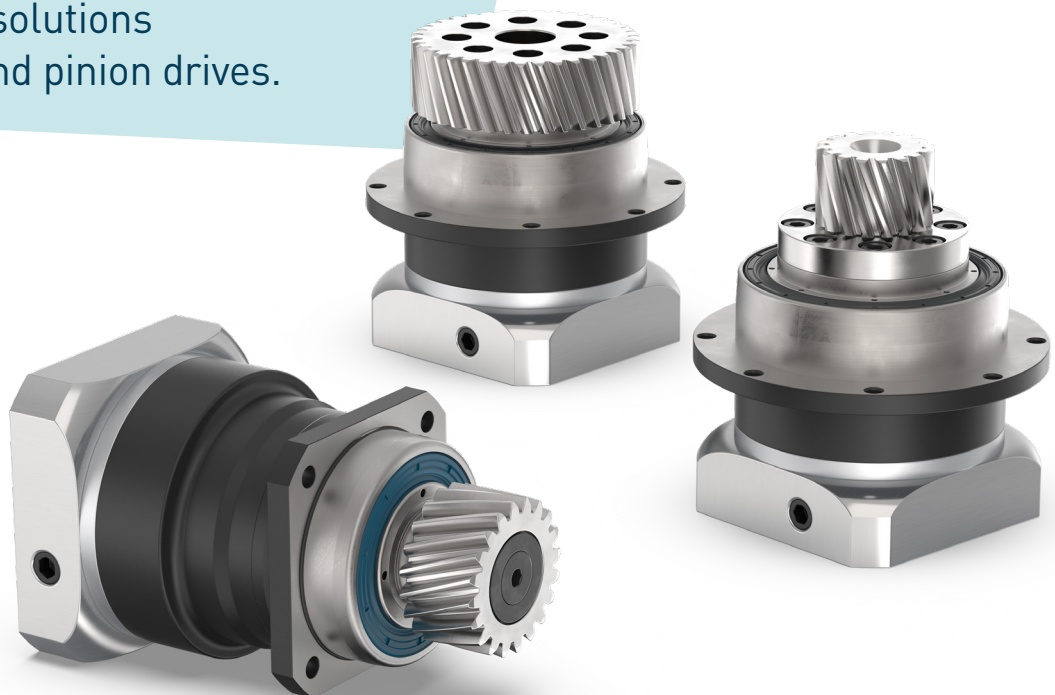




Planetary gearboxes with mounted pinion

Powerful solutions
for rack and pinion drives.



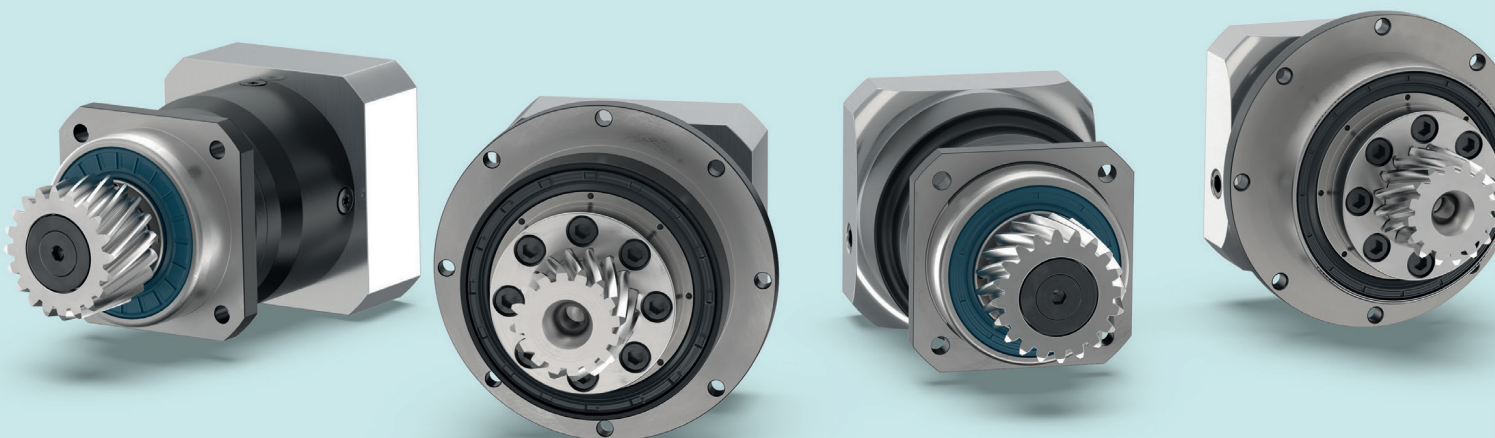
The integrated gearbox/pinion combination: Added value for your toothed rack applications.



A gearbox/pinion combination developed from a single source is the guarantee of ideal technical coordination for your rack and pinion drive.

The pinion is the essential element of the rack and pinion drive for converting the rotatory movement of the gearbox into a linear movement. The Neugart pinion is pre-mounted on the gearbox and secured with screws. This means that the compact unit consisting of the gearbox and the pinion can be quickly installed in the application, and less installation work is required.

Planetary gearboxes with a mounted pinion are available in many different combinations. The pinions, which are manufactured in-house, will fulfill your requirements with regard to dynamics, feed force and positioning accuracy with their precision gearing. This is how we ensure that the ideal solution is available for different applications.



Pinions with helical-cut and straight teeth

Three specific types of pinions are available for selection: the PK1 pinion is fitted to the toothed output shaft of the gearbox, whereby the required secure positive-fitted connection is provided by internal gearing in accordance with DIN 5480. The PM1 and PM2 pinions, on the other hand, are designed for gearboxes with flanged output shafts. The force is transmitted force-fitted using a mechanical interface that is standardized in accordance with ISO 9409-1. Both pinion types are available with helical-cut teeth, and the PK1 is also available with straight teeth.



Many possible combinations

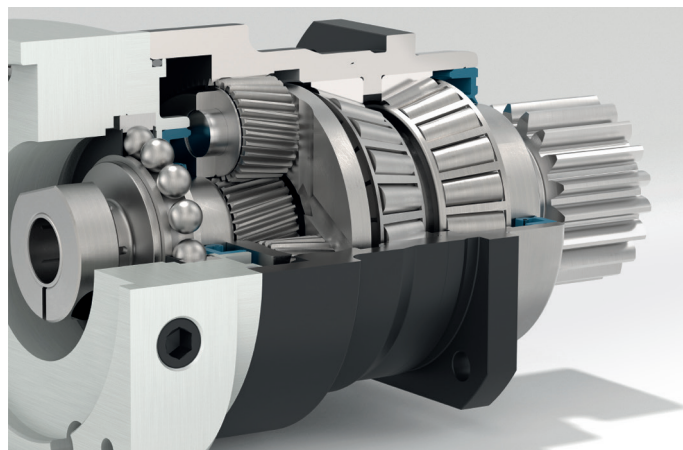
The pinions can be combined with a total of ten gearbox series. These include gearboxes from the Precision Line, which are designed for high precision. Four gearbox series are available for selection in the Economy Line, which include durable and powerful standard gearboxes with an outstanding price/performance ratio.



High load-bearing capacity

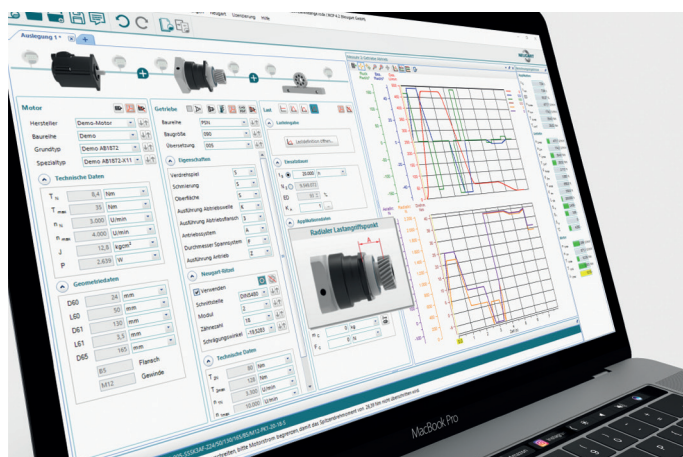
The gearboxes have a powerful output shaft bearing which has been developed with regard to the requirements of pinion applications. The tapered or inclined roller bearings that are used transmit the high levels of radial and axial force which can occur in the event of dynamic cycles with large loads.

A wide variety of gearbox models, frame sizes and ratios are available for this, in order to accurately depict the speed optimizations and torques that can be transmitted in combination with the pinion.



Simple CAD data configuration

All pinion gearboxes are integrated in the intuitively operated Tec Data Finder (TDF) configuration tool. This makes it possible for suitable components to be configured in an easy and time-saving way, and the CAD data for gearboxes with a mounted pinion is available within a very short time via email.



Quick design of gearbox/pinion/motor combinations

The application-specific motor/gearbox/pinion combination is designed using the powerful Neugart Calculation Program (NCP).

The application parameters of the rack and pinion system can be quickly entered into the predefined application screen. The gearbox with pinion is automatically selected from a database and the calculation is promptly displayed in the result bar. This allows convenient comparisons with similar gearbox and pinion combinations – and therefore quickly leads to the optimum solution.

PK1 Pinion Technical data

Pinion with helical teeth

Helix angle $\beta = -19,5283^\circ$ (rising to the left)

hardened and ground, Quality 6



Pinion type	Module	Number of teeth	Pitch circle diameter	Profile modification factor	Feed constant	Pinion weight	Max. torque	Max. feed force	Suitable for gearbox ⁽¹⁾					
									PSN	PLN	WPLN	PLHE	WPLHE	PLPE
	m	z	d_0	x	$d_0 \times \pi$	m_p	T_{vmax}	F_v						
	mm		mm		mm/U	kg	Nm	N						
PK1	1,5	19	30,239	0,30	95,00	0,11	68	4517	070	070	070	060	060	70
PK1	2	15	31,831	0,55	100,00	0,16	90	5650						
PK1	2	16	33,953	0,55	106,67	0,18	103	6060						
PK1	2	18	38,197	0,45	120,00	0,23	108	5540						
PK1	2	18	38,197	0,45	120,00	0,21	141	7380	090	090	090	080	080	90
PK1	2	20	42,441	0,45	133,33	0,27	183	8620						
PK1	2	22	46,686	0,45	146,67	0,33	200	8559						
PK1	2	23	48,808	0,45	153,33	0,32	229	9380						
PK1	2	25	53,052	0,45	166,67	0,39	250	9420	115	115	115	120	120	120
PK1	2	26	55,174	0,40	173,33	0,42	263	9534						
PK1	2	27	57,296	0,35	180,00	0,46	275	9590						
PK1	3	20	63,662	0,45	200,00	0,69	436	13701						
PK1	3	20	63,662	0,45	200,00	0,77	534	16770	142	142	142	-	-	155
PK1	3	22	70,028	0,45	220,00	0,94	602	17190						
PK1	3	24	76,394	0,45	240,00	1,12	660	17270						
PK1	4	20	84,883	0,40	266,67	1,64	1295	30510						
									190	190	-	-	-	-

Pinion with straight teeth

Helix angle $\beta = 0^\circ$

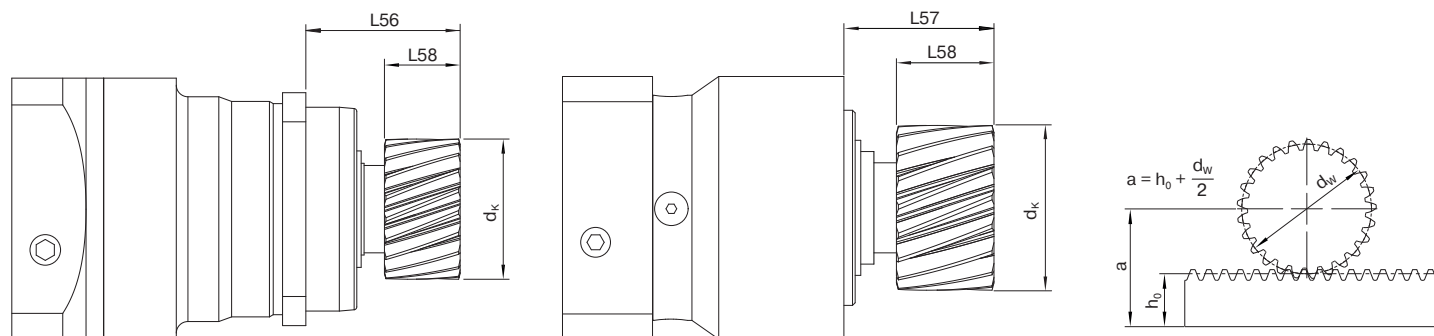
hardened and ground, Quality 6



Pinion type	Module	Number of teeth	Pitch circle diameter	Profile modification factor	Feed constant	Pinion weight	Max. torque	Max. feed force	Suitable for gearbox ⁽¹⁾					
									PSN	PLN	WPLN	PLHE	WPLHE	PLPE
	m	z	d_0	x	$d_0 \times \pi$	m_p	T_{vmax}	F_v						
	mm		mm		mm/U	kg	Nm	N						
PK1	1,5	20	30,00	0,30	94,25	0,11	43	2860	070	070	070	060	060	070
PK1	2	16	32,00	0,50	100,53	0,16	61	3810						
PK1	2	19	38,00	0,40	119,38	0,22	94	4947						
PK1	2	19	38,00	0,40	119,38	0,20	94	4940	090	090	090	080	080	090
PK1	2	22	44,00	0,30	138,23	0,28	133	6046						
PK1	3	17	51,00	0,40	160,22	0,40	225	8820						
PK1	3	22	66,00	0,20	207,35	0,71	397	12030	115	115	115	120	120	120
PK1	3	22	66,00	0,20	207,35	0,79	397	12030						
PK1	3	25	75,00	0,20	235,62	1,04	525	14000						
PK1	4	19	76,00	0,30	238,76	1,32	712	18730	142	142	142	-	-	155
PK1	4	22	88,00	0,20	276,46	1,71	986	22400						
PK1	5	19	95,00	0,40	298,45	2,38	1481	31170						
									190	190	-	-	-	-

⁽¹⁾ Application specific configuration with NCP. More information about the gearboxes can be found on the product pages or at www.neugart.com

PK1 Pinion Dimensions



PSN/PLN with pinion
(also applies to WPLN, PLHE and WPLHE)

PLPE with pinion

Pinion with helical teeth

Frame size	Pinion type	Module	Number of teeth	Tip diameter	Operating pitch circle diameter	Pinion width	Center distance ⁽¹⁾	Output shaft length with pinion	
		mm						mm	mm
		m	z	d_k	d_w	L58	a	L56	L57
		mm		mm	mm	mm	mm	mm	
060 / 070	PK1	1,5	19	34,06	31,14	21	33,10	51	39,1
	PK1	2	15	37,95	34,03	26	39,02	52	40,1
	PK1	2	16	40,07	36,15	26	40,08	52	40,1
	PK1	2	18	43,92	40,00	26	42,00	52	40,1
080 / 090	PK1	2	18	43,92	40,00	26	42,00	52	42,9
	PK1	2	20	48,16	44,24	26	44,12	53	42,9
	PK1	2	22	52,40	48,49	26	46,24	53	42,9
115 / 120	PK1	2	23	54,53	50,61	26	47,30	64	54
	PK1	2	25	58,74	54,85	26	49,43	64	54
	PK1	2	26	60,66	56,77	26	50,39	64	54
	PK1	2	27	62,59	58,70	26	51,35	64	54
	PK1	3	20	72,25	66,36	31	59,18	69,5	59,5
142 / 155	PK1	3	20	72,25	66,36	31	59,18	81	65,9
	PK1	3	22	76,62	72,73	31	62,36	81	65,9
	PK1	3	24	84,99	79,09	31	65,55	81	65,9
190	PK1	4	20	95,97	88,08	41	79,04	84	-

Pinion with straight teeth

Frame size	Pinion type	Module	Number of teeth	Tip diameter	Operating pitch circle diameter	Pinion width	Center distance ⁽¹⁾	Output shaft length with pinion	
		mm						mm	mm
		m	z	d_k	d_w	L58	a	L56	L57
		mm		mm	mm	mm	mm	mm	
060 / 070	PK1	1,5	20	33,82	30,90	21	32,95	51	39,1
	PK1	2	16	37,92	34,00	26	39,00	52	40,1
	PK1	2	19	43,52	39,60	26	41,80	52	40,1
080 / 090	PK1	2	19	43,52	39,60	26	41,80	53	42,9
	PK1	2	22	49,12	45,20	26	44,60	53	42,9
115 / 120	PK1	3	17	59,29	53,40	31	52,70	69,5	59,5
	PK1	3	22	73,09	67,20	31	59,60	69,5	59,5
142 / 155	PK1	3	22	73,09	67,20	31	59,60	81	59,5
	PK1	3	25	82,09	76,20	31	64,12	81	65,9
	PK1	4	19	86,29	78,40	41	74,20	84	68,9
190	PK1	4	22	97,49	89,60	41	79,80	84	-
	PK1	5	19	108,89	99,00	51	83,50	84	-

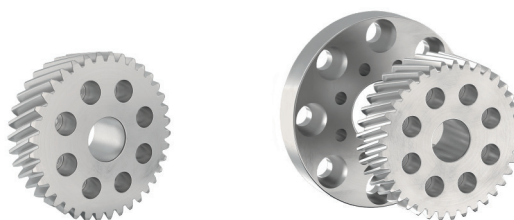
⁽¹⁾ For standard toothed rack height h_0 . Module 1,5 ($h_0=17,5$), Module 2 ($h_0=22$ mm), Module 3 ($h_0=26$ mm), Module 4 ($h_0=35$ mm), Module 5 ($h_0=34$ mm).

PM1 Pinion Technical data

Pinion with helical teeth

Helix angle $\beta = -19,5283^\circ$ (rising to the left)

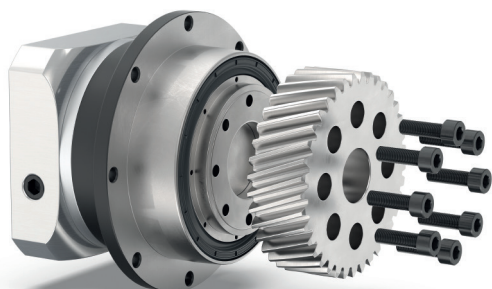
hardened and ground, Quality 6



Pinion type	Module	Number of teeth	Output flange (inclusive) ^{2) 3)}	Pitch circle diameter	Profile modification factor	Feed constant	Pinion weight	Max. feed force	Suitable for gearbox ^{(1) (2)}				
									PSFN	PLEN	WPSFN	PFHE	
	m	z		d_0	x	$d_0 \times \pi$	m_p	F_V					
	mm			mm		mm/U	kg	N					
PM1	2	26	–	55,174	0,40	173,33	0,43	2853	064	064	064	064	2)
PM1	2	27	–	57,296	0,35	180,00	0,47	2794					
PM1	2	26	064 → 090	55,174	0,40	173,33	0,60	2853	090	090	090	090	3)
PM1	2	27	064 → 090	57,296	0,35	180,00	0,64	2794					
PM1	2	35	064 → 090	74,272	0,35	233,33	1,00	2378					
PM1	2	37	–	78,517	0,35	246,67	0,89	4404	090	090	090	090	2)
PM1	2	26	064 → 110	55,174	0,40	173,33	0,76	2853	110	110	110	110	3)
PM1	2	27	064 → 110	57,296	0,35	180,00	0,79	2794					
PM1	2	35	064 → 110	74,272	0,35	233,33	1,16	2378					
PM1	2	40	–	84,883	0,35	266,67	0,94	7232	110	110	110	110	2)
PM1	2	45	–	95,493	0,30	300,00	1,25	6784					
PM1	2	37	090 → 140	78,517	0,35	246,67	1,54	4404	140	140	140	–	3)
PM1	3	31	090 → 140	98,676	0,35	310,00	2,40	3830					
PM1	3	35	–	111,409	0,35	350,00	2,18	13796	140	140	140	–	2)
PM1	3	40	–	127,324	0,35	400,00	2,92	12810					
PM1	4	30	–	127,324	0,20	400,00	3,67	12829					
PM1	3	35	140 → 200	111,409	0,35	350,00	4,20	13796	200	200	–	–	3)
PM1	3	40	140 → 200	127,324	0,35	400,00	4,93	12810					
PM1	4	30	140 → 200	127,324	0,20	400,00	5,68	12829					

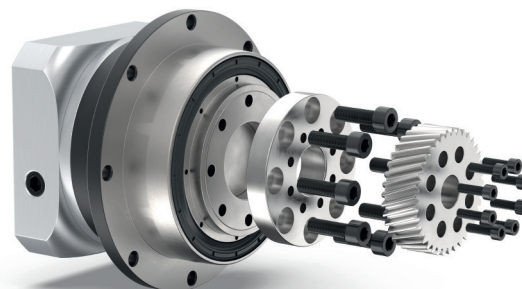
⁽¹⁾ Application specific configuration with NCP. More information about the gearboxes can be found on the product pages or at www.neugart.com

²⁾ Direct mounting of the pinion

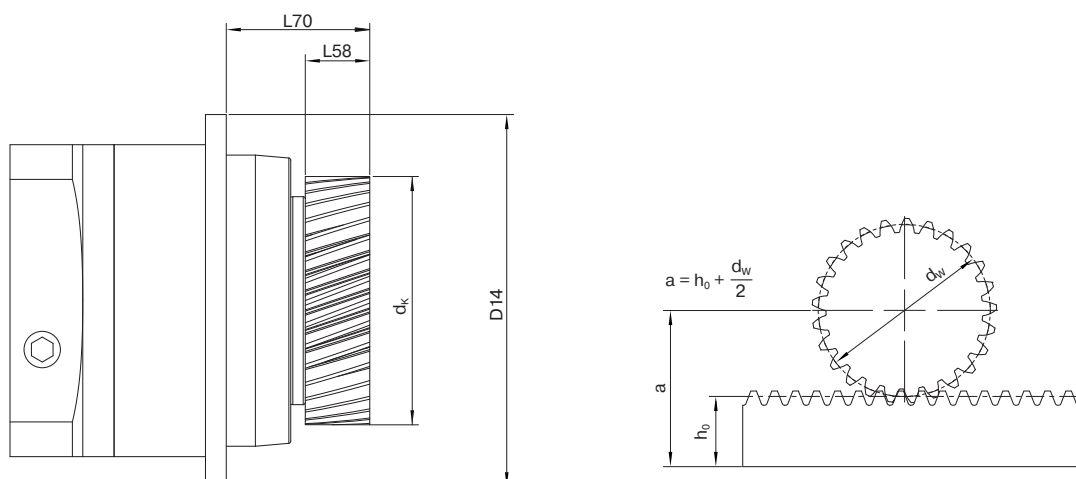


PSFN090 with PM1 pinion for gearbox frame size 090

³⁾ Use of an adapter flange for installing the pinion



PSFN090 with adapter flange (064 → 090) and PM1 pinion for gearbox frame size 064



Pinion with helical teeth

Frame size	Pinion type	Module	Number of teeth	Output flange (inclusive) ³⁾	Tip diameter	Operating pitch circle diameter	Center distance ⁽¹⁾	Pinion width	Flange diameter	Output shaft length with pinion
		m	z		dk	dw	a	L58	D14	L70
		mm			mm	mm	mm	mm	mm	
064	PM1	2	26	–	60,66	56,77	50,39	26	86	45,5
	PM1	2	27	–	62,59	58,70	51,35	26	86	45,5
090	PM1	2	26	064 → 090	60,66	56,77	50,39	26	118	66
	PM1	2	27	064 → 090	62,59	58,70	51,35	26	118	66
	PM1	2	35	064 → 090	79,56	75,67	59,84	26	118	66
	PM1	2	37	–	83,81	79,92	61,96	26	118	56
110	PM1	2	26	064 → 110	60,66	56,77	50,39	26	145	65
	PM1	2	27	064 → 110	62,59	58,70	51,35	26	145	65
	PM1	2	35	064 → 110	79,56	75,67	59,84	26	145	65
	PM1	2	40	–	90,17	86,28	65,14	26	145	55
	PM1	2	45	–	100,58	96,69	70,35	26	145	55
140	PM1	2	37	090 → 140	83,81	79,92	61,96	26	179	77
	PM1	3	31	090 → 140	106,67	100,78	76,39	31	179	82
	PM1	3	35	–	119,40	113,51	82,75	31	179	69
	PM1	3	40	–	135,27	139,42	90,71	31	179	69
	PM1	4	30	–	136,77	128,92	99,46	41	179	79
200	PM1	3	35	140 → 200	119,40	113,51	82,75	31	247	100
	PM1	3	40	140 → 200	135,27	129,42	90,71	31	247	100
	PM1	4	30	140 → 200	136,77	128,92	99,46	41	247	110

⁽¹⁾ For standard toothed rack height h_0 . Module 2 ($h_0 = 22$ mm), Module 3 ($h_0 = 26$ mm), Module 4 ($h_0 = 35$ mm).

PM2 Pinion Technical data

Pinion with helical teeth

Helix angle $\beta = -19,5283^\circ$ (rising to the left)

hardened and ground, Quality 6



Pinion type	Module	Number of teeth	Pitch circle diameter	Profile modification factor	Feed constant	Pinion weight	Max. torque	Max. feed force	Suitable for gearbox ⁽¹⁾			
									PSFN	PLFN	WPSFN	PFHE
	m	z	d_o	x	$d_o \times \pi$	m_p	T_{vmax}	F_v				
	mm		mm		mm/U	kg	Nm	N				
PM2	2	16	33,95	0,25	106,67	0,46	124	7300	090	090	090	090
PM2	2	20	42,44	0,45	133,33	0,81	226	10650	110	110	110	110
PM2	3	14	44,56	0,20	140,00	0,89	228	10230				
PM2	2	20	42,44	0,45	133,33	1,15	231	10930	140	140	140	-
PM2	3	17	54,11	0,45	170,00	3,16	349	12930				
PM2	3	17	54,11	0,45	170,00	1,41	349	12930	200	200	-	-
PM2	4	20	84,88	0,40	266,67	4,47	1279	30140				

Pinion with straight teeth

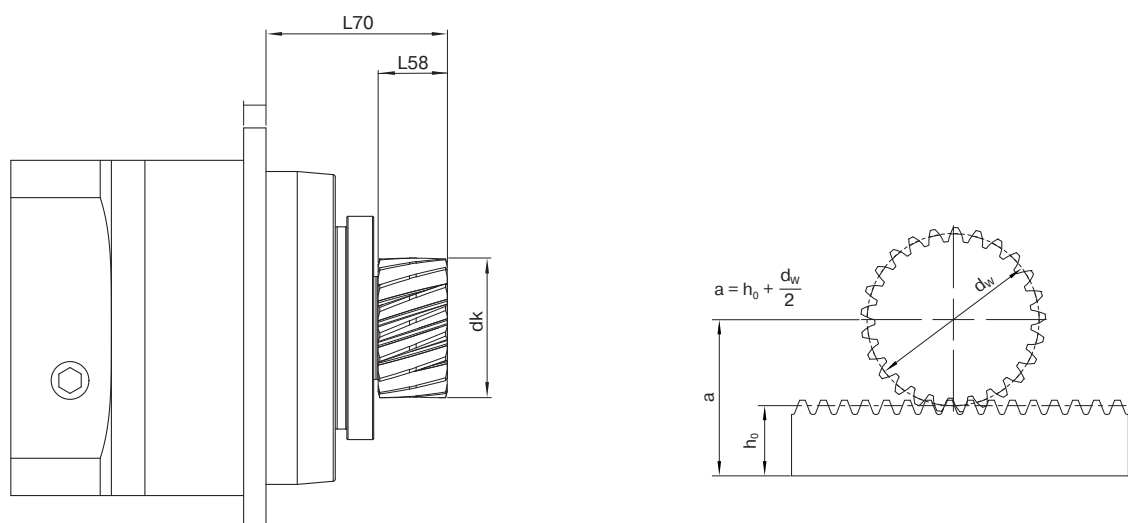
Helix angle $\beta = 0^\circ$

hardened and ground, Quality 6



Pinion type	Module	Number of teeth	Pitch circle diameter	Profile modification factor	Feed constant	Pinion weight	Max. torque	Max. feed force	Suitable for gearbox ⁽¹⁾			
									PSFN	PLFN	WPSFN	PFHE
	m	z	d_o	x	$d_o \times \pi$	m_p	T_{vmax}	F_v				
	mm		mm		mm/U	kg	Nm	N				
PM2	2	17	34,00	0,20	106,81	0,45	98	5780	090	090	090	090
PM2	2	22	44,00	0,40	138,23	0,82	194	8840	110	110	110	110
PM2	3	19	57,00	0,40	179,07	1,46	275	9650	140	140	140	-
PM2	4	22	88,00	0,20	276,46	4,54	847	19260	200	200	-	-
PM2	5	19	95,00	0,20	298,45	5,41	1304	27460				

⁽¹⁾ Application specific configuration with NCP. More information about the gearboxes can be found on the product pages or at www.neugart.com



Pinion with helical teeth

Frame size	Pinion type	Module	Number of teeth	Tip diameter	Operating pitch circle diameter	Pinion width	Center distance ⁽¹⁾	Output shaft length with pinion
		m	z	d_k	d_w	L58	a	L70
		mm		mm	mm	mm	mm	
090	PM2	2	16	38,87	34,95	26	39,48	66,45
110	PM2	2	20	48,16	44,24	26	44,12	67,45
110	PM2	3	14	51,68	45,76	31	43,88	72,45
140	PM2	2	20	48,16	44,24	26	44,12	77,45
140	PM2	3	17	62,70	56,81	31	49,41	101,00
200	PM2	3	17	62,70	56,81	31	49,41	83,00
200	PM2	4	20	95,97	88,08	41	64,04	111,00

Pinion with straight teeth

Frame size	Pinion type	Module	Number of teeth	Tip diameter	Operating pitch circle diameter	Pinion width	Center distance ⁽¹⁾	Output shaft length with pinion
		m	z	d_k	d_w	L71	a	L70
		mm		mm	mm	mm	mm	
090	PM2	2	17	38,72	34,80	26	39,40	66,45
110	PM2	2	22	49,52	45,60	26	44,80	67,45
140	PM2	3	19	65,29	59,40	31	50,70	83,00
200	PM2	4	22	97,49	89,60	41	64,80	111,00
200	PM2	5	19	106,89	97,00	51	67,50	121,00

⁽¹⁾ For standard toothed rack height h_0 . Module 2 ($h_0 = 22$ mm), Module 3 ($h_0 = 26$ mm), Module 4 ($h_0 = 35$ mm), Module 5 ($h_0 = 34$ mm).



Do you have any questions or need further information?

We are happy to advise you on all topics relating to drive technology.
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