



WMH Herion
part of your drive



Rack & Pinion Drive



Volker Uhlmann
Managing Director
Wilhelm Vogel GmbH

Alfred Uhlmann
Managing Director
Wilhelm Vogel GmbH



Claude Herion
Managing Director
WMH Herion

Andreas Pfafflinger
Member of
General Management
WMH Herion



2GETHER IN MOTION – VOGEL AND WMH HERION

Two innovative traditional companies – one joint objective: maximum product and process quality through the exclusive combination of top-class components.

The cooperation between VOGEL Antriebstechnik and WMH Herion is based on the initiative for more efficiency, quality and precision. To achieve these, we consistently exploit synergies: Our product qualities complement each other perfectly. Our large range of technically mature products enables us to offer unique and perfectly matching rack and pinion drives. In brief: Our customers benefit from the decades of development, manufacturing and consultation skills acquired by two system suppliers who deliver to a high quality level which is recognised the world over. And from the product flexibility which we can provide thanks to our leading position in customer-specific development.

2gether in motion – quality connects.

Wilhelm Vogel GmbH **Antriebstechnik**

FUTURE IN MOTION.

For more than 60 years, VOGEL Antriebstechnik has been making a name for itself as a medium-sized, owner-managed family business for innovative and reliable technology in gearbox construction for industrial applications. Our world moves with rated torques from 10 Nm to 25000 Nm. Our range of standard solutions extends from classic machinery gearboxes through compact technology for coaxial and right-angle applications to our own high-precision servo products.

WMH Herion **Antriebstechnik GmbH**

PART OF YOUR DRIVE.

The development, design and production of drive technology – with a special focus on racks and spur gears as well as other gearing elements – have been at the centre of business activities at WMH Herion for more than 60 years. As a gearing specialist, we develop and produce individual customer-specific special solutions, standard components and complete systems. Gladly, we'll face up to the challenge of meeting even the most stringent demands placed on our products and services.

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Gearbox size



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Gearbox with splined shaft connection to the pinion with rack

MPRW

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Gearbox size



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Gearbox with keyway connection to the pinion with rack

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AREAS OF APPLICATION – WE OFFER THE IDEAL SYSTEM

The combination of low-backlash planetary gearboxes with high-precision pinions and racks is extremely energy-efficient, precise, dynamic and convincing thanks to the long service life. Rack and pinion drives from WMH Herion and VOGEL enable even machine gantries weighing tonnes to be accelerated dynamically and positioned accurately down to the μm range.

Our comprehensive product portfolio makes ideal powerful applications possible for a wide range of different branches:

- Machine tools
 - Drive and automation technology
 - Robotics and handling
 - Plastics and film processing machines
 - Woodworking machines
- and many more besides

Components you can rely on:

Gearbox

VOGEL planetary gearboxes combine maximum flexibility with high power density and make high torque transmission possible in the tightest of spaces.

Pinion

With high precision and load-bearing capacity as well as smooth running properties, the pinions from WMH Herion are extremely reliable power transmitters even during continuous operation.

Rack

Precision-ground racks from WMH Herion allow the rotary movement of the pinion to be transformed exactly into a linear movement

SOLUTIONS – AS INDIVIDUAL AS YOUR REQUIREMENTS



With our practical range of products we cover a wide spectrum of common requirements. The high-quality components which have been exactly matched to one another are top performers that have been designed for durability and precision. The choice is yours:

Plug & Move

Rack and pinion drive with pinion pre-mounted on the output shaft of the gearbox. You benefit from minimum assembly work and fast start-up.

Modular system

Purchase the rack and pinion drive as individual components – as a gearbox with matching pinion and rack. The components can be configured into a system quickly and economically.

Individual customised solutions

When we say “on request” we mean: everything is possible. You benefit from the flexibility of two specialist companies with development skills and a range of components that is quite unique in the world. We do everything in our power to ensure you get just the rack and pinion drive you require. From customising through more minor application-specific adaptation of our range components through adaptation of design sizes to the development of tailor-made solutions. Working with you, we design the optimum and most economic customised solution which is in no way inferior to our tried-and-trusted series products in terms of either quality or efficiency.

Accessories direct from the OEM

All mounting pieces can be purchased optionally.



Up-to-date + compact

All product information can be downloaded from
www.vogel-antriebe.de
www.wmh-herion.de

Lubricating systems

We realise the lubricating concept in close cooperation with you.
For suitable lubrication technology applications please contact our experts at:



Herion
Schmiersysteme

Herion Schmiersysteme GmbH
Zeppelinstraße 4 | 82178 Puchheim
Tel +49 89 / 8400823-0 | Fax +49 89 / 8400823-029
mail@herion-schmiersysteme.de
www.herion-schmiersysteme.de



QUALITY WITHOUT COMPROMISE

1. High Precision

Gearboxes with a splined shaft connection on the output shaft with reduced backlash and rack in 5h23 quality, pinion in 5e24 quality.

2. Precision

Gearboxes with a keyway connection on the output shaft MPRN with standard clearance and rack in 6h25 quality, pinion in 7e25 quality.

3. Rack dimensions

In Q5, the rack can be delivered as 1 m or 0.5 m as standard. In Q6, the rack can be delivered as 2 m, 1 m or 0.5 m as standard.

The quality of the rack and pinion drive depends on its installation situation in the machine.

We can take components fitted near the drive or on the machine into account to a certain extent, but we cannot modify these.



GEARBOX WITH SPLINED SHAFT CONNECTION TO THE PINION WITH RACK

Precise machining guarantees quality and ensures smooth process workflows. The connection between the gearbox and output pinion as well as the quality of the rack plays a decisive role here. Splined shaft connections transmit the torque efficiently and make reversing operation possible. Sudden loads can be absorbed without any problems.

MPRW 050 - 300 / 04 - 05 TECHNICAL DATA

Gearbox ratio			3 / 12		4 - 7 / 16 - 70		10 / 100		3	16	100
Size	Module [mm]	z	F _{zul} [N]	T _{2bzul} [Nm]	F _{zul} [N]	T _{2bzul} [Nm]	F _{zul} [N]	T _{2bzul} [Nm]	V _{zul} [m/min]	V _{zul} [m/min]	V _{zul} [m/min]
050	2	15	1800	29	2300	37	2200	35	200	37	6
	2	16	1700	29	2200	37	2100	35	210	40	6
	2	18	1500	29	1900	37	1800	35	240	45	7
100	2	18	3300	63	3300	63	3300	63	240	45	7
	2	20	3300	70	3300	70	3300	70	260	50	8
	2	22	3300	77	3300	77	3300	77	290	55	8
200	2	23	5000	122	5000	122	5000	122	230	43	6
	2	25	5000	133	5000	133	5000	133	250	46	7
	2	27	5000	143	5000	143	5000	143	270	50	8
300	3	20	9000	286	9000	286	9000	286	265	50	8
	3	22	9000	315	9000	315	9000	315	290	55	8
	3	24	9000	344	9000	344	9000	344	320	60	9
04	4	20	13100	555	13100	555	13100	555	355	66	10
05	4	25	16000	850	16000	850	16000	850	385	72	11



MPRW 050 – 100 TECHNICAL DATA

The following technical specifications in the table are intended only for rough preselection

MPRW				050													
Gear stages			1					2									
Ratio	i		3	4	5	7	10	12	16	20	25	28	35	40	50	70	100
Max. acceleration torque (max. 1000 cycles per hour)	T_{2bzul}	Nm	32	44	44	44	35	32	44	44	44	44	44	44	44	44	35
Nominal torque on output (with n_{1zul})	T_{2Nzul}	Nm	20	29	29	29	19	20	29	29	29	29	29	29	29	29	19
Emergency stop torque (permissible 1000 times during gearbox life time)	$T_{2Notzul}$	Nm	80	110	110	107	88	80	110	110	110	110	110	110	110	107	88
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)	n_{1mzul}	min ⁻¹	3300	3300	3300	3700	4000	4000	4400	4400	4400	4400	4400	4400	4800	5500	5500
Max. input speed	$n_{1maxzul}$	min ⁻¹	6000					6000									
Max. backlash*	j	arcmin	standard ≤ 4 / reduced ≤ 2					standard ≤ 6 / reduced ≤ 4									
Torsional rigidity [▲]	C	Nm/arcmin	5					5									
Max. radial load** (with reference to shaft centre on output shaft)	F_{2rzul}	N	2700					2700									
Max. axial load** (with reference to shaft centre on output shaft)	F_{2azul}	N	2400					2400									
Weight	m	kg	2,1					2,7									
Running noise (with $n_1 = 3000 \text{ min}^{-1}$ without load)	L_{PA}	dB(A)	≤ 64					≤ 64									
Inertia (with reference to input)	Ø d 11	J_1	kgcm ²	0,33	0,24	0,20	0,18	0,16	0,21	0,21	0,18	0,18	0,17	0,17	0,16	0,16	0,16
	Ø d 14	J_1	kgcm ²	0,36	0,27	0,23	0,21	0,19	0,25	0,24	0,21	0,21	0,20	0,20	0,19	0,19	0,19
	Ø d 19	J_1	kgcm ²	0,53	0,44	0,40	0,34	0,33	-	-	-	-	-	-	-	-	-

MPRW				100													
Gear stages			1					2									
Ratio	i		3	4	5	7	10	12	16	20	25	28	35	40	50	70	100
Max. acceleration torque (max. 1000 cycles per hour)	T_{2bzul}	Nm	90	120	120	120	90	90	120	120	120	120	120	120	120	120	90
Nominal torque on output (with n_{1zul})	T_{2Nzul}	Nm	56	83	83	83	58	56	83	83	83	83	83	76	83	83	58
Emergency stop torque (permissible 1000 times during gearbox life time)	$T_{2Notzul}$	Nm	200	275	275	275	220	200	275	275	275	275	275	275	275	275	220
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)	n_{1mzul}	min ⁻¹	2800	2800	2800	2800	3100	3100	3500	3500	3500	3500	3500	3500	3800	4500	4500
Max. input speed	$n_{1maxzul}$	min ⁻¹	6000					6000									
Max. backlash*	j	arcmin	standard ≤ 4 / reduced ≤ 2					standard ≤ 6 / reduced ≤ 4									
Torsional rigidity [▲]	C	Nm/arcmin	11					11									
Max. radial load** (with reference to shaft centre on output shaft)	F_{2rzul}	N	4000					4000									
Max. axial load** (with reference to shaft centre on output shaft)	F_{2azul}	N	3350					3350									
Weight	m	kg	3,1					4,4									
Running noise (with $n_1 = 3000 \text{ min}^{-1}$ without load)	L_{PA}	dB(A)	≤ 64					≤ 64									
Inertia (with reference to input)	Ø d 11	J_1	kgcm ²	1,03	0,70	0,58	0,48	0,43	0,25	0,23	0,19	0,19	0,17	0,17	0,16	0,16	0,16
	Ø d 14	J_1	kgcm ²	1,07	0,74	0,62	0,52	0,47	0,29	0,26	0,22	0,22	0,20	0,20	0,19	0,19	0,19
	Ø d 19	J_1	kgcm ²	1,21	0,88	0,76	0,67	0,62	-	-	-	-	-	-	-	-	-
	Ø d 24	J_1	kgcm ²	1,92	1,59	1,47	1,37	1,32	-	-	-	-	-	-	-	-	-

[▲]with reference to output

* measured with 2 % nominal torque on output shaft

**charge centre of output shaft at output speed 250 min⁻¹. Please contact us for combined load applications

All technical modifications are just valid for the gearboxes in the rack and pinion drive.

MPRW 200 – 300 TECHNICAL DATA

MPRW				200														
Gear stages				1					2									
Ratio	i			3	4	5	7	10	12	16	20	25	28	35	40	50	70	100
Max. acceleration torque (max. 1000 cycles per hour)	T_{2bzul}	Nm		230	330	330	300	235	230	330	330	330	330	330	330	330	330	235
Nominal torque on output (with n_{1zul})	T_{2Nzul}	Nm		135	200	195	190	135	135	200	195	195	200	195	200	195	190	135
Emergency stop torque (permissible 1000 times during gearbox life time)	$T_{2Notzul}$	Nm		500	690	675	640	550	500	690	675	675	690	675	690	675	640	550
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)	n_{1mzul}	min ⁻¹		2500	2500	2500	2800	2800	2800	3100	3100	3100	3100	3100	3100	3500	4200	4200
Max. input speed	$n_{1maxzul}$	min ⁻¹		4500					4500									
Max. backlash*	j	arcmin		standard ≤ 3 / reduced ≤ 1					standard ≤ 5 / reduced ≤ 3									
Torsional rigidity [▲]	C	Nm/arcmin		30					30									
Max. radial load** (with reference to shaft centre on output shaft)	F_{2rzul}	N		6300					6300									
Max. axial load** (with reference to shaft centre on output shaft)	F_{2azul}	N		5650					5650									
Weight	m	kg		7,3					8,3									
Running noise (with $n_1 = 3000$ min ⁻¹ without load)	L_{PA}	dB(A)		≤ 66					≤ 64									
Inertia (with reference to input)	Ø d 11	J_1	kgcm ²	-	-	-	-	-	0,80	0,72	0,58	0,56	0,48	0,47	0,44	0,43	0,43	0,42
	Ø d 14	J_1	kgcm ²	-	-	-	-	-	0,84	0,76	0,61	0,60	0,52	0,51	0,47	0,46	0,46	0,46
	Ø d 19	J_1	kgcm ²	4,48	3,23	2,78	2,42	2,23	0,98	0,90	0,76	0,74	0,66	0,65	0,62	0,61	0,61	0,60
	Ø d 24	J_1	kgcm ²	5,00	3,75	3,30	2,94	2,75	-	-	-	-	-	-	-	-	-	-
	Ø d 28	J_1	kgcm ²	6,80	5,56	5,10	4,74	4,55	-	-	-	-	-	-	-	-	-	-
	Ø d 32	J_1	kgcm ²	7,09	5,84	5,39	5,02	4,83	-	-	-	-	-	-	-	-	-	-
	Ø d 38	J_1	kgcm ²	8,94	7,69	7,24	6,85	6,67	-	-	-	-	-	-	-	-	-	-

MPRW				300														
Gear stages				1					2									
Ratio	i			3	4	5	7	10	12	16	20	25	28	35	40	50	70	100
Max. acceleration torque (max. 1000 cycles per hour)	T_{2bzul}	Nm		400	660	660	600	480	400	660	660	660	660	660	660	660	600	480
Nominal torque on output (with n_{1zul})	T_{2Nzul}	Nm		290	390	390	380	245	290	390	390	390	390	390	390	380	245	
Emergency stop torque (permissible 1000 times during gearbox life time)	$T_{2Notzul}$	Nm		1000	1400	1400	1400	1100	1000	1400	1400	1400	1400	1400	1400	1400	1400	1100
Permissible average input speed (with T_{2Nzul} and 20 °C ambient temperature)	n_{1mzul}	min ⁻¹		2100	2100	2100	2300	2600	2600	2900	2900	2900	2900	2900	2900	3200	3200	3900
Max. input speed	$n_{1maxzul}$	min ⁻¹		4000					4000									
Max. backlash*	j	arcmin		standard ≤ 3 / reduced ≤ 1					standard ≤ 5 / reduced ≤ 3									
Torsional rigidity [▲]	C	Nm/ arcmin		60					60									
Max. radial load** (with reference to shaft centre on output shaft)	F_{2rzul}	N		9450					9450									
Max. axial load** (with reference to shaft centre on output shaft)	F_{2azul}	N		9870					9870									
Weight	m	kg		17,3					19,0									
Running noise (with $n_1 = 3000$ min ⁻¹ without load)	L_{PA}	dB(A)		≤ 66					≤ 65									
Inertia (with reference to input)	Ø d 19	J_1	kgcm ²	-	-	-	-	-	2,70	2,46	2,26	2,20	2,14	2,12	2,11	2,08	2,07	2,06
	Ø d 24	J_1	kgcm ²	13,54	9,72	8,27	7,14	6,46	3,22	2,98	2,78	2,72	2,66	2,63	2,62	2,59	2,58	2,58
	Ø d 28	J_1	kgcm ²	15,30	11,49	10,04	8,89	8,22	5,02	4,78	4,58	4,53	4,46	4,43	4,42	4,39	4,38	4,38
	Ø d 32	J_1	kgcm ²	15,61	11,79	10,34	9,20	8,53	5,30	5,07	4,87	4,81	4,74	4,71	4,71	4,68	4,66	4,66
	Ø d 38	J_1	kgcm ²	16,59	12,78	11,33	10,16	9,48	7,16	6,92	6,72	6,66	6,58	6,55	6,54	6,51	6,50	6,49
	Ø d 42	J_1	kgcm ²	23,09	19,27	17,82	16,66	15,98	-	-	-	-	-	-	-	-	-	-
	Ø d 48	J_1	kgcm ²	25,47	21,65	20,20	19,04	18,37	-	-	-	-	-	-	-	-	-	-

[▲]with reference to output

* measured with 2 % nominal torque on output shaft

**charge centre of output shaft at output speed 250 min⁻¹. Please contact us for combined load applications

All technical modifications are just valid for the gearboxes in the rack and pinion drive.

MPRW 04 – 05 TECHNICAL DATA

MPRW				04												
Gear stages			1					2								
Ratio	i		3	4	5	7	10	12	16	20	28	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	T _{2bzul}	Nm	880	1100	1100	1100	880	1100	1100	1100	1100	1100	1100	1100	880	
Nominal torque on output (with n _{1Nzul})	T _{2Nzul}	Nm	420	550	550	550	340	550	550	550	550	550	550	550	340	
Emergency stop torque (permissible 1000 times during gearbox life time)	T _{2Notzul}	Nm	2200	2750	2750	2750	2200	2750	2750	2750	2750	2750	2750	2750	2200	
Permissible average input speed (with T _{2Nzul} and 20 °C ambient temperature)	n _{1mzul}	min ⁻¹	1400	1700	1700	2400	2400	2700	2700	2700	2900	2900	2900	3500	3500	
Max. input speed	n _{1maxzul}	min ⁻¹	4000					4000								
Max. backlash*	j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5								
Torsional rigidity▲	C	Nm/arcmin	145					125								
Max. radial load** (with reference to shaft centre on output shaft)	F _{2rzul}	N	14000					14000								
Max. axial load** (with reference to shaft centre on output shaft)	F _{2azul}	N	13500					13500								
Weight	m	kg	29					32								
Running noise (with n ₁ = 3000 min ⁻¹ without load)	L _{PA}	dB(A)	≤ 70					≤ 70								
Inertia (with reference to input)	Ø d 28	J ₁	kgcm ²	29,42	22,06	19,46	17,45	16,44	7,15	6,69	5,84	5,15	5,1	4,79	4,77	4,76
	Ø d 38	J ₁	kgcm ²	29,38	22,02	19,41	17,4	16,39	8,07	7,61	6,76	6,07	6,02	5,71	5,69	5,68
	Ø d 42	J ₁	kgcm ²	38,71	31,35	28,74	26,73	25,72	–	–	–	–	–	–	–	–
	Ø d 48	J ₁	kgcm ²	38,36	31	28,39	26,38	25,37	–	–	–	–	–	–	–	–

MPRW			05													
Gear stages			1					2								
Ratio	i		3	4	5	7	10	12	16	20	28	35	50	70	100	
Max. acceleration torque (max. 1000 cycles per hour)	T _{2bzul}	Nm	1500	1900	1900	1900	1500	1900	1900	1900	1900	1900	1900	1900	1500	
Nominal torque on output (with n _{1Nzul})	T _{2Nzul}	Nm	750	1000	1000	1000	620	1000	1000	1000	1000	1000	1000	1000	620	
Emergency stop torque (permissible 1000 times during gearbox life time)	T _{2Notzul}	Nm	3800	4750	4750	4750	3800	4750	4750	4750	4750	4750	4750	4750	3800	
Permissible average input speed (with T _{2Nzul} and 20 °C ambient temperature)	n _{1mzul}	min ⁻¹	1200	1400	1400	2200	2200	2500	2500	2500	2500	2500	2500	3000	3000	
Max. input speed	n _{1maxzul}	min ⁻¹	3500					3500								
Max. backlash*	j	arcmin	standard ≤ 6 / reduced ≤ 3					standard ≤ 8 / reduced ≤ 5								
Torsional rigidity [▲]	C	Nm/ arcmin	225					195								
Max. radial load** (with reference to shaft centre on output shaft)	F _{2rzul}	N	18000					18000								
Max. axial load** (with reference to shaft centre on output shaft)	F _{2azul}	N	22500					22500								
Weight	m	kg	50					53								
Running noise (with n ₁ = 3000 min ⁻¹ without load)	L _{PA}	dB(A)	≤ 70					≤ 70								
Inertia (with reference to input)	Ø d 28	J ₁	kgcm ²	55,95	35,18	27,5	21,36	18,62	23,42	22,12	19,27	17,35	17,2	16,32	16,26	16,23
	Ø d 38	J ₁	kgcm ²	55,6	34,83	27,15	21,01	18,27	23,37	22,08	19,22	17,3	17,15	16,27	16,21	16,18
	Ø d 42	J ₁	kgcm ²	69,37	48,6	40,92	34,78	32,04	32,71	31,41	28,55	26,63	26,48	25,6	25,54	25,51
	Ø d 48	J ₁	kgcm ²	68,15	47,38	39,7	33,56	30,82	32,35	31,06	28,2	26,28	26,13	25,25	25,19	25,16
	Ø d 55	J ₁	kgcm ²	66,01	45,24	37,57	31,43	28,69	–	–	–	–	–	–	–	–

[▲]with reference to output

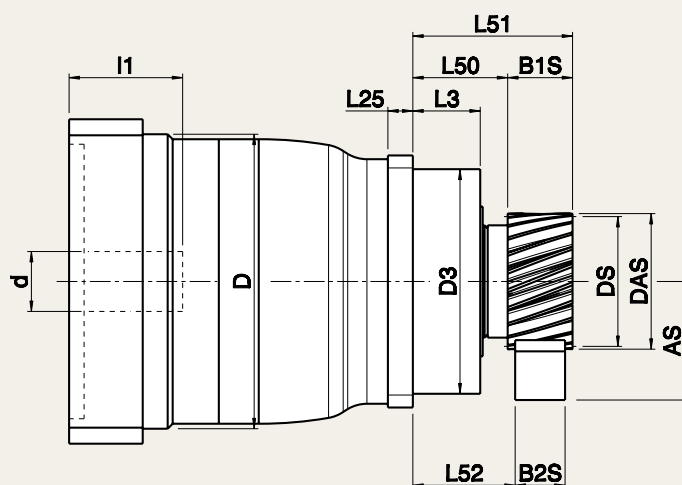
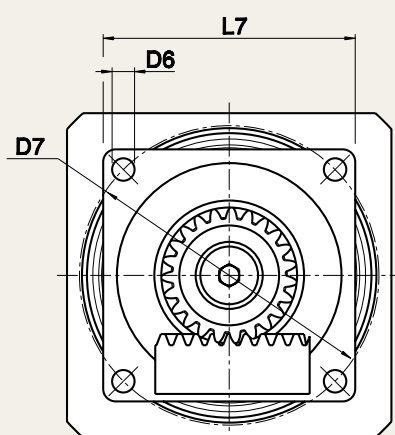
* measured with 2 % nominal torque on output shaft

**charge centre of output shaft at output speed 250 min⁻¹. Please contact us for combined load applications

All technical modifications are just valid for the gearboxes in the rack and pinion drive.



MPRW 050 - 300 DIMENSIONS 1-STAGE



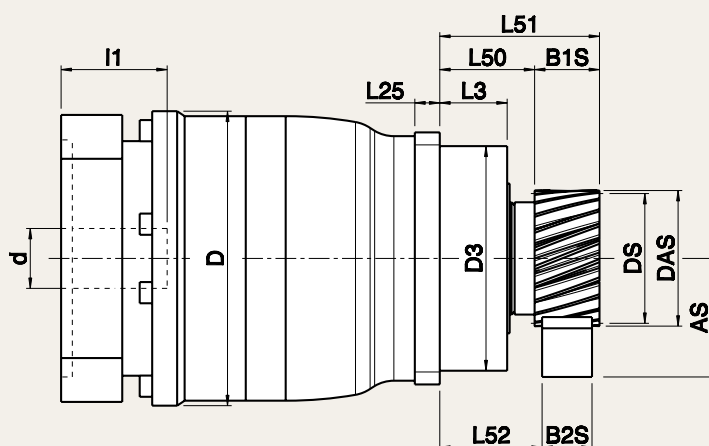
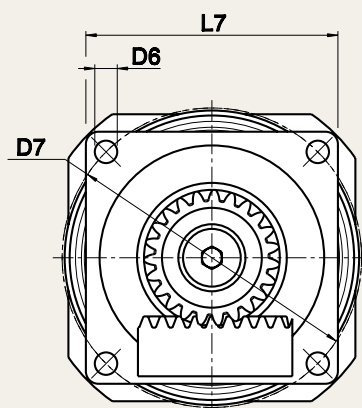
Gearbox dimensions

d x l1 F7	Size	Ratio	D	D3 g6	D6	D7	L3	L7	L25
11 x 23	050	3 – 10	72	60	5.5	68	18.0	62	6
14 x 30									
19 x 40									
11 x 23	100	3 – 10	94	70	6.6	85	17.5	76	7
14 x 30									
19 x 40									
24 x 50	200	3 – 10	120	90	9.0	120	27.0	101	10
19 x 40									
24 x 50									
28 x 60									
32 x 60									
38 x 80	300	3 – 10	154	130	11.0	165	27.0	141	12
24 x 50									
28 x 60									
32 x 60									
38 x 80									
42 x 110									
48 x 110									

Gearing data

Module	z	AS	B1S	B2S	DAS	DS	L50	L51	L52
2	15	38.9	26	24	37.83	31.83	26	52	27
	16	40.0			39.95	33.95			
	18	41.9			43.80	38.20			
2	18	41.9	26	24	43.80	38.20	27	53	28
	20	44.0			48.04	42.44			
	22	46.1			52.29	46.69			
2	23	47.2	26	24	54.41	48.81	38	64	39
	25	49.3			58.65	53.05			
	27	51.2			62.50	57.30			
3	20	59.0	31	29	72.06	63.66	50	81	51
	22	62.2			78.43	70.03			
	24	65.4			84.79	76.39			

MPRW 050 - 300 DIMENSIONS 2-STAGE



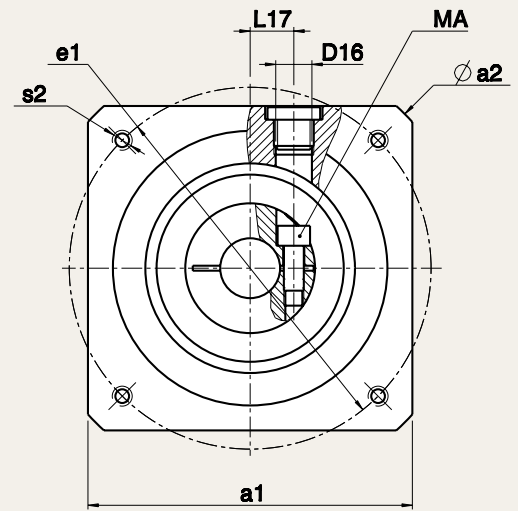
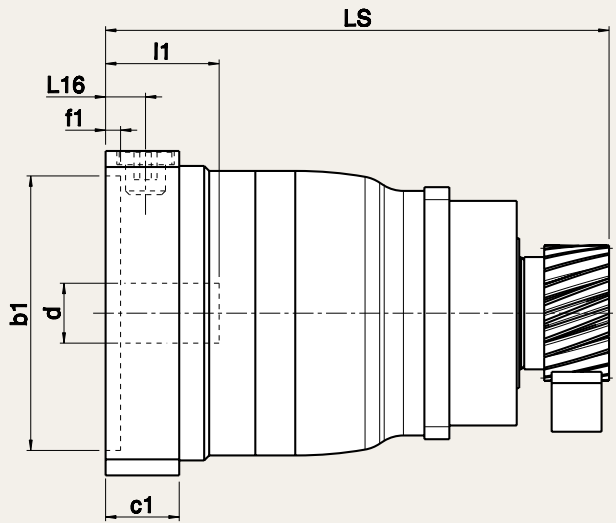
Gearbox dimensions

d x l1 F7	Size	Ratio	D	D3 g6	D6	D7	L3	L7	L25
11 x 23 14 x 30	050	12 - 100	72	60	5.5	68	18.0	62	6
11 x 23 14 x 30	100	12 - 100	94	70	6.6	85	17.5	76	7
11 x 23 14 x 30 19 x 40	200	12 - 100	120	90	9.0	120	27.0	101	10
19 x 40 24 x 50 28 x 60 32 x 60	300	12 - 100	152	130	11.0	165	27.0	141	12

Gearing data

Module	z	AS	B1S	B2S	DAS	DS	L50	L51	L52
2	15	38.9	26	24	37.83	31.83	26	52	27
	16	40.0			39.95	33.95			
	18	41.9			43.80	38.20			
2	18	41.9	26	24	43.80	38.20	27	53	28
	20	44.0			48.04	42.44			
	22	46.1			52.29	46.69			
2	23	47.2	26	24	54.41	48.81	38	64	39
	25	49.3			58.65	53.05			
	27	51.2			62.50	57.30			
3	20	59.0	31	29	72.06	63.66	50	81	51
	22	62.2			78.43	70.03			
	24	65.4			84.79	76.39			

MPRW 050 - 300 DIMENSIONS MOTOR MOUNTING 1-STAGE



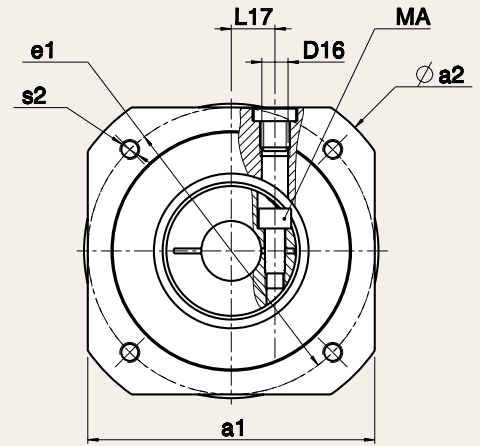
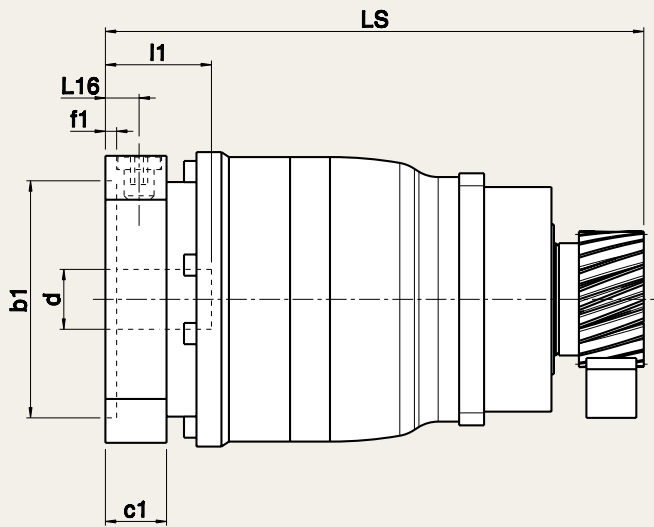
Gearbox dimensions

d x l1 F7	Size	LS	L16	L17	c1	f1	D16	Screw type	MA [Nm]
11 x 23	050	141.0	10.5	10	18.5	4.5	M10x1	M5 / 12.9	9
14 x 30		141.0	10.5	10 - 12	18.5	4.5	M10x1	M5 / 12.9	9
19 x 40		150.0	10.5	12 - 16	18.5	4.5	M10x1	M6 / 12.9	16
11 x 23	100	165.5	13.5	10	24.5	4.5	M12x1.5	M5 / 12.9	9
14 x 30		165.5	13.5	10 - 12	24.5	4.5	M12x1.5	M5 / 12.9	9
19 x 40		165.5	13.5	12 - 16	24.5	4.5	M12x1.5	M6 / 12.9	16
24 x 50		175.5	13.5	16 - 21	24.5	4.5	M12x1.5	M8 / 12.9	40
19 x 40	200	201.8	16.0	12 - 16	29.5	6.0	M16x1.5	M6 / 12.9	16
24 x 50		201.8	16.0	16 - 21	29.5	6.0	M16x1.5	M8 / 12.9	40
28 x 60		201.8	16.0	21 - 24	29.5	6.0	M16x1.5	M10 / 12.9	80
32 x 60		201.8	16.0	21 - 24	29.5	6.0	M16x1.5	M10 / 12.9	80
38 x 80		226.8	16.0	24 - 26	29.5	6.0	M16x1.5	M10 / 12.9	80
24 x 50	300	264.5	20.5	16 - 21	36.5	6.0	M20x1.5	M8 / 12.9	40
28 x 60		264.5	20.5	21 - 24	36.5	6.0	M20x1.5	M10 / 12.9	80
32 x 60		264.5	20.5	21 - 24	36.5	6.0	M20x1.5	M10 / 12.9	80
38 x 80		264.5	20.5	24 - 26	36.5	6.0	M20x1.5	M10 / 12.9	80
42 x 110		298.5	20.5	26	36.5	6.0	M20x1.5	M12 / 12.9	135
48 x 110		298.5	20.5	26	36.5	6.0	M20x1.5	M12 / 12.9	135

Motor dimensions																											
a1		75	75	75	95	95	75	75	95	75	95	95	120	115	120	120	130	130	150	140	150	160	150	160	200	250	
a2		90	90	90	120	120	90	90	120	102	120	120	120	140	140	140	160	160	160	186	190	186	190	186	190	250	300
b1	G8	40	40	50	50	50	60	60	60	60	70	70	80	80	95	95	95	110	110	110	110	110	110	130	130	180	230
e1		63	63	70	70	95	75	75	75	90	85	90	100	100	115	115	130	130	130	130	145	145	165	165	165	215	265
s2		M4 x8	M5 x10	M5 x10	M5 x10	M6 x12	M5 x10	M6 x12	M6 x12	M5 x10	M6 x12	M6 x12	M6 x12	M6 x12	M8 x16	M8 x16	M8 x16	M8 x16	M8 x16	M8 x16	M8 x16	M8 x16	M10 x20	M10 x20	M10 x20	M12 x24	M12 x24
											Ø7						Ø9								Ø11		

X	X	X			X	X		X																		
X	X	X			X	X		X	X		X		X													
											X		X				X									
			X	X			X																			
			X	X			X			X	X		X													
											X		X				X									
																	X					X				
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																	X		X		X					
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MPRW 050 - 300 DIMENSIONS MOTOR MOUNTING 2-STAGE



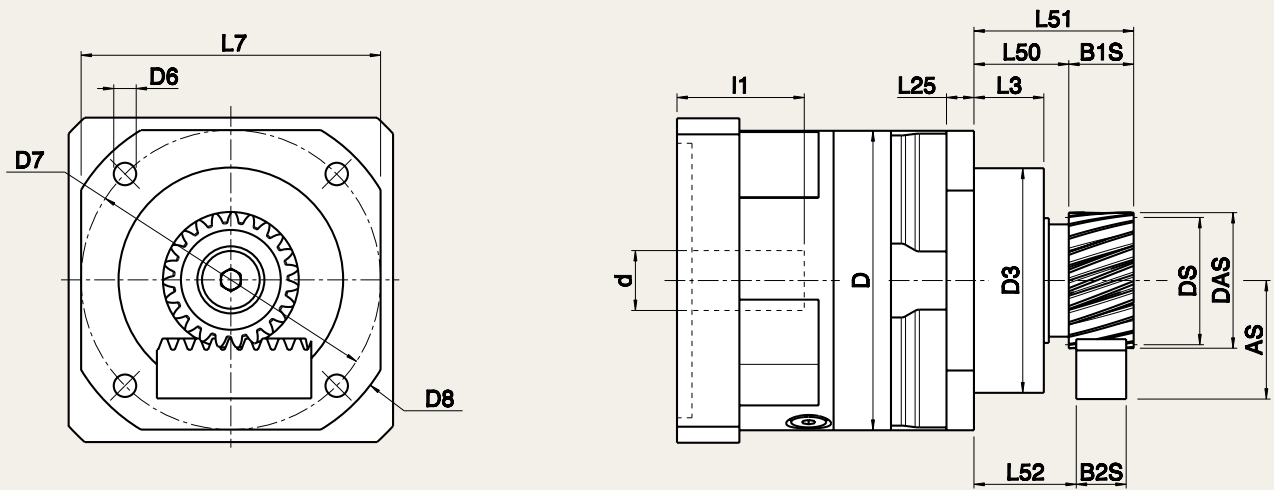
Gearbox dimensions

d x l1 F7	Size	LS	L16	L17	c1	f1	D16	Screw type	MA [Nm]
11 x 23	050	169.5	10.5	10	18.5	4.5	M10x1	M5 / 12.9	9
14 x 30		169.5	10.5	10 - 12	18.5	4.5	M10x1	M5 / 12.9	9
11 x 23	100	185.5	10.5	10	18.5	4.5	M10x1	M5 / 12.9	9
14 x 30		185.5	10.5	10 - 12	18.5	4.5	M10x1	M5 / 12.9	9
11 x 23	200	215.8	13.5	10	24.5	4.5	M12x1.5	M5 / 12.9	9
14 x 30		215.8	13.5	10 - 12	24.5	4.5	M12x1.5	M5 / 12.9	9
19 x 40		215.8	13.5	12 - 16	24.5	4.5	M12x1.5	M6 / 12.9	16
19 x 40	300	283.0	16.0	12 - 16	29.5	6.0	M16x1.5	M6 / 12.9	16
24 x 50		283.0	16.0	16 - 21	29.5	6.0	M16x1.5	M8 / 12.9	40
28 x 60		283.0	16.0	21 - 24	29.5	6.0	M16x1.5	M10 / 12.9	80
32 x 60		283.0	16.0	16 - 24	29.5	6.0	M16x1.5	M10 / 12.9	80

Motor dimensions																							
a1		75	75	75	95	95	75	75	95	75	95	95	95	120	115	120	120	130	130	140	160	160	200
a2		90	90	90	120	120	90	90	120	102	120	120	120	140	140	140	160	160	160	190	190	190	250
b1	G8	40	40	50	50	50	60	60	60	60	70	70	80	80	95	95	95	110	110	110	110	130	180
e1		63	63	70	70	95	75	75	75	90	85	90	100	100	115	115	130	130	130	145	165	165	215
s2		M4 x8	M5 x10	M5 x10	M5 x10	M6 x12	M5 x10	M6 x12	M6 x12	M5 x10	M6 x12	M6 x12	M6 x12	M8 x16	M8 x16	M8 x16	M8 x16	M8 x16	M8 x16	M10 x20	M10 x20	M12 x24	
											Ø7							Ø9				Ø11	

X	X	X			X	X		X														
X	X	X			X	X		X	X		X		X									
X	X	X			X	X		X														
X	X	X			X	X		X	X		X		X									
			X	X			X															
			X	X			X			X	X		X									
											X	X			X							
													X		X	X		X	X	X		
																	X	X	X		X	
																					X	X
																					X	X

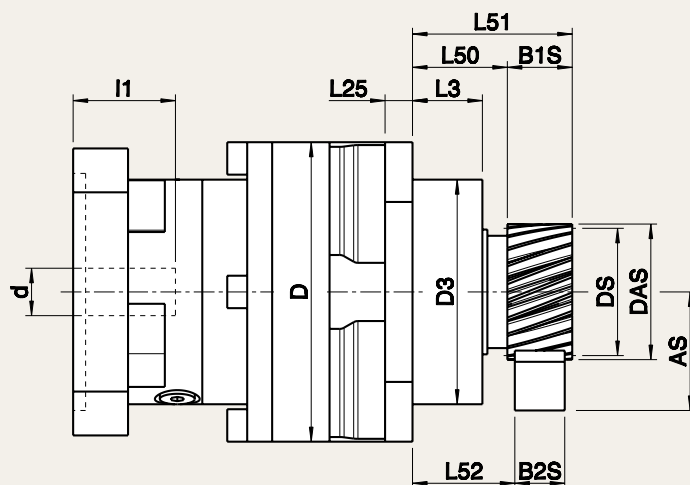
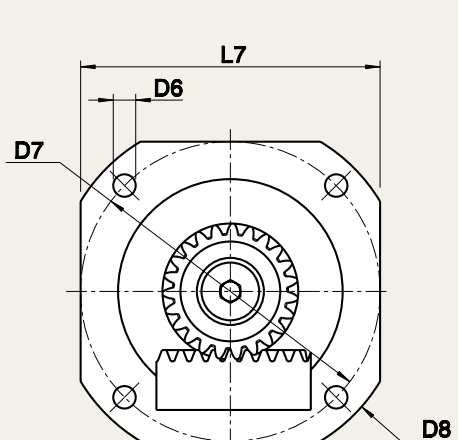
MPRW 04 - 05 DIMENSIONS 1-STAGE



Gearbox dimensions											
d x l1 F7	Size	Ratio	D	D3 g6	D6	D7	D8	L3	L7	L25	
28 x 60	04	3 - 10	185	160	13	215	245	27	180	15	
32 x 60											
38 x 80											
42 x 110											
48 x 110											
28 x 60	05	3 - 10	215	180	17	250	280	35	215	17	
32 x 60											
38 x 80											
42 x 110											
48 x 110											
55 x 110											

Gearing data									
Module	z	AS	B1S	B2S	DAS	DS	L50	L51	L52
4	20	79.0	41	39	96.08	84.88	43	84	44
4	25	89.4	41	39	116.82	106.10	62	103	63

MPRW 04 - 05 DIMENSIONS 2-STAGE



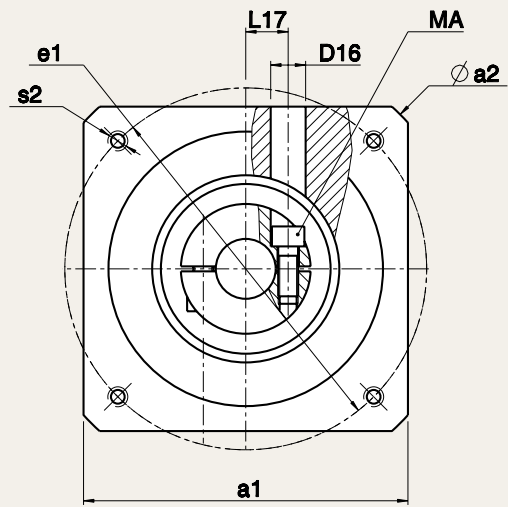
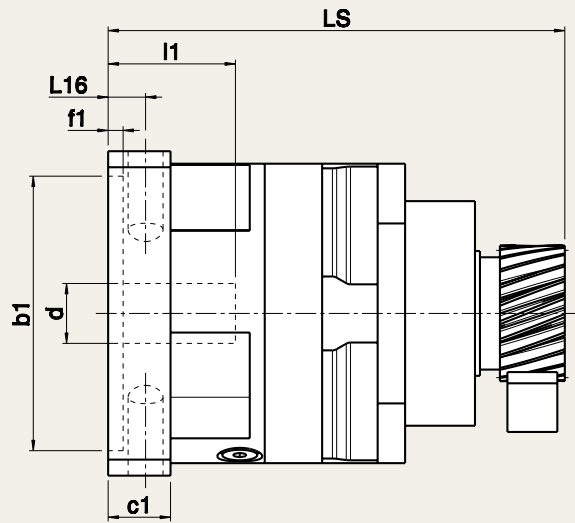
Gearbox dimensions

d x l1 F7	Size	Ratio	D	D3 g6	D6	D7	D8	L3	L7	L25
28 x 60	04	12 – 100	185	160	13	215	245	27	180	15
32 x 60										
38 x 80										
28 x 60	05	12 – 100	215	180	17	250	280	35	215	17
32 x 60										
38 x 80										
42 x 110										
48 x 110										

Gearing data

Module	z	AS	B1S	B2S	DAS	DS	L50	L51	L52
4	20	79.0	41	39	96.08	84.88	43	84	44
4	25	89.4	41	39	116.82	106.10	62	103	63

MPRW 04 - 05 DIMENSIONS MOTOR MOUNTING 1-STAGE



Gearbox dimensions

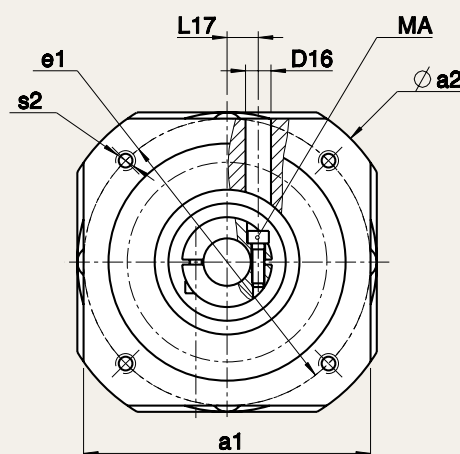
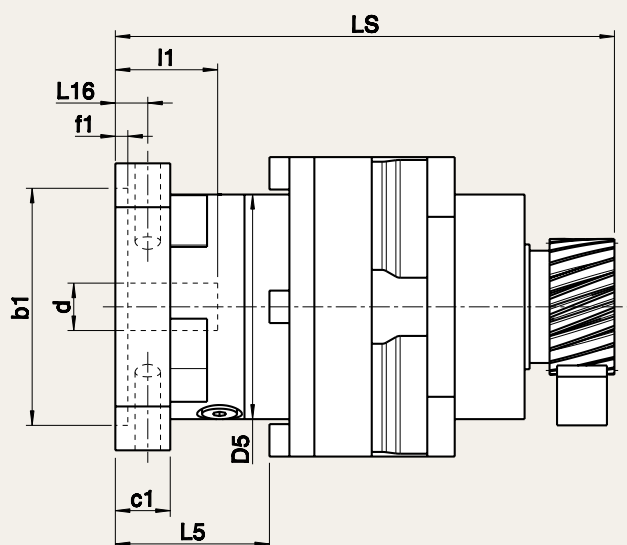
d x l1 F7	Size	LS	L16	L17	c1	f1	D16	Screw type	MA [Nm]
28 x 60	04	275.5	22.0	23	38.0	6.0	25.0	M10 / 12.9	80
32 x 60		275.5	22.0	23	38.0	6.0	25.0	M10 / 12.9	80
38 x 80		275.5	22.0	23	38.0	6.0	25.0	M10 / 12.9	80
42 x 110		305.5	22.0	23	38.0	6.0	25.0	M12 / 12.9	135
48 x 110		305.5	22.0	23	38.0	6.0	25.0	M12 / 12.9	135
28 x 60	05	315.0	22.0	27	38.0	6.0	25.0	M10 / 12.9	80
32 x 60		315.0	22.0	27	38.0	6.0	25.0	M10 / 12.9	80
38 x 80		315.0	22.0	27	38.0	6.0	25.0	M10 / 12.9	80
42 x 110		345.0	53.0	37	38.0	6.0	25.0	M12 / 12.9	135
48 x 110		345.0	53.0	37	38.0	6.0	25.0	M12 / 12.9	135
55 x 110		345.0	53.0	37	38.0	6.0	25.0	M12 / 12.9	135

Motor dimensions

a1	190	190	200	250	260	
a2	220	220	250	300	350	
b1	G8	110	130	180	230	250
e1		130	165	215	265	300
s2		M8 x16	M10 x20	M12 x24	M12 x24	M16 x32
		-	-	Ø14	Ø14	-

X	X	X	X	X
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X

MPRW 04 - 05 DIMENSIONS MOTOR MOUNTING 2-STAGE



Gearbox dimensions

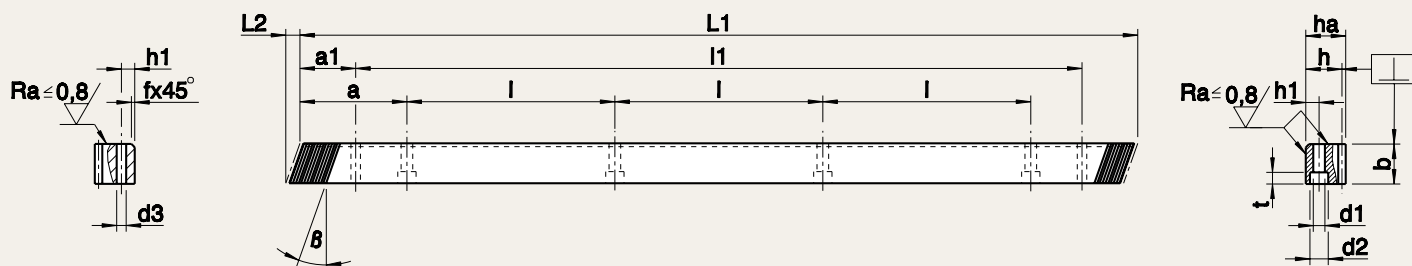
d x l1 F7	Size	LS	L16	L17	c1	f1	D5	L5	D16	Screw type	MA [Nm]
28 x 60	04	295.5	18.0	23	30.0	6.0	155	81	17.5	M10 / 12.9	80
32 x 60		295.5	18.0	23	30.0	6.0	155	81	17.5	M10 / 12.9	80
38 x 80		315.5	38.0	23	50.0	6.0	155	101	17.5	M10 / 12.9	80
28 x 60	05	368.0	22.0	27	38.0	6.0	185	118	25.0	M10 / 12.9	80
32 x 60		368.0	22.0	27	38.0	6.0	185	118	25.0	M10 / 12.9	80
38 x 80		368.0	22.0	27	38.0	6.0	185	118	25.0	M10 / 12.9	80
42 x 110		398.0	53.0	37	38.0	6.0	185	148	25.0	M12 / 12.9	135
48 x 110		398.0	53.0	37	38.0	6.0	185	148	25.0	M12 / 12.9	135

Motor dimensions

a1	160	190	160	190	200	250	260
a2	180	220	190	220	250	300	350
b1	G8	110	110	130	130	180	230
e1		130	130	165	165	215	265
s2	M8 x16	M8 x16	M10 x20	M10 x20	M12 x24	M12 x24	M16 x32
	Ø9	-	Ø11	-	Ø14	Ø14	-

X		X		X		
X		X		X		
X		X		X		
	X		X	X	X	X
	X		X	X	X	X
	X		X	X	X	X
	X		X	X	X	X
	X		X	X	X	X

MPRW 050 - 300 / 04 - 05 RACK DIMENSIONS



- Material 1.0503 [C45]
- Induction hardened 50-55 HRC
- Helix angle 19°31'42'' right-hand
- Angle of pressure 20°
- Toothing quality 5h23

Rack dimensions

Module	L1 Nominal	L2	z	b	ha	h	f +0.5	a	l	h1	d1	d2	t	a1	l1	d3	m [kg]	Part No.
2	500.00	8.5	75	24	24	22	2	62.5	125	8	7	11	7	31.7	436.6	5.7	2.1	143-020-405-5
2	1000.00	8.5	150	24	24	22	2	62.5	125	8	7	11	7	31.7	936.6	5.7	4.1	143-020-410-5
3	500.00	10.3	50	29	29	26	2	62.5	125	9	10	15	9	35.0	430.0	7.7	2.9	143-030-405-5
3	1000.00	10.3	100	29	29	26	2	62.5	125	9	10	15	9	35.0	930.0	7.7	5.9	143-030-410-5
4	506.66	13.8	38	39	39	35	2	62.5	125	12	10	15	9	33.3	433.0	7.7	5.4	143-040-405-5
4	1000.00	13.8	75	39	39	35	2	62.5	125	12	10	15	9	33.3	933.4	7.7	10.7	143-040-410-5





GEARBOX WITH KEYWAY CONNECTION TO THE PINION WITH RACK

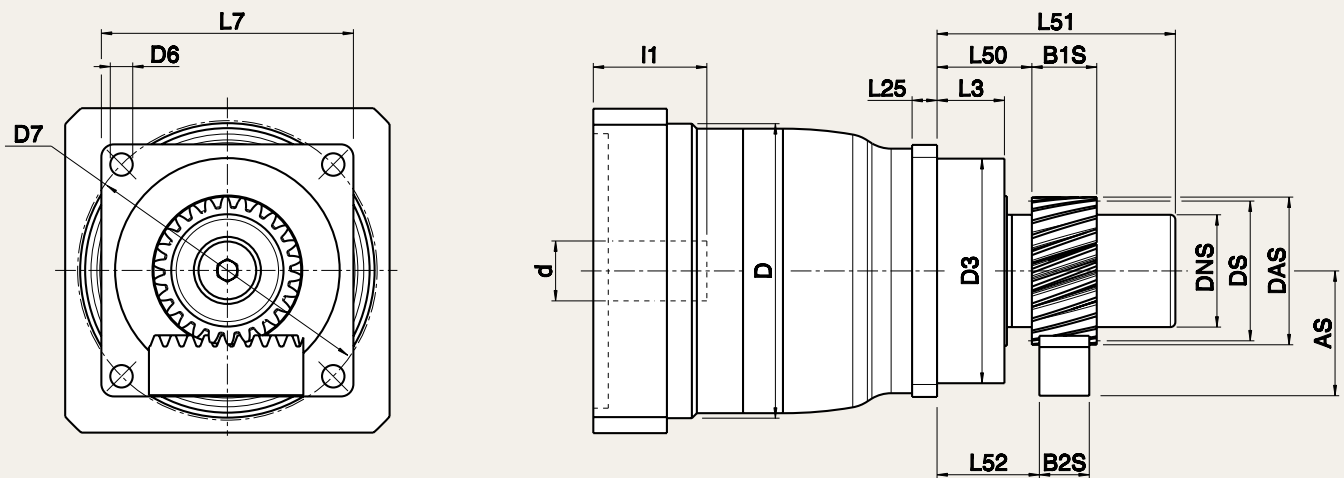
In practice, keyway connections have proved themselves economical and are convincing thanks to their simple fitting/removal. In addition, the precise and central seat of the hub is an advantage.

MPRN 050 - 300 TECHNICAL DATA

Gearbox ratio			3 / 12		4 - 10 16 - 100		3	16	100
Size	Module [mm]	z	F _{uzul} [N]	T _{2bzul} [Nm]	F _{uzul} [N]	T _{2bzul} [Nm]	V _{zul} [m/min]	V _{zul} [m/min]	V _{zul} [m/min]
050	2	18	1700	32	1800	34	240	45	7
100	2	22	3500	82	3500	82	290	55	8
200	2	26	5000	138	5000	138	260	49	8
300	3	24	9000	315	9000	315	290	55	8



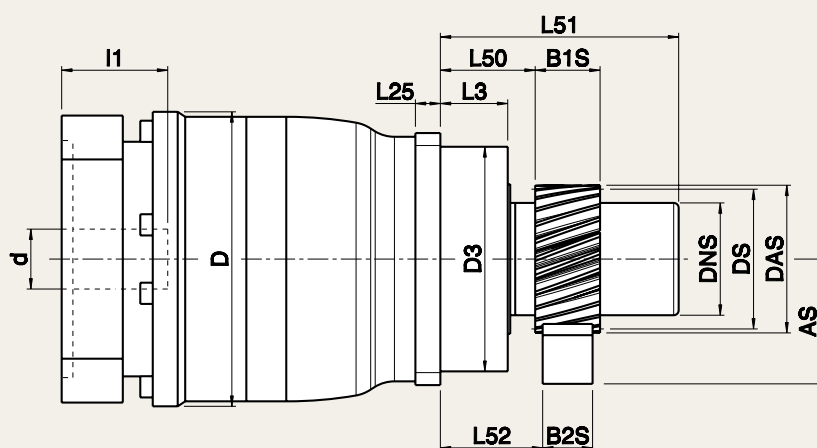
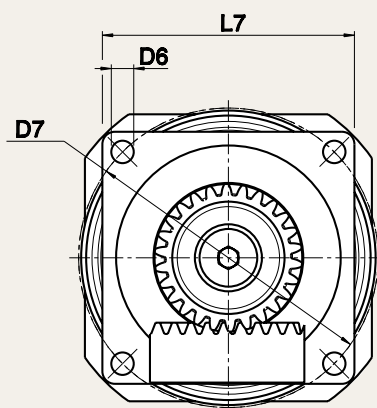
MPRN 050 - 300 DIMENSIONS 1-STAGE



Gearbox dimensions										
d x l1 F7	Size	Ratio	D	D3 g6	D6	D7	L3	L7	L25	
11 x 23	050	3 - 10	72	60	5.5	68	18.0	62	6	
14 x 30										
19 x 40										
11 x 23	100	3 - 10	94	70	6.6	85	17.5	76	7	
14 x 30										
19 x 40										
24 x 50	200	3 - 10	120	90	9.0	120	27.0	101	10	
19 x 40										
24 x 50										
28 x 60										
32 x 60										
38 x 80	300	3 - 10	154	130	11.0	165	27.0	141	12	
24 x 50										
28 x 60										
32 x 60										
38 x 80										
42 x 110										
48 x 110										

Gearing data										
Module	z	AS	B1S	B2S	DAS	DNS	DS	L50	L51	L52
2	18	41.9	26	24	43.80	-	38.20	26	52.0	27
2	22	45.7	26	24	51.49	40	46.69	27	62.0	28
2	26	49.6	26	24	59.17	45	55.17	38	95.5	39
3	24	64.2	31	29	82.39	58	76.39	50	122.0	51

MPRN 050 - 300 DIMENSIONS 2-STAGE



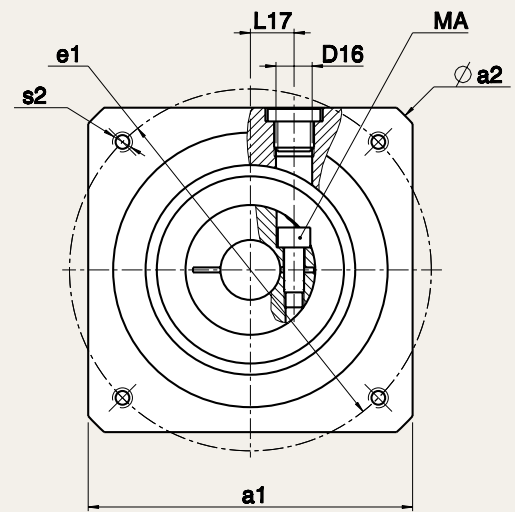
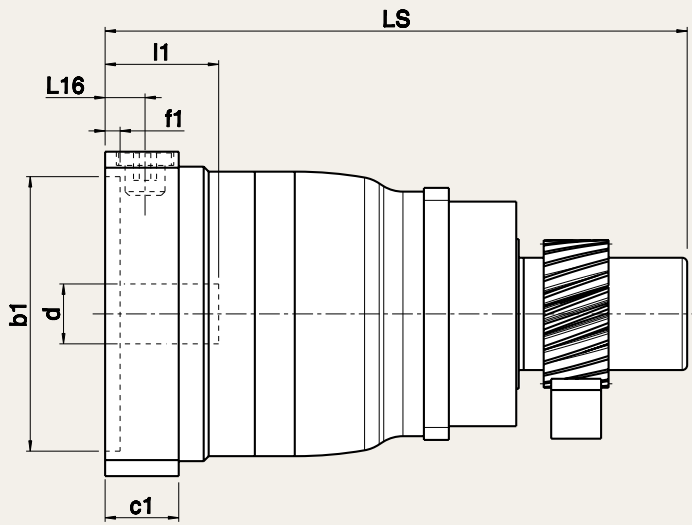
Gearbox dimensions

d x l1 F7	Size	Ratio	D	D3 g6	D6	D7	L3	L7	L25
11 x 23 14 x 30	050	12 - 100	72	60	5.5	68	18.0	62	6
11 x 23 14 x 30									
11 x 23 14 x 30	100	12 - 100	94	70	6.6	85	17.5	76	7
11 x 23 14 x 30									
11 x 23 14 x 30 19 x 40 19 x 40	200	12 - 100	120	90	9.0	120	27.0	101	10
24 x 50 28 x 60 32 x 60									
	300	12 - 100	152	130	11.0	165	27.0	141	12

Gearing data

Module	z	AS	B1S	B2S	DAS	DNS	DS	L50	L51	L52
2	18	41.9	26	24	43.80	-	38.20	26	52.0	27
	22	45.7	26	24	51.49	40	46.69	27	62.0	28
2	26	49.6	26	24	59.17	45	55.17	38	95.5	39
	24	64.2	31	29	82.39	58	76.39	50	122.0	51

MPRN 050 - 300 DIMENSIONS MOTOR MOUNTING 1-STAGE



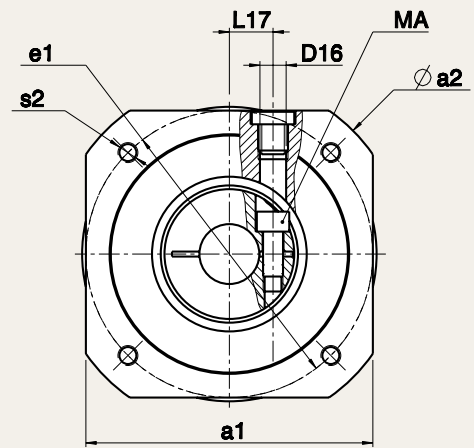
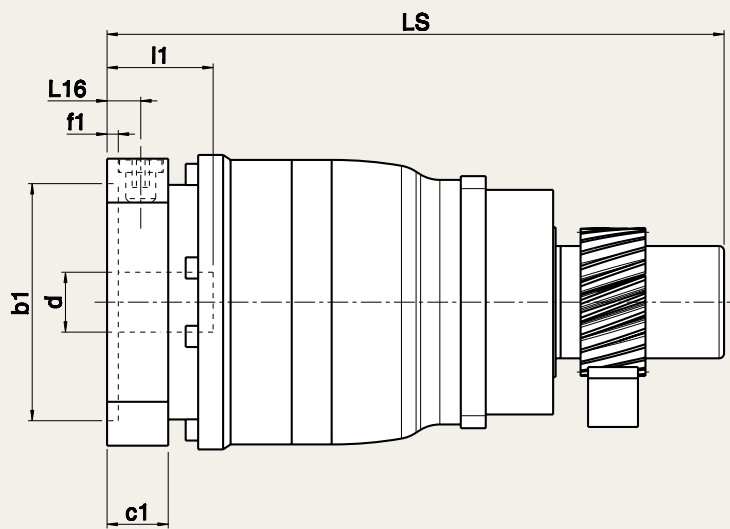
Gearbox dimensions

d x l1 F7	Size	LS	L16	L17	c1	f1	D16	Screw type	MA [Nm]
11 x 23	050	141.0	10.5	10	18.5	4.5	M10x1	M5 / 12.9	9
14 x 30		141.0	10.5	10 - 12	18.5	4.5	M10x1	M5 / 12.9	9
19 x 40		150.0	10.5	12 - 16	18.5	4.5	M10x1	M6 / 12.9	16
11 x 23	100	174.5	13.5	10	24.5	4.5	M12x1.5	M5 / 12.9	9
14 x 30		174.5	13.5	10 - 12	24.5	4.5	M12x1.5	M5 / 12.9	9
19 x 40		174.5	13.5	12 - 16	24.5	4.5	M12x1.5	M6 / 12.9	16
24 x 50		184.5	13.5	16 - 21	24.5	4.5	M12x1.5	M8 / 12.9	40
19 x 40	200	233.3	16.0	12 - 16	29.5	6.0	M16x1.5	M6 / 12.9	16
24 x 50		233.3	16.0	16 - 21	29.5	6.0	M16x1.5	M8 / 12.9	40
28 x 60		233.3	16.0	21 - 24	29.5	6.0	M16x1.5	M10 / 12.9	80
32 x 60		233.3	16.0	21 - 24	29.5	6.0	M16x1.5	M10 / 12.9	80
38 x 80		258.3	16.0	24 - 26	29.5	6.0	M16x1.5	M10 / 12.9	80
24 x 50	300	305.5	20.5	16 - 21	36.5	6.0	M20x1.5	M8 / 12.9	40
28 x 60		305.5	20.5	21 - 24	36.5	6.0	M20x1.5	M10 / 12.9	80
32 x 60		305.5	20.5	21 - 24	36.5	6.0	M20x1.5	M10 / 12.9	80
38 x 80		305.5	20.5	24 - 26	36.5	6.0	M20x1.5	M10 / 12.9	80
42 x 110		339.5	20.5	26	36.5	6.0	M20x1.5	M12 / 12.9	135
48 x 110		339.5	20.5	26	36.5	6.0	M20x1.5	M12 / 12.9	135

Motor dimensions																											
a1		75	75	75	95	95	75	75	95	75	95	95	120	115	120	120	130	130	150	140	150	160	150	160	200	250	
a2		90	90	90	120	120	90	90	120	102	120	120	140	140	140	160	160	160	186	190	186	190	186	190	250	300	
b1	G8	40	40	50	50	50	60	60	60	60	70	70	80	80	95	95	95	110	110	110	110	110	110	130	130	180	230
e1		63	63	70	70	95	75	75	75	90	85	90	100	100	115	115	130	130	130	130	145	145	165	165	165	215	265
s2		M4 x8	M5 x10	M5 x10	M5 x10	M6 x12	M5 x10	M6 x12	M6 x12	M5 x10	M6 x12	M6 x12	M6 x12	M6 x12	M8 x16	M8 x16	M8 x16	M8 x16	M8 x16	M8 x16	M8 x16	M8 x16	M10 x20	M10 x20	M10 x20	M12 x24	M12 x24
											Ø7							Ø9							Ø11		

X	X	X				X	X			X																	
X	X	X				X	X			X	X			X		X											
													X		X				X								
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MPRN 050 - 300 DIMENSIONS MOTOR MOUNTING 2-STAGE



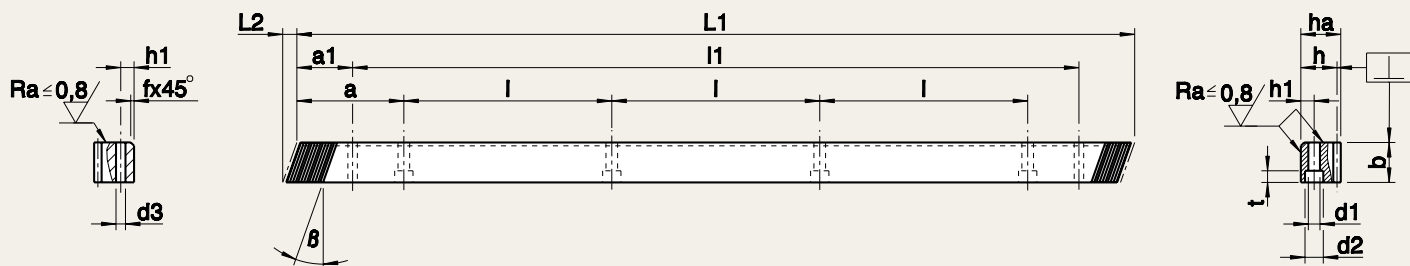
Gearbox dimensions

d x l1 F7	Size	LS	L16	L17	c1	f1	D16	Screw type	MA [Nm]
11 x 23	050	169.5	10.5	10	18.5	4.5	M10x1	M5 / 12.9	9
14 x 30		169.5	10.5	10 - 12	18.5	4.5	M10x1	M5 / 12.9	9
11 x 23	100	194.5	10.5	10	18.5	4.5	M10x1	M5 / 12.9	9
14 x 30		194.5	10.5	10 - 12	18.5	4.5	M10x1	M5 / 12.9	9
11 x 23	200	247.3	13.5	10	24.5	4.5	M12x1.5	M5 / 12.9	9
14 x 30		247.3	13.5	10 - 12	24.5	4.5	M12x1.5	M5 / 12.9	9
19 x 40		247.3	13.5	12 - 16	24.5	4.5	M12x1.5	M6 / 12.9	16
19 x 40	300	324.0	16.0	12 - 16	29.5	6.0	M16x1.5	M6 / 12.9	16
24 x 50		324.0	16.0	16 - 21	29.5	6.0	M16x1.5	M8 / 12.9	40
28 x 60		324.0	16.0	21 - 24	29.5	6.0	M16x1.5	M10 / 12.9	80
32 x 60		324.0	16.0	16 - 24	29.5	6.0	M16x1.5	M10 / 12.9	80

Motor dimensions																							
a1		75	75	75	95	95	75	75	95	75	95	95	95	120	115	120	120	130	130	140	160	160	200
a2		90	90	90	120	120	90	90	120	102	120	120	120	140	140	140	160	160	160	190	190	190	250
b1	G8	40	40	50	50	50	60	60	60	60	70	70	80	80	95	95	95	110	110	110	110	130	180
e1		63	63	70	70	95	75	75	75	90	85	90	100	100	115	115	130	130	130	145	165	165	215
s2		M4 x8	M5 x10	M5 x10	M5 x10	M6 x12	M5 x10	M6 x12	M6 x12	M5 x10	M6 x12	M6 x12	M6 x12	M6 x12	M8 x16	M8 x16	M8 x16	M8 x16	M8 x16	M8 x16	M10 x20	M10 x20	M12 x24
											Ø7							Ø9				Ø11	

X	X	X				X	X			X												
X	X	X				X	X			X	X		X		X							
X	X	X				X	X			X												
X	X	X				X	X			X	X		X		X							
				X	X				X													
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															X	X	X		X	X	X	
																					X	X
																					X	X

MPRN 050 - 300 RACK DIMENSIONS



- Material 1.0503 [C45]
- Induction hardened 50-55 HRC
- Helix angle 19°31'42'' right-hand
- Angle of pressure 20°
- Toothing quality 6h25

Rack dimensions

Module	L1 Nominal	L2	z	b	ha	h	f +0.5	a	l	h1	d1	d2	t	a1	l1	d3	m [kg]	Part No.
2	500.00	8.5	75	24	24	22	2	62.5	125	8	7	11	7	31.7	436.6	5.7	2.1	143-020-405
2	1000.00	8.5	150	24	24	22	2	62.5	125	8	7	11	7	31.7	936.6	5.7	4.1	143-020-410
3	500.00	10.3	50	29	29	26	2	62.5	125	9	10	15	9	35.0	430.0	7.7	2.9	143-030-405
3	1000.00	10.3	100	29	29	26	2	62.5	125	9	10	15	9	35.0	930.0	7.7	5.9	143-030-410
4	506.66	13.8	38	39	39	35	2	62.5	125	12	10	15	9	33.3	433.0	7.7	5.4	143-040-405
4	1000.00	13.8	75	39	39	35	2	62.5	125	12	10	15	9	33.3	933.4	7.7	10.7	143-040-410
4	2000.00	13.8	150	39	39	35	2	62.5	125	12	10	15	9	33.3	1933.4	7.7	21.4	143-040-420

LUBRICATION SYSTEM FOR RACKS AND PINIONS

Delivery and support by Herion Schmiersysteme GmbH,
 Puchheim, Germany, www.herion-schmiersysteme.de

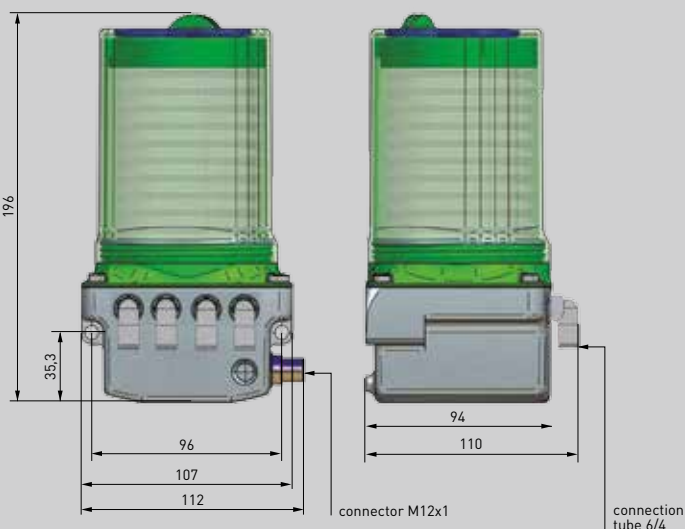
FlexxPump 400 DLS:

- Automatic and pulse-controlled relubrication-unit
- Direct controlled and error-monitoring by PLC
- Compact piston-pump (1 or 2 pump-bodies)
- Grease up to NLGI. 3 (with solid particles)
- Up to 4 outlets; max. 16 lubrication-points
- Different quantities of lubricant and lubrication intervals
- Operating pressure: up to 70 bar (1015 psi)
- 400 cc lubricant in bellow / cartridge
- Low weight and minimal current consumption
- Perfect for a combined relubrication of:
 - Racks/pinions drives; open gears
 - Linear guideways
 - Ball screw nuts
 - (Ball) bearings
 - Slewing rings

TECHNICAL DATA

Dimensions		112 x 196 x 94 [mm] B x H x T
Weight (excl. lubricant)		1120 g
Function principle		Piston pump
Volume of reservoir	Grease (types 400)	400 cc in bellow / cartridge
	Oil (types 500)	500 ml (direct filling)
Delivered volume per stroke/pulse	1 outlet	1 x 0.15 cc types: 401/501
	2 outlets	2 x 0.15 cc types: 402/422/502/522
	3 outlets	3 x 0.15 cc types: 403/503
	4 outlets	4 x 0.15 cc types: 404/504

Number of pump cycles per cartridge 400 cc		~ 2700
Operating pressure		Up to 70 bar (1015 psi)
Lubricant	Oil or grease	Up to NLGI. 3 (with solid particles)
Operation temperature		- 25 °C...+ 70 °C
Number of outlets		Up to 4; right-angled and pivotable
Number of lubrication points		Up to 16 * / **
Connection		PA-tube; Ø T=6x4
Operating voltage		24V DC (by cable)
Connecting plug		M12 x 1, 4-pole
Current consumption at 24V DC		I _{max} ≤ 350 mA
Installation position	Grease	Any
	Oil	Upright
Control	Integrated external	Microelectronic PLC
Pressure monitoring		Integrated, electronic
Fill level monitoring		Integrated, reed contact
Error-signal	PLC	Sophisticated: reservoir empty/back-pressure/internal error
	Optical	Optional: LED-Connector 90° (134-002-014 / -015)
IP class		IP 65
Material housing		Zinc, polyamide



* by using Splitters up to 16 lubrication-points;
 ** by using progressive-distributors > 16 lubrication-points.

LUBRICATION OF PINIONS AND RACKS

Lubrication of open spur gear drives and racks

For open gears systems in open drives, an automatic lubrication supply should be preferred. Exceptions are possible, in the case of very small modules, slow speed < 1m/s and little travel one-time manual lubrication is adequate here. Therefore, we offer adhering grease Herion F01 (or F 02 for an application in the food industry (with H1-approval)).

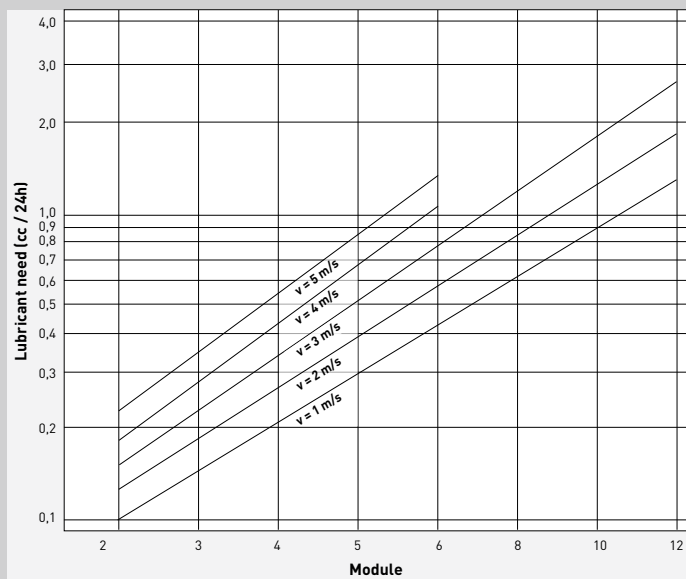
Automatic relubrication with polyurethane foamed pinions

A far better technical solution to relubricate the tooth system is an automatic and continuous spreading of the lubricant with polyurethane foamed pinions, which are brought into contact

with the drive gear or rack. The lubrication pinion does not transmit a torque – it only carries the grease to that part of the open gear system it touches.

The necessary relubrication amounts for different tooth systems with different running conditions is shown in the diagram below. Conditions for the validity of the values shown in the table below are the use of a suitable Herion polyurethane foamed pinion and a proper lubricant like Herion F01 or F02.

Lubricant need for lubrication with PU lubrication pinion



Lubrications & Lubrication tubes

Standard grease for open gears and bearings

Grease Herion F01

- Based on lithium/calcium complex with extreme pressure additives, which are combined with the soap structure so that an optimum adhesiveness to the metal surface is possible.
- Heat-resistant, good corrosion protection attributes, contains no solid components.

Operative ranges:

- Had been developed as special grease for high loaded open gears.
- Due to the high temperature properties usable for a wide range of applications, where high temperatures and high loads exist.
- Also recommended for ball bearings and roller bearings as well as for slide bearings/bushes and open gears.
- Temperature range -30 °C to +150 °C.

Description	Part No.
Individual cartridge for FlexxPump, pre-filled with 400 cm ³ grease Herion F01	000-101-104
Grease Herion F01, 1 kg tin	000-101-210
Grease Herion F01, 400 cc, standard cartridge	000-101-220
Tube 6x4; pre-filled with grease Herion F01; sold by meter	134-003-001
Tube 6x4, sold by meter	134-001-001
Tube 6x4; transparent; only for oil, sold by meter	134-004-002

Other lubricants (e.g. greases with H1-approval (F 02) or with solid particles (graphite) F 05: on demand! Further tubes (e.g. suitable for drag chains): on request!

PU LUBRICATION PINION

Technical specification lubrication pinion

The Herion lubrication pinions are made of open cellular polyurethane foam (temperature range -30 °C....+150 °C) and from Module 3 are constructed from several segments.

Choice of the correct lubrication pinion has to be decided by the design, if the lubrication pinion should be mounted on a rack or drive pinion. The mounting on the drive pinion should be preferred, because the distribution of lubrication is better than a lubrication of the rack.

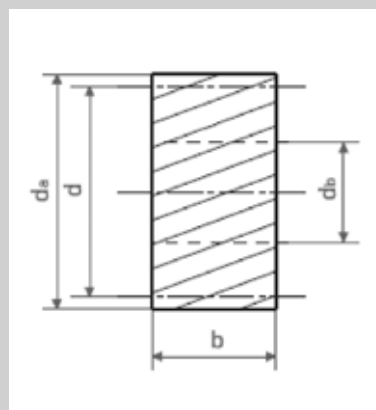
Using lubrication pinions of an open-cellular polyurethane foam material ensures an optimal supply of the open gear system over long distances. The material stores the lubricant and delivers it in smallest quantities.

This avoids over-lubrication as well as wear (as a consequence of insufficient lubrication).

PU lubrication pinion helical

- Helical; LH
- Helix angle 19° 31' 42''
- Material: open-cellular polyurethane foam

Module	z	da	d	db	b	Part No.
2.0	17	40.1	36.1	12.0	20.0	132-020-017
3.0	17	60.1	54.1	12.0	30.0	132-030-017
4.0	17	80.2	72.2	12.0	40.0	132-040-017



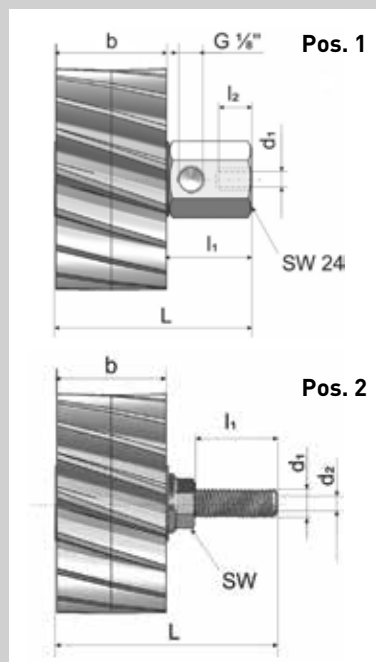
Mounting axes for PU lubrication pinions

- **Pos. 1:** Right-angled; connection for lubrication: radial
- **Pos. 2:** Straight; connection for lubrication: axial
- Material: steel

Other PU lubrication pinions and mounting axes in our huge stock program!

Special design (all parameters changeable): on request!

Module	L	l1	l2	d1	Connection	b	M (kg)	Part No.	Pos.
2.0	51.0	30.0	10	M 8	G 1/8"	20	0.14	133-020-001	1
3.0	61.0	30.0	10	M 8	G 1/8"	30	0.17	133-030-001	1
4.0	71.0	30.0	10	M 8	G 1/8"	40	0.20	133-040-001	1
2.0	61.0	30.0	-	M 10	M 6	20	0.08	133-020-002	2
3.0	71.0	30.0	-	M 10	M 6	30	0.11	133-030-002	2
4.0	81.0	30.0	-	M 10	M 6	40	0.14	133-040-002	2



TUBE-CONNECTION FOR MOUNTING AXES

Application:

Connection between lubrication points and plastic tubes from relubrication systems (FlexxPump 400/500).

Technical data:

- Working pressure: max. 80 bar
- Working temperature: 30° C...+100° C
- Fluid: Oil, grease
- Material: nickel-plated brass 58,
NBR, stainless steel

Features:

- Full flow for the fluid
- Very simple seal function through integrated O-rings with own seal
- Can be inserted and extracted with one hand
- Straight connectors with integrated hexagon socket
- All rotary elbow male adaptors can be rotated under pressure

Other tube-connectors at stock!

Straight tube-connectors

Thread G	Tube outer Ø T	AF	E	H	L	D	Part No.
M6	6 x 4	-	4	2.5	18.5	11	134-000-001
G 1/8"	6 x 4	11	6	4	18	-	134-000-002

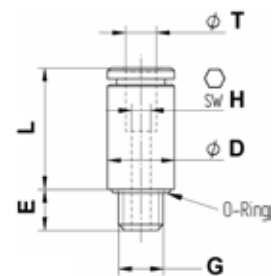
Right-angled tube-connectors, pivoted under pressure

Thread G	Tube outer Ø T	AF	E	D	A	L	Part No.
M6	6 x 4	9	5	11	21	16	134-001-001
G 1/8"	6 x 4	13	6	11	21	20	134-001-002

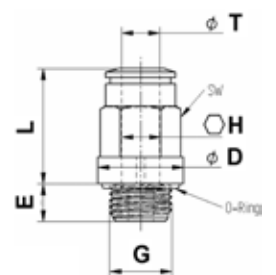
AF: Width across flats · **H:** Hexagon socket

- Long standing experience and know-how of transmission technology and lubrication
- Reviewed and proven quality „made in Germany“
- Conceptual design, dimensioning and calculation of the relubrication amounts for the respective application
- CAD-datasets for design and documentation
- Standard parts in stock
- Wide selection of accessoires and connectors (in stock)
- Pre-finished, pre-filled and de-aerated components (on request)
- Installation Service on site (on request)
- Special design & own engineering; all parameters chosen freely, fast delivery and attractive prices - also for low quantities (on request).

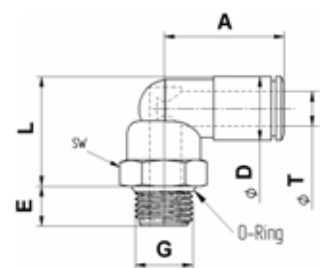
Herion Schmiersysteme GmbH | Zeppelinstraße 4 | 82178 Puchheim
Tel +49 89 / 8400823-0 | Fax +49 89 / 8400823-029
mail@herion-schmiersysteme.de | www.herion-schmiersysteme.de



134-000-001



134-000-002



134-001-001
134-001-002

ASSEMBLY INSTRUCTION PINION

- To keep the gearbox securely in position, the installation of the pinion should take place before mounting the motor.
- During assembly place the gearbox vertically, gearbox output shaft pointing upwards.
- Prior to assembly the output shaft and the mounting parts have to be degreased and cleaned.
- Evenly warm the pinion up to 80 °C, in order to achieve sufficient expansion.
- Carefully put the pinion on the gearbox output shaft and slide it into position with little force.

- Mount the disc and tighten the screw with screw tightening torque. Screw locking medium Loctite 243.

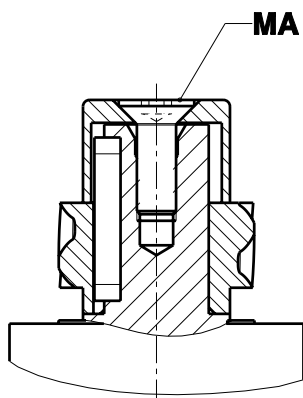
If the pinion jams during mounting, the tapped hole in the front face of the output shaft can be used.

High mounting forces caused by mounting presses must not be transferred through the gearbox output shaft to avoid any damage.

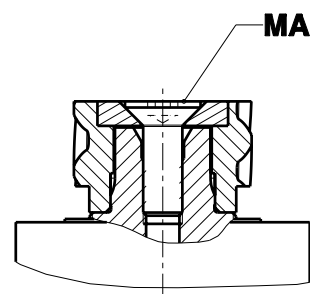
Data for the pinion mounting

Gearbox size	Screw type	MA
	ISO 10642 (DIN 7991)	(Nm)
050	M5 / 8.8	5.5
100	M8 / 8.8	22
200	M12 / 8.8	73
300	M16 / 8.8	184
04	M20 / 8.8	372
05	M20 / 8.8	372

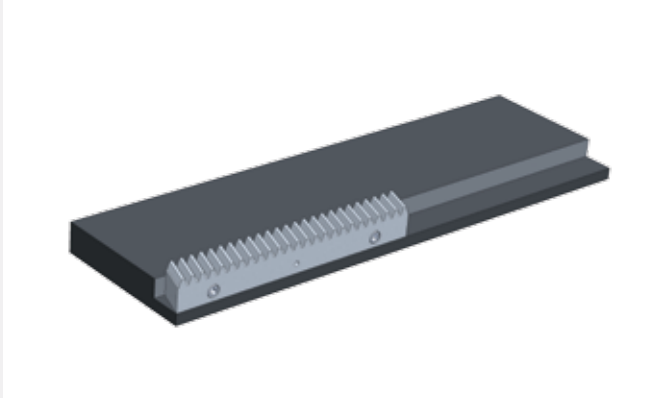
MPRN



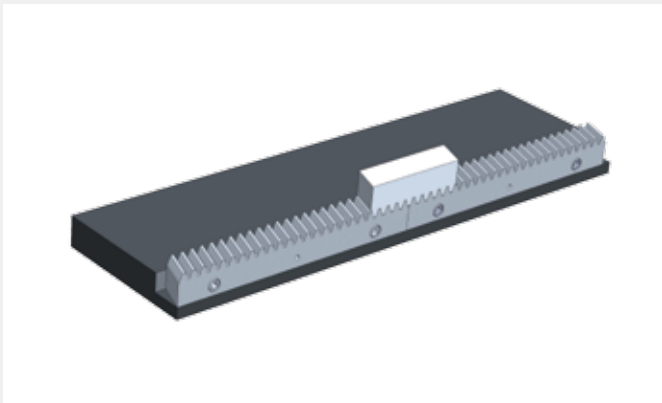
MPRW



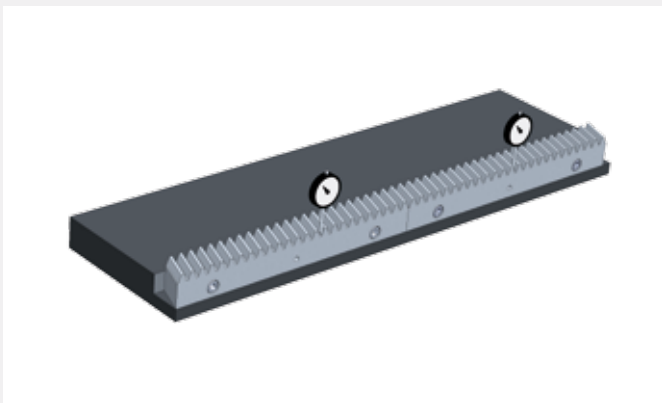
ASSEMBLY INSTRUCTION RACKS



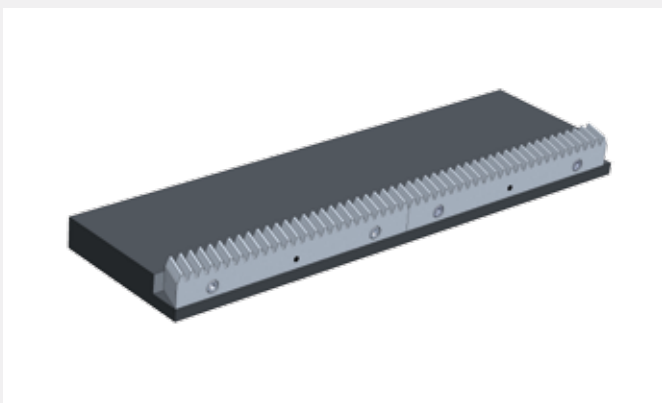
- Positioning and fixing of the rack (e.g. with screw clamps).
- Fixing of the rack with screws according to the defined torque.



- Connect another rack by means of a mounting piece (for mounting pieces, please see page 39).
- Fixing of the rack with screws according to the defined torque.

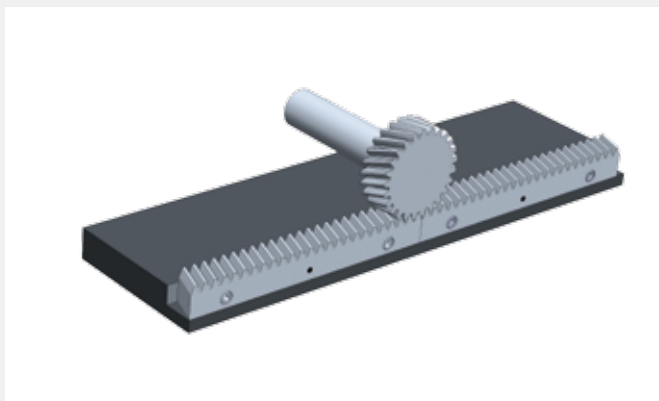


- After assembly, check the parallelism of the racks to each other and the transition from one to the other rack.
- Likewise, the correct alignment of the racks must be checked.



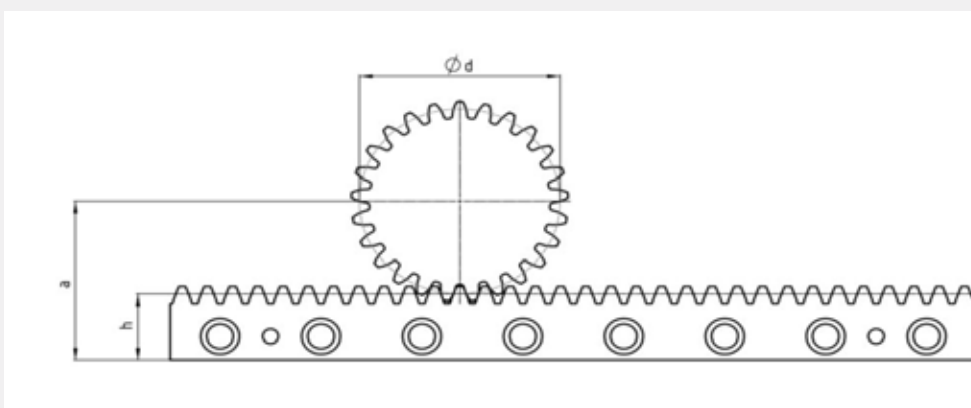
- Following the check, ream the register pins and pin the racks.

CENTER DISTANCE RACKS



The center distance a is determined by the distance between the center of the pinion to the back surface of the rack using the following formula:

$$a = \frac{z \cdot m}{2 \cdot \cos \beta} + x \cdot m + h$$



- a** = Running center distance
- z** = Number of teeth
- m** = Module
- β** = Helix angle
- x** = Addendum modification
- h** = Height of pitch line to the back surface

Mounting pieces

Mounting pieces, helical teeth

Material: steel 1.0503 [C45]

Helix angle 19°31'42'' left hand

Mounting pieces for racks – quality 5

Module	L1	b	Part No.
2	200	24	143-020-002
3	200	29	143-030-002
4	200	39	143-040-002

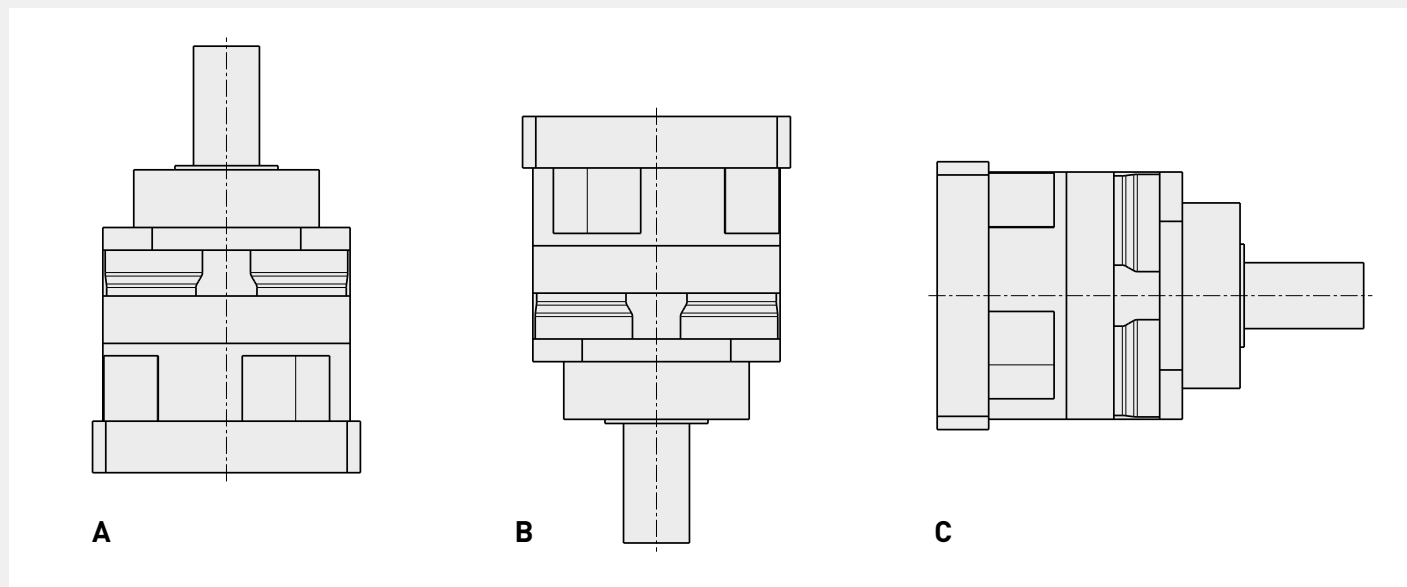
Mounting pieces for racks – quality 6

Module	L1	b	Part No.
2	200	24	143-020-003
3	200	29	143-030-003

RECOMMENDED OILS FOR GEARBOXES

Note: The following specifications are valid for gearboxes MPRW 04, MPRW 05

Mounting position: (Side under)



Lubrication

The planetary gearboxes are always oil-lubricated, and are supplied filled with oil. In our works the gearboxes are filled with a synthetic poly-alpha-olefin-based gear oil. The viscosity is 150 cSt. The quantity of oil filled is suitable for the mounting position specified in the order. If the oil quantity is unknown when the order is placed, the quantity suitable for vertical mounting position A is filled.

Subsequent change of mounting position

If it is necessary to change the mounting position later, the oil should always be completely drained from the gearbox for safety reasons. Then fill with oil according to our specifications (see following table) in line with the new mounting position. One of the recommended oils should be used for this (see table below).

Oil quantities for mounting position (cc)

Ratio	A		B		C	
	3 - 10	12 - 100	3 - 10	12 - 100	3 - 10	12 - 100
MPRW 04	550	800	550	800	200	350
MPRW 05	800	1400	800	1400	600	850

Recommended oils

Mobil	Optimol
Mobil SHC 629	Optigear Synthetic A 150

Or equivalent oils from other manufacturers.

CAUTION! Do not mix mineral and/or synthetic oil grades. This could damage the gearbox.

FORMULAE SYMBOLS AND INDICES

Designation	Unit	Symbol
Force	N	F
Ratio	-	i
Backlash	arcmin	j
Inertia	kgcm ²	J
Running noise	dB(A)	L _{PA}
Mass	kg	m
Rotary speed	min ⁻¹	n
Efficiency	%	η
Torque	Nm	T
Screw tightening torque	Nm	MA
Length	mm	L, l
Diameter	mm	D, d
Centre distance, system	mm	AS
Overall length, system	mm	LS
Tooth width, pinion	mm	B1S
Tooth width, rack	mm	B2S
Outside diameter, pinion	mm	DAS
Outer diameter, bushing	mm	DNS
Reference diameter, pinion	mm	DS
No. of teeth pinion / rack		z
Speed	m/min	v

Designation	Indices
Permissible value	perm
Input	1
Output	2
Acceleration	b
Average	m
Minimum	min
Maximum	max
Nominal	N
Emergency stop	ES
Radial	r
Circumference	u

INQUIRY AND ORDER FORM

The ordering party is responsible for testing and sizing the drive as well as mounting it in the machine. Since not all the relevant parameters are available, this order cannot be checked for correctness by the companies WMH Herion and Wilhelm Vogel Antriebstechnik.

Customer / Company

Country

Customer number

Contact person

Street

Phone

Fax

Postal code

e-mail

City

Date

☐

Inquiry

☐

Order

☐

Please contact me

Custom design:

☐

Yes

☐

No

Please note: if you answer "yes", please fill in additional information on page 43.

Validity of data is hereby confirmed:

Company stamp and signature:

Name in print

City

Date

Customer drawing:

Quantity:

Details of the system:

Precision: ☐ High Precision (MPRW)
☐ Precision (MPRN)

Gearbox size:

Ratio:

Load values for the overall system:

Travel speed [m/min]:

Tangential force [N]:

If the value for tangential force is not available, please specify the following values so that it can be calculated:

Mass [kg]:

Acceleration [m/s²]:

Process force [N]:

Mounting position of the rack: ☐ Vertical
☐ Horizontal

Friction coefficient in the guide [-]:

Further details of the gearbox:

Runtime h/day:

Starts/h:

Operating mode:

Ambient temperature: °C

Ambient air: ☐ Pure, free of particles
☐ Paper and textile fibres
☐ Dust
☐ Gas
☐ Other particles

Lubrication: ☐ Grease ☐ Oil
☐ mineral ☐ synthetic
☐ For use in the food industry

Side under:

Motor data:

Motor type:

Power [kW]:

Speed [min⁻¹]:

Shaft (d x l):

Pitch circle Ø (e1):

Centring Ø (b1):

Motor mounting (s2):

Square dimension (a1):

Details of the pinion:

Module:

No. of teeth:

Version for splined shaft connection ☐

Version for keyway connection ☐

Pre-mounted ☐ Loose ☐

Details of the rack:

Module:

Part No.:

Quantity:

Application area / Usage

Comment / Supplementary information / Requirements

Recorded by

Date

Return fax to Mr /Mrs

Fax

Return info per e-mail to

Your stamp:

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Wilhelm Vogel GmbH Antriebstechnik

Stattmannstr. 1 · 72644 Oberboihingen · Germany

Telefon +49 7022 / 60 01-0

Fax Distribution +49 7022 / 60 01-250

Fax Purchasing +49 7022 / 60 01-444

info@vogel-antriebe.de · www.vogel-antriebe.de



WMH Herion
part of your drive

WMH Herion Antriebstechnik GmbH

Stanglmühle 9-11 · 85283 Wolnzach · Germany

Telefon +49 8442 / 96 99-0

Telefax +49 8442 / 96 99-288

info@wmh-herion.de

www.wmh-herion.de