



2010 43QGP Allegro Bus

10/17/2012

SIXTY-EIGHT-B-r1 – coach modification – RV SPARE TIRE

CARRIER DESIGN AND MATERIALS, Revision 1. As coaches became larger and heavier so have the tires and rims needed to keep the coach on the road. Our coach tires are 295/80R22.5 Michelin XZA2 Energy LRH, weighing 126 pounds add the weight of the aluminum rim 54 pounds makes the weight of the combination 180 pounds.

Searching for a spare tire took us to Chris Morrow at Bay Diesel in Red Bay, Alabama where we were able to locate a good spare tire (same age as other tires) at a reasonable price. After locating the tire a search for an aluminum rim for mounting the tire began, we were also able to locate a rim in decent condition in Red Bay. Thinking locating a facility to mount the tire would be easy several local tire dealers were contacted to ask what their mounting charge. The prices ranged from \$ 35.00 to \$ 15.00 making a decision on which tire dealer would get our business easy, fortunately we had done previous business with the dealer charging \$ 15.00.

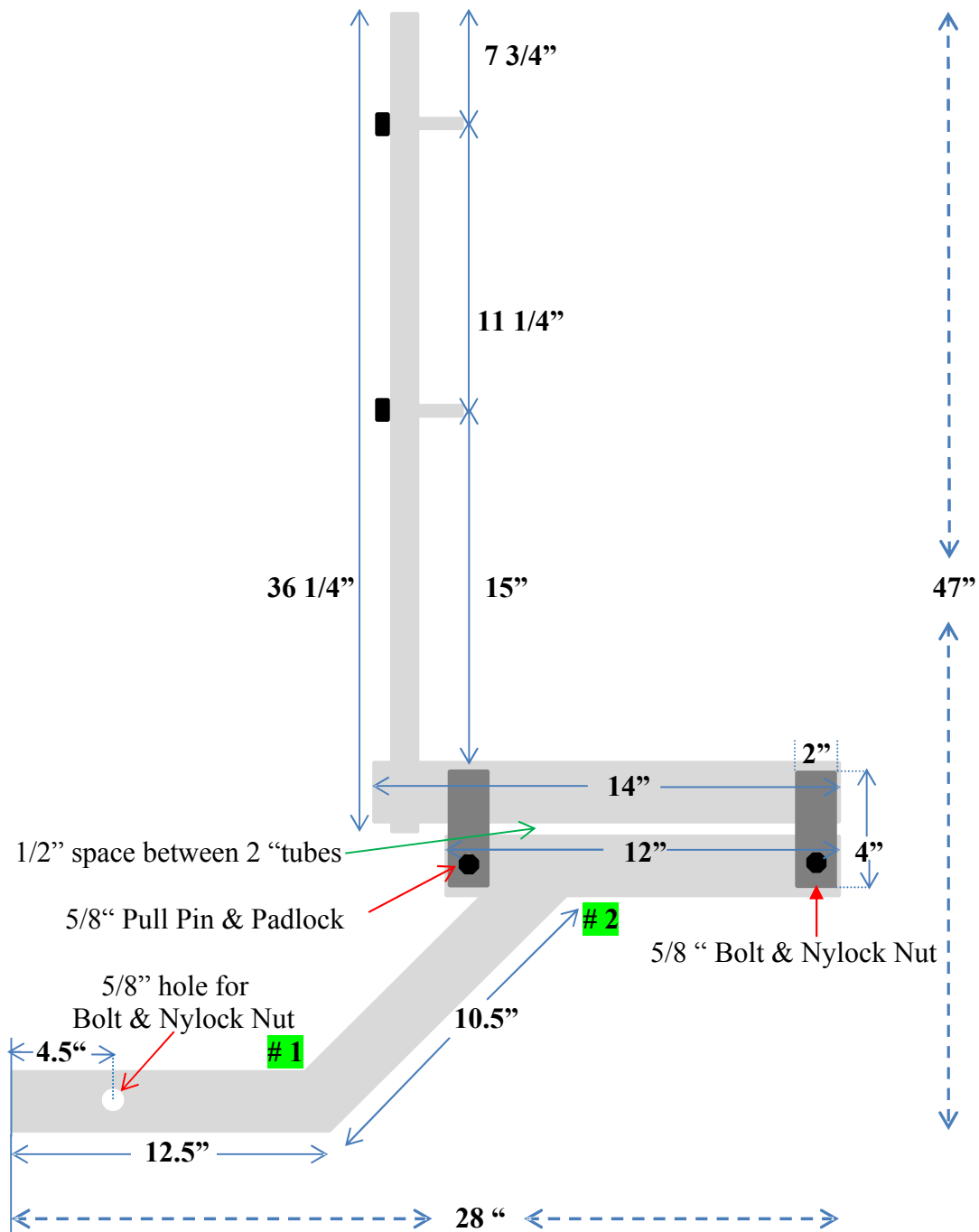
After tire and rim were mated the combination began riding in the back of our Lincoln MKX (toad) for several months while traveling the country making our toad with the RV spare on board a two passenger vehicle. Our intent during this process was to design and build a tire-rim carrier to be mounted on the rear of the coach similar to the “Continental Kits” popular 50 or 60 years ago. After the tire/rim and continental kit had been mounted a cover was designed and created for the tire and its carrier using heavy brown vinyl specifically purchased from an upholstery outlet in northern Mississippi during one of our Red Bay trips.

Initially the plan was to design and build a 2” receiver, mounting it on top of the Tiffin OEM receiver. After shopping around the decision was made to purchase a commercially built 3,500 pound receiver designed to be bolted to a step bumper of a truck. This commercial receiver was mounted on top of the OEM Curt receiver, information on its mounting can be found in Crusingator’s Modifications Number 68-A.

Next step, design the carrier then purchase the materials necessary for its assembly. After the design had been completed, steel was obtained from a local welding shop. After cutting, the steel was tack welded into the design. All finish welding was performed by a local commercial welder. After the welding was completed, all weld joints were smoothed with an angle grinder then sanded to a smooth finish. Finally the carrier was sent to be sand blasted then to have a medium gloss black powder coating applied.

Crusingator's RV Continental Kit

Designed to carry a 295/80R22.5 Michelin Tire



NO SCALE

#1 and #2 are each a 60 ° (degree) angle

RV Continental Kit Material List

Units	Size	Component	Length-Width	Unit Cost	Cost
2	5/8"	Cap Bolt	5"	\$ 1.79	\$ 3.58
2	5/8"	Cap Bolt	3 1/2"	\$ 1.33	\$ 2.66
4	5/8"	Nylock Nut		\$ 0.46	\$ 1.84
4	5/8"	Flat Washer		\$ 0.33	\$ 1.32
1	5/8"	Pull Pin	6"	\$ 5.91	\$ 5.91
2	1/2"	Cap Bolt	4 1/2"	\$ 1.02	\$ 2.04
2	1/2"	Cap Bolt	5 "	\$ 1.08	\$ 2.16
4	1/2"	Lock Washer		\$ 0.22	\$ 0.88
4	1/2"	Flat Washer		\$ 0.20	\$ 0.80
6	1/2"	Hex Nut		\$ 0.20	\$ 1.20
2	1/2"	Pull Pin w/clips	5"	\$ 5.24	\$ 10.48
1	3/16"	Flat Bar	2' X 2"	\$ 7.32	\$ 7.32
1	3/8"	Flat Bar	16" x 1 1/4"	\$ 4.45	\$ 4.45
4	3/16"	Square Tube	4' X 2"	\$ 4.96	\$ 19.84
3	3/16"	Square Tube	3' x 1 1/2"	\$ 3.88	\$ 11.64
1	2"	3500# Receiver		\$ 15.99	\$ 15.99
2	1/4"	Turnbuckles	10" to 16"	\$ 5.99	\$ 11.98
1		Tie Down Rings	Set of 4	\$ 9.99	\$ 9.99
2	1/4"	Cap Bolt (GD5)	2 1/2"	\$ 0.99	\$ 1.98
4	1/4"	Cap Bolts (GD5)	4"	\$ 1.35	\$ 5.40
6	1/4"	Lock Washers (GD5)		\$ 0.24	\$ 1.44
6	1/4"	Hex Nut (GD5)		\$ 0.17	\$ 1.02
1		Master Padlock		\$ 7.97	\$ 7.97
1		Welding		\$ 20.00	\$ 20.00
1		Sand Blasting	7'	\$ 15.00	\$ 15.00
1		Powder Coating	7'	\$ 20.00	\$ 20.00
1		Cover & Materials		\$ 40.00	\$ 40.00
		(GD5) = Grade 5			
				Sub-Total	\$ 226.89
				Tax @ 7%	\$ 15.88
				Total	\$ 242.77

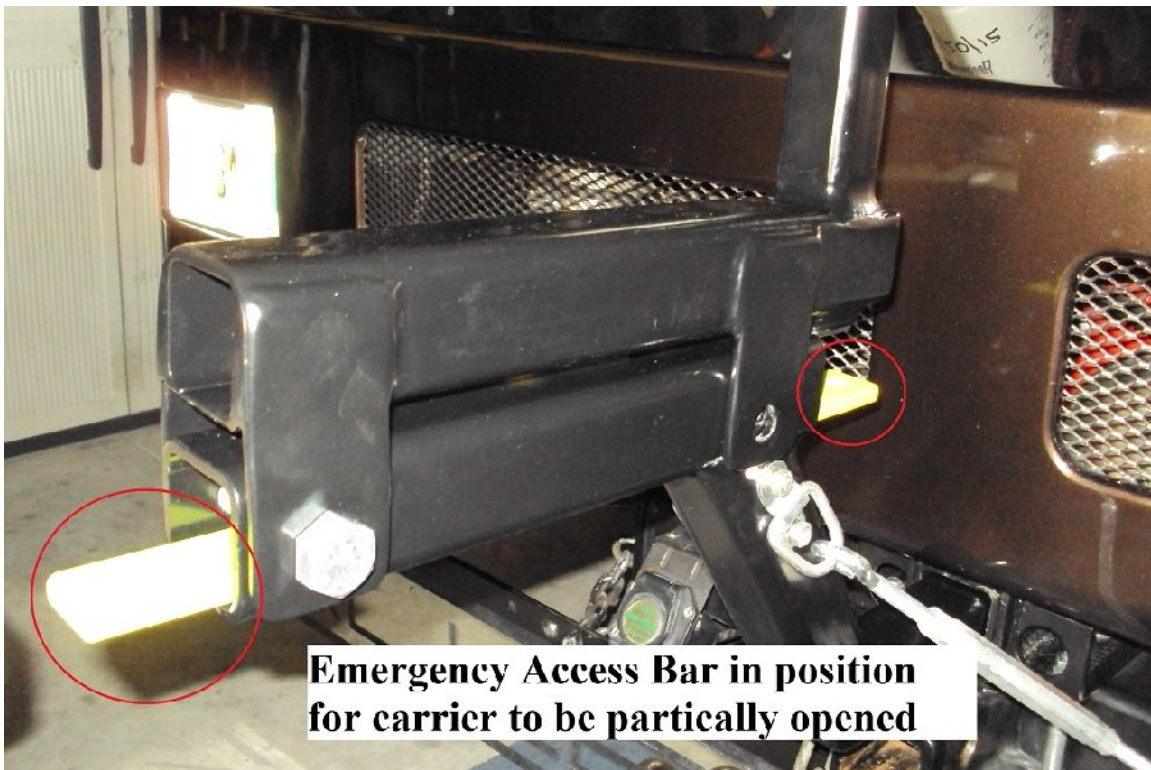
By design a 1/2" space between the two 2" tubes was made allowing room for the carrier to un-folded (hinge) open 135 °. Allowing the RV tire while mounted to its carrier to rest on the ground for removal.

Angles 1 and 2 were cut then welded at 60 ° (degrees) allowing clearance to prevent conflicts between the carrier and the toad vehicles tow bar.

Two separate metal components (Engine Access Bars) were fabricated to allow lowering the carrier part of the way to the ground. The first Engine Access Bar was named "Emergency Engine Access Bar" it is 3/8" thick by 1 1/4" wide by 16" long piece of steel bar. It is inserted into the lower opening (below the 5/8" bolt) of the lower square tube leaving about 5" of the bar exposed from the lower square tubing. With the bar in position the carrier can be lowered into a partially open position allowing the engine access cover to be opened. This engine access bar makes this a one person operation this bar was designed to be used primarily in an emergency.

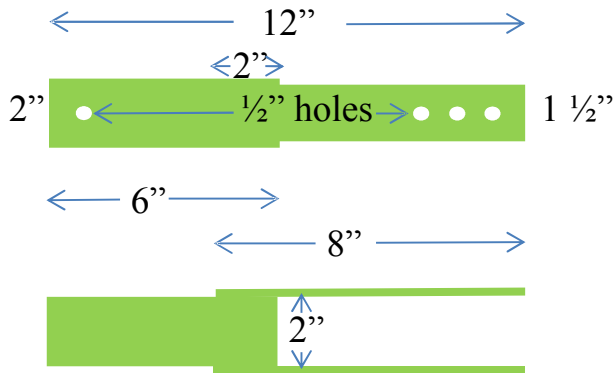
"Emergency Engine Access Bar" side view, painted fluorescent green to be quickly found.

"Emergency Engine Access Bar" top view.

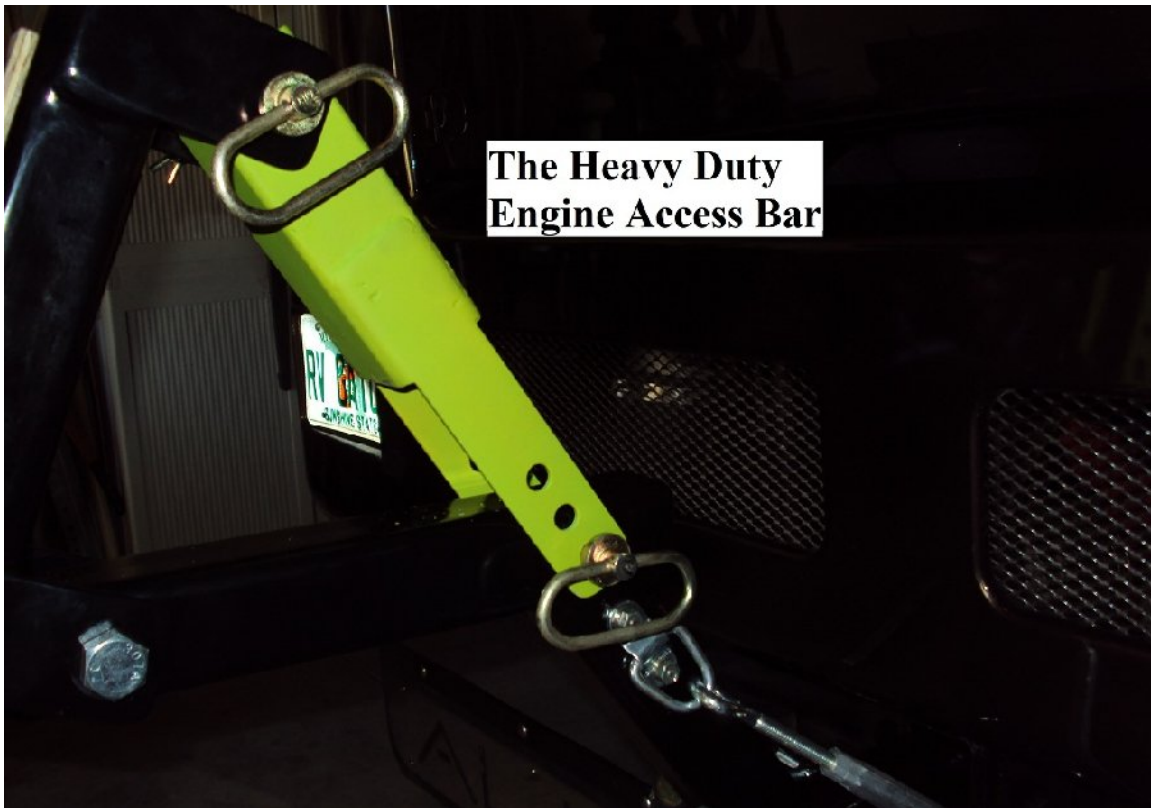


The second Engine Access Bar was constructed using heavier materials its use requires two people to lower the carrier utilizing this bar. As with the first engine access bar this one was fabricated to allow lowering the carrier part of the way enough to allow opening the rear engine access cover without requiring the toad to be disconnected.

Side View of the Engine Access Bar



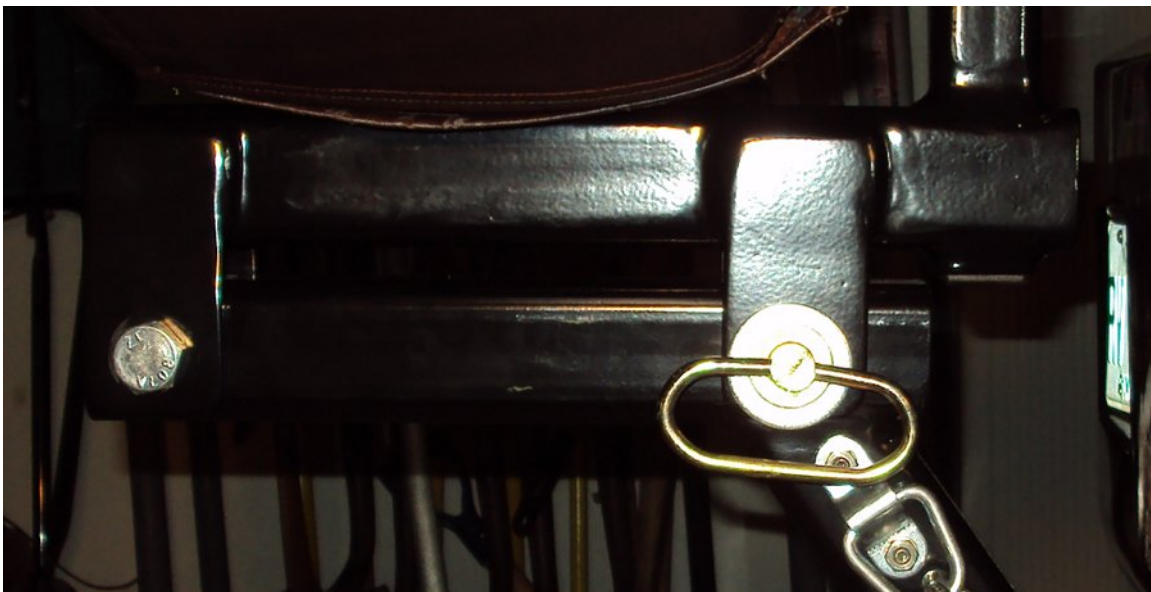
Top View of the Engine Access Bar



The above photo shows the Engine Access Bar inserted into the carrier using two 1/2" pull pins with safety clips thus allowing the tire and carrier to be tilted enough for allow opening the rear engine access cover. The toad does

not require disconnecting to perform this operation however it is easier to access the engine compartment if the toad has been disconnected and moved away from the coach. This is more of an option in the event the toad is connected and access to the engine becomes necessary for some form of repair.

SPECIAL ATTENTION should be made in the type of construction utilized to mate the 1 1/2" and 2" tubing at the 90 ° angle. A 1 1/2 " square hole was cut thru both upper and lower sides of the 14" x 2" tube, allowing the 1 1/2" tube to slide thru the new opening made in the 2" tube, extending thru the lower side about 1/2 ". All upper, lower and inside angles of the two pieces were welded. This construction method allows the elimination/need for gussets to be welded to strengthen the 90 ° angle between the two tubes.



Prior to sand blasting and powder coating the two pivot flanges welded to the 14" upper tube and attached to the lower 12" tube with a 5/8" bolt were both bent outward enough to allow a stainless steel fender washer (with a 5/8" hole drilled thru it) to be installed between the lower tube and the two flanges. The two stainless steel washer's act as a bearing after the 5/8" pivot bolt is properly tightened, tight but loose enough to allow rotation. Turn buckles were installed along with tie down rings, one on each side of the carrier. They were attached with 1/4" (GRD 5) grade five hardware between the 4" Curt receiver bar and the tire carrier to prevent the approximate 1" side to side motion at the top of the carrier while driving down the highway. The reason the side to side motion exists is due to the two inch receiver not making a TIGHT FIT inside the Curt receiver, allowing a few thousandths of an inch gap between the carrier and receiver. After the turnbuckles are tightened their addition prevents the top of the carrier from waving side to side.



Some point in the future the tire carrier **MAY** display a large Florida Gator (as in the Crusingator Avatar). A decision has yet to be made on leaving the carrier as seen above, adding a decal or air brushing a large Crusingator avatar on the cover.