	50	64	70	100			
Maximum torque	MF	$T_{2\alpha}$	Nm	320	365	365	365	352	352	320	320	320	365	365	365	365	365	320	365	365	365	365	352	365	352		
			in.lb	2800	3200	3200	3200	3100	3100	2800	2800	2800	3200	3200	3200	3200	3200	2800	3200	3200	3200	3200	3100	3200	3100		
Maximum torque	HIGH TORQUE – MA	$T_{2\alpha}$	Nm	380	380	-	-	-	-	380	380	380	380	380	380	-	380	370	-	-	380	-	-	-	-		
			in.lb	3400	3400	-	-	-	-	3400	3400	3400	3400	3400	3400	-	3400	3300	-	-	3400	-	-	-	-		
Emergency stop torque ^{b)}		T_{2Not}	Nm														480										
			in.lb															4200									
Nominal input speed ^{c)}		n_{IN}	min ⁻¹	2300		2800				3100													3600				
Max. input speed		n_{IMax}	min ⁻¹		6000																		7000				
Max. torsional backlash		j_t	arcmin		Standard	≤ 8												Standard	≤ 10								
Max. axial force ^{d)}		F_{2AMax}	N															3500									
			lb _f																790								
Max. radial force ^{d)}		F_{2RMax}	N															3000									
			lb _f																680								
Weight incl. standard adapter plate ^{e)}		m	kg	9.4 - 15.3															9.8 - 14.9								
			lb _m	21 - 34															22 - 33								
Operating noise ^{f)}		L_{PA}	dB(A)		≤ 65														≤ 61								
Max. permitted housing temperature			°C																+90								
			F																+194								
Ambient temperature			°C																-15 to +40								
			F																5 to 104								
Lubrication																			Lubricated for life								
Paint																			Housing: pearl dark grey / Drive-Side: Innovation Blue								
Direction of rotation																			Motor and gearhead same direction								
Type of protection																			IP 64								
Moment of inertia (related to the drive)			kgcm ²	0.9 to 8.9															0.2 to 1.9								
			10 ³ in.lb.s ²	0.8 to 7.9															0.2 to 1.7								
Clamping hub diameter		Standard	mm	19(E) 24(G) 28(H)															14(C) 16(D) 19(E)								
				32(l) 38(K)															24(G) 28(H)								

^{a)} Other ratios available on request.

^{b)} Permitted 1000 times during the service life of the gearhead. If $T_{2\alpha} > T_{2Not}$, then T_{2Not} is the maximum permitted value.

^{c)} At T_{2N} and 20°C ambient temperature. Higher speeds possible if calculated using cymex®.

^{d)} Refers to the center of the output shaft at $n_2 = 150$ rpm.

^{e)} Depending on the clamping hub diameter and the selected adapter plate.

^{f)} At $i=10$ and $n_1=3000$ rpm at no load.

You can select a suitable adapter plate using the online configurator on www.wittenstein-alpha.com

Quick gearhead selection based on the motor characteristic*:

Max. torque $T_{2\alpha} \geq T_{max\ motor} * i$

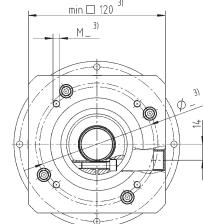
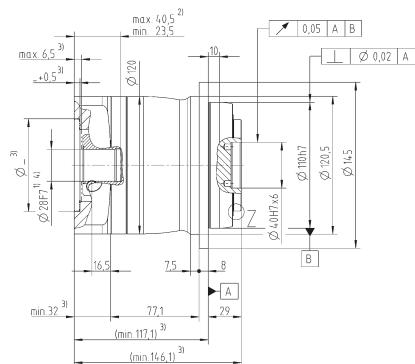
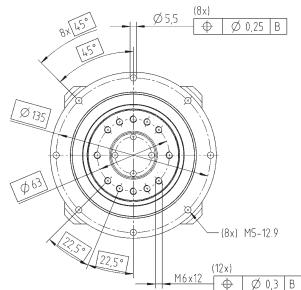
*Please refer to catalog pages 4 and 5 for detailed information on manual selection based on the application.

For application-specific sizing with cymex®, see www.cymex.com

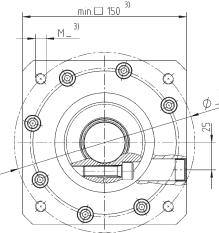
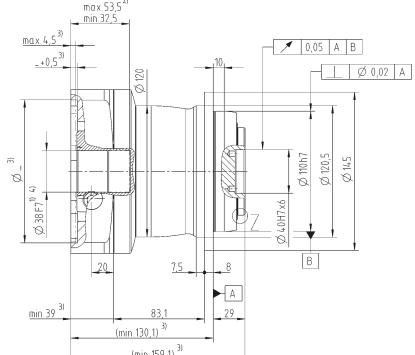
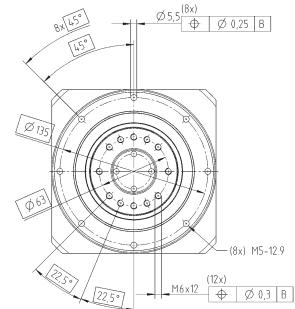
Motor shaft diameter [mm]

1-stage

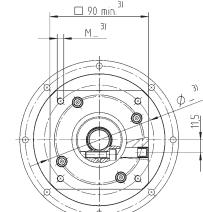
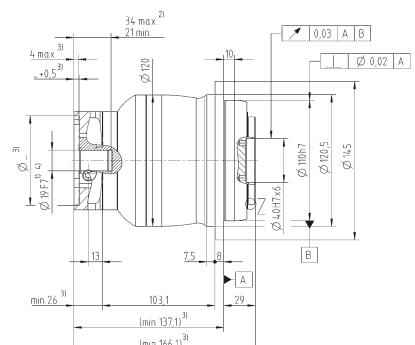
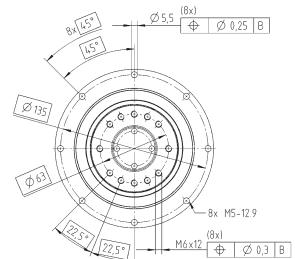
Up to 28⁴⁾ (H)
clamping hub
diameter



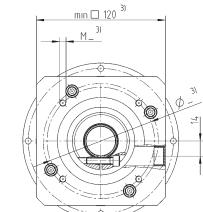
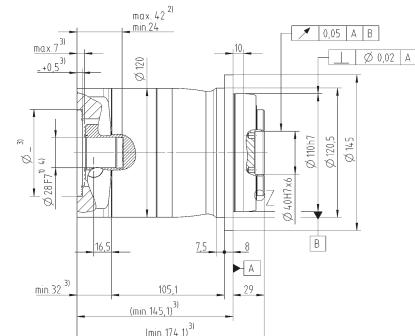
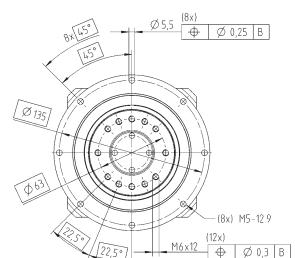
Up to 38⁴⁾ (K)
clamping hub
diameter



Up to 19⁴⁾ (E)
clamping hub
diameter



Up to 28⁴⁾ (H)
clamping hub
diameter



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./max. permissible motor shaft length.
Longer motor shafts are adaptable; please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameters are compensated by a bushing with a minimum thickness of 1 mm.

 Motor mounting according to operating manual

				1-stage			2-stage						
Ratio ^{a)}	i	5	8	10	25	32	50	64	100				
Maximum Torque Emergency stop torque ^{b)}	MF $T_{2\alpha}$	Nm	700	640	640	700	640	700	640	640			
		in.lb	6200	5700	5700	6200	5700	6200	5700	5700			
Nominal input speed ^{c)}	n_{IN}	Nm	1000										
		in.lb	8900										
Max. input speed	n_{IMax}	min ⁻¹	2000		2200		2600						
Max. torsional backlash	j_t	arcmin	Standard ≤ 8			Standard ≤ 10							
Max. axial force ^{d)}	F_{2AMax}	N	3800										
		lb _f	900										
Max. radial force ^{d)}	F_{2RMax}	N	4400										
		lb _f	1000										
Weight incl. standard adapter plate ^{e)}	m	kg	19.3.5 - 25.3			19.8 - 29.3							
		lb _m	43 - 56			44 - 65							
Operating noise ^{f)}	L_{PA}	dB(A)	≤ 68			≤ 65							
Max. permitted housing temperature		°C	+90										
		F	+194										
Ambient temperature		°C	-15 to +40										
		F	5 to 104										
Lubrication			Lubricated for life										
Paint			Housing: pearl dark grey / Drive-Side: Innovation Blue										
Direction of rotation			Motor and gearhead same direction										
Type of protection			IP 64										
Moment of interia (related to the drive)		kgcm ²	7.4 to 9.8			0.83 to 7.69							
		10 ⁻³ in.lb.s ²	6.6 to 8.6			0.73 to 6.8							
Clamping hub diameter	Standard	mm	38(K)			19(E) 24(G) 28(H)							
	big		-			32(I) 38(K)							

^{a)} Other ratios available on request.

^{b)} Permitted 1000 times during the service life of the gearhead. If $T_{2\alpha} > T_{2Not}$, then T_{2Not} is the maximum permitted value.

^{c)} At T_{2N} and 20°C ambient temperature. Higher speeds possible if calculated using cymex®.

^{d)} Refers to the center of the output shaft at $n_2 = 150$ rpm.

^{e)} Depending on the clamping hub diameter and the selected adapter plate.

^{f)} At $i=10$ and $n_1=3000$ rpm at no load.

You can select a suitable adapter plate using the online configurator on www.wittenstein-alpha.com

Quick gearhead selection based on the motor characteristic*:

Max. torque $T_{2\alpha} \geq T_{max\ motor} * i$

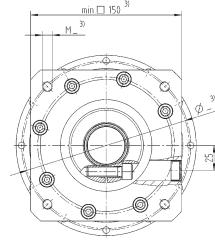
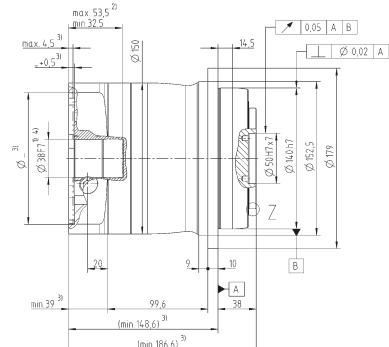
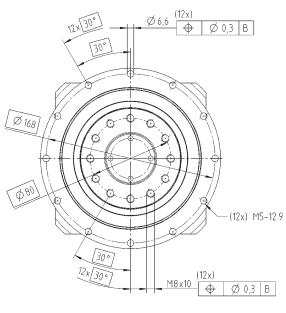
*Please refer to catalog pages 4 and 5 for detailed information on manual selection based on the application.

For application-specific sizing with cymex®, see www.cymex.com

Motor shaft diameter [mm]

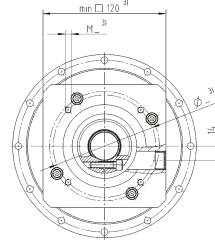
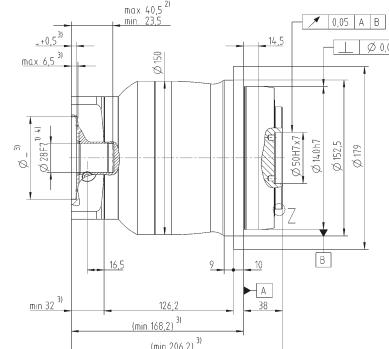
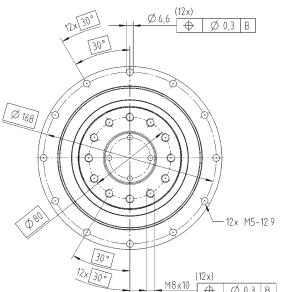
1-stage

Up to 38⁴⁾ (K)
clamping hub
diameter

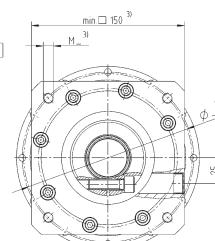
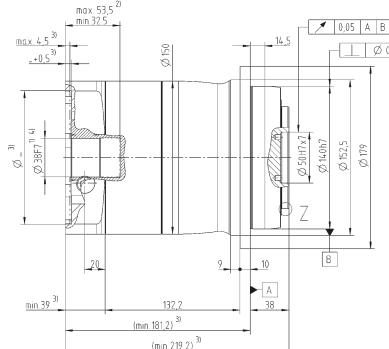
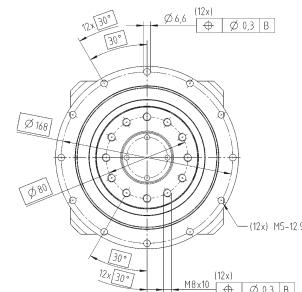


2-stage

Up to 28⁴⁾ (H)
clamping hub
diameter



Up to 38⁴⁾ (K)
clamping hub
diameter



Non-tolerated dimensions ± 1 mm

- 1) Check motor shaft fit.
- 2) Min./max. permissible motor shaft length.
Longer motor shafts are adaptable; please contact us.
- 3) The dimensions depend on the motor.
- 4) Smaller motor shaft diameters are compensated by a bushing with a minimum thickness of 1 mm.

Motor mounting according to operating manual

Equivalent force at the output ($F_{2\text{eq}}$)

The equivalent force $F_{2\text{eq}}$ at the output describes the decisive forces for gearhead selection.

Equivalent application torque ($T_{2\text{eq}}$)

The equivalent application torque $T_{2\text{eq}}$ describes the decisive torque for gearhead selection.

Sizing factor (f_a)

The sizing factor f_a describes the influence of the daily operating time and the operating mode factor on the application torque.

Operating mode factor (K_M)

The operating mode factor K_M describes the influence of the duty cycle, the number of cycles and the dynamics on the application torque.

Moment of inertia (relates to the drive) (J)

The mass moment of inertia J is a measure of the effort applied by an object to maintain its momentary condition (at rest or moving).

Operating noise (L_{PA})

Low noise level L_{PA} is a factor of growing importance for environmental and health reasons. The gear ratio and speed both affect the noise level.

General rule:

A higher speed means a higher noise level, while a higher ratio means a lower noise level. The values specified in our catalog relate to gearheads with a ratio $i = 10/100$ at a speed $n = 3000$ rpm

Max. radial force (F_{2R})

The radial force F_{2R} is the force component acting at right angles to the output shaft with the NP, NPS, NPR and NPL or parallel to the output flange with the NPT. It acts perpendicular to the axial force and can assume an axial distance of x_2 in relation to the shaft shoulder with the NP, NPS, NPR and NPL or to the shaft flange with the NPT, which acts as a lever arm. The lateral force produces a bending moment.

Max. input speed ($n_{1\text{max}}$) and nominal input speed (n_{1N})

Two speeds are of relevance when sizing a gearhead: the maximum speed and the nominal speed at the input. The maximum permissible speed $n_{1\text{Max}}$ must not be exceeded because it serves as the basis for sizing → cyclic operation. The nominal speed n_{1N} must not be exceeded in → continuous operation. The housing temperature limits the nominal speed, which must not exceed 90°C. The nominal input speed specified in the catalogue applies to an ambient temperature of 20°C. As can be seen in the diagram below, the temperature limit is reached more quickly in the presence of an elevated outside temperature, in other words the nominal input speed must be reduced if the ambient temperature is high. The values applicable to your gearhead are available from WITTENSTEIN alpha on request.

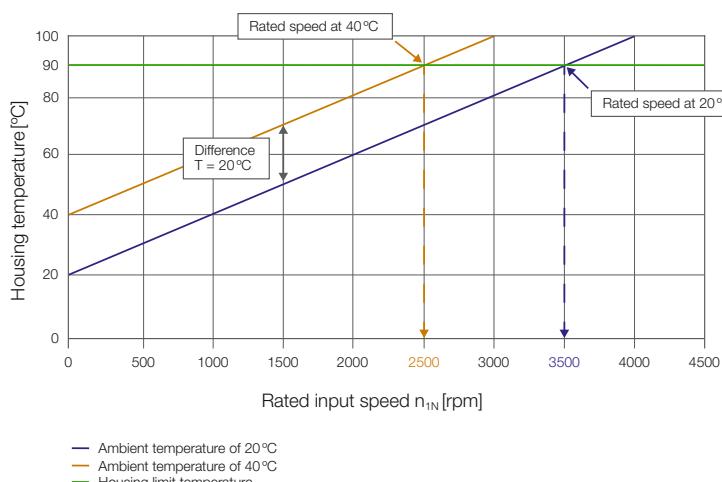
Max. output torque (T_{2a})

T_{2a} is the maximum torque which can be transmitted by the gearhead. This value may be lower, depending on the specific boundary conditions of the application.

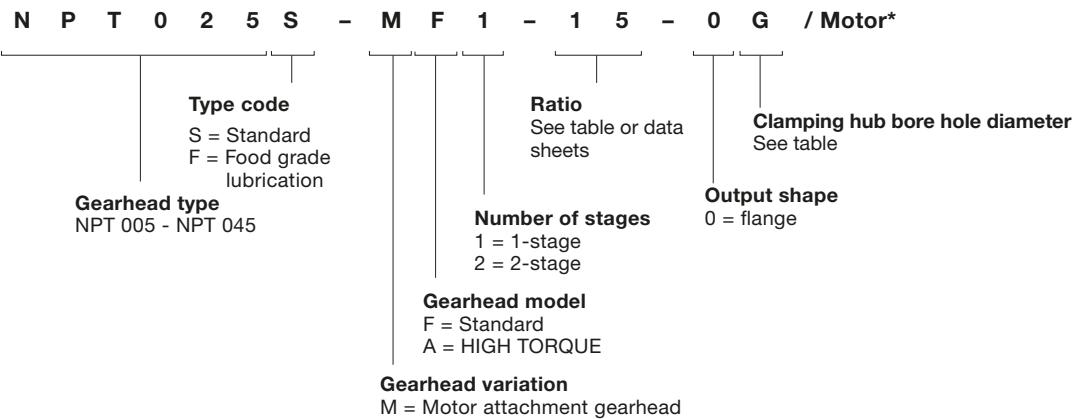
Emergency stop torque ($T_{2\text{Not}}$)

The emergency stop torque [Nm] $T_{2\text{Not}}$ is the maximum permissible torque at the gearhead output and must not be reached more than 1000 times during the life of the gearhead. It must never be exceeded.

Further information can be found in the glossary of our current product catalog.



Order codes for the alpha Value Line – NPT



*Full motor designation only required for determining attached gearhead components!

Ratio and clamping hub diameter table

Size	Stages	Ratios	Clamping hub diameters* [mm]
005	1 stage	4, 5, 7, 8, 10	8 (Z), 9 (A), 11 (B), 14 (C)
	2 stage	16, 20, 25, 28, 35, 40, 50, 64, 70, 100	8 (Z), 9 (A), 11 (B), 14 (C)
015	1 stage	3, 4, 5, 7, 8, 10	9 (A), 11 (B), 14 (C), 16 (D), 19 (E)
	2 stage	12, 15, 16, 20, 25, 28, 30, 32, 35, 40, 50, 64, 70, 100	8 (Z), 9 (A), 11 (B), 14 (C)
025	1 stage	3, 4, 5, 7, 8, 10	14 (C), 16 (D), 19 (E), 24 (G), 28 (H)
	2 stage	9, 12, 15, 16, 20, 25, 28, 30, 32, 35, 40, 50, 64, 70, 100	9 (A), 11 (B), 14 (C), 16 (D), 19 (E)
035	1 stage	3, 4, 5, 7, 8, 10	19 (E), 24 (G), 28 (H), 32 (I), 38 (K)
	2 stage	9, 12, 15, 16, 20, 25, 28, 30, 32, 35, 40, 50, 64, 70, 100	14 (C), 16 (D), 19 (E), 24 (G), 28 (H)
045	1 stage	5, 8, 10	38 (K)
	2 stage	25, 32, 50, 64, 100	19 (E), 24 (G), 28 (H), 32 (I), 38 (K)

*Intermediate diameters are possible in combination with a bushing with a minimum thickness of 1 mm.



alpha

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WITTENSTEIN alpha – **intelligent** drive systems

www.wittenstein-alpha.com/alpha-value-line

