Recreation Tech Tips

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Modifying Military Boxes for Bear-Resistant Containers

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Portable bear-resistant containers often satisfy legal requirements for storing food and stock feed in grizzly bear habitat where special regulations are in effect. Although a number of containers are commercially available, there has been continuing interest in using surplus military medical boxes as bear-resistant containers. The Missoula Technology & Development Center has plans for modifying the boxes that strengthen them enough to pass the tests required for commercially produced bear-resistant boxes in the Yellowstone and Northern Continental Divide grizzly bear ecosystems.

The Box

The boxes we modified (Figure 1) were originally built to hold military medical kits. They are available on the surplus market for about $50 each. They are aluminum, 31 3/8 in long, 19½ in

wide, and 11 in high (792 x 495 x 279 mm), and weigh just over 25 pounds (11.3 kg). The unmodified boxes have 10 latches and a tight rubber seal, making them difficult and inconvenient to open. While the boxes are sturdy and about the right size for packing with stock, they will not meet the Interagency Grizzly Bear Committee standards or pass the impact test without modification.

Figure 1—Surplus medical box modified to be bear-resistant. One side can be hinged or both sides can be secured with latches.

Modification Plans

We have two modified versions of the box, and both have been tested and approved. One has a hinge and two latches, the other has no hinge and four latches. The rubber seal needs to remain in place. Follow these steps to modify your box (Figure 2):

Step 1—Remove latches from one long side of the box. Install steel continuous (piano) hinge, making sure the box will open without binding. Use metal, wood, or plastic spacers under the hinge to fill the gaps at recessed areas where latches were removed. Use 3/16-in (4.8-mm) diameter rivets or ¼-in (6.35-mm) bolts to fasten the hinge to the box, with a minimum of eight fasteners on each side of the hinge.

Step 2—Spot weld ¼-in (6.35-mm) diameter aluminum rod around the remaining perimeter of the box toeliminate the gap between the latched lid and the box. If you wish to use steel rod

instead of aluminum, weld flat tabs at about 6-in (152-mm) spacing and rivet the tabs to the box. The idea is to eliminate any gap that a bear can get its claws into to pry open the box. Gaps ¼ in (6.35 mm) or greater do not meet the standard.

Step 3—Using at least three ¼-in (6.35-mm) diameter fasteners on each piece, bolt two reinforcement pieces 8 to 10 in (203 to 254 mm) apart, centered on the side opposite the hinge. While 10-in (254-mm) long pieces best strengthen the side, pieces as short as 4 in (102 mm) can also be used, provided they are bolted rather than riveted and are mounted over the gap between the lid and the box. These pieces are essential to reinforce the side in the event of a substantial crushing side impact. A spacer needs to go under each reinforcement piece to allow the top to close without hitting the reinforcement piece.

Step 4—Install latch protectors on the two latches opposite the hinged side. Fasten these protectors to the box with ¼-in (6.35-mm) bolts or 3/16-in (4.8-mm) rivets. Remove all the other latches by cutting or grinding off the pivot pins.

Step 5—Secure the latches with closing snaps or ring fasteners.

An Alternative—If you do not want a hinged cover, simply extend the rod around the entire perimeter of the box just below the lid, and modify both sides as described in steps 3 to 5 above. The result is a box with four latches and four reinforcement pieces.

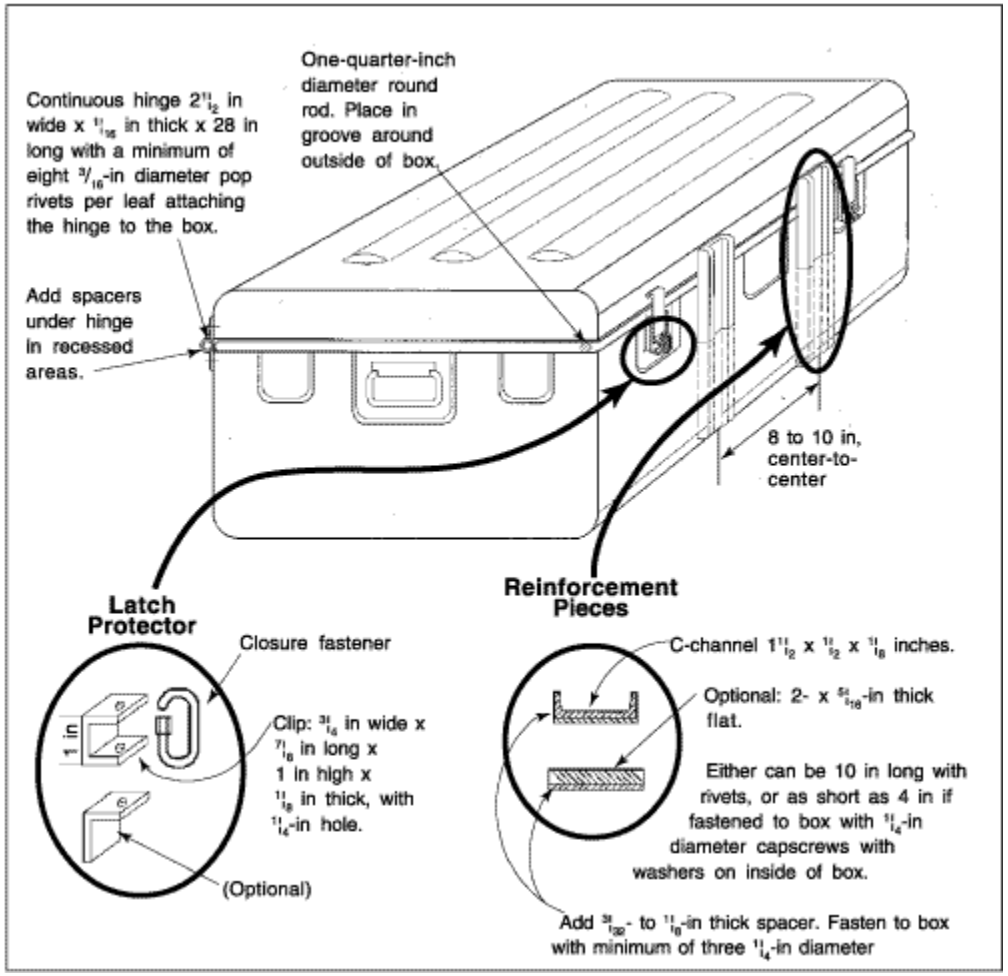

Figure 2—Modified medical box.

Parts List

- ¼-in (6.35-mm) diameter aluminum rod, approximately 71 in (1800 mm) long for hinged version, or 102 in (2590 mm) long for unhinged version. Steel rod can also be used.

- Steel continuous (piano) hinge, approximately 28 in (710 mm) long, 2 ½ in (64 mm) wide, and 1/16 in (1.6 mm) thick. Metal, wood, or plastic spacers are also needed to fill gaps in recessed

areas under the hinge.

- Two steel C-channel reinforcement pieces (four for unhinged version), 10 in (254 mm) long, 1½ in (38 mm) wide, ½ in (13 mm) high, and 1/16 in (3.2 mm) thick. Length can be as short as 4 in (100 mm) if the pieces are fastened with bolts instead of rivets. As an alternative, steel flat stock, 2 in (51 mm) wide x 5/16 in (8 mm) thick, can be used.

- Two aluminum, steel, or plastic flat spacers (four for unhinged version) 1½ in (38 mm) wide, 9 in (229 mm) long, and 3/32 in to 1/8 in (2.4 to 3.2 mm) thick. These go under the reinforcement pieces.

- Two latch protectors (four for the unhinged version), U-channel, 1 in high (25 mm), ¾ in (19 mm) wide, 7/8 in (22 mm) long, and 1/8 in (3.2 mm) thick. The lower part of the U can instead be L-shaped as long as the gap at the bottom of the latch is less than ¼ in (6.35 mm).

- Two snap fasteners or ring-type closure fasteners.

- Rivets, locking nuts, bolts, and washers as indicated.

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