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**INSTALLATION OF A BED MOUNTED  
FUEL TANK IN THE GM 1500 SERIES  
PICKUP TRUCK**

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## 1. GENERAL

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The installation instructions contained herein apply specifically to the developmental bed mounted retrofit fuel tank system for GM 1500 ½ ton pickup trucks. The system comprises an OEM steel tank and brackets mounted in the bed of the truck aft of the cab. A complete parts list and drawings for the developmental system is contained in Appendix A.

The retrofit tank system was designed and tested under contract with the Automotive Safety Research Institute. The results of the testing are available through their WEB site : [www.autosafety.org](http://www.autosafety.org).

**Warning: DO NOT USE THE TANK AS A SEAT WHILE THE TRUCK IS IN MOTION.**

## 2. REMOVAL OF THE EXISTING TANK

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**Warning:** Always use protective eyewear when working under a vehicle.

**Warning:** Gasoline is extremely flammable. Always work in a well ventilated area, free of all possible sources of ignition, such as, open flame, cigarettes, sparks or natural gas appliances with pilot lights.

- 2.1 Empty the existing fuel tank of as much fuel as possible. This may be accomplished by siphoning the tank or by driving the truck until nearly empty.
- 2.2 Disconnect the negative battery terminal.
- 2.3 Support the truck on jack stands.

**Warning:** Always securely support a vehicle before working underneath of it. Never rely on a jack to support a vehicle.

- 2.4 Open the fuel door and remove the cap. Unscrew the bolts from the filler neck and side panel of the box (see Figure 1). Reinstall the cap.



Figure 1: Removal of filler neck.

- 2.5 Disconnect the fuel ground strap that connects the filler neck to the vehicle frame.
- 2.6 If equipped, remove the plastic fuel tank shield.
- 2.7 Repeat steps 2.4 to 2.6 for dual tank trucks.
- 2.8 For trucks with dual tanks remove the cover from the switching valve.
- 2.9 Support the tank using a transmission jack or similar.
- 2.10 With the tank supported unbolt the tank brackets from the frame rail. The bolts for the left side rear tank bracket are shown in Figure 2.



Figure 2: Bolts attaching the rear tank brackets to the frame rail.

- 2.11 Lower the tank sufficiently to facilitate access to the electrical and fuel line connections on the top of the tank.
- 2.12 Disconnect the electrical connections to the tank. This includes the sending unit wire and the grounding wire and possibly the fuel pump connection on fuel injected models.

- 2.13 Cut the fuel supply, return and vent hoses. Cap the cut ends of the fuel lines at the tank and at the truck to prevent spillage.
- 2.14 Lower the tank to remove it from the vehicle.
- 2.15 If the truck is equipped with two fuel tanks, remove the second following the steps described above.
- 2.16 Remove and inspect the sending unit from the tank, if it is damaged or in poor condition it should be replaced, otherwise it can be reinstalled into the box mounted tank. Replace the sending unit's O-ring seal when reinstalling the sending unit in the box tank.

### 3. *FUEL LINES*

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**Warning:** Gasoline is extremely flammable. Always work in a well ventilated area, free of all possible sources of ignition, such as, open flame, cigarettes, sparks or natural gas appliances with pilot lights.

**Note:** For fuel injected trucks use high pressure hose clamps for all fuel line connections.

- 3.1 If the truck was equipped with dual side mounted tanks, remove the tank switching valve. This is accomplished by disconnecting the electrical connector, cutting the fuel hoses and unbolting the valve from the frame rail.
- 3.2 Inspect the remaining fuel lines for corrosion and replace as required. Use the existing steel fuel lines if possible and new fuel line hose at all junctions. New steel lines or fuel hose may be used. If replacement is necessary:
  - 3.2.1 For fuel injected systems, remove the metal fuel line back to the steel braided lines. Replace the fuel filter if required. Install the new fuel line hoses and affix them to the frame rail and connect the fuel supply line to the fuel filter.
  - 3.2.2 For a non fuel injected system, replace the fuel lines with fuel line hose.
- 3.3 Route the fuel line alongside the frame rail to the cab mount cross member, continue the lines in between the cab mounts and up through the holes drilled in the bed floor (see 4.7). Typical fuel line routing is shown in Figure 3.



Figure 3: Typical routing of fuel hoses.

- 3.4 Cut the fuel hoses to length and connect to the bed mounted tank (Figure 4).



Figure 4: Fuel hose connections to the tank.

- 3.5 For fuel injected trucks ensure high pressure hose clamps are used for all the connections.
- 3.6 Affix the fuel line hoses, along their length, to the frame rail and cross members to ensure the hoses are securely held in position.

#### ***4. INSTALLATION OF THE BOX MOUNTED TANK***

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The box mounted tank system consists of relocating an OEM or an after market replacement side mounted tank in the box of the pickup, behind the cab. Standard OEM type brackets are used to secure the tank in place. These brackets and the floor of the of the truck box need to be modified to include additional holes for fastening the brackets to the box floor and to provide passage for the fuel lines.

- 4.1 Four 3/8 inch diameter holes must be drilled in the bottom of the two tank mounting brackets. The position of these holes is indicated in Figure 5. A template to aid in the positioning of these holes is provided in Appendix B.

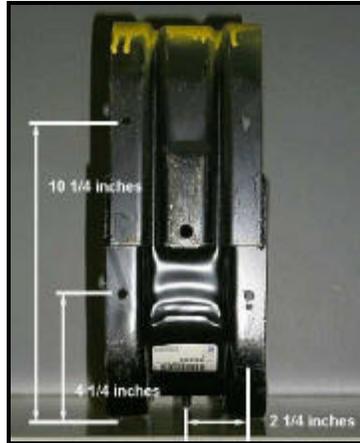


Figure 5: Position of holes to be drilled in the tank mounting brackets.

- 4.2 The holes in floor of the box are match drilled with those drilled in the tank brackets. This is accomplished by first identifying the centreline of the box (see Figure 6) .



Figure 6: Centreline of box floor.

- 4.3 Position the brackets such that the centre of the brackets are 12 inches from the centreline of the box and the rear of the brackets is 2 ¼ inches from the front wall of the box (see Figure 7). Double check the brackets' position and mark the hole to be drilled in the floor using the brackets as a template. Drill the eight 3/8" diameter holes in the floor.



Figure 7: Positioning of the tank brackets and angle brace.

- 4.4 Fasten the brackets to the box floor. The bolts are inserted through the brackets, through the floor and through a bearing plate on the under side of the truck box floor, as shown in Figure 8.



Figure 8: Bearing plate for tank bracket bolts.

- 4.5 Centre the tank cover angle brace as indicated in Figure 7. Match drill two  $3/8$ " diameter holes in the floor to bolt the brace down.
- 4.6 Bolt the tank bracket extensions to the vertical portion of the tank brackets (the side of the bracket closest to the front of the box). These extensions are to assist in securing the tank cover.
- 4.7 Drill three  $3/4$ " diameter holes in the floor of the box to allow passage of the fuel lines from underneath the trucks. Insert the plastic grommets in the holes to protect the lines. The location of the holes are indicated in Figure 9. The protective grommets are shown in Figure 10 with the fuel lines in place.



Figure 9: Three 3/4" holes drilled in the box floor.

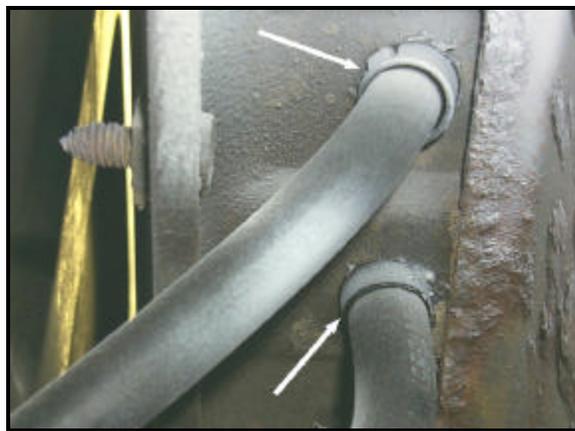


Figure 10: Plastic grommets used to protect the fuel lines as they pass through the box floor.

- 4.8 Secure the tank in the brackets with the filler spout on the right side of the truck (see Figure 11).
- 4.9 Install the sending unit in the tank (see Figure 11).
- 4.10 Attach the fuel lines to the sending unit as described in 3.4.
- 4.11 Attach the filler neck mounting bracket to the top edge of the truck box with self tapping screws and install the filler neck. Install the filler and vent hoses (see Figure 11).
- 4.12 Connect the filler neck and the sending unit ground wires to the side panel of the truck box and ensure a good electrical connection is achieved (see Figure 11).



Figure 11: Bed tank secured in position.

- 4.13 Extend the sending unit wire and pass it through the box floor by feeding it through one of the holes for the fuel lines. Make appropriate connections underneath the truck.
- 4.14 For fuel injected trucks extend the sending unit wire and fuel pump positive wire and pass them through box floor by feeding them through one of the holes for the fuel lines. Make appropriate connections underneath the truck.
- 4.15 Verify that all hose clamps for the fuel lines and the filler lines are tight.
- 4.16 Install the tank cover. Two bolts fasten the top face of the cover to the bracket extensions. Two nuts fasten the front face of the cover to the studs on the tank brackets. The lower edge of the cover is bolted to the angle brace (see Figure 12).

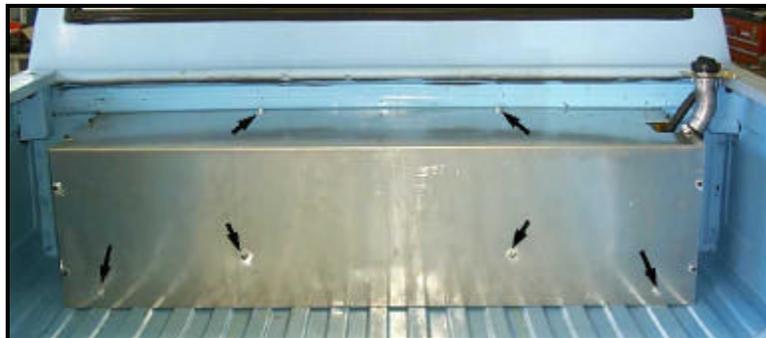


Figure 12: Fasten the tank cover. The bolt and nut locations are indicated.

- 4.17 Install the side panel and bolt in place (see Figure 13).



Figure 13: Bolt locations for side plates.

4.18 Fill the tank with fuel and check for leaks. The installation is now complete.

**Warning: DO NOT USE THE TANK AS A SEAT WHILE THE TRUCK IS IN MOTION.**

## *APPENDIX A :Bed Mounted Tank Parts List and Drawings*

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The major components of the developmental box mounted tank system are shown in Figure 14 with the complete parts list presented in the subsequent table.

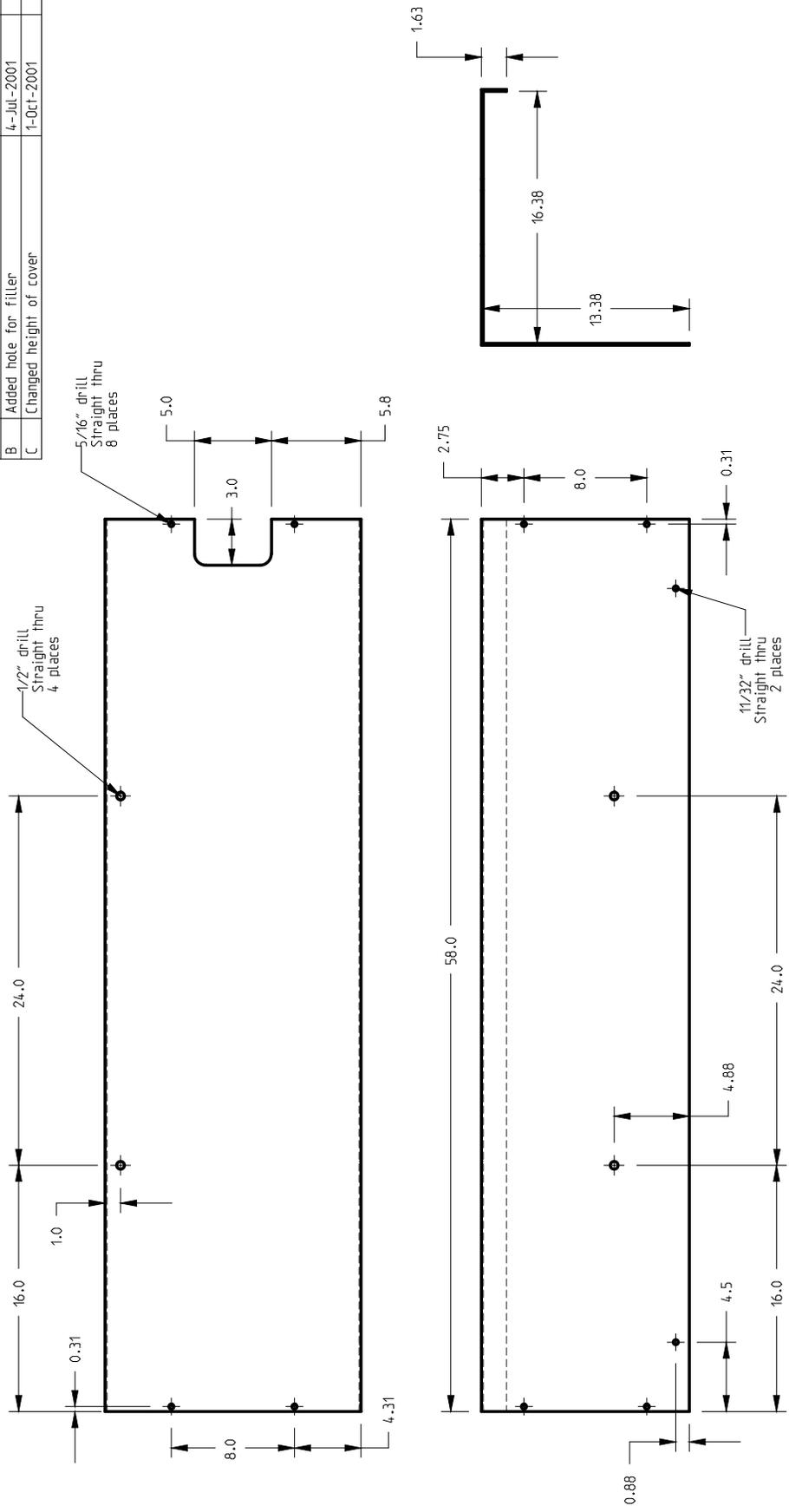


Figure 14: Major components of the box mounted tank system.

Table 1: Parts list of components used in the developmental bed mounted tank system.

Item Number	Part Number	Part Name	Quantity
1	GM1B	Steel Fuel Tank	1
2	15624659	Fuel Tank Bracket	1
3	15624661	Fuel Tank Bracket	1
4	14071921	Filler Neck	1
5	22591476	Filler Cap	1
6	14036751	Vent Hose	1
7	14041209	Filler Hose	1
8	25002010	Sending Unit (Carb)	1
9	078-024	Filler Neck Mounting Bracket	1
10	078-016	Tank Cover Bracket Right	1
11	078-017	Tank Cover Bracket Left	1
12	078-020	Mounting Plate	2
13	FT-9	3/8' -16 x 1-1/2" Bolt	20
14	155-028	3/8"-16 Nut	18
15	656-004	3/8" Washer	18
16	663-084	3/8" Lock Washer	18
17	315-725	Snap in Bushing	3
18	078-023	2"x 2"x 56" CRS Angle	1
19	078-014-B	Bed Tank Cover	1
20	078-015	Tank Cover End Plate Left	1
21	078-018	Tank Cover End PlateRight	1
22	BRQ62006	70 mm Clamp	2
23	TRIDHAS20	32 mm Clamp	2
24	508-824	Self Taping Sheet Metal Screws	7
25	DAY80062	5/16" Fuel hose	7'
26	DAY80063	3/8" Fuel hose	7'
27	DAY80058	1/4" Fuel hose	7'
28	BRQ3504	1/4" Clamp	2
29	BRQ3506	3/8" Clamp	4
		<b>Fuel Injection also requires list below</b>	
FI-1	GKP-GF1481	Fuel Filter	1
FI-2	Titan ac31440	Fuel line	1
FI-3	Titan ac311770	Fuel line	2
FI-4	25090846	Sending Unit (Fuel Injected)	1
FI-5	25168719	Fuel Pump (Fuel Injected)	1
FI-6	BRQF16	3/8 FI Clamps	6

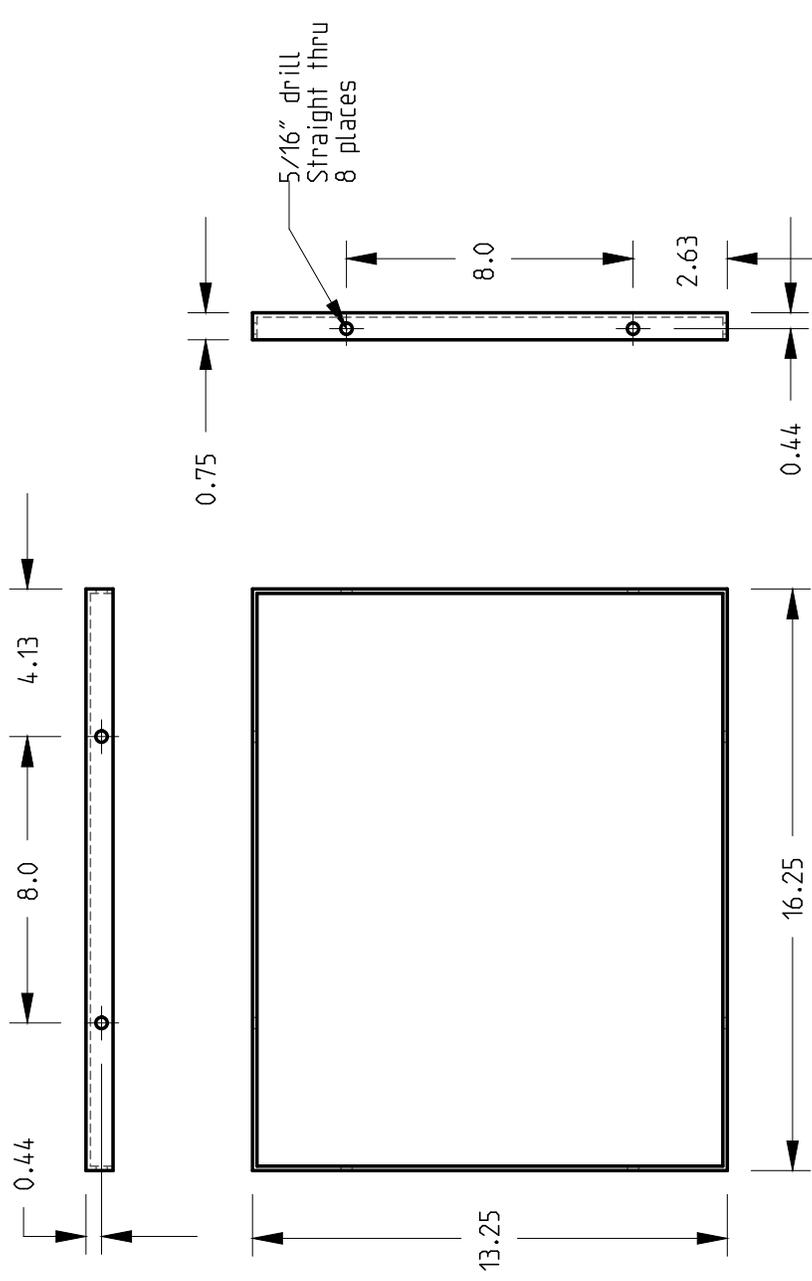
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A	FIRST RELEASE	1-Feb-2001	
B	Added hole for filter	4-Jul-2001	
C	Changed height of cover	1-Oct-2001	



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			078-014C

Note: Material to be Aluminum  
1/8" thick, Checker Plate

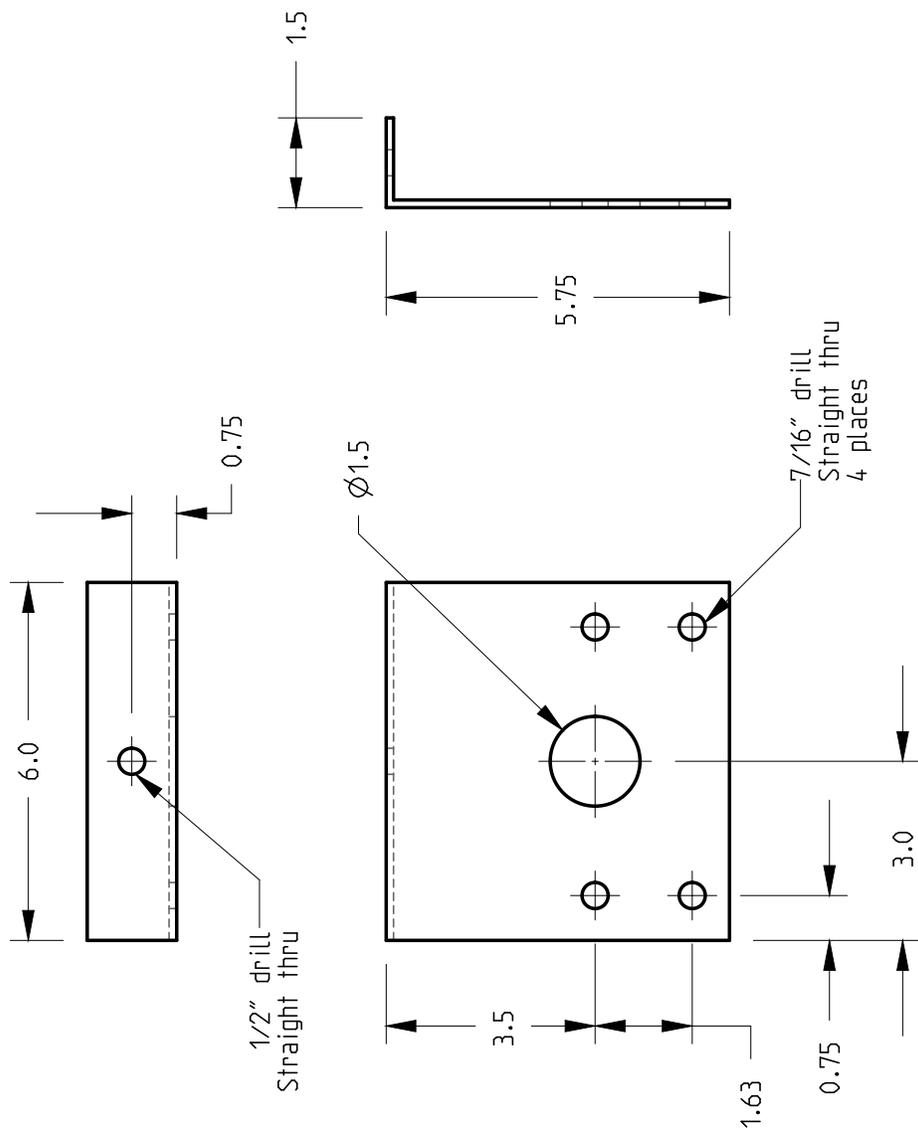
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B	Minor dimension change	1-Oct-2001	



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DO NOT SCALE DRAWING

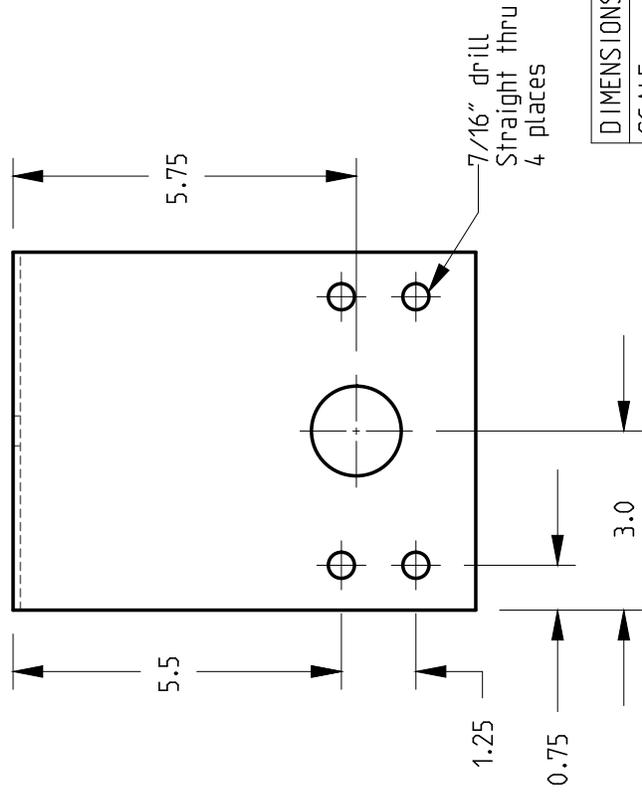
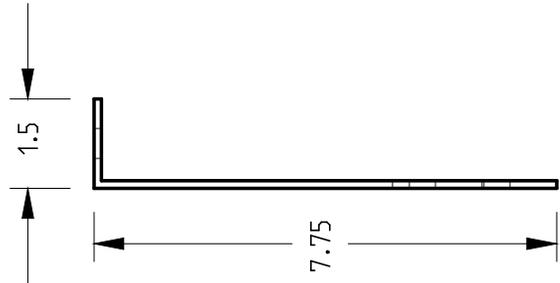
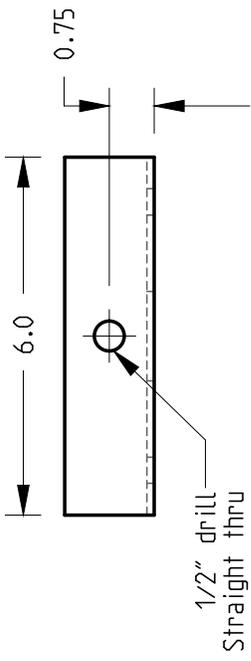
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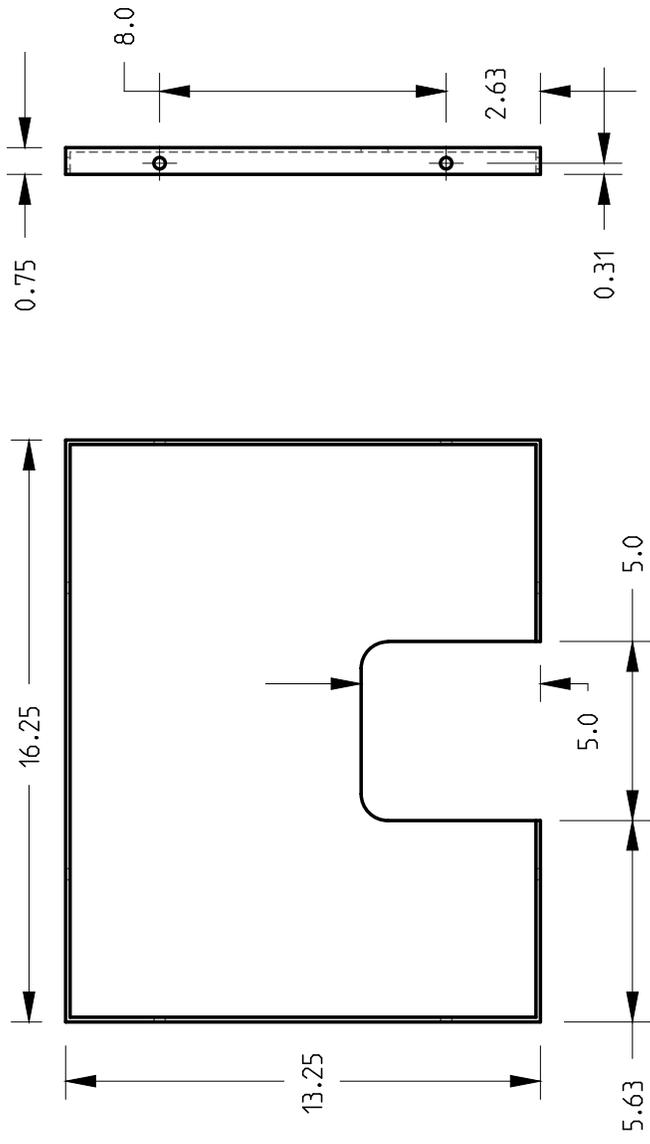
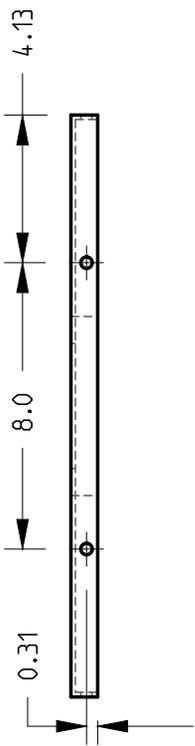
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B	Minor dimension change	1-Oct-2001	



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DEC. .XXX±0.001	QTY 1	PART
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	Steel, 1/8"	None
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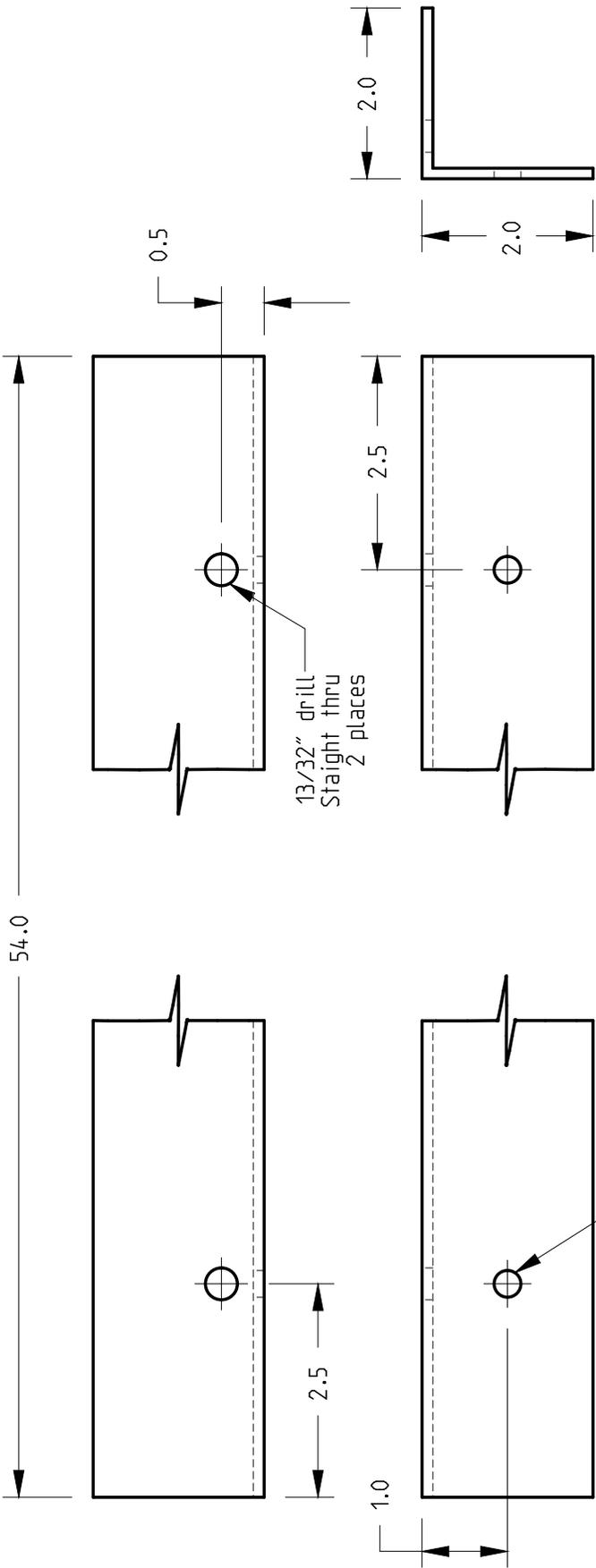
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B	Minor dimension change	1-Oct-2001	



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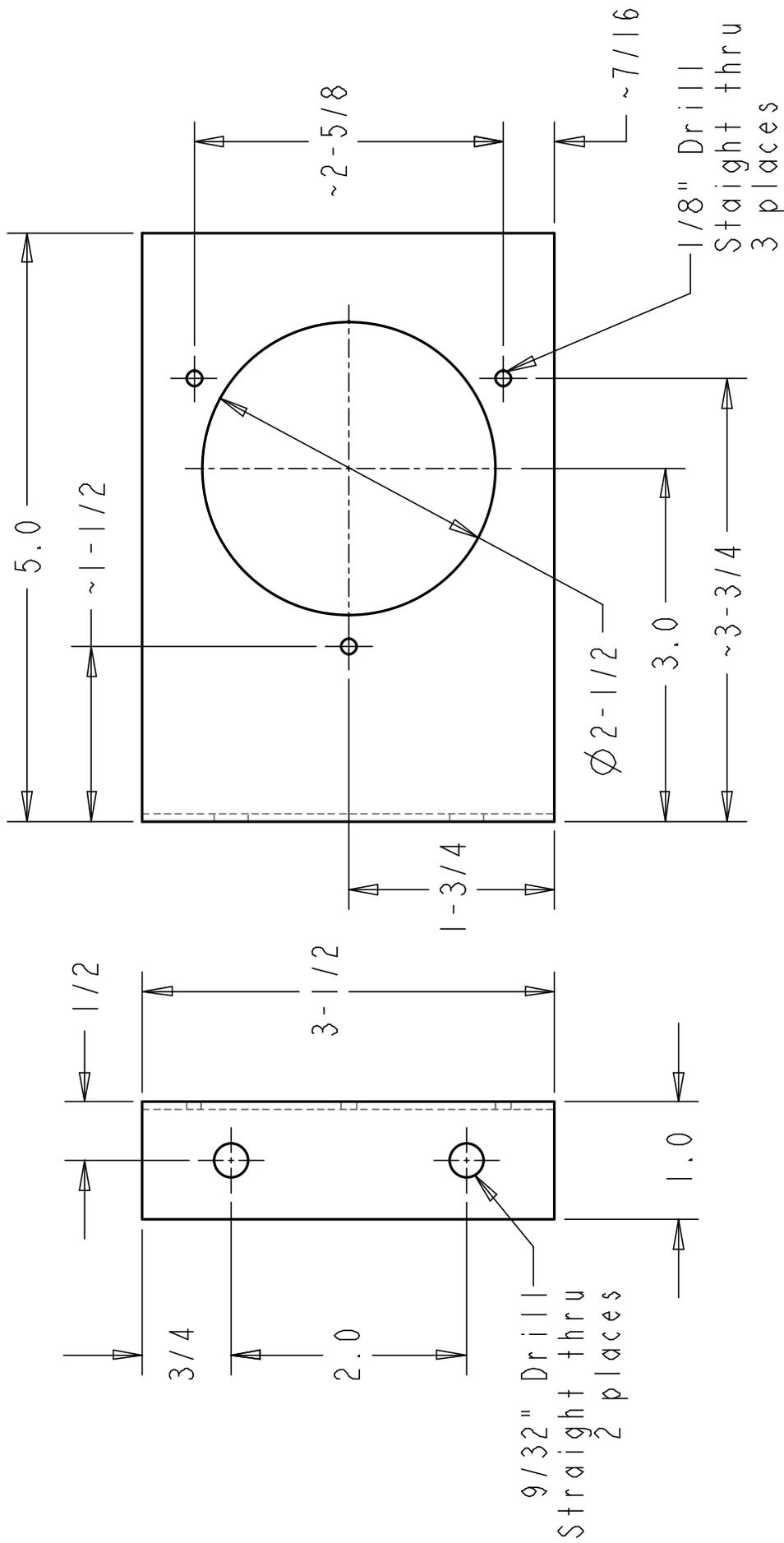


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B	Changed overall length	1-Oct-2001	



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DO NOT SCALE DRAWING



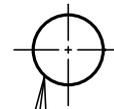
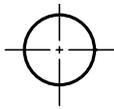
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<b>BIOKINETICS</b> and Associates Ltd.	<b>68-XX</b>
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*APPENDIX B Template for drilling holes in tank  
brackets.*

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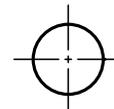
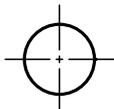
Mark center for 4 holes

# TEMPLATE FOR MOUNTING HOLES

078-019



Remove to fit over existing screw.



Caution: Printing from a PDF file may not scale this image correctly. Use "print as image" option when printing this page for use as a template.

Align with horizontal surface and end of bracket.

