

Neugart Rack System

Precision racks for the highest performance requirements

Neugart offers racks of the highest quality with straight or helical gearing. Our standard racks are made of induction-hardened, quenched and tempered steel, cover a module range from 1.5 to 5 mm, and comply with quality level 6.

The racks are heat-treated and ground to optimize their mechanical properties. The standard versions are available in lengths of 1000 mm and 2000 mm. Custom lengths are available upon request.



Planetary gearboxes with mounted pinion

Numerous combination options from three different pinion types with helical and straight teeth ensure that the ideal solution is available for every application.

The pinions can be paired with different gearbox types, including precision gearboxes for maximum accuracy, Economy gearboxes for maximum durability and efficiency, and right-angle planetary gearbox for special installation situations.

This allows you to benefit from maximum flexibility and technical coordination for a wide range of requirements.

PK1

- The PK1 pinion is mounted directly on the gearbox's toothed output shaft.
- The precise design of the internal spline in accordance with DIN 5480 enables optimum power transmission and ensures a permanently high level of connection reliability, even in demanding applications.



PM1

- The PM1 pinion is specially designed for gearboxes with flange output shafts.
- Thanks to its large circumference, the PM1 pinion enables particularly high feed rates.



PM2

- The PM2 pinion is specially designed for gearboxes with flange output shafts.
- Thanks to its low number of teeth, the PM2 pinion enables particularly high feed forces.



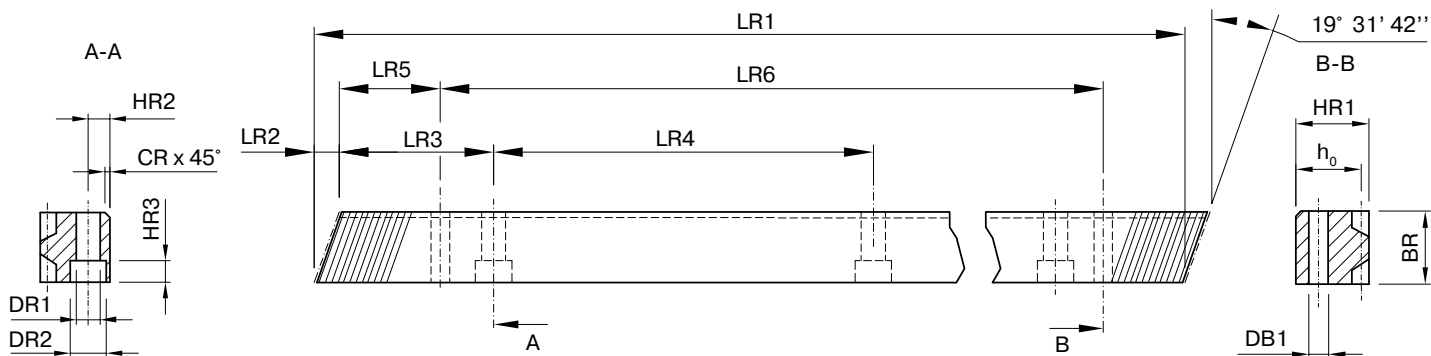
Helical rack

Helix angle $\beta = 19,5283^\circ$ (right-hand)

Neugart tempered steel, hardened (HRC 56-60)

Profile ground on all sides

Quality 6



Product code	m	LR1	LR2	LR3	LR4	LR5	LR6	BR	HR1	HR2	DB1	CR	DR1	DR2	HR3	h ₀	z	Number of mounting holes
mm																		
NRS15-6B1000-R1	1.5	1000	6.739	62.5	125	29.94	939.42	19	19	8	5.7	2	7	11	7	17.5	200	8
NRS20-6B1000-R1	2	1000	8.512	62.5	125	31.71	936.58	24	24	8	5.7	2	7	11	7	22	150	8
NRS20-6B2000-R1	2	2000	8.512	62.5	125	31.71	1936.58	24	24	8	5.7	2	7	11	7	22	300	16
NRS30-6B1000-R1	3	1000	10.286	62.5	125	34.99	930.02	29	29	9	7.7	2	9	15	9	26	100	8
NRS30-6B2000-R1	3	2000	10.286	62.5	125	34.99	1930.02	29	29	9	7.7	2	9	15	9	26	200	16
NRS40-6B1000-R1	4	1000	13.832	62.5	125	33.30	933.40	39	39	12	7.7	3	9	15	9	35	75	8
NRS40-6B2000-R1	4	2000	13.832	62.5	125	33.30	1933.40	39	39	12	7.7	3	9	15	9	35	150	16

Product code	Article no.	m	LR1	Weight
		mm		kg
NRS15-6B1000-R1	100789973	1.5	1000	2.52
NRS20-6B1000-R1	100777056	2	1000	4.03
NRS20-6B2000-R1	100777057	2	2000	8.07
NRS30-6B1000-R1	100789982	3	1000	5.66
NRS30-6B2000-R1	100789984	3	2000	11.34
NRS40-6B1000-R1	100789986	4	1000	10.37
NRS40-6B2000-R1	100789988	4	2000	20.76



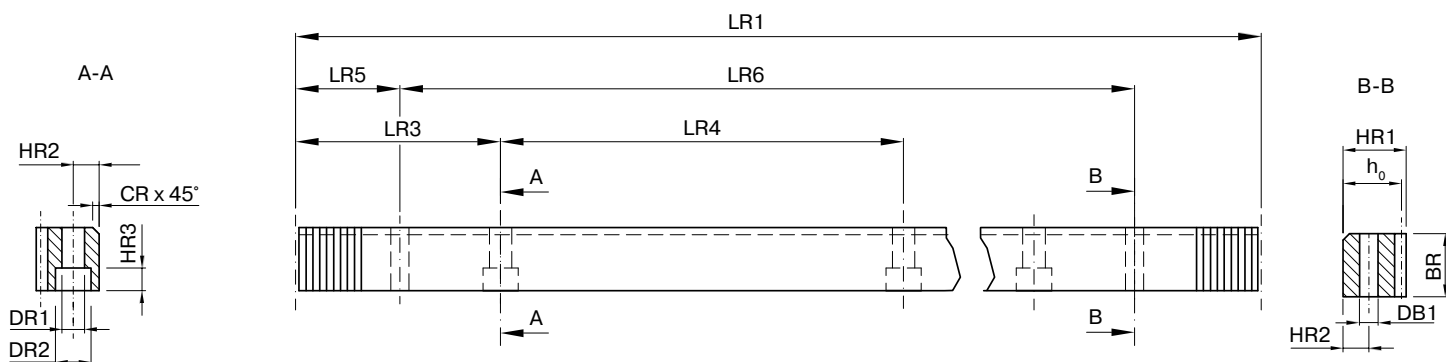
Straight rack

Helix angle $\beta = 0^\circ$

Neugart tempered steel, hardened (HRC 56-60)

Profile ground on all sides

Quality 6



Product code	m	LR1	LR3	LR4	LR5	LR6	BR	HR1	HR2	DB1	CR	DR1	DR2	HR3	h ₀	z	Number of mounting holes
mm																	
NRS15-6B1018-L0	1.5	1017.876	63.617	127.235	34.4	949.076	19	19	8	5.7	2	7	11	7	17.5	216	8
NRS20-6B1005-L0	2	1005.310	62.832	125.664	31.3	942.710	24	24	8	5.7	2	7	11	7	22	160	8
NRS20-6B2011-L0	2	2010.619	62.832	125.664	31.3	1948.019	24	24	8	5.7	2	7	11	7	22	320	16
NRS30-6B1018-L0	3	1017.876	63.617	127.235	34.4	949.076	29	29	9	7.7	2	10	15	9	26	108	8
NRS30-6B2036-L0	3	2035.752	63.617	127.235	34.4	1966.952	29	29	9	7.7	2	10	15	9	26	216	16
NRS40-6B1005-L0	4	1005.310	62.832	125.664	37.5	930.310	39	39	12	7.7	3	10	15	9	35	80	8
NRS40-6B2011-L0	4	2010.619	62.832	125.664	37.5	1935.619	39	39	12	7.7	3	10	15	9	35	160	16
NRS50-6B1005-L0	5	1005.310	62.832	125.664	30.1	945.110	49	39	12	11.7	3	14	20	13	34	64	8
NRS50-6B2011-L0	5	2010.619	62.832	125.664	30.1	1950.419	49	39	12	11.7	3	14	20	13	34	128	16

Product code	Article no.	m	LR1	Weight
mm				kg
NRS15-6B1018-L0	100789990	1.5	1017.876	2.56
NRS20-6B1005-L0	100789992	2	1005.310	4.05
NRS20-6B2011-L0	100790009	2	2010.619	8.11
NRS30-6B1018-L0	100790003	3	1017.876	5.76
NRS30-6B2036-L0	100790011	3	2035.752	11.55
NRS40-6B1005-L0	100790005	4	1005.310	10.42
NRS40-6B2011-L0	100790017	4	2010.619	20.87
NRS50-6B1005-L0	100790007	5	1005.310	12.34
NRS50-6B2011-L0	100790019	5	2010.619	24.76





Pinion with helical teeth

Helix angle $\beta = -19,5283^\circ$ (left-hand)

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⁾						
									PSNro	PSN	PLN	WPLN	PLHE	WPLHE	PLPE
	m	z	d ₀	x	d ₀ × π	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	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	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	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	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							

Pinion with straight teeth

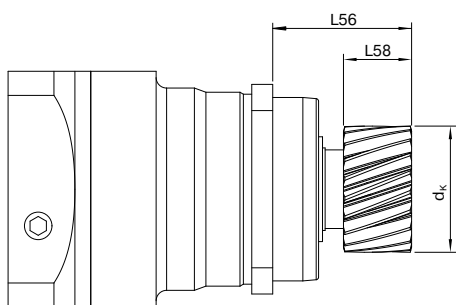
Helix angle $\beta = 0^\circ$

hardened and ground, Quality 6

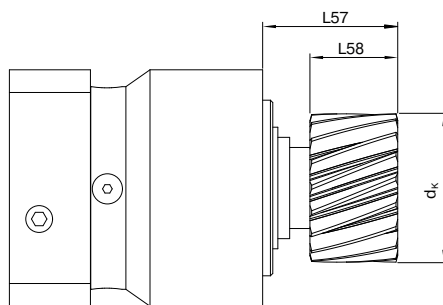


Pinion type	Module	Number of teeth	Pitch circle diameter	Profile modification factor	Feed constant	Pinion weight	Max. torque	Max. feed force	Suitable for gearbox ⁽¹⁾						
									PSNpro	PSN	PLN	WPLN	PLHE	WPLHE	PLPE
	m	z	d ₀	x	d ₀ × π	m _p	T _{vmax}	F _v							
	mm		mm		mm/U	kg	Nm	N							
PK1	1.5	20	30.00	0.30	94.25	0.11	43	2860	070	070	070	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	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	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	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							

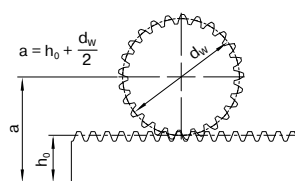
⁽¹⁾ Application specific configuration with NCP.
More information about the gearboxes can be found on the product pages or at www.neugart.com



PSNpro 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	
		m	z	d_k	d_w			L 56	L 57
		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	
		m	z	d_k	d_w			L 56	L 57
		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).

Pinion with helical teeth

Helix angle $\beta = -19,5283^\circ$ (left-hand)

hardened and ground, Quality 6



Pinion type	Module	Number of teeth	Adapter flange (inclusive) ^{2) 3)}	Pitch circle diameter	Profile modification factor	Feed constant	Pinion weight	Max. feed force	Suitable for gearbox ⁽¹⁾			Mounting method
									PSFNro	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	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	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	2)
PM1	2	26	064 → 110	55.174	0.40	173.33	0.76	2853	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	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	–	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	–	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	–	–	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

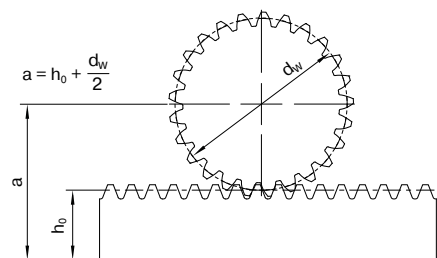
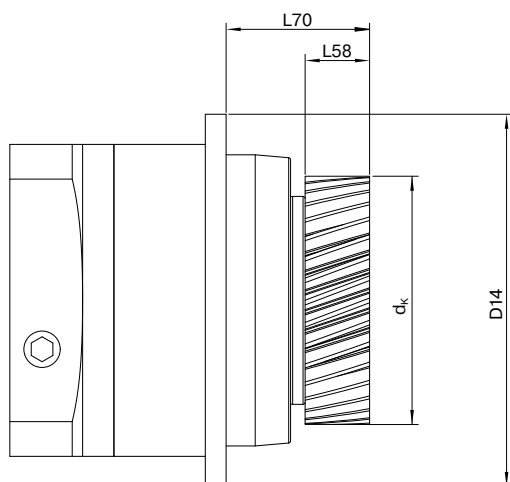
3) Use of an adapter flange for installing the pinion



PSFNpro with PM1 pinion for gearbox frame size 090



PSFNpro 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	Adapter flange (inclusive)	Tip diameter	Operating pitch circle diameter	Center distance ⁽¹⁾	Pinion width	Flange diameter	Output shaft length with pinion
		m	z		d_k	d_w	a	L 58	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).

Pinion with helical teeth

Helix angle $\beta = -19,5283^\circ$ (left-hand)

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⁾		
									PSFNpro	WPSFN	PFHE
	m	z	d_0	x	$d_0 \times \pi$	m_P	T_{vmax}	F_v	PSFNpro	WPSFN	PFHE
	mm		mm		mm/U	kg	Nm	N			
PM2	2	16	33.95	0.25	106.67	0.46	124	7300	090	090	090
PM2	2	20	42.44	0.45	133.33	0.81	226	10650	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	-
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	-	-
PM2	4	20	84.88	0.40	266.67	4.47	1279	30140			

Pinion with straight teeth

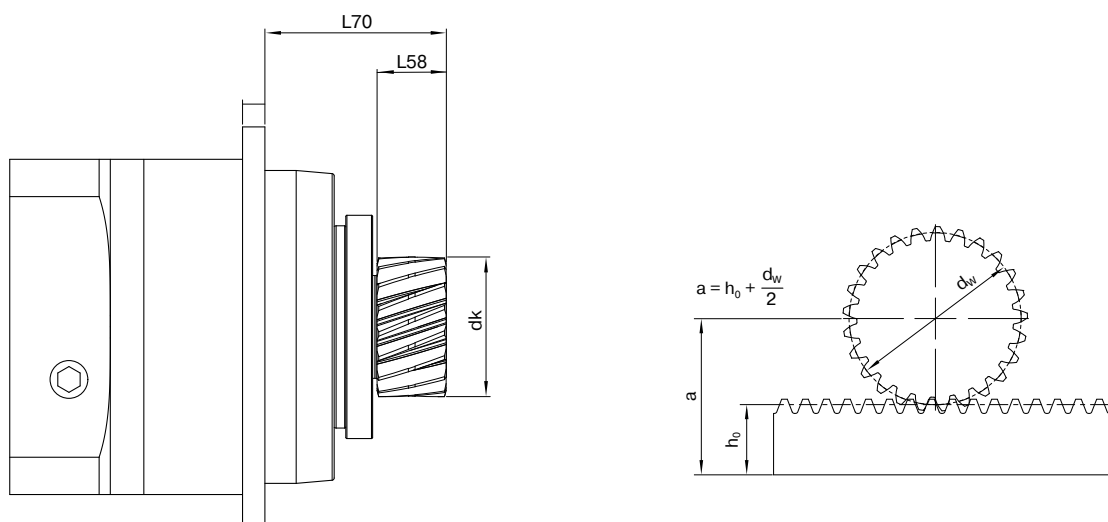
Helix angle $\beta = 0^\circ$

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⁾		
									PSFNpro	WPSFN	PFHE
	m	z	d_0	x	$d_0 \times \pi$	m_P	T_{vmax}	F_v	PSFNpro	WPSFN	PFHE
	mm		mm		mm/U	kg	Nm	N			
PM2	2	17	34.00	0.20	106.81	0.45	98	5780	090	090	090
PM2	2	22	44.00	0.40	138.23	0.82	194	8840	110	110	110
PM2	3	19	57.00	0.40	179.07	1.46	275	9650	140	140	-
PM2	4	22	88.00	0.20	276.46	4.54	847	19260	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
	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
	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
	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	L58	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
	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).