



**HLAE**

## The unique planetary gearbox with certified hygienic design – ideal for reliable cleaning processes

Our **HLAE** is unique: It is the world's first planetary gearbox with certified hygienic design – flexible without a radial screw, powerful, and yet ideal for fast and easy cleaning. It has been developed specifically for challenging applications such as in the pharmaceutical, cosmetics, and food industries.

**2 Certified protection**

Our **HLAE** is unique in the world. It is the first planetary gearbox to be awarded a 3-A RPSCQC certificate. It is thus ideal for the industrial production of food, pharmaceuticals, and cosmetics.

**3 Fast and easy to clean**

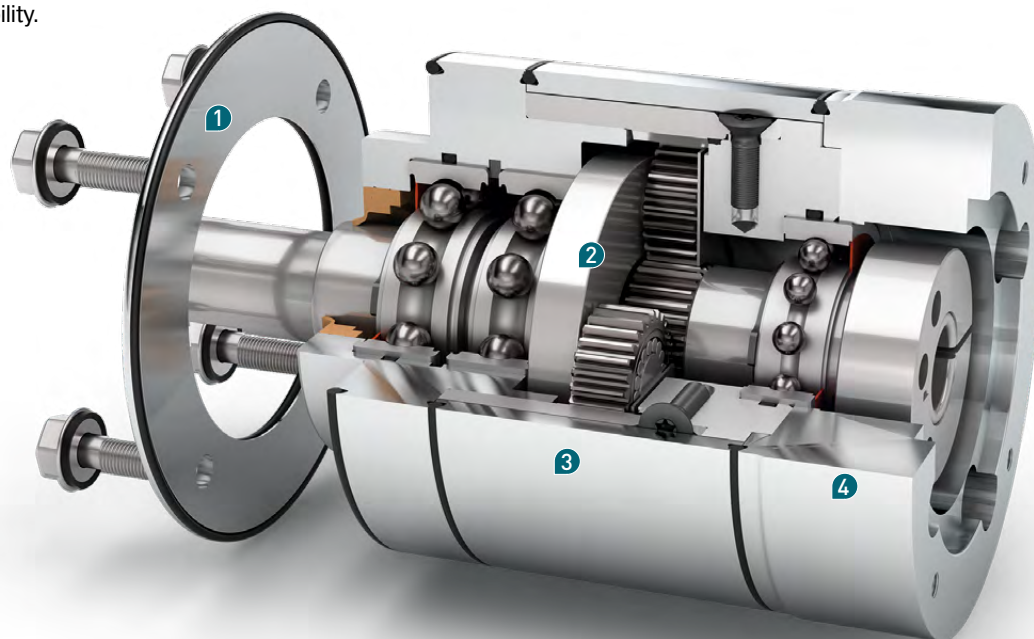
The electropolished surface is one of the main features of our **HLAE** planetary gearbox. It exceeds the usual hygiene standards and allows for fast aseptic cleaning, even under high pressure.

**1 For particularly flexible installations**

Designed for free positioning, the **HLAE** sealing kit provides the highest level of hygienic protection and is therefore the ideal universal solution for a wide range of machine wall thicknesses. It can therefore be connected to the machine with the maximum flexibility.

**4 Unique and all-inclusive**

The **HLAE** does not need a radial screw. The hygienic design planetary gearbox can consequently be connected to your motor with maximum flexibility. The result is a surface completely and uncompromisingly free of dead space.



- + For any mounting position
- + Individual adaptation of the input flange to the motor
- + Lifetime lubrication for maintenance-free operation
- + Equidirectional rotation
- + Wide range of output shaft designs
- + Precise gearing
- + Optional FFPM seals for greater chemical and heat resistance

Code	Gearbox characteristics			HLAE070	HLAE090	HLAE110	z <sup>(1)</sup>
	Service life	t <sub>L</sub>	h	30,000			
	Efficiency at full load <sup>(2)</sup>	η	%	98			1
				97			2
	Min. operating temperature	T <sub>min</sub>	°C	-25 (-13)			
	Max. operating temperature	T <sub>max</sub>	(°F)	90 (194)			
	Protection class			IP69K			
<b>F</b>	Food grade lubrication			Grease			
	Installation position			Any			
<b>S</b>	Standard backlash	j <sub>t</sub>	arcmin	< 10	< 7	< 7	1
				< 12	< 9	< 9	2
	Torsional stiffness <sup>(2)</sup>	c <sub>g</sub>	Nm/arcmin (lb <sub>f</sub> .in/ arcmin)	1.5 - 2.1 (13 - 19)	3.9 - 5.2 (35 - 46)	9.7 - 13.1 (86 - 116)	1
				1.5 - 2.1 (13 - 19)	4.0 - 5.2 (35 - 46)	9.9 - 13.1 (88 - 116)	2
	Gearbox weight	m <sub>G</sub>	kg (lb <sub>m</sub> )	2.1 (4.6)	3 (6.6)	8.7 (19.2)	1
				2.4 (5.3)	3.7 (8.2)	11 (24.3)	2
<b>S</b>	Standard surface			Housing: Stainless steel 1.4404 – electropolished (R <sub>a</sub> < 0,8 μm)			
	Running noise <sup>(3)</sup>	Q <sub>g</sub>	dB(A)	58	60	65	
	Max. bending moment based on the gearbox input flange <sup>(4)</sup>	M <sub>b</sub>	Nm (lb <sub>f</sub> .in)	8 (71)	16 (142)	40 (354)	
	Motor flange precision			DIN 42922-N			

Output shaft loads			HLAE070	HLAE090	HLAE110	z <sup>(1)</sup>
Radial force for 20,000 h <sup>(5)(6)</sup>	F <sub>r20.000h</sub>	N (lb <sub>f</sub> )	450 (101)	900 (203)	1450 (326)	
Axial force for 20,000 h <sup>(5)(6)</sup>	F <sub>a20.000h</sub>		550 (124)	1500 (338)	2500 (563)	
Radial force for 30,000 h <sup>(5)(6)</sup>	F <sub>r30.000h</sub>		400 (90)	600 (135)	1250 (281)	
Axial force for 30,000 h <sup>(5)(6)</sup>	F <sub>a30.000h</sub>		500 (113)	1000 (225)	2000 (450)	
Static radial force <sup>(6)(7)</sup>	F <sub>rStat</sub>	Nm (lb <sub>f</sub> .in)	1000 (225)	1250 (281)	5000 (1125)	
Static axial force <sup>(6)(7)</sup>	F <sub>aStat</sub>		1200 (270)	1600 (360)	3800 (855)	
Tilting moment for 20,000 h <sup>(5)(7)</sup>	M <sub>K20.000h</sub>		22 (195)	49 (434)	109 (965)	
Tilting moment for 30,000 h <sup>(5)(7)</sup>	M <sub>K30.000h</sub>		19 (168)	33 (292)	94 (832)	

Moment of inertia			HLAE070	HLAE090	HLAE110	z <sup>(1)</sup>
Mass moment of inertia <sup>(2)</sup>	J	kgcm <sup>2</sup> (lb <sub>f</sub> .in.s <sup>2</sup> 10 <sup>-4</sup> )	0.064 - 0.135 (0.566 - 1.195)	0.390 - 0.770 (3.452 - 6.815)	1.300 - 2.630 (11.505 - 23.276)	1
			0.064 - 0.131 (0.566 - 1.159)	0.390 - 0.740 (3.452 - 6.549)	1.300 - 2.620 (11.505 - 23.187)	2

<sup>(1)</sup> Number of stages

<sup>(2)</sup> The ratio-dependent values can be retrieved in Tec Data Finder – [www.neugart.com](http://www.neugart.com)

<sup>(3)</sup> Sound pressure level from 1 m, measured on input running at n<sub>1</sub>=3000 rpm no load; i=5

<sup>(4)</sup> Max. motor weight\* in kg = 0.2 × M<sub>b</sub> / motor length in m

\* with symmetrically distributed motor weight

\* with horizontal and stationary mounting

<sup>(5)</sup> These values are based on an output shaft speed of n<sub>2</sub>=100 rpm

<sup>(6)</sup> Based on the center of the output shaft

<sup>(7)</sup> Other (sometimes higher) values following changes to T<sub>2N</sub>, F<sub>r</sub>, F<sub>a</sub>, cycle, and service life of bearing. Application specific configuration with NCP – [www.neugart.com](http://www.neugart.com)

Output torques			HLAE070	HLAE090	HLAE110	i <sup>(1)</sup>	z <sup>(2)</sup>				
Nominal output torque <sup>(3)(4)</sup>	T <sub>2N</sub>	Nm (lb <sub>r</sub> .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 (1389)	9	2				
			33 (292)	80 (708)	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					
			Max. output torque <sup>(4)(5)</sup>	T <sub>2max</sub>	Nm (lb <sub>r</sub> .in)	45 (398)		136 (1204)	184 (1628)	3	1
						53 (469)		140 (1239)	248 (2195)	4	
48 (425)	131 (1159)	274 (2425)				5					
40 (354)	104 (920)	216 (1912)				7					
29 (257)	80 (708)	192 (1699)				8					
24 (212)	61 (540)	152 (1345)				10					
53 (469)	140 (1239)	251 (2221)				9	2				
53 (469)	140 (1239)	274 (2425)				12					
53 (469)	131 (1159)	274 (2425)				15					
53 (469)	140 (1239)	274 (2425)				16					
53 (469)	140 (1239)	274 (2425)				20					
48 (425)	131 (1159)	274 (2425)				25					
53 (469)	140 (1239)	274 (2425)				32					
48 (425)	131 (1159)	274 (2425)				40					
29 (257)	80 (708)	192 (1699)				64					
24 (212)	61 (540)	152 (1345)				100					

<sup>(1)</sup> Ratios (i=n<sub>1</sub>/n<sub>2</sub>)

<sup>(2)</sup> Number of stages

<sup>(3)</sup> Application specific configuration with NCP – [www.neugart.com](http://www.neugart.com)

<sup>(4)</sup> Values for feather key (code "A"): for repeated load

<sup>(5)</sup> 30,000 rotations of the output shaft permitted; see page 128

Output torques			HLAE070	HLAE090	HLAE110	i <sup>(1)</sup>	z <sup>(2)</sup>
Emergency stop torque <sup>(3)</sup>	T <sub>2Stop</sub>	Nm (lb <sub>f</sub> .in)	56 (496)	170 (1505)	230 (2036)	3	1
			66 (584)	174 (1540)	310 (2744)	4	
			60 (531)	164 (1451)	342 (3027)	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)	314 (2779)	9	2	
		66 (584)	174 (1540)	342 (3027)	12		
		66 (584)	164 (1451)	342 (3027)	15		
		66 (584)	174 (1540)	342 (3027)	16		
		66 (584)	174 (1540)	342 (3027)	20		
		60 (531)	164 (1451)	342 (3027)	25		
		66 (584)	174 (1540)	342 (3027)	32		
		60 (531)	164 (1451)	342 (3027)	40		
		36 (319)	100 (885)	240 (2124)	64		
		30 (266)	76 (673)	190 (1682)	100		

Input speeds			HLAE070	HLAE090	HLAE110	i <sup>(1)</sup>	z <sup>(2)</sup>			
Average thermal input speed at T <sub>2N</sub> and S1 <sup>(4)(5)</sup>	n <sub>1N</sub>	rpm	3000	2500	2000	3	1			
			3000	2500	2000	4				
			3000	2500	2000	5				
			3000	2500	2000	7				
			3000	2500	2000	8				
			3000	2500	2000	10				
		3000	3000	2500	9	2				
		3000	3000	2500	12					
		3000	3000	2500	15					
		3000	3000	2500	16					
		3000	3000	2500	20					
		3000	3000	2500	25					
		3000	3000	2500	32					
		3000	3000	2500	40					
		3000	3000	2500	64					
		3000	3000	2500	100					
		Max. mechanical input speed <sup>(4)</sup>	n <sub>1Limit</sub>	rpm	13000		7000	6500		

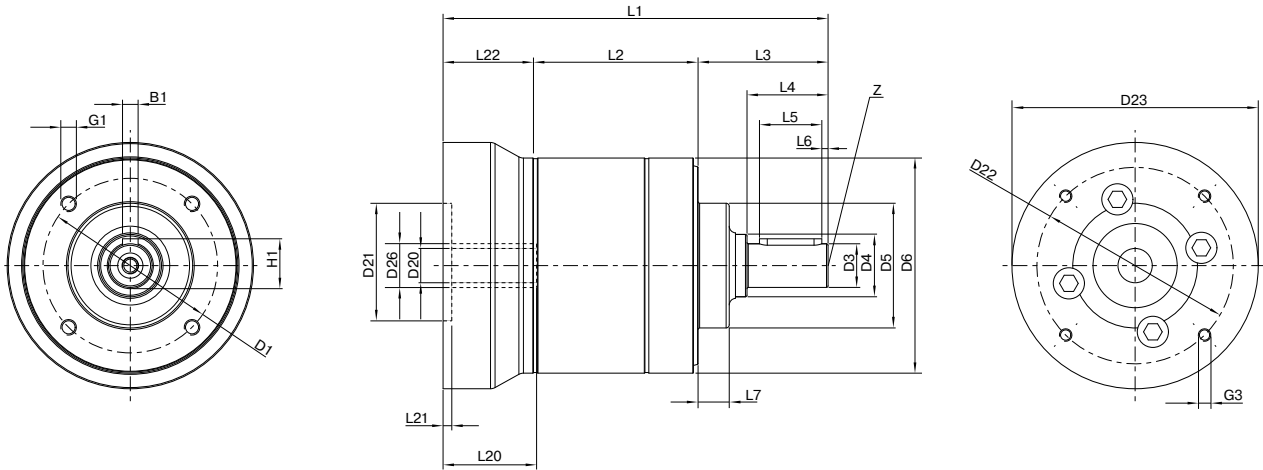
<sup>(1)</sup> Ratios (i=n<sub>1</sub>/n<sub>2</sub>)

<sup>(2)</sup> Number of stages

<sup>(3)</sup> Permitted 1000 times

<sup>(4)</sup> Application-specific speed configurations with NCP – [www.neugart.com](http://www.neugart.com)

<sup>(5)</sup> See page 128 for the definition



Drawing corresponds to a HLAE070 / 1-stage / output shaft with feather key / 11 mm clamping system / motor adaptation – one part / B5 flange type motor  
 All other variants can be retrieved in the Tec Data Finder at [www.neugart.com](http://www.neugart.com)

Geometry <sup>(1)</sup>			HLAE070	HLAE090	HLAE110	z <sup>(2)</sup>	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		52.8 (2.079)	68.0 (2.677)	89.0 (3.504)	1		
			64.8 (2.551)	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)			
Clamping system diameter input	D26		More information on page 117					
Motor shaft diameter j6/k6	D20		The dimensions vary with the motor/gearbox flange. The input flange geometries can be retrieved for each specific motor in Tec Data Finder at <a href="http://www.neugart.com">www.neugart.com</a>					
Max. permis. motor shaft length	L20							
Min. permis. motor shaft length								
Centering diameter input	D21							
Centering depth input	L21							
Pitch circle diameter input	D22							
Motor flange length	L22							
Diagonal dimension input	D23							
Mounting thread x depth	G3	4x						
Output shaft with feather key (DIN 6885-1)						A 5x5x20	A 6x6x25	A 8x7x35
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)	Z		M5x12.5	M6x16	M10x22			
Smooth output shaft								
Shaft length from shoulder	L4		26 (1.024)	32 (1.260)	45 (1.772)		B	

<sup>(1)</sup> Dimensions in mm (in)  
<sup>(2)</sup> Number of stages