SR 080 | 1 & 2-stage — Planetary gearboxes

Drawings

Input

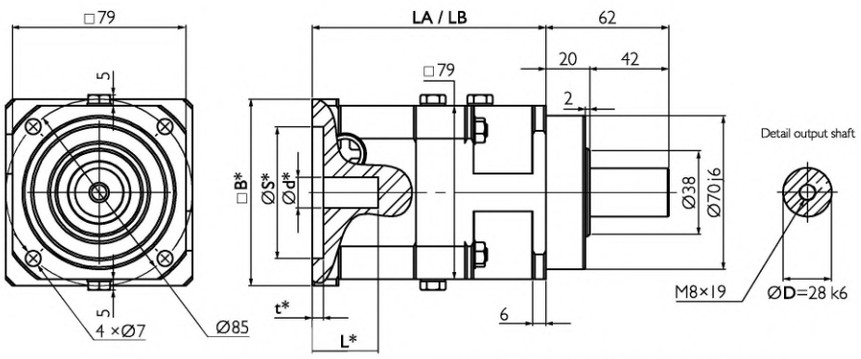
A	for motor shaft	L ≤ 45	6 ≤ Ød ≤ 19	result in **LA**
B	for motor shaft	45 < L ≤ 55	19 < Ød ≤ 24	result in **LB**

Output

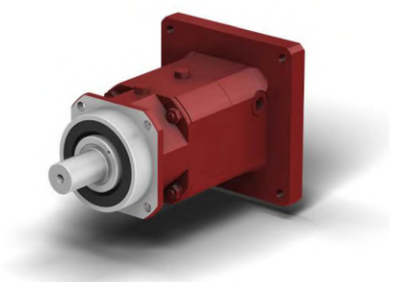
Standard

0

		1-stage	2-stage	3-stage
LA	[mm]	106.5	128.5	150.5
LB	[mm]	116	138	160

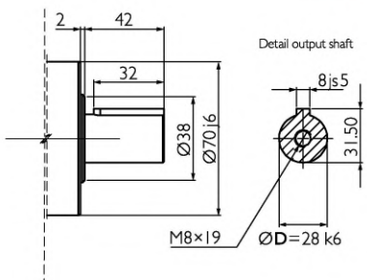


* depending on the motor. See pages 130 et seq.

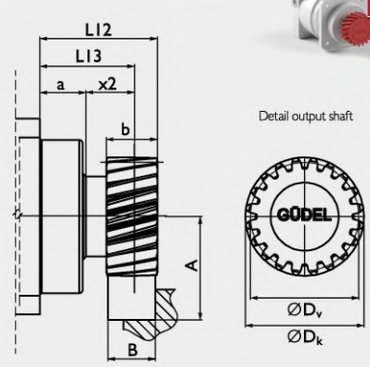


Example SR 080 B0, 2-stage

1

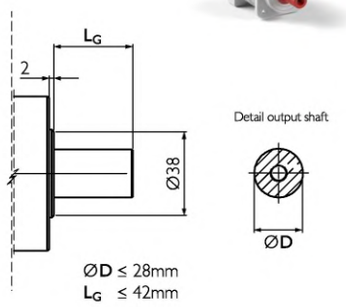


2



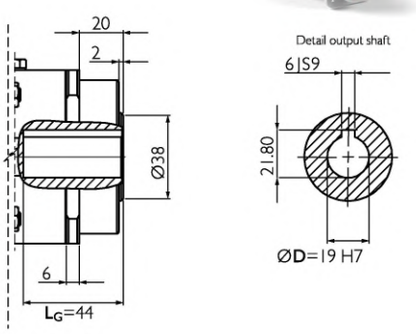
Optional

3

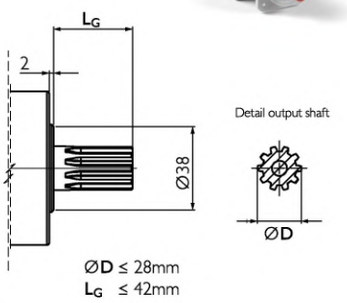


Option 3 on request. Adjustments can reduce capacity.

4



5



Option 5 on request. Adjustments can reduce capacity.

Your ideal drive train

Function Package with gearbox, rack and pinion from Güdel

Material	16MnCr5 DIN 1.7131
Teeth	pressure angle α = 20°, helical teeth left, 19°31'42" hardened (58$^{+4}_{0}$ HRC), ground, crowned
Quality	6f24 DIN 3962 / 63 / 67

Pinion

		m_n	P_t	z	A	b	D_k	D_0	D_v	L12	L13	x2	a	M
Pinion 1	[-]	2	6.66	20	43.221	25	46.44	42.441	42.441	52.5	40.0	20.0	20	0.3
Pinion 2	[-]	2.5	8.33	16	43.471	26	48.94	42.441	43.941	58	45	15	30	0.3

m_n: Normal module, P_t: Transverse pitch [mm], z: Number of teeth, D_0: Pitch circle diameter for calculation, D_v: Pitch circle diameter for design, M: Weight [kg]

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Available ratios		i		1-stage	2-stage				
				4	12	16	20	28	40
Nominal torque S5 a)		T_{2N}	[Nm]	95	95	95	95	95	95
Acceleration torque S5 b)		T_{2B}	[Nm]	150	140	140	140	140	140
Nominal input speed S5 c)		n_{1N}	[rpm]	2 600	2 900	3 100	3 100	3 100	3 100
Maximum input speed S5		n_{1max}	[rpm]	5 400	5 400	5 400	5 400	5 400	5 400
Emergency stop torque d)		T_{2not}	[Nm]	250	250	250	250	250	250
Efficiency		η	[%]	96	93				
Lifetime		L_h	[h]	> 20 000					
Weight		M	[kg]	4	5				
Angular backlash		j_t	[arcmin]	Precision **P 1** ≤ 1 / **P 3** ≤ 3 / **P 5** ≤ 5 / **P 12** ≤12					
Torsionnal rigidity e)		C_{t2}	[Nm/arcmin]	11.7	11.1	11.1	11.3	11.1	11.1
Noise i)		L_{pA}	[dB(A)]	≤ 70					
Max. permitted housing temperature g)		T	[°C]	90					
Protection class				IP 65					
Direction of rotation				Same way input / output					
Max. radial force on output shaft f)		F_{rmax}	[N]	Center of output shaft: 4 200 / End of output shaft: 3 285					
Max. axial force on output shaft f)		F_{amax}	[N]	3 600					
Color				Red, RAL 3003					
Inertia in kg.cm² h)	Ø11	J_1	[kgcm²]	0.46	0.46	0.45	0.45	0.34	0.31
	Ø14			1.02	1.01	1.00	1.00	0.89	0.86
	Ø19			1.03	1.03	1.02	1.01	0.91	0.88
	Ø24			1.85	1.84	1.83	1.83	1.72	1.69

a) Nominal output torque when operating at n_{1N}.
b) 1000 cycles per hour max.
c) Valid for an ambient temperature of 20°C and T_{2N}. At higher ambient temperatures, please reduce speed.
d) Valid 1000 times the gearbox life.
e) Valid for an input Ø of 19mm in 1-stage and 14mm in 2- and 3-stage.
f) Values for 300 rpm.
g) For other temperatures, please contact us. Nominal output torque when operating at n_{1N}.
h) Depending on the motor output shaft Ø.
i) With i=10 and n_{1N}=2500 rpm no load.

Rack

			Pinion 1			Pinion 2		
			Q6	Q7	Q9	Q6	Q7	Q9
Max acceleration force	F_{2B}	[N]	7 490	2 963	5 036	7 490	2 963	5 036
Max acceleration torque	T_{2B}	[Nm]	159	63	107	159	63	107
Precision			P1		P12	P1		P12
Feed force			High	Medium	Elevated	High	Medium	Elevated

Above values for rack and pinion take into consideration a number of load cycles: $1x10^6$ for the rack; $1x10^7$ for the pinion. Both in pulsating operation.

For proper sizing follow flowchart **calculate your ideal drive train** on pages 136 et seq.

More on the technical datasheets **your ideal drive train** on pages 120 et seq.

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SR 080 | 3-stage — Planetary gearboxes — Drawings

Input

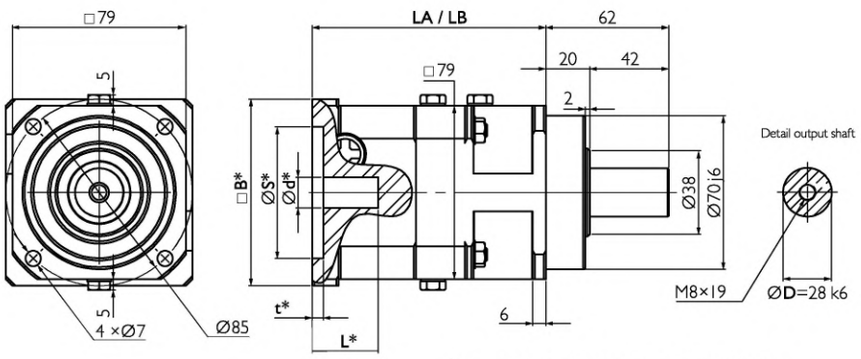
A	for motor shaft	L ≤ 45	6 ≤ Ød ≤ 19	result in **LA**
B	for motor shaft	45 < L ≤ 55	19 < Ød ≤ 24	result in **LB**

Output

Standard

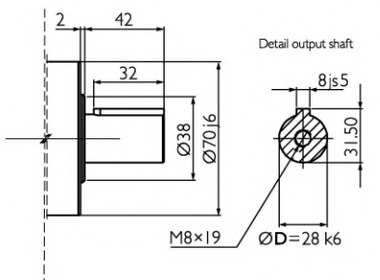
0

		1-stage	2-stage	3-stage
LA	[mm]	106.5	128.5	150.5
LB	[mm]	116	138	160

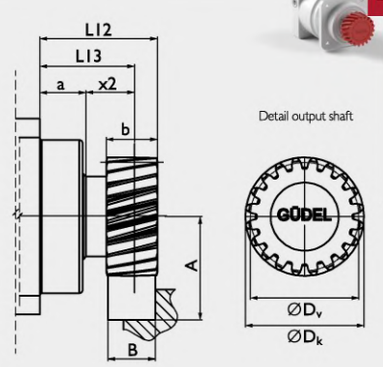


* depending on the motor. See pages 130 et seq.

1

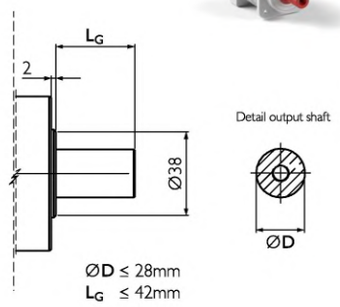


2



Optional

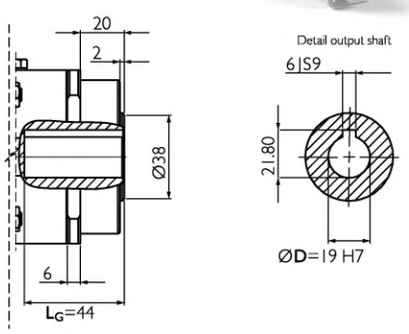
3



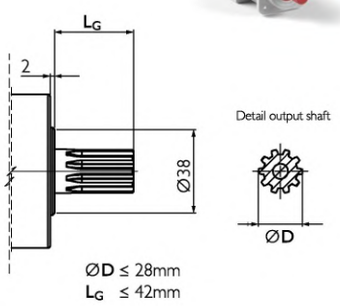
ØD ≤ 28mm
LG ≤ 42mm

Option 3 on request. Adjustments can reduce capacity.

4

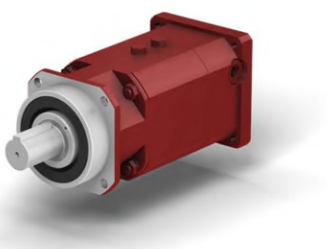


5



ØD ≤ 28mm
LG ≤ 42mm

Option 5 on request. Adjustments can reduce capacity.



Example SR 080 A1, 3-stage

Your ideal drive train

Function Package with gearbox, rack and pinion from Güdel

Material	16MnCr5 DIN 1.7131
Teeth	pressure angle α = 20°, helical teeth left, 19°31'42" hardened (58$^{+4}_{0}$ HRC), ground, crowned
Quality	6f24 DIN 3962 / 63 / 67

Pinion

		m_n	P_t	z	A	b	D_k	D_0	D_v	L12	L13	x2	a	M
Pinion 1	[-]	2	6.66	20	43.221	25	46.44	42.441	42.441	52.5	40.0	20.0	20	0.3
Pinion 2	[-]	2.5	8.33	16	43.471	26	48.94	42.441	43.941	58	45	15	30	0.3

m_n: Normal module, P_t: Transverse pitch [mm], z: Number of teeth, D_0: Pitch circle diameter for calculation, D_v: Pitch circle diameter for design, M: Weight [kg]

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Available ratios		i		3-stage									
				60	80	100	112	120	140	160	200	280	400
Nominal torque S5 a)		T_{2N}	[Nm]	95	95	95	95	95	95	95	95	95	95
Acceleration torque S5 b)		T_{2B}	[Nm]	140	140	140	140	140	140	140	140	140	140
Nominal input speed S5 c)		n_{1N}	[rpm]	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000
Maximum input speed S5		n_{1max}	[rpm]	5 400	5 400	5 400	5 400	5 400	5 400	5 400	5 400	5 400	5 400
Emergency stop torque d)		T_{2not}	[Nm]	250	250	250	250	250	250	250	250	250	250
Efficiency		η	[%]	90									
Lifetime		L_h	[h]	> 20 000									
Weight		M	[kg]	6									
Angular backlash		j_t	[arcmin]	Precision **P 1** ≤ 1 / **P 3** ≤ 3 / **P 5** ≤ 5 / **P 12** ≤12									
Torsionnal rigidity e)		C_{t2}	[Nm/arcmin]	10.7	10.7	9.8	10.6	10.6	10.7	10.6	10.7	10.6	10.1
Noise i)		L_{pA}	[dB(A)]	≤ 70									
Max. permitted housing temperature g)		T	[°C]	90									
Protection class				IP 65									
Direction of rotation				Same way input / output									
Max. radial force on output shaft f)		F_{rmax}	[N]	Center of output shaft: 4 200 / End of output shaft: 3 285									
Max. axial force on output shaft f)		F_{amax}	[N]	3 600									
Color				Red, RAL 3003									
Inertia in kg.cm² h)	Ø11	J_1	[kgcm²]	0.46	0.45	0.31	0.34	0.31	0.34	0.31	0.31	0.31	0.31
	Ø14			1.01	1.00	0.86	0.89	0.86	0.89	0.86	0.86	0.86	0.86
	Ø19			1.03	1.02	0.88	0.91	0.88	0.91	0.88	0.88	0.88	0.88
	Ø24			1.84	1.83	1.69	1.72	1.69	1.72	1.69	1.69	1.69	1.69

* Other ratios available. 36, 64, 84, 180, 196, 300, 360, 500, 600, 700, 1 000 on request.

a) Nominal output torque when operating at n_{1N}.

b) 1000 cycles per hour max.

c) Valid for an ambient temperature of 20°C and T_{2N}. At higher ambient temperatures, please reduce speed.

d) Valid 1000 times the gearbox life.

e) Valid for an input Ø of 19 mm in 1-stage and 14 mm in 2- and 3-stage.

f) Values for 300 rpm.

g) For other temperatures, please contact us. Nominal output torque when operating at n_{1N}.

h) Depending on the motor output shaft Ø.

i) With i=10 and n_{1N}=2500 rpm no load.

Rack

			Pinion 1			Pinion 2		
			Q6	Q7	Q9	Q6	Q7	Q9
Max acceleration force	F_{2B}	[N]	7 490	2 963	5 036	7 490	2 963	5 036
Max acceleration torque	T_{2B}	[Nm]	159	63	107	159	63	107
Precision			P1		P12	P1		P12
Feed force			High	Medium	Elevated	High	Medium	Elevated

Above values for rack and pinion take into consideration a number of load cycles: $1x10^6$ for the rack; $1x10^7$ for the pinion. Both in pulsating operation.

For proper sizing follow flowchart **calculate your ideal drive train** on pages 136 et seq.

More on the technical datasheets **your ideal drive train** on pages 120 et seq.

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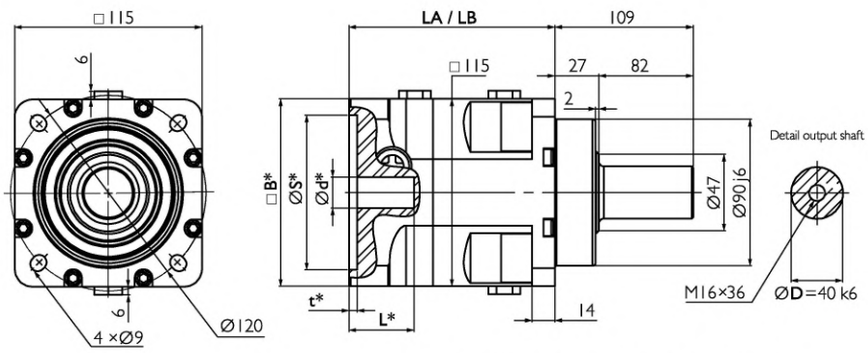
Input

A	for motor shaft	L ≤ 50	9 ≤ Ød ≤ 24	result in **LA**
B	for motor shaft	51 < L ≤ 64	24 < Ød ≤ 35	result in **LB**

Output

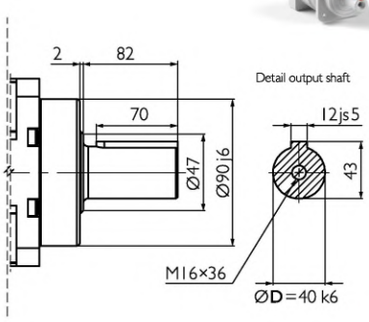
Standard

		1-stage	2-stage	3-stage
LA	[mm]	126	164	202
LB	[mm]	140	178	216

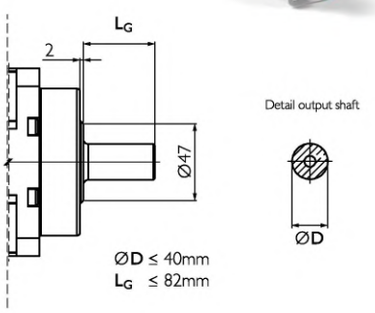


* depending on the motor. See pages 130 et seq.

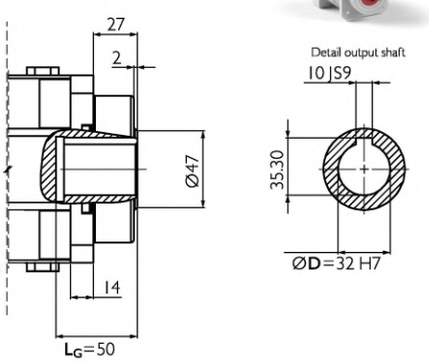
Example SR 100 A0, 1-stage

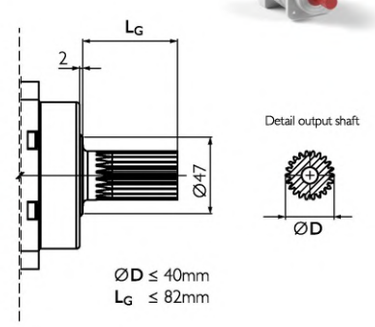


Optional

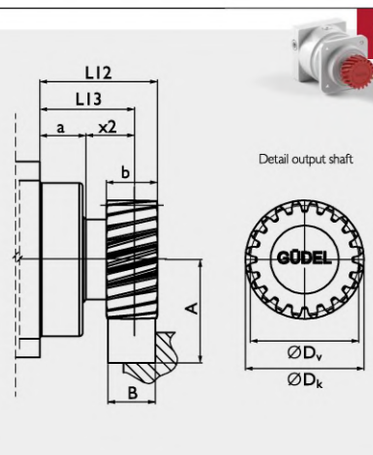


Option 3 on request. Adjustments can reduce capacity.





Option 5 on request. Adjustments can reduce capacity.



Your ideal drive train

Function Package with gearbox, rack and pinion from Güdel

Material	16MnCr5 DIN 1.7131
Teeth	pressure angle α = 20°, helical teeth left, 19°31'42'' hardened (58$^{+4}_{0}$ HRC), ground, crowned
Quality	6f24 DIN 3962 / 63 / 67

Pinion

		m_n	P_t	z	A	b	D_k	D_0	D_v	L12	L13	x2	a	M
Pinion 1	[-]	2	6.66	25	48.526	25	57.05	53.052	53.052	63.3	51.0	24.0	27	0.4
Pinion 2	[-]	3	10.00	20	57.831	30	69.66	63.662	63.662	69.0	54.0	27.0	27	0.7

m_n: Normal module, P_t: Transverse pitch [mm], z: Number of teeth, D_0: Pitch circle diameter for calculation, D_v: Pitch circle diameter for design, M: Weight [kg]

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Available ratios		i		1-stage	2-stage				
				4	12	16	20	28	40
Nominal torque S5 a)		T_{2N}	[Nm]	300	300	300	300	300	300
Acceleration torque S5 b)		T_{2B}	[Nm]	370	370	370	370	370	370
Nominal input speed S5 c)		n_{1N}	[rpm]	2 200	2 600	2 800	2 800	2 800	2 800
Maximum input speed S5		n_{1max}	[rpm]	4 000	4 000	4 000	4 000	4 000	4 000
Emergency stop torque d)		T_{2not}	[Nm]	800	800	800	800	800	800
Efficiency		η	[%]	96	93				
Lifetime		L_h	[h]	> 20 000					
Weight		M	[kg]	8	10				
Angular backlash		j_t	[arcmin]	Precision **P 1** ≤ 1 / **P 3** ≤ 3 / **P 5** ≤ 5 / **P 12** ≤12					
Torsionnal rigidity e)		C_{t2}	[Nm/arcmin]	41.0	32.0	38.7	38.4	36.8	38.7
Noise i)		L_{pA}	[dB(A)]	≤ 71					
Max. permitted housing temperature g)		T	[°C]	90					
Protection class				IP 65					
Direction of rotation				Same way input / output					
Max. radial force on output shaft f)		F_{rmax}	[N]	Center of output shaft: 6 600 / End of output shaft: 4 300					
Max. axial force on output shaft f)		F_{amax}	[N]	6 000					
Color				Red, RAL 3003					
Inertia in kg.cm² h)	Ø14	J_1	[kgcm²]	2.83	2.76	2.69	2.23	1.83	1.60
	Ø19			2.83	2.76	2.69	2.23	1.83	1.60
	Ø24			2.84	2.77	2.70	2.24	1.84	1.61
	Ø32			6.04	5.97	5.90	5.44	5.04	4.81
	Ø35			8.67	8.60	8.53	8.07	7.67	7.44

a) Nominal output torque when operating at n_{1N}.
b) 1000 cycles per hour max.
c) Valid for an ambient temperature of 20°C and T_{2N}. At higher ambient temperatures, please reduce speed.
d) Valid 1000 times the gearbox life.
e) Valid for an input Ø of 24 mm in 1-stage and 19 mm in 2- and 3-stage.
f) Values for 300 rpm.
g) For other temperatures, please contact us. Nominal output torque when operating at n_{1N}.
h) Depending on the motor output shaft Ø.
i) With n_{1N}=2500 rpm no load.

Rack

			Pinion 1			Pinion 2		
			Q6	Q7	Q9	Q6	Q7	Q9
Max acceleration force	F_{2B}	[N]	7 540	4 107	4 805	16 163	7 565	12 980
Max acceleration torque	T_{2B}	[Nm]	200	109	127	515	241	413
Precision			P1		P12	P1		P12
Feed force			High	Medium	Elevated	High	Medium	Elevated

Above values for rack and pinion take into consideration a number of load cycles: $1x10^6$ for the rack; $1x10^7$ for the pinion. Both in pulsating operation.

For proper sizing follow flowchart **calculate your ideal drive train** on pages 136 et seq.

More on the technical datasheets **your ideal drive train** on pages 120 et seq.

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Input

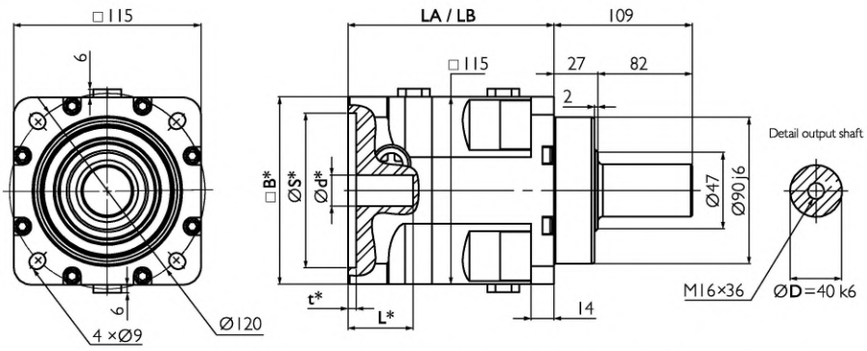
A	for motor shaft	L ≤ 50	9 ≤ Ød ≤ 24	result in **LA**
B	for motor shaft	51 < L ≤ 64	24 < Ød ≤ 35	result in **LB**

Output

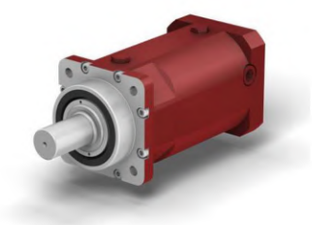
Standard

		1-stage	2-stage	3-stage
LA	[mm]	126	164	202
LB	[mm]	140	178	216

0

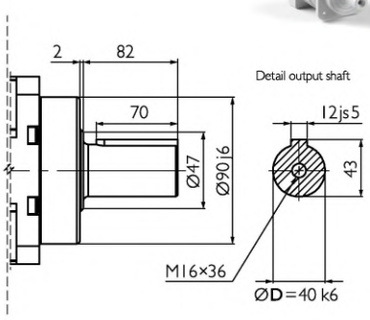


* depending on the motor. See pages 130 et seq.

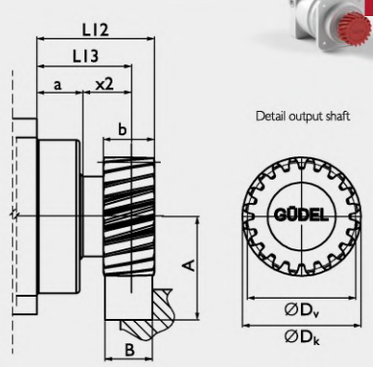


Example SR 100 A0. 3-stage

1

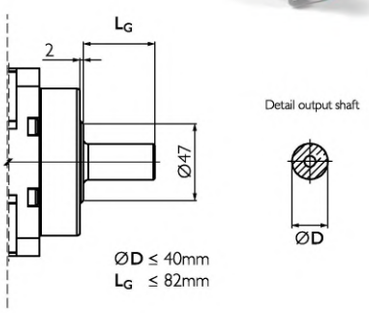


2



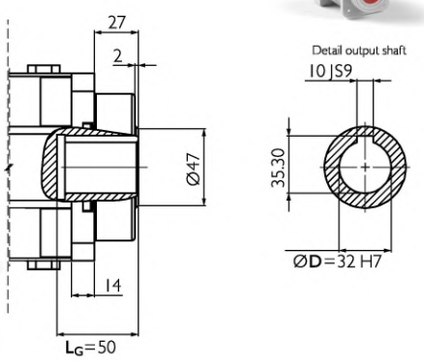
Optional

3

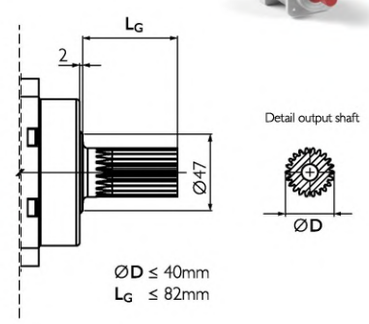


Option 3 on request. Adjustments can reduce capacity.

4



5



Option 5 on request. Adjustments can reduce capacity.

Your ideal drive train

Function Package with gearbox, rack and pinion from Güdel

Material	16MnCr5 DIN 1.7131
Teeth	pressure angle α = 20°, helical teeth left, 19°31'42'' hardened (58$^{+4}_{0}$ HRC), ground, crowned
Quality	6f24 DIN 3962 / 63 / 67

Pinion

		m_n	P_t	z	A	b	D_k	D_0	D_v	L12	L13	x2	a	M
Pinion 1	[-]	2	6.66	25	48.526	25	57.05	53.052	53.052	63.3	51.0	24.0	27	0.4
Pinion 2	[-]	3	10.00	20	57.831	30	69.66	63.662	63.662	69.0	54.0	27.0	27	0.7

m_n: Normal module, P_t: Transverse pitch [mm], z: Number of teeth, D_0: Pitch circle diameter for calculation, D_v: Pitch circle diameter for design, M: Weight [kg]

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Available ratios *		i		3-stage									
				60	80	100	112	120	140	160	200	280	400
Nominal torque S5 a)		T_{2N}	[Nm]	300	300	300	300	300	300	300	300	300	300
Acceleration torque S5 b)		T_{2B}	[Nm]	404	404	404	404	404	404	404	404	404	404
Nominal input speed S5 c)		n_{1N}	[rpm]	3 800	3 800	3 800	3 800	3 800	3 800	3 800	3 800	3 800	3 800
Maximum input speed S5		n_{1max}	[rpm]	4 500	4 500	4 500	4 500	4 500	4 500	4 500	4 500	4 500	4 500
Emergency stop torque d)		T_{2not}	[Nm]	800	800	800	800	800	800	800	800	800	800
Efficiency		η	[%]	90									
Lifetime		L_h	[h]	> 20 000									
Weight		M	[kg]	12									
Angular backlash		j_t	[arcmin]	Precision **P 1** ≤ 1 / **P 3** ≤ 3 / **P 5** ≤ 5 / **P 12** ≤12									
Torsionnal rigidity e)		C_{t2}	[Nm/arcmin]	38.4	38.4	34.3	37.0	37.0	38.4	37.0	38.4	37.0	37.0
Noise i)		L_{pA}	[dB(A)]	≤ 71									
Max. permitted housing temperature g)		T	[°C]	90									
Protection class				IP 65									
Direction of rotation				Same way input / output									
Max. radial force on output shaft f)		F_{rmax}	[N]	Center of output shaft: 6 600 / End of output shaft: 4 300									
Max. axial force on output shaft f)		F_{amax}	[N]	6 000									
Color				Red, RAL 3003									
Inertia in kg.cm² h)	Ø14	J_1	[kgcm²]	2.23	2.22	1.59	1.83	1.59	1.82	1.60	1.59	1.59	1.59
	Ø19			2.23	2.22	1.59	1.83	1.59	1.82	1.60	1.59	1.59	1.59
	Ø24			2.24	2.23	1.60	1.84	1.61	1.83	1.61	1.60	1.60	1.60
	Ø32			5.44	5.43	4.80	5.04	4.80	5.03	4.81	4.80	4.80	4.80
	Ø35			8.07	8.06	7.43	7.67	7.44	7.66	7.44	7.43	7.43	7.43

* Other ratios available. 36, 64, 84, 180, 196, 300, 360, 500, 600, 700, 1000 on request.

a) Nominal output torque when operating at n_{1N}.

b) 1000 cycles per hour max.

c) Valid for an ambient temperature of 20°C and T_{2N}. At higher ambient temperatures, please reduce speed.

d) Valid 1000 times the gearbox life.

e) Valid for an input Ø of 24 mm in 1-stage and 19 mm in 2- and 3-stage.

f) Values for 300 rpm.

g) For other temperatures, please contact us. Nominal output torque when operating at n_{1N}.

h) Depending on the motor output shaft Ø.

i) With n_{1N}=2500 rpm no load.

Rack

			Pinion 1			Pinion 2		
			Q6	Q7	Q9	Q6	Q7	Q9
Max acceleration force	F_{2B}	[N]	7 540	4 107	4 805	16 163	7 565	12 980
Max acceleration torque	T_{2B}	[Nm]	200	109	127	515	241	413
Precision			P1		P12	P1		P12
Feed force			High	Medium	Elevated	High	Medium	Elevated

Above values for rack and pinion take into consideration a number of load cycles: $1x10^6$ for the rack; $1x10^7$ for the pinion. Both in pulsating operation.

For proper sizing follow flowchart **calculate your ideal drive train** on pages 136 et seq.

More on the technical datasheets **your ideal drive train** on pages 120 et seq.

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Input

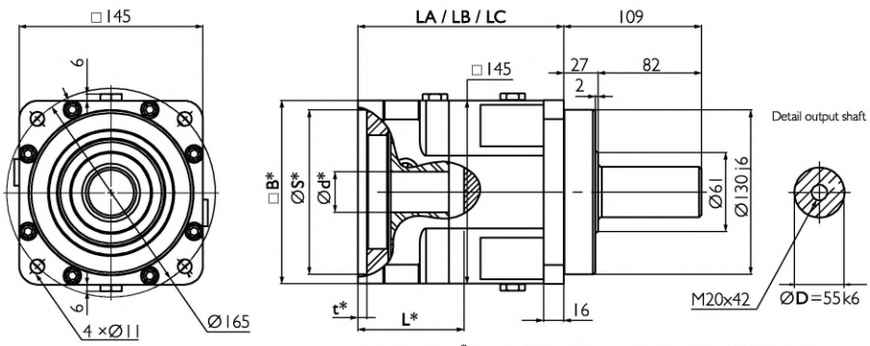
A	for motor shaft	L ≤ 51	14 ≤ Ød ≤ 24	result in **LA**
B	for motor shaft	51 < L ≤ 63	24 < Ød ≤ 35	result in **LB**
C	for motor shaft	63 < L ≤ 83	24 < Ød ≤ 42	result in **LC**

Output

Standard

0

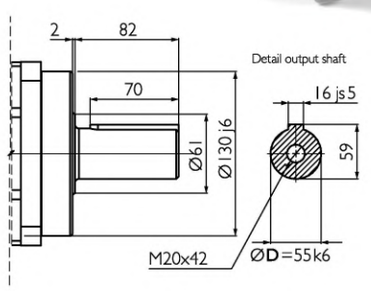
		1-stage	2-stage	3-stage
LA	[mm]	143	185	227
LB	[mm]	155	197	239
LC	[mm]	175	217	



* depending on the motor. See pages 130 et seq.

Example SR 140 A2, 1-stage

1



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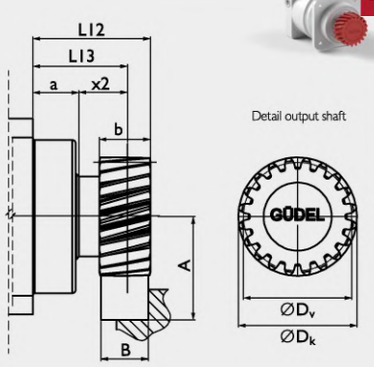
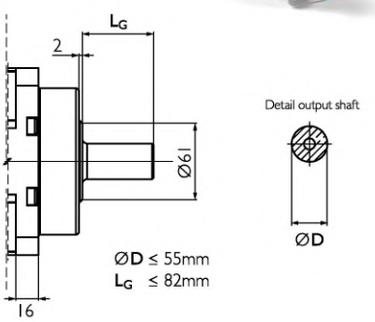


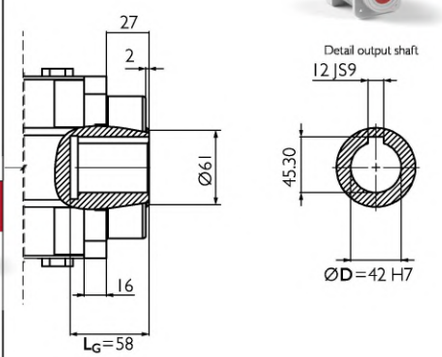
Optional

3



Option 3 on request. Adjustments can reduce capacity.

4



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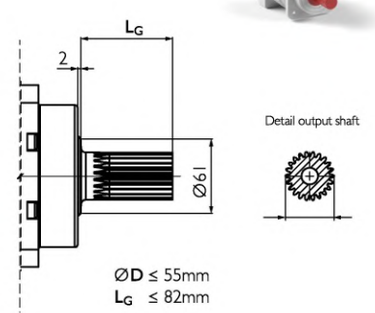

Option 5 on request. Adjustments can reduce capacity.

Your ideal drive train

Function Package with gearbox, rack and pinion from Güdel

Material 16MnCr5 DIN 1.7131
Teeth pressure angle α = 20°, helical teeth left, 19°31'42" hardened (58$^{+4}_{0}$ HRC), ground, crowned
Quality 6f24 DIN 3962 / 63 / 67

Pinion

		m_n	P_t	z	A	b	D_k	D_0	D_v	L12	L13	x2	a	M
Pinion 1	[-]	3	10.00	22	61.014	30	76.03	70.028	70.028	69.5	54.5	27.5	27	0.8
Pinion 2	[-]	4	13.33	20	77.441	40	92.88	84.883	84.883	79.0	59.0	32.0	27	1.6

m_n: Normal module, P_t: Transverse pitch [mm], z: Number of teeth, D_0: Pitch circle diameter for calculation, D_v: Pitch circle diameter for design, M: Weight [kg]

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Available ratios		i		1-stage	2-stage				
				4	12	16	20	28	40
Nominal torque S5 a)		T_{2N}	[Nm]	500	500	500	500	500	500
Acceleration torque S5 b)		T_{2B}	[Nm]	750	750	750	750	750	750
Nominal input speed S5 c)		n_{1N}	[rpm]	1 900	2 400	2 600	2 600	2 600	2 600
Maximum input speed S5		n_{1max}	[rpm]	3 600	3 600	3 600	3 600	3 600	3 600
Emergency stop torque d)		T_{2not}	[Nm]	1 300	1 300	1 300	1 300	1 300	1 300
Efficiency		η	[%]	96	93				
Lifetime		L_h	[h]	> 20 000					
Weight		M	[kg]	14	18				
Angular backlash		j_t	[arcmin]	Precision **P 1** ≤ 1 / **P 3** ≤ 3 / **P 5** ≤ 5 / **P 12** ≤12					
Torsionnal rigidity e)		C_{t2}	[Nm/arcmin]	106.2	85.0	95.7	102.1	95.7	95.7
Noise i)		L_{pA}	[dB(A)]	≤ 71					
Max. permitted housing temperature g)		T	[°C]	90					
Protection class				IP 65					
Direction of rotation				Same way input / output					
Max. radial force on output shaft f)		F_{rmax}	[N]	Center of output shaft: 9 950 / End of output shaft: 6 700					
Max. axial force on output shaft f)		F_{amax}	[N]	10 300					
Color				Red, RAL 3003					
Inertia in kg.cm² h)	Ø14	J_1	[kgcm²]	7.12	6.86	6.63	5.29	4.15	3.48
	Ø19			7.12	6.86	6.63	5.29	4.15	3.48
	Ø24			8.13	7.87	7.64	6.30	5.16	4.49
	Ø32			10.33	10.07	9.84	8.50	7.36	6.69
	Ø35			13.16	12.90	12.67	11.33	10.19	9.52
	Ø38			18.35	18.09	17.86	16.52	15.38	14.71
	Ø42			17.95	17.69	17.46	16.12	14.98	14.31

a) Nominal output torque when operating at n_{1N}.
b) 1000 cycles per hour max.
c) Valid for an ambient temperature of 20°C and T_{2N}.
At higher ambient temperatures, please reduce speed.
d) Valid 1000 times the gearbox life.
e) Valid for an input Ø of 38 mm in 1-stage and 24 mm in 2- and 3-stage.
f) Values for 300 rpm.
g) For other temperatures, please contact us. Nominal output torque when operating at n_{1N}.
h) Depending on the motor output shaft Ø.
i) With n_{1N}=2500 rpm no load.

Rack

			Pinion 1			Pinion 2		
			Q6	Q7	Q9	Q6	Q7	Q9
Max acceleration force	F_{2B}	[N]	16 230	8 715	12 919	28 585	14 084	24 045
Max acceleration torque	T_{2B}	[Nm]	568	305	452	1 213	598	1 021
Precision			P1		P12	P1		P12
Feed force			High	Medium	Elevated	High	Medium	Elevated

Above values for rack and pinion take into consideration a number of load cycles:
$1x10^6$ for the rack; $1x10^7$ for the pinion. Both in pulsating operation.

For proper sizing follow flowchart **calculate your ideal drive train** on pages 136 et seq.

More on the technical datasheets **your ideal drive train** on pages 120 et seq.

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Input

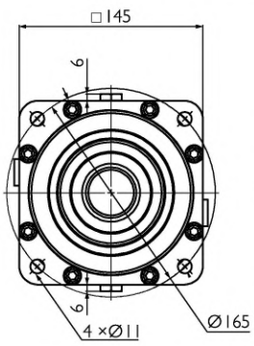
A	for motor shaft	L ≤ 51	14 ≤ Ød ≤ 24	result in **LA**
B	for motor shaft	51 < L ≤ 63	24 < Ød ≤ 35	result in **LB**
C	for motor shaft	63 < L ≤ 83	24 < Ød ≤ 42	result in **LC**

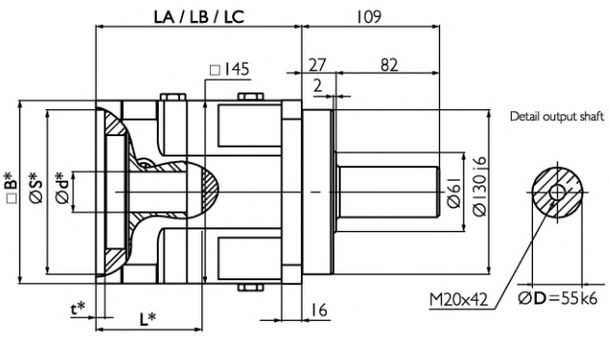
		1-stage	2-stage	3-stage
LA	[mm]	143	185	227
LB	[mm]	155	197	239
LC	[mm]	175	217	

Output

Standard

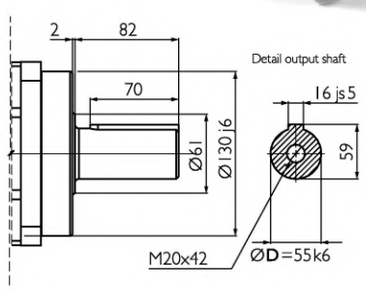
0



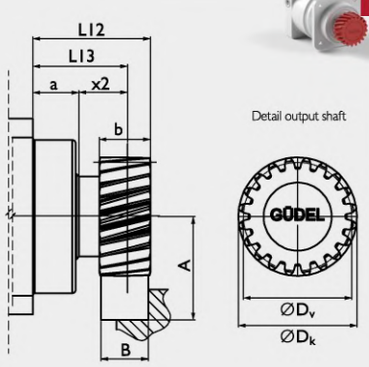


* depending on the motor. See pages 130 et seq.

1

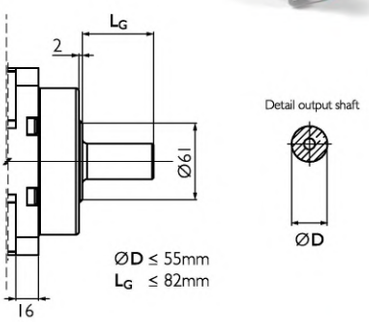


2



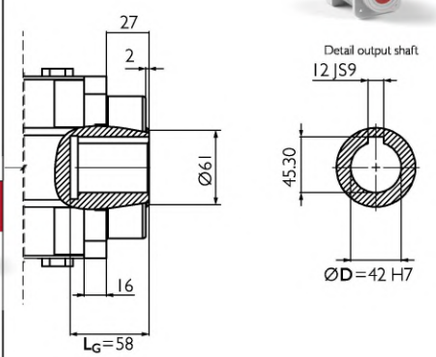
Optional

3

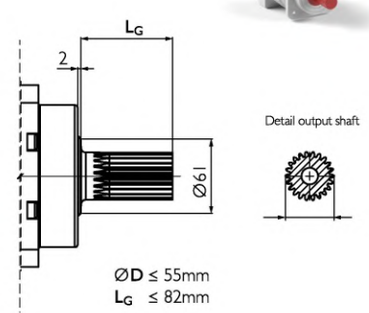


Option 3 on request. Adjustments can reduce capacity.

4



5



Option 5 on request. Adjustments can reduce capacity.

Example SR 140 A4, 1-stage

Your ideal drive train

Function Package with gearbox, rack and pinion from Güdel

Material 16MnCr5 DIN 1.7131
Teeth pressure angle α = 20°, helical teeth left, 19°31'42" hardened (58$^{+4}_{0}$ HRC), ground, crowned
Quality 6f24 DIN 3962 / 63 / 67

Pinion

		m_n	P_t	z	A	b	D_k	D_0	D_v	L12	L13	x2	a	M
Pinion 1	[-]	3	10.00	22	61.014	30	76.03	70.028	70.028	69.5	54.5	27.5	27	0.8
Pinion 2	[-]	4	13.33	20	77.441	40	92.88	84.883	84.883	79.0	59.0	32.0	27	1.6

m_n: Normal module, P_t: Transverse pitch [mm], z: Number of teeth, D_0: Pitch circle diameter for calculation, D_v: Pitch circle diameter for design, M: Weight [kg]

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Available ratios *		i		3-stage									
				60	80	100	112	120	140	160	200	280	400
Nominal torque S5 a)		T_{2N}	[Nm]	500	500	500	500	500	500	500	500	500	500
Acceleration torque S5 b)		T_{2B}	[Nm]	750	750	750	750	750	750	750	750	750	750
Nominal input speed S5 c)		n_{1N}	[rpm]	3 500	3 500	3 500	3 500	3 500	3 500	3 500	3 500	3 500	3 500
Maximum input speed S5		n_{1max}	[rpm]	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000
Emergency stop torque d)		T_{2not}	[Nm]	1 300	1 300	1 300	1 300	1 300	1 300	1 300	1 300	1 300	1 300
Efficiency		η	[%]	90									
Lifetime		L_h	[h]	> 20 000									
Weight		M	[kg]	22									
Angular backlash		j_t	[arcmin]	Precision **P 1** ≤ 1 / **P 3** ≤ 3 / **P 5** ≤ 5 / **P 12** ≤12									
Torsionnal rigidity e)		C_{t2}	[Nm/arcmin]	92	92	84	86	86	92	86	92	86	86
Noise i)		L_{pA}	[dB(A)]	≤ 71									
Max. permitted housing temperature g)		T	[°C]	90									
Protection class				IP 65									
Direction of rotation				Same way input / output									
Max. radial force on output shaft f)		F_{rmax}	[N]	Center of output shaft: 9 950 / End of output shaft: 6 700									
Max. axial force on output shaft f)		F_{amax}	[N]	10 300									
Color				Red, RAL 3003									
Inertia in kg.cm² h)	Ø14	J_1	[kgcm²]	5.28	5.27	3.44	4.14	3.47	4.11	3.47	3.46	3.45	3.44
	Ø19			5.28	5.27	3.44	4.14	3.47	4.11	3.47	3.46	3.45	3.44
	Ø24			6.29	6.28	4.45	5.15	4.48	5.12	4.48	4.47	4.46	4.45
	Ø32			8.49	8.48	6.65	7.35	6.68	7.32	6.68	6.67	6.66	6.65
	Ø35			11.32	11.31	9.48	10.18	9.51	10.15	9.51	9.50	9.49	9.48
	Ø38			16.51	16.50	14.67	15.37	14.70	15.34	14.70	14.69	14.68	14.67
	Ø42			16.11	16.10	14.27	14.97	14.30	14.94	14.30	14.29	14.28	14.27

* Other ratios available. 36, 64, 84, 180, 196, 300, 360, 500, 600, 700, 1 000 on request.

a) Nominal output torque when operating at n_{1N}.

b) Maximal 1 000 Zyklen pro Stunde

c) Valid for an ambient temperature of 20°C and T_{2N}. At higher ambient temperatures, please reduce speed.

d) Valid 1000 times the gearbox life.

e) Valid for an input Ø of 38 mm in 1-stage and 24 mm in 2- and 3-stage.

f) Values for 300 rpm.

g) For other temperatures, please contact us. Nominal output torque when operating at n_{1N}.

h) Depending on the motor output shaft Ø.

i) With n_{1N}=2500 rpm no load.

Rack

			Pinion 1			Pinion 2		
			Q6	Q7	Q9	Q6	Q7	Q9
Max acceleration force	F_{2B}	[N]	16 230	8 715	12 919	28 585	14 084	24 045
Max acceleration torque	T_{2B}	[Nm]	568	305	452	1 213	598	1 021
Precision			P1		P12	P1		P12
Feed force			High	Medium	Elevated	High	Medium	Elevated

Above values for rack and pinion take into consideration a number of load cycles: $1x10^6$ for the rack; $1x10^7$ for the pinion. Both in pulsating operation.

For proper sizing follow flowchart **calculate your ideal drive train** on pages 136 et seq.

More on the technical datasheets **your ideal drive train** on pages 120 et seq.

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SR 180 | 1 & 2-stage — Planetary gearboxes

Drawings

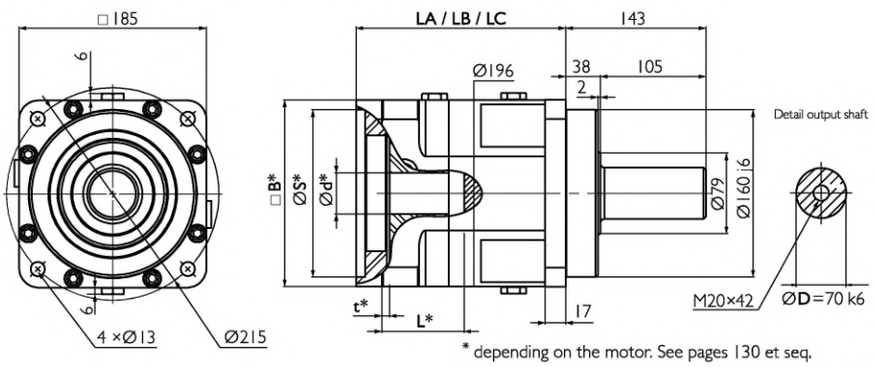
Input

A	for motor shaft	L ≤ 60	19 ≤ Ød ≤ 32	result in **LA**
B	for motor shaft	60 < L ≤ 85	32 < Ød ≤ 48	result in **LB**
C	for motor shaft	85 < L ≤111	32 < Ød ≤ 48	result in **LC**

Output

Standard

		1-stage	2-stage	3-stage
LA	[mm]	168	220	273
LB	[mm]	193	246	298
LC	[mm]	219	272	



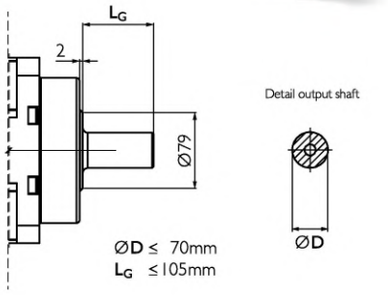
* depending on the motor. See pages 130 et seq.

Example SR 180 A2, 1-stage

Optional

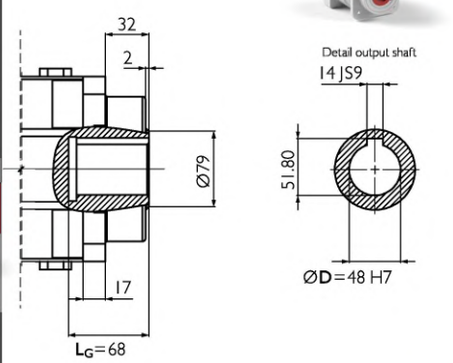
0

3

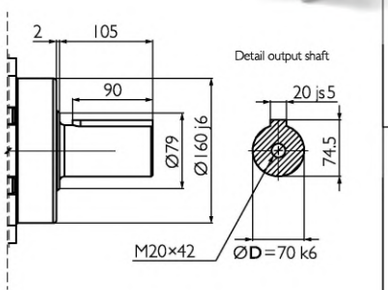


Option 3 on request. Adjustments can reduce capacity.

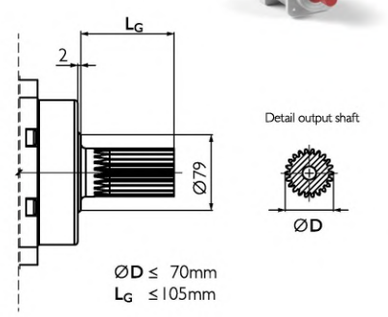
4



1

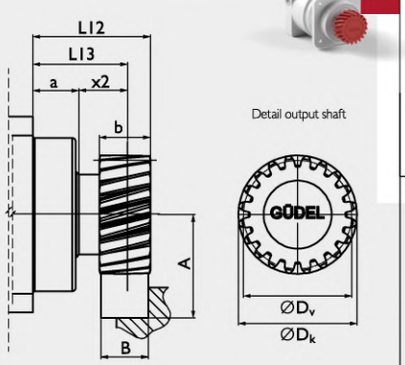


5



Option 5 on request. Adjustments can reduce capacity.

2



Your ideal drive train

Function Package with gearbox, rack and pinion from Güdel

Material	16MnCr5 DIN 1.7131
Teeth	pressure angle α = 20°, helical teeth left, 19°31'42'' hardened (58$^{+4}_{0}$ HRC), ground, crowned
Quality	6f24 DIN 3962 / 63 / 67

Pinion

		m_n	P_t	z	A	b	D_k	D_0	D_v	L12	L13	x2	a	M
Pinion 1	[-]	4	13.33	20	77.441	40	92.88	84.883	84.883	89.5	69.5	31.5	38	1.5
Pinion 2	[-]	5	16.66	20	87.052	50	116.10	106.103	106.103	95.5	70.5	32.5	38	3.0

m_n: Normal module, P_t: Transverse pitch [mm], z: Number of teeth, D_0: Pitch circle diameter for calculation, D_v: Pitch circle diameter for design, M: Weight [kg]

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SR 180 | 1 & 2-stage — Planetary gearboxes

Available ratios		i		1-stage	2-stage				
				4	12	16	20	28	40
Nominal torque S5 [a]		T_{2N}	[Nm]	1 100	1 100	1 100	1 100	1 100	1 100
Acceleration torque S5 [b]		T_{2B}	[Nm]	1 500	1 500	1 500	1 500	1 500	1 500
Nominal input speed S5 [c]		n_{1N}	[rpm]	1 300	2 200	2 400	2 400	2 400	2 400
Maximum input speed S5		n_{1max}	[rpm]	3 100	3 600	3 600	3 600	3 600	3 600
Emergency stop torque [d]		T_{2not}	[Nm]	2 780	2 780	2 780	2 780	2 780	2 780
Efficiency		η	[%]	96	93				
Lifetime		L_h	[h]	> 20 000					
Weight		M	[kg]	32	39				
Angular backlash		j_t	[arcmin]	Precision **P 1** ≤ 1 / **P 3** ≤ 3 / **P 5** ≤ 5 / **P 12** ≤12					
Torsionnal rigidity [e]		C_{t2}	[Nm/arcmin]	191.8	147.5	172.5	182.7	172.5	172.5
Noise [i]		L_{pA}	[dB(A)]	≤ 72					
Max. permitted housing temperature [g]		T	[°C]	90					
Protection class				IP 65					
Direction of rotation				Same way input / output					
Max. radial force on output shaft [f]		F_{rmax}	[N]	Center of output shaft: 18 000 / End of output shaft: 13 000					
Max. axial force on output shaft [f]		F_{amax}	[N]	15 000					
Color				Red, RAL 3003					
Inertia in kg.cm² [h]	Ø19	J_1	[kgcm²]	23.35	23.57	22.65	16.76	11.90	9.07
	Ø24			24.40	24.62	23.70	17.81	12.95	10.12
	Ø32			26.61	26.83	25.91	20.02	15.16	12.33
	Ø35			29.53	29.75	28.83	22.94	18.08	15.25
	Ø38			35.13	35.35	34.43	28.54	23.68	20.85
	Ø42			34.63	34.85	33.93	28.04	23.18	20.35
	Ø48			35.03	35.25	34.33	28.44	23.58	20.75

a) Nominal output torque when operating at n_{1N}.
b) 1000 cycles per hour max.
c) Valid for an ambient temperature of 20°C and T_{2N}. At higher ambient temperatures, please reduce speed.
d) Valid 1000 times the gearbox life.
e) Valid for an input Ø of 48 mm in 1-stage and 38 mm in 2- and 3-stage.
f) Values for 300 rpm.
g) For other temperatures, please contact us. Nominal output torque when operating at n_{1N}.
h) Depending on the motor output shaft Ø.
i) With n_{1N}=2500 rpm no load.

Rack

			Pinion 1			Pinion 2		
			Q6	Q7	Q9	Q6	Q7	Q9
Max acceleration force	F_{2B}	[N]	28 585	14 084	24 045	44 505	23 785	40 048
Max acceleration torque	T_{2B}	[Nm]	1 213	598	1 021	2 361	1 262	2 125
Precision			P1		P12	P1		P12
Feed force			High	Medium	Elevated	High	Medium	Elevated

Above values for rack and pinion take into consideration a number of load cycles: $1x10^6$ for the rack; $1x10^7$ for the pinion. Both in pulsating operation.

For proper sizing follow flowchart **calculate your ideal drive train** on pages 136 et seq.

More on the technical datasheets **your ideal drive train** on pages 120 et seq.

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SR 180 3-stage — Planetary gearboxes

Drawings

Input

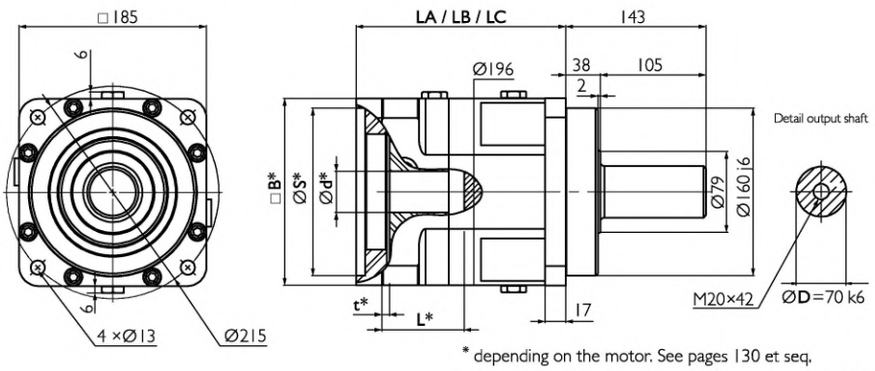
A	for motor shaft	L ≤ 60	19 ≤ Ød ≤ 32	result in **LA**
B	for motor shaft	60 < L ≤ 85	32 < Ød ≤ 48	result in **LB**
C	for motor shaft	85 < L ≤111	32 < Ød ≤ 48	result in **LC**

		1-stage	2-stage	3-stage
LA	[mm]	168	220	273
LB	[mm]	193	246	298
LC	[mm]	219	272	

Output

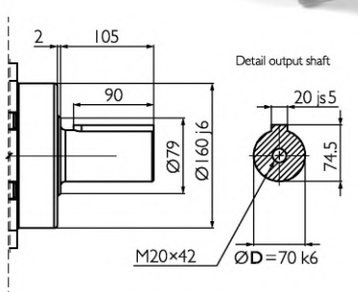
Standard

0



* depending on the motor. See pages 130 et seq.

1



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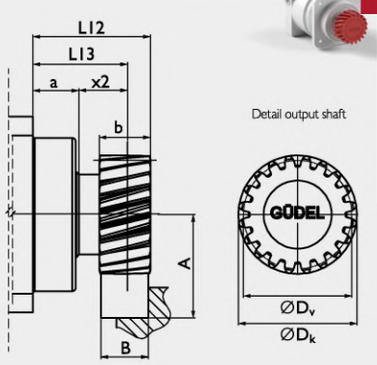
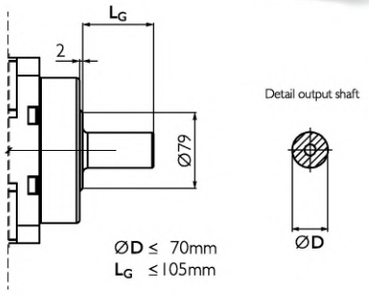


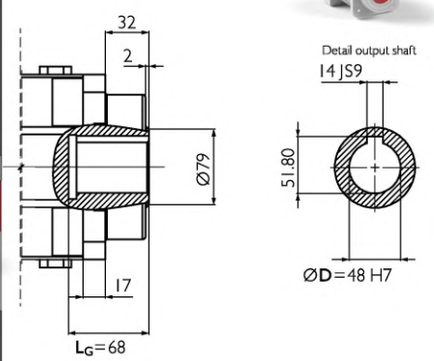
Optional

3

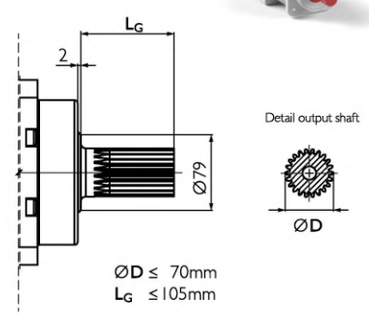


Option 3 on request. Adjustments can reduce capacity.

4



5



Option 5 on request. Adjustments can reduce capacity.

Example SR 180 A5, 1-stage

Your ideal drive train

Function Package with gearbox, rack and pinion from Güdel

Material	16MnCr5 DIN 1.7131
Teeth	pressure angle α = 20°, helical teeth left, 19°31'42" hardened (58$^{+4}_{0}$ HRC), ground, crowned
Quality	6f24 DIN 3962 / 63 / 67

Pinion

		m_n	P_t	z	A	b	D_k	D_0	D_v	L12	L13	x2	a	M
Pinion 1	[-]	4	13.33	20	77.441	40	92.88	84.883	84.883	89.5	69.5	31.5	38	1.5
Pinion 2	[-]	5	16.66	20	87.052	50	116.10	106.103	106.103	95.5	70.5	32.5	38	3.0

m_n: Normal module, P_t: Transverse pitch [mm], z: Number of teeth, D_0: Pitch circle diameter for calculation, D_v: Pitch circle diameter for design, M: Weight [kg]

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Available ratios *		i		3-stage									
				60	80	100	112	120	140	160	200	280	400
Nominal torque S5 a)		T_{2N}	[Nm]	1 100	1 100	1 100	1 100	1 100	1 100	1 100	1 100	1 100	1 100
Acceleration torque S5 b)		T_{2B}	[Nm]	1 500	1 500	1 500	1 500	1 500	1 500	1 500	1 500	1 500	1 500
Nominal input speed S5 c)		n_{1N}	[rpm]	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000
Maximum input speed S5		n_{1max}	[rpm]	3 600	3 600	3 600	3 600	3 600	3 600	3 600	3 600	3 600	3 600
Emergency stop torque d)		T_{2not}	[Nm]	2 780	2 780	2 780	2 780	2 780	2 780	2 780	2 780	2 780	2 780
Efficiency		η	[%]	90									
Lifetime		L_h	[h]	> 20 000									
Weight		M	[kg]	46									
Angular backlash		j_t	[arcmin]	Precision **P 1** ≤ 1 / **P 3** ≤ 3 / **P 5** ≤ 5 / **P 12** ≤12									
Torsionnal rigidity e)		C_{t2}	[Nm/arcmin]	173.4	173.4	173.1	164.1	164.1	173.4	164.1	140.0	164.1	164.1
Noise i)		L_{pA}	[dB(A)]	≤ 72									
Max. permitted housing temperature g)		T	[°C]	90									
Protection class				IP 65									
Direction of rotation				Same way input / output									
Max. radial force on output shaft f)		F_{rmax}	[N]	Center of output shaft: 18 000 / End of output shaft: 13 000									
Max. axial force on output shaft f)		F_{amax}	[N]	15 000									
Color				Red, RAL 3003									
Inertia in kg.cm² h)	Ø19	J_1	[kgcm²]	16.77	16.73	8.93	11.88	9.07	11.76	9.06	9.00	8.96	8.93
	Ø24			17.82	17.78	9.98	12.93	10.12	12.81	10.11	10.05	10.01	9.98
	Ø32			20.03	19.99	12.19	15.14	12.33	15.02	12.32	12.26	12.22	12.19
	Ø35			22.95	22.91	15.11	18.06	15.25	17.94	15.24	15.18	15.14	15.11
	Ø38			28.55	28.51	20.71	23.66	20.85	23.54	20.84	20.78	20.74	20.71
	Ø42			28.05	28.01	20.21	23.16	20.35	23.04	20.34	20.28	20.24	20.21
	Ø48			28.45	28.41	20.61	23.56	20.75	23.44	20.74	20.68	20.64	20.61

* Other ratios available. 36, 64, 84, 180, 196, 300, 360, 500, 600, 700, 1000 on request.

a) Nominal output torque when operating at n_{1N}.

b) 1000 cycles per hour max.

c) Valid for an ambient temperature of 20°C and T_{2N}. At higher ambient temperatures, please reduce speed.

d) Valid 1000 times the gearbox life.

e) Valid for an input Ø of 48 mm in 1-stage and 38 mm in 2- and 3-stage.

f) Values for 300 rpm.

g) For other temperatures, please contact us. Nominal output torque when operating at n_{1N}.

h) Depending on the motor output shaft Ø.

i) With n_{1N}=2500 rpm no load.

Rack

			Pinion 1			Pinion 2		
			Q6	Q7	Q9	Q6	Q7	Q9
Max acceleration force	F_{2B}	[N]	28 585	14 084	24 045	44 505	23 785	40 048
Max acceleration torque	T_{2B}	[Nm]	1 213	598	1 021	2 361	1 262	2 125
Precision			P1		P12	P1		P12
Feed force			High	Medium	Elevated	High	Medium	Elevated

Above values for rack and pinion take into consideration a number of load cycles: $1x10^6$ for the rack; $1x10^7$ for the pinion. Both in pulsating operation.

For proper sizing follow flowchart **calculate your ideal drive train** on pages 136 et seq.

More on the technical datasheets **your ideal drive train** on pages 120 et seq.

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Input

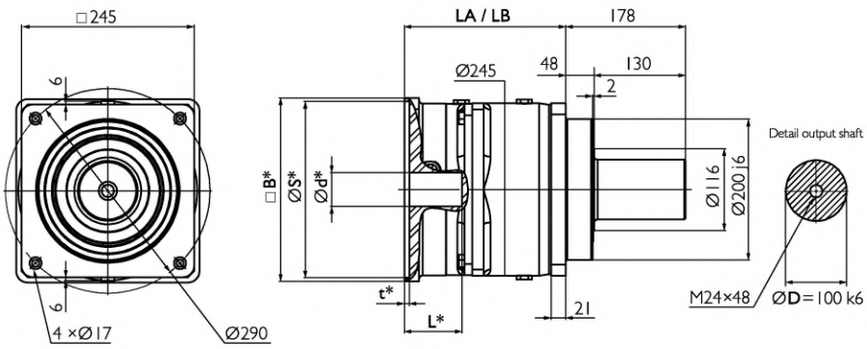
A	for motor shaft	L ≤ 85	24 ≤ Ød ≤ 48	result in **LA**
B	for motor shaft	85 < L ≤115	48 < Ød ≤ 55	result in **LB**

Output

Standard

0

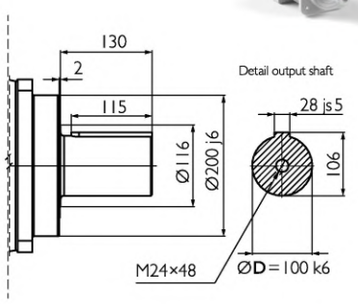
		1-stage	2-stage	3-stage
LA	[mm]	229	300	371
LB	[mm]	259	330	



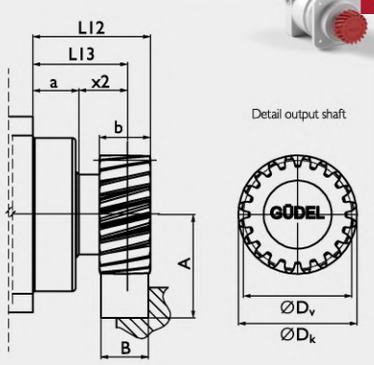
* depending on the motor. See pages 130 et seq.

Example SR 240 B4, 1-stage

1

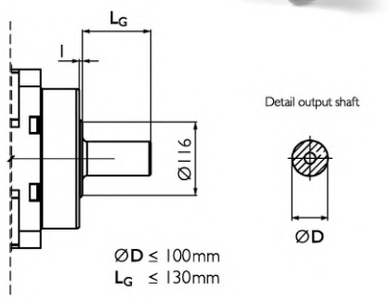


2



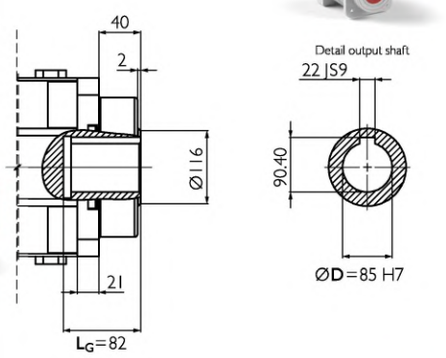
Optional

3

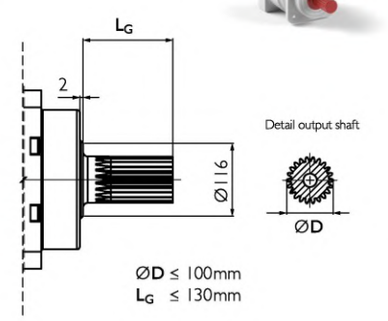


Option 3 on request. Adjustments can reduce capacity.

4



5



Option 5 on request. Adjustments can reduce capacity.

Your ideal drive train

Function Package with gearbox, rack and pinion from Güdel

Material 16MnCr5 DIN 1.7131
Teeth pressure angle α = 20°, helical teeth left, 19°31'42" hardened (58$^{+4}_{0}$ HRC), ground, crowned
Quality 6f24 DIN 3962 / 63 / 67

Pinion

		m_n	P_t	z	A	b	D_k	D_0	D_v	L12	L13	x2	a	M
Pinion 1	[-]	5	16.66	24	97.662	50	137.32	127.324	127.324	120.5	95.5	47.5	48	5.4
Pinion 2	[-]	6	20.00	20	106.662	60	139.32	127.324	127.324	119.0	89.0	41.0	48	5.6

m_n: Normal module, P_t: Transverse pitch [mm], z: Number of teeth, D_0: Pitch circle diameter for calculation, D_v: Pitch circle diameter for design, M: Weight [kg]

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SR 240 | 1 & 2-stage Planetary gearboxes

Available ratios		i		1-stage	2-stage				
				4	12	16	20	28	40
Nominal torque S5 a)		T_{2N}	[Nm]	3 600	3 600	3 600	3 600	3 600	3 600
Acceleration torque S5 b)		T_{2B}	[Nm]	4 800	4 800	4 800	4 800	4 800	4 800
Nominal input speed S5 c)		n_{1N}	[rpm]	900	1 500	1 700	1 700	1 700	1 700
Maximum input speed S5		n_{1max}	[rpm]	2 000	3 100	3 100	3 100	3 100	3 100
Emergency stop torque d)		T_{2not}	[Nm]	8 500	8 500	8 500	8 500	8 500	8 500
Efficiency		η	[%]	96	93				
Lifetime		L_h	[h]	> 20 000					
Weight		M	[kg]	70	90				
Angular backlash		j_t	[arcmin]	Precision **P 1** ≤ 1 / **P 3** ≤ 3 / **P 5** ≤ 5 / **P 12** ≤12					
Torsionnal rigidity e)		C_{t2}	[Nm/arcmin]	718.8	593.5	611.0	628.5	611.0	611.0
Noise i)		L_{pA}	[dB(A)]	≤ 73					
Max. permitted housing temperature g)		T	[°C]	90					
Protection class				IP 65					
Direction of rotation				Same way input / output					
Max. radial force on output shaft f)		F_{rmax}	[N]	Center of output shaft: 37 500 / End of output shaft: 25 000					
Max. axial force on output shaft f)		F_{amax}	[N]	34 000					
Color				Red, RAL 3003					
Inertia in kg.cm² h)	Ø24	J_1	[kgcm²]	83.3	79.1	74.9	73.3	34.0	22.9
	Ø32			85.5	81.3	77.1	75.5	36.2	25.1
	Ø35			90.8	86.6	82.4	80.8	41.5	30.4
	Ø38			94.2	90.0	85.8	84.2	44.9	33.8
	Ø42			93.7	89.5	85.3	83.7	44.4	33.3
	Ø48			93.9	89.7	85.5	83.9	44.6	33.5
	Ø55			116.5	112.3	108.1	106.5	67.2	56.1

a) Nominal output torque when operating at n_{1N}.
b) 1000 cycles per hour max.
c) Valid for an ambient temperature of 20°C and T_{2N}. At higher ambient temperatures, please reduce speed.
d) Valid 1000 times the gearbox life.
e) Valid for an input Ø of 55 mm in 1-stage and 48 mm in 2- and 3-stage.
f) Values for 300 rpm.
g) For other temperatures, please contact us. Nominal output torque when operating at n_{1N}.
h) Depending on the motor output shaft Ø.
i) With n_{1N}=1800 rpm no load.

Rack

			Pinion 1			Pinion 2		
			Q6	Q7	Q9	Q6	Q7	Q9
Max acceleration force	F_{2B}	[N]	44 786	29 748	39 992	63 300	-	59 005
Max acceleration torque	T_{2B}	[Nm]	2 851	1 894	2 546	4 030	-	3 756
Precision			P1		P12	P1		P12
Feed force			High	Medium	Elevated	High	Medium	Elevated

Above values for rack and pinion take into consideration a number of load cycles: $1x10^6$ for the rack; $1x10^7$ for the pinion. Both in pulsating operation.

For proper sizing follow flowchart **calculate your ideal drive train** on pages 136 et seq.

More on the technical datasheets **your ideal drive train** on pages 120 et seq.

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SR 240 | 3-stage — Planetary gearboxes — Drawings

Input

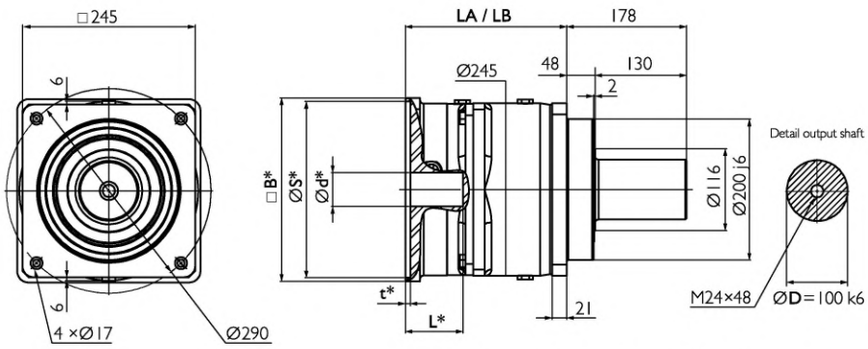
A	for motor shaft	L ≤ 85	24 ≤ Ød ≤ 48	result in **LA**
B	for motor shaft	85 < L ≤115	48 < Ød ≤ 55	result in **LB**

Output

Standard

0

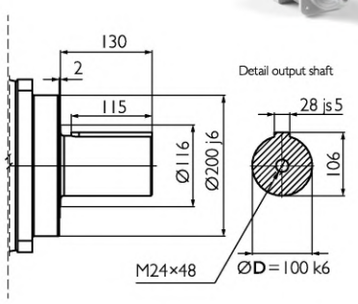
		1-stage	2-stage	3-stage
LA	[mm]	229	300	371
LB	[mm]	259	330	



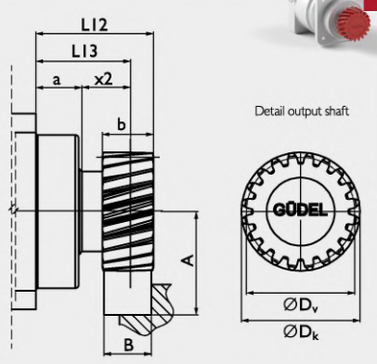
* depending on the motor. See pages 130 et seq.

Example SR 240 B2, 1-stage

1

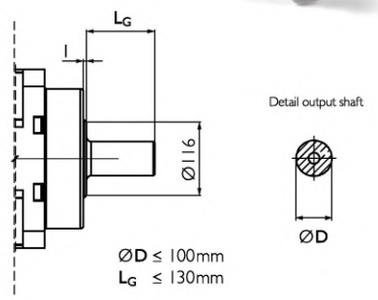


2



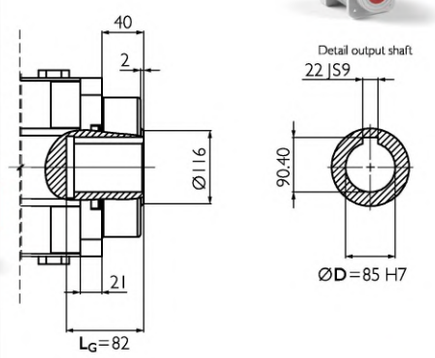
Optional

3

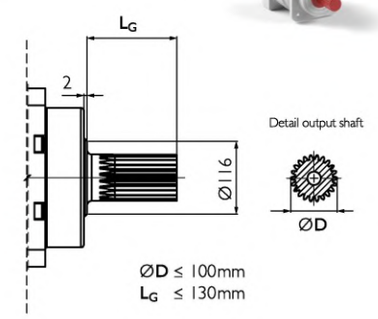


Option 3 on request. Adjustments can reduce capacity.

4



5



Option 5 on request. Adjustments can reduce capacity.

Your ideal drive train

Function Package with gearbox, rack and pinion from Güdel

Material	16MnCr5 DIN 1.7131
Teeth	pressure angle α = 20°, helical teeth left, 19°31'42'' hardened (58$^{+4}_{0}$ HRC), ground, crowned
Quality	6f24 DIN 3962 / 63 / 67

Pinion

		m_n	P_t	z	A	b	D_k	D_0	D_v	L12	L13	x2	a	M
Pinion 1	[-]	5	16.66	24	97.662	50	137.32	127.324	127.324	120.5	95.5	47.5	48	5.4
Pinion 2	[-]	6	20.00	20	106.662	60	139.32	127.324	127.324	119.0	89.0	41.0	48	5.6

m_n: Normal module, P_t: Transverse pitch [mm], z: Number of teeth, D_0: Pitch circle diameter for calculation, D_v: Pitch circle diameter for design, M: Weight [kg]

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SR 240 3-stage Planetary gearboxes

Available ratios *		i		3-stage									
				60	80	100	112	120	140	160	200	280	400
Nominal torque S5 a)		T_{2N}	[Nm]	3 600	3 600	3 600	3 600	3 600	3 600	3 600	3 600	3 600	3 600
Acceleration torque S5 b)		T_{2B}	[Nm]	4 800	4 800	4 800	4 800	4 800	4 800	4 800	4 800	4 800	4 800
Nominal input speed S5 c)		n_{1N}	[rpm]	2 100	2 100	2 100	2 100	2 100	2 100	2 100	2 100	2 100	2 100
Maximum input speed S5		n_{1max}	[rpm]	3 100	3 100	3 100	3 100	3 100	3 100	3 100	3 100	3 100	3 100
Emergency stop torque d)		T_{2not}	[Nm]	8 500	8 500	8 500	8 500	8 500	8 500	8 500	8 500	8 500	8 500
Efficiency		η	[%]	90									
Lifetime		L_h	[h]	> 20 000									
Weight		M	[kg]	110									
Angular backlash		j_t	[arcmin]	Precision **P 1** ≤ 1 / **P 3** ≤ 3 / **P 5** ≤ 5 / **P 12** ≤12									
Torsionnal rigidity e)		C_{t2}	[Nm/arcmin]	532.4	532.4	593.5	550.0	550.0	564.5	550.0	564.5	550.0	561.5
Noise i)		L_{pA}	[dB(A)]	≤ 73									
Max. permitted housing temperature g)		T	[°C]	90									
Protection class				IP 65									
Direction of rotation				Same way input / output									
Max. radial force on output shaft f)		F_{rmax}	[N]	Center of output shaft: 37 500 / End of output shaft: 25 000									
Max. axial force on output shaft f)		F_{amax}	[N]	34 000									
Color				Red, RAL 3003									
Inertia in kg.cm² h)	Ø24	J_1	[kgcm²]	78.0	74.2	22.3	33.9	23.4	33.9	22.8	22.8	22.4	22.3
	Ø32			80.2	76.4	24.5	36.1	25.6	36.1	25.0	25.0	24.6	24.5
	Ø35			85.5	81.7	29.8	41.4	30.9	41.4	30.3	30.3	29.9	29.8
	Ø38			88.9	85.1	33.2	44.8	34.3	44.8	33.7	33.7	33.3	33.2
	Ø42			88.4	84.6	32.7	44.3	33.8	44.3	33.2	33.2	32.8	32.7
	Ø48			88.6	84.8	32.9	44.5	34.0	44.5	33.4	33.4	33.0	32.9
	Ø55			111.2	107.4	55.5	67.1	56.6	67.1	56.0	56.0	55.6	55.5

* Other ratios available. 36, 64, 84, 180, 196, 300, 360, 500, 600, 700, 1 000 on request.

a) Nominal output torque when operating at n_{1N}.

b) 1000 cycles per hour max.

c) Valid for an ambient temperature of 20°C and T_{2N}. At higher ambient temperatures, please reduce speed.

d) Valid 1000 times the gearbox life.

e) Valid for an input Ø of 55 mm in 1-stage and 48 mm in 2- and 3-stage.

f) Values for 300 rpm.

g) For other temperatures, please contact us. Nominal output torque when operating at n_{1N}.

h) Depending on the motor output shaft Ø.

i) With n_{1N}=1800 rpm no load.

Rack

			Pinion 1			Pinion 2		
			Q6	Q7	Q9	Q6	Q7	Q9
Max acceleration force	F_{2B}	[N]	44 786	29 748	39 992	63 300	-	59 005
Max acceleration torque	T_{2B}	[Nm]	2 851	1 894	2 546	4 030	-	3 756
Precision			P1		P12	P1		P12
Feed force			High	Medium	Elevated	High	Medium	Elevated

Above values for rack and pinion take into consideration a number of load cycles: $1x10^6$ for the rack; $1x10^7$ for the pinion. Both in pulsating operation.

For proper sizing follow flowchart **calculate your ideal drive train** on pages 136 et seq.

More on the technical datasheets **your ideal drive train** on pages 120 et seq.

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