

SailServo

GWS Tests

Transmitter/Receiver:- Spectrum Dx5e/AR500 Rudder Ch4 Hi Mode Output 1.16 / 1.88ms = 0.72ms 3.5/9v 5A
Pulse Width (PWM) checked with GWS MT1 servo tester

6v Bench supply

Measured drum rotation and travel at no load
Short Angle drum fails to rotate back to zero when pulled in
Long Drum rotation increases as more load is applied
Time to pull in 100mm cord. Sec/100mm

22 Jan 2013 Circumference 125.7 40mm drum

Speed Drop Bands	
Drop 0%	= 0 - 10% Speed Drop
Band 20%	= 10 - 20%
Band 30%	= 20 - 30%
Band 40%	= 30 - 40%

1/2 T		0.8 - 2.2ms = 1.4		deg = 300		= 105 mm		214 = deg/ms		0.350 = mm/deg		75 = mm/ms						
		1.0 - 2.0 = 1.0ms = 210deg = 0.6T = 150mm						Speed Drop			Running				Hold			
Kg	Load	Short	Short	Turns	Long	Total	Time	sec/	Sec/	rpm	%	V	CA	W	%	V	CA	W
.cm		mm	deg	deg	deg	Deg	mm	100mm	160deg									
0.0	0.0			160		160	58	1.0	1.6	28	0%	5.93	0.19	1.1		6.01	0.01	0.1
1.0	0.5	0	0	160		160	58	1.1	1.9	28	0%	5.90	0.25	1.5		6.00	0.01	0.1
2.0	1.0	0	0	160		160	58	1.2	2.0	27	1%	5.85	0.35	2.0		5.96	0.10	0.6
3.0	1.5	-3	-10	150	10	160	58	1.2	2.0	24	12%	5.81	0.45	2.6		5.92	0.22	1.3
4.0	2.0	-7	-20	140	10	150	54	1.4	2.5	20	27%	5.77	0.55	3.2		5.87	0.33	1.9

1 T		0.8 - 2.2ms = 1.4		deg = 455		= 160 mm		325 = deg/ms		0.352 = mm/deg		114 = mm/ms						
		1.0 - 2.0 = 1.0ms = 325deg = 0.9T = 115mm						Speed Drop			Running				Hold			
Kg	Load	Short	Short	Turns	Long	Total	Time	sec/	Sec/	rpm	%	V	CA	W	%	V	CA	W
.cm		mm	deg	deg	deg	Deg	mm	100mm	90deg									
0.0	0.0	0		250		250	78	1.3	1.7	14	0%	5.90	0.24	1.4		6.00	0.01	0.1
1.0	0.5	-3	-10	240		240	75	1.5	2.0	14	4%	5.87	0.30	1.8		6.00	0.01	0.1
2.0	1.0	-7	-20	230		230	69	1.6	2.2	13	11%	5.83	0.43	2.5		5.95	0.19	1.1
3.0	1.5	-10	-30	220		220	61	1.8	2.9	12	16%	5.79	0.50	2.9		5.93	0.19	1.1
4.0	2.0	-14	-40	210	10	220	53	1.9	3.6	10	30%	7.75	0.60	4.7		5.92	0.23	1.4

3 T		0.8 - 2.2ms = 1.4		deg = 1085		= 380 mm		775 = deg/ms		0.350 = mm/deg		271 = mm/ms						
		1.0 - 2.0 = 1.0ms = 775deg = 2.2T = 270mm						Speed Drop			Running				Hold			
Kg	Load	Short	Short	Turns	Long	Total	Time	sec/	Sec/	rpm	%	V	CA	W	%	V	CA	W
.cm		mm	deg	deg	deg	Deg	mm	100mm	2 rev									
0.0	0.0			860		860	335	4.8	1.4	32	0%	5.95	0.15	0.9		6.00	0.02	0.1
1.0	0.5	0	0	860		860	335	4.9	1.5	30	6%	5.91	0.25	1.5		6.00	0.02	0.1
2.0	1.0	0	0	860		860	335	5.3	1.6	28	11%	5.88	0.31	1.8		6.00	0.03	0.2
3.0	1.5	0	0	860		860	335	5.8	1.7	25	21%	5.83	0.40	2.3		5.93	0.19	1.1
4.0	2.0	0	0	860		860	335	6.7	2.0	22	31%	5.80	0.50	2.9		5.80	0.31	1.8

6 T		1.0 - 2.0ms = 1.0		deg = 2155		= 825 mm		2155 = deg/ms		0.383 mm/deg		825 = mm/ms						
		1.0 - 2.0 = 1.0ms = 2155deg = 6T = 825mm						Speed Drop			Running				Hold			
Kg	Load	Short	Short	Turns	Long	Total	Time	sec/	Sec/	rpm	%	V	CA	W	%	V	CA	W
.cm		mm	deg	deg	deg	Deg	mm	100mm	2 rev									
0.0	0.0			1600		1600	625	7.6	1.2	34	0%	5.96	0.10	0.6		6.00	0.02	0.1
1.0	0.5	0	0	1600		1600	625	8.5	1.4	31	6%	5.93	0.20	1.2		5.97	0.08	0.5
2.0	1.0	0	0	1600		1600	625	9.4	1.5	27	18%	5.89	0.29	1.7		5.94	0.12	0.7
3.0	1.5	-10	-30	1570		1570	613	10.8	1.8	23	30%	5.85	0.38	2.2		5.93	0.20	1.2

12 T		1.0 - 2.2ms = 1.2		deg = 4310		= 1620 mm		3592 = deg/ms		0.376 mm/deg		1350 = mm/ms						
		1.0 - 2.0 = 1.0ms = 3600deg = 10 T = 1350mm						Speed Drop			Running				Hold			
Kg	Load	Short	Short	Turns	Long	Total	Time	sec/	Sec/	rpm	%	V	CA	W	%	V	CA	W
.cm		mm	deg	deg	deg	Deg	mm	100mm	2 rev									
0.0	0.0			3200		3200	1204	8.1	0.7	33	0%	5.95	0.12	0.7		5.98	0.10	0.6
0.6	0.5	-3	-10	3190		3190	1200	8.8	0.7	31	6%	5.93	0.21	1.2		5.96	0.15	0.9
2.0	1.0	-10	-30	3170		3170	1189	9.6	0.8	28	14%	5.89	0.30	1.8		5.95	0.02	0.1
3.0	1.5	0		3200		3200	1189	11.3	1.0	26	21%	5.85	0.38	2.2		5.91	0.15	0.9
4.0	2.0	-3	-10	3190		3190	1185	13.0	1.1	22	32%	5.81	0.50	2.9		5.90	0.30	1.8