

Frame Size	Unit	Note	10	20	30	35	40	50	60	70
Ratio	i		15 / 20 / 25 / 30							
Nominal Output Torque	T2N [Nm]	*1	150	250	480	950	1750	3200	5000	7500
Maximum Acceleration Torque	T2B [Nm]	*2	225	375	720	1425	2625	4800	7500	11250
Emergency Stop Torque	T2Not [Nm]	*3	300	500	960	1900	3500	6400	10000	15000
Nominal Input Speed	n1N [rpm]	*4	2400	2400	2000	1600	1300	900	800	700
Maximum Input Speed	n1max [rpm]	*5	8000	7000	6000	5000	4000	4000	3500	3500
Maximum Radial Load	F2Rmax [N]	*6	4900	7200	10000	15000	18000	25000	30000	35000
Maximum Axial Load	F2Amax [N]	*7	2450	3600	5000	7500	9000	12500	15000	17500
Efficiency	h [%]	*8	> 92	> 92	> 92	> 92	> 92	> 92	> 92	> 92
Torsional Rigidity	Ct21 [Nm/arcmin]	*9	10	16	34	75	150	377	473	726
Maximum Torsional Backlash	jt [arcmin]	*10	≤ 6	≤ 6	≤ 6	≤ 5	≤ 5	≤ 4	≤ 4	≤ 4
Noise Level	LpA [dB(A)]	*11	< 69	< 69	< 71	< 71	< 73	< 73	< 75	< 75
Ambient Temperature	[°C]	-	-10 to 90							
Permitted Housing Temperature	[°C]	-	90							
Protection Class	-	-	IP64							
Lubrication	-	-	Synthetic Oil [ISO VG-Class 150]							
Service Life	SL [h]	*12	30,000							
Weight	m [kg]	-	10	16	27	52	75	115	190	300

Frame Size	Unit	Note	10	20	30	35	40	50	60	70
Ratio	i		40 / 50							
Nominal Output Torque	T2N [Nm]	*1	110	200	360	700	1300	3200	5000	7500
Maximum Acceleration Torque	T2B [Nm]	*2	165	300	540	1050	1950	4800	7500	11250
Emergency Stop Torque	T2Not [Nm]	*3	220	400	720	1400	2600	6400	10000	15000
Nominal Input Speed	n1N [rpm]	*4	3700	3700	3100	2500	2100	1400	1300	1200
Maximum Input Speed	n1max [rpm]	*5	8000	7000	6000	5000	4000	4000	3500	3500
Maximum Radial Load	F2Rmax [N]	*6	4900	7200	10000	15000	18000	25000	30000	35000
Maximum Axial Load	F2Amax [N]	*7	2450	3600	5000	7500	9000	12500	15000	17500
Efficiency	h [%]	*8	> 92	> 92	> 92	> 92	> 92	> 92	> 92	> 92
Torsional Rigidity	Ct21 [Nm/arcmin]	*9	10	16	34	75	150	377	473	726
Maximum Torsional Backlash	jt [arcmin]	*10	≤ 6	≤ 6	≤ 6	≤ 5	≤ 5	≤ 4	≤ 4	≤ 4
Noise Level	LpA [dB(A)]	*11	< 69	< 69	< 71	< 71	< 73	< 73	< 75	< 75
Ambient Temperature	[°C]	-	-10 to 90							
Permitted Housing Temperature	[°C]	-	90							
Protection Class	-	-	IP64							
Lubrication	-	-	Synthetic Oil [ISO VG-Class 150]							
Service Life	SL [h]	*12	30,000							
Weight	m [kg]	-	10	16	27	52	75	115	190	300

Frame Size	Unit	Note	10	20	30	35	40	50	60	70
Ratio	i		60 / 75							
Nominal Output Torque	T2N [Nm]	*1	75	125	250	475	900	2550	4050	5100
Maximum Acceleration Torque	T2B [Nm]	*2	110	185	375	710	1350	3825	6075	7650
Emergency Stop Torque	T2Not [Nm]	*3	150	250	500	950	1800	5100	8100	10200
Nominal Input Speed	n1N [rpm]	*4	4500	4500	3900	3300	2700	1900	1600	1500
Maximum Input Speed	n1max [rpm]	*5	8000	7000	6000	5000	4000	4000	3500	3500
Maximum Radial Load	F2Rmax [N]	*6	4900	7200	10000	15000	18000	25000	30000	35000
Maximum Axial Load	F2Amax [N]	*7	2450	3600	5000	7500	9000	12500	15000	17500
Efficiency	h [%]	*8	> 90	> 90	> 90	> 90	> 90	> 90	> 90	> 90
Torsional Rigidity	Ct21 [Nm/arcmin]	*9	10	16	34	75	150	377	473	726
Maximum Torsional Backlash	jt [arcmin]	*10	≤ 6	≤ 6	≤ 6	≤ 5	≤ 5	≤ 4	≤ 4	≤ 4
Noise Level	LpA [dB(A)]	*11	< 67	< 67	< 69	< 69	< 71	< 71	< 73	< 73
Ambient Temperature	[°C]	-	-10 to 90							
Permitted Housing Temperature	[°C]	-	90							
Protection Class	-	-	IP64							
Lubrication	-	-	Synthetic Oil [ISO VG-Class 150]							
Service Life	SL [h]	*12	30,000							
Weight	m [kg]	-	10	16	27	52	75	115	190	300

*1) At nominal input speed, service life is 30,000 hours

*2) The maximum torque when starting or stopping operation. Permitted 1,000 cycles/hour.

*3) The maximum torque allowed under a stress situation. Permitted 1,000 times during service life.

*4) Average input speed at nominal torque. Maintain housing temperature below 90°C

*5) The maximum intermittent input speed

*6) Maximum radial load gearbox can accept. Measured at center of output shaft at 400rpm

*7) Maximum axial load gearbox can accept. Measured at center of output shaft at 400rpm

*8) The efficiency at full load

*9) At nominal output torque. Does not include lost motion.

*10) Measured at output, 2% load and max 10Nm.

*11) Measured at 1,500 rpm input at partial load

*12) Based on S5 duty cycle <60% and <20 minute run time.

Moment of inertia I_1 [kgcm²]

Ratio	Frame Size							
	10	20	30	35	40	50	60	70
15:1	0.676	2.64	5.56	9.86	26.2	57.3	100.8	185
20:1	0.605	2.41	5.23	8.98	22.1	50.2	90.1	151
25:1	0.579	2.34	5.05	8.53	20.9	45.4	73.0	133
30:1	0.577	2.34	5.10	8.45	21.5	44.0	70.2	132
40:1	0.557	2.29	4.88	8.12	20.5	41.2	64.3	118
50:1	0.547	2.26	4.83	7.96	20.0	39.8	60.8	111
60:1	0.542	2.27	4.79	7.87	19.1	38.9	58.7	107
75:1	0.537	2.24	4.77	7.79	18.9	38.3	57.1	104

Units and Symbols

Maximum Motor Acceleration Torque	T1BMot	Nm
Nominal Output Torque	T2N	Nm
Maximum Acceleration Torque	T2B	Nm
Emergency Stop Torque	T2Not	Nm
Nominal Input Speed	n1N	rpm
Maximum Input Speed	n1max	rpm
Maximum Input Radial Load	F1Rmax	N
Maximum Output Radial Load	F2Rmax	N
Maximum Input Axial Load	F1Amax	N
Maximum Output Axial Load	F2Amax	N
Mass Moment of Inertia	I1	kgcm ²
Efficiency at Full Load	η	%
Torsional Rigidity	Ct21	Nm/arc-min
Maximum Torsional Backlash	jt	arc-min
Noise Level	LpA	dB(A)
Service Life	Lh	h
Run time	RT	min
Duty cycle	DC	%
Ambient Temperature	ta	°C
Thermal Performance Limit	Ptherm	kW
Performance	P	kW
Weight	m	kg