http://www.employees.org/~joestone/Halloween.old/Html/fcg.htm

Introduction

Doug Ferguson at Phantasmechanics invented the FCG (Flying Crank Ghost). Doug's web site includes illustrated instructions on how to build a FCG and Doug also sells FCG kits.

I wouldn't dare try to improve on Doug's instructions, however, I found that Doug's instructions were lacking in two ways. First, Doug's instructions didn't include a consolidated parts list. Second, Doug wasn't specific in terms of where holes should be drilled.

Parts List

Table 1 includes a complete parts list for an official Phantasmechanics' FCG motor platform.

Table 1. Flying Crank Ghost Motor Platform Parts List

Quantity	Description	Package	Multiple	Unit
1	6' Replacement Power Cord	$3.99	x 1	$3.99
1	$^{3}/_{16}$" Wire Rope Clip (U-Bolt)	$1.39	/ 2	$0.70
2	4’ x 1" x $^{1}/_{8}$" Aluminum Angle	$15.98	x 1	$15.98
1	1’ x 1" x $^{1}/_{8}$" Aluminum Flat	$3.99	/ 4	$1.00
19	¼-20 Hex Nuts Course	$0.98	x 19 / 24	$0.78
10	¼" SAE Washers	$0.49	/ 2	$0.25
4	$^{10}/_{32}$ x ½" Machine Screws	$0.49	x 4 / 8	$0.25
5	¼" x 1½" Bolts	$0.60	x 1	$0.60
2	¼" x 1-$^{1}/_{4}$" Fender Washers	$0.59	x 2 / 6	$0.20
14	¼" Split Lock-Washers	$0.98	x 14 / 20	$0.69
2	¼" x 2" Eye Bolt	$0.78	x 1	$0.78
2	¼" x 2 ½" Eye Bolt	$0.78	x 1	$0.78
1	½" x 4" Eye Bolt	$0.49	x 1	$0.49
3	$^{3}/_{4}$" Swivel Pulley	$5.97	x 1	$5.97
6	8" Cable Ties	$1.79	x 6 / 15	$0.72
1	8 - 10 Spade Terminal	$0.89	x 1 / 7	$0.13
2	Twist-On Wire Connectors	$0.99	x 2 / 14	$0.14
		$41.17		$33.45

The Dayton 2Z806 gear motor is available at Grainger. Grainger is *"… the leading North American business-to-business distributor of maintenance, repair, and operating (MRO) supplies, services and related information.*" As a "*business-to-business distributor*", Grainger is a wholesaler. You will need to purchase the gear motor from a local outlet in the name of your workplace and pay cash.

You can also purchase the Dayton 2Z806 gear motor from the Electric Motor Warehouse (1-877-98MOTOR). The Electric Motor Warehouse offers competitive prices.

Assembling Nuts, Washers and Bolts

I will describe how the nuts, washers and bolts are assembled using abbreviations. The abbreviations are described in table 2.

Table 2. Abbreviation Chart

E	Bolt Eye
FW	Fender Washer
H	Bolt Head
LW	Split Lock-washer
N	Hex Nut
W	SAE Washer

For example,

H W_4 N_7 LW_4 N_8 - Describes an assembly consisting of a SAE washer, hex nut, split lock-washer and hex nut where the SAE washer is positioned next to the head of the bolt. The subscript indicates the unit-count out of the total number of units. For example,

LW_4 - refers to the fourth of 14 ¼" split lock-washers.

N_7 - refers to the seventh of 19 course ¼-20 Hex Nuts.

Bolts for Frame Members (4)

[H W_1 N_1 LW_1 N_2], [H W_2 N_3 LW_2 N_4], [H W_3 N_5 LW_3 N_6], [H W_4 N_7 LW_4 N_8]

Long Eye Bolt

E N_9 LW_5 N_{10} N_{11} FW_1 LW_6 N_{12}

Pulley Eye Bolts (2 x 2")

[E N_{13} LW_7 N_{14}], [E N_{15} LW_8 N_{16}]

Arm Pivot Eye Bolts (2 x 2 $^1/_2$")

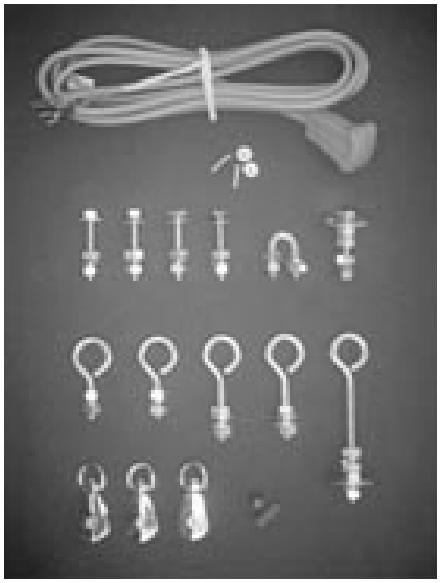
[E N_{17} W_5 LW_9 W_6 N_{18}], [E N_{19} W_7 LW_{10} W_8 N_{20}]

Crank Pivot Assembly

H W_9 FW_2 W_{10} N_{21} LW_{11} N_{22} N_{23} LW_{12} N_{24}

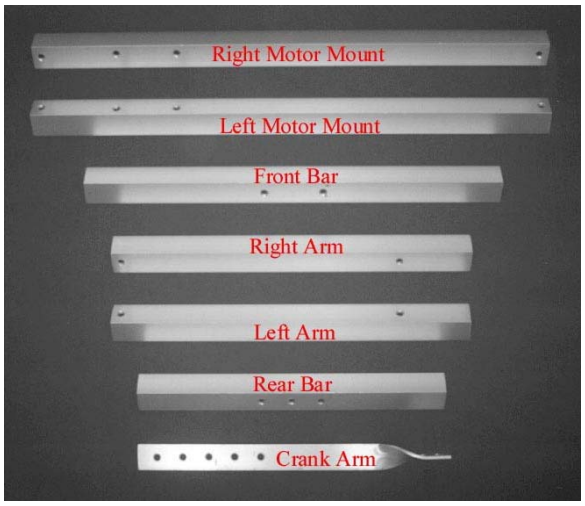
Crank Arm U-Bolt

N_{25} LW_{13} LW_{14} N_{26}



The following picture illustrates all of the assembled hardware,

Cutting Aluminum



The 4' length of 1" x $^{1}/_{8}$" angle aluminum is cut into,

1	20"	Right Motor Mount
2	13 $^{3}/_{4}$"	Right and Left Arm

The 4' length of 1" x $^{1}/_{8}$" angle aluminum is cut into,

1	20"	Left Motor Mount
1	16"	Front Bar
1	11 $^{3}/_{4}$"	Rear Bar

The 12" length of 1" x $^{1}/_{8}$" flat aluminum serves as the crank.

Drilling Holes

All of the holes are drilled on $^{1}/_{2}$" centers unless otherwise noted (e.g. Right and Left Motor Mount).

The Right and Left Motor Mounts involve "mirrored" lengths of angle aluminum. With both lengths oriented the same, the holes which are measured "From Left" on one length are measured "From Right" on the other length, hence "From Left/Right". And vice versa, the holes which are measured "From Right" on one length are measured "From Left" on the other length, hence "From Right/Left". The same applies to the "Right and Left Arm".

Right and Left Motor Mount

3/8" (From Left/Right)

3 5/16" (From Left/Right) x 3/8" (From Angle)

5 5/8" (From Left/Right) x 3/8" (From Angle)

3/8" (From Right/Left)

Front Bar

+/- 1 1/8" (From 8" Center)

Right and Left Arm

2 3/4" (From Left/Right)

3/8" (From Right/Left)

Rear Bar

5 7/8" (Center)

+/- 1 1/8" (From Center)

Crank Arm

3/4" (From Left)

1 3/4" (From Left)

2 3/4" (From Left)

3 3/4" (From Left)

4 3/4" (From Left)

1/2" (From Right)

1 1/16" (From Right)

Bending Aluminum

The crank arm must be bent at a 90° angle. The bend extends 1 1/4" to 2 3/4" (is centered 2") from the right end of the crank arm.