HO-031 Two-sheave traveling clothesline frame

Bring a lightly clipped dry cloth along an attended 52 in tabletop line frame without carrying a powered dryer or storing the line on a winding drum.

Original bounded component build. Dimensions describe this example, not an approved structural, occupied-building or universal fit design.

US inches/feet control; metric figures are references. No physical build, load certification or animal trial performed.

Before cutting

Read the whole assembly and inspect its receiving space before cutting. Measure actual sheet thickness; nominal lumber labels do not control these joints.

Set aside straight, clean stock and allow it to acclimate. Keep fingers clear of blades, clamp work and use tool-appropriate eye/hearing protection.

Dry-fit moving pieces before final fastening; stop if a proposed dimensional substitution changes clearances. Purchased hardware dimensions and hole patterns below must match the actual item.

Materials and actual cuts

Part	Qty	Actual size	Material and special cut
A Long frame base	1	52 x 12 x 3/4 in 1320.80 x 304.80 x 19.05 mm	W: untreated sound wood/plywood. Square ends; remove all splinters and burrs.
B Wheel bearing upright	4	24 x 2 1/2 x 3/4 in 609.60 x 63.50 x 19.05 mm	W: untreated sound wood/plywood. 13/32 in axle hole centered across 2 1/2 in width, 22 in above bottom.
C Triangular upright brace	4	8 x 8 x 3/8 in 203.20 x 203.20 x 9.53 mm	W: untreated sound wood/plywood. One right triangle from EACH separate 8 x 8 in blank; legs 8 in before edge cleanup. Mirrored placement uses the same finished shape.
D Brace foot cleat	4	8 x 3/4 x 3/4 in 203.20 x 19.05 x 19.05 mm	W: untreated sound wood/plywood. Square ends; remove all splinters and burrs.
E Sheave root disc	2	3 1/2 x 3 1/2 x 1/4 in 88.90 x 88.90 x 6.35 mm	W: untreated sound wood/plywood. 3 1/2 in diameter; 13/32 in centered bore. No V notch: the 1/4 in-wide U groove is formed between the flanges.
F Sheave flange disc	4	4 x 4 x 1/4 in 101.60 x 101.60 x 6.35 mm	W: untreated sound wood/plywood. 4 in diameter; 13/32 in centered bore. Four fixing holes at 1 1/4 in radius, 45/135/225/315 degrees.
G Removable axle	2	3 1/2 x 3/8 x 3/8 in 88.90 x 9.53 x 9.53 mm	Straight 3/8 in round hardwood dowel 1/8 in cross bores 1/4 in from each end.
H Axle retaining cross pin	4	3/4 x 1/8 x 1/8 in 19.05 x 3.17 x 3.17 mm	Straight 1/8 in round hardwood dowel Square ends; remove all splinters and burrs.
I Running washer	4	3/4 x 3/4 x 1/8 in 19.05 x 19.05 x 3.17 mm	Smooth nylon sheet, actual 1/8 in 3/4 in diameter, 13/32 in centered bore.
J Traveling cord loop stock	1	110 x 1/8 x 1/8 in 2794.00 x 3.17 x 3.17 mm	Smooth braided 1/8 in polyester cord; dry light-cloth use Length 110 in is starting stock including joining tails. Adjust the actual tied loop to run without preload; keep the joining knot on the upper span and at least 6 in from a sheave.

Hardware and tools

8 x #8 x 2 in wood screw. Two base-to-upright screws each

8 x #8 x 1 1/4 in wood screw. Two base-to-cleat screws each

16 x #6 x 1 in wood screw. Four per triangular brace

8 x #4 x 5/8 in wood screw. Four per glued sheave

1 x Compatible wood adhesive. Actual label/full cure for the two sheave laminations

2 x Bench clamps. Hold the long base against empty motion

2 x Smooth clothespegs. Attended dry-cloth trial only; not structural hardware

Tape, square, pencil; clamped saw setup appropriate to the material; drill/driver and depth stop; countersink for wood fasteners; files/sanding block; clamps. Specific additional tools are noted in the steps.

Measured assembly reference

Coordinates refer to the illustrated pose: x left/right, y front/rear, z up. Positions are inches from the front-left underside datum. A negative position projects beyond that datum. The size vector gives the part orientation before any stated rotation; it is not a substitute for its cut profile.

Part / instance	Origin x, y, z	Size dx, dy, dz / rotation
A / 1	0, 0, 0 in 0.00, 0.00, 0.00 mm	52 x 12 x 3/4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
B / 1	1 3/4, 3 1/2, 3/4 in 44.45, 88.90, 19.05 mm	2 1/2 x 3/4 x 24 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
B / 2	1 3/4, 5 1/4, 3/4 in 44.45, 133.35, 19.05 mm	2 1/2 x 3/4 x 24 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
B / 3	45 3/4, 3 1/2, 3/4 in 1162.05, 88.90, 19.05 mm	2 1/2 x 3/4 x 24 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
B / 4	45 3/4, 5 1/4, 3/4 in 1162.05, 133.35, 19.05 mm	2 1/2 x 3/4 x 24 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
C / 1	1 3/4, 3 1/8, 3/4 in 44.45, 79.38, 19.05 mm	8 x 3/8 x 8 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
C / 2	1 3/4, 6, 3/4 in 44.45, 152.40, 19.05 mm	8 x 3/8 x 8 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
C / 3	48 1/4, 3 1/2, 3/4 in 1225.55, 88.90, 19.05 mm	8 x 3/8 x 8 in Rotation x/y/z: 0.0000, 0.0000, 180.0000 deg
C / 4	48 1/4, 6 3/8, 3/4 in 1225.55, 161.92, 19.05 mm	8 x 3/8 x 8 in Rotation x/y/z: 0.0000, 0.0000, 180.0000 deg
D / 1	1 3/4, 2 3/8, 3/4 in 44.45, 60.32, 19.05 mm	8 x 3/4 x 3/4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
D / 2	1 3/4, 6 3/8, 3/4 in 44.45, 161.92, 19.05 mm	8 x 3/4 x 3/4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
D / 3	40 1/4, 2 3/8, 3/4 in 1022.35, 60.32, 19.05 mm	8 x 3/4 x 3/4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
D / 4	40 1/4, 6 3/8, 3/4 in 1022.35, 161.92, 19.05 mm	8 x 3/4 x 3/4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
E / 1	1 1/4, 4 5/8, 21 in 31.75, 117.47, 533.40 mm	3 1/2 x 1/4 x 3 1/2 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
F / 1	1, 4 3/8, 20 3/4 in 25.40, 111.12, 527.05 mm	4 x 1/4 x 4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg

Part / instance	Origin x, y, z	Size dx, dy, dz / rotation
F / 2	1, 4 7/8, 20 3/4 in 25.40, 123.82, 527.05 mm	4 x 1/4 x 4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
G / 1	2 13/16, 3, 22 9/16 in 71.44, 76.20, 573.09 mm	3/8 x 3 1/2 x 3/8 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
H / 1	2 5/8, 3 3/16, 22 11/16 in 66.67, 80.96, 576.26 mm	3/4 x 1/8 x 1/8 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
H / 2	2 5/8, 6 3/16, 22 11/16 in 66.67, 157.16, 576.26 mm	3/4 x 1/8 x 1/8 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
I / 1	2 5/8, 4 1/4, 22 3/8 in 66.67, 107.95, 568.32 mm	3/4 x 1/8 x 3/4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
I / 2	2 5/8, 5 1/8, 22 3/8 in 66.67, 130.17, 568.32 mm	3/4 x 1/8 x 3/4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
E / 2	45 1/4, 4 5/8, 21 in 1149.35, 117.47, 533.40 mm	3 1/2 x 1/4 x 3 1/2 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
F / 3	45, 4 3/8, 20 3/4 in 1143.00, 111.12, 527.05 mm	4 x 1/4 x 4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
F / 4	45, 4 7/8, 20 3/4 in 1143.00, 123.82, 527.05 mm	4 x 1/4 x 4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
G / 2	46 13/16, 3, 22 9/16 in 1189.04, 76.20, 573.09 mm	3/8 x 3 1/2 x 3/8 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
H / 3	46 5/8, 3 3/16, 22 11/16 in 1184.27, 80.96, 576.26 mm	3/4 x 1/8 x 1/8 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
H / 4	46 5/8, 6 3/16, 22 11/16 in 1184.27, 157.16, 576.26 mm	3/4 x 1/8 x 1/8 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
I / 3	46 5/8, 4 1/4, 22 3/8 in 1184.27, 107.95, 568.32 mm	3/4 x 1/8 x 3/4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
I / 4	46 5/8, 5 1/8, 22 3/8 in 1184.27, 130.17, 568.32 mm	3/4 x 1/8 x 3/4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg
J / 1	1 1/8, 4 11/16, 20 7/8 in 28.57, 119.06, 530.23 mm	47 3/4 x 1/8 x 3 3/4 in Rotation x/y/z: 0.0000, 0.0000, 0.0000 deg

Numbered assembly

01. Use this small complete frame for attended light dry-cloth handling, not an outdoor tensioned line, a lifeline, a hoist or a child-accessible toy. Keep all loop cord away from children; no safe load, tension or wind rating is supplied.

02. Cut A 52 x 12 x 3/4 in. Mark axle centers x 3 and 47 in, y 4 3/4 in, z 22 3/4 in. The center separation is 44 in; the base datum is its front-left underside.

03. Cut B four 24 x 2 1/2 x 3/4 in uprights. Register pairs and drill 13/32 in holes across their 3/4 in thickness, 22 in above the bottom and centered across 2 1/2 in. All four centers finish z 22 3/4 in.

04. Stand B at x 1 3/4-4 1/4 and 45 3/4-48 1/4 in, y 3 1/2-4 1/4 and 5 1/4-6 in. Use two #8 x 2 in screws up through A into each upright, at x center plus/minus 3/4 in and the upright thickness center. Pilot fully; do not split an axle-bearing post.

05. From four separate 8 in square x 3/8 in blanks cut C four right triangles. Each has two 8 in blank legs; allow actual saw kerf at the diagonal, which is a non-mating brace edge. Do not assume two exact triangles from one

8 in blank.

06. Cut D four 8 x 3/4 x 3/4 in foot cleats. Fit at x 1 3/4-9 3/4 and 40 1/4-48 1/4 in, y 2 3/8-3 1/8 and 6 3/8-7 1/8 in, z 3/4-1 1/2 in. Use two #8 x 1 1/4 in screws up through A into each cleat.

07. Place C between each cleat and the adjacent B face: front y 3 1/8-3 1/2 in, rear y 6-6 3/8 in. Tall legs lie against the outer end of each post group; the slope runs down toward the base middle.

08. Fix each C with four #6 x 1 in screws from its face, two into B at z 3 and 6 in and two into D at z 1 1/8 in. Use x 2 1/8 in at left post screws and 47 7/8 in at right; foot screws lie x 4, 8 and 44, 41 in as the triangle permits. Confirm all points remain buried.

09. Cut E two 3 1/2 in diameter x 1/4 in root discs and F four 4 in diameter x 1/4 in flange discs. Drill registered 13/32 in center bores. Glue F/E/F into two 3/4 in-wide sheaves with actual compatible wood adhesive and full cure.

10. In each sheave drill four clearance/countersinks from one F at 1 1/4 in radius and 45, 135, 225, 315 degrees. Add four #4 x 5/8 in screws through the three-disc stack. They finish 1/8 in short of the far face and stay inside the root, not in the running groove.

11. Cut G two 3 1/2 in axles from 3/8 in dowel, cross-drill 1/8 in at 1/4 in from each end, and make H four 3/4 in retaining pins. Make I four 3/4 in-diameter x 1/8 in washers with 13/32 in bores.

12. Fit each sheave between its two posts, with one I each side. The wheel spans y 4 3/8-5 1/8 in; the root groove spans y 4 5/8-4 7/8 in. Insert G from y 3 to 6 1/2 in and retain with H at y 3 1/4 and 6 1/4 in. Wheels turn without squeezing the washers.

13. Cut J 110 in from 1/8 in braided cord. Route it once around both root discs in the common y 4 3/4 in plane. A nominal center-path length is 2(44)+2*pi(1 13/16)=99.38827 in, before actual sag or the joining knot; this is a setup reference, not a tension specification.

14. Join the two tails on the UPPER straight span with a firm double overhand bend suited to the actual cord. Keep short tails visible. Adjust only enough to seat both spans without preloading the wooden frame. Reject slip or a knot that will not remain outside the sheaves.

15. With the knot centered near x 25 in, mark operating limits on the cord so it never comes within 6 in of either sheave. Move the line only 16 in either way from that centered setup. The joining knot is NOT intended to pass through the 1/4 in-wide groove.

16. Clamp A and turn an empty span slowly by hand. Both wheels must rotate, cord must remain centered and posts must not rack. Stop at a migrating pin, knot slip, side rub or a rising base edge. Do not tighten the cord to conceal an alignment fault.

17. Clip one small dry cloth to the LOWER span with separately supplied clothespegs and hand-shift it within the marked travel. Remove the cloth before leaving the frame. Store the loop dismantled and inaccessible to children; do not suspend a wet load or reach through a moving loop.

Acceptance and intermediate checks

Axle center spacing is 44 in and all four bores share z 22 3/4 in.

Each sheave has 3 1/2 in root, 4 in flanges and 1/4 in clear groove width.

Both 1/8 in washers per wheel leave the sheave free between its posts; cross pins stay outboard.

The knot remains on the straight upper span at least 6 in from either wheel through all marked travel.

Use and maintenance

No wet-laundry capacity, wind, tension or lifting rating. The knot intentionally limits travel and never enters a sheave.

Accessible loop cord is a strangulation/entanglement hazard. Adult attended use only; remove and store cord after use.

Inspect the actual joints, moving interfaces and fasteners before each use. Stop at splitting, binding, loose retention or an exposed sharp edge. Brush debris from separated contact faces and follow the actual material/finish supplier cleaning instructions. Dry fully before reassembly; do not conceal damage with coating. Repeat the empty functional check after humidity or fit changes. Replace damaged parts rather than forcing the mechanism. No physical build, load, impact, safety or service-life performance is certified.

Measured interface notes

This is a traveling circuit, not a cord-storage winder. The entire loop remains on two rotating sheaves rather than accumulating layers on one drum.

Groove root radius 1 3/4 in plus 1/16 in cord radius gives nominal cord-center radius 1 13/16 in. Actual cord sag and joining allowance are set by the unloaded fit.

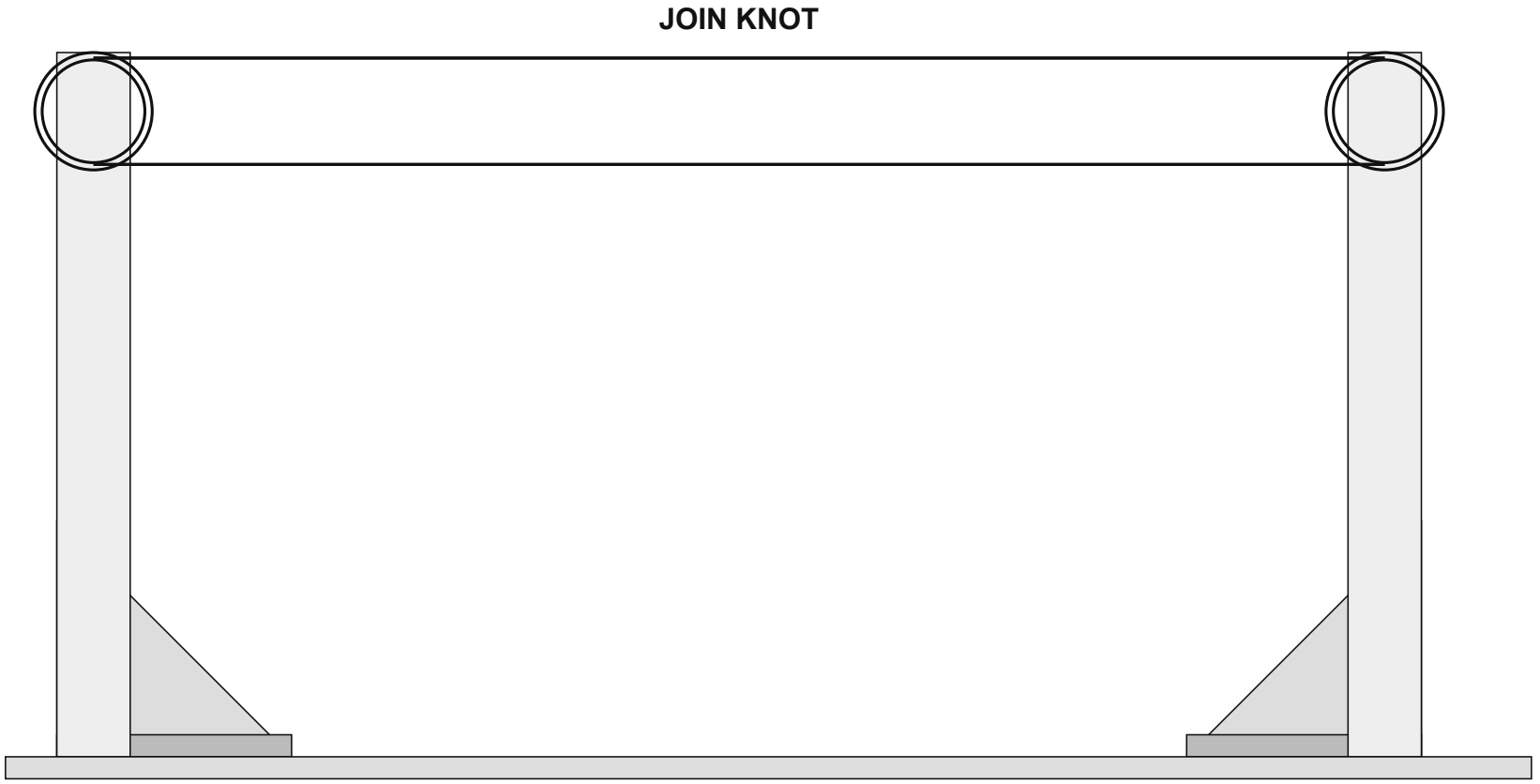
Primary context references

S4: Purdue University Extension, Wood drying: FNR-37. https://extension.purdue.edu/extmedia/FNR/FNR-37.html

S13: US Consumer Product Safety Commission, Window Covering Cords. https://www.cpsc.gov/gocordless

HO-031 | TRAVELING LOOP FRONT ELEVATION

Looking along the axle direction. The return knot stays on the upper span and NEVER passes a sheave.



Base 52 x 12 x 3/4 in; axle centers x 3 and 47 in, z 22 3/4 in.

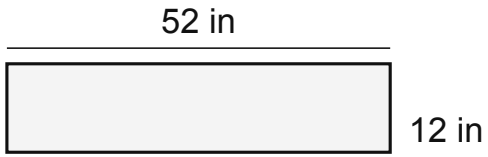
Root 3 1/2 in diameter; flanges 4 in; cord 1/8 in. Nominal center path 99.38827 in.

Original B/W vector drawing - dimensions control - unbuilt / untested

HO-031 | PART SIZES 1 OF 2

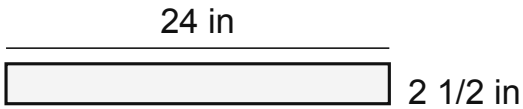
Actual dimensions; labels identify any stock blanks. Allow for saw kerfs between pieces.

A Long frame base x 1



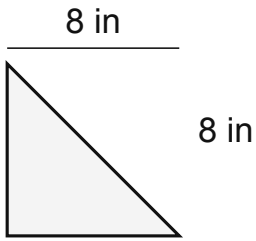
Face: 1320.8 x 304.8 mm
Thickness: 3/4 in / 19.05 mm
Special cuts: see cut list and steps.

B Wheel bearing upright x 4



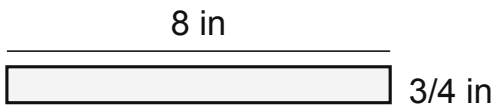
Face: 609.6 x 63.5 mm
Thickness: 3/4 in / 19.05 mm
Special cuts: see cut list and steps.

C Triangular upright brace x 4



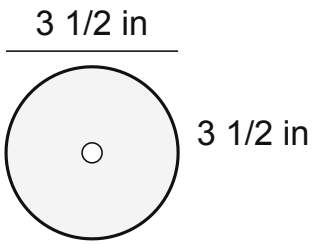
Face: 203.2 x 203.2 mm
Thickness: 3/8 in / 9.52 mm
Special cuts: see cut list and steps.

D Brace foot cleat x 4



Face: 203.2 x 19.0 mm
Thickness: 3/4 in / 19.05 mm
Special cuts: see cut list and steps.

E Sheave root disc x 2



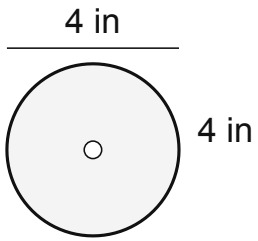
Face: 88.9 x 88.9 mm
Thickness: 1/4 in / 6.35 mm
Special cuts: see cut list and steps.

Original B/W vector drawing - dimensions control - unbuilt / untested

HO-031 | PART SIZES 2 OF 2

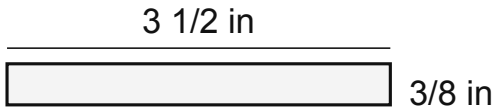
Actual dimensions; labels identify any stock blanks. Allow for saw kerfs between pieces.

F Sheave flange disc x 4



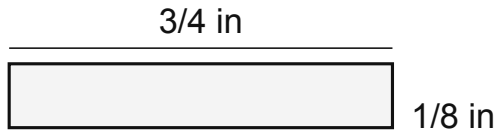
Face: 101.6 x 101.6 mm
Thickness: 1/4 in / 6.35 mm
Special cuts: see cut list and steps.

G Removable axle x 2



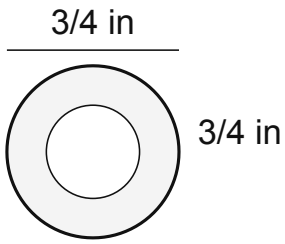
Face: 88.9 x 9.5 mm
Thickness: 3/8 in / 9.52 mm
Special cuts: see cut list and steps.

H Axle retaining cross pin x 4



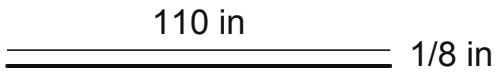
Face: 19.0 x 3.2 mm
Thickness: 1/8 in / 3.17 mm
Special cuts: see cut list and steps.

I Running washer x 4



Face: 19.0 x 19.0 mm
Thickness: 1/8 in / 3.17 mm
Special cuts: see cut list and steps.

J Traveling cord loop stock x 1

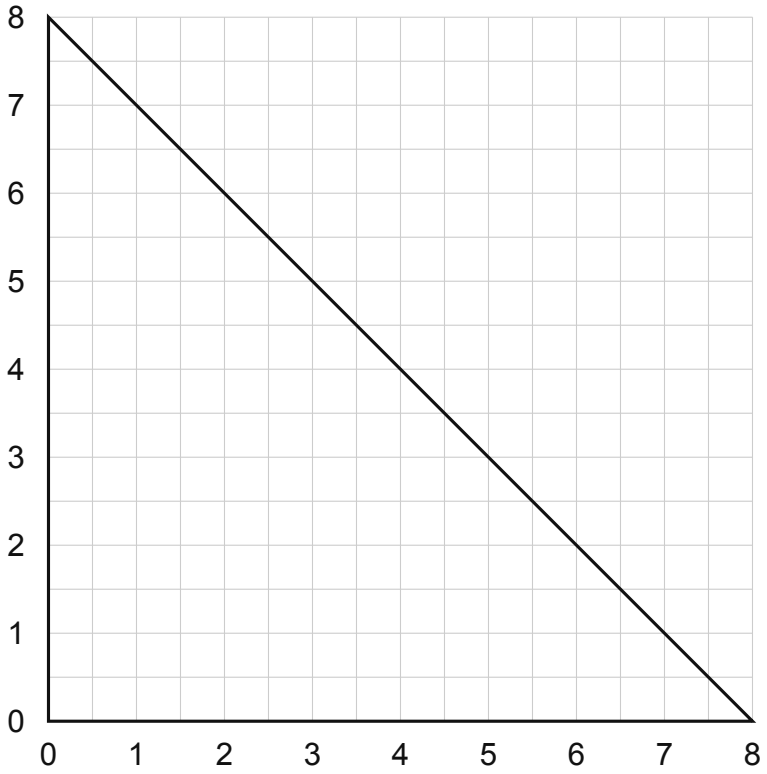


Face: 2794.0 x 3.2 mm
Thickness: 1/8 in / 3.17 mm
Special cuts: see cut list and steps.

Original B/W vector drawing - dimensions control - unbuilt / untested

HO-031 | RETAINED PROFILE - PART C

Half-inch grid; numbered axes are inches. Transfer using dimensions, not print scale.



Triangular upright brace

Plane: xz

Horizontal extent: 8 in

Vertical extent: 8 in

203.20 x 203.20 mm

One right triangle from EACH separate 8 x 8 in blank; legs 8 in before edge cleanup. Mirrored placement uses the same finished shape.

Original B/W vector drawing - dimensions control - unbuilt / untested

HO-031 | SHEAVE AXIAL STACK AND TRAVEL LIMITS

Section along y through either 3/8 in axle. All dimensions are actual inches.

Front post: y 3 1/2-4 1/4. Front washer: 4 1/4-4 3/8.

Front flange: 4 3/8-4 5/8. Root: 4 5/8-4 7/8. Rear flange: 4 7/8-5 1/8.

Rear washer: 5 1/8-5 1/4. Rear post: 5 1/4-6. Axle ends: y 3 and 6 1/2.

Both cross pins lie at y 3 1/4 and 6 1/4, through 1/8 in bores 1/4 in from axle ends.

All wheel/post/washer bores: 13/32 in. Axle actual diameter: 3/8 in.

The clear groove width is 1/4 in; cord diameter 1/8 in leaves 1/16 in each side.

Knot centered x 25 on upper span; limit travel to 16 in each way and never closer than 6 in to wheels.

Route one continuous loop. This build does not wind multiple cord layers or pass its knot through a wheel.

Triangles: four separate 8 x 8 x 3/8 in blanks. Diagonal is a non-mating cut, not a two-piece yield promise.

Original B/W vector drawing - dimensions control - unbuilt / untested