



# LifeTrac

## Fabrication Instructions



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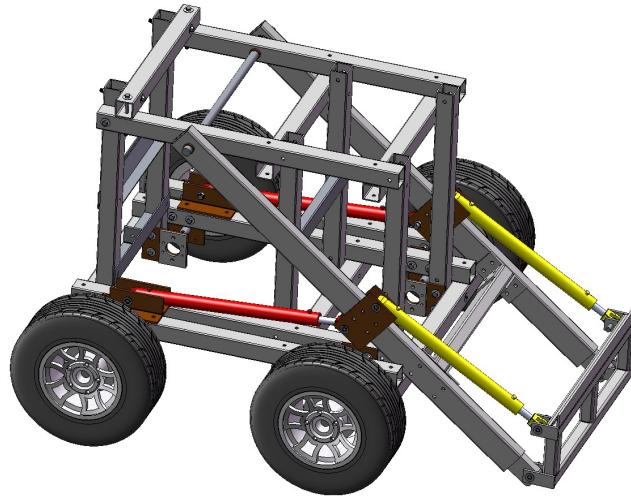
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## Introduction

This guide will walk you through the entire process of fabricating LifeTrack, Open Source Ecology's general purpose tractor. Specifically, this is version 3. Included at the end of this document are instructions for building optional components like the quick connect wheel mounts and bend loaders arms, which are currently developmental.



## Bill of Materials

*See the appendix for more detailed specifications.*

Steel				Hydraulics (check the appendix for full specs)		
Type	Stock Size	Length	Quantity	Category	Description	Quantity
Rebar	1"	20 ft	9	Cylinder	2 1/2 x 36 x 1 1/2 in, double acting, 3/8 NPT	2
Chain	3/8"	80 ft	1		2.5 x 30 x 1.25 in, double acting, 3/8 NPT	2
Square Tube	.25 x 4 x 4 in	20 ft	5	Motor	31.88 cu.in	4
	.375 x 3 x 6 in	20	1	Valve	3 Spool, 25 GPM	1
Round Tube	.25 x 2.375 in	4.5 in	1		2 Spool, 25 GPM	1
	0.3125 x 2.5 in	20 in	1		Cushion Valve, 30 GPM, 1/2 NPT	1
Round Bar	1.875 in	160 in	1	Fitting	3/8 NPTM x 1/2 NPTF swivel	4



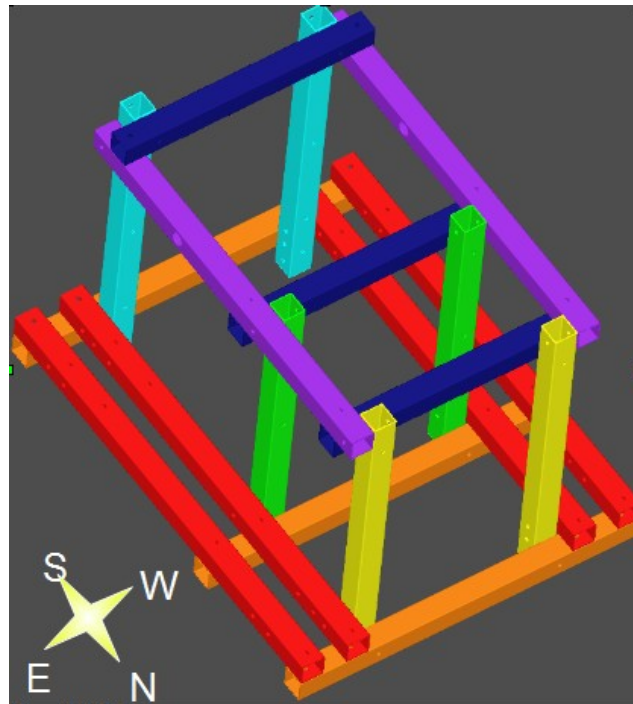
Angle	.5 x 4 x 6 in	2 ft	1		3/8 NPTM x 1/2 NPTF 90 deg swivel	4
Plate	.375 x 8 in	50 in	1		SAE M 10 to NPT M 1/2	8
	.5 x 4 in	68 in	1		SAE 4M to 1/4 NPTM	4
	.5 x 8 in	104 in	1		1/2 QC	8
	.5 x 10 in	107 in	1		1/4 QC	5
	.5 x 12 in	60 in	1		3/4 Nips	3
	1 x 8 in	18 in	1		3/4 Swivel	1
					3/4 QC for work ports	2
Hoses					1/2 Swivel	14
Size	Length	Quantity			3/4 Tee	2
1/2 NPTM to 1/2 NPTM	36 in	10			3/4 to 1/4 reducer	1
	48 in	7			3/4 elbow	1
	60 in	3			1/4 nip	2
	120 in	1			30 GPM check valve	2
	144 in	1			3/4 QC	3
1/4 NPTM to 1/4 NPTM	36 in	1			3/4 nips	6
	60 in	1			1/2 NPT hex nipple	2
	72 in	1			3/4 NPT to 1/2 NPT bushing	2
					1/2 tee	9
Other					1/2 nip	4
1 7/8 in Flange Bearing	8				1/4 tee	3
1 1/4 in shaft coupler with 5/16 in keyway	2					
6" x 1 3/8 in 6T fully splined shaft	4		Fastners			
Female 1 3/8 in 6T splined coupling	2		Category	Size	Length	Quantity
1.875 in double split shaft collars	12		Bolt	3/4"-10	2 in	8
					4.5"	4
					5.5"	40
					9"	42
					1/2"-13	16
					5/8" coarse	32

			9/16 coarse	2"	32
		Washer	3/4"		120
			3/4" lock		8
			1/2" lock		16
			5/8" lock		32
			9/16"		32
			1 7/8"		16
		Nut	3/4" metal lock		80
			3/4"		16
			3/4" nylon lock		4
			1/2" nylon lock		4
			5/8" metal lock		32
			9/16" nylon lock		32

## Cut List

The LifeTrack frame is made from 18 pieces of 4" by 4" by 1/4" thick steel tube fastened together with 9" by 3/4" steel bolts. All holes are centered unless otherwise specified.

### Frame

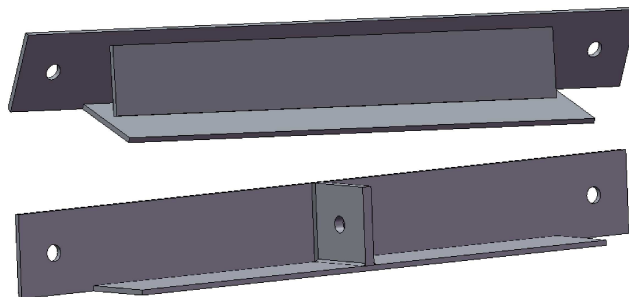


Frame			
Section	Dimensions	Holes	Count
Outer Base (red)	76" x 4" x 4"	See "76inch outer base tube" in appendix	2
	13/16" hole	Vertical 2" from South end	2
	13/16" hole	Vertical 11 1/2" from South end	2
	13/16" hole	Vertical 20 1/2" from South end	2
	13/16" hole	Vertical 50" from South end	2
	13/16" hole	Vertical 74" from South end	2
	13/16" hole	Horizontal 9" from South end	2
	13/16" hole	Horizontal 13" from South end	2
	13/16" hole	Horizontal 63" from South end	2
	13/16" hole	Horizontal 67" from South end	2
Inner Base (red)	76" x 4" x 4"	See "76inch inner base tube" in appendix	2
	13/16" hole	Vertical 2" from South end	2

	13/16" hole	Vertical 11 1/2" from South end	2
	13/16" hole	Vertical 20 1/2" from South end	2
	13/16" hole	Vertical 50" from South end	2
	13/16" hole	Vertical 74" from South end	2
	13/16" hole	Horizontal 6" from South end	2
	13/16" hole	Horizontal 9" from South end	2
	13/16" hole	Horizontal 13" from South end	2
	13/16" hole	Horizontal 46" from South end	2
	13/16" hole	Horizontal 63" from South end	2
	13/16" hole	Horizontal 67" from South end	2
	13/16" hole	Horizontal 70" from South end	2
Bottom Crossbar (orange)	60" x 4" x 4"	<i>See "60inch under base tube" in appendix</i>	3
	13/16" hole	Vertical 2" from an end	2
	13/16" hole	Vertical 10" from an end	2
	13/16" hole	Vertical 50" from an end	2
	13/16" hole	Vertical 58" from an end	2
	13/16" hole	Horizontal 14" from an end	2
	13/16" hole	Horizontal 46" from an end	2
A-pillar (yellow)	55" x 4" x 4"	<i>See "55inch front-vertical tube" in appendix</i>	2
	13/16" hole	N-S 2" from top	2
	13/16" hole	N-S 46" from top	2
	13/16" hole	N-S 49" from top	2
	13/16" hole	N-S 53" from top	2
	13/16" hole	E-W 6" from top	2
	13/16" hole	E-W 50" from top	2
B-pillar (green)	52" x 4" x 4"	<i>See "52inch middle-vertical tube" in appendix</i>	2
	13/16" hole	N-S 2" from top	2
	13/16" hole	N-S 26" from top	2
	13/16" hole	N-S 46" from top	2
	13/16" hole	E-W 6" from top	2
	13/16" hole	E-W 50" from top	2
C-pillar (blue)	59" x 4" x 4"	<i>See "59inch rear-vertical tube" in appendix</i>	2
	13/16" hole	N-S 2" from top	2
	13/16" hole	N-S 6" from top	2

	13/16" hole	N-S 9" from top	2
	13/16" hole	N-S 53" from top	2
	13/16" hole	E-W 5" from top	2
	13/16" hole	E-W 12" from top	2
	13/16" hole	E-W 31" from top	2
	13/16" hole	E-W 57" from top	2
Top Crossbar (indigo)	44" x 4" x 4"	<i>See "44inch top E-W tube" in appendix</i>	3
	13/16" hole	Vertical 2" from an end	2
	13/16" hole	Vertical 42" from an end	2
	13/16" hole	Horizontal 6" from an end	2
	13/16" hole	Horizontal 38" from an end	2
Cant Rail (violet)	84" x 4" x 4"	<i>See 68inch top N-S tube" in appendix</i>	2
	13/16" hole	Vertical 6" from South end	2
	13/16" hole	Vertical 38" from South end	2
	13/16" hole	Vertical 62" from South end	2
	13/16" hole	Horizontal 2" from South end	2
	2 3/8" hole	Horizontal 22" from South end (use a cutting torch and grind it smooth)	2
	13/16" hole	Horizontal 42" from South end	2
	13/16" hole	Horizontal 66" from South end	2

## **Power Cube Mount**



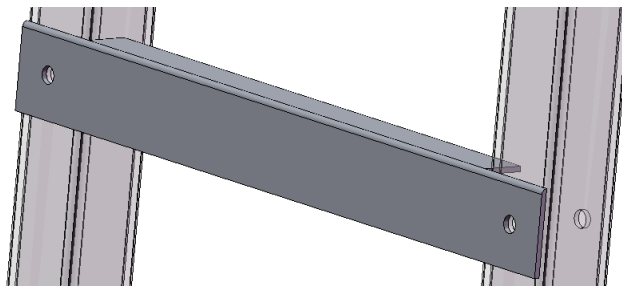
Power Cube Mount (Makes a mount for one Power Cube. Double the counts to build a mount for a second Power Cube)			
Part Name	Stock	Dimensions	Count
PCM#1	1/2" x 4" plate	36"	2

	3/4" hole	2" from each end	2
PCM#2	1/2" x 4" plate	27 1/2"	3
PCM#3	1/2" x 4" plate	4"	1
	3/4" hole	centered	1

## ***Hydraulic Valve Mount***

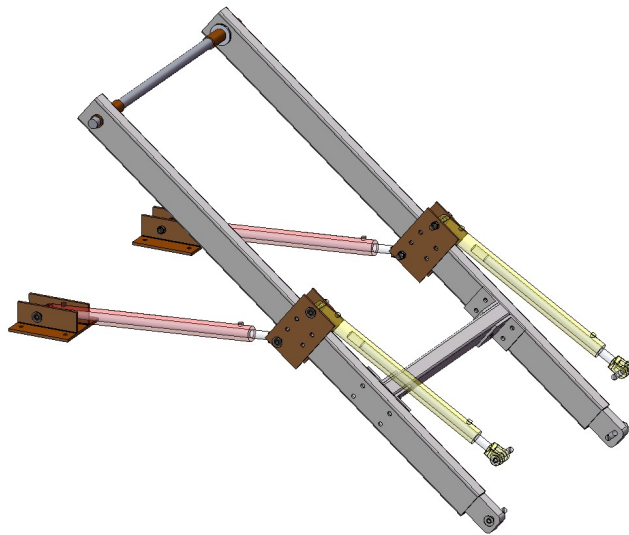






Hydraulic Valve Mount			
Part Name	Stock	Dimensions	Count
HVM#1	1/2" x 4" plate	36"	1
	3/4" hole	2" from each end	2
HVM#2	1/2" x 4" plate	27 1/2"	1

### Loader Arm



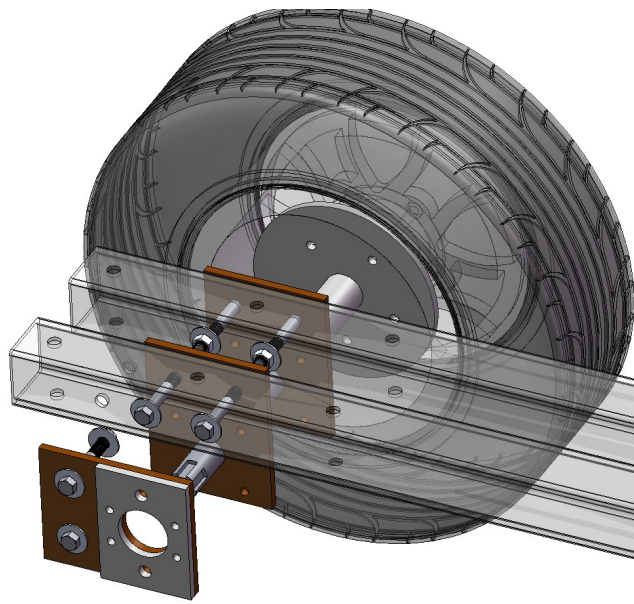
Loader Arm			
Hydraulic Cylinder Base Mount <i>see "Hydraulic Cylinder base mount" in appendix</i>			
Part Name	Stock	Dimensions	Count
HCBM#1	1/2" plate	12" x 12"	2
	3/4" hole	2" from <u>left</u> side & 1 1/2" from top/bottom	2
	3/4" hole	2" from <u>right</u> side & 1 1/2" from top/bottom	2

HCBM#2	1/2" plate	12" x 4"	4
	1" hole	4 1/4" along the long side & 2 1/2" up	1
<b>Loader Arm</b> <i>see "Loader arm" in appendix</i>			
Part Name	Stock	Dimensions	Count
LA	3" x 6" x 3/8" tube	100"	2
	2 3/8" hole	3" from pivot end	2
	13/16" holes	54" from pivot end & 1 1/2" from each edge	4
	13/16" holes	58" from pivot end & 1 1/2" from each edge	4
	13/16" holes	71" from pivot end & 1 1/2" from each edge	4
	13/16" holes	78" from pivot end & 1 1/2" from each edge	4
	3/4" plug weld holes	On the 6" side, 98 1/2" and 97" from pivot end and 1 1/2" from the 3" side.	4
	3/4" plug weld holes	On the 3" side between the previous holes, 98 1/2" and 97" from pivot end.	2
<b>Loader Arm Hydraulic Mount Plate</b> <i>see "Loader arm hydraulic mount plate" in appendix</i>			
Part Name	Stock	Dimensions	Count
LAHMP	3/8" plate	12 1/2" x 8"	4
	1" hole	2 1/4" from lower left & 1 37/64" up	1
	1" hole	3 3/16" from lower left & 11 5/16" up	1
	3/4" holes	4 3/4" up & 2" from each edge	2
	3/4" holes	7 3/4" up & 2" from each edge	2
<b>Loader Arm Crossbar</b> <i>see "Loader arm support beam" in appendix</i>			
Part Name	Stock	Dimensions	Count
LAC	3" x 6" x 3/8" tube	45"	1

	13/16" holes	2 1/2" from each end & 1 1/2" from each edge	8
	13/16" holes	4 1/2" from both ends	4
<b>Loader Arm Crossbar Mount</b> <i>see "Loader arm support beam angle iron" in appendix</i>			
<b>Part Name</b>	<b>Stock</b>	<b>Dimensions</b>	<b>Count</b>
LACM	6" x 4" x 1/2" angle	6"	4
	3/4" holes (on 4" side)	1 1/2" from each end	2
	3/4" hole (on 6" side)	1 1/2" from outside	1
	3/4" holes (on 6" side)	3 1/2" from outside & 1 1/2" from each end	2
<b>Loader Arm Round</b> <i>see "Loader Arm Round" in appendix</i>			
<b>Part Name</b>	<b>Stock</b>	<b>Dimensions</b>	<b>Count</b>
LAR	2 3/8" round tube	3 1/2"	2
<b>Tractor Frame Round</b> <i>see "Tractor Frame Round" in appendix</i>			
<b>Part Name</b>	<b>Stock</b>	<b>Dimensions</b>	<b>Count</b>
TFR	2 3/8" round tube	4 1/2"	2
<b>Loader Arm Insert</b> <i>see "Loader Arm End-Lump" in appendix</i>			
<b>Part Name</b>	<b>Stock</b>	<b>Dimensions</b>	<b>Count</b>
LAI	4 1/2" x 2" solid	8"	2
	Round off two corners on the 4 1/2" side		
	1" hole	In one of the rounded corners, 1 1/2" from each edge	1
<b>Loader Arm Shaft</b> <i>see "Loader Arm Shaft" in appendix</i>			
<b>Part Name</b>	<b>Stock</b>	<b>Dimensions</b>	<b>Count</b>
LAS	1 7/8 round bar	56"	1

## **Wheel Hardware**



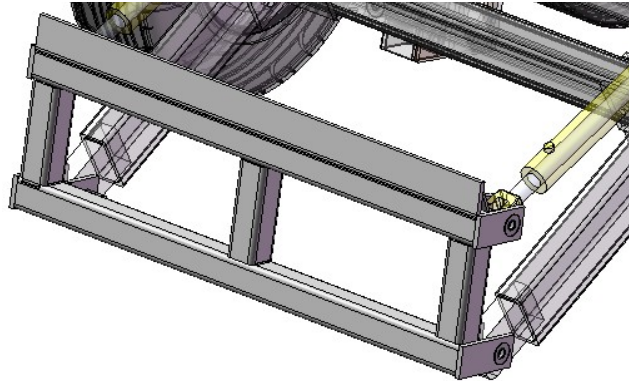


Axle Shaft Mount Plate <i>see "Wheel axle shaft holding plate" in appendix</i>			
Part Name	Stock	Dimensions	Count
ASMP	1/2" plate	8" x 10"	8
	2 1/4" hole	3" from short side	1
	9/16" holes	13/16" from short side & 1 13/16" from each long side	2
	9/16" holes	5 3/16" from short side & 1 13/16" from each long side	2
	3/4" holes	8" from short side & 2" from each long side	2
Hydraulic Motor Frame Mount <i>see "Wheel hydraulic motor interface plate" in appendix</i>			
Part Name	Stock	Dimensions	Count
HMFM	1/2" plate	8" x 10"	4
	3 19/64" hole	3" from short side	1
	3/4" holes	3" from short side & 1 1/4" from each long side	2
	3/4" holes	8" from short side & 2" from each long side	2
Hydraulic Motor Interface Plate <i>see "Wheel Motor QA plate face A" in appendix</i>			

Part Name	Stock	Dimensions	Count
HMIP	1/2" plate	8" x 6"	4
	3 19/64" hole	Centered	1
	3/4" holes	1 1/4" from each short end	2
	1/2" holes	3 3/16" from each short end & 1 1/16" from each long side	4
Wheel Disc Mount Gusset <i>see "Wheel mount gusset" in appendix</i>			
Part Name	Stock	Dimensions	Count
WDMG	1/2" plate	4" x 4" right triangle	16
Axle Shaft <i>see "Wheel Axle Shaft" in appendix</i>			
Part Name	Stock	Dimensions	Count
AXLE#1	1 7/8" round bar	26"	4
	3/4" hole	18" from an end. Probably best to wait and drill this during assembly.	1
	3 1/2" x 1 3/8" hole	Into one end of the shaft. Using a lathe would be a good idea for this hole.	1
	3" slit	Make a slit on either side of the hole that was just made in the end of the shaft.	2
AXLE#2	1 3/8" splined shafting	6"	1
Wheel Disc Mount <i>see "Wheel Mount Round" in appendix</i>			
Part Name	Stock	Dimensions	Count
WDM	2 1/2" round tube	6"	4
	3/4" hole	5" from an end	2
Wheel Disc <i>see "Wheel Mount Disc" in appendix</i>			
Part Name	Stock	Dimensions	Count
DISC	1/2" plate	12" diameter	4
	2 3/8" hole	Centered	1

	9/16" holes	3 1/4" from center & 2 1/2" from each other	8
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### Quick Attach Plate



Quick Attach Plate			
Part Name	Stock	Dimensions	Count
QAP#1	3" square tube	51"	2
QAP#2	3" square tube	9"	3
QAP#3	1/2" x 3" plate	51"	1
QAP#4	1/2" x 3" plate	6"	4
	1" pivot pin hole	1 1/2" from end	1
QAP#5	1/2" x 3" plate	3"	4
	1" pivot pin hole	centered	1
QAP#6	1/2" x 2" plate	51"	1

### Pins



Pins			
Part Name	Stock	Dimensions	Count
PIN	1" bar	6"	10
	1/8" cotter pin hole	As close to one end as possible.	1

***Optional***

***Wheel Tracks***



TRACK	1" rebar	20"	33
Wheel Track Pressing Jig			
Part Name	Stock	Dimensions	Count
WTPJ#1	7/16" x 6" U-channel	16 3/4"	1
WTPJ#2	1" plate	4" x 5 3/4"	2
	Notch	1/2" on the 4" side.	1
WTPJ#3	1" plate	3" x 6"	2
Wheel Track Welding Jig			
Part Name	Stock	Dimensions	Count
WTWJ#1	1/2" rebar	58"	4
WTWJ#2	1/2" rebar	15 1/2"	24
WTWJ#3	1/2" rebar	5"	24
WTWJ#4	1/2" rebar	2 3/4"	4

WTWJ#5	1/2" rebar	3 3/4"	6
WTWJ#6	1/2" rebar	14 1/2"	2
Wheel Track Chain			
Part Name	Stock	Dimensions	Count
CHAIN	3/8" x 2" chain	131 links	2

**Bent Loader Arms**



Bent Loader Arms			

## Quick Connect Wheels



Quick Connect Wheels			
Part Name	Stock	Dimensions	Count
PEG	1"	1 1/2"	2

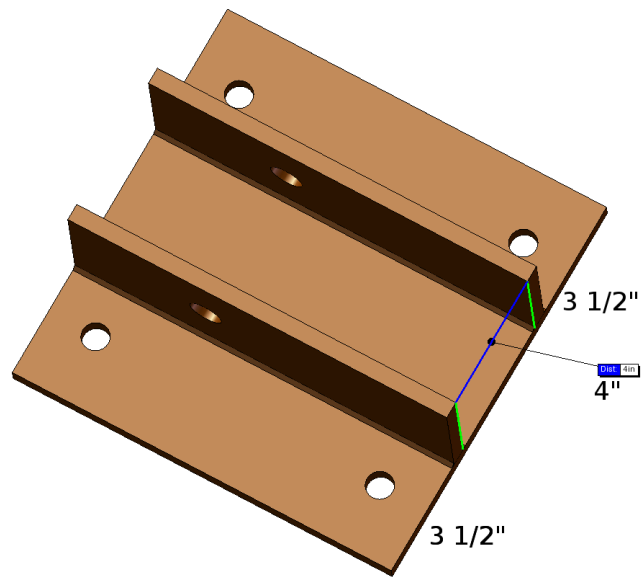
# **Component Build Procedures**

## ***Frame Mounts***

### **Loader Arm Cylinder Base Mount**

See “Loader Arm” in Cut List.

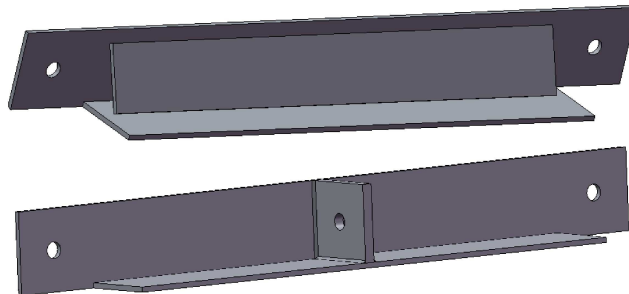
Position part HCBM#1 on a flat surface. Position part HCBM#2 (times 2) on top of HCBM#1 such that there is 4” between them and they are each 3 1/2” from the outside edge of HCBM#1. The hole in part HCBM#2 should be as far away from the surface of part HCBM#1 as possible.



Use a jig, magnet, or clamp to hold all the pieces in place. Insert a bar through the holes in the two HCBM#2 parts to maintain alignment. Tack weld the three parts together (do not weld the pin). Finish welding the parts, moving around to ensure no warping.

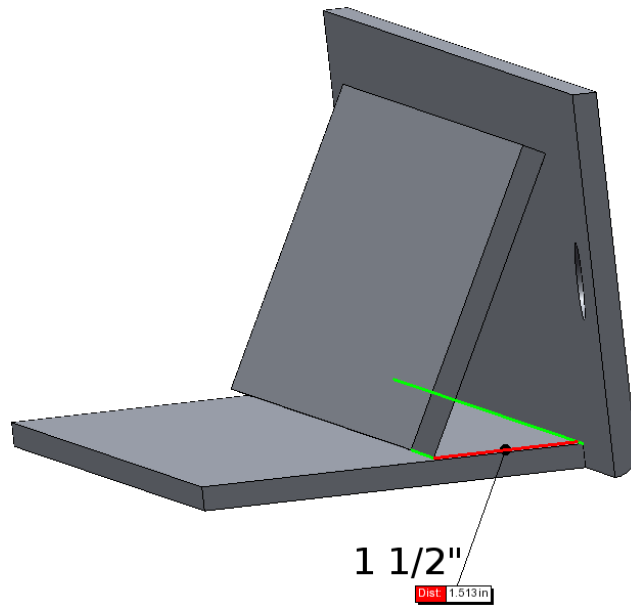
## Power Cube Mount

See “Power Cube Mount” in Cut List

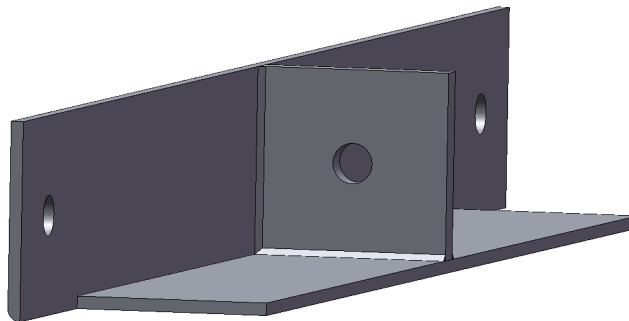


Place PCM#1 on a flat surface. Position PCM#2 vertically and centered on PCM#1. Secure them at 90 degrees and tack weld. Finish the weld. Do this twice, using two of each piece. This makes piece PCM#1&2 (times two).

Now take PCM#1&2 and secure it to a flat surface. Take another PCM#2 and position it at an angle such that it contacts the PCM#2 portion of PCM#1&2 one and a half inches from the 90 degree angle. Tack weld, then complete the two welds.



Position the other PCM#1&2 on a flat surface. Position part PCM#3 in the center at 90 degrees to both PCM#1 and PCM#2. Tack weld and then complete the two welds.

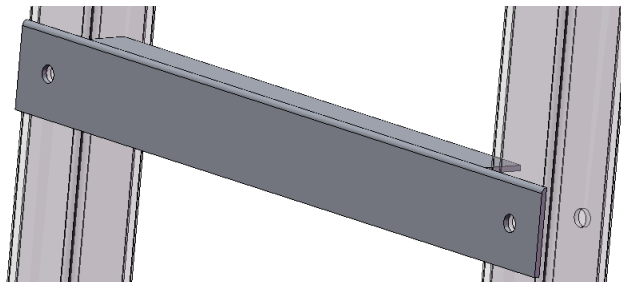


If you want to mount two Power Cubes to the LifeTrac, re-accomplish this procedure to create an identical mount for the other Power Cube.

### Driver Seat Mount

### Hydraulic Valve Mount

See "Hydraulic Valve Mount" in Cut List.

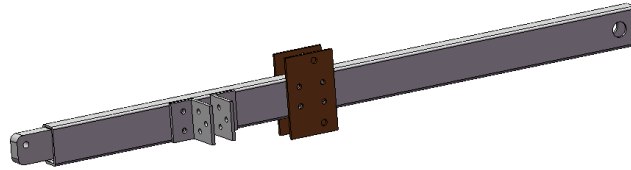


Position HVM#1 on a flat surface. Position HVM#2 vertically at 90 degrees and centered on HVM#1.

Secure them in place. Tack weld, then finish the weld.

## Loader Arm

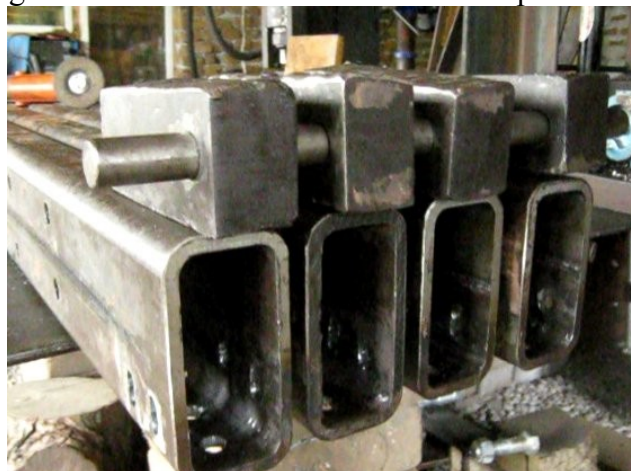
See “Loader Arm” > “Loader Arm” & “Loader Arm Hydraulic Mount Plate” & “Loader Arm Crossbar Mount” & “Loader Arm Insert” in Cut List.



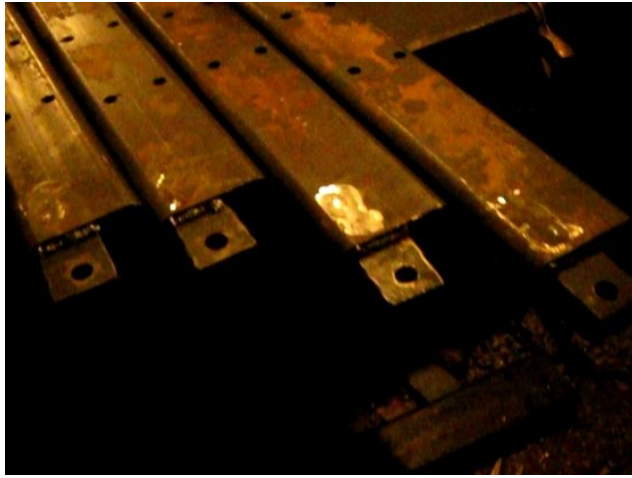
If the plug weld holes haven't been made yet, mark them as shown, then drill or torch.



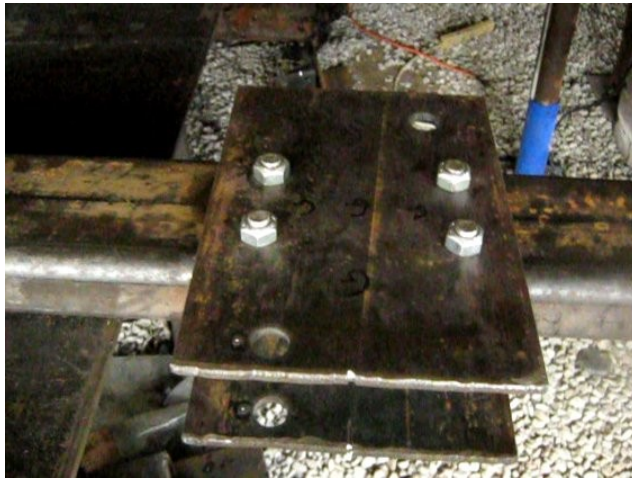
It is best to line up all the loader arms and plugs at this point so that they will have identical pivot points. Run a piece of round bar through the 2 3/8” hole at one end and the inserts (part LAI) at the other. Weld through the plug weld holes so that the insert becomes part of the loader arm.



Weld all the way around the insert to finish attaching it to the loader arm. Grind the welds smooth.

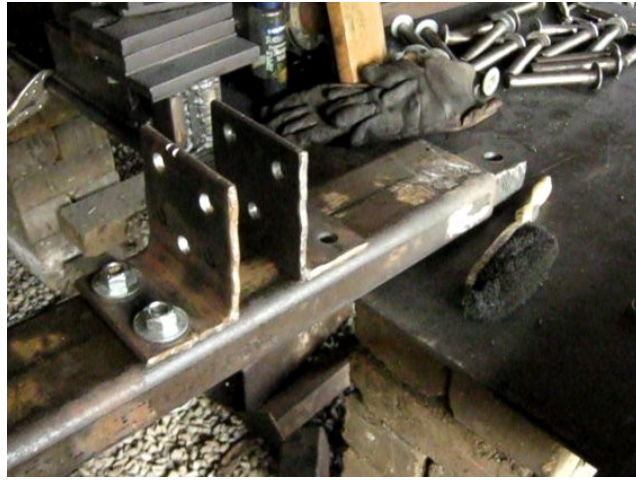


Orient the cylinder mount plate (part LAHMP) so the cylinder mount hole on the bottom (the 3" side with the insert) is closest to the insert-end of the loader arm. Bolt part LAHMP to the loader arm with four bolts.



Position the loader arm crossbar mounts (part LACM) on what will now become the inside of the loader arm. Keep in mind the insert is on the bottom of the loader arm. Attach part LACM with two bolts and repeat as necessary.

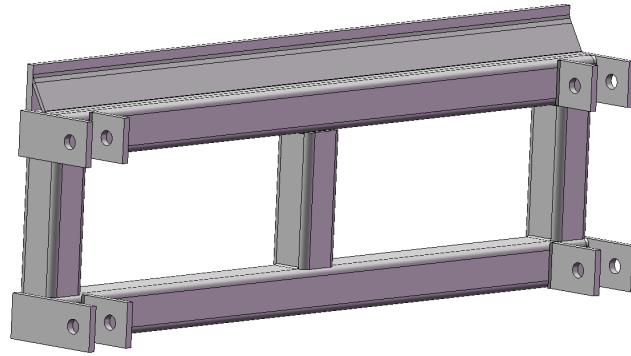






## Quick Attach Plate

See “Quick Attach Plate” in Cut List.



Position parts QAP#1 and QAP#2 on a flat surface as illustrated. Weld together.



Position part QAP#3 as illustrated. Weld to part QAP#1. Position the part QAP#6 at an angle, as shown, and weld in place.



Position part QAP#4 on the ends of part QAP#1 as shown. Tack weld in place. Run a 1" bar through the holes in QAP#4 and QAP#5. That will hold QAP#5 in place and line up all the holes. Position QAP#5 so it creates a three inch gap next to QAP#4.



Do the same for the other set of pivot points.



There is also a quick attach mechanism that needs to be included...Need dimensions for that...



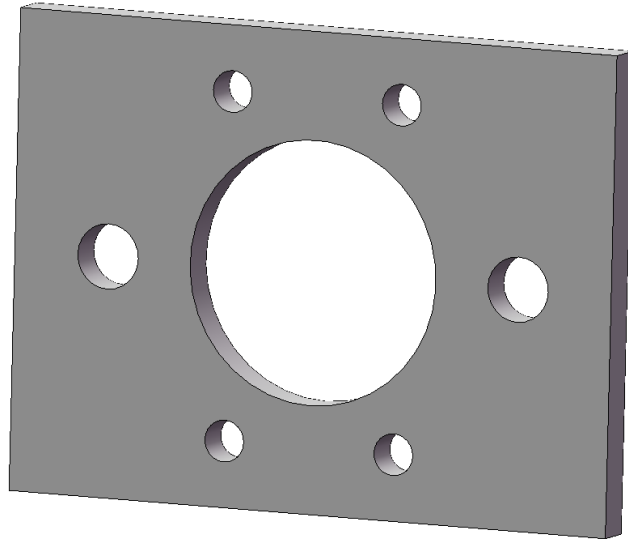
## **Hydraulic Motor Interface**

See “Wheel Hardware” > “Hydraulic Motor Interface Plate” in Cut List.

The interface plate will become a part of the motor. Or the motor will become a part of the interface plate. Whatever. It's more secure than using the little 1/2” bolt holes on the motor and it can always be

ground off later if necessary.

Put the motor interface plate (part HMIP) flat in a vice, or clamp it to the edge of a workbench. Ensure the threaded fittings on the hydraulic motor are sealed off so nothing falls inside them.

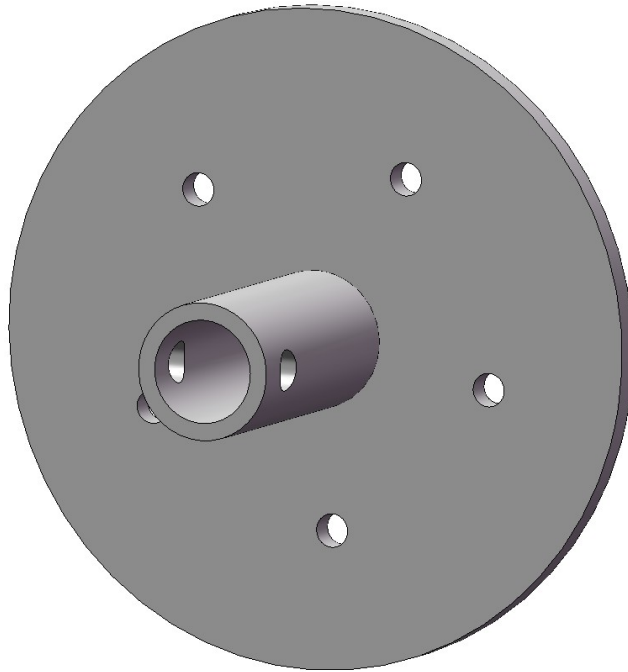


Place the hydraulic motor shaft through the large opening on the interface plate and center the motor. Weld the motor flanges to the interface plate. Insert a 3/4" bolt through the bolt holes at either end of the plate and attach a nut. Weld the nut to the interface plate and remove the bolt.

## **Wheel Disc Mount**

See "Wheel Hardware" > "Wheel Disc Mount Gusset" & "Wheel Disc Mount" & "Wheel Disc" in Cut List.

The wheel disc mount will look like this, but it will also have triangular gussets bracing the two parts that are pictured together.



Lay the wheel disc (part DISC) on a flat surface. Place the wheel mount round (part WDM) on top, centered on the large hole in the middle of the plate with the bolt hole as far from the plate as possible. Tack weld it in place. Attach the four wheel mount gussets (part (WDMG) to the round and the plate. Alternate between parts frequently, and use small welds, so as not to deform the assembly.



Bolt the wheel mount to the outside of the wheel with 8 bolts and locknuts.

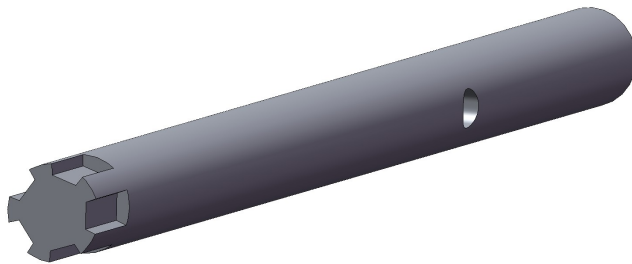




## **Axle Shaft**

See “Wheel Hardware” > “Axle Shaft” in Cut List.

It will end up looking something like this. But not exactly like this.



The axle shaft (part AXLE#1) should already have a hole in one end with two slits in it. If not, reference the Cut List.

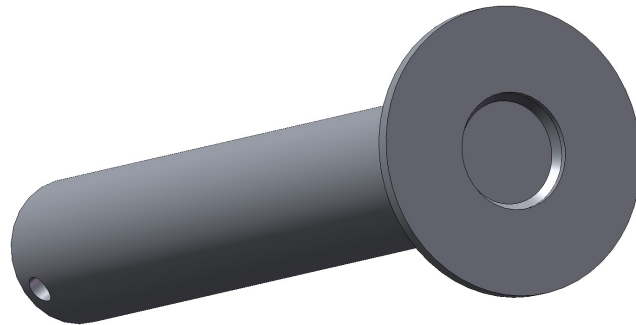
Secure part AXLE#1 in a vice and insert the splined shafting (part AXLE#2). Plug weld through the two slits to permanently fasten the two parts together, creating part AXLE#1&2.

Insert part AXLE#1&2 into the Wheel Disc Mount. Using the Wheel Disc Mount as a guide, drill

## **Pins**

See “Pins” in Cut List.

Stand the pin blank (part PIN) up in a hole, or fasten it in a vice, something like that. Weld a big washer to the end that doesn't have the cotter pin hole in it. Do that until you have enough pins (ten).



## **Hydraulic System**

### ***Optional***

## **Wheel Tracks**

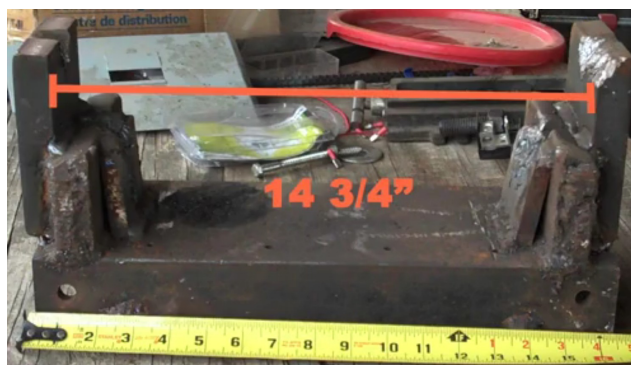
See “Wheel Tracks” (the whole thing) in Cut List.

Making the wheel tracks is tedious and requires two custom jigs. They do improve the performance of the tractor, though, allowing it to cross ditches up to 2/3 of the wheelbase.



### ***Pressing Jig***

See “Wheel Tracks” > “Wheel Track Pressing Jig” in Cut List.



Place the U-channel (part WTPJ#1) open side down on a flat surface. Position part WTPJ#2 at either end (14 3/4" apart), at 90 degrees, with the notch up. Tack weld.

Position part WTPJ#3 on the inside of each WTPJ#2, as shown, and tack weld.

Weld it all together. Solidly. Make it really strong. If any part of the jig starts to deform in use, bend it back into place and add more metal and welds to reinforce it.

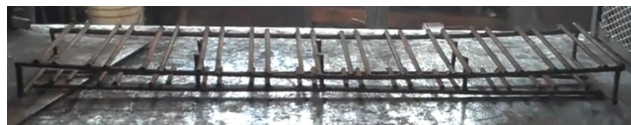
Place the jig in a 20 Ton shop press with an 8 1/2" wide press foot. Center a piece of track rebar (part

TRACK) in the notches on the top of the jig. Press. Remove the bent rebar and repeat.



### ***Welding Jig***

See “Wheel Track” > “Wheel Track Welding Jig” in Cut List.



The tread welding jig creates 12 slots to hold 12 pieces of bent rebar while welding on the chain.



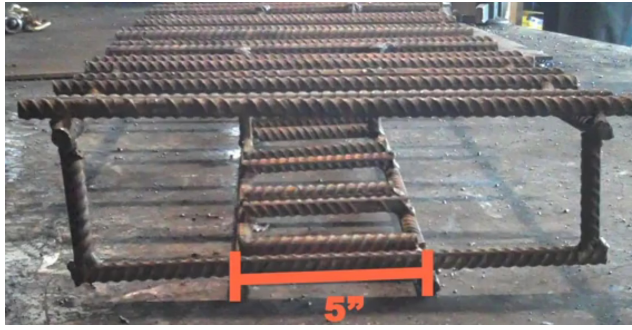
Make the top of the welding jig by first laying out two long pieces of rebar (part WTWJ#1) 13 1/2" apart (on center). Lay twenty four pieces of rebar (part WTWJ#2) across. Position part WTWJ#2 in pairs 1 11/16" from center to center and 3 1/4" apart down the whole length of part WTWJ#1.



Let part WTWJ#2 overhang part WTWJ#1 by 1" on each end of WTWJ#2. Weld them in place.



Make the bottom of the welding jig by first laying out the remaining two long pieces of rebar (part WTWJ#1) 5 inches apart (on centers). Lay 24 pieces of rebar (part WTWJ#3) along the length of part WTWJ#1, using the same spacing as the top part of the jig. Do not let part WTWJ#3 overhang WTWJ#1 at all.



Weld on two pieces of rebar (part WTWJ#6) at either end of the bottom of the welding jig. On top of that, weld two short pieces of rebar (part WTWJ#4) upright. Also, weld six pieces of short rebar (part WTWJ#5) in pairs, equally spaced from one end of the jig to the other. Be sure to weld them outside the pairs of rebar that the track pieces will go inside of.



### ***Welding Track***

See “Wheel Tracks” > “Tracks” & “Wheel Track Chain” in Cut List.



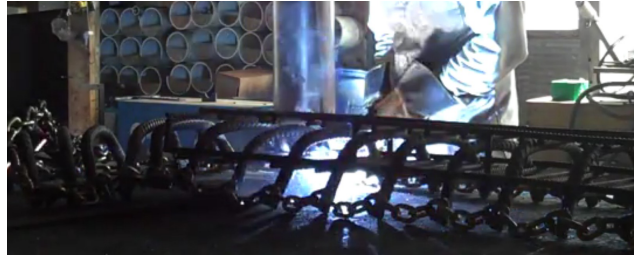


Position the welding jig with some space around it to pile up either end of the chain. Insert twelve pieces of track (part TRACK) in the twelve slots in the jig. Lay two chains on either side of the outside of the jig. Leave one link free at the end and weld the middle of the second link of the chain to the first TRACK. Be sure to weld the chain on the outside of the TRACK. Continue welding, leaving three links between each welded link.



When that's done, flip the jig over and weld the bottom of each link to the TRACK.



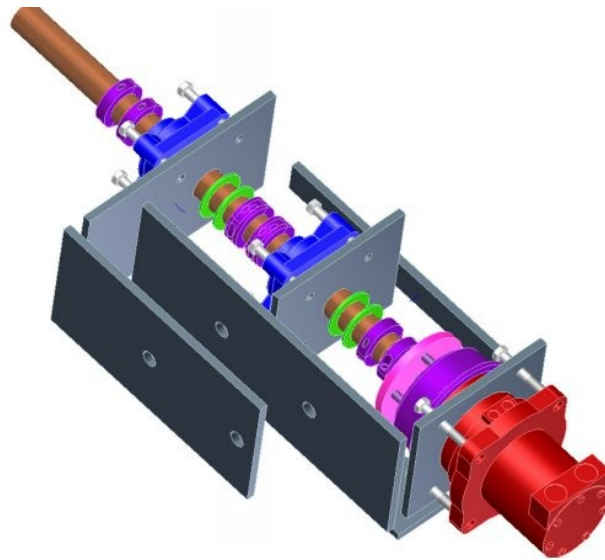


When each TRACK has been welded to every fourth link in both chains, top and bottom, flip the welding jig back over. Remove the section of track that has been welded, set twelve new pieces of TRACK in the jig, position the chain, and continue until the entire length of the chain has TRACK attached.

### Bent Loader Arm

### Quick Connect Wheels

See “Quick Connect Wheels” in Cut List.



## Tractor Assembly

The LifeTrac can be assembled by 2 people in approximately 8 hours.

### ***Frame Build Procedure***

Lay the 3 Sub-Base pieces on top of 6 cinder blocks, or rocks, or you can even use some scrap pieces of 4" x 4" tube.



Lay the 4 Base pieces on top of the 3 Sub-Base pieces and line up the bolt holes. Bolt them all together using washers and metal lock nuts. However, do not tighten the bolts. Leave some wiggle room until the entire frame is together.



Using the cinder blocks, or a strong friend, hold the pillars in place and bolt them to the Base pieces.



Hopefully that strong friend hasn't wandered off. Hold the upper crossbars in place and bolt them to the pillars.



Now put the Cant bar in place and bolt it to the upper crossbars and pillars.



Finally, put the rear upper crossbar on top of the Cant bar and bolt it in place.



[Just mount the two power cube plates, the hydraulic valve plate, and the seat plate to the frame at this time...need all the dimensions for those]

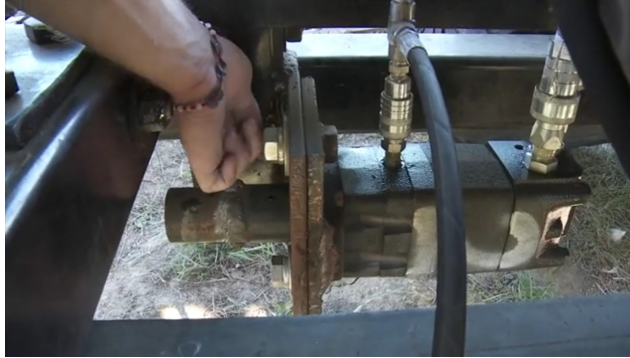
Now tighten up the bolts. Get them as tight as you can without deforming the square tubes.

## ***Wheel Unit Build Procedure***

### ***Wheel Mount Alignment Procedure***

If the LifeTrac frame isn't still up on blocks, put it back up on blocks.

Attach the interface plate to the motor frame mount plate. Attach the mount plate to the frame (4 total).



Attach the bearing to the axle shaft mounting plate so that the bearing is facing outwards. Bolt the plate to the frame with 3/4" x 5 1/2" bolts (8 total).



Insert the axle shaft through the outer bearing.



Before passing the axle shaft through the inner bearing, slide on a large washer and two locking collars.





Continue pushing the axle through the inner bearing. Slide on another large washer and lock collar. Continue pushing the shaft until the splined part engages the hydraulic motor unit.



There should be no more than 1/8" gap between the female coupler and the shaft face.



Now the hydraulic motor, axle shaft, and axle bearings are all lined up properly. Weld the motor mount plate to the C-pillar. Seriously, weld it on there nice and tight. All the way around. Also, tack weld the bearing mount plates to the horizontal tubes. But just tack weld those so it's easy to grind the weld off later if necessary.

Slide another lock collar onto the outer part of the shaft. Grease all the washers and lock collars. Tighten the lock collars against each side of each bearing so that the axle shaft doesn't try to move in or out.

Mount the wheel onto the axle shaft and align the bolt hole in the wheel disc mount with the bolt hole in the axle shaft.



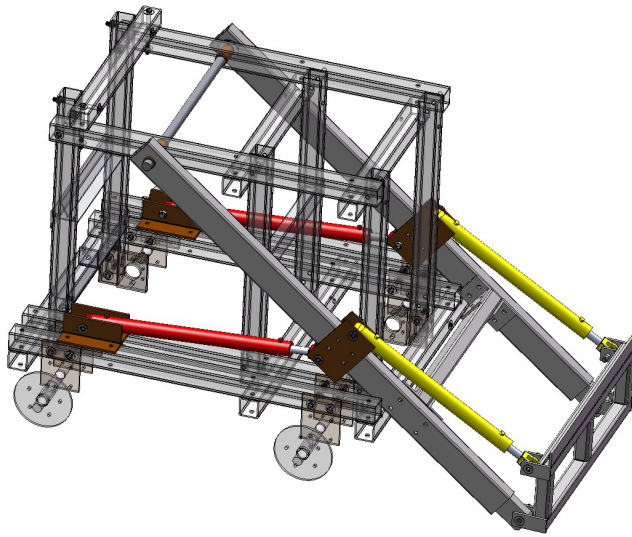
Secure with a 3/4" x 4 1/2" bolt and lock nut (4 times).



You should now have a frame with four wheel units attached to it.



## ***Loader Arm Alignment Procedure***



The Cant rail should already have a 2 3/8" hole for the loader arm pivot insert. If not, make that hole now. Reference the cut list.



Now insert the 2" x 2 3/8" round tube into the hole in the Cant rail. Insert the loader arm pivot bar

through both inserts in both Cant rails to ensure the pivots line up.



Weld the insert in place. Grind the welds smooth.



Mount the loader arms on the loader arm pivot bar, with the 2 3/8" insert in place.



Attach the loader arm crossbar to the supports on both loader arms. Only use one or two bolts because you're going to have to take it apart again.





Tack weld the outside of the loader arm 2 3/8" round inserts so they are in proper alignment with the loader arm pivot bar and the Cant rail inserts.



Remove the loader arms and completely weld the loader arm round inserts, then grind them smooth.

Ensure the shaft is centered within the frame. Slide two big washers onto the shaft from either side to create a gap between the loader arm and the frame. Slide the loader arms onto either end of the shaft. This is easier if you use some kind of hoist, or several strong friends.



Slide lock collars onto the shaft outside of the loader arm but don't tighten them all the way. Bolt the

loader crossbar into place.



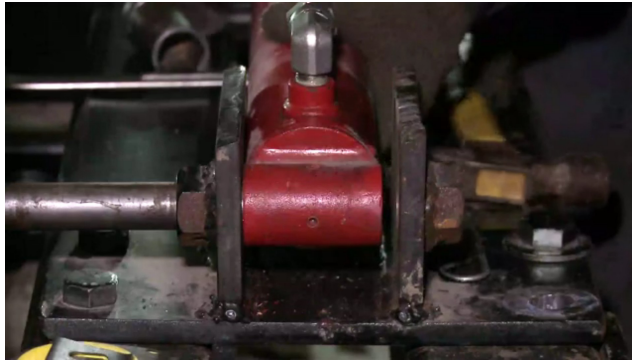
Position the hydraulic cylinder between the loader arm cylinder plates and secure with a pin and cotter pin (2 total).



Mount the hydraulic cylinder frame plates to the frame.

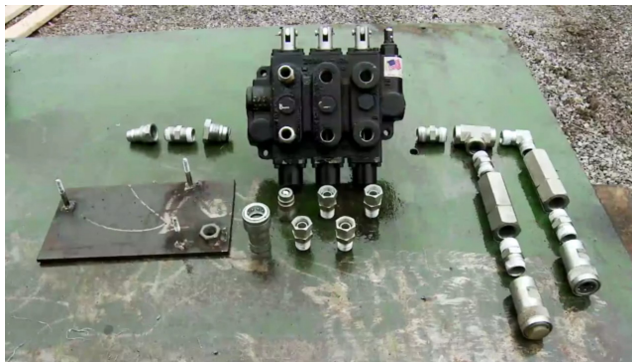


Position the lower hydraulic cylinder in the frame mount plates and the loader arm plates and secure with pins and cotter pins.



## ***Hydraulic Distribution System Build Procedure***

Gather the required components and ensure they are clean. Wrap all threads in Teflon tape and then cover all open connections. Preferably with a plastic cap, but really anything will do as long as it doesn't fall off.



First, you must cut off the end of the power beyond sleeve to prevent it interfering with the return flow. If available, place the part into a band saw. Otherwise just use a vice, a hacksaw, and a steady hand. Either way cut off the tip just below the threads.





## ***Track Attachment Procedure***



Lay out two complete tracks on the ground the same distance apart as the tractor wheels. Drive the tractor on to the center of the track.



Using come-alongs, ratchet the ends of the tracks tightly towards one another.



Let air out of the tires, then tighten the track again. Get the links close enough that you can connect them with detachable chain links. Do that, then secure with a cotter pin.



Remove the come-alongs and give the now treaded tractor a test drive.