

**Technical specifications VDS+ 050**

Ratio	i	1-stage						
		4	7	10	16	28	40	
$n_1=500$ rpm	$T_{2Max}$	Nm	124	132	148	154	165	158
		in.lb	1097	1168	1310	1363	1460	1398
	$T_{2Servo}$	Nm	54	71	74	81	90	74
		in.lb	478	628	655	717	797	655
$\eta$	%	92	89	86	82	72	64	
$n_1=1000$ rpm	$T_{2Max}$	Nm	124	130	136	140	151	142
		in.lb	1097	1151	1204	1239	1336	1257
	$T_{2Servo}$	Nm	58	76	80	88	97	81
		in.lb	513	673	708	779	858	717
$\eta$	%	94	91	89	85	77	69	
$n_1=2000$ rpm	$T_{2Max}$	Nm	88	106	112	120	134	122
		in.lb	779	938	991	1062	1186	1080
	$T_{2Servo}$	Nm	60	78	82	89	99	83
		in.lb	531	690	726	788	876	735
$\eta$	%	95	93	91	88	75	75	
$n_1=3000$ rpm	$T_{2Max}$	Nm	72	86	95	106	112	108
		in.lb	637	761	841	938	991	956
	$T_{2Servo}$	Nm	59	77	81	88	97	81
		in.lb	522	681	717	779	858	717
$\eta$	%	96	94	93	90	83	78	
$n_1=4000$ rpm	$T_{2Max}$	Nm	62	77	83	92	102	95
		in.lb	549	681	735	814	903	841
	$T_{2Servo}$	Nm	58	76	79	87	96	80
		in.lb	513	673	699	770	850	708
$\eta$	%	96	95	93	91	85	80	
Emergency stop torque	$T_{2Not}$	Nm	230	242	242	250	262	236
		in.lb	2036	2142	2142	2213	2319	2089
Nominal input speed	$n_{1N}$	rpm	4000	4000	4000	4000	4000	4000
Maximum input speed	$n_{1Max}$	rpm	6000					
Average no-load running torque (at $n_1=3000$ rpm and 20°C gearhead temperature.) <sup>a</sup>	$T_{012}$	Nm	1,3	1,2	1,2	1,1	1	0,9
		in.lb	11,5	10,6	10,6	9,7	8,9	8,0
Torsional backlash	$j_t$	arcmin	≤3					
Torsional rigidity	$C_{t12}$	Nm/arcmin	8					
		in.lb/arcmin	71					
Max. axial force <sup>b</sup>	$F_{2AMax}$	N	5000					
		lb <sub>f</sub>	1125					
Max. radial force <sup>b</sup>	$F_{2RMax}$	N	3800					
		lb <sub>f</sub>	855					
Max. tilting moment	$M_{2KMax}$	Nm	409					
		in.lb	3620					
Service Life For calculation see "Technical Basics"	$L_h$	h	> 20000					
Weight (without motor attachment parts)	m	kg	8,5					
		lb <sub>m</sub>	18,8					
Noise level (At $n_1=3000$ rpm without load)	$L_{PA}$	dB(A)	≤ 62					
Max. permissible housing temperature		°C	+90					
		°F	194					
Ambient temperature		°C	-10 bis +40					
		°F	14 to 194					
Lubrication			Synthetic transmission oil					
Paint			None					
Direction of rotation			See drawings					
Type of protection			IP 65					
Mass moment of inertia referring to the drive	$J_1$	kgcm <sup>2</sup>	2,27	2,03	1,94	1,84	1,81	1,86
		10 <sup>3</sup> in.lb.s <sup>2</sup>	2,01	1,80	1,72	1,63	1,60	1,64

<sup>a</sup> Decrease in operation

<sup>b</sup> In reference to the center of output flange / shaft

**Technical specifications VDS+ 063**

Ratio	i	1-stage						
		4	7	10	16	28	40	
n <sub>1</sub> =500 rpm	T <sub>2Max</sub>	Nm	302	314	315	320	328	324
		in.lb	2673	2779	2788	2832	2903	2867
	T <sub>2Servo</sub>	Nm	198	210	225	221	229	226
		in.lb	1752	1859	1991	1956	2027	2000
η	%	93	91	88	83	74	68	
n <sub>1</sub> =1000 rpm	T <sub>2Max</sub>	Nm	264	284	290	298	304	301
		in.lb	2336	2513	2567	2637	2690	2664
	T <sub>2Servo</sub>	Nm	192	228	240	238	245	241
		in.lb	1699	2018	2124	2106	2168	2133
η	%	94	93	91	86	78	73	
n <sub>1</sub> =2000 rpm	T <sub>2Max</sub>	Nm	202	243	262	271	282	278
		in.lb	1788	2151	2319	2398	2496	2460
	T <sub>2Servo</sub>	Nm	174	212	230	238	248	243
		in.lb	1540	1876	2036	2106	2195	2151
η	%	96	94	93	89	83	78	
n <sub>1</sub> =3000 rpm	T <sub>2Max</sub>	Nm	164	190	202	209	235	231
		in.lb	1451	1682	1788	1850	2080	2044
	T <sub>2Servo</sub>	Nm	128	166	184	209	198	194
		in.lb	1133	1469	1628	1850	1752	1717
η	%	96	95	94	91	85	81	
n <sub>1</sub> =4000 rpm	T <sub>2Max</sub>	Nm	128	148	164	175	201	198
		in.lb	1133	1310	1451	1549	1779	1752
	T <sub>2Servo</sub>	Nm	104	132	152	175	165	162
		in.lb	920	1168	1345	1549	1460	1434
η	%	97	96	94	92	86	83	
Emergency stop torque	T <sub>2Not</sub>	Nm	460	484	491	494	518	447
in.lb		4071	4283	4345	4372	4584	3956	
Nominal input speed	n <sub>1N</sub>	rpm	4000	4000	4000	4000	4000	4000
Maximum input speed	n <sub>1Max</sub>	rpm	4500					
Average no-load running torque (at n <sub>1</sub> =3000 rpm and 20°C gearhead temperature.) <sup>a</sup>	T <sub>012</sub>	Nm	2,1	1,9	1,8	1,7	1,6	1,4
		in.lb	18,6	16,8	15,9	15,0	14,2	12,4
Torsional backlash	j <sub>t</sub>	arcmin	≤3					
Torsional rigidity	C <sub>112</sub>	Nm/arcmin	28					
		in.lb/arcmin	248					
Max. axial force <sup>b</sup>	F <sub>2AMax</sub>	N	8250					
		lb <sub>f</sub>	1856					
Max. radial force <sup>b</sup>	F <sub>2RMax</sub>	N	6000					
		lb <sub>f</sub>	1350					
Max. tilting moment	M <sub>2KMax</sub>	Nm	843					
		in.lb	7461					
Service Life For calculation see "Technical Basics"	L <sub>h</sub>	h	> 20000					
Weight (without motor attachment parts)	m	kg	15					
		lb <sub>m</sub>	33,2					
Noise level (At n <sub>1</sub> =3000 rpm without load)	L <sub>PA</sub>	dB(A)	≤ 64					
Max. permissible housing temperature		°C	+90					
		°F	194					
Ambient temperature		°C	-10 bis +40					
		°F	14 to 194					
Lubrication	Synthetic transmission oil							
Paint	None							
Direction of rotation	See drawings							
Type of protection	IP 65							
Mass moment of inertia referring to the drive	J <sub>1</sub>	kgcm <sup>2</sup>	6,72	5,79	5,54	5,44	5,41	5,35
		10 <sup>3</sup> in.lb.s <sup>2</sup>	5,95	5,12	4,90	4,82	4,78	4,74

<sup>a</sup> Decrease in operation

<sup>b</sup> In reference to the center of output flange / shaft

**Technical specifications VDS+ 080**

Ratio	i	1-stage						
		4	7	10	16	28	40	
n <sub>1</sub> =500 rpm	T <sub>2Max</sub>	Nm	578	646	672	702	785	676
		in.lb	5115	5717	5947	6213	6947	5983
	T <sub>2Servo</sub>	Nm	469	601	613	677	764	631
		in.lb	4151	5319	5425	5991	6761	5584
η	%	94	92	89	86	77	70	
n <sub>1</sub> =1000 rpm	T <sub>2Max</sub>	Nm	514	602	588	656	698	613
		in.lb	4549	5328	5204	5806	6177	5425
	T <sub>2Servo</sub>	Nm	491	574	561	625	665	584
		in.lb	4345	5080	4965	5531	5885	5168
η	%	95	93	91	88	81	74	
n <sub>1</sub> =2000 rpm	T <sub>2Max</sub>	Nm	350	435	431	500	536	470
		in.lb	3098	3850	3814	4425	4744	4160
	T <sub>2Servo</sub>	Nm	335	415	411	476	511	448
		in.lb	2965	3673	3637	4213	4522	3965
η	%	96	95	93	89	84	79	
n <sub>1</sub> =3000 rpm	T <sub>2Max</sub>	Nm	259	336	334	400	433	380
		in.lb	2292	2974	2956	3540	3832	3363
	T <sub>2Servo</sub>	Nm	247	320	319	381	413	362
		in.lb	2186	2832	2823	3372	3655	3204
η	%	97	96	94	92	86	81	
n <sub>1</sub> =3500 rpm	T <sub>2Max</sub>	Nm	227	299	300	362	394	346
		in.lb	2009	2646	2655	3204	3487	3062
	T <sub>2Servo</sub>	Nm	217	285	286	345	376	330
		in.lb	1920	2522	2531	3053	3328	2921
η	%	97	96	94	92	87	82	
Emergency stop torque	T <sub>2Not</sub>	Nm	938	993	963	1005	1064	941
		in.lb	8301	8788	8523	8894	9416	8328
Nominal input speed	n <sub>1N</sub>	rpm	3500	3500	3500	3500	3500	3500
Maximum input speed	n <sub>1Max</sub>	rpm	4000					
Average no-load running torque (at n <sub>1</sub> =3000 rpm and 20°C gearhead temperature.) <sup>a</sup>	T <sub>012</sub>	Nm	3,6	3,5	3,4	3,2	3	2,8
		in.lb	31,9	31,0	30,1	28,3	26,6	24,8
Torsional backlash	j <sub>t</sub>	arcmin	≤3					
Torsional rigidity	C <sub>t12</sub>	Nm/arcmin	78					
		in.lb/arcmin	690					
Max. axial force <sup>b</sup>	F <sub>2AMax</sub>	N	13900					
		lb <sub>f</sub>	3128					
Max. radial force <sup>b</sup>	F <sub>2RMax</sub>	N	9000					
		lb <sub>f</sub>	2025					
Max. tilting moment	M <sub>2KMax</sub>	Nm	1544					
		in.lb	13664					
Service Life For calculation see "Technical Basics"	L <sub>h</sub>	h	> 20000					
Weight (without motor attachment parts)	m	kg	32					
		lb <sub>m</sub>	70,7					
Noise level (At n <sub>1</sub> =3000 rpm without load)	L <sub>PA</sub>	dB(A)	≤ 66					
Max. permissible housing temperature		°C	+90					
		°F	194					
Ambient temperature		°C	-10 bis +40					
		°F	14 to 194					
Lubrication			Synthetic transmission oil					
Paint			None					
Direction of rotation			See drawings					
Type of protection			IP 65					
Mass moment of inertia referring to the drive	J <sub>1</sub>	kgcm <sup>2</sup>	20,74	17,57	17,70	16,34	16,25	16,91
		10 <sup>3</sup> in.lb.s <sup>2</sup>	18,36	15,55	15,67	14,46	14,38	14,96

<sup>a</sup> Decrease in operation

<sup>b</sup> In reference to the center of output flange / shaft

**Technical specifications VDS+ 100**

Ratio	i	1-stage						
			4	7	10	16	28	40
n <sub>1</sub> =500 rpm	T <sub>2Max</sub>	Nm	1184	1336	1377	1392	1505	1376
		in.lb	10478	11824	12186	12319	13319	12178
	T <sub>2Servo</sub>	Nm	1155	1304	1343	1359	1469	1343
		in.lb	10222	11540	11886	12027	13001	11886
	η	%	95	93	91	87	80	76
	n <sub>1</sub> =1000 rpm	T <sub>2Max</sub>	Nm	905	1070	1122	1140	1251
in.lb			8009	9470	9930	10089	11071	10284
T <sub>2Servo</sub>		Nm	883	1044	1095	1113	1221	1134
		in.lb	7815	9239	9691	9850	10806	10036
η		%	95	94	92	88	82	79
n <sub>1</sub> =2000 rpm		T <sub>2Max</sub>	Nm	595	748	807	830	930
	in.lb		5266	6620	7142	7346	8231	7815
	T <sub>2Servo</sub>	Nm	581	730	788	810	908	862
		in.lb	5142	6461	6974	7169	8036	7629
	η	%	96	95	94	91	86	82
	n <sub>1</sub> =3000 rpm	T <sub>2Max</sub>	Nm	430	564	621	644	735
in.lb			3806	4991	5496	5699	6505	6275
T <sub>2Servo</sub>		Nm	420	551	606	629	718	692
		in.lb	3717	4876	5363	5567	6354	6124
η		%	97	96	95	92	87	84
n <sub>1</sub> =3500 rpm		T <sub>2Max</sub>	Nm	-	-	-	-	-
	in.lb		-	-	-	-	-	-
	T <sub>2Servo</sub>	Nm	-	-	-	-	-	-
		in.lb	-	-	-	-	-	-
	η	%	-	-	-	-	-	-
	Emergency stop torque	T <sub>2Not</sub>	Nm	1819	1932	1940	1955	2073
		in.lb	16098	17098	17169	17302	18346	16426
Nominal input speed	n <sub>1N</sub>	rpm	3000	3000	3000	3000	3000	3000
Maximum input speed	n <sub>1Max</sub>	rpm	3500					
Average no-load running torque (at n <sub>1</sub> =3000 rpm and 20°C gearhead temperature.) <sup>a</sup>	T <sub>012</sub>	Nm	9,8	8,1	7,4	6,7	5,8	5
		in.lb	86,7	71,7	65,5	59,3	51,3	44,3
Torsional backlash	j <sub>t</sub>	arcmin	≤3					
Torsional rigidity	C <sub>112</sub>	Nm/arcmin	153					
		in.lb/arcmin	1354					
Max. axial force <sup>b</sup>	F <sub>2AMax</sub>	N	19500					
		lb <sub>f</sub>	4388					
Max. radial force <sup>b</sup>	F <sub>2RMax</sub>	N	14000					
		lb <sub>f</sub>	3150					
Max. tilting moment	M <sub>2KMax</sub>	Nm	3059					
		in.lb	27072					
Service Life For calculation see "Technical Basics"	L <sub>h</sub>	h	> 20000					
Weight (without motor attachment parts)	m	kg	61					
		lb <sub>m</sub>	134,8					
Noise level (At n <sub>1</sub> =3000 rpm without load)	L <sub>PA</sub>	dB(A)	≤ 70					
Max. permissible housing temperature		°C	+90					
		°F	194					
Ambient temperature		°C	-10 bis +40					
		°F	14 to 194					
Lubrication			Synthetic transmission oil					
Paint			None					
Direction of rotation			See drawings					
Type of protection			IP 65					
Mass moment of inertia referring to the drive	J <sub>1</sub>	kgcm <sup>2</sup>	65,59	56,20	54,30	55,17	52,71	53,04
		10 <sup>3</sup> in.lb.s <sup>2</sup>	58,05	49,73	48,06	48,83	46,65	46,94

<sup>a</sup> Decrease in operation

<sup>b</sup> In reference to the center of output flange / shaft