

Cape Cod and Islands Council BSA Chuckwagon Derby

Chuckwagon Assembly Instructions

Prep work:

- 1.) Cut all wooden pieces into required dimensions.
- 2.) Drill three (3) vertical $\frac{3}{8}$ " holes in 4"x4"x36" rear axle: one in center, and one each nine inches from center, then one (1) vertical $\frac{3}{8}$ " holes in 4"x4"x36" front axle in center.
- 3.) Drill 1¼-inch hole five (5) inches into each end of both axles. Drill corresponding holes in wagon bottom.
- 4.) Drill two (2) $\frac{3}{8}$ " holes in each 2"x4"x18" Push Bar holder. Drill corresponding holes in side-pieces. Drill one (1) $\frac{3}{4}$ " hole in each 2"x4"x18" Push Bar holder for $\frac{3}{4}$ "x30" dowel Push Bar. Ensure bolts will not interfere with ribs or back of sled during construction.
- 5.) Cut shallow slots along the 5" section of the 1¼" dowel to be inserted into the axle. (This will allow the air to escape when the glue-covered section of the dowel is put into the axle.) [Note: See below for alternative axle modifications.]
- 6.) Drill two $\frac{3}{4}$ " holes in 2"x4"x58" Pull Bar as shown.
- 7.) Attach angle irons to front axle as shown. Drill corresponding hole in end of Pull Bar. Make sure Pull Bar is able to move vertically but not horizontally, as the Pull Bar is the only way to steer to front axle and the entire wagon.
- 8.) Glue 1¼-inch dowels into axle. To seat dowel: put another piece of wood on free end and tap lightly with a hammer.
- 9.) Glue 20" long $\frac{3}{4}$ " dowels into pull bar.

With Help:

- 1.) Assemble main frame of wagon with glue and 1" wood screws. Assemble the sides to the front and back first, and then attach the bottom. Attach the seat. Do not attach ribs yet.
- 2.) If using wooden wheels: Assemble wheels with a 4"x4" wooden square on both the inner and outer sides of wheel by axle for added strength. Use both glue and screws.
- 3.) Attach axles to frame: rear with 3 - $\frac{3}{8}$ "x5" bolts; front with a 4"x4" spacer and the $\frac{3}{8}$ "x6" bolt.

Let glue dry overnight.

- 1.) Put wheels on axles. Ensure wheel moves freely, but will not fall off under varied trail conditions. Another 4"x4" spacer may be used, with a predrilled hole in the axle and cotter pin place in the hole.
- 2.) Install Push Bar holders. Install $\frac{3}{4}$ "x30" Push Bar with glue.
- 3.) Install ribs with glue and screws. Attach sheet to Ribs.
- 4.) Attach Pull Bar to front axle.
- 5.) Decorate Chuckwagon. Colorful canopies add visual interest!!

Modifications

- 1.) You may choose to use 1¼" diameter schedule 80 pipe rather than a dowel for your axle. If so, please smooth both ends of the pipe before inserting it into the 4"x4" main axles.
- 2.) Any type of wheels and bearings are allowed, as long as they can stand up to the varied trail conditions.
- 3.) A rear Push Bar may be added for additional boy-power. A $\frac{3}{4}$ " dowel works well attached with two 2"x4" to the wagon.

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4'x8' Sheet $\frac{1}{2}$ " Plywood

Front 24 x 11.5	Seat 12 x 25	18 4"x4" square
Back 24 x 11.5		
Bottom 59 x 24	Side 12 x 59	Side 12 x 59

- Material List**
- 1- 4'x8' sheet $\frac{1}{2}$ " plywood
 - 1- 2"x4"x58"
 - 2- 2"x4"x18"
 - 4- $1\frac{1}{4}$ " dowels x 10" long
 - 2- $\frac{3}{4}$ " dowels x 20" long
 - 1- $\frac{3}{4}$ " dowel x 30" long
 - 2- 4"x4"x36"
 - 4- Wheels, 18"-24" dia.
 - $\frac{1}{2}$ " to 1" thick
 - 4- $\frac{3}{8}$ "x5" bolts and nuts
 - 4- $\frac{3}{8}$ "x3" bolts and nuts
 - 16- $\frac{3}{8}$ "x1" bolts and nuts
 - 1- $\frac{3}{8}$ "x6" bolts and nuts
 - 14- $\frac{3}{8}$ " washers
 - 2- Angle irons, 6"x2"
 - 1- large U-bolt
 - 3- Ribs, 83"x1" or 2"
 - 1- Box 1" wood screws
 - 1- Bottle wood glue

