HLAE

The unique Hygienic Design planetary gearbox – ideal for safe cleaning processes

Our **HLAE** is unique: It is the world's first planetary gearbox in a hygienic design - flexible without a radial bolt, powerful and yet easy and quick to clean. It was developed specifically for applications in sensitive areas such as pharmaceuticals, cosmetics and food.

Cyclic torque	**15 - 171 Nm**
Radial force	**1000 - 5000 N**
Axial force	**1200 - 3800 N**
Torsional backlash	**7 - 12 arcmin**
Protection class	**IP69K**

Frame sizes

70 **90** **110**

- Hygienic Design
- Application-specific gearbox
- Equidirectional rotation
- Round type output flange
- Rotary shaft seal
- Extra long centering collar
- FDA certified materials
- Coaxial gearbox
- Spur gear
- Low-friction deep groove ball bearings
- Planet carrier in disc design

Detailed explanations of the technical features starting on page 201.

Code	Gearbox characteristics			HLAE070	HLAE090	HLAE110	p(1)
	Service life(2)	L_h	h	20,000			
	Efficiency(3)	η	%	98			1
				97			2
	Min. operating temperature	T_{min}	°C (°F)	-25 (-13)			
	Max. operating temperature	T_{max}		90 (194)			
	Protection class			IP69K			
F	Food grade lubrication			Grease (lifetime lubrication)			
	Installation position			Any			
S	Standard backlash	φ	arcmin	< 10	< 7	< 7	1
				< 12	< 9	< 9	2
	Torsional stiffness(3)	C_{2t}	Nm / arcmin (lb_f.in/ arcmin)	2.3 - 3.1 (20 - 27)	6.6 - 8.7 (58 - 77)	14.7 - 19.5 (130 - 173)	1
				2.2 - 3.2 (19 - 28)	6.6 - 9.0 (58 - 80)	13.5 - 20.5 (119 - 181)	2
	Gearbox weight(3)	m	kg (lb_m)	2.1 (4.6 - 4.7)	3.7 - 3.8 (8.2 - 8.4)	7.3 - 7.4 (16.1 - 16.3)	1
				2.3 - 2.5 (5.2 - 5.6)	4.3 - 4.5 (9.5 - 9.8)	8.6 - 9.0 (19.0 - 19.8)	2
S	Standard surface			Housing: Stainless steel 1.4404 – electropolished (R_a < 0,8µm)			
	Running noise(3)	L_{pA}	dB(A)	58	60	65	

Output shaft loads			HLAE070	HLAE090	HLAE110	p(1)
Maximum radial force	$F_{r\,max}$	N (lb_f)	1000 (225)	1250 (281)	5000 (1124)	
Maximum axial force	$F_{a\,max}$		1200 (270)	1600 (360)	3800 (854)	
Maximum tilting moment	$M_{K\,max}$	Nm (lb_f.in)	48 (428)	68 (603)	376 (3331)	

Input characteristics			HLAE070	HLAE090	HLAE110	p(1)
Clamping system diameter input (Code)	D26	mm	11 (C)	19 (E)(4)	24 (F)(4)	
			14 (D)(4)	-	-	
Mass moment of inertia input(3)(4)	J_1	kgcm² (lb_f. in.s²$10^{-4}$)	0.086 - 0.154 (0.761 - 1.363)	0.753 - 1.088 (6.665 - 9.630)	1.579 - 2.530 (13.975 - 22.392)	1
			0.084 - 0.142 (0.743 - 1.257)	0.748 - 1.007 (6.620 - 8.913)	1.569 - 2.479 (13.887 - 21.941)	2
Average idle torque(3)(4)	T_0	Nm (lb_f.in)	0.15 - 0.40 (1 - 4)	0.25 - 0.75 (2 - 7)	0.60 - 1.85 (5 - 16)	1
			0.10 - 0.15 (1)	0.15 - 0.35 (1 - 3)	0.45 - 0.95 (4 - 8)	2
Maximum bending moment input	M_{b1}		8 (71)	16 (142)	40 (354)	

(1) Number of stages
(2) Application specific configuration with NCP – www.neugart.com
(3) The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com
(4) Reference clamping system diameter

Output torques			HLAE070	HLAE090	HLAE110	i(1)	p(2)
Cyclic torque(3)(4)	T_{2Z}	Nm (lb_f.in)	28 (248)	85 (752)	115 (1018)	3	1
			33 (292)	87 (770)	155 (1372)	4	
			30 (266)	82 (726)	171 (1513)	5	
			25 (221)	65 (575)	135 (1195)	7	
			18 (159)	50 (443)	120 (1062)	8	
			15 (133)	38 (336)	95 (841)	10	
			33 (292)	87 (770)	157 (1390)	9	2
			33 (292)	87 (770)	171 (1513)	12	
			33 (292)	82 (726)	171 (1513)	15	
			33 (292)	87 (770)	171 (1513)	16	
			33 (292)	87 (770)	171 (1513)	20	
			30 (266)	82 (726)	171 (1513)	25	
			33 (292)	87 (770)	171 (1513)	32	
			30 (266)	82 (726)	171 (1513)	40	
			18 (159)	50 (443)	120 (1062)	64	
			15 (133)	38 (336)	95 (841)	100	
Maximum torque(3)(4)	T_{2max}	Nm (lb_f.in)	44 (389)	105 (929)	184 (1629)	3	1
			48 (425)	139 (1230)	245 (2168)	4	
			46 (407)	131 (1159)	270 (2390)	5	
			40 (354)	104 (920)	215 (1903)	7	
			28 (248)	80 (708)	192 (1699)	8	
			24 (212)	60 (531)	152 (1345)	10	
			52 (460)	139 (1230)	250 (2213)	9	2
			48 (425)	139 (1230)	270 (2390)	12	
			52 (460)	131 (1159)	270 (2390)	15	
			48 (425)	139 (1230)	270 (2390)	16	
			48 (425)	139 (1230)	270 (2390)	20	
			46 (407)	131 (1159)	270 (2390)	25	
			48 (425)	139 (1230)	270 (2390)	32	
			46 (407)	131 (1159)	270 (2390)	40	
			28 (248)	80 (708)	192 (1699)	64	
			24 (212)	60 (531)	152 (1345)	100	

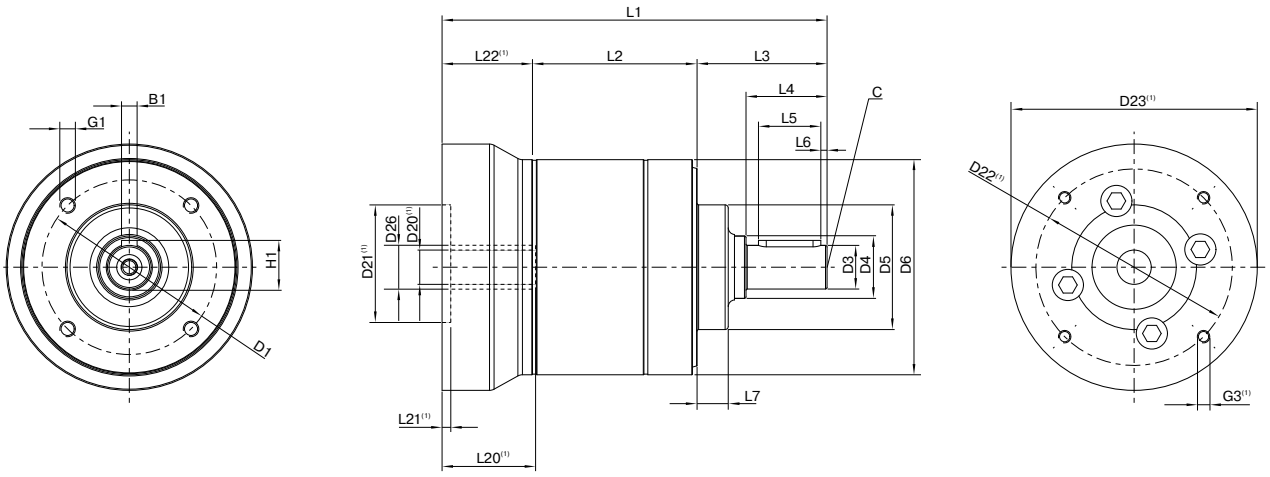
(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) Based on reference clamping system diameter

Output torques			HLAE070	HLAE090	HLAE110	i(1)	p(2)
Continuous torque(3)	T_{2D}	Nm (lb_f.in)	17 (150)	41 (363)	97 (859)	3	1
			18 (159)	70 (620)	131 (1159)	4	
			19 (168)	69 (611)	146 (1292)	5	
			20 (177)	55 (487)	114 (1009)	7	
			15 (133)	42 (372)	102 (903)	8	
			12.5 (111)	32 (283)	80 (708)	10	
			23 (204)	81 (717)	133 (1177)	9	2
			25 (221)	76 (673)	165 (1460)	12	
			27 (239)	69 (611)	146 (1292)	15	
			27 (239)	76 (673)	165 (1460)	16	
			28 (248)	76 (673)	165 (1460)	20	
			25 (221)	69 (611)	146 (1292)	25	
			28 (248)	76 (673)	165 (1460)	32	
			25 (221)	69 (611)	146 (1292)	40	
			15 (133)	42 (372)	102 (903)	64	
			12.5 (111)	32 (283)	80 (708)	100	

Input speeds			HLAE070	HLAE090	HLAE110	i(1)	p(2)
Continuous input speed(3)(4)	n_{1D}	rpm	3950	3000	1150	3	1
			4000	2350	1250	4	
			4000	2750	1500	5	
			4000	2950	1700	7	
			4000	3500	2250	8	
			4000	3500	2600	10	
			4000	2300	1100	9	2
			4000	2750	1300	12	
			4000	3400	1600	15	
			4000	3300	1650	16	
			4000	3500	2000	20	
			4000	3500	2400	25	
			4000	3500	2550	32	
			4000	3500	3000	40	
			4000	3500	3000	64	
			4000	3500	3000	100	
Max. mechanical input speed(3)	n_{1max}	rpm	13000	7000	6500		

Output torques			HLAE070	HLAE090	HLAE110	i(1)	p(2)
Emergency stop torque(4)(5)	T_{2Stop}	Nm (lb_f.in)	56 (496)	150 (1328)	230 (2036)	3	1
			66 (584)	174 (1540)	310 (2744)	4	
			60 (531)	164 (1452)	340 (3009)	5	
			50 (443)	130 (1151)	270 (2390)	7	
			36 (319)	100 (885)	240 (2124)	8	
			30 (266)	76 (673)	190 (1682)	10	
			66 (584)	174 (1540)	310 (2744)	9	2
			66 (584)	174 (1540)	340 (3009)	12	
			66 (584)	164 (1452)	340 (3009)	15	
			66 (584)	174 (1540)	340 (3009)	16	
			66 (584)	174 (1540)	340 (3009)	20	
			60 (531)	164 (1452)	340 (3009)	25	
			66 (584)	174 (1540)	340 (3009)	32	
			60 (531)	164 (1452)	340 (3009)	40	
			36 (319)	100 (885)	240 (2124)	64	
			30 (266)	76 (673)	190 (1682)	100	

(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) Based on reference clamping system diameter
(5) Permitted 1000 times



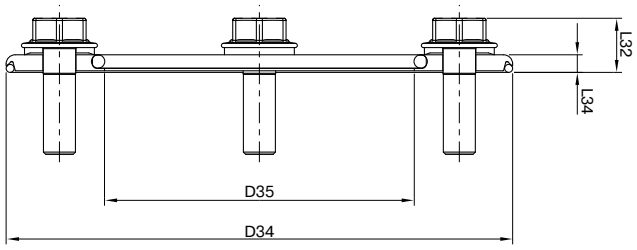
Drawing corresponds to a HLAE070 / 1-stage / output shaft with feather key / 11 mm clamping system / motor adaptation – one part / B5 flange type motor

(1) The dimensions vary with the motor/gearbox flange. The input flange dimensions can be retrieved for each specific motor in Tec Data Finder at www.neugart.com

Geometry(2)			**HLAE070**	**HLAE090**	**HLAE110**	**p**(3)	**Code**
Pitch circle diameter output	D1		56 (2.205)	75 (2.953)	90 (3.543)		
Shaft diameter output	D3	h7	14 (0.551)	20 (0.787)	25 (0.984)		
Shaft collar output	D4		20 (0.787)	25 (0.984)	35 (1.378)		
Centering diameter output	D5	h7	40 (1.575)	58 (2.283)	65 (2.559)		
Housing diameter	D6		69 (2.717)	88 (3.465)	109 (4.291)		
Mounting thread x depth	G1	4x	M5x11	M6x12	M8x20		
Min. total length	L1		123.5 (4.862)	146 (5.748)	191 (7.520)	1	
			135.5 (5.335)	166 (6.535)	219 (8.622)	2	
Housing length	L2		53.0 (2.087)	68.0 (2.677)	89.0 (3.504)	1	
			65.0 (2.559)	88.0 (3.465)	117.0 (4.606)	2	
Shaft length output	L3		41.7 (1.642)	50 (1.969)	66.5 (2.618)		
Centering depth output	L7		10 (0.394)	13 (0.512)	14 (0.551)		
Motor shaft diameter j6/k6	D20		More information on page 191/192				
Clamping system diameter input	D26		More information on page 178				
Output shaft with feather key (DIN 6885-1)			A 5x5x20	A 6x6x25	A 8x7x35		**A**
Feather key width (DIN 6885-1)	B1		5 (0.197)	6 (0.236)	8 (0.315)		
Shaft height including feather key (DIN 6885-1)	H1		16 (0.630)	22.5 (0.886)	28 (1.102)		
Shaft length from shoulder	L4		26 (1.024)	32 (1.260)	45 (1.772)		
Feather key length	L5		20 (0.787)	25 (0.984)	35 (1.378)		
Distance from shaft end	L6		2 (0.079)	2,5 (0.098)	5 (0.197)		
Center hole (DIN 332, type DR)	C		M5x12,5	M6x16	M10x22		
Smooth output shaft							**B**
Shaft length from shoulder	L4		26 (1.024)	32 (1.260)	45 (1.772)		

(2) Dimensions in mm
(3) Number of stages

HLAE Sealing kit



The freely positionable sealing kit for the HLAE provides maximum hygienic protection, making it universally suitable for different machine side thicknesses.
It therefore gives you maximum flexibility for connecting to the machine while satisfying the strictest hygienic requirements

			HLAE070	HLAE090	HLAE110
Art. No.			**63911**	**63858**	**64130**
Outside diameter	D34	mm(in)	75 (2.953)	95 (3.740)	120 (4.724)
Inner diameter	D35		40 (1.575)	58 (2.283)	65 (2.559)
Overall length	L32		8.5 (0.335)	9.5 (0.374)	11.5 (0.453)
Disc length	L33		3 (0.118)	3 (0.118)	3 (0.118)
Width across flats	SW30		8 (0.315)	10 (0.394)	13 (0.512)
Quantity x screw x length	N30		4 x M5x16	4 x M6x20	4 x M8x25

For correct installation of the sealing kit, please refer to the corresponding mounting instructions (www.neugart.com). CAD data can be accessed at www.neugart.com

Included parts

1 x electropolished stainless steel disc
1 x EPDM sealing ring (seal to application)
1 x EPDM sealing ring (seal to gearbox)
4 x USIT-VA with EPDM coated sealing washer, EHEDG-compliant
4 x Hygienic Design stainless steel screw (electropolished), EHEDG-compliant

Individual appearance and additional protection for your gearbox

With the Option: Painted surface, Neugart offers a high-quality surface finish for all gearboxes and sizes. The standard color RAL 9005 jet black ensures a modern, elegant appearance and allows harmonious integration into a wide variety of applications. The paint structure is based on a robust two-component system and guarantees reliable adhesion and an even, high-quality surface.

Advantages of the painted surface – RAL 9005 jet black:

- High-quality appearance
- Robust paint system
- High chemical resistance (individual testing recommended)
- Improved durability
- Flexibly available – even for quantities of 1 for all gearboxes and sizes

Note:
The screw-on surfaces on the drive flange to the motor and on the output side to the application are not painted for functional reasons.

The paint finish is primarily for visual enhancement and does not provide corrosion protection for long-term use in salt-laden environments, for example. If you have special requirements for a corrosion-protected paint finish, please contact us.