

## Homemade Creeper with Backrest and Locking Casters

**Motivation:** It became difficult to work under the train layout without back support that could be positioned where needed. It was difficult to solder wires up under the platform and still maintain my back in an upright position. This creeper provides back support and can be position where needed with the casters locked to prevent movement.

**Description of Design:** The creeper was built using inexpensive materials that are available from Harbor Freight and Home Depot. It is built on a small mover's dolly that is modified by substituting 2 locking casters for 2 of the 4 non-locking casters. An adjustable plywood backrest is attached to the dolly by a hinge. Wooden side arms with adjustment holes are attached to 2x3's using 5/16 lag screws and the 2x3's are secured to the dolly and the backrest.

**Construction Steps:** (numbers in parenthesis refers to items in the list of materials)

1. Remove 2 of the 4 casters along the short dimension of the dolly (1).
2. Install the 2 locking casters (2) in their place. These casters need to be modified by elongating the mounting slots in the direction closer to the caster wheels. The elongation is best done with a Dremel tool using a rotary file attachment.
3. Install 3 each 1/4 inch washers (3) over each caster mounting stud before attaching the caster to the dolly. This is to provide clearance between the stud and the wheel to allow complete circular swiveling.
4. Cut a 2x3 to 5.5 inches (4) and mount it within the dolly frame between the 2 non-locking casters. Use two 10-32 bolts (8) that are 3 inches long complete with washers (9), lock washers (11), and nuts (10). This provides the mounting surface for the backrest-hinge that is screwed to the 2x3.
5. Cut two 2x3's to 16 or 17 inches long (4). These provide the attachment points for the adjustable side arms. The length of these depends on the clearance needed to sit on the dolly.
6. Use two 10-32 bolts that are 3 inches long (8) to mount one 16 inch 2x3 (4) under the dolly approximately 6 inches back from the front of the dolly (end of dolly with locking casters). It is important to center the 2x3 so that there is equal overhang on each side of the dolly.
7. Use two 10-32 bolts that are 3 inches long (8) to mount the other 16 inch 2x3 (4) approximately 1 1/2 inches down from the top of the backrest. It is important to center the 2x3 so that there is equal overhang on each side of the backrest.
8. Mount the hinge (7) to the center of the 5 1/2 inch 2x3 (4) on the back of the dolly using 3 wood screws (7) from the hinge package.
9. Attach the other section of the hinge to the 12 x12 plywood (5) backrest using the three 1.25 inch 1/4 - 20 bolts (12). Center the backrest so the edges line up with the edges of the dolly. The hinge should be on the backside of the backrest with the head of the bolt and a washer on the side of the backrest facing the seat. Place a 1/4 inch washer (14), lock washer (15), and nut (13) on the hinge side of the backrest.
10. Drill 5/16 inch clearance holes in each of the two 1 x 2 backrest adjustment arms (6) as follows:

- A. Drill a hole in the center of the wide dimension at a distance of 1 1/2 inches from the end.
  - B. Drill a hole in the center of the wide dimension at a distance of 3 1/4 inches from the opposite end.
  - C. Drill a hole in the center of the wide dimension at a distance of 2 1/4 inches from that same end.
  - D. Drill a hole in the center of the wide dimension at a distance of 1 1/4 inches from that same end.
11. Drill 7/32 inch pilot holes for the 5/16 lag screws (16) in the centers on all 4 protruding ends of the 2x3's. Mark a "X" diagonally across the ends of 2x3 to locate the center.
  12. Mount the two 1x2 arms to the dolly with the lag screw placed in the hole that is 1 1/2 inches from the end. Place a 5/16 washer (17) on each side of the 1x2.
  13. Mount the other end of the 1x2 arms to the backrest with the lag screw placed in the hole that is 2 1/4 inches from the end. Place a 5/16 washer on each side of the 1x2.
  14. Experiment with adjustment of the backrest by selecting one of the 3 holes near the backrest in the adjustment arm that provides the most comfort.
  15. Mount the 12x18 plywood (5) to the dolly to serve as a seat using wood screws. Line up the plywood with the edges of the dolly. Make sure you leave clearance for free movement of the hinge at the end of the dolly near the backrest.

**Using the Creeper:** It is important to note that this creeper may raise the person's head so high that their head may not clear the bottom of the platform. The dolly raises the person's body up by about 4 inches. My platform is 35 inches off the floor and my head just clears the bottom of the platform by about an inch or 2. More head clearance can be obtained by increasing the slope of the backrest. A person can sit in the creeper and move to the desired location. The casters can be locked while sitting in the creeper. The 2 front casters could also be locked and the front of the creeper can be picked up and moved into the position where you plan to work. I have also found it very helpful to use a regular automotive creeper along with the homemade creeper to serve as a movable tray for the materials that I am using like cordless drill, soldering iron, solder, wire, wire strippers, electrical tape, screwdrivers, diagonals, etc.

**Preferences:** There are some areas where personal preference may lead to modifications. I used some less than optimum materials because I had them on hand. Some people may prefer a higher backrest. Some may prefer widening the seat and the backrest out to the backrest adjusting arms. Relative sizes and locations of items may require changes to items like the backrest adjusting arms.

**Pictures:** Pictures are located at the end of the document after the list of materials.

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## List of Materials

Item #	Description	Part #	Qty	Supplier	Comments
1	Mover's Dolly 18 x 12	61899	1	Harbor Freight	Regular price 19.99, sale price 11.99, coupon price 8.99
2	3 in swivel caster with brake	61855	2	Harbor Freight	Regular price 5.99, sale price 4.49, coupon price 2.99
3	1/4 inch flat washers		24	Home Depot	Use 3 each 1 inch diameter washers on each locking caster mounting stud before installing caster. This raises caster so caster wheels will swivel without hitting mounting studs.
4	2 x 3 Studing			Home Depot	Cut 2 lengths to 16 inches for backrest adjustment. Cut 1 length to 5.5 inches to mount hinge to dolly.
5	1/2 inch plywood			Home Depot	Cut one piece 12 x 18 for seat. Cut one piece 12 x 12 for backrest.
6	1 x 2 furring strip			Home Depot	Cut 2 lengths 21 inches long for backrest support arms.
7	3 1/2 in Square Hinge	207-330	1	Home Depot	Used to mount backrest to dolly.
8	10-32 bolts 3 in long		6	Home Depot	Used to mount 2 x 3's to dolly and to backrest.
9	# 10 flat washers		12	Home Depot	Use 1 inch washers under head of # 10 bolts and under lock washer & nut
10	10-32 nuts		6	Home Depot	Use to secure 2 x 3's with # 10 bolts
11	# 10 lock washers		6	Home Depot	Use between flat washers (item 9) and nuts (item 10).
12	1 1/4 inch 1/4-20 bolts		3	Home Depot	Use to secure hinge to backrest.
13	1/4-20 nuts		3	Home Depot	Use to secure hinge to backrest.
14	1/4 inch flat washers		6	Home Depot	Use 1 inch washer under head and nut of 1/4-20 bolts.
15	1/4 inch lock washers		3	Home Depot	Use under item 12.
16	5/16 hex head Lag screws 2 1/2 in.		4	Home Depot	Use to secure backrest adjustment arms to the 2 x 3's
17	5/16 flat washers		8	Home Depot	Use 1 1/2 inch washers on either side of backrest adjustment arms when mounting with 5/16 lag screws.



