

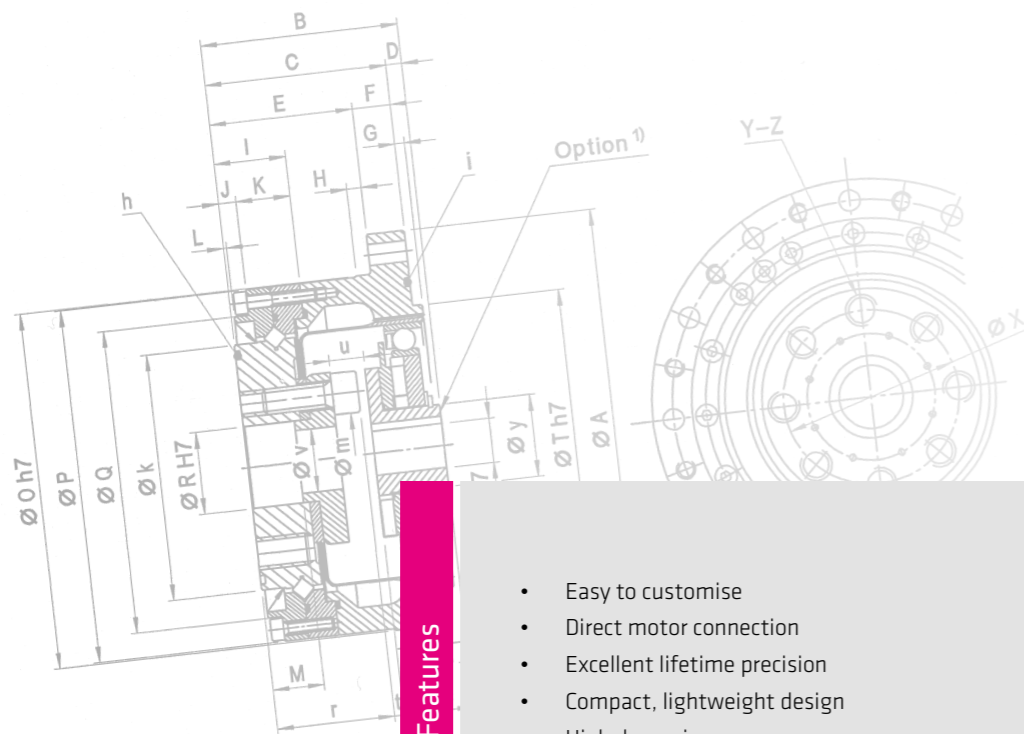
The standard series

HFUC-2UH Series Units are available in thirteen sizes with gear ratios of 30, 50, 80, 100, 120 and 160:1 offering repeatable peak torques from 9 to 9180 Nm.

Harmonic Drive® Units combine the precision Harmonic Drive® Component Sets consisting of three components - Circular Spline, Flexspline and Wave Generator - and integral high load capacity, tilt resistant output bearings.

The output bearing with high tilting rigidity enables the direct introduction of high payloads without further support and thus permits simple and space saving design installations.

If required, the Units are available as specific configurations tailored to your application and can utilise standard servo motors. Unit and motor together form a compact and lightweight system capable of withstanding high loads. On request, the series is available for ambient temperatures between -40 and 90 °C and can be used with a large selection of special lubricants tailored to your application. Due to the Units positioning accuracy, stable machine characteristics with short cycle times are guaranteed.



Features

- Easy to customise
- Direct motor connection
- Excellent lifetime precision
- Compact, lightweight design
- High dynamics
- Integrated high capacity output bearing

Optimised for your applications:

- Optimal design solution
- Easy integration
- Reduced diversity of components
- Reduced material use
- Higher product quality
- Less waste
- Consistent quality
- High availability
- Reduced Total Cost of Ownership
- Reduced maintenance costs
- Greater energy efficiency
- Lower production costs
- Small machine footprint

Customer Benefits



QUICKLINK
www.harmonicdrive.co.uk/2050

HFUC-2UH

Ordering code

Table 172.1

Series	Size	Ratio						Version	Special design
		30	50	80	100	120	160		
HFUC	14	30	50	80	100			2UH	According to customer requirements
	17	30	50	80	100	120			
	20	30	50	80	100	120	160		
	25	30	50	80	100	120	160		
	32	30	50	80	100	120	160		
	40		50	80	100	120	160		
	45		50	80	100	120	160		
	50		50	80	100	120	160		
	58		50	80	100	120	160		
	65		50	80	100	120	160		
	80		50	80	100	120	160		
	90		50	80	100	120	160		
100 ¹⁾		50	80	100	120	160			
Ordering code									
HFUC - 25 - 100 - 2UH - SP									

¹⁾Information on request

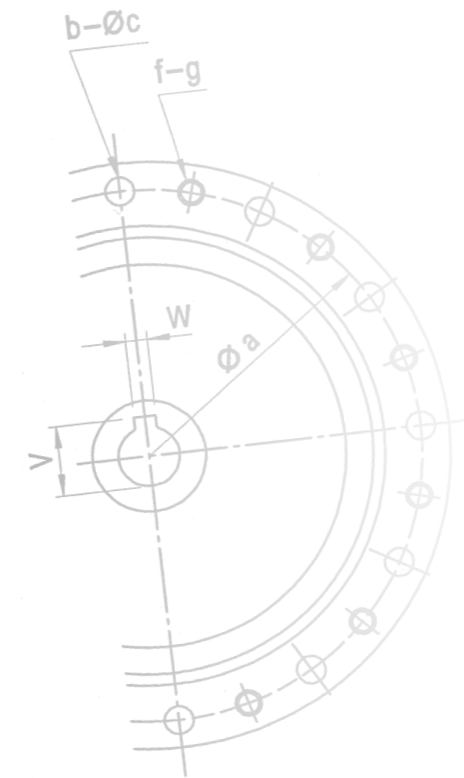
Table 172.2

Version	
Ordering code	Description
2UH	Unit with integrated cross roller output bearing

Available motor adaptations:

[QUICKLINK www.harmonicdrive.co.uk/2105](http://www.harmonicdrive.co.uk/2105)

Clarification of the technical data can be found in the Glossary



Technical data

Table 174.1

	Unit	HFUC-14-2UH				HFUC-17-2UH				
		30	50	80	100	30	50	80	100	120
Ratio	i []	30	50	80	100	30	50	80	100	120
Repeatable peak torque	T_R [Nm]	9.0	18	23	28	16	34	43	54	54
Average torque	T_A [Nm]	6.8	6.9	11	11	12	26	27	39	39
Rated torque	T_N [Nm]	4.0	5.4	7.8	7.8	8.8	16	22	24	24
Momentary peak torque	T_M [Nm]	17	35	47	54	30	70	87	110	86
Maximum input speed (oil lubrication)	$n_{in(max)}$ [rpm]	14000				10000				
Maximum input speed (grease lubrication)	$n_{in(max)}$ [rpm]	8500				7300				
Average input speed (oil lubrication)	$n_{av(max)}$ [rpm]	6500				6500				
Average input speed (grease lubrication)	$n_{av(max)}$ [rpm]	3500				3500				
Moment of inertia	J_{in} [$\times 10^{-4}$ kgm ²]	0.033				0.079				
Weight	m [kg]	0.49				0.64				
Maximum hollow shaft diameter	$d_{H(max)}$ [mm]	8				7				
Transmission accuracy	[arcmin]	< 2	< 1.5			< 1.5				
Repeatability	[arcmin]	< ± 0.1				< ± 0.1				
Lost Motion	[arcmin]	< 1				< 1				
Torsional stiffness	K_3 [$\times 10^3$ Nm/rad]	3.4	5.7	7.1		6.7	13	16		
Ambient operating temperature	[°C]	Standard 0 ... 60, Special lubrication -40 ... 90								
Output bearing										
Dynamic radial load	$F_{R dyn(max)}$ [N]	1930				2148				
Dynamic axial load	$F_{A dyn(max)}$ [N]	2880				3207				
Dynamic tilting moment	$M_{dyn(max)}$ [Nm]	41				64				

Table 174.2

	Unit	HFUC-20-2UH						HFUC-25-2UH					
		30	50	80	100	120	160	30	50	80	100	120	160
Ratio	i []	30	50	80	100	120	160	30	50	80	100	120	160
Repeatable peak torque	T_R [Nm]	27	56	74	82	87	92	50	98	137	157	167	176
Average torque	T_A [Nm]	20	34	47	49	49	49	38	55	87	108	108	108
Rated torque	T_N [Nm]	15	25	34	40	40	40	27	39	63	67	67	67
Momentary peak torque	T_M [Nm]	50	98	127	147	147	147	95	186	255	284	304	314
Maximum input speed (oil lubrication)	$n_{in(max)}$ [rpm]	10000						7500					
Maximum input speed (grease lubrication)	$n_{in(max)}$ [rpm]	6500						5600					
Average input speed (oil lubrication)	$n_{av(max)}$ [rpm]	6500						5600					
Average input speed (grease lubrication)	$n_{av(max)}$ [rpm]	3500						3500					
Moment of inertia	J_{in} [$\times 10^{-4}$ kgm ²]	0.193						0.413					
Weight	m [kg]	0.98						1.5					
Maximum hollow shaft diameter	$d_{H(max)}$ [mm]	10						15					
Transmission accuracy	[arcmin]	< 1.5	< 1			< 1.5			< 1				
Repeatability	[arcmin]	< ± 0.1						< ± 0.1					
Lost Motion	[arcmin]	< 1						< 1					
Torsional stiffness	K_3 [$\times 10^3$ Nm/rad]	11	23	29			21	44	57				
Ambient operating temperature	[°C]	Standard 0 ... 60, Special lubrication -40 ... 90											
Output bearing													
Dynamic radial load	$F_{R dyn(max)}$ [N]	2354						3904					
Dynamic axial load	$F_{A dyn(max)}$ [N]	3511						5827					
Dynamic tilting moment	$M_{dyn(max)}$ [Nm]	91						156					

Illustration 175.1

HFUC-14-2UH [mm]

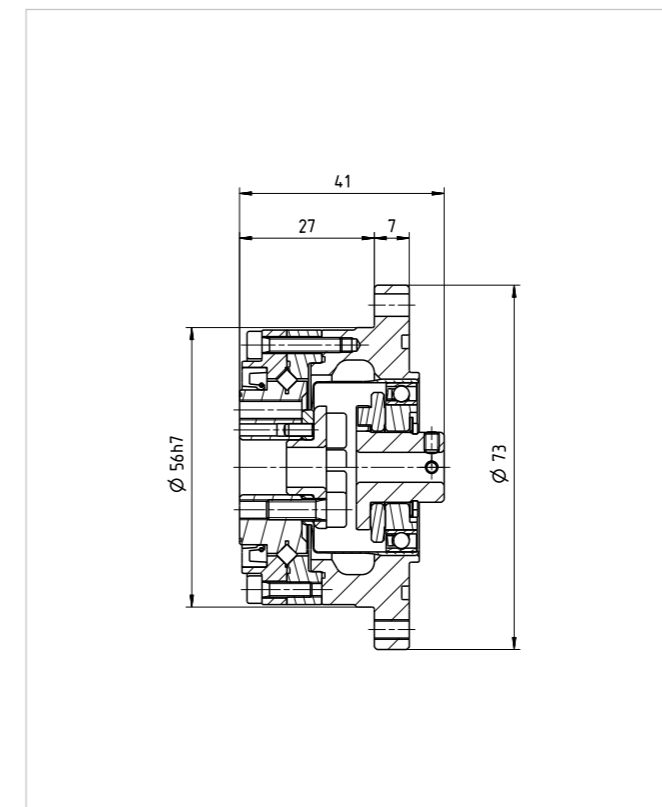


Illustration 175.2

HFUC-17-2UH [mm]

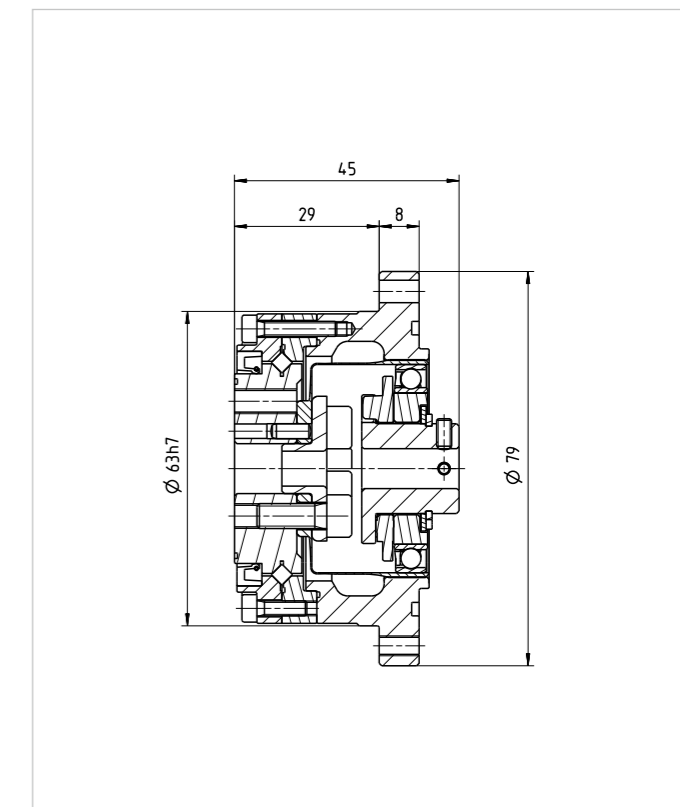


Illustration 175.3

HFUC-20-2UH [mm]

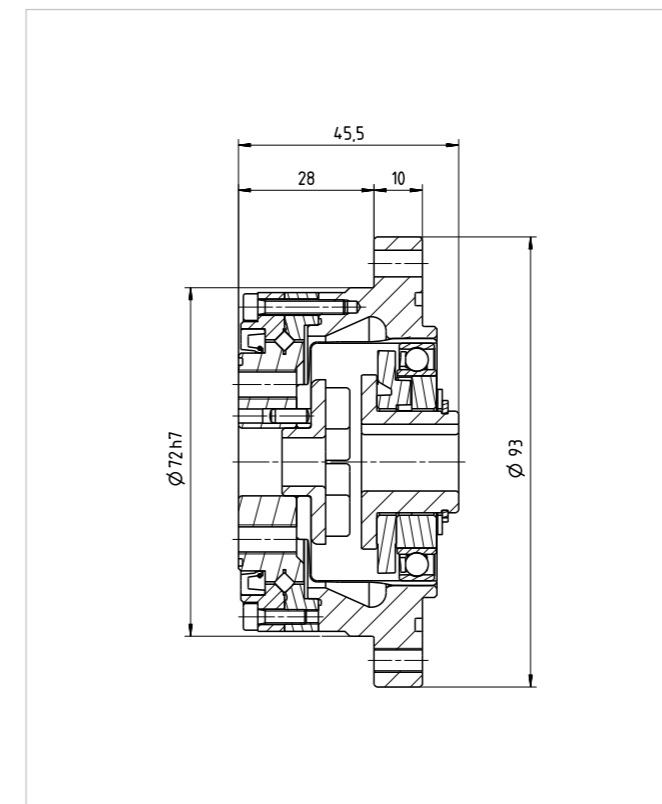
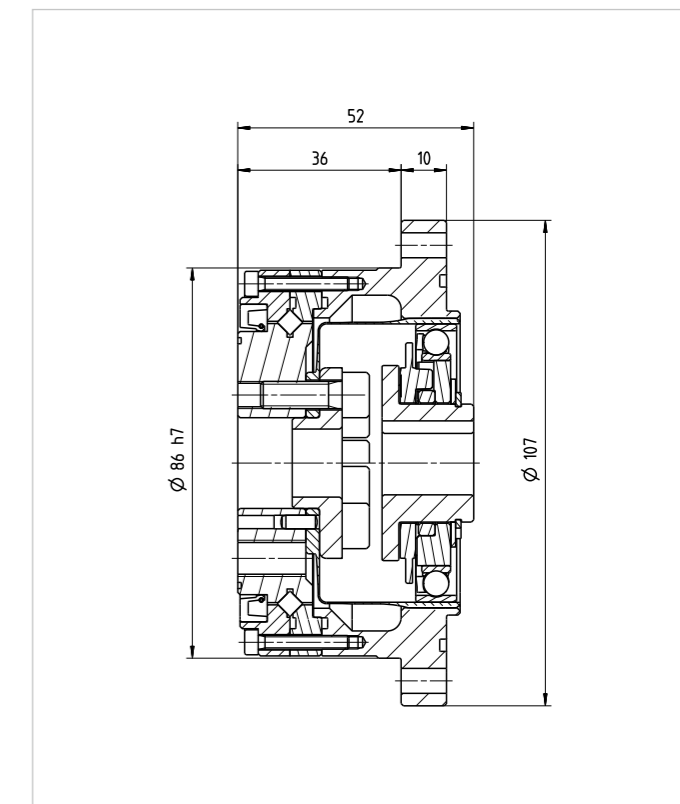


Illustration 175.4

HFUC-25-2UH [mm]



Technical data

Table 176.1

	Unit	HFUC-32-2UH						HFUC-40-2UH				
		30	50	80	100	120	160	50	80	100	120	160
Ratio	i []	30	50	80	100	120	160	50	80	100	120	160
Repeatable peak torque	T_R [Nm]	100	216	304	333	353	372	402	519	568	617	647
Average torque	T_A [Nm]	75	108	167	216	216	216	196	284	372	451	451
Rated torque	T_N [Nm]	54	76	118	137	137	137	137	206	265	294	294
Momentary peak torque	T_M [Nm]	200	382	568	647	686	686	686	980	1080	1180	1180
Maximum input speed (oil lubrication)	$n_{in(max)}$ [rpm]	7000						5600				
Maximum input speed (grease lubrication)	$n_{in(max)}$ [rpm]	4800						4000				
Average input speed (oil lubrication)	$n_{av(max)}$ [rpm]	4600						3600				
Average input speed (grease lubrication)	$n_{av(max)}$ [rpm]	3500						3000				
Moment of inertia	J_{in} [$\times 10^{-4}$ kgm ²]	1.69						4.50				
Weight	m [kg]	3.2						5.0				
Maximum hollow shaft diameter	$d_{H(max)}$ [mm]	20						24				
Transmission accuracy	[arcmin]	< 1.5	< 1					< 1				
Repeatability	[arcmin]	< ± 0.1						< ± 0.1				
Lost Motion	[arcmin]	< 1						< 1				
Torsional stiffness	K_3 [$\times 10^3$ Nm/rad]	49	98	120			180	230				
Ambient operating temperature	[°C]	Standard 0 ... 60, Special lubrication -40 ... 90										
Output bearing												
Dynamic radial load	$F_{R dyn(max)}$ [N]	6101						8652				
Dynamic axial load	$F_{A dyn(max)}$ [N]	7926						11242				
Dynamic tilting moment	$M_{dyn(max)}$ [Nm]	313						450				

Table 176.2

	Unit	HFUC-45-2UH					HFUC-50-2UH					
		50	80	100	120	160	50 ¹⁾	80	100	120	160	
Ratio	i []	50	80	100	120	160	50 ¹⁾	80	100	120	160	
Repeatable peak torque	T_R [Nm]	500	706	755	823	882	715	941	980	1080	1180	
Average torque	T_A [Nm]	265	390	500	620	630	350	519	666	813	843	
Rated torque	T_N [Nm]	176	313	353	402	402	245	372	470	529	529	
Momentary peak torque	T_M [Nm]	950	1270	1570	1760	1910	1430	1860	2060	2060	2450	
Maximum input speed (oil lubrication)	$n_{in(max)}$ [rpm]	5000					4500					
Maximum input speed (grease lubrication)	$n_{in(max)}$ [rpm]	3800					3500					
Average input speed (oil lubrication)	$n_{av(max)}$ [rpm]	3300					3000					
Average input speed (grease lubrication)	$n_{av(max)}$ [rpm]	3000					2500					
Moment of inertia	J_{in} [$\times 10^{-4}$ kgm ²]	8.68					12.6					
Weight	m [kg]	7.0					8.9					
Maximum hollow shaft diameter	$d_{H(max)}$ [mm]	25					32					
Transmission accuracy	[arcmin]	< 1					< 1					
Repeatability	[arcmin]	< ± 0.1					< ± 0.1					
Lost Motion	[arcmin]	< 1					< 1					
Torsional stiffness	K_3 [$\times 10^3$ Nm/rad]	260	330			340	440					
Ambient operating temperature	[°C]	Standard 0 ... 60, Special lubrication -40 ... 90										
Output bearing												
Dynamic radial load	$F_{R dyn(max)}$ [N]	9368					14155					
Dynamic axial load	$F_{A dyn(max)}$ [N]	12174					18393					
Dynamic tilting moment	$M_{dyn(max)}$ [Nm]	686					759					

¹⁾ Only valid with oil lubrication. Grease lubrication can be used when the average torque T_{av} is not greater than half the nominal torque T_N

Illustration 177.1

HFUC-32-2UH [mm]

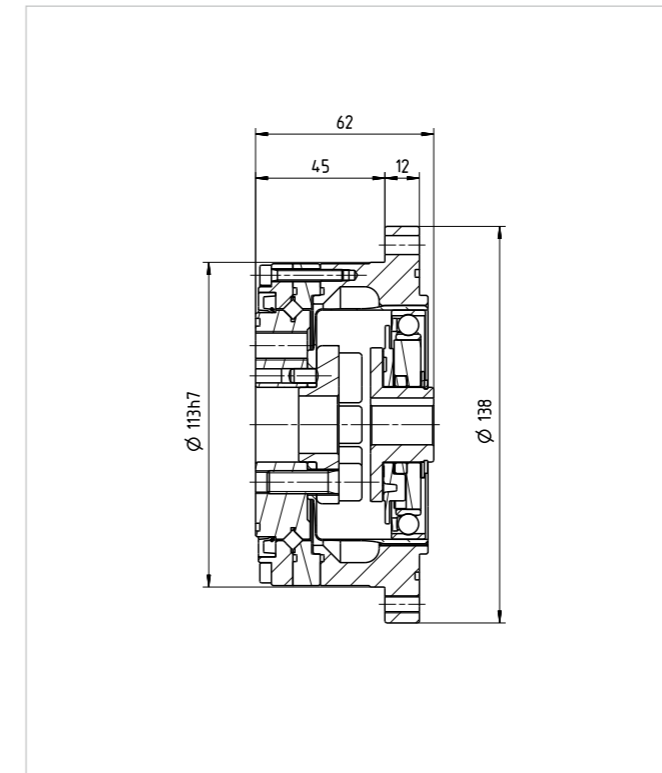


Illustration 177.2

HFUC-40-2UH [mm]

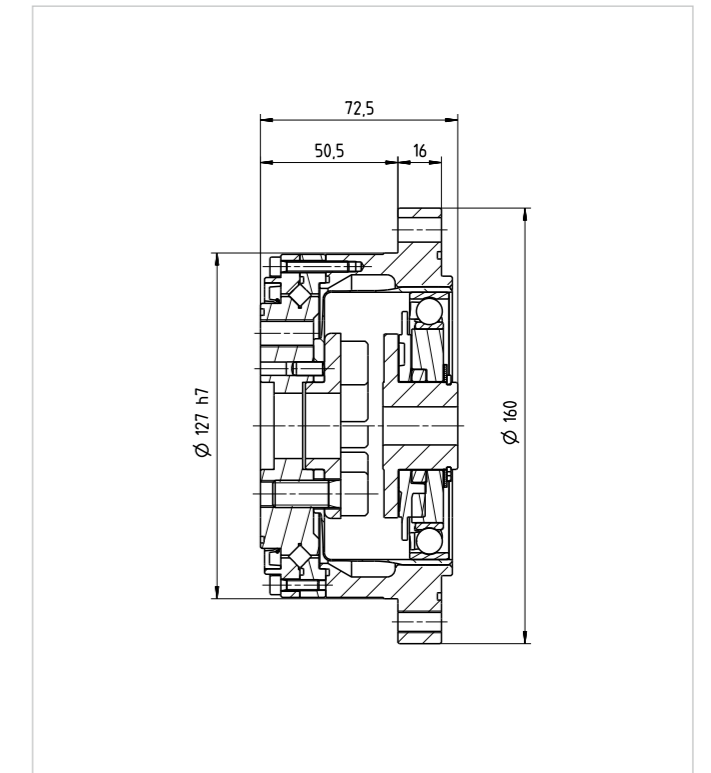


Illustration 177.3

HFUC-45-2UH [mm]

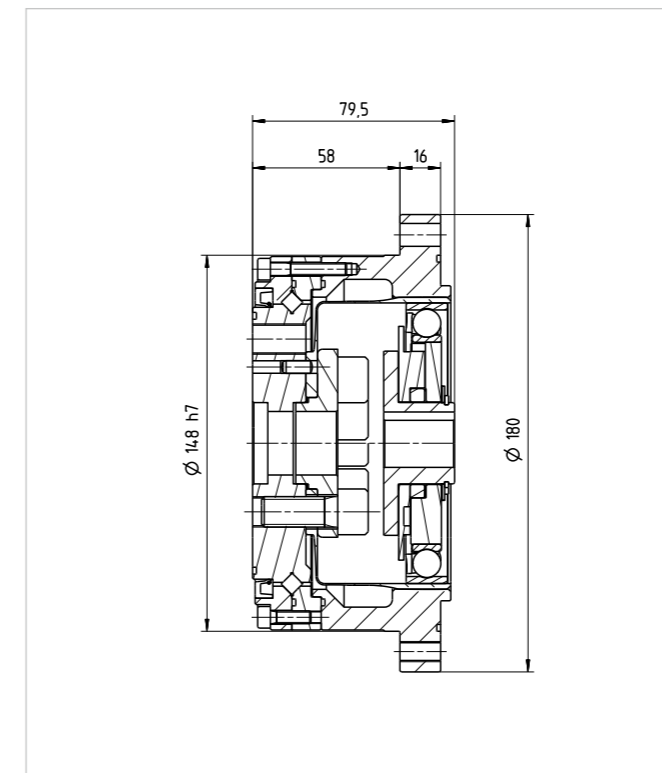
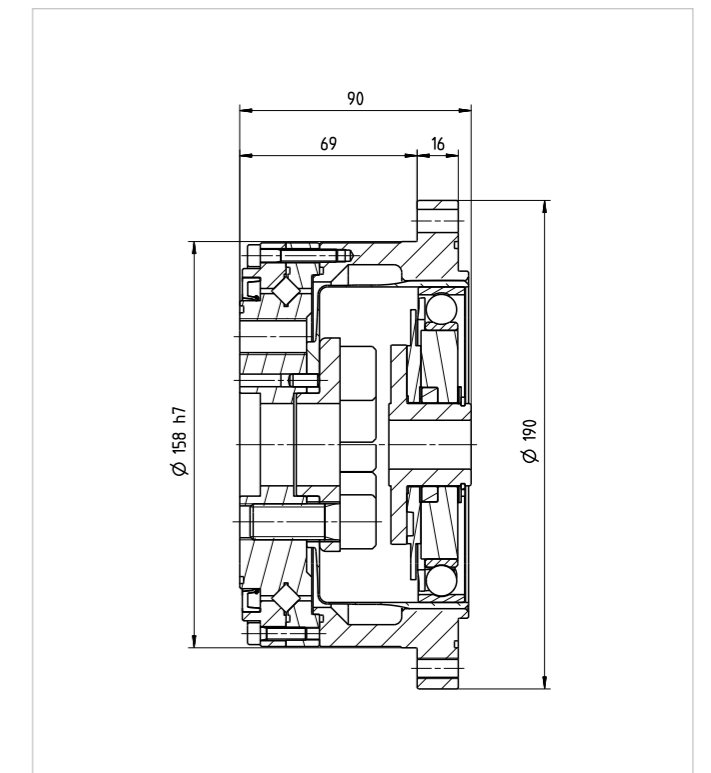


Illustration 177.4

HFUC-50-2UH [mm]



Technical data

Table 178.1

	Unit	HFUC-58-2UH					HFUC-65-2UH				
		50 ¹⁾	80	100	120	160	50 ¹⁾	80	100	120	160
Ratio	i []	50 ¹⁾	80	100	120	160	50 ¹⁾	80	100	120	160
Repeatable peak torque	T_R [Nm]	1020	1480	1590	1720	1840	1420	2110	2300	2510	2630
Average torque	T_A [Nm]	520	770	1060	1190	1210	720	1040	1520	1570	1570
Rated torque	T_N [Nm]	353	549	696	745	745	490	745	951	951	951
Momentary peak torque	T_M [Nm]	1960	2450	3180	3330	3430	2830	3720	4750	4750	4750
Maximum input speed (oil lubrication)	$n_{in(max)}$ [rpm]	4000					3500				
Maximum input speed (grease lubrication)	$n_{in(max)}$ [rpm]	3000					2800				
Average input speed (oil lubrication)	$n_{av(max)}$ [rpm]	2700					2400				
Average input speed (grease lubrication)	$n_{av(max)}$ [rpm]	2200					2200				
Moment of inertia	J_{in} [$\times 10^{-4}$ kgm ²]	27.3					46.8				
Weight	m [kg]	14.6					20.9				
Maximum hollow shaft diameter	$d_{H(max)}$ [mm]	38					44				
Transmission accuracy	[arcmin]	< 1					< 1				
Repeatability	[arcmin]	< ± 0.1					< ± 0.1				
Lost Motion	[arcmin]	< 1					< 1				
Torsional stiffness	K_3 [$\times 10^3$ Nm/rad]	540	710			780	980				
Ambient operating temperature	[°C]	Standard 0 ... 60. Special lubrication -40 ... 90									
Output bearing											
Dynamic radial load	$F_{R dyn(max)}$ [N]	21091					22602				
Dynamic axial load	$F_{A dyn(max)}$ [N]	27409					29371				
Dynamic tilting moment	$M_{dyn(max)}$ [Nm]	1180					1860				

Table 178.2

	Unit	HFUC-80-2UH					HFUC-90-2UH				
		50 ¹⁾	80	100	120	160	50 ¹⁾	80	100	120	160
Ratio	i []	50 ¹⁾	80	100	120	160	50 ¹⁾	80	100	120	160
Repeatable peak torque	T_R [Nm]	2440	3430	4220	4590	4910	3530	3990	5680	6160	6840
Average torque	T_A [Nm]	1260	1830	2360	3130	3130	1720	2510	3360	4300	4300
Rated torque	T_N [Nm]	872	1320	1700	1990	1990	1180	1550	2270	2570	2700
Momentary peak torque	T_M [Nm]	4870	6590	7910	7910	7910	6660	7250	9020	9800	11300
Maximum input speed (oil lubrication)	$n_{in(max)}$ [rpm]	2900					2700				
Maximum input speed (grease lubrication)	$n_{in(max)}$ [rpm]	2300					2000				
Average input speed (oil lubrication)	$n_{av(max)}$ [rpm]	2300					2100				
Average input speed (grease lubrication)	$n_{av(max)}$ [rpm]	1500					1300				
Moment of inertia	J_{in} [$\times 10^{-4}$ kgm ²]	122					214				
Weight	m [kg]	30.8					42.5				
Maximum hollow shaft diameter	$d_{H(max)}$ [mm]	55					62				
Transmission accuracy	[arcmin]	< 1					< 1				
Repeatability	[arcmin]	< ± 0.1					< ± 0.1				
Lost Motion	[arcmin]	< 1					< 1				
Torsional stiffness	K_3 [$\times 10^3$ Nm/rad]	1450	1850			2060	2630				
Ambient operating temperature	[°C]	Standard 0 ... 60, Special lubrication -40 ... 90									
Output bearing											
Dynamic radial load	$F_{R dyn(max)}$ [N]	25200					27400				
Dynamic axial load	$F_{A dyn(max)}$ [N]	37611					40895				
Dynamic tilting moment	$M_{dyn(max)}$ [Nm]	2740					4210				

¹⁾ Only valid with oil lubrication. Grease lubrication can be used when the average torque T_{av} is not greater than half the nominal torque T_N

Illustration 179.1

HFUC-58-2UH [mm]

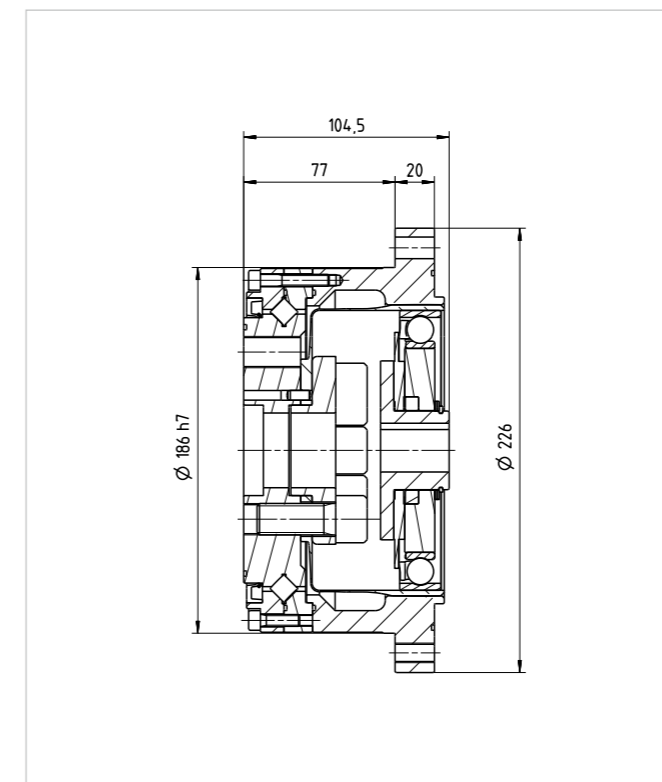


Illustration 179.2

HFUC-65-2UH [mm]

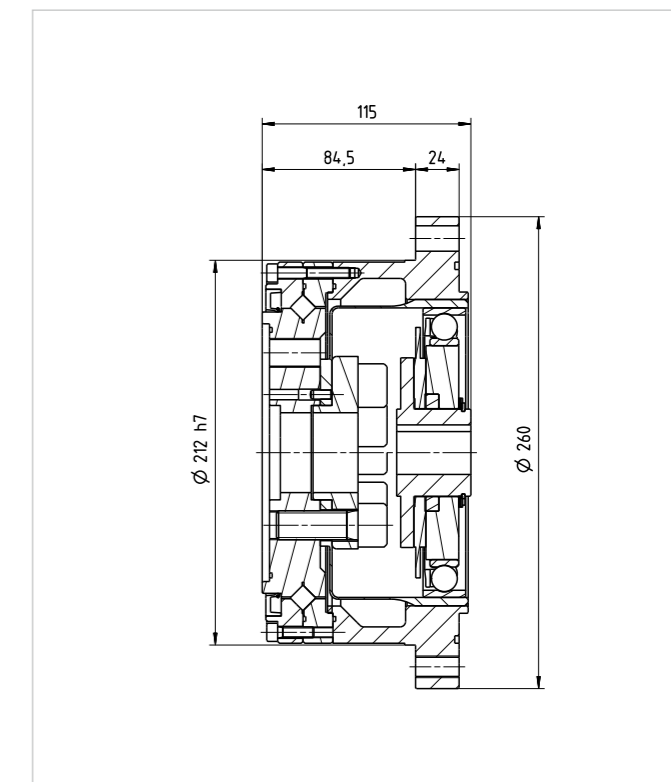


Illustration 179.3

HFUC-80-2UH [mm]

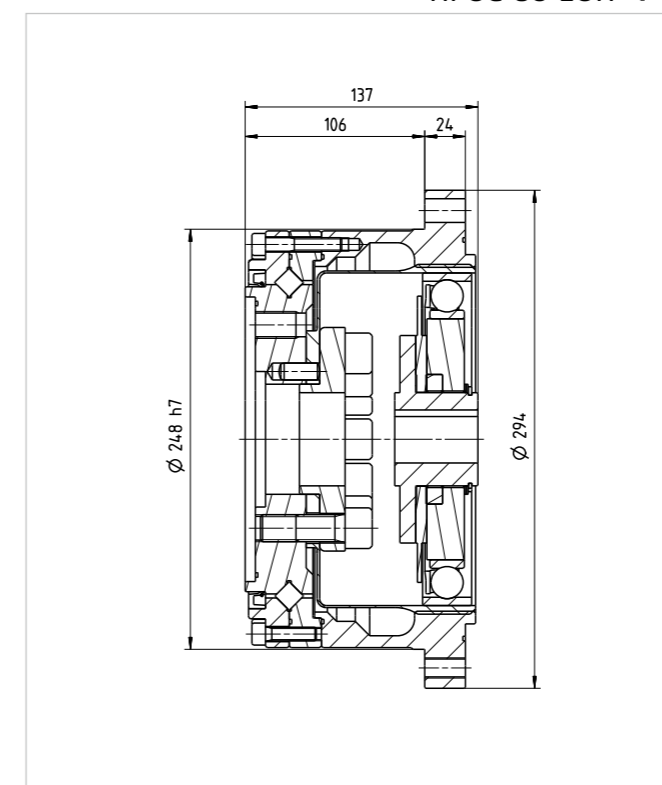


Illustration 179.4

HFUC-90-2UH [mm]

