Power Cube 6/Manufacturing Instructions

From Open Source Ecology
< Power Cube 6

Power Cube 6	
Home | Research & Development | Bill of Materials | Manufacturing Instructions | User's Manual	78px

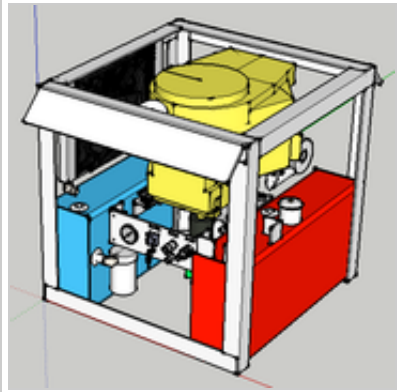
Power Cube Manufacturing Instructions

Prepare	Preparation · Safety · Workspace · Tools · Raw Materials · Pre-Fabricated Parts
Subassembly Fabrication	Engine mounts · Hydraulic Pump Mount · Quick attach mounts · Fuel tank · Oil Cooler Mount · Key Switches and Choke · Electrical Cables · Battery Mount · Hydraulic Reservoir
Assembly	Frame · Top / Bottom Rectangles · Gas Tank · Hydraulic Tank · Engine Mounts and Hydraulic Motor Mount · Battery Mount · Oil Cooler and Fan Mounts · Solenoid Mounting and Installation · Keyswitch Brackets and Installation · Choke Bracket and Installation · Throttle Adjustment

Contents

Overview

This is the procedure for manufacturing version 6 of the OSE Power Cube.



PowerCube VI

Intro to Power Cube Construction Script

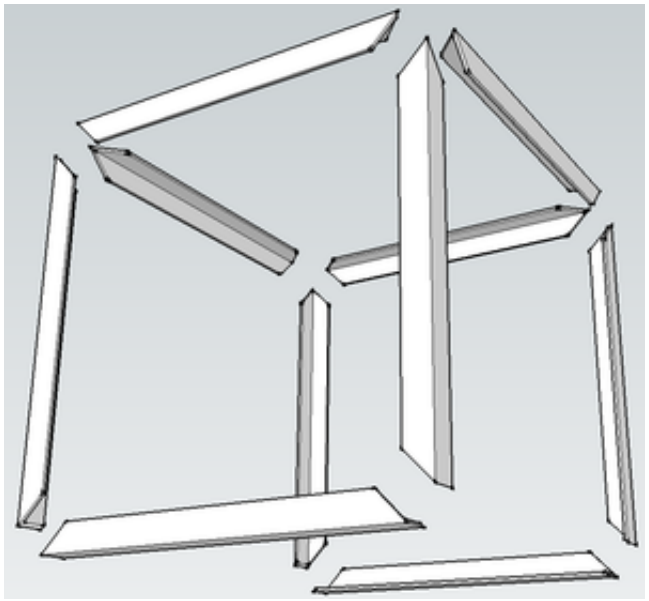
Preparation

1. Safety
2. Workspace
3. Tools

Steel Cut Sheet

Type	Cross Section	Qty	Cut Length
Flat Steel	1/8" x 4"	2	1"
Angle Iron	1/4" x 2" x 2"	2	4"
Angle Iron	1/4" x 2" x 2"	1	2"
Angle Iron*	1/4" x 2" x 2"	10	27" - 45 degree miter cuts (see diagram)
Tube - Rectangular	1/4" x 6" x 12"	2	26"
Flat Iron	1/8" x 4"	1	14"
Flat Iron	3/8" x 4"	2	26"
Flat Iron	1/4" X 6"	4	12"
Flat Iron	1/4" X 6"	1	6"
Flat Iron	1/4" x 8"	1	13.5"
Expanded Steel	1/8" thick	1	14" x 26"

- Note: These angle iron pieces are to be cut at specific 45 degree angles for a mitered frame, as shown below.



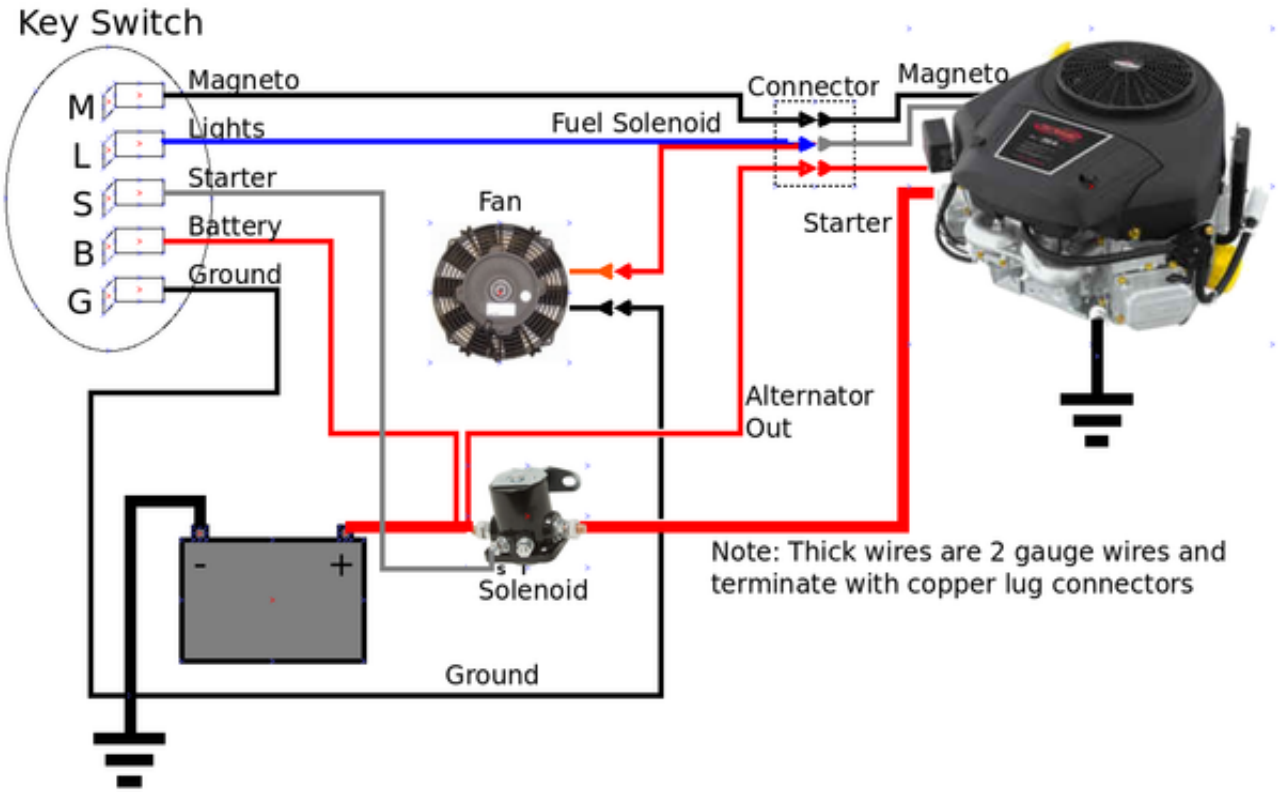
Fabrication

Design Files

Sketchup

File:PC6 Fuel Tank FAB.skp
File:PC6 Hydraulic Reservoir FAB.skp
File:PC6 Frame FAB.skp
File:PC6 Engine Pump Mount FAB.skp
File:PC6 Control Panel FAB.skp

Electrical Diagram



From key switch:

Red - Battery Positive, Alternator Positive

Black - Battery Negative, Frame Ground

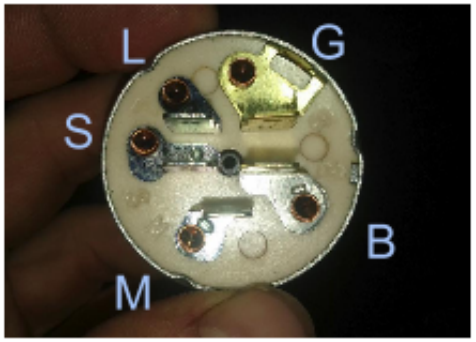
Yellow - Fuel Solenoid Positive, Fan Positive

Blue - Magneto Ground

White - Starter Solenoid Positive

Resolving Correct Labeling on Key Switch

Note: Convention on back of key switch. M and B have different label on the metal stud - I am assuming we go by the label imprinted in the plastic.



edit (https://docs.google.com/drawings/d/14sKP8bw0pvIXgpXrXbzYvp6MmNKw-dqUMjk7FDI4ky4/edit)

Jack's Small Engine says:

The letters on the back of an ignition switch stand for the following:

- M = Magneto
- S = Starter Solenoid
- L = Lights
- A = Accessory
- B = Battery
- G = Ground
- I = Ignition
- R = Regulator/Rectifier

Source: http://www.jackssmallengines.com/Products/TROY-BILT/ignition-switches-keys

As for the labeling on the switch itself, we can verity with an ohmmeter:

In OFF position, M should connect to ground. In ON position, M should not connect to anything

In OFF position, B should not connect to anything. In ON position, B should connect to L

Subassembly Fabrication

The purpose of this section is to cut the raw steel into required lengths and shapes as required for final assembly. These step includes drilling and cutting steel up to 1/4” in thickness.

1. Hydraulic Pump mount
2. Fuel tank
3. Hydraulic oil reservoir
4. Control Panel
5. Battery Mount

Assembly

Power Cube assembly requires all the parts listed in the Bill Of Materials to be available and prepared as detailed in the “Fabrication” section (above). Assembly requires a welder (electric or torch) capable of welding metal 3/8” thick.

A "Stronghand" clamp has proven useful for 90 degree alignment of the frame members

1. Frame
2. Gas tank
3. Hydraulic tank
4. Engine and Hydraulic Pump Mounts
5. Battery mount
6. Oil cooler and fan mounts
7. Solenoid Mounting Bolts
8. Throttle mount
9. Keyswitch mount
10. Quick Attach Plates
11. Painting
12. Install Hydraulic Components
13. Install Engine and Pump
14. Install Solenoid
15. Install Muffler

File:Frameweld.jpg
Power Cube Frame welding

16. Wiring
17. Install Throttle Control

Final touches

1. Install engine and secure with bolts, nuts and washers
2. Connect wiring to key switch and solenoid
3. Connect fuel line
4. Connect coupling to engine shaft
5. Install hydraulic pump on coupling and secure with nuts & washers
6. Install fan and hydraulic oil cooler

See Also

See also Power_Cube_Fabrication_Procedure for older model.

Work in progress by Tom Griffing - File:Powercube.odtFile:Powercube.pdf

File:PowerCube.skp

Previous Versions

Power Cube Fabrication June 2011

Peer Review

- I would do double chain coupler. I have had good experience with it - it will extend pump life because it will eliinate any strain on the pump shaft, while easing accuracy requirements for pump mount welding.