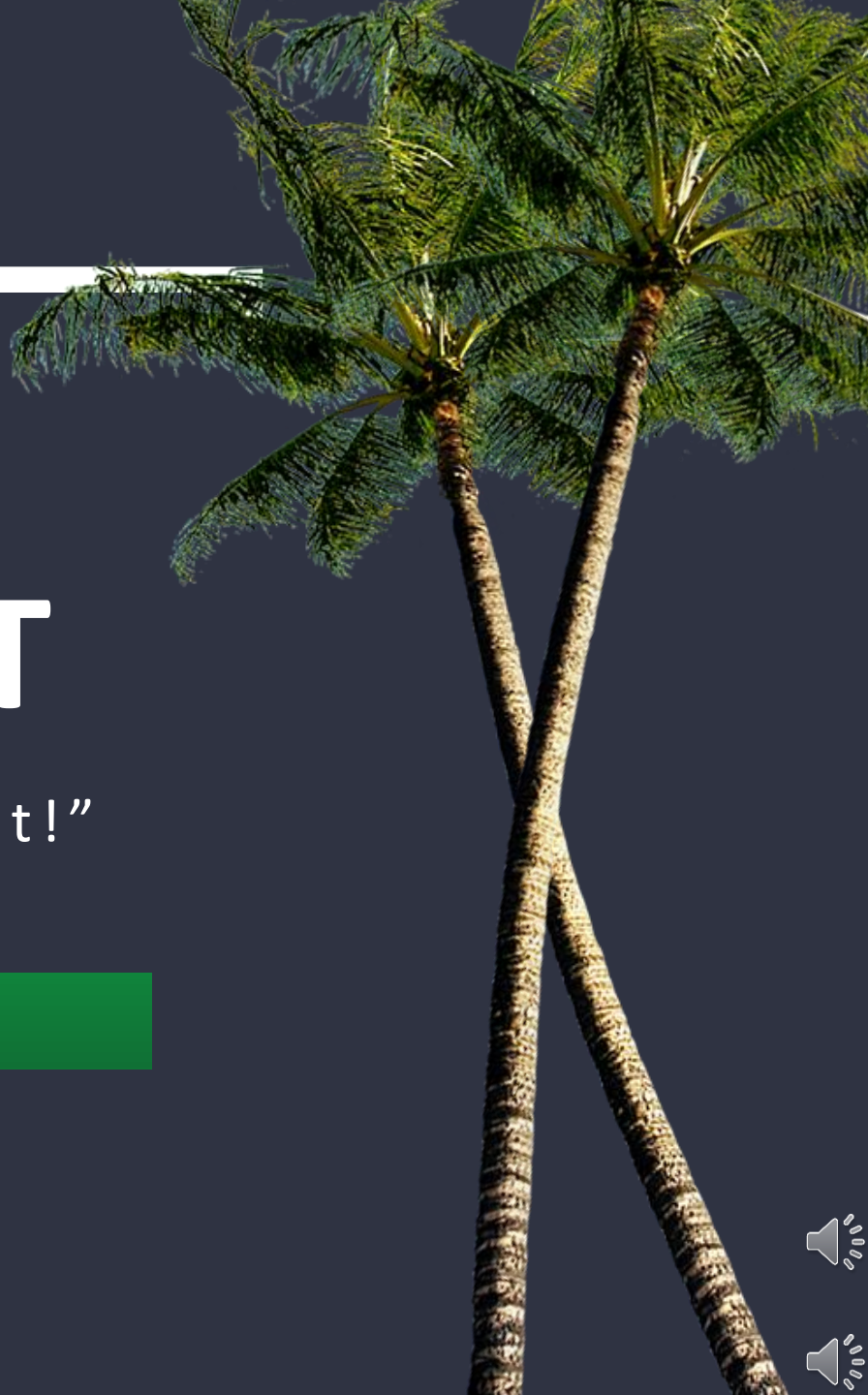
JACKED LIFT

"If it needs… we can LIFT it!"

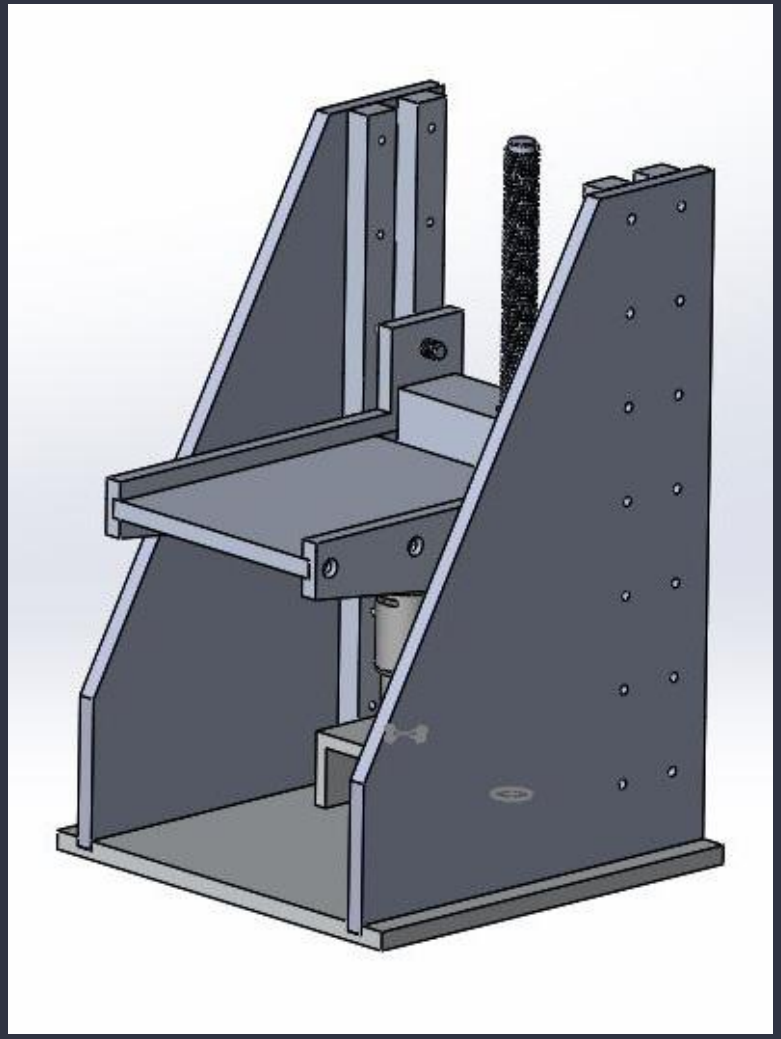


THE PROBLEM

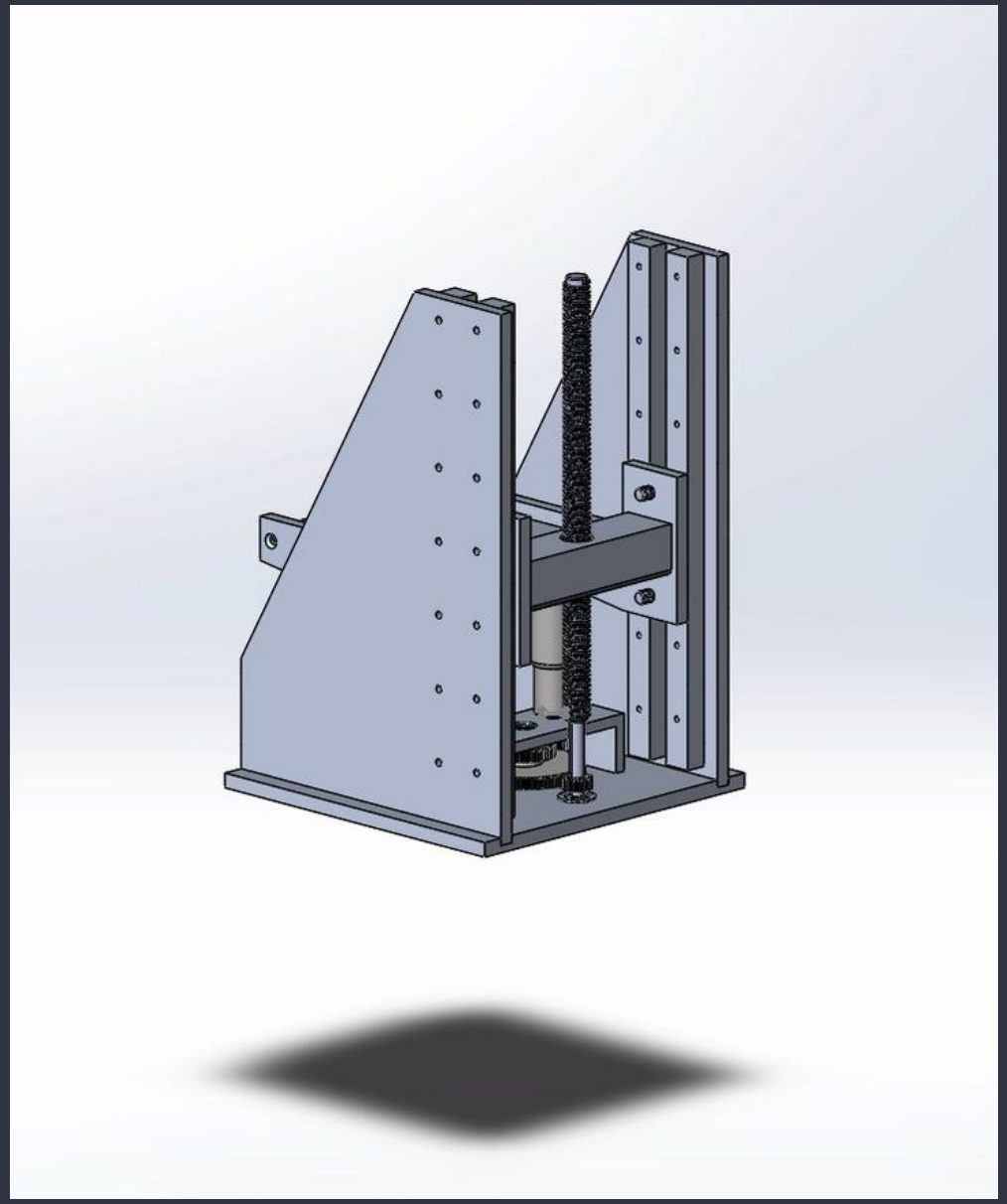
- Objects need to be lifted vertically
- Weight is a limiting factor
- Safety is paramount
- Ease of operation should be considered

DESIGN CONSIDERATIONS

- Stable base
- Mechanical lift with electric drivetrain
- Sturdy construction
- Threaded shaft
- Reinforced Platform

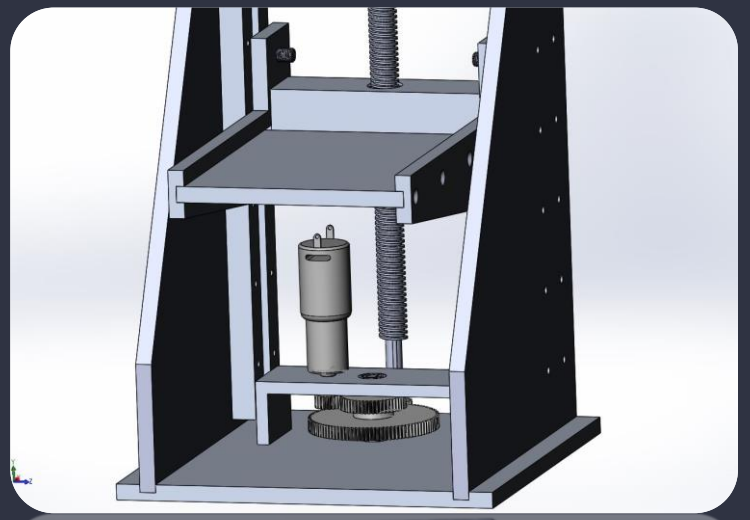


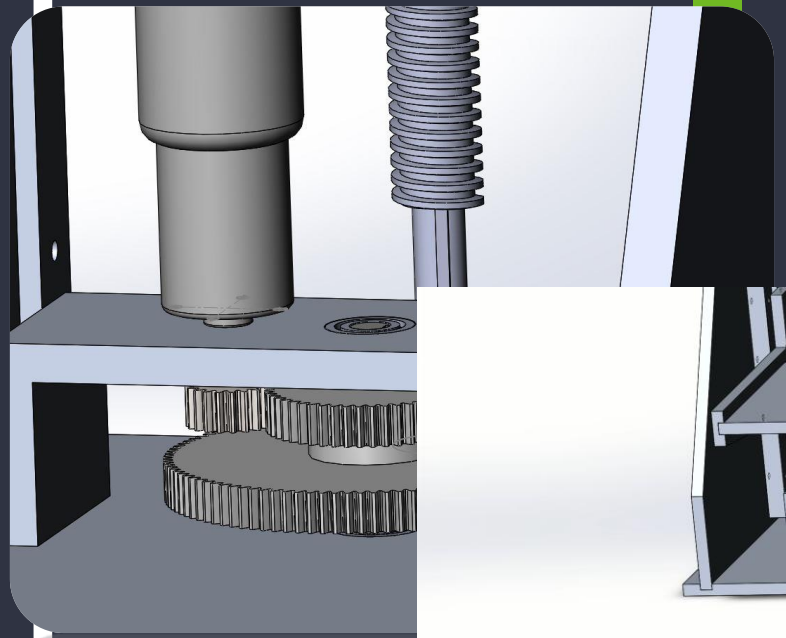
- Planetary gear motor
- Spur gears transmit power from the motor to the shaft
- Gearing down from 1 to 2.5 to 5 back to 1
- A threaded shaft cranks the platform vertically
- Platform is secured between two plates
- Plates are reinforced and provide a track
- Platform is reinforced to distribute load

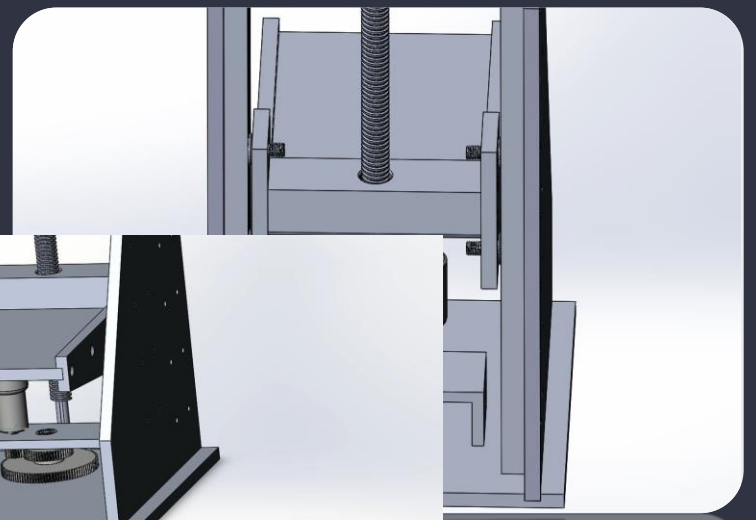


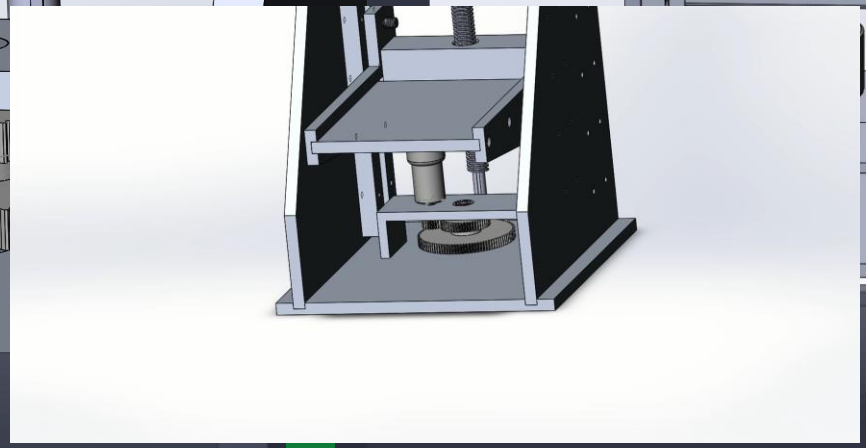
HOW DOES IT WORK?

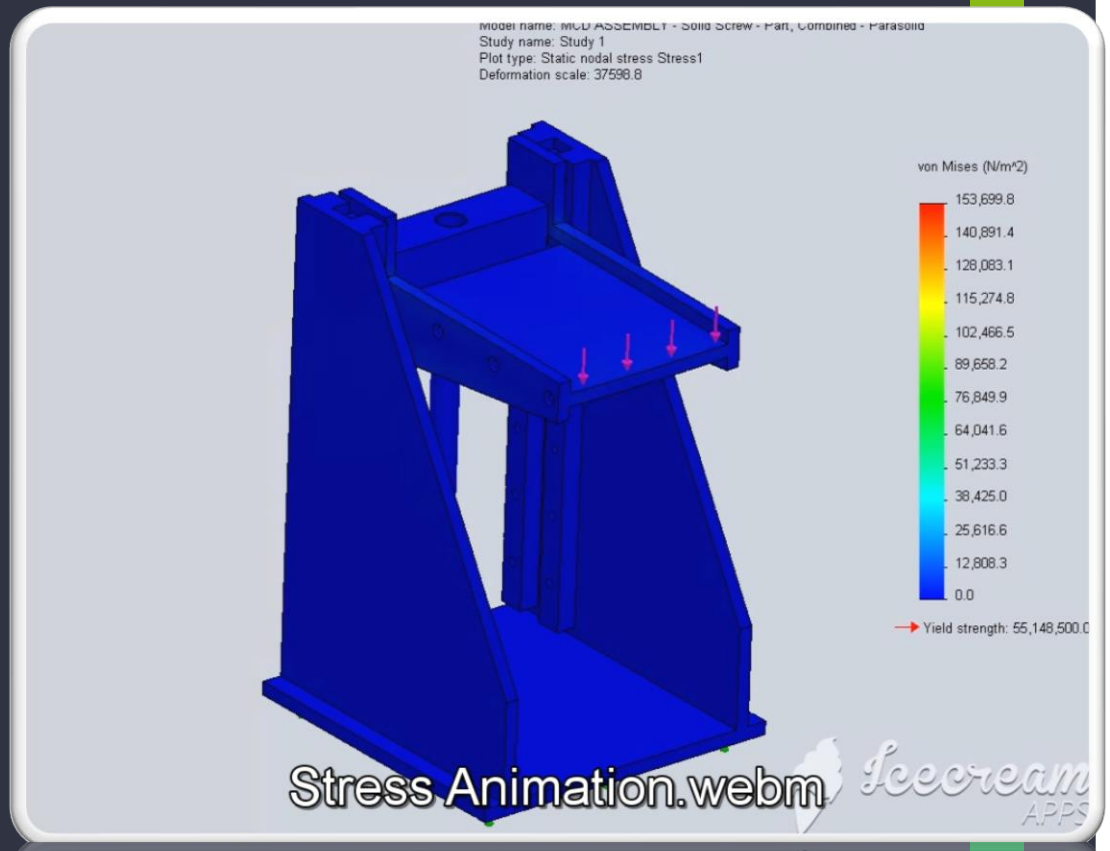
ANATOMY OF A GEAR TRAIN

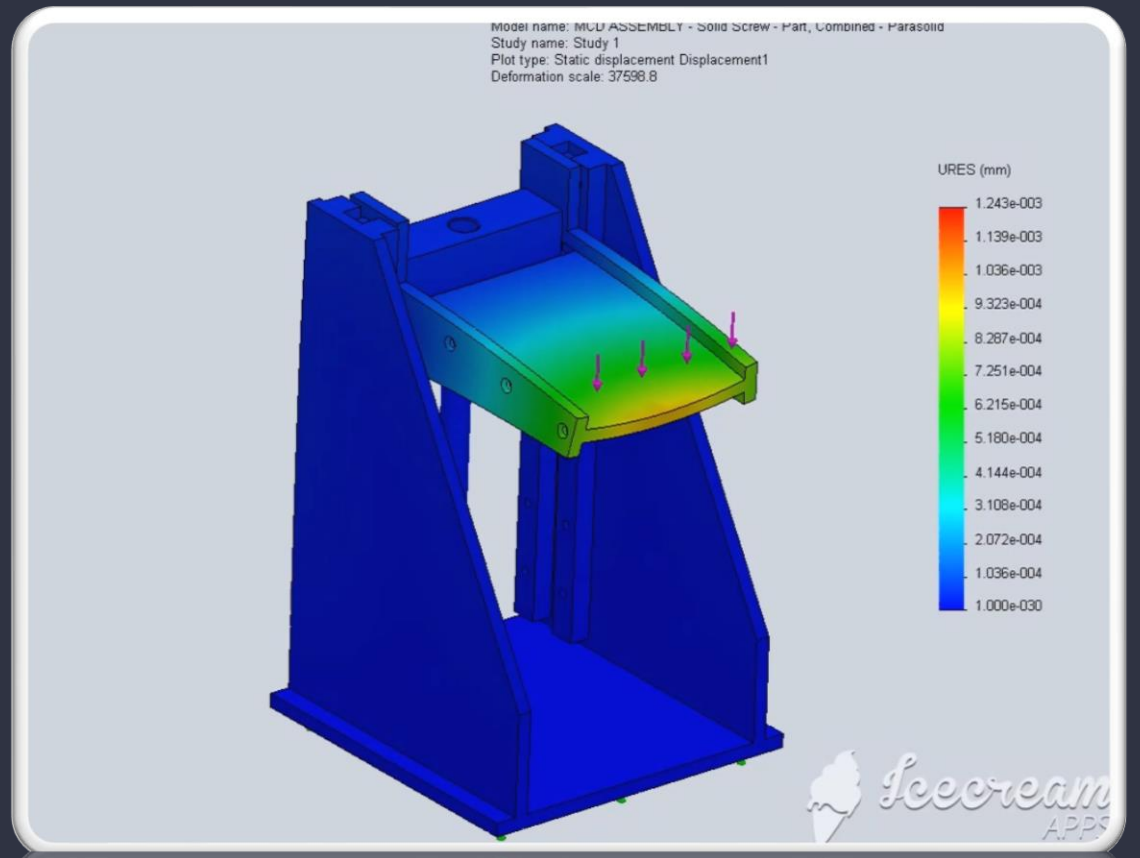






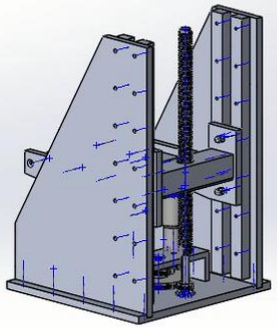



Model name: MCD ASSEMBLY - Solid Screw - Part, Combined - Parasolid
Study name: Study 1
Plot type: Static nodal stress Stress1
Deformation scale: 37598.8
von Mises (N/m^2)
153,699.8
140,891.4
128,083.1
115,274.8
102,466.5
89,658.2
76,849.9
64,041.6
51,233.3
38,425.0
25,616.6
12,808.3
0.0
Yield strength: 55,148,500.0
Stress Animation.webm
Icecream APPS


Model name: MCD ASSEMBLY - Solid Screw - Part, Combined - Parasolid
Study name: Study 1
Plot type: Static displacement Displacement1
Deformation scale: 37598.8
URES (mm)
1.243e-003
1.139e-003
1.036e-003
9.323e-004
8.287e-004
7.251e-004
6.215e-004
5.180e-004
4.144e-004
3.108e-004
2.072e-004
1.036e-004
1.000e-030
Icecream APPS

THE BUDGET

Power Transmission			
Item	Quantity	Price / Unit	Total
12 rpm Planetary Gear Reduction Motor (12 VDC)	1	$39.99	$39.99
7/8 - 6 RH Acme Threaded Shaft	1	DFP	$0.00
7/8 - 6 360 Brass Acme Lead Nut	1	$13.72	$13.72
3D Printed Spur gears	5	≈ $4.00	$20.00
McGill CFH1 Cam Follower	4	$6.12	$24.48
.375"x.875"x0.2812" Flanged Radial Ball Bearing	2	$1.99	$3.98
.500"x1.375" Flanged Radial Ball Bearing	1	$2.37	$2.37
.375" Keyed (3/32) Shaft	1	$13.37	$13.37
	Total		$117.91
Structural Components			
6061 Aluminum Alloy	DFP	$1 / lb	$25.00
1/4-20 x 1 1/2 Flat Socket Head screws	20	$0.28	$5.60
1/4-20 x 1 1/2 Socket Head Cap screws	28	$0.32	$8.96
3/32 Key Stock	1	$7.50	$7.50
	Total		$47.06
Electrical Components			
12V DC Battery	1	DFP	0
12V DC Switch	1	DFP	0
Miscellaneous Wire	-	DFP	0
	Total		$0.00
	GRAND TOTAL		$164.97



QUESTIONS?