

**Motor characteristics and lifting forces, Boomtrim BTE-1 (one motor)**

<b>Motor Load at</b>	<b>free Load</b>	<b>max. Efficiency</b>	<b>max. Power</b>	<b>Stall</b>
Voltage DC			12	
Speed rp/min	6480	5767	3240	0
Current A	1	8	32	63
Watts	11	93	384	756
Torque at 20° C, Nm	-	0.11	0.51	1.02

$$W = A \times V$$

<b>Extension Force Kg</b>				
2 Stage Gear, i = 25	none	222	1029	2059
3 Stage Gear, i = 51	none	453	2100	4198

$$Ext. Force = \frac{Torque \times 2000 \times \pi \times Efficiency \times 0.4}{Thread\ pitch\ (distance)}$$

<b>Forces at Brackets Kg</b>				
<b>45° mounted</b>				
Vertical Force, 2 Stage Gear	-	157	728	1456
Vertical Force, 3 Stage Gear	-	320	1485	2968
Horizontal Force, 2 Stage Gear	-	157	728	1456
Horizontal Force, 3 Stage Gear	-	320	1485	2968
<b>40° mounted</b>				
Vertical Force, 2 Stage Gear	-	143	661	1324
Vertical Force, 3 Stage Gear	-	291	1350	2698
Horizontal Force, 2 Stage Gear	-	170	788	1577
Horizontal Force, 3 Stage Gear	-	347	1609	3216

$$F_y = F \times \sin a$$

$$F_x = F \times \cos a$$

$$F_y = F \times \sin a$$

$$F_x = F \times \cos a$$