GA-027 Eight-emitter comparison rail

Hold eight identical collection cups under drip emitters for a timed volume comparison without claiming a laboratory flow measurement.

Controlling dimensions: US inches and feet. Metric equivalents are references. Original editorial design; no physical build, animal trial or load certification is claimed.

Before marking and cutting

Measure the stated stock sections before cutting. Use the cut-list geometry, not scale measurements from the drawing.

US inch dimensions control; millimeter values are rounded conversions. Ordinary cut target ±1/16 in (1.6 mm); fit commercial accessories before boring attachment holes.

Use limits

Original bounded garden component, not an occupied structure.

No human standing, sitting, climbing, lifting or fall protection use. No stated safe working load.

Geometry and fastener quantities are editorially checked; no prototype build, wind test or crop trial is claimed.

Materials and finished cuts

Part	Qty	Size to cut	Material and detail
P01 Base	1	36 × 7 1/4 × 3/4 in 914.4 × 184.15 × 19.05 mm	1 × 8 in board sound untreated cedar or other durable untreated wood; actual 3/4 × 7-1/4 in section
P02 Rear emitter rail	1	36 × 1 1/2 × 3/4 in 914.4 × 38.1 × 19.05 mm	1 × 2 in board sound untreated cedar or other durable untreated wood; no unknown salvage
P03 Riser blocks	2	3 1/4 × 1 1/2 × 1 1/2 in 82.55 × 38.1 × 38.1 mm	2 × 2 in board sound untreated wood
P04 Front cup stop	1	36 × 1 1/2 × 3/4 in 914.4 × 38.1 × 19.05 mm	1 × 2 in board sound untreated cedar or other durable untreated wood; no unknown salvage

Hardware and consumables

8 #8 × 1-1/2 in screws for risers

4 #8 × 2-1/2 in screws vertically through emitter rail into riser tops

6 #8 × 1-1/4 in screws for cup stop

8 identical straight-sided graduated cups, outside diameter ≤3-1/2 in and overall height ≤3 in; select volume for the actual timed test without overflow

8 removable clips sized for the actual tubing; timer

Tools

Tape measure and steel rule; Pencil, square and clamps; Saw suited to the stated stock; eye and hearing protection; Drill/driver, countersink and bits matched to fasteners; Sandpaper and edge file; gloves when handling cut mesh

Primary context and design record

Context references; not design endorsements or certifications.

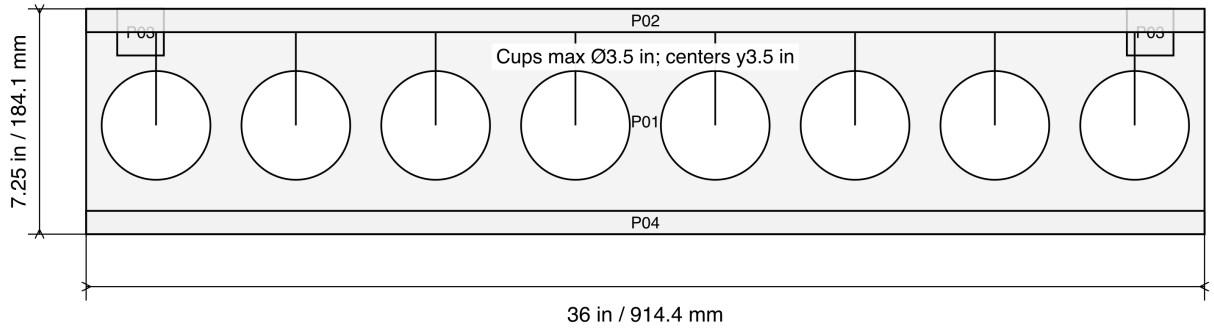
E07 · Rain Barrels: Information and Guide · Penn State Extension

E08 · Irrigating the Vegetable Garden · Colorado State University Extension

Assembly and first checks

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PLAN — looking down; rear at top; controlling dimensions in inches



Part IDs refer to the finished cut list. Shapes are not load-rated. Read assembly before cutting.

Notches, holes, fittings and operating angles: see numbered steps and geometric annotations.

Original editorial draft • B/W vector • not physically built or tested • no implied Extension endorsement

01 Plan the eight-emitter comparison rail for this result: Hold eight identical collection cups under drip emitters for a timed volume comparison without claiming a laboratory flow measurement. Confirm the design reference before cutting: Base 36 × 7-1/4 in (914.4 × 184.15 mm); eight centers at 4-1/2 in pitch, y = 3-1/2 in. In the drawings x runs left to right, y runs front to rear and z runs upward.

02 Verify the required stock before laying out these parts: 1 × 8 in board: actual 0.75 × 7.25 in (19.05 × 184.15 mm); 1 × 2 in board: actual 0.75 × 1.5 in (19.05 × 38.1 mm); 2 × 2 in board: actual 1.5 × 1.5 in (38.1 × 38.1 mm). Reject split or twisted wood and unknown salvage; thinner stock requires recalculating the joints, not simply using the listed lengths.

03 Cut and label the finished parts: 1 Base 36 × 7.25 × 0.75 in (914.4 × 184.15 × 19.05 mm), mark P01; 1 Rear emitter rail 36 × 1.5 × 0.75 in (914.4 × 38.1 × 19.05 mm), mark P02; 2 Riser blocks 3.25 × 1.5 × 1.5 in (82.55 × 38.1 × 38.1 mm), mark P03; 1 Front cup stop 36 × 1.5 × 0.75 in (914.4 × 38.1 × 19.05 mm), mark P04. Keep saw kerf outside each finished line. Rip only where the finished width is narrower than the actual stock; use a suitable guide and target ±1/16 in (1.6 mm) for ordinary cuts. Dowel triples mean length × diameter × diameter, not square dowel stock.

04 Locate the two risers at x = 1 to 2-1/2 and 33-1/2 to 35 in, both y = 5-3/4 to 7-1/4 in on the wider base. Fasten each from beneath with four #8 × 1-1/2 in screws. Their top faces are z = 4 in.

05 Set the emitter rail lower edge on the two riser tops at z = 4 in, with rear face flush at y = 7-1/4 in. Its front face is y = 6-1/2 in. Drill two vertical pilots per riser through the 1-1/2 in-high rail into its end and install four #8 × 2-1/2 in screws. Keep rail and base screw paths separate.

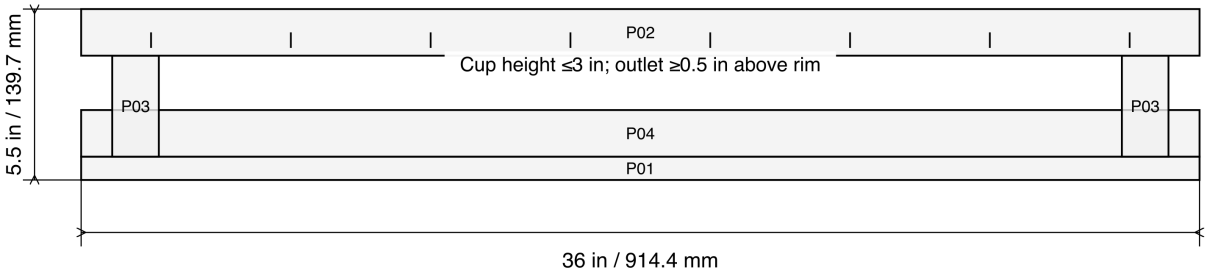
06 Attach the front cup stop along y = 0 with six 1-1/4 in underside screws. Its 1-1/2 in height retains cups without hiding their upper rims.

07 Mark eight cup centers at x = 2-1/4, 6-3/4, 11-1/4, 15-3/4, 20-1/4, 24-3/4, 29-1/4 and 33-3/4 in, all at y = 3-1/2 in. Use cup outside diameter no greater than 3-1/2 in and height no greater than 3 in; do not infer capacity from diameter.

Complete the assembly

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FRONT — transparent assembly projection from y = 0; controlling dimensions in inches



Part IDs refer to the finished cut list. Shapes are not load-rated. Read assembly before cutting.
Notches, holes, fittings and operating angles: see numbered steps and geometric annotations.
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08 Attach removable matched-tubing clips to the rear rail at each x center. Route a short compatible flexible tube forward from the rail front y = 6-1/2 in to discharge above cup-center y = 3-1/2 in, respecting its minimum bend radius. Secure against wandering without kinks; set outlet at least 1/2 in above the actual cup rim, with a reference discharge height z = 4-1/4 in for a 3 in-tall cup.

09 Set all eight actual cups on the marked centers on a level waterproof outdoor surface. At maximum 3-1/2 in diameter, cup edges remain 1 in behind the front stop, 1/2 in ahead of the riser faces and at least 1/2 in inside the base ends. Verify these clearances and stable flat bases before adding water; no cup may touch the wood stops or risers.

10 Connect only the irrigation test line, with the actual filter, regulator and water source appropriate to that system. Keep roof water tests separate and label them nonpotable; use it only for inedible landscape applications.

11 Run the chosen common test duration, stop flow together and compare captured volumes. Repeat a suspicious result after swapping cups; do not label the fixture as a calibrated flowmeter or select watering duration from this comparison alone.

12 Complete the acceptance checks below before putting the assembly into service. Record any changed stock thickness, fastener or equipment fit on the project sheet. The published geometry has not been physically built or load-tested.

Acceptance and intermediate checks

Base 36 × 7-1/4 in (914.4 × 184.15 mm); eight centers at 4-1/2 in pitch, y = 3-1/2 in.

Actual cups: outside diameter ≤3-1/2 in, height ≤3 in; at least 1 in clearance to front stop and 1/2 in to riser faces/base ends.

All cups level and initially empty; outlets centered with at least 1/2 in rim clearance, test time identical and cup volume sufficient for the trial.

Operation

No direct connection to drinking-water plumbing is designed. No universal irrigation rate or uniformity guarantee.

Cleaning and maintenance

Rinse equipment according to water source, dry cups and check clips before each comparison.