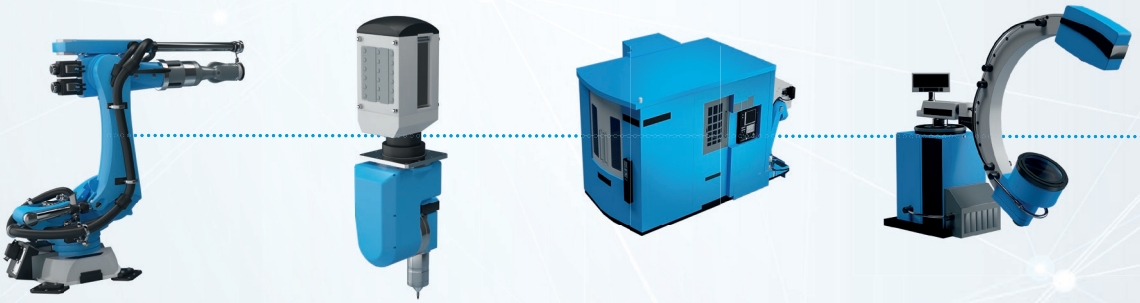


Strain wave gears

Compact, zero backlash precision gears



Nabtesco

Strain wave gears
Next level

Is it possible to improve upon the original?
Of course; we have done it!

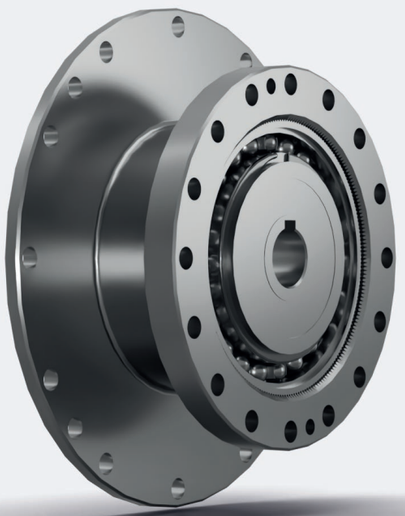
Innovation makes all the difference: After all, your application is unique! You should therefore rely on an economical standard solution that can be enhanced at any time! Take the plunge into the world of zero backlash strain wave gears and experience a new level of quality, precision, production and service! You will be astonished at what is possible.

Our strain wave gears offer decisive advantages – in terms of technology, construction and cost-effectiveness. They feature absolute zero backlash, outstanding repeatability and a high torque capacity – all in a compact and lightweight design. All strain wave gears can also be customised to the exact requirements of your application in terms of performance, geometry, material, interfaces, and gear properties, including functional, component and system integration, as required. This means there are no compromises in the design of your machine or robot. Production is compliant with automotive standards to guarantee the highest quality, large volumes, short development times, complete traceability, and outstanding cost-effectiveness.

The benefits

- Absolute zero backlash
- Compact, lightweight design
- High reduction ratios in a single gear stage
- High torsional rigidity
- High reliability and long life
- Outstanding transmission accuracy and repeatability
- High torque capacity
- High efficiency
- Central hollow shaft possible
- Maintenance-free





Configure your ideal gearbox

100 % custom tailored
Our motto: Not the application has to be adapted to the gear, but the gear to the requirements of the application.

100 % flexible
Our flexible modular product system offers you a large selection of sizes, versions, and additional components.

100 % cost-effective
Modular engineering and automotive-compliant production – made in Germany – are your guarantee for maximum cost-effectiveness and availability.







Compact, zero backlash precision gears

High level of individual customisation

Automotive compliant production

Strain wave gears – how they work

High-precision zero backlash technology

Strain wave gears comprise only three components: wave generator, flex spline and circular spline. They are characterised by power transmission via a flexible element, the flex spline. This is a flexible, cylindrical steel component with external gear teeth that assumes an elliptical shape when the wave generator is inserted. In combination with the continuously rotating engagement of the flex spline and circular spline teeth, this achieves absolute zero backlash, outstanding transmission precision and high torsional rigidity.

The three components:

Circular spline:
a cylindrical rigid ring with internal gear teeth

Flex spline:
a cylindrical, flexible, thin-walled steel component with external gear teeth

Wave generator:
a hub with an elliptical outer contour on which a special, radially flexible ball bearing is mounted

Areas of application

- Robotics (industrial robots and cobots)
- Automation
- General mechanical engineering
- Machine tool construction
- Medical technology
- Handling
- Autonomous mobile robots



Our flexible modular product system

Gear sets: Component sets
Ideal for customers who wish to integrate the gearbox in an existing application

Gear units: Our enclosed plug-and-play solutions
Includes rigid output and input bearing and seal system

Gear sets plus: Strain wave gears with output bearings
Gear sets including rigid output bearing

Actuators
Complete systems, typically consisting of a gear set, bearing, housing, and electric motor

All gear solutions can be implemented as hat type gears (HTG) and cup type gears (CTG), and with a hollow or solid shaft.

Customising
We offer custom-tailored solutions that are adapted to your exact requirements – from custom design and development to production of application-specific components, modules, and complete systems. We create an optimised solution based on your specifications with regard to costs, performance, weight, installation space, and more. We also develop integrated solutions, as well as software and control units, to meet the most stringent requirements.



How does a strain wave gear work?

Visit our YouTube channel. All you have to do is scan the QR code to view a video explaining the gear type with the highest precision ever.

The digital gear

A compact solution for smart automation

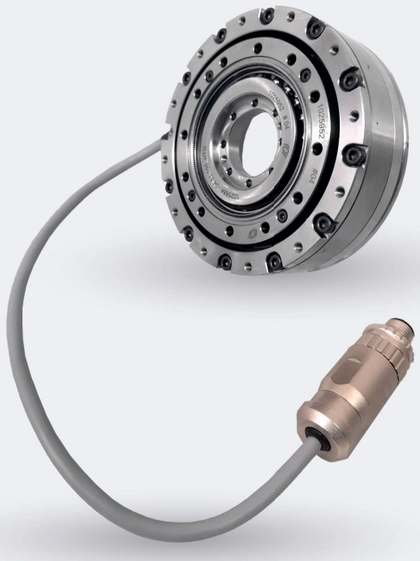
Our digital gear combines high-precision, zero backlash strain wave gear technology with smart sensors and artificial intelligence – without having to change the size of the gear. For you, this means more benefits with the same size footprint!

Sensors measure torques, temperatures, and vibrations. In combination with our practical empirical values, they provide reliable information on the condition of the gearbox. The integrated electronic evaluation unit (EEU) analyses the data and sends it directly via the bus system to the higher-level controller. The operator receives recommendations for action, in order to respond promptly to changing parameters and to initiate appropriate measures.

Strain wave gears fulfil all requirements for integration in smart, intelligently networked, and digital production processes, significantly boosting efficiency, optimising performance, saving resources, and increasing cost-effectiveness. All in all, the potential savings are in the double-digit percentage range.

Your benefits:

- Compact digital plug-and-play solution
- Continuous condition monitoring
- Calculation of the actual life of the gearbox
- Gear error analysis
- Identification of overloads, unsuitable operating points, and misuse
- Predictive maintenance concepts
- Process optimisation
- Improved performance and increased efficiency
- Lower costs in the double-digit percentage range

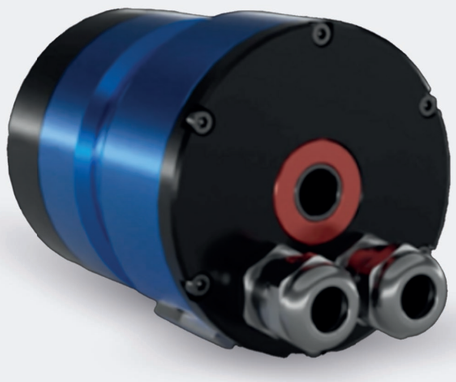


Actuators

Highly functional and convenient, with incomparable flexibility

Our actuators give you powerful complete systems that are crucial in simplifying your automation solution. Actuators are complete, pre-assembled drive systems, typically consisting of a gear set, bearing, housing, and electric motor with encoder. All components are perfectly matched to achieve unequalled performance in applications with minimal space requirements.

The unique engineering design offers a high level of functionality, convenience, and incomparable flexibility. Our modular system comprises numerous customising options for every need – such as a hollow or solid shaft, with or without a brake, standard or high voltage. All actuators are custom designed for the exact requirements of your application. Depending on the customer requirement, we can also adapt a wide range of sensor types and integrate additional components, such as torque, temperature, and position sensors.



Your benefits:

- Premium full package for your automation solution
- Perfectly matched components
- Optimal performance in a very compact design
- Simple plug-and-play solution for uncomplicated integration
- Modular system for maximum flexibility
- High scalability for individual drive systems
- Controller-independent
- Reduced complexity of the overall system
- Six sizes for torques from 7 to 382 Nm

Gear sets at a glance

Sample material short text:

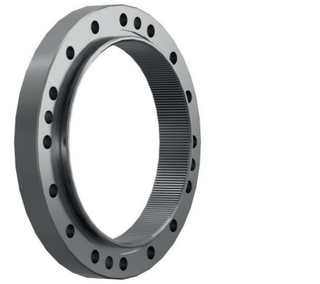
OG - 0**51** - **HSN** - 0**80** - **ZZZ** - **S**

Series · Size · Type, input, length · Reduction ratio · Sensor technolo-gy* · Design

	Series	Size	Type, input, length	Reduction ratio	Sensor technology	Design
Example:	OG	-051	-HSN	-050	-ZZZ	-C
	Gear set	35	CSN	50 80 100	ZZZ	S / C
			HSN			
		43	CSN	50 80 100 120	ZZZ	S / C
			HSN			
		51	CSN	30 50 80 100 120 160	ZZZ	S / C
			HSN			
		63	CSN	30 50 80 100 120 160	ZZZ	S / C
			HSN			
		81	CSN	30 50 80 100 120 160	ZZZ	S / C
			HSN			
		102	CSN	50 80 100 120 160	ZZZ	S / C
			HSN			

* Sensors for gear set not available

Configure your gearbox



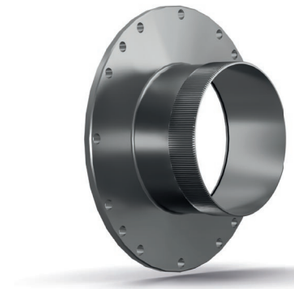
Circular spline – CS



Wave generator – WG

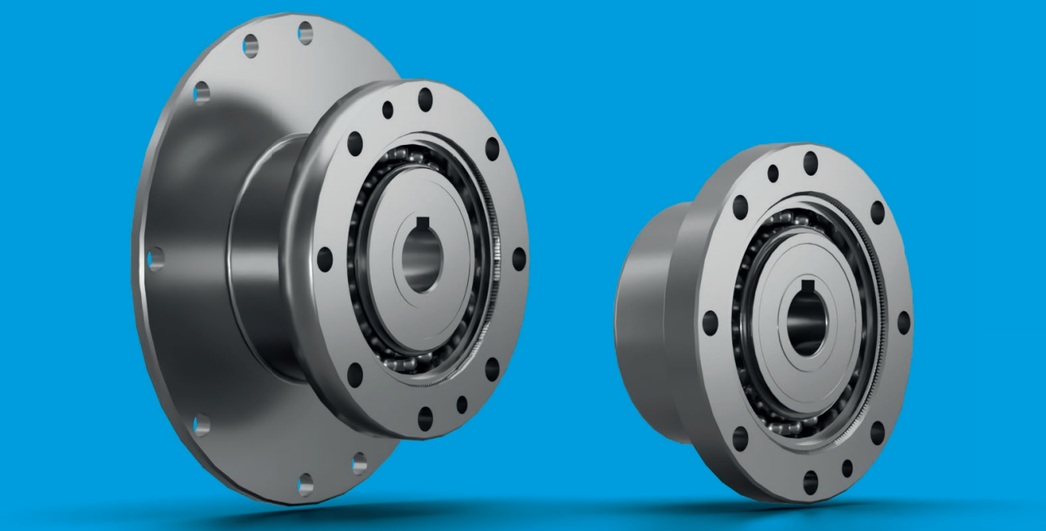


Flex spline – FS
Cup type



Flex spline – FS
Hat type

Series
Gear Set 35



Series Gear Set 35

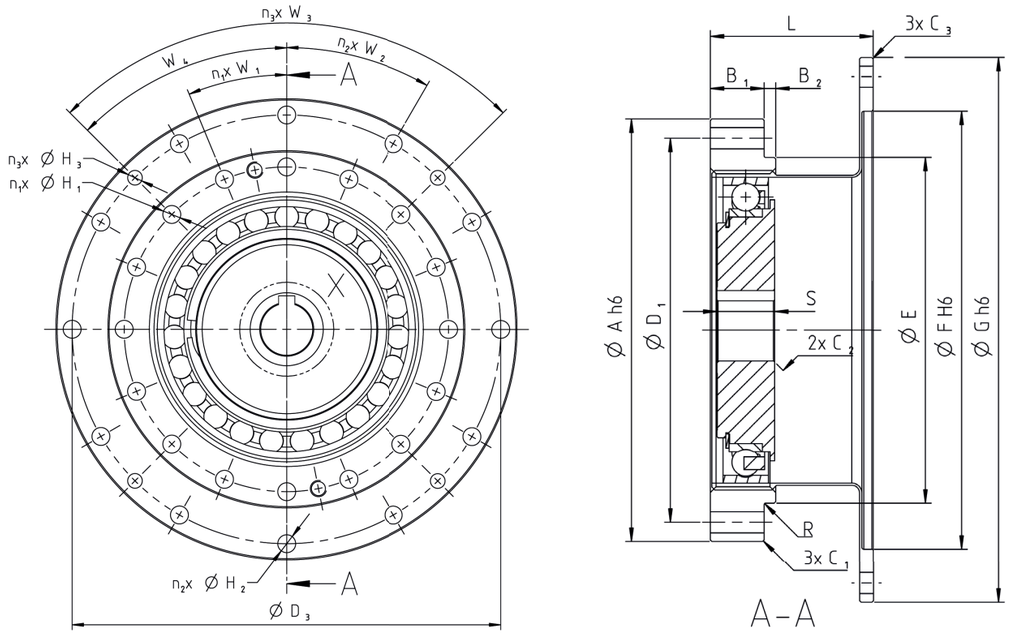
Technical data sheet

Size			35		
Ratio	i		50	80	100
Rated Torque	T_r	Nm	7	10	10
Max. Average Torque	T_a	Nm	13	20	20
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	23	30	36
Emergency Stop Torque	T_c	Nm	46	61	70
Rated Input Speed	n_r	rpm	2,000		
Max. Average Input Speed	n_a	rpm	3,500		
Max. Input Speed	n_{max}	rpm	8,500		
Service Lifetime (Ref. Value)	L_{10}	hrs	10,000		
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<2	<1	
Transmission Accuracy	TA	arc.sec.	<90		
Torsional Rigidity	K_1	Nm	2		
		kNm/rad	3.4	4.7	4.7
	K_2	Nm	6.9		
		kNm/rad	4.7	6.1	6.4
	K_3	Nm	T_{RPT}		
		kNm/rad	5.7	7.1	7.1
Ambient Temperature		°C	-20...+70**		
Lubricant			Turmogrease IFM		

** extended temperature range can be requested

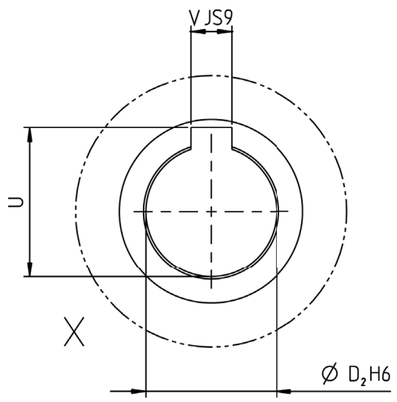
Series Gear Set 35

Technical drawing 35 hat type variant



Dimension		
A	mm	50
B_1	mm	6
B_2	mm	2
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.5 x 45
D_1	mm	44
D_2	mm	9
D_3	mm	64
E	mm	38
F	mm	48
G	mm	70
L	mm	23.7
R	mm	0.4

S	mm	9.5
T	mm	0.425
U	mm	10.4
V	mm	3
H_1	mm	3.5
n_1		8
W_1	°	45
H_2	mm	3.5
n_2		8
W_2	°	45
H_3	mm	3.5
n_3		2
W_3	°	180
W_4	°	22.5



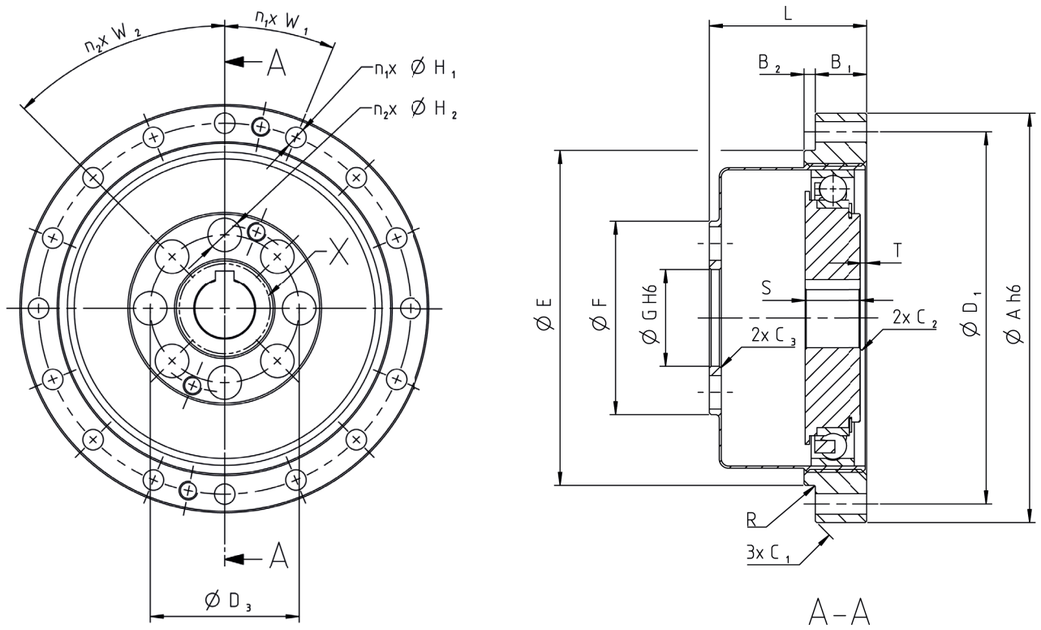
Max. hollow shaft of drive shaft

D_{2max} = 14 mm

(without feather key)

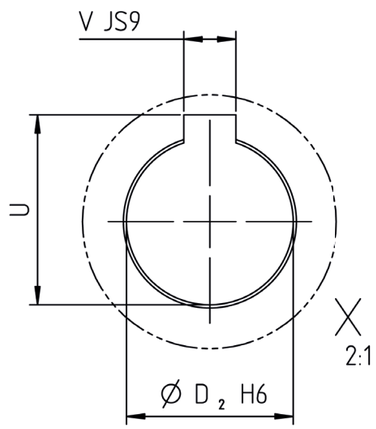
Series Gear Set 35

Technical drawing 35 cup type variant



Dimension		
A	mm	50
B_1	mm	6
B_2	mm	2
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.5 x 45
D_1	mm	44
D_2	mm	9
D_3	mm	17
E	mm	38
F	mm	23
G	mm	11

L	mm	23.7
R	mm	0.4
S	mm	9.5
T	mm	0.425
U	mm	10.4
V	mm	3
H_1	mm	3.5
n_1		8
W_1	°	45
H_2	mm	4.5
n_2		6
W_2	°	60

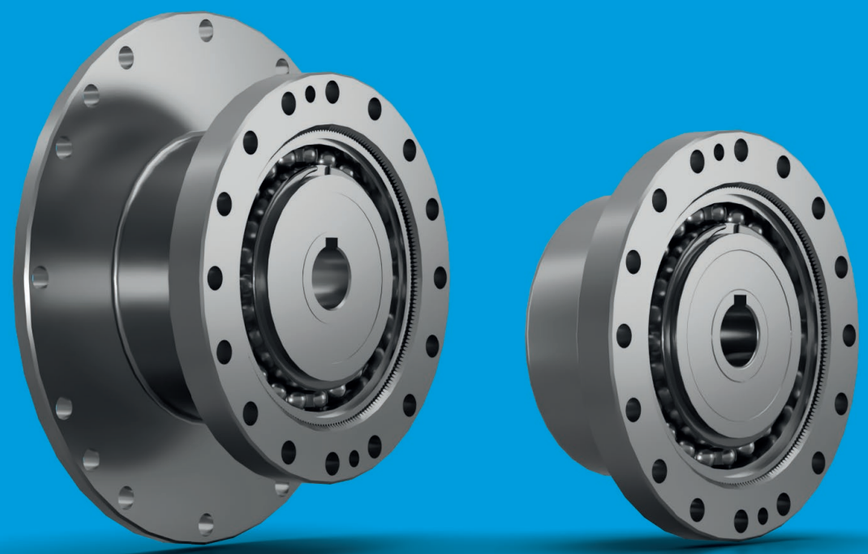


Max. hollow shaft of drive shaft

D_{2max} = 14 mm

(without feather key)

Series
Gear Set 43



Series Gear Set 43

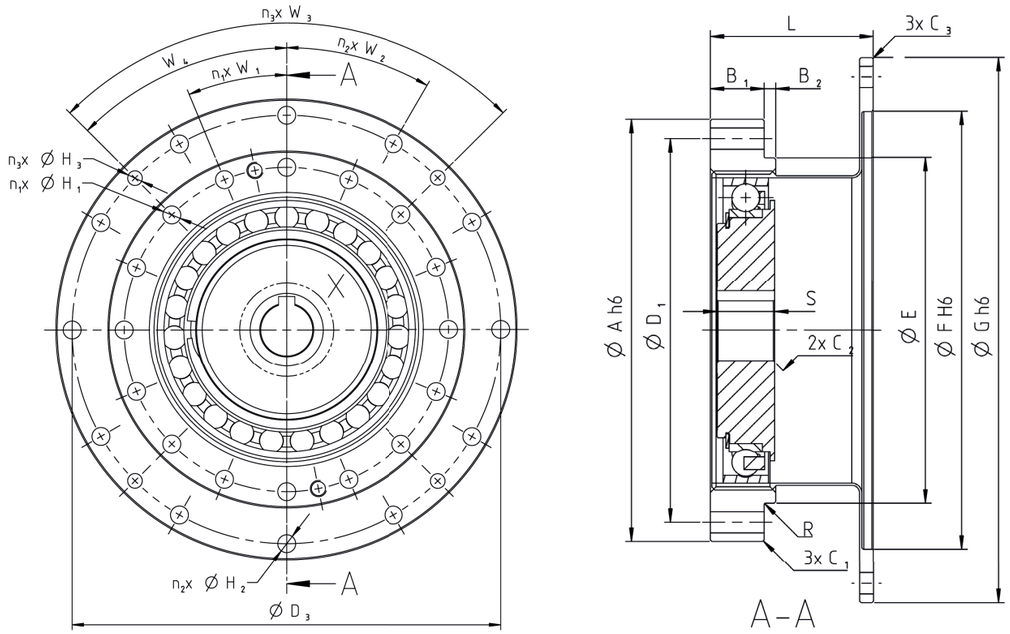
Technical data sheet

Size			43			
Ratio	i		50	80	100	120
Rated Torque	T_r	Nm	21	29	31	31
Max. Average Torque	T_a	Nm	35	37	53	53
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	44	56	70	70
Emergency Stop Torque	T_c	Nm	91	113	143	112
Rated Input Speed	n_r	rpm	2,000			
Max. Average Input Speed	n_a	rpm	3,500			
Max. Input Speed	n_{max}	rpm	7,300			
Service Lifetime (Ref. Value)	L_{10}	hrs	10,000			
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<2	<1		
Transmission Accuracy	TA	arc.sec.	<90			
Torsional Rigidity	K_1	Nm	3.9			
		kNm/rad	8.1	10	10	10
	K_2	Nm	12			
		kNm/rad	11	14	14	14
	K_3	Nm	T_{RPT}			
		kNm/rad	13	16	16	16
Ambient Temperature		°C	-20...+70**			
Lubricant			Turmogrease IFM			

** extended temperature range can be requested

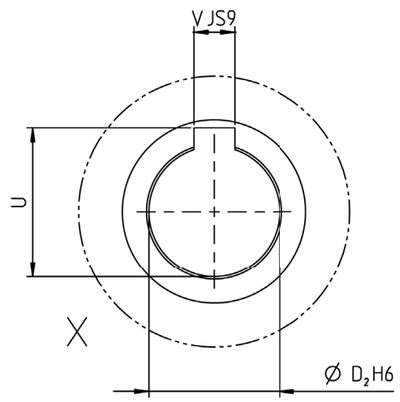
Series Gear Set 43

Technical drawing 43 hat type variant



Dimension		
A	mm	60
B_1	mm	6.5
B_2	mm	2.5
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.5 x 45
D_1	mm	54
D_2	mm	9
D_3	mm	74
E	mm	48
F	mm	60
G	mm	80
L	mm	26.75
R	mm	0.4

S	mm	10.5
T	mm	0.135
U	mm	10.4
V	mm	3
H_1	mm	3.5
n_1		16
W_1	°	22.5
H_2	mm	3.5
n_2		12
W_2	°	30
H_3	mm	3.5
n_3		4
W_3	°	90
W_4	°	45



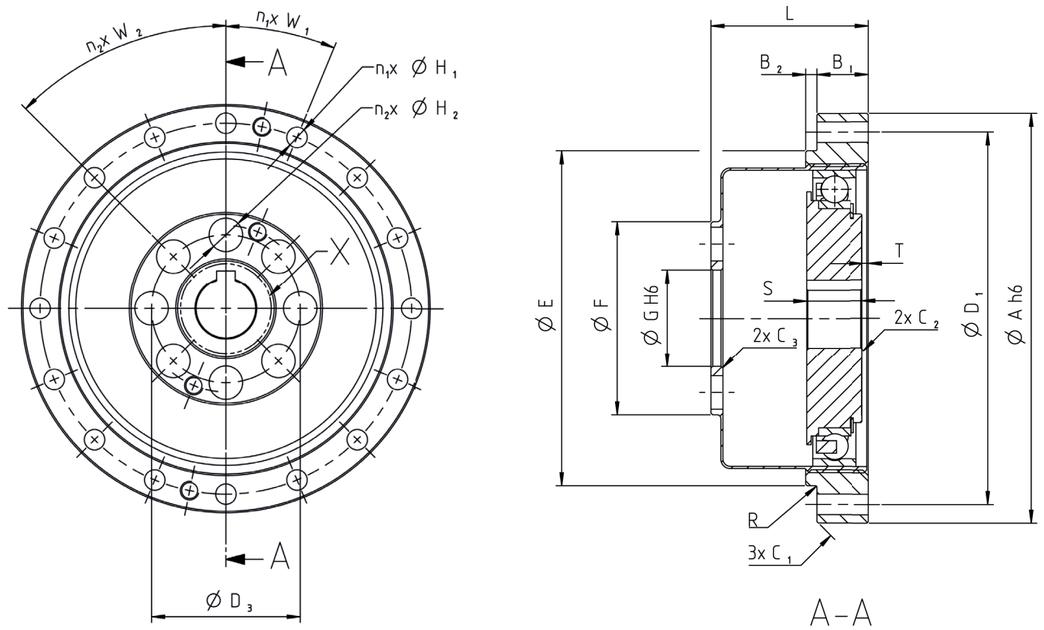
Max. hollow shaft of drive shaft

D_{2max} = 19 mm

(without feather key)

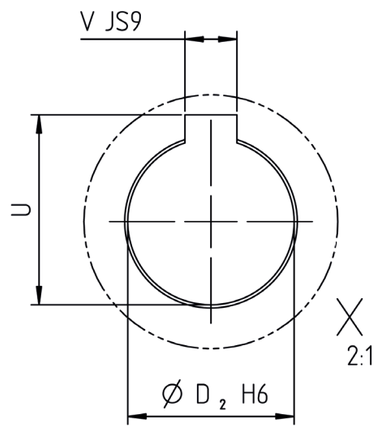
Series Gear Set 43

Technical drawing 43 cup type variant



Dimension		
A	mm	60
B_1	mm	6.5
B_2	mm	2.5
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.5 x 45
D_1	mm	54
D_2	mm	9
D_3	mm	19
E	mm	48
F	mm	27.2
G	mm	10

L	mm	26.75
R	mm	0.4
S	mm	10.5
T	mm	0.135
U	mm	10.4
V	mm	3
H_1	mm	3.5
n_1		16
W_1	°	22.5
H_2	mm	5.5
n_2		6
W_2	°	60

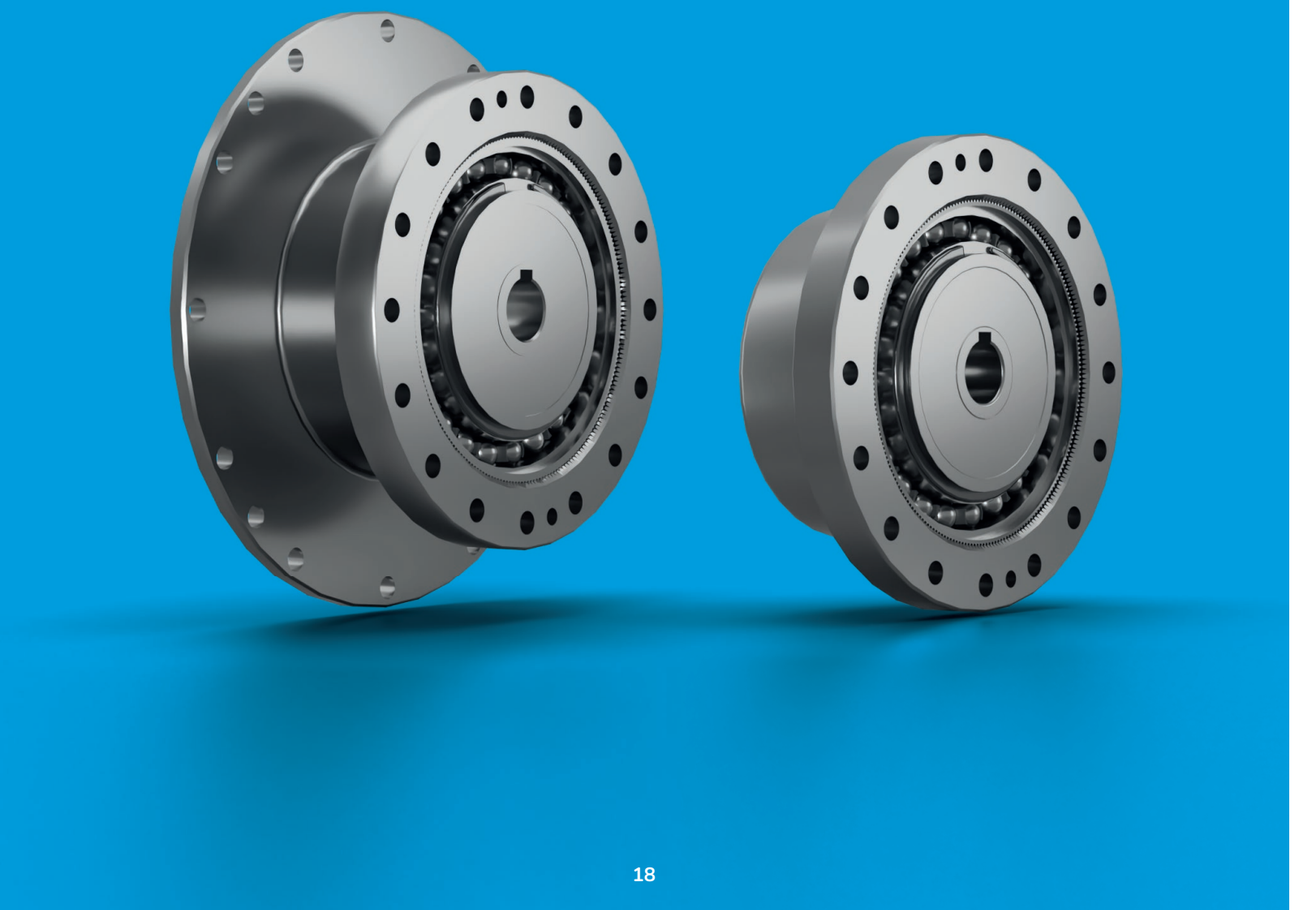


Max. hollow shaft of drive shaft

D_{2max} = 19 mm

(without feather key)

Series
Gear Set 51



Series Gear Set 51

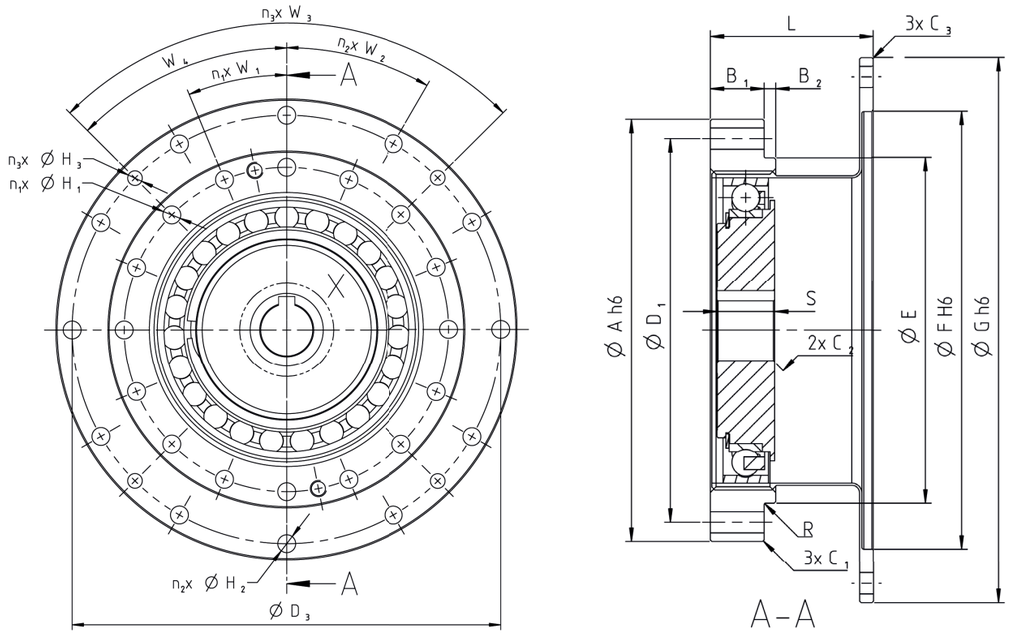
Technical data sheet

Size			51					
Ratio	i		30	50	80	100	120	160
Rated Torque	T_r	Nm	15	33	44	52	52	52
Max. Average Torque	T_a	Nm	24	53	73	77	78	77
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	27	73	96	107	113	120
Emergency Stop Torque	T_c	Nm	50	127	165	191	191	191
Rated Input Speed	n_r	rpm	2,000					
Max. Average Input Speed	n_a	rpm	3,500					
Max. Input Speed	n_{max}	rpm	6,500					
Service Lifetime (Ref. Value)	L_{10}	hrs	7,000	10,000				
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<3	<2	<1			
Transmission Accuracy	TA	arc.sec.	<90	<60				
Torsional Rigidity	K_1	Nm	7					
		kNm/rad	5.7	13	16	16	16	16
	K_2	Nm	25					
		kNm/rad	7.1	18	25	25	25	25
	K_3	Nm	T_{RPT}					
		kNm/rad	11	23	29	29	29	29
Ambient Temperature		°C	-20...+70**					
Lubricant			Turmogrease IFM					

** extended temperature range can be requested

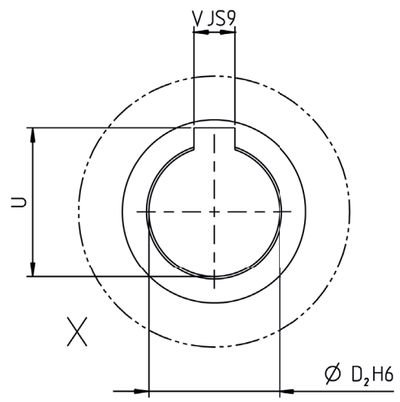
Series Gear Set 51

Technical drawing 51 hat type variant



Dimension		
A	mm	70
B_1	mm	7.5
B_2	mm	3
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.5 x 45
D_1	mm	62
D_2	mm	9
D_3	mm	84
E	mm	54
F	mm	70
G	mm	90
L	mm	29.4
R	mm	0.4

S	mm	12
T	mm	0.165
U	mm	10.4
V	mm	3
H_1	mm	3.5
n_1		16
W_1	°	22.5
H_2	mm	3.5
n_2		12
W_2	°	30
H_3	mm	3.5
n_3		4
W_3	°	90
W_4	°	45



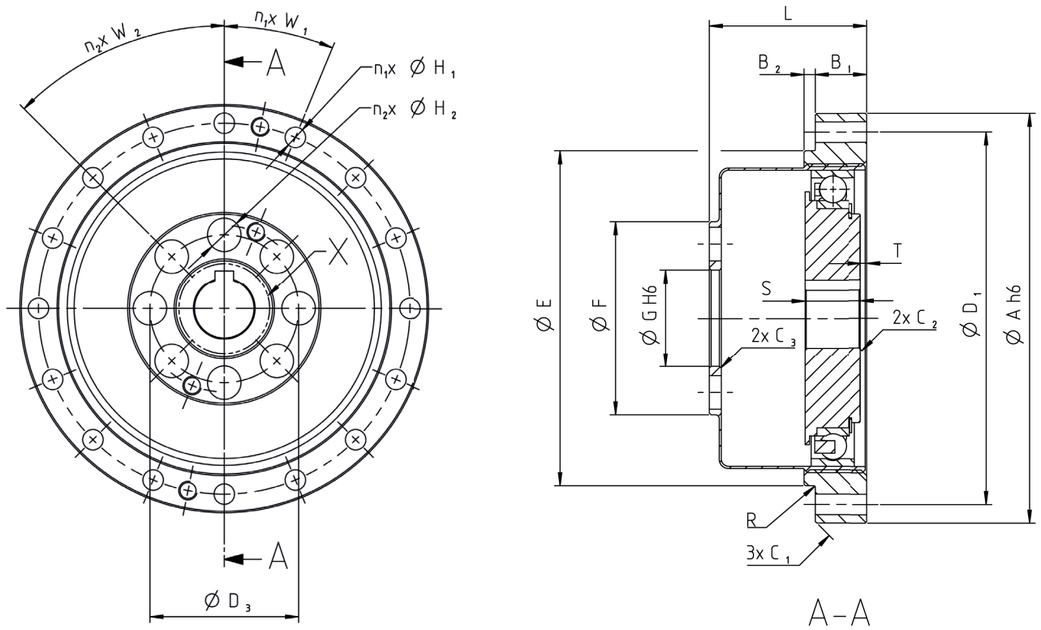
Max. hollow shaft of drive shaft

D_{2max} = 21 mm

(without feather key)

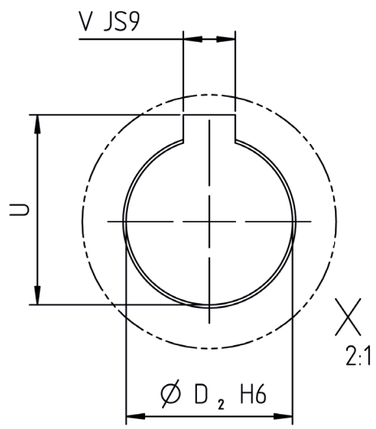
Series Gear Set 51

Technical drawing 51 cup type variant



Dimension		
A	mm	70
B_1	mm	7.5
B_2	mm	3
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.5 x 45
D_1	mm	62
D_2	mm	9
D_3	mm	24
E	mm	54
F	mm	32
G	mm	16

L	mm	29.3
R	mm	0.4
S	mm	12
T	mm	0.165
U	mm	10.4
V	mm	3
H_1	mm	3.5
n_1		16
W_1	°	22.5
H_2	mm	5.5
n_2		8
W_2	°	45

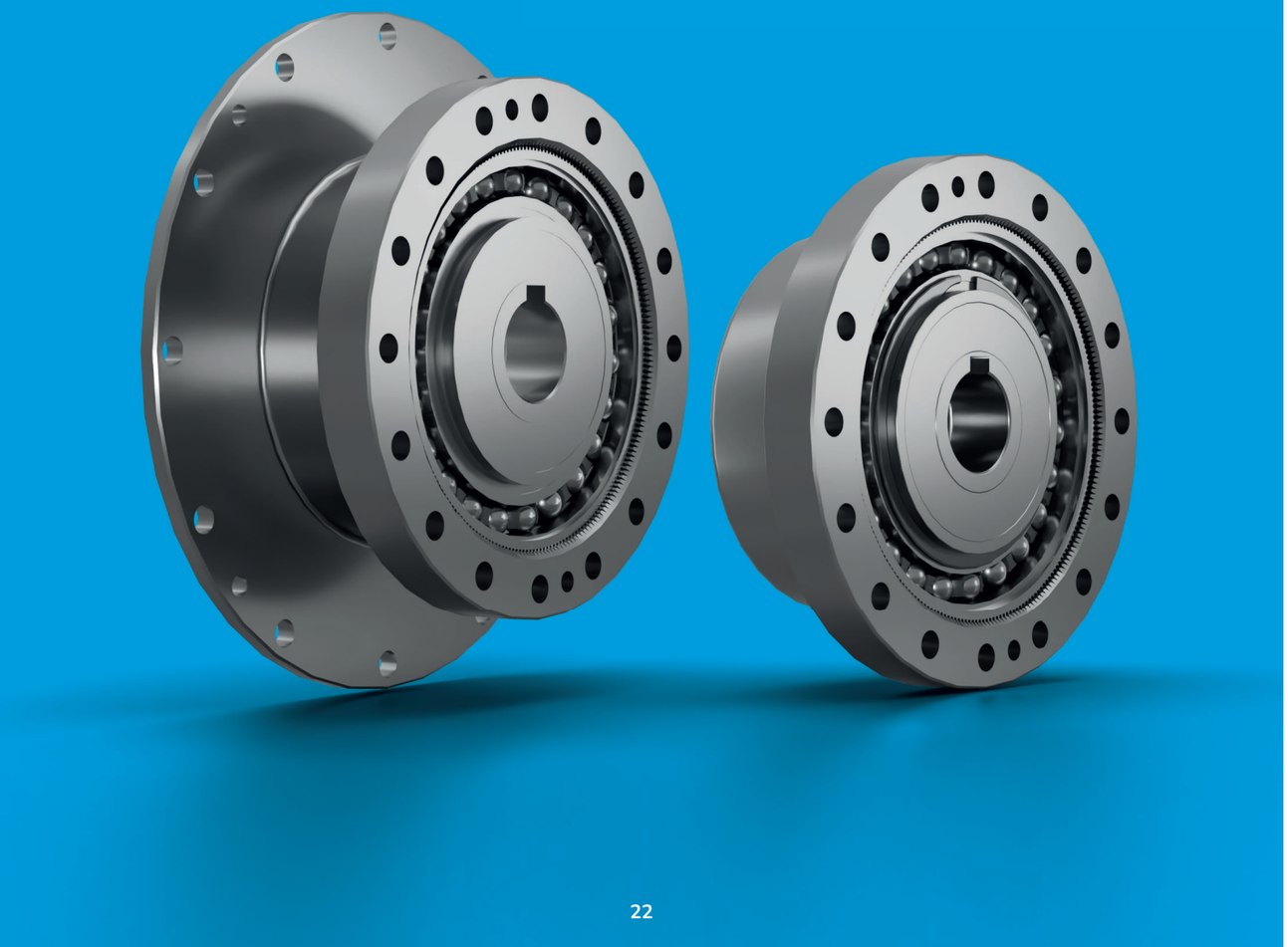


Max. hollow shaft of drive shaft

D_{2max} = 21 mm

(without feather key)

Series
Gear Set 63



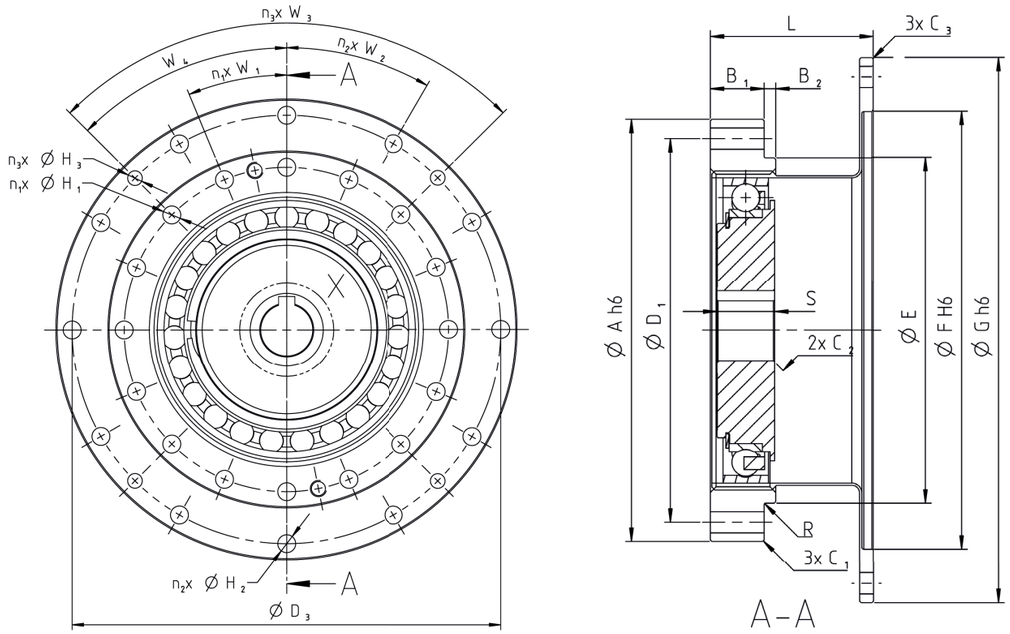
Technical data sheet

Size			63					
Ratio	i		30	50	80	100	120	160
Rated Torque	T_r	Nm	27	51	82	87	87	87
Max. Average Torque	T_a	Nm	44	83	130	161	161	161
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	50	127	178	204	217	229
Emergency Stop Torque	T_c	Nm	95	242	332	369	395	408
Rated Input Speed	n_r	rpm	2,000					
Max. Average Input Speed	n_a	rpm	3,500					
Max. Input Speed	n_{max}	rpm	5,600					
Service Lifetime (Ref. Value)	L_{10}	hrs	7,000	10,000				
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<3	<2	<1			
Transmission Accuracy	TA	arc.sec.	<90	<60				
Torsional Rigidity	K_1	Nm	14					
		kNm/rad	10	25	31	31	31	31
	K_2	Nm	48					
		kNm/rad	13	34	50	50	50	50
	K_3	Nm	T_{RPT}					
		kNm/rad	21	44	57	57	57	57
Ambient Temperature		°C	-20...+70**					
Lubricant			Turmogrease IFM					

** extended temperature range can be requested

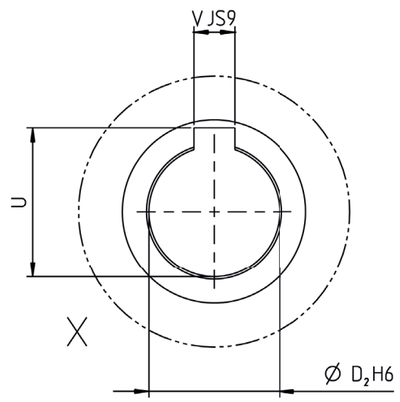
Series Gear Set 63

Technical drawing 63 hat type variant



Dimension		
A	mm	85
B_1	mm	10
B_2	mm	3
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.5 x 45
D_1	mm	75
D_2	mm	16
D_3	mm	102
E	mm	67
F	mm	88
G	mm	110
L	mm	34.4
R	mm	0.4

S	mm	12
T	mm	1.325
U	mm	18.3
V	mm	5
H_1	mm	4.5
n_1		15
W_1	°	22.5
H_2	mm	4.5
n_2		12
W_2	°	30
H_3	mm	3.5
n_3		4
W_3	°	90
W_4	°	45



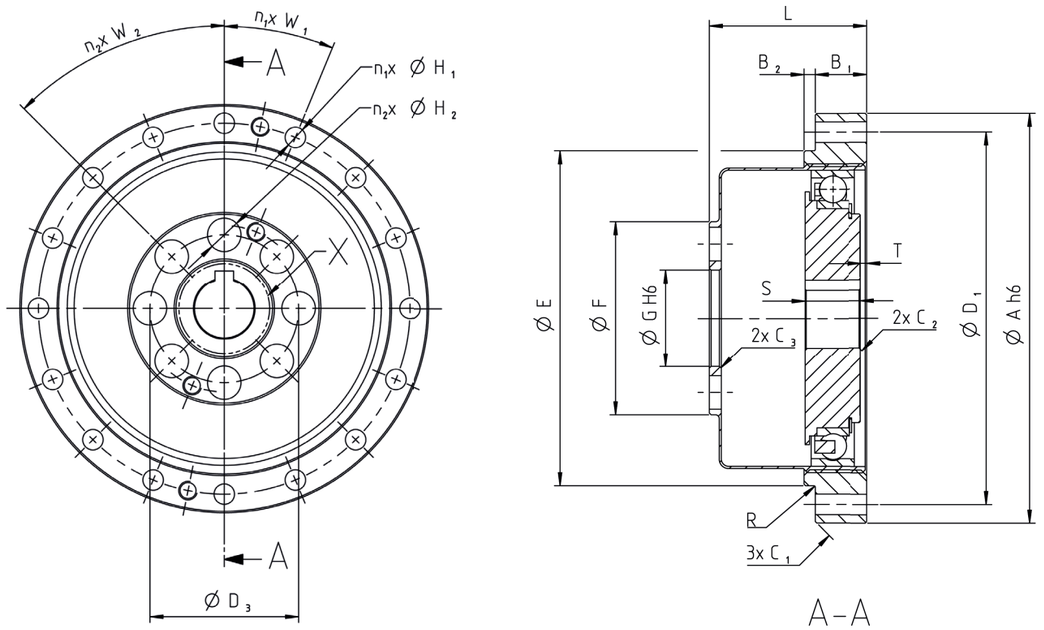
Max. hollow shaft of drive shaft

D_{2max} = 29 mm

(without feather key)

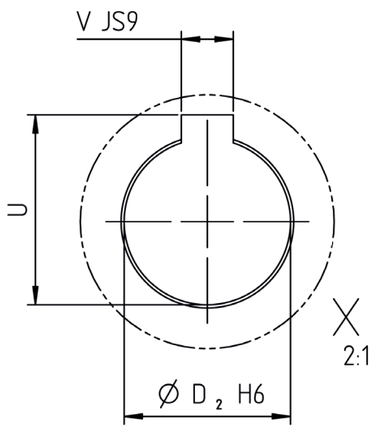
Series Gear Set 63

Technical drawing 63 cup type variant



Dimension		
A	mm	85
B_1	mm	10
B_2	mm	3
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.5 x 45
D_1	mm	75
D_2	mm	16
D_3	mm	30
E	mm	67
F	mm	40
G	mm	20

L	mm	34.3
R	mm	0.4
S	mm	12
T	mm	1.325
U	mm	18.3
V	mm	5
H_1	mm	4.5
n_1		16
W_1	°	22.5
H_2	mm	6.6
n_2		8
W_2	°	45

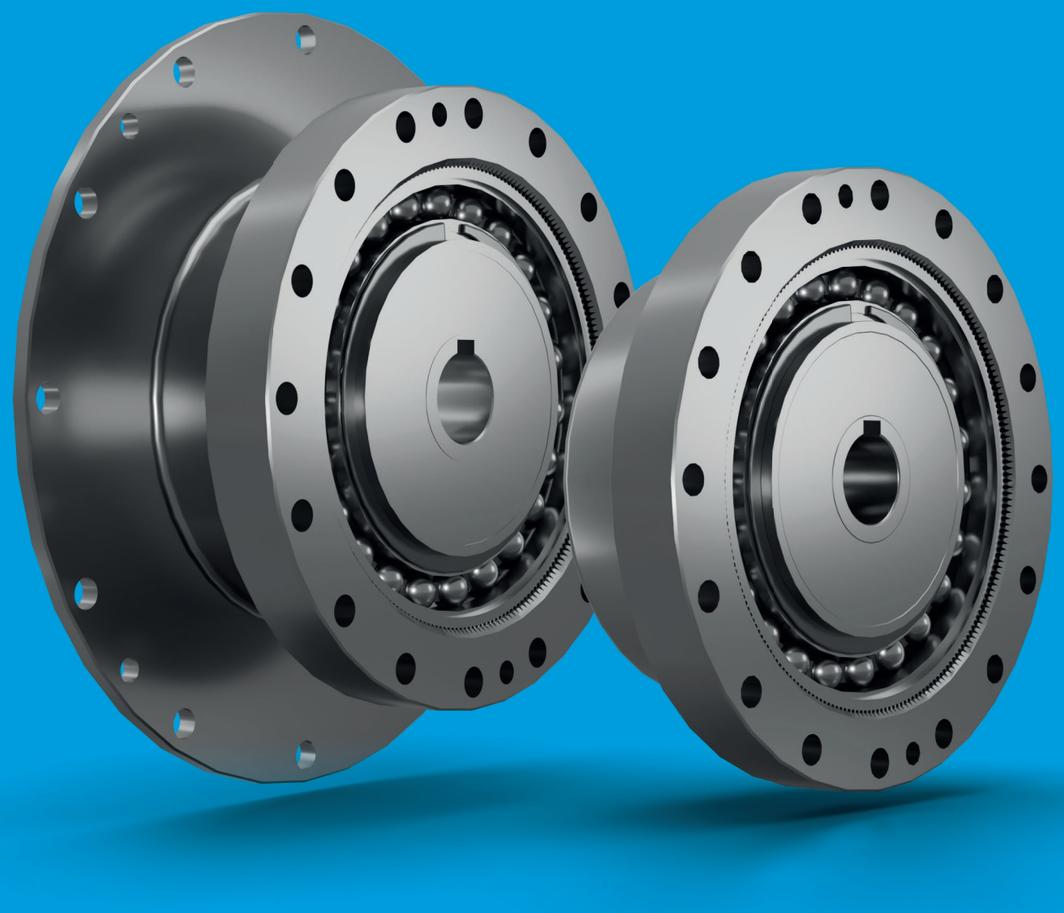


Max. hollow shaft of drive shaft

D_{2max} = 29 mm

(without feather key)

Series
Gear Set 81



Series Gear Set 81

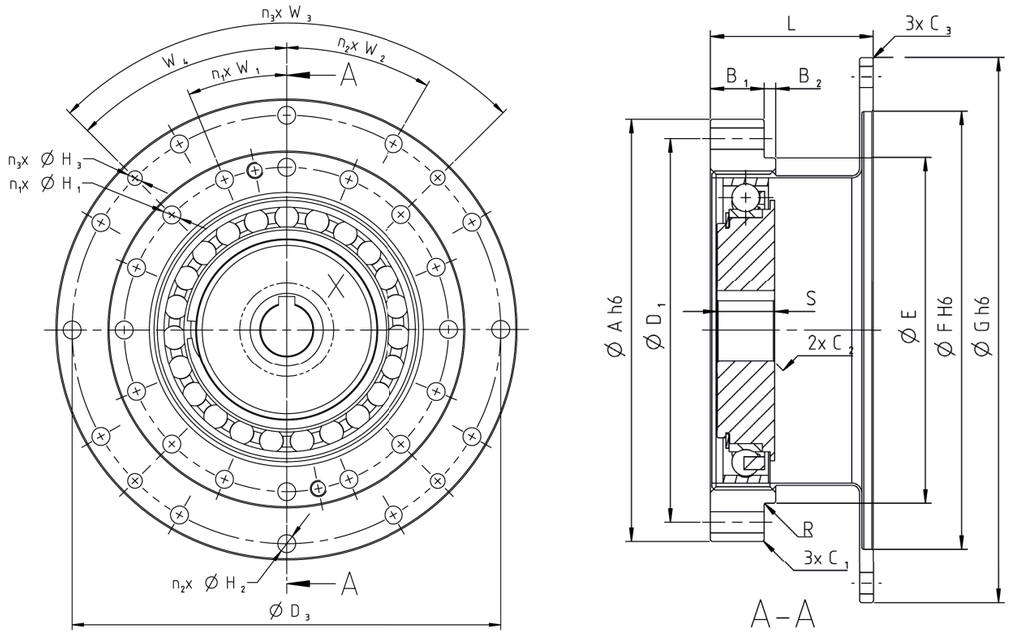
Technical data sheet

Size			81					
Ratio	i		30	50	80	100	120	160
Rated Torque	T_r	Nm	54	99	153	178	178	178
Max. Average Torque	T_a	Nm	93	175	271	351	351	351
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	100	281	395	433	459	484
Emergency Stop Torque	T_c	Nm	200	497	738	841	892	892
Rated Input Speed	n_r	rpm	2,000					
Max. Average Input Speed	n_a	rpm	3,500					
Max. Input Speed	n_{max}	rpm	4,800					
Service Lifetime (Ref. Value)	L_{10}	hrs	7,000	10,000				
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<3	<2	<1			
Transmission Accuracy	TA	arc.sec.	<90	<60				
Torsional Rigidity	K_1	Nm	29					
		kNm/rad	24	54	67	67	67	67
	K_2	Nm	108					
		kNm/rad	30	78	110	110	110	110
	K_3	Nm	T_{RPT}					
		kNm/rad	49	98	120	120	120	120
Ambient Temperature		°C	-20...+70**					
Lubricant			Turmogrease IFM					

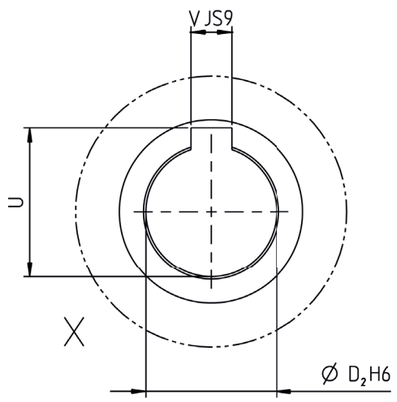
** extended temperature range can be requested

Series Gear Set 81

Technical drawing 81 hat type variant



Dimension		
A	mm	110
B_1	mm	14
B_2	mm	3
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.5 x 45
D_1	mm	100
D_2	mm	16
D_3	mm	132
E	mm	90
F	mm	114
G	mm	142
L	mm	42.4
R	mm	0.4
S	mm	15
T	mm	1.72
U	mm	18.3
V	mm	5
H_1	mm	5.5
n_1		16
W_1	°	22.5
H_2	mm	5.5
n_2		12
W_2	°	30
H_3	mm	4.5
n_3		4
W_3	°	90
W_4	°	45



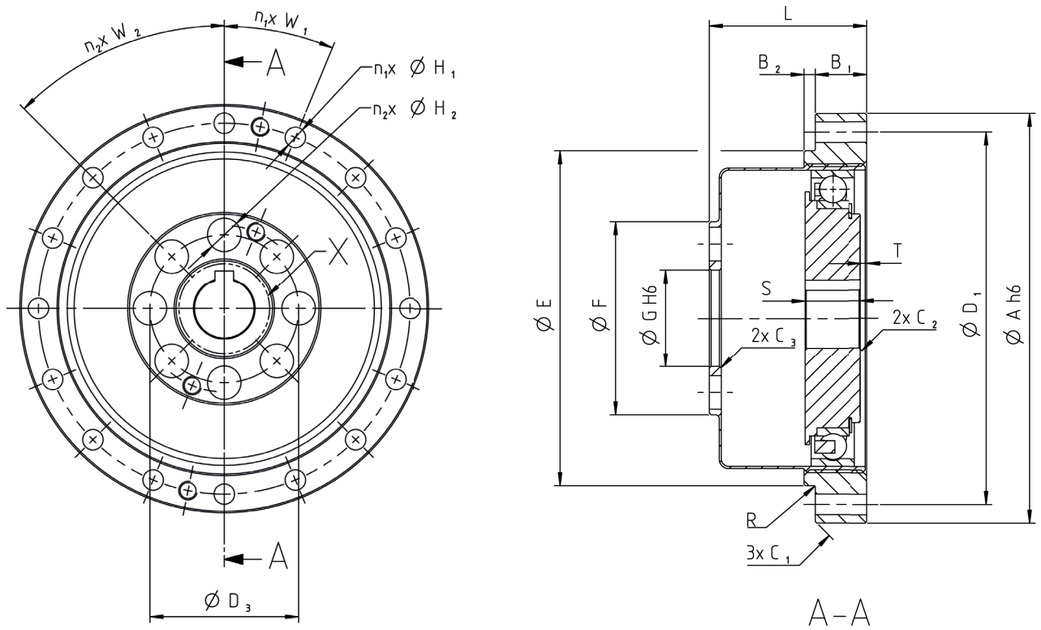
Max. hollow shaft of drive shaft

D_{2max} = 36 mm

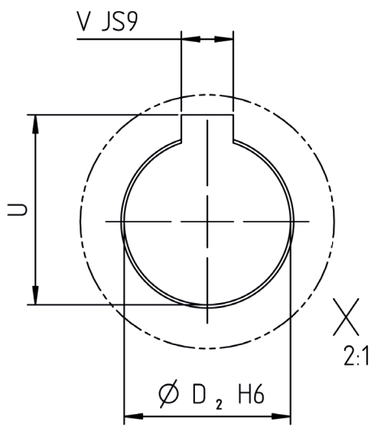
(without feather key)

Series Gear Set 81

Technical drawing 81 cup type variant



Dimension		
A	mm	110
B_1	mm	14
B_2	mm	3
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.5 x 45
D_1	mm	100
D_2	mm	16
D_3	mm	40
E	mm	90
F	mm	52
G	mm	26
L	mm	42.3
R	mm	0.4
S	mm	15
T	mm	1.72
U	mm	18.3
V	mm	5
H_1	mm	5.5
n_1		16
W_1	°	22.5
H_2	mm	9
n_2		8
W_2	°	45



Max. hollow shaft of drive shaft

D_{2max} = 36 mm

(without feather key)

Gear sets plus at a glance

Sample material short text:

OP - **051** - **HSN** - **080** - **ZZZ** - **S**

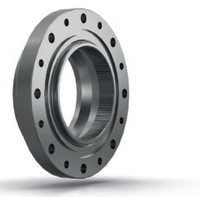
Series · Size · Type, input, length · Reduction ratio · Sensor technology · Design

	Series	Size	Type, input, length	Reduction ratio	Sensor technology	Design
Example:	OP	-051	-HSN	-050	-ZZZ	-C
Gear Set Plus		35	CSN	50 80 100	ZZZ	S / C
			HSN			
		43	CSN	50 80 100 120	ZZZ	S / C
			HSN			
		51	CSN	30 50 80 100 120 160	ZZZ	S / C
			HSN			
		63	CSN	30 50 80 100 120 160	ZZZ	S / C
			HSN			
		81	CSN	30 50 80 100 120 160	ZZZ	S / C
			HSN			
		102	CSN	50 80 100 120 160	ZZZ	S / C
			HSN			

Configure your gearbox



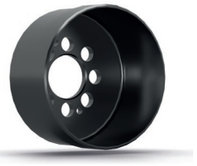
Wave generator – WG



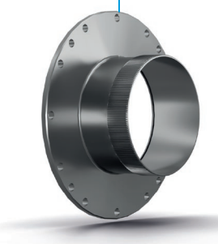
Circular spline – CS
Cup type



Circular spline – CS
Hat type



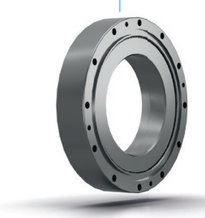
Flex spline – FS
Cup type



Flex spline – FS
Hat type

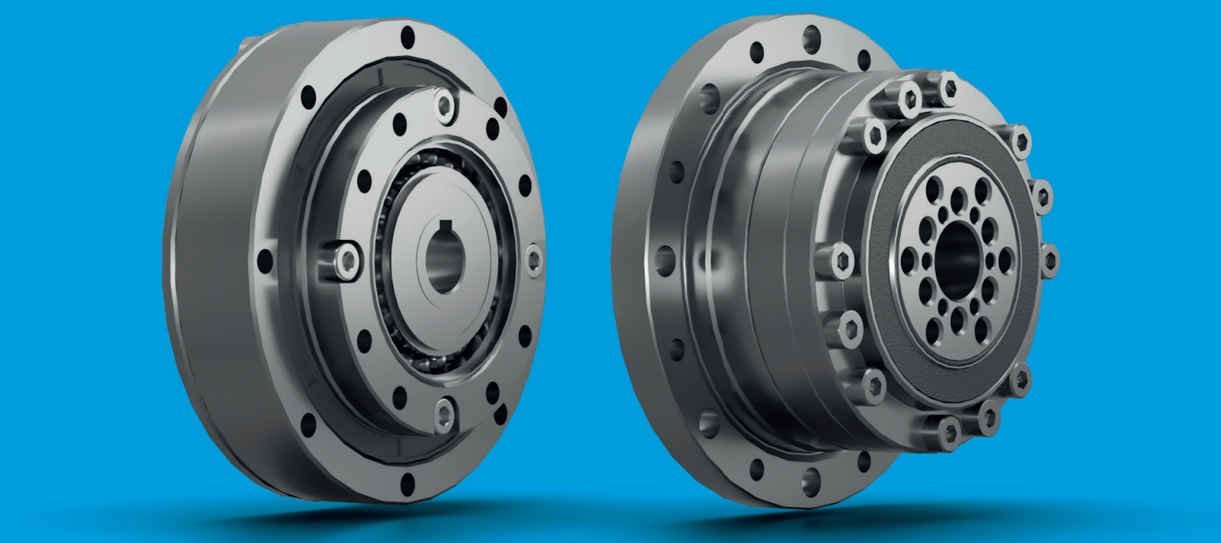


Cross roller bearing – CRB
Cup type



Cross roller bearing – CRB
Hat type

Series
Gear Set Plus 35



Series Gear Set Plus 35

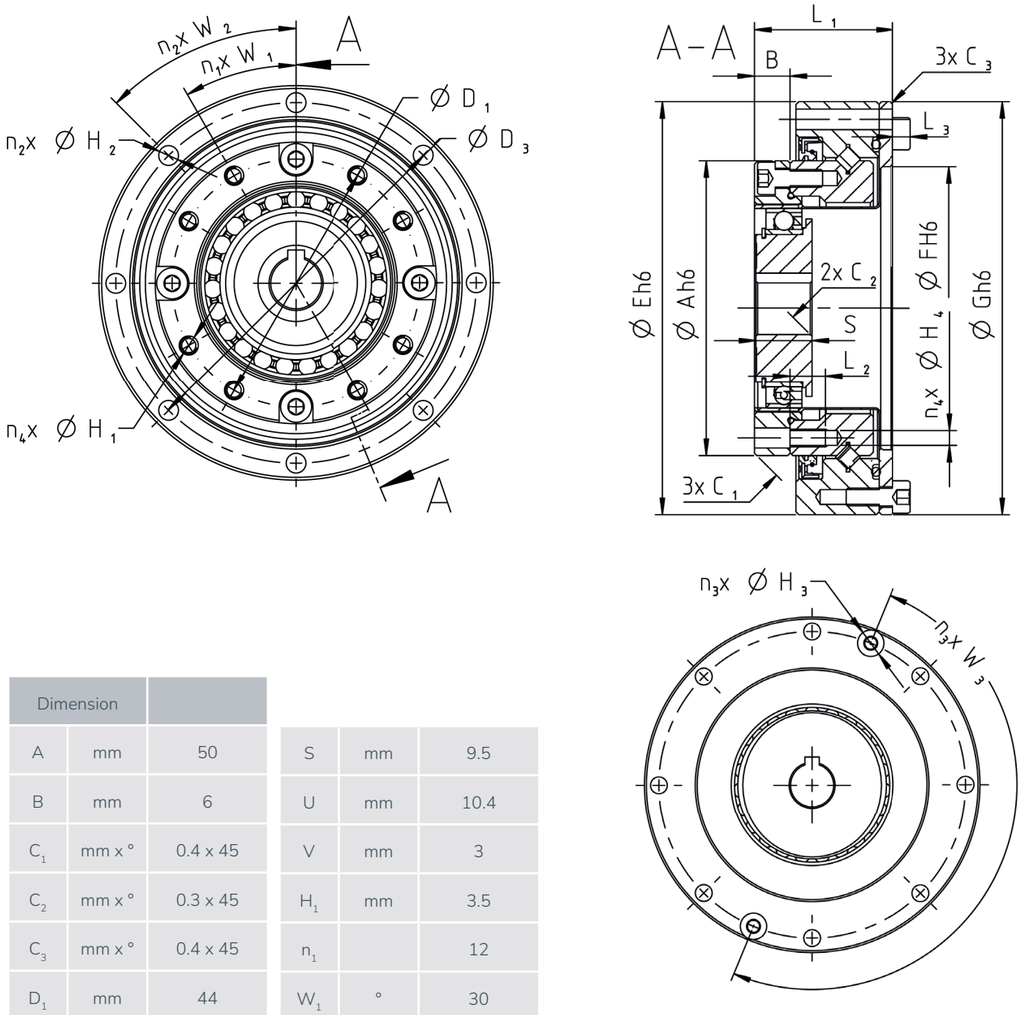
Technical data sheet

Size			35		
Ratio	i		50	80	100
Rated Torque	T_r	Nm	7	10	10
Max. Average Torque	T_a	Nm	13	20	20
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	23	30	36
Emergency Stop Torque	T_c	Nm	46	61	70
Rated Input Speed	n_r	rpm	2,000		
Max. Average Input Speed	n_a	rpm	3,500		
Max. Input Speed	n_{max}	rpm	8,500		
Service Lifetime (Ref. Value)	L_{10}	hrs	10,000		
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<2	<1	
Transmission Accuracy	TA	arc.sec.	<90		
Torsional Rigidity	K_1	Nm	2		
		kNm/rad	3.4	4.7	4.7
	K_2	Nm	6.9		
		kNm/rad	4.7	6.1	6.4
	K_3	Nm	T_{RPT}		
		kNm/rad	5.7	7.1	7.1
Moment Rigidity		Nm/arcmin.	Hat type variant: 25 | Cup type variant: 13		
Max. Allowable Dynamic Tilting Moment		Nm	Hat type variant: 74 | Cup type variant: 41		
Max. Allowable Static Tilting Moment		Nm	Hat type variant: 144 | Cup type variant: 53		
Ambient Temperature		°C	-20...+70**		
Lubricant			Turmogrease IFM		

** extended temperature range can be requested

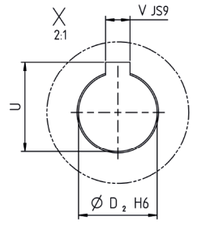
Series Gear Set Plus 35

Technical drawing 35 hat type variant



Dimension		
A	mm	50
B	mm	6
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.4 x 45
D_1	mm	44
D_2	mm	9
D_3	mm	64
E	mm	70
F	mm	48
G	mm	70
L_1	mm	23.5
L_2	mm	6
L_3	mm	3

S	mm	9.5
U	mm	10.4
V	mm	3
H_1	mm	3.5
n_1		12
W_1	°	30
H_2	mm	3.5
n_2		8
W_2	°	45
H_3	mm	5.5
n_3		2
W_3	°	180
n_4		8
H_4	mm	M3



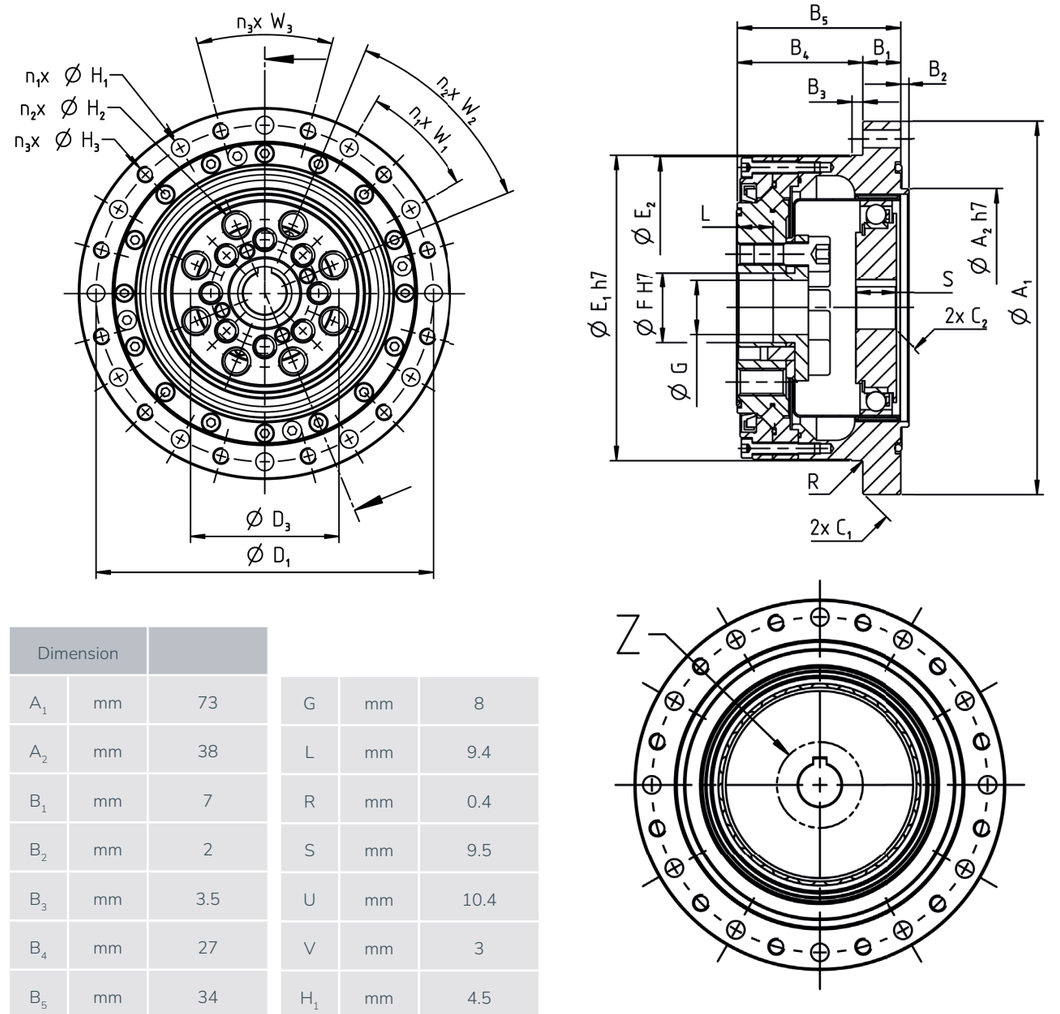
Max. hollow shaft of drive shaft

D_{2max} = 14 mm

(without feather key)

Series Gear Set Plus 35

Technical drawing 35 cup type variant



Dimension		
A_1	mm	73
A_2	mm	38
B_1	mm	7
B_2	mm	2
B_3	mm	3.5
B_4	mm	27
B_5	mm	34
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
D_1	mm	65
D_2	mm	9
D_3	mm	23
E_1	mm	56
E_2	mm	56
F	mm	11

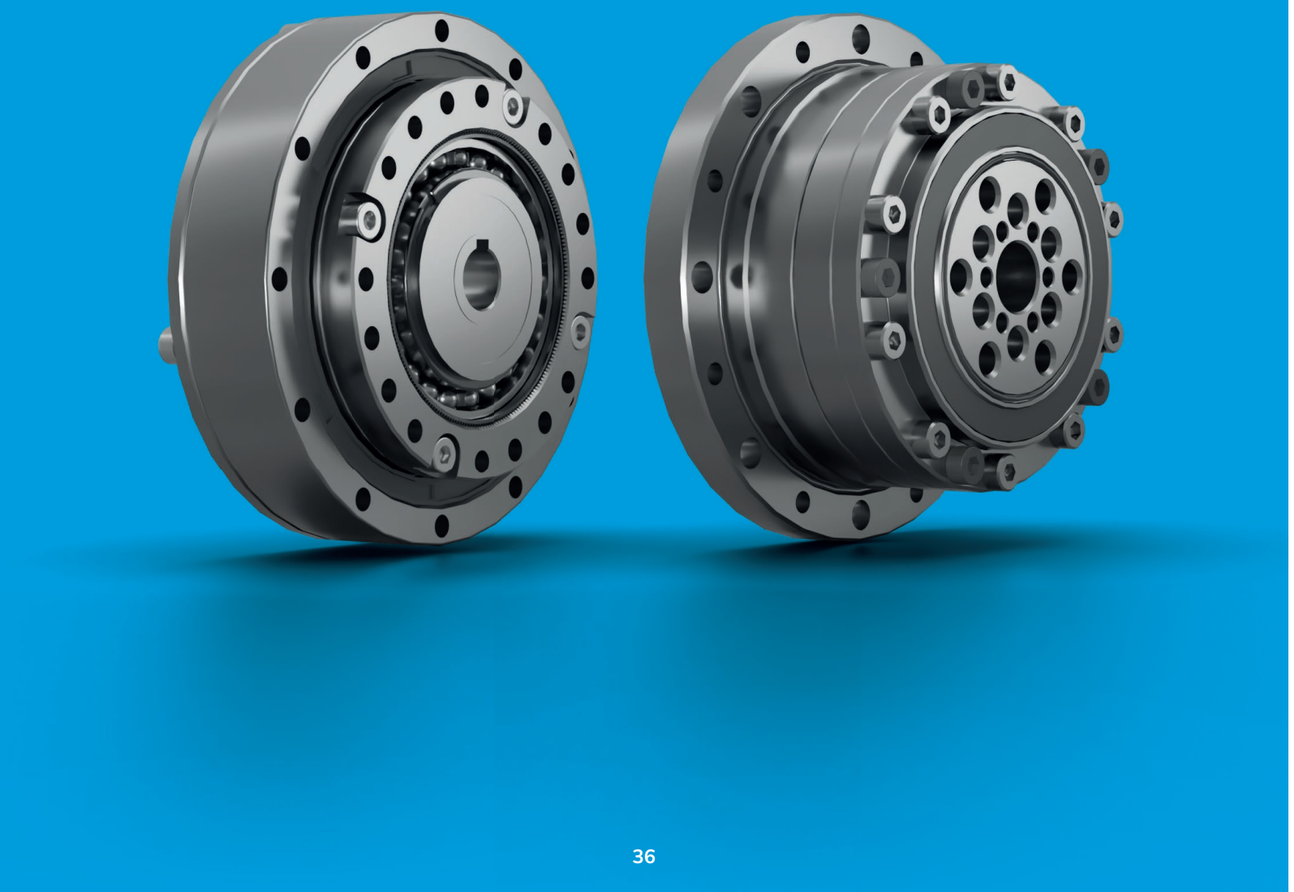
G	mm	8
L	mm	9.4
R	mm	0.4
S	mm	9.5
U	mm	10.4
V	mm	3
H_1	mm	4.5
n_1		8
W_1	°	45
H_2	mm	M4 x 8
n_2		6
W_2	°	60
H_3	mm	M4
n_3		8
W_3	°	45

Max. hollow shaft of drive shaft

D_{2max} = 14 mm

(without feather key)

Series
Gear Set Plus 43



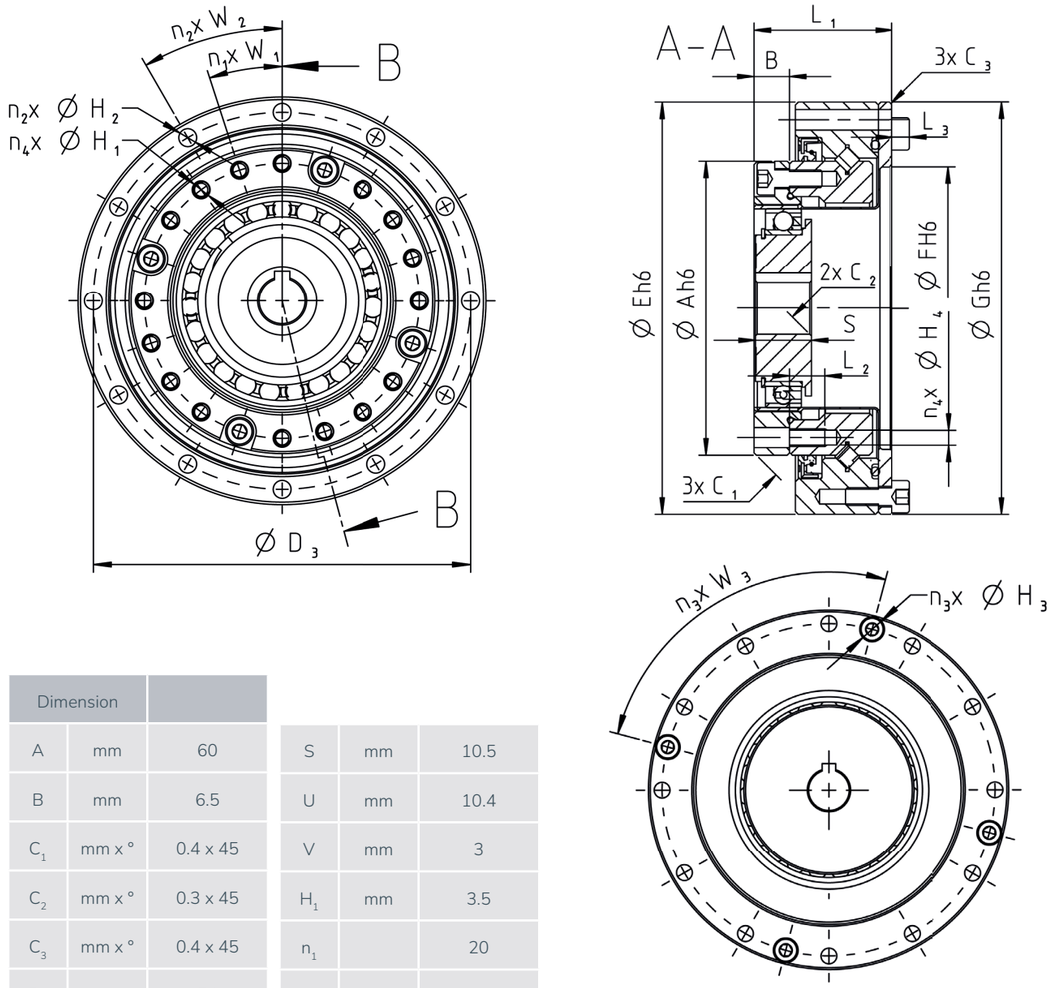
Technical data sheet

Size			43			
Ratio	i		50	80	100	120
Rated Torque	T_r	Nm	21	29	31	31
Max. Average Torque	T_a	Nm	35	37	53	53
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	44	56	70	70
Emergency Stop Torque	T_c	Nm	91	113	143	112
Rated Input Speed	n_r	rpm	2,000			
Max. Average Input Speed	n_a	rpm	3,500			
Max. Input Speed	n_{max}	rpm	7,300			
Service Lifetime (Ref. Value)	L_{10}	hrs	10,000			
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<2	<1		
Transmission Accuracy	TA	arc.sec.	<90			
Torsional Rigidity	K_1	Nm	3.9			
		kNm/rad	8.1	10	10	10
	K_2	Nm	12			
		kNm/rad	11	14	14	14
	K_3	Nm	T_{RPT}			
		kNm/rad	13	16	16	16
Moment Rigidity		Nm/arcmin.	Hat type variant: 45 | Cup type variant: 22.5			
Max. Allowable Dynamic Tilting Moment		Nm	Hat type variant: 124 | Cup type variant: 64			
Max. Allowable Static Tilting Moment		Nm	Hat type variant: 328 | Cup type variant: 80			
Ambient Temperature		°C	-20...+70**			
Lubricant			Turmogrease IFM			

** extended temperature range can be requested

Series Gear Set Plus 43

Technical drawing 43 hat type variant



Dimension		
A	mm	60
B	mm	6.5
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.4 x 45
D_1	mm	54
D_2	mm	9
D_3	mm	74
E	mm	80
F	mm	60
G	mm	80
L_1	mm	26.5
L_2	mm	6
L_3	mm	3

S	mm	10.5
U	mm	10.4
V	mm	3
H_1	mm	3.5
n_1		20
W_1	°	18
H_2	mm	3.5
n_2		12
W_2	°	30
H_3	mm	5.5
n_3		4
W_3	°	90
n_4		16
H_4	mm	M3

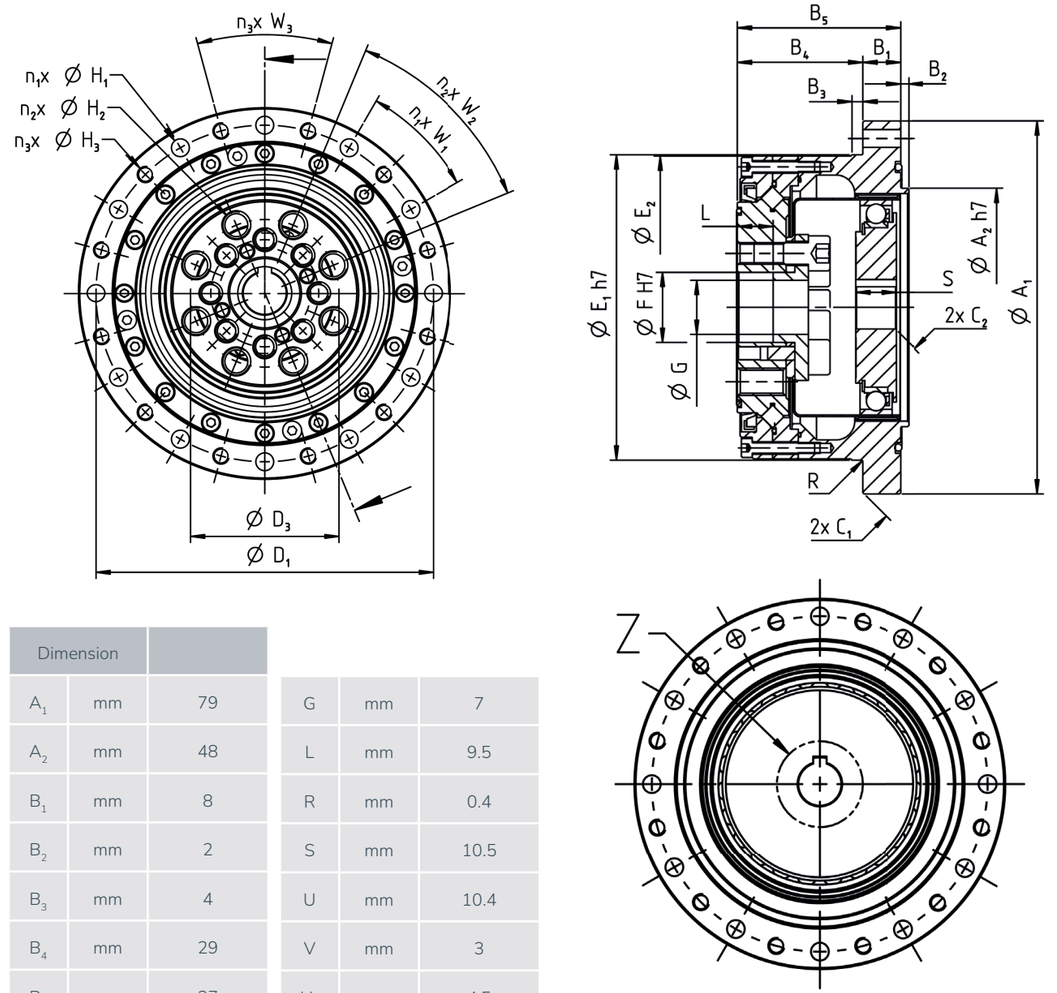
Max. hollow shaft of drive shaft

D_{2max} = 19 mm

(without feather key)

Series Gear Set Plus 43

Technical drawing 43 cup type variant



Dimension		
A_1	mm	79
A_2	mm	48
B_1	mm	8
B_2	mm	2
B_3	mm	4
B_4	mm	29
B_5	mm	37
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
D_1	mm	71
D_2	mm	9
D_3	mm	27
E_1	mm	63
E_2	mm	62
F	mm	10

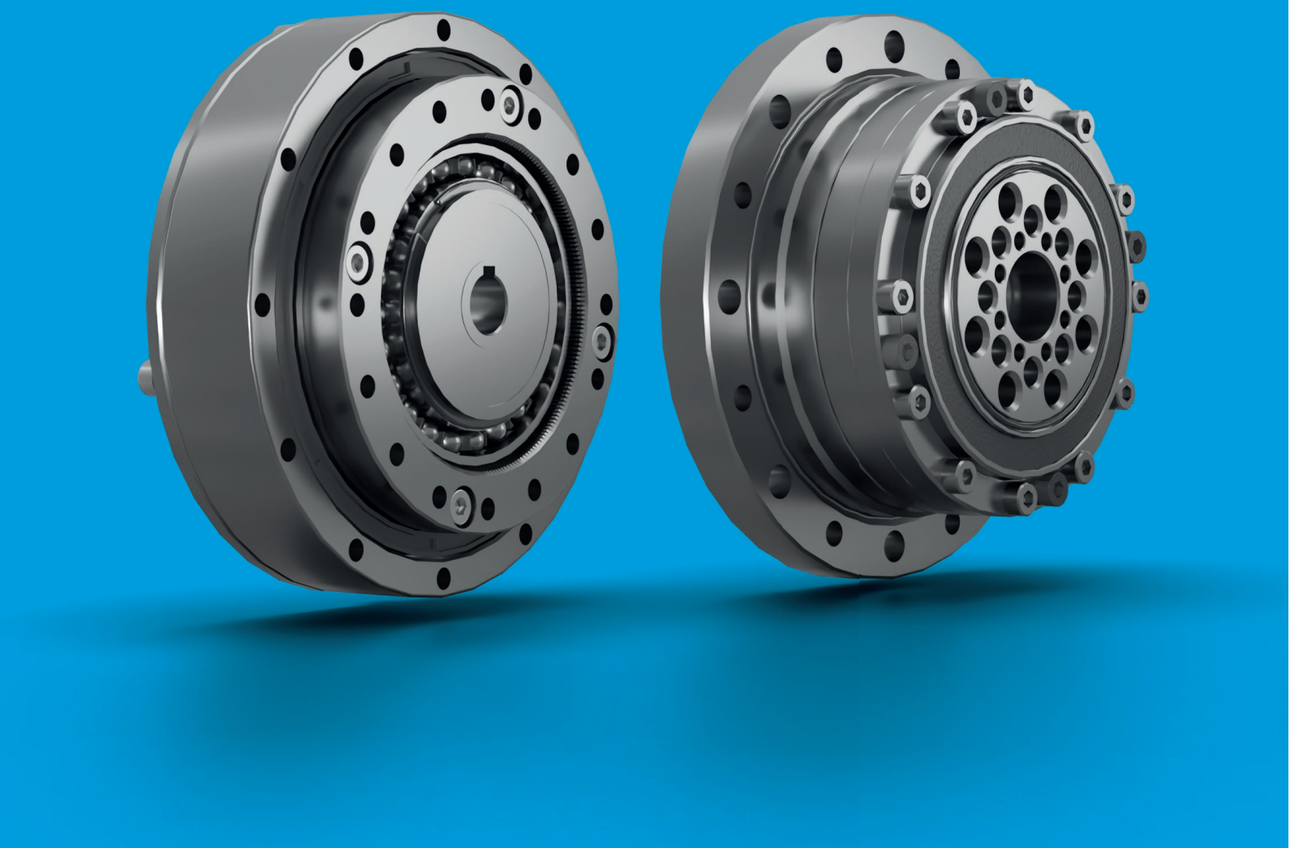
G	mm	7
L	mm	9.5
R	mm	0.4
S	mm	10.5
U	mm	10.4
V	mm	3
H_1	mm	4.5
n_1		8
W_1	°	45
H_2	mm	M5 x 10
n_2		6
W_2	°	60
H_3	mm	M4
n_3		8
W_3	°	45

Max. hollow shaft of drive shaft

D_{2max} = 19 mm

(without feather key)

Series
Gear Set Plus 51



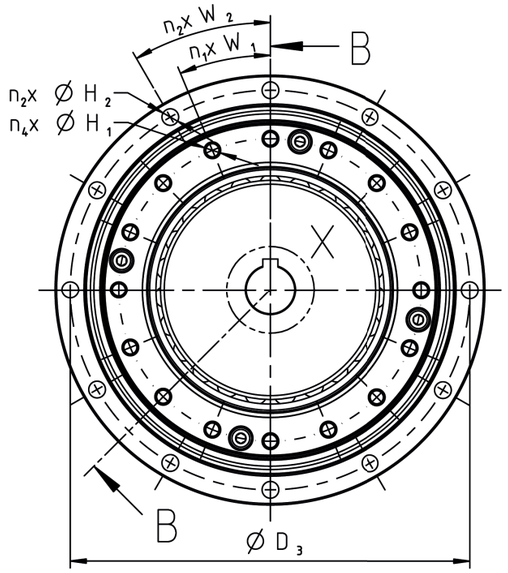
Technical data sheet

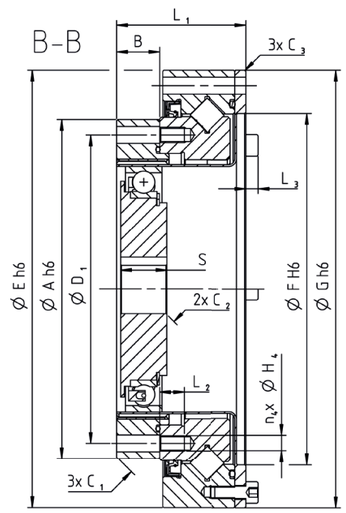
Size			51					
Ratio	i		30	50	80	100	120	160
Rated Torque	T_r	Nm	15	33	44	52	52	52
Max. Average Torque	T_a	Nm	24	53	73	77	78	77
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	27	73	96	107	113	120
Emergency Stop Torque	T_c	Nm	50	127	165	191	191	191
Rated Input Speed	n_r	rpm	2,000					
Max. Average Input Speed	n_a	rpm	3,500					
Max. Input Speed	n_{max}	rpm	6,500					
Service Lifetime (Ref. Value)	L_{10}	hrs	7,000	10,000				
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<3	<2	<1			
Transmission Accuracy	TA	arc.sec.	<90	<60				
Torsional Rigidity	K_1	Nm	7					
		kNm/rad	5.7	13	16	16	16	16
	K_2	Nm	25					
		kNm/rad	7.1	18	25	25	25	25
	K_3	Nm	T_{RPT}					
		kNm/rad	11	23	29	29	29	29
Moment Rigidity		Nm/arcmin.	Hat type variant: 74 | Cup type variant: 37					
Max. Allowable Dynamic Tilting Moment		Nm	Hat type variant: 187 | Cup type variant: 91					
Max. Allowable Static Tilting Moment		Nm	Hat type variant: 515 | Cup type variant: 113					
Ambient Temperature		°C	-20...+70**					
Lubricant			Turmogrease IFM					

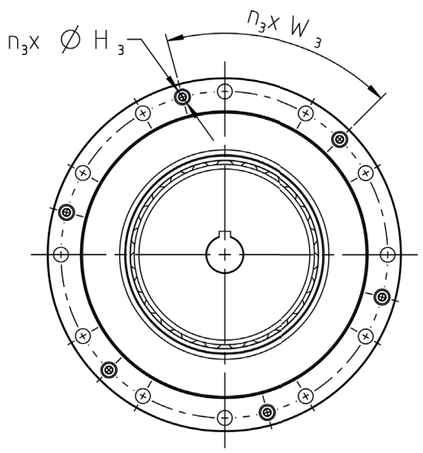
** extended temperature range can be requested

Series Gear Set Plus 51

Technical drawing 51 hat type variant

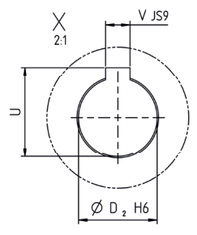






Dimension		
A	mm	70
B	mm	7.5
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.4 x 45
D_1	mm	62
D_2	mm	9
D_3	mm	84
E	mm	90
F	mm	70
G	mm	90
L_1	mm	29
L_2	mm	8
L_3	mm	3

S	mm	12
U	mm	10.4
V	mm	3
H_1	mm	3.5
n_1		16
W_1	°	22.5
H_2	mm	3.5
n_2		12
W_2	°	30
H_3	mm	5.5
n_3		4
W_3	°	90
n_4		16
H_4	mm	M3



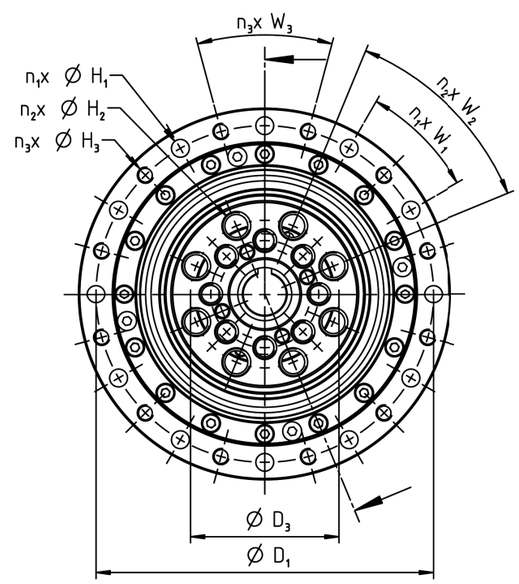
Max. hollow shaft of drive shaft

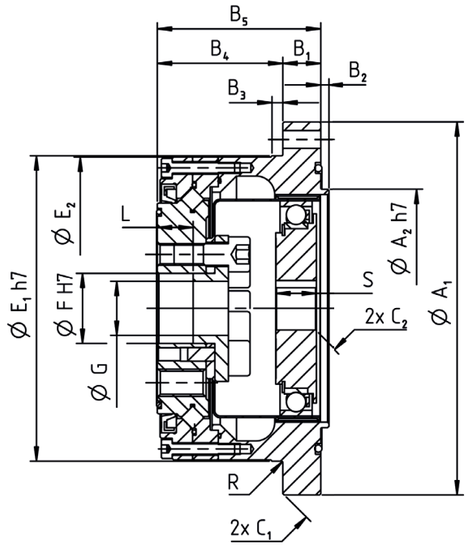
D_{2max} = 21 mm

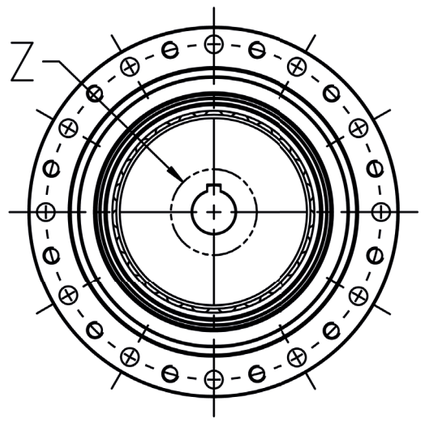
(without feather key)

Series Gear Set Plus 51

Technical drawing 51 cup type variant

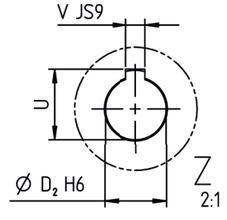






Dimension		
A_1	mm	93
A_2	mm	56
B_1	mm	10
B_2	mm	3
B_3	mm	5
B_4	mm	28
B_5	mm	38
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
D_1	mm	82
D_2	mm	9
D_3	mm	32
E_1	mm	72
E_2	mm	70
F	mm	14

G	mm	10
L	mm	9
R	mm	0.4
S	mm	12
U	mm	10.4
V	mm	3
H_1	mm	5.5
n_1		8
W_1	°	45
H_2	mm	M6 x 9
n_2		8
W_2	°	45
H_3	mm	M5
n_3		8
W_3	°	45



Max. hollow shaft of drive shaft

D_{2max} = 21 mm

(without feather key)

Series
Gear Set Plus 63



Series Gear Set Plus 63

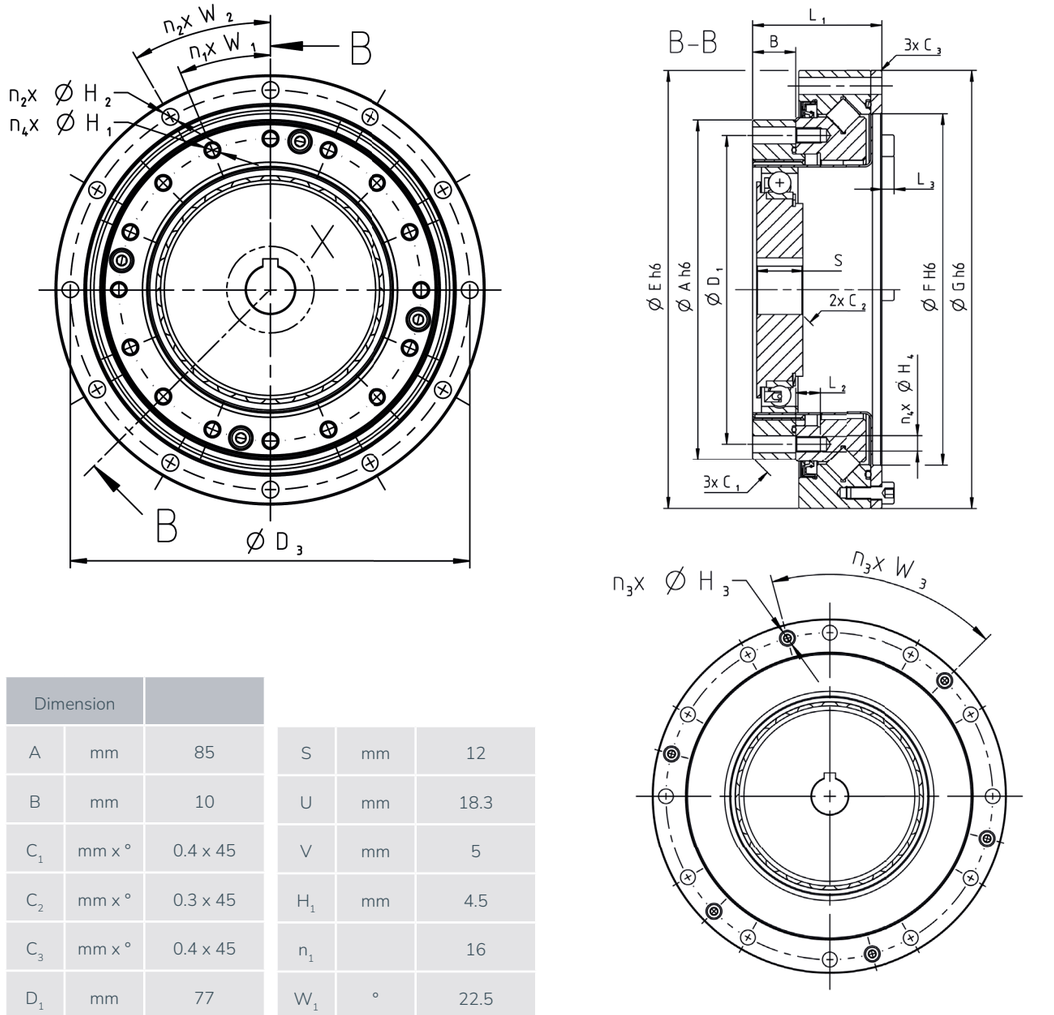
Technical data sheet

Size			63					
Ratio	i		30	50	80	100	120	160
Rated Torque	T_r	Nm	27	51	82	87	87	87
Max. Average Torque	T_a	Nm	44	83	130	161	161	161
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	50	127	178	204	217	229
Emergency Stop Torque	T_c	Nm	95	242	332	369	395	408
Rated Input Speed	n_r	rpm	2,000					
Max. Average Input Speed	n_a	rpm	3,500					
Max. Input Speed	n_{max}	rpm	5,600					
Service Lifetime (Ref. Value)	L_{10}	hrs	7,000	10,000				
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<3	<2	<1			
Transmission Accuracy	TA	arc.sec.	<90	<60				
Torsional Rigidity	K_1	Nm	14					
		kNm/rad	10	25	31	31	31	31
	K_2	Nm	48					
		kNm/rad	13	34	50	50	50	50
	K_3	Nm	T_{RPT}					
		kNm/rad	21	44	57	57	57	57
Moment Rigidity		Nm/arcmin.	Hat type variant: 114 | Cup type variant: 70					
Max. Allowable Dynamic Tilting Moment		Nm	Hat type variant: 258 | Cup type variant: 156					
Max. Allowable Static Tilting Moment		Nm	Hat type variant: 1070 | Cup type variant: 234					
Ambient Temperature		°C	-20...+70**					
Lubricant			Turmogrease IFM					

** extended temperature range can be requested

Series Gear Set Plus 63

Technical drawing 63 hat type variant



Dimension		
A	mm	85
B	mm	10
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.4 x 45
D_1	mm	77
D_2	mm	16
D_3	mm	102
E	mm	110
F	mm	88
G	mm	110
L_1	mm	34
L_2	mm	8
L_3	mm	3

S	mm	12
U	mm	18.3
V	mm	5
H_1	mm	4.5
n_1		16
W_1	°	22.5
H_2	mm	4.5
n_2		12
W_2	°	30
H_3	mm	5.5
n_3		4
W_3	°	90
n_4		16
H_4	mm	M4

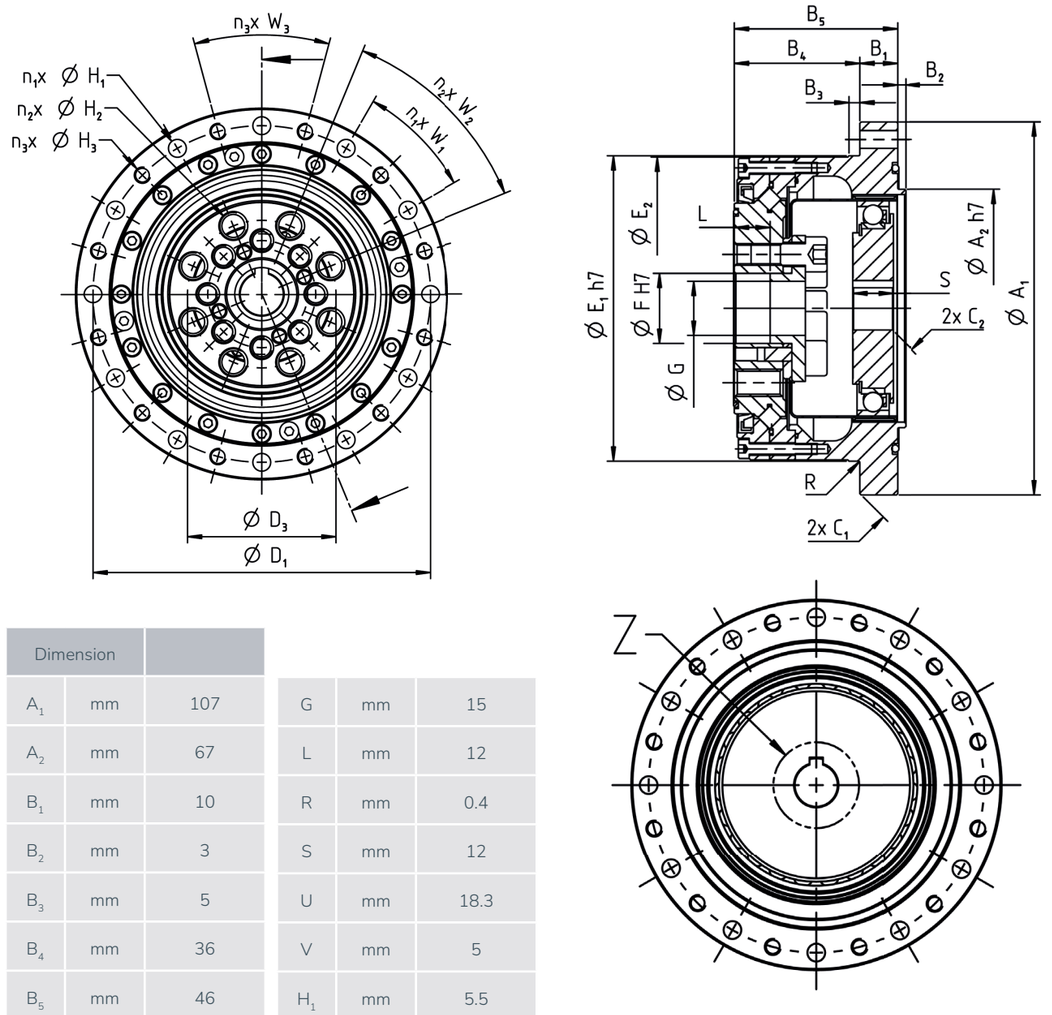
Max. hollow shaft of drive shaft

D_{2max} = 29 mm

(without feather key)

Series Gear Set Plus 63

Technical drawing 63 cup type variant



Dimension		
A_1	mm	107
A_2	mm	67
B_1	mm	10
B_2	mm	3
B_3	mm	5
B_4	mm	36
B_5	mm	46
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
D_1	mm	96
D_2	mm	16
D_3	mm	42
E_1	mm	86
E_2	mm	85
F	mm	20

G	mm	15
L	mm	12
R	mm	0.4
S	mm	12
U	mm	18.3
V	mm	5
H_1	mm	5.5
n_1		8
W_1	°	45
H_2	mm	M8 x 12
n_2		8
W_2	°	45
H_3	mm	M5
n_3		10
W_3	°	36

Max. hollow shaft of drive shaft

D_{2max} = 29 mm

(without feather key)

Series
Gear Set Plus 81



Series Gear Set Plus 81

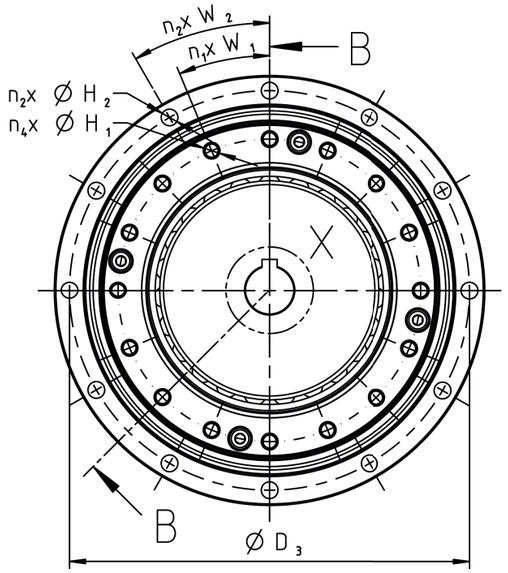
Technical data sheet

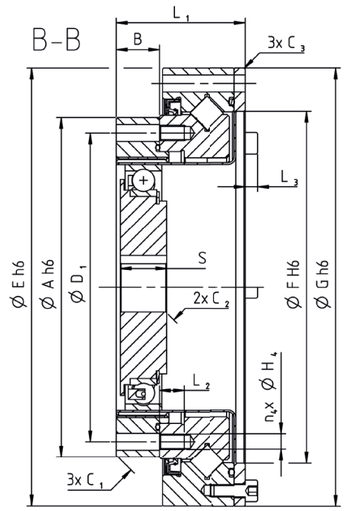
Size			81					
Ratio	i		30	50	80	100	120	160
Rated Torque	T_r	Nm	54	99	153	178	178	178
Max. Average Torque	T_a	Nm	93	175	271	351	351	351
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	100	281	395	433	459	484
Emergency Stop Torque	T_c	Nm	200	497	738	841	892	892
Rated Input Speed	n_r	rpm	2,000					
Max. Average Input Speed	n_a	rpm	3,500					
Max. Input Speed	n_{max}	rpm	4,800					
Service Lifetime (Ref. Value)	L_{10}	hrs	7,000	10,000				
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<3	<2	<1			
Transmission Accuracy	TA	arc.sec.	<90	<60				
Torsional Rigidity	K_1	Nm	29					
		kNm/rad	24	54	67	67	67	67
	K_2	Nm	108					
		kNm/rad	30	78	110	110	110	110
	K_3	Nm	T_{RPT}					
		kNm/rad	49	98	120	120	120	120
Moment Rigidity		Nm/arcmin.	Hat type variant: 290 | Cup type variant: 157					
Max. Allowable Dynamic Tilting Moment		Nm	Hat type variant: 580 | Cup type variant: 313					
Max. Allowable Static Tilting Moment		Nm	Hat type variant: 2425 | Cup type variant: 500					
Ambient Temperature		°C	-20...+70**					
Lubricant			Turmogrease IFM					

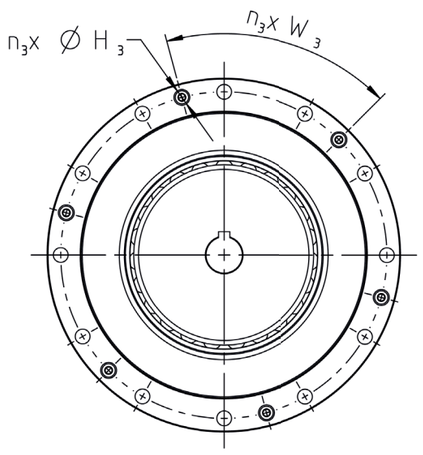
** extended temperature range can be requested

Series Gear Set Plus 81

Technical drawing 81 hat type variant

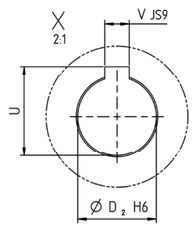






Dimension		
A	mm	110
B	mm	14
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
C_3	mm x °	0.4 x 45
D_1	mm	100
D_2	mm	16
D_3	mm	132
E	mm	142
F	mm	114
G	mm	142
L_1	mm	42
L_2	mm	8
L_3	mm	4

S	mm	15
U	mm	18.3
V	mm	5
H_1	mm	5.5
n_1		16
W_1	°	22.5
H_2	mm	5.5
n_2		12
W_2	°	30
H_3	mm	7
n_3		4
W_3	°	90
n_4		16
H_4	mm	M5



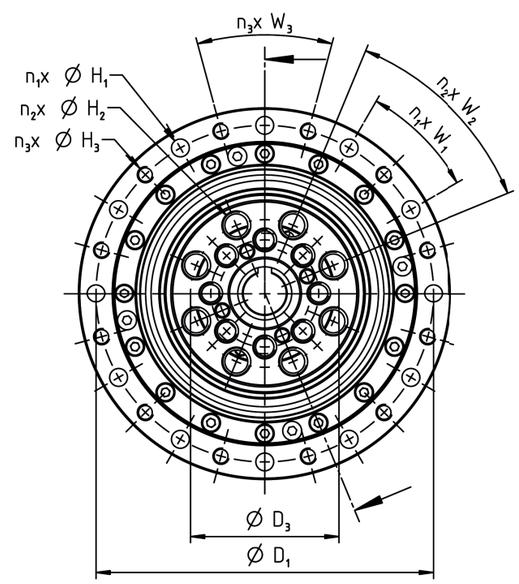
Max. hollow shaft of drive shaft

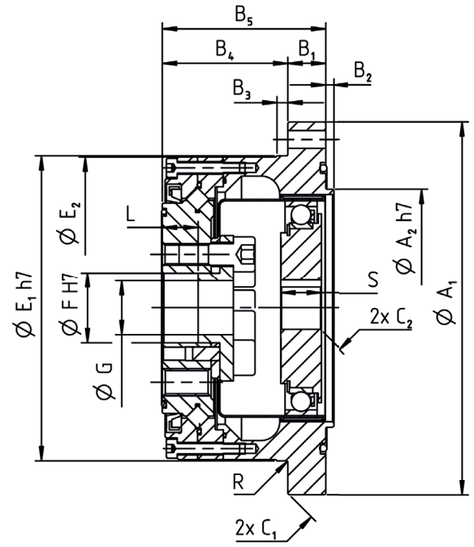
D_{2max} = 36 mm

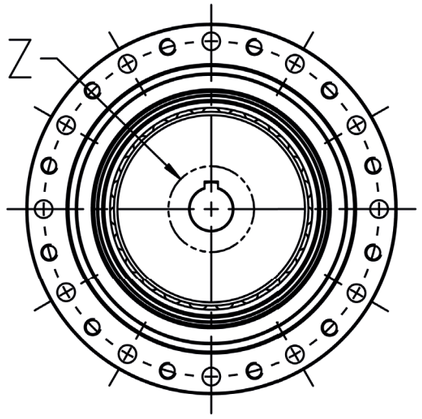
(without feather key)

Series Gear Set Plus 81

Technical drawing 81 cup type variant

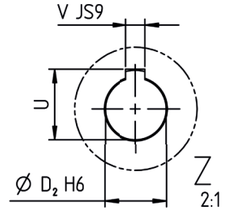






Dimension		
A_1	mm	138
A_2	mm	90
B_1	mm	12
B_2	mm	3
B_3	mm	5
B_4	mm	45
B_5	mm	57
C_1	mm x °	0.4 x 45
C_2	mm x °	0.3 x 45
D_1	mm	125
D_2	mm	16
D_3	mm	55
E_1	mm	113
E_2	mm	112
F	mm	26

G	mm	20
L	mm	15
R	mm	0.4
S	mm	15
U	mm	18.3
V	mm	5
H_1	mm	6.6
n_1		10
W_1	°	36
H_2	mm	M10 x 15
n_2		8
W_2	°	45
H_3	mm	M6
n_3		12
W_3	°	30



Max. hollow shaft of drive shaft

D_{2max} = 36 mm

(without feather key)

Gear units at a glance

Sample material short text:

OU - 0**51** - **HHN** - 0**80** - **ZZZ** - **S**

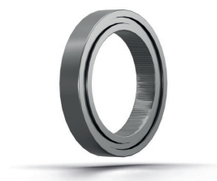
Series · Size · Type, input, length · Reduction ratio · Sensor technology · Design

	Series	Size	Type, input, length	Reduction ratio	Sensor technology	Design
Example:	OU	-051	-HHN	-050	-ZZZ	-C
Gear unit		35	HHN	50 80 100	ZZZ	S / C
		43	HHN	50 80 100 120	ZZZ	S / C
		51	HHN	30 50 80 100 120 160	ZZZ	S / C
		63	HHN	30 50 80 100 120 160	ZZZ	S / C
		81	HHN	30 50 80 100 120 160	ZZZ	S / C
		102	HHN	50 80 100 120 160	ZZZ	S / C

Configure your gearbox



Wave generator
Hollow shaft – WG



Hollow shaft bearing
PTO side



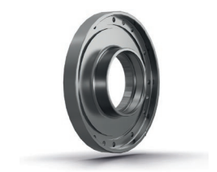
Hollow shaft bearing
Drive side



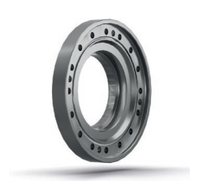
Shaft seal
PTO side



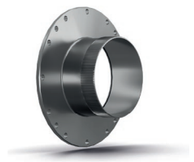
Shaft seal
Drive side



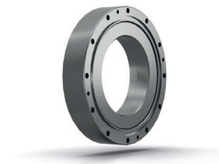
Bearing shield FS



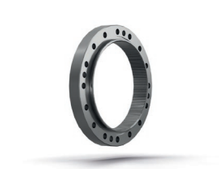
Bearing shield CS



Flex spline – FS
Hat type

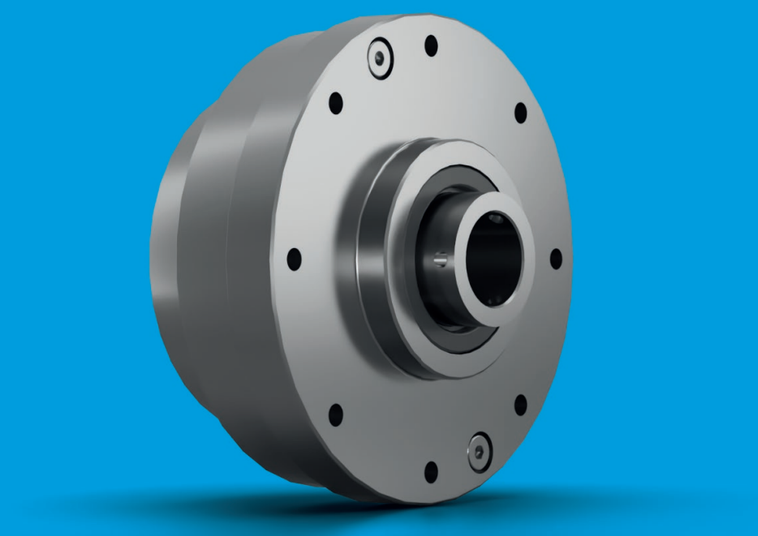


Cross roller bearing – CRB
Hat type



Circular spline – CS
Hat type

Series
Gear Unit 35



Series Gear Unit 35

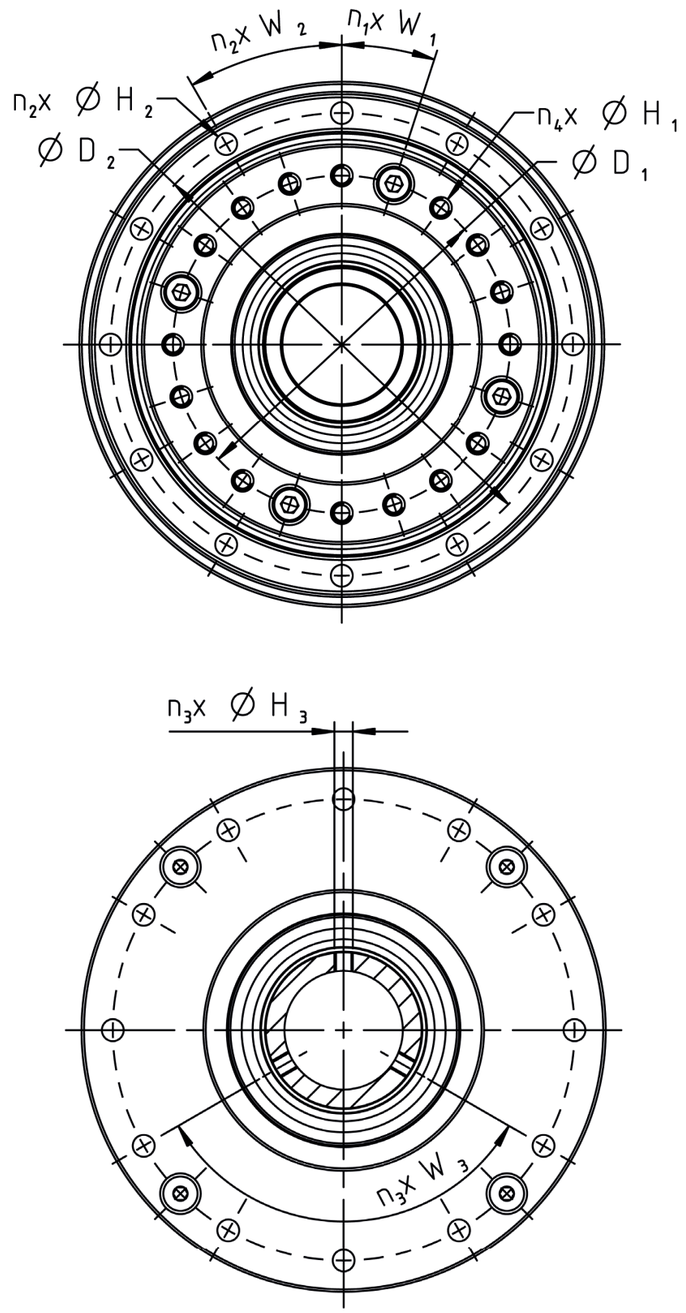
Technical data sheet

Size			35		
Ratio	i		50	80	100
Rated Torque	T_r	Nm	7	10	10
Max. Average Torque	T_a	Nm	13	20	20
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	23	30	36
Emergency Stop Torque	T_c	Nm	46	61	70
Rated Input Speed	n_r	rpm	2,000		
Max. Average Input Speed	n_a	rpm	3,500		
Max. Input Speed	n_{max}	rpm	8,500		
Service Lifetime (Ref. Value)	L_{10}	hrs	10,000		
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<2	<1	
Transmission Accuracy	TA	arc.sec.	<90		
Torsional Rigidity	K_1	Nm	2		
		kNm/rad	3.4	4.7	4.7
	K_2	Nm	6.9		
		kNm/rad	4.7	6.1	6.4
	K_3	Nm	T_{RPT}		
		kNm/rad	5.7	7.1	7.1
Moment Rigidity		Nm/arcmin.	25		
Max. Allowable Dynamic Tilting Moment		Nm	74		
Max. Allowable Static Tilting Moment		Nm	144		
Ambient Temperature		°C	-20...+70**		
Lubricant			Turmogrease IFM		

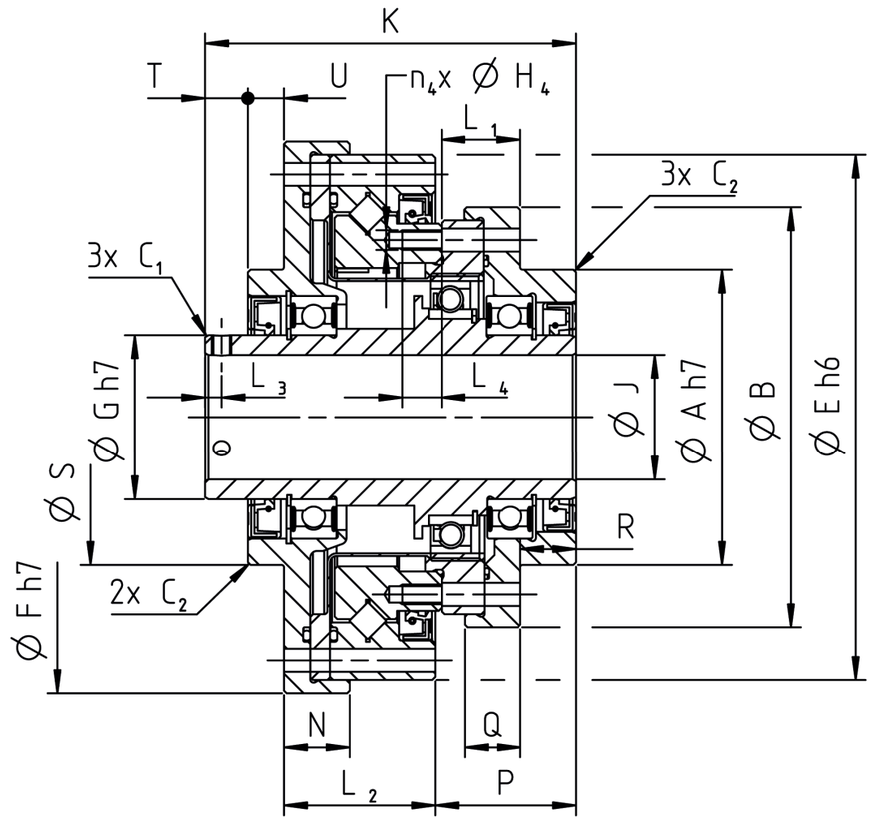
** extended temperature range can be requested

Series Gear Unit 35

Technical drawing 35 hat type variant

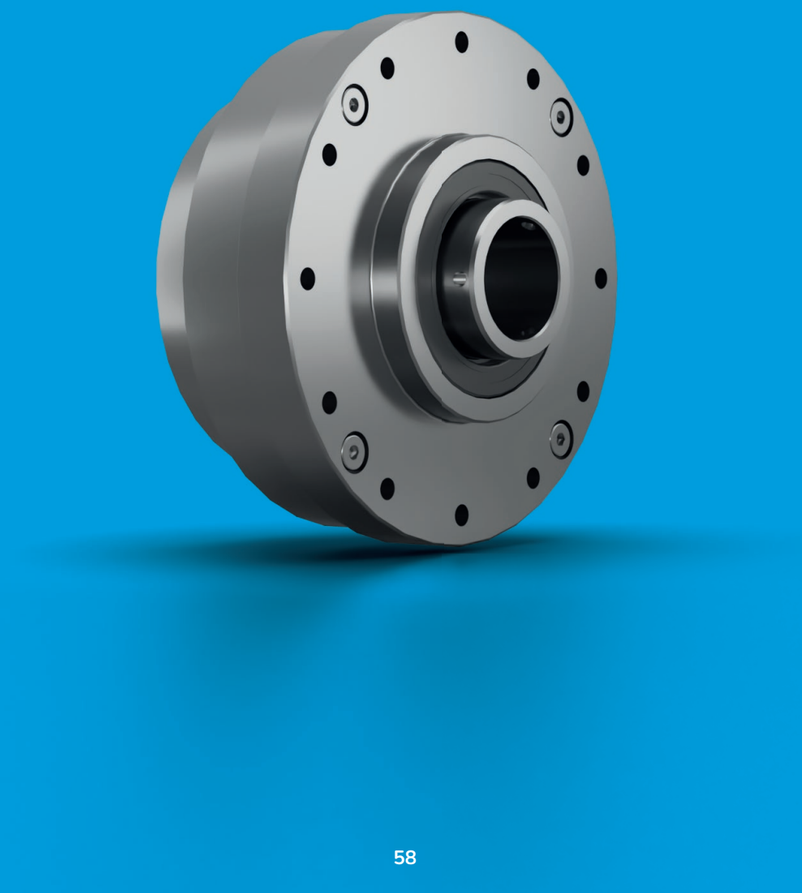


Technical drawing 35 hat type variant



Dimension			F	mm	74	N	mm	9	H_1	mm	3.5
A	mm	36	G	mm	20	P	mm	20	n_2		8
B	mm	54	J	mm	14	Q	mm	8	W_2	°	45
C_1	mm x °	0.5 x 30	K	mm	52.5	R	mm	7.5	H_2	mm	3.5
C_2	mm x °	0.4 x 45	L_1	mm	11.5	S	mm	36	n_3		3
D_1	mm	44	L_2	mm	20.5	T	mm	6.5	H_3	mm	M3
D_2	mm	64	L_3	mm	2.5	U	mm	5.5	W_3	°	120
D_3	mm	-	L_4	mm	6	n_1		12	n_4		8
E	mm	70	M	mm	12	W_1	°	30	H_4	mm	M3

Series
Gear Unit 43



Series Gear Unit 43

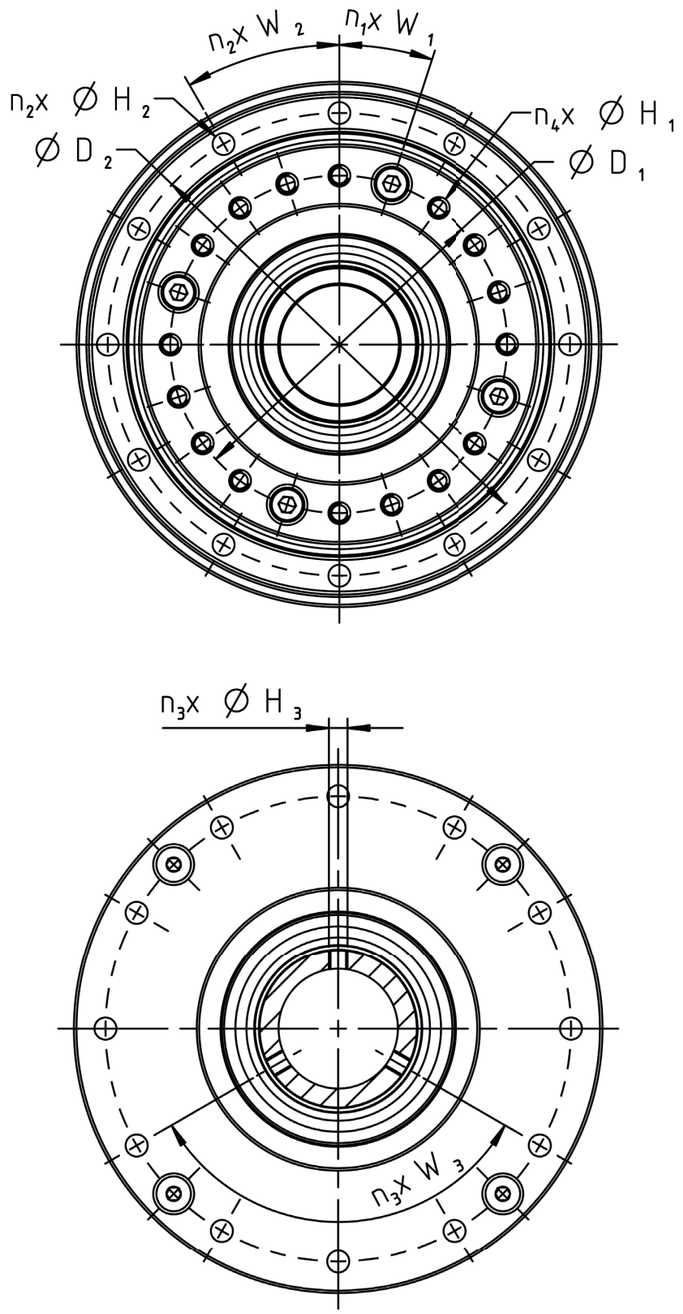
Technical data sheet

Size			43			
Ratio	i		50	80	100	120
Rated Torque	T_r	Nm	21	29	31	31
Max. Average Torque	T_a	Nm	35	37	53	53
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	44	56	70	70
Emergency Stop Torque	T_c	Nm	91	113	143	112
Rated Input Speed	n_r	rpm	2,000			
Max. Average Input Speed	n_a	rpm	3,500			
Max. Input Speed	n_{max}	rpm	7,300			
Service Lifetime (Ref. Value)	L_{10}	hrs	10,000			
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<2	<1		
Transmission Accuracy	TA	arc.sec.	<90			
Torsional Rigidity	K_1	Nm	3.9			
		kNm/rad	8.1	10	10	10
	K_2	Nm	12			
		kNm/rad	11	14	14	14
	K_3	Nm	T_{RPT}			
		kNm/rad	13	16	16	16
Moment Rigidity		Nm/arcmin.	45			
Max. Allowable Dynamic Tilting Moment		Nm	124			
Max. Allowable Static Tilting Moment		Nm	328			
Ambient Temperature		°C	-20...+70**			
Lubricant			Turmogrease IFM			

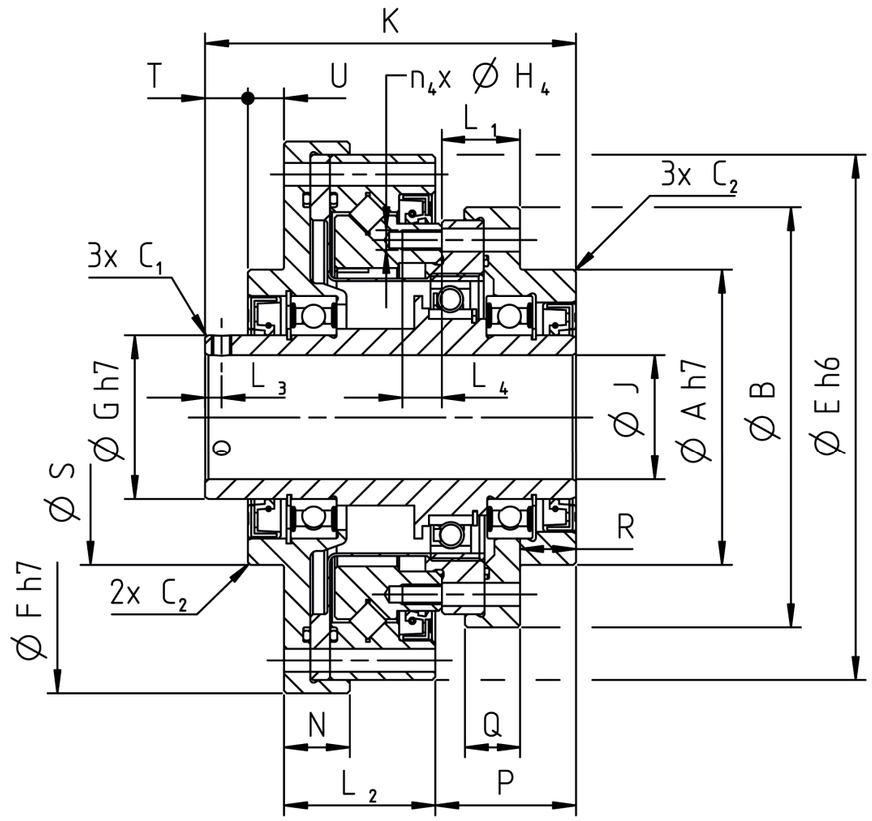
** extended temperature range can be requested

Series Gear Unit 43

Technical drawing 43 hat type variant

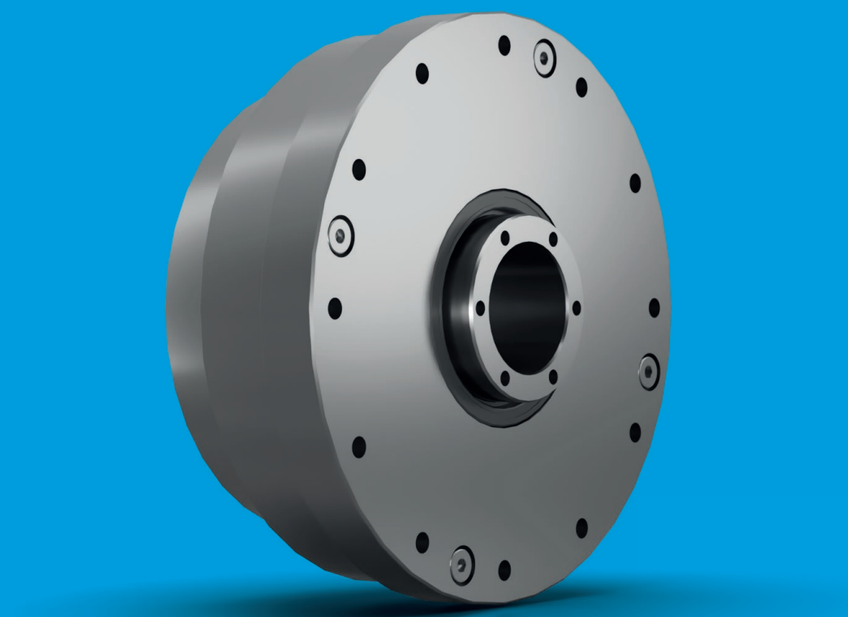


Technical drawing 43 hat type variant



Dimension			F	mm	84	N	mm	10	H_1	mm	3.5
A	mm	45	G	mm	25	P	mm	21.5	n_2		12
B	mm	64	J	mm	19	Q	mm	8.8	W_2	°	30
C_1	mm x °	0.5 x 30	K	mm	56.5	R	mm	8.5	H_2	mm	3.5
C_2	mm x °	0.4 x 45	L_1	mm	12	S	mm	45	n_3		3
D_1	mm	54	L_2	mm	23	T	mm	6.5	H_3	mm	M3
D_2	mm	74	L_3	mm	2.5	U	mm	5.5	W_3	°	120
D_3	mm	-	L_4	mm	6	n_1		20	n_4		16
E	mm	80	M	mm	12	W_1	°	18	H_4	mm	M3

Series
Gear Unit 51



Series Gear Unit 51

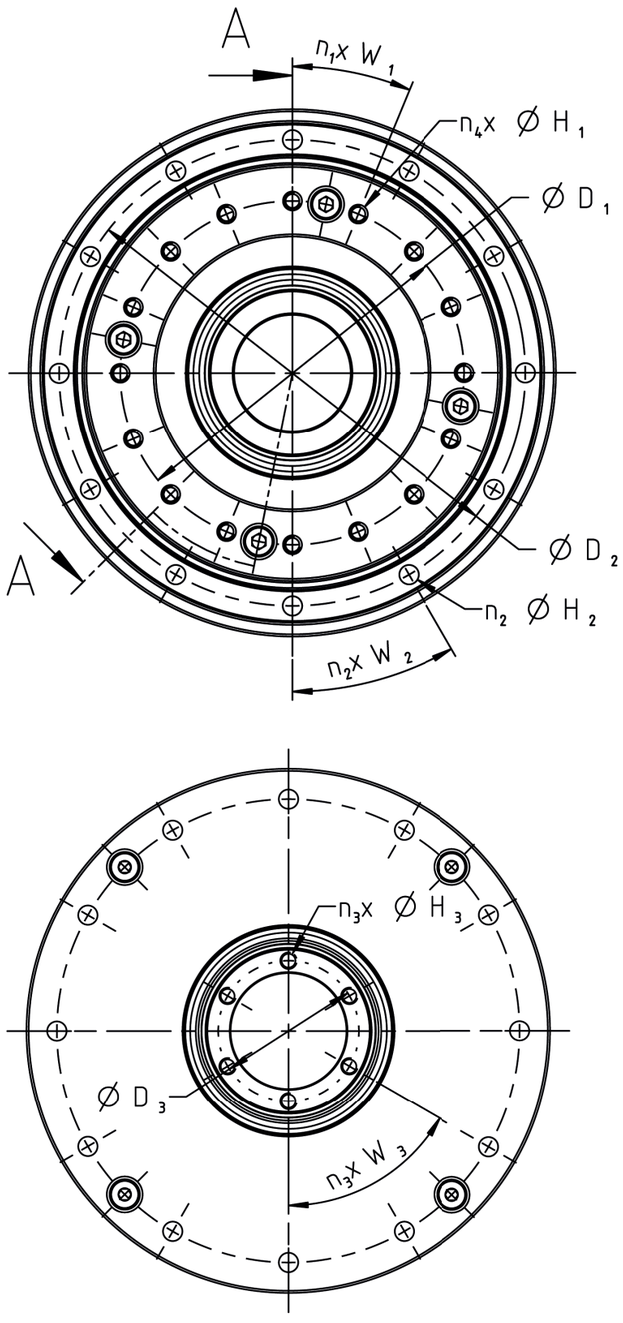
Technical data sheet

Size			51					
Ratio	i		30	50	80	100	120	160
Rated Torque	T_r	Nm	15	33	44	52	52	52
Max. Average Torque	T_a	Nm	24	53	73	77	78	77
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	27	73	96	107	113	120
Emergency Stop Torque	T_c	Nm	50	127	165	191	191	191
Rated Input Speed	n_r	rpm	2,000					
Max. Average Input Speed	n_a	rpm	3,500					
Max. Input Speed	n_{max}	rpm	6,500					
Service Lifetime (Ref. Value)	L_{10}	hrs	7,000	10,000				
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<3	<2	<1			
Transmission Accuracy	TA	arc.sec.	<90	<60				
Torsional Rigidity	K_1	Nm	7					
		kNm/rad	5.7	13	16	16	16	16
	K_2	Nm	25					
		kNm/rad	7.1	18	25	25	25	25
	K_3	Nm	T_{RPT}					
		kNm/rad	11	23	29	29	29	29
Moment Rigidity		Nm/arcmin.	74					
Max. Allowable Dynamic Tilting Moment		Nm	187					
Max. Allowable Static Tilting Moment		Nm	515					
Ambient Temperature		°C	-20...+70**					
Lubricant			Turmogrease IFM					

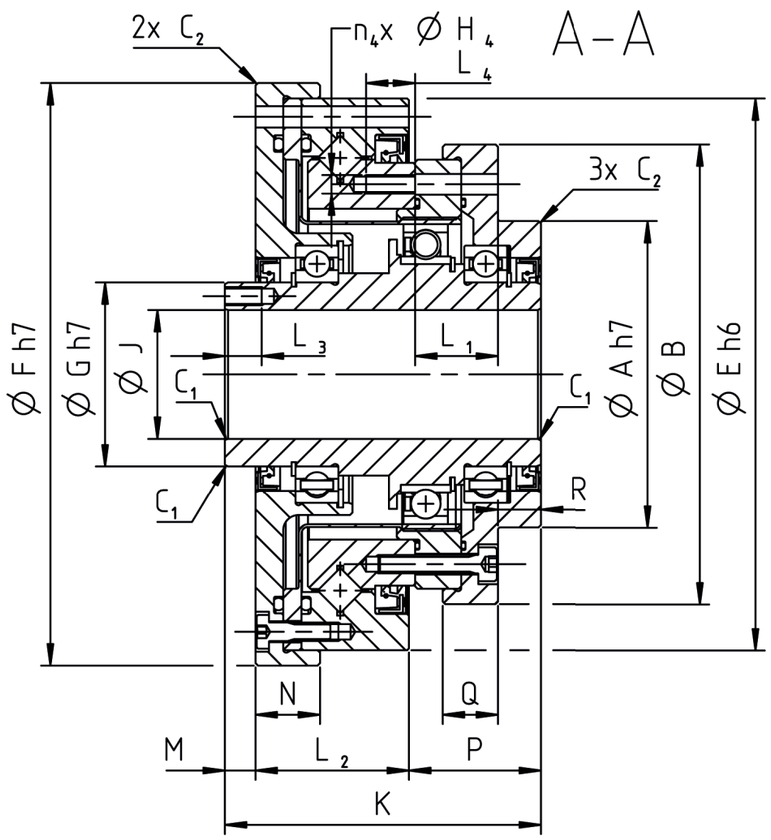
** extended temperature range can be requested

Series Gear Unit 51

Technical drawing 51 hat type variant

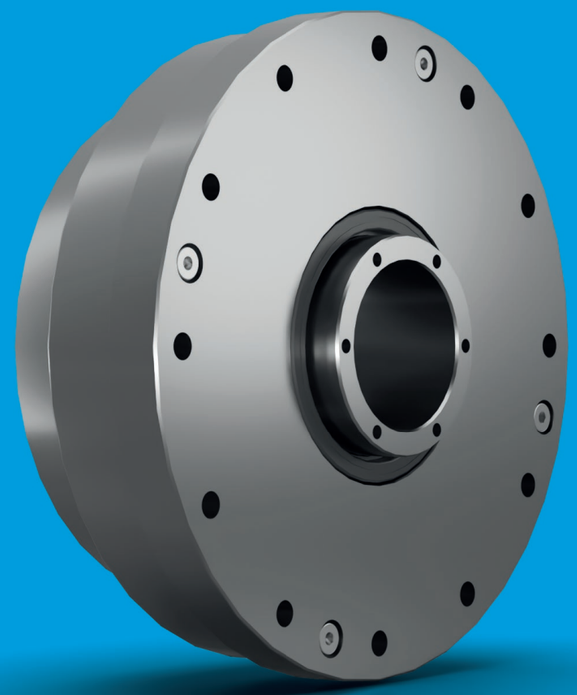


Technical drawing 51 hat type variant



Dimension			F	mm	95	N	mm	10.5	H_1	mm	3.5
A	mm	50	G	mm	30	P	mm	21.5	n_2		12
B	mm	75	J	mm	21	Q	mm	9	W_2	°	30
C_1	mm x °	0.5 x 30	K	mm	51.5	R	mm	7	H_2	mm	3.5
C_2	mm x °	0.4 x 45	L_1	mm	13.5	S	mm	-	n_3		6
D_1	mm	62	L_2	mm	25	T	mm	-	H_3	mm	M3
D_2	mm	84	L_3	mm	6	U	mm	-	W_3	°	60
D_3	mm	25.5	L_4	mm	8	n_1		16	n_4		16
E	mm	90	M	mm	5	W_1	°	22.5	H_4	mm	M3

Series
Gear Unit 63



Series Gear Unit 63

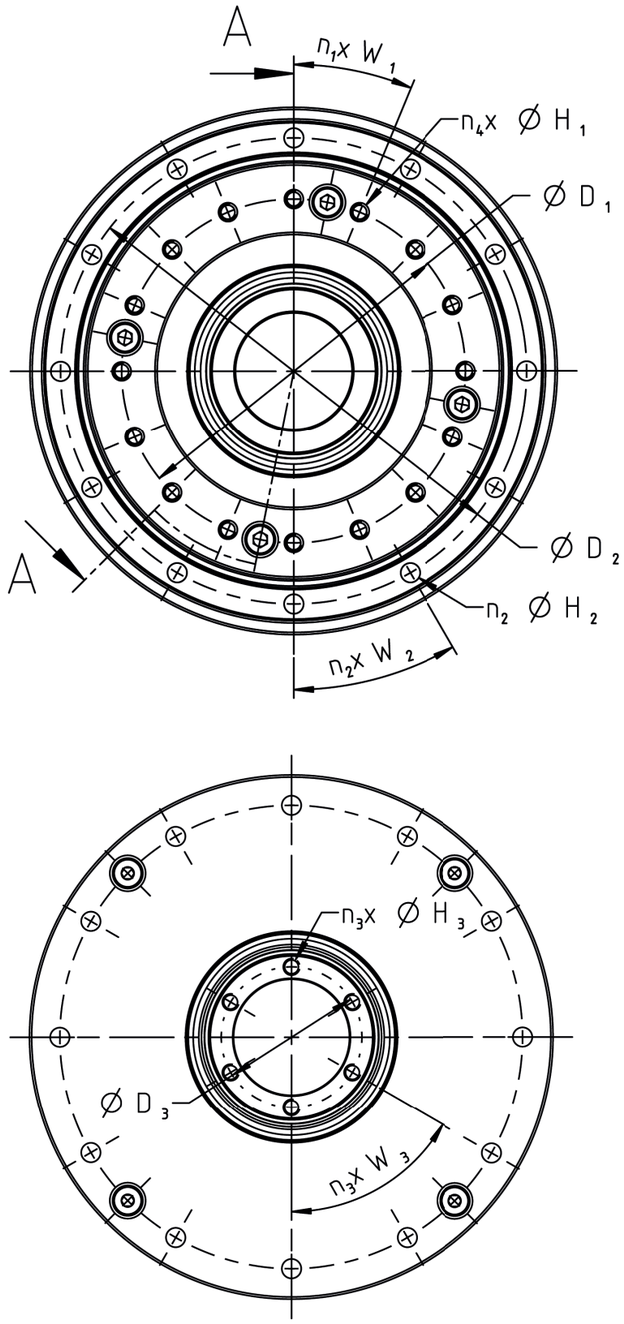
Technical data sheet

Size			63					
Ratio	i		30	50	80	100	120	160
Rated Torque	T_r	Nm	27	51	82	87	87	87
Max. Average Torque	T_a	Nm	44	83	130	161	161	161
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	50	127	178	204	217	229
Emergency Stop Torque	T_c	Nm	95	242	332	369	395	408
Rated Input Speed	n_r	rpm	2,000					
Max. Average Input Speed	n_a	rpm	3,500					
Max. Input Speed	n_{max}	rpm	5,600					
Service Lifetime (Ref. Value)	L_{10}	hrs	7,000	10,000				
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<3	<2	<1			
Transmission Accuracy	TA	arc.sec.	<90	<60				
Torsional Rigidity	K_1	Nm	14					
		kNm/rad	10	25	31	31	31	31
	K_2	Nm	48					
		kNm/rad	13	34	50	50	50	50
	K_3	Nm	T_{RPT}					
		kNm/rad	21	44	57	57	57	57
Moment Rigidity		Nm/arcmin.	114					
Max. Allowable Dynamic Tilting Moment		Nm	258					
Max. Allowable Static Tilting Moment		Nm	1070					
Ambient Temperature		°C	-20...+70**					
Lubricant			Turmogrease IFM					

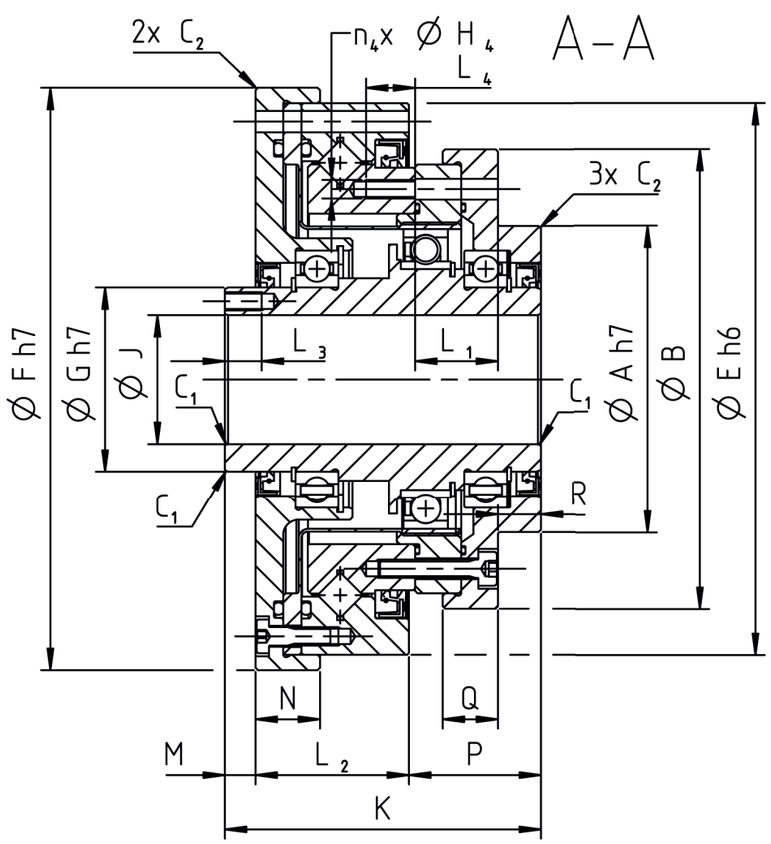
** extended temperature range can be requested

Series Gear Unit 63

Technical drawing 63 hat type variant



Technical drawing 63 hat type variant



Dimension			F	mm	115	N	mm	10.5	H_1	mm	4.5
A	mm	60	G	mm	38	P	mm	23.5	n_2		12
B	mm	90	J	mm	29	Q	mm	8.5	W_2	°	30
C_1	mm x °	0.5 x 30	K	mm	55.5	R	mm	6	H_2	mm	4.5
C_2	mm x °	0.4 x 45	L_1	mm	15.5	S	mm	-	n_3		6
D_1	mm	77	L_2	mm	26	T	mm	-	H_3	mm	M3
D_2	mm	102	L_3	mm	6	U	mm	-	W_3	°	60
D_3	mm	33.5	L_4	mm	8	n_1		16	n_4		16
E	mm	110	M	mm	6	W_1	°	22.5	H_4	mm	M4

Series
Gear Unit 81



Series Gear Unit 81

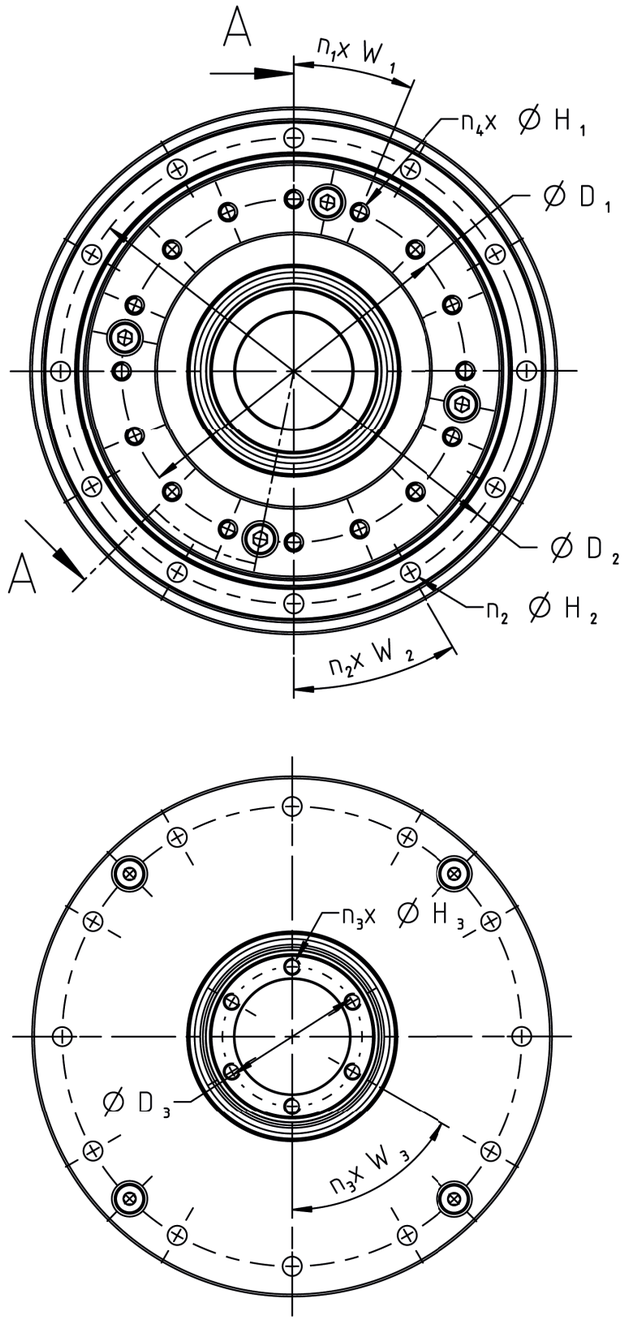
Technical data sheet

Size			81					
Ratio	i		30	50	80	100	120	160
Rated Torque	T_r	Nm	54	99	153	178	178	178
Max. Average Torque	T_a	Nm	93	175	271	351	351	351
Max. Acceleration / Deceleration Torque	T_{RPT}	Nm	100	281	395	433	459	484
Emergency Stop Torque	T_c	Nm	200	497	738	841	892	892
Rated Input Speed	n_r	rpm	2,000					
Max. Average Input Speed	n_a	rpm	3,500					
Max. Input Speed	n_{max}	rpm	4,800					
Service Lifetime (Ref. Value)	L_{10}	hrs	7,000	10,000				
Hysteresis Loss (@ T_r, n_r, 20°C)	HL	arc.min.	<3	<2	<1			
Transmission Accuracy	TA	arc.sec.	<90	<60				
Torsional Rigidity	K_1	Nm	29					
		kNm/rad	24	54	67	67	67	67
	K_2	Nm	108					
		kNm/rad	30	78	110	110	110	110
	K_3	Nm	T_{RPT}					
		kNm/rad	49	98	120	120	120	120
Moment Rigidity		Nm/arcmin.	290					
Max. Allowable Dynamic Tilting Moment		Nm	580					
Max. Allowable Static Tilting Moment		Nm	2425					
Ambient Temperature		°C	-20...+70**					
Lubricant			Turmogrease IFM					

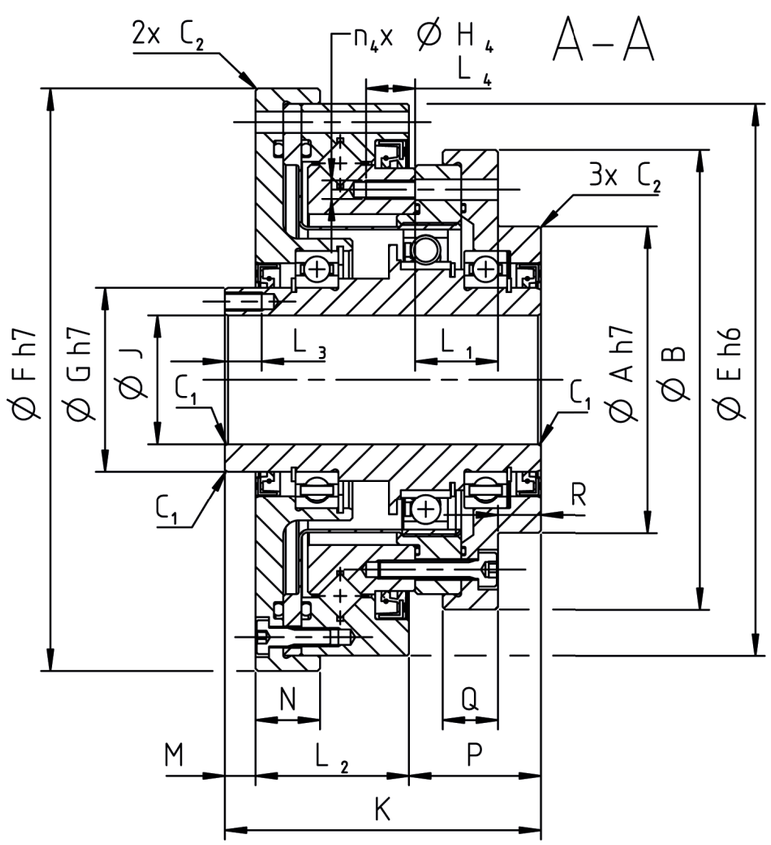
** extended temperature range can be requested

Series Gear Unit 81

Technical drawing 81 hat type variant



Technical drawing 81 hat type variant



Dimension			F	mm	147	N	mm	12	H_1	mm	5.5
A	mm	80	G	mm	45	P	mm	26.5	n_2		12
B	mm	115	J	mm	36	Q	mm	9.5	W_2	°	30
C_1	mm x °	0.5 x 30	K	mm	65.5	R	mm	5	H_2	mm	5.5
C_2	mm x °	0.4 x 45	L_1	mm	20.5	S	mm	-	n_3		6
D_1	mm	100	L_2	mm	32	T	mm	-	H_3	mm	M3
D_2	mm	132	L_3	mm	6	U	mm	-	W_3	°	60
D_3	mm	40.5	L_4	mm	8	n_1		16	n_4		16
E	mm	142	M	mm	7	W_1	°	22.5	H_4	mm	M5

Other technologies

Precision cycloidal gears

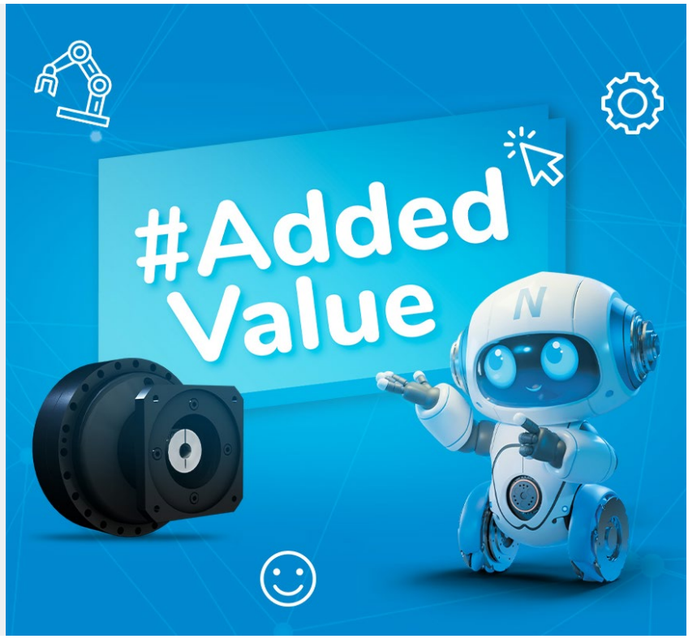
Cycloidal gears for the most stringent requirements

Precision cycloidal gears are the key to more productivity, efficiency, and flexibility in production. Cycloidal gears use cams and rollers for power transmission. This ensures high efficiency, exceptional resistance to impacts, and minimal backlash throughout their entire lifetime. Their special design makes them much more precise, dynamic and rigid than the commonly used rotary indexers and standard planetary gears – which makes it possible to achieve substantial improvements in efficiency.

Nabtesco #AddedValue

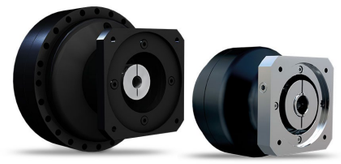
With us, you get much more than just a gearbox. You get robotics know-how, gear expertise, application experience, engineering support, industry knowledge, and an outstanding service level for the automation of your processes – all from a single source.

We see ourselves as your strategic advisor and problem solver. No matter how complex your gear technology requirements – we will find a solution. Challenge us!



Our cycloidal gears

We are the world's largest manufacturer of precision cycloidal gears and offer the most extensive and most diverse product portfolio on the market.



Neco® & Neco® HT

Solid shaft precision gears.
Modular gears with high power density.



RD-C

Hollow shaft precision gears.
Maximum flexibility in the motor connection.



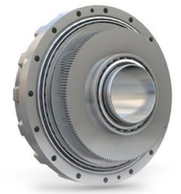
RD-E

Solid shaft precision gears.
Maximum flexibility in the motor connection.



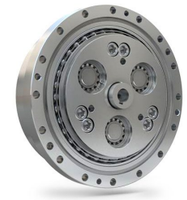
RV-N

Solid shaft component set.
Compact & precise: Ideal for robotics.



RV-C

Hollow shaft component set.
Compact & precise: Ideal for robotics.



RV

Solid shaft component set.
With individual output bearing.



RF-P

Solid shaft component set.
High speed in the tightest of spaces.

Learn more about cycloidal gears.

Visit our website to discover the entire range of cycloidal gears. Just scan the QR code to learn more about the advantages of this innovative technology.

Nabtesco





Get to know Nabby and Tessy:

Do you have questions or require a consultation?

Then contact us.
Our team of experts will be glad to help you.

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05/2025 – Subject to technical modification