SHOP DRAWING SET

Garage Shop

A one-car woodshop in an 18 by 20 ft attached garage with a 12 ft ceiling and a 6 in concrete landing across the back. The truck keeps the center bay with its nose over the landing, the potting station and the machine bay take the west wall with the bulk rack on the landing behind them, and the shop takes the east wall: a locking wall-hung tool cabinet, a rolling flip bench with the table saw sunk flush at one end, the DCS785 miter saw on a flip section in the middle and the DW735 planer on a flip section at the other end, a mobile dust cart pairing the 16 gal Stealthsonic vac with a cyclone, the compressor beside it, and a 100 A subpanel fed from the basement with dedicated circuits for every stationary tool. Everything that cuts is on wheels and parks against the wall.

LOCATION
Attached gar
MI

GARAGE
18 x 17 ft +
landing, 12
ceiling
(measured)

SUBPANEL
100 A, 8 cir
+ 2 spare

Design basis

WHAT WAS DECIDED

- **Rolling shop, fixed walls.** The flip bench and the dust cart roll out into the aisle or the empty bay to work and park against the east wall, the bench under the cabinet. The only fixed pieces are on the walls, so the bay stays a clear 7 by 17 ft rectangle for the Maverick or the Forester.
- **Garden west, shop east, bulk storage at the back.** The potting station takes the front-left corner, the machine bay and the hook rail the rest of the west wall; the bulk rack stands on the landing in the back-left corner with the bags under it, and the landing east of the truck's nose stays empty as the way out of the house door. The tool cabinet, the flip bench under it, the dust cart, the compressor and the subpanel take the east wall.
- **The landing is the wheel stop.** The truck parks with its front tires 6 in short of the curb and its nose 13 in over the landing (the bumper clears the 6 in step), 11 in short of the house door's step. Nothing lives on the landing in front of the truck, and nothing on it east of the nose.
- **Table saw in the bench.** The DWE7491 (to be bought) sits in the bench's end bay on a platform that puts its table flush with the bench top; the blade runs along the bench so the flat sections are its outfeed. Its 20 A receptacle is C3.
- **Wall-hung locking cabinet.** 48 W x 40 H x 12 D case with two 4 in deep door boxes on continuous hinges, bottom edge 48 in off the floor. Hardened hasps with discus padlocks, hinge screws hidden inside the boxes, and the French cleat pinned from inside so the case cannot be lifted off while locked.
- **One flip bench for the three machines.** 92 x 30 in on four step-down casters mounted inside its end panels: table saw at one end, the 56 lb DCS785 on a 4 in torsion-box flip section in the middle, the 92 lb DW735 on another at the far end. Each flip section carries its tool on one face and a 4.5 in riser bench top on the other, so with both tools down it is one flat bench at 37.75 in, with the miter up its table is at bench height with a wing either side, and with the planer up the bench is its infeed. Spring index plungers and draw latches lock each section at 0 and 180; lead ingots under the riser tops put each section's centre of gravity close to its shaft. Neither tool is ever lifted again.
- **Dust cart.** A 38 x 24 in plywood base on 3 in casters with the DeWalt 16 gal Stealthsonic drum braced in a 2x4 corral and, beside it, a 12 in pedestal carrying a Dust Deputy cyclone on its 5 gal bucket, with an 8 in spine for the strap and the handle. The two tippiest things in a shop become one 85 lb cart with a 32 degree tip angle, and the vac's head stays free to lift off.
- **Printed where a print beats a purchase.** A Prusa Core One is on hand, so hose cuffs, the planer reducer, clips, grommets, battery docks and bit holders are printed in PETG from the model's STEP files instead of bought; each sheet lists its printed parts and the shopping list leaves them out.
- **Tables roll on step-down casters inside their legs.** The flip bench and the potting station each carry four retractable, side-mounted casters on the inside faces of their end panels or corner legs, so nothing sticks out past the footprint. Retracted, the table stands on its own frame and does not move; a pedal drops each wheel and lifts the table about 3/4 in to roll. One spec for both: 2.5 to 3 in swivel polyurethane wheels, 200 lb or more per caster (800 lb a set of four), an assembly no bigger than about 2.75 wide, 6.5 deep with its pedal and 7 in tall. The dust cart has no legs and stays on plate casters.
- **Nothing heavy on the floor.** Bags sit on the potting station's 6 in shelf or stacked on the landing under the bulk rack; totes start at 30 in above the floor; the pot well puts a pot's rim at counter height so filling is a scoop, not a lift; the EGO mower and snowblower roll in and out of a flat bay.

MEASURED AND ASSUMED

- **Measured 2026-09-19:** 18 ft across the overhea 17 ft of flat floor to the landing; the concrete lan wide across the back wall from the back-left corr middle of that wall standing on the landing behin door on the east wall in the back-right corner, wit at floor level in front of it; 12 ft ceiling. Wall to wa
- Still assumed: a 7 ft door on standard track with lift conversion is an option with this ceiling), dryw attic above. Photograph the door track height, th framing from the hatch before ordering electrical
- Vehicles: Ford Maverick hybrid, 200 in long, 72 ir axle 33 in behind the bumper; Subaru Forester, 1 parks inside, nose over the landing, front tires 6 i sized for the Maverick.
- Tools: DW735 planer (24 x 22 x 20 in, 92 lb, 15 A (31 x 24.5 x 18.5 in, 56 lb), DWE7491 10 in table in, table 13 in up, 55 lb without its stand), eleven FlexVolt 9 Ah packs plus kit batteries, DCV581H its power strip. EGO 56 V mower and snowblowe edger. No jointer.
- Dust cart sized for the DeWalt DXV16P-QTA 16 g item 1992617: 19.5 in drum, 20 in tall without it about 28 lb, 2-1/2 in x 7 ft hose, under 65 dBA) a Deluxe on its 5 gal bucket (11.9 in bottom diame and the cradle hole are the two numbers to chan
- Printer: Prusa Core One, 250 x 220 x 270 mm bu part on these sheets fits flat on the bed; PETG fo summer or a hose cuff's squeeze, PLA only for in
- Hand tools: a basic set (tape, squares, chisels, ha utility knife, small clamps). All of it fits on the doo
- Totes: standard 27 gal, 31 x 20 x 15 in.
- Build tools on hand: circular saw, miter saw, plan jigsaw. A pocket-hole jig and a straightedge or tra assumed; the table saw arrives with the bench, s cut with the track.
- Basement main panel: brand, main size and spar feeder breaker on sheet 07 must match that bra

- **100 A subpanel, permit-grade.** Fed from the basement main through the house wall at the back-right corner to the east wall, with 20 A circuits for the table saw, the flip bench's drop, and the compressor and vac, four LED work lights (two over the work zone, two over the plant side), a 50 A EV circuit roughed in for a future charger, a 30 A heater circuit, GFCI general receptacles and a 15 A lighting circuit.

WHY ONE FLIP BENCH AND NOT THREE STANDS

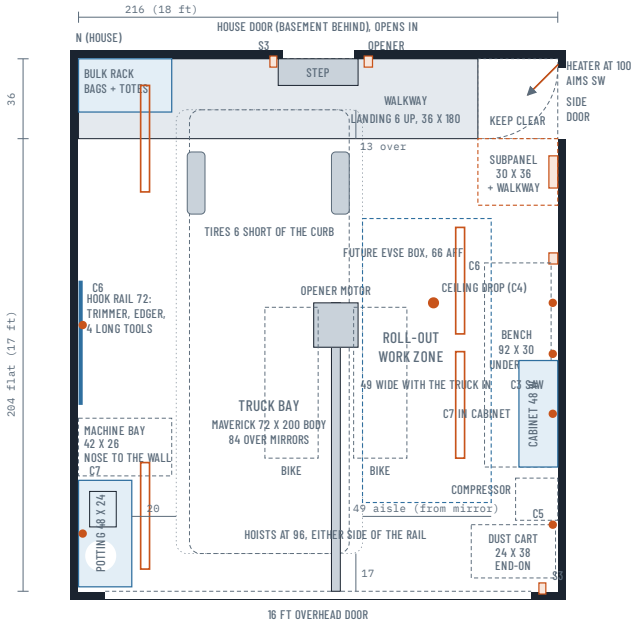
Three stands take three footprints and give the miter saw and the table saw no outfeed. One bench mounts all three permanently in 92 x 30 in, and the two flip sections turn its flat top into the miter station's wings and the table saw's outfeed the moment a tool goes down. Each flip is ten seconds: pull the plunger, turn, it snaps home, close the latch. The price is two 1 in shafts, four $9 bearings, two plungers, two latches, 170 lb of lead and a careful hour aligning the bushings.

WHY A SUBPANEL AND NOT FOUR CIRCUITS FISHED FROM THE BASEMENT

Four new 20 A circuits plus a 50 A EV circuit plus a heater circuit is six runs through the house. One 100 A feeder is one run, and every future circuit starts in the garage. The feeder is also the only part of this job that is expensive to change later, so it is sized for everything on the list running at once, including the EV charger that is not bought yet, set to 32 A.

Garage layout

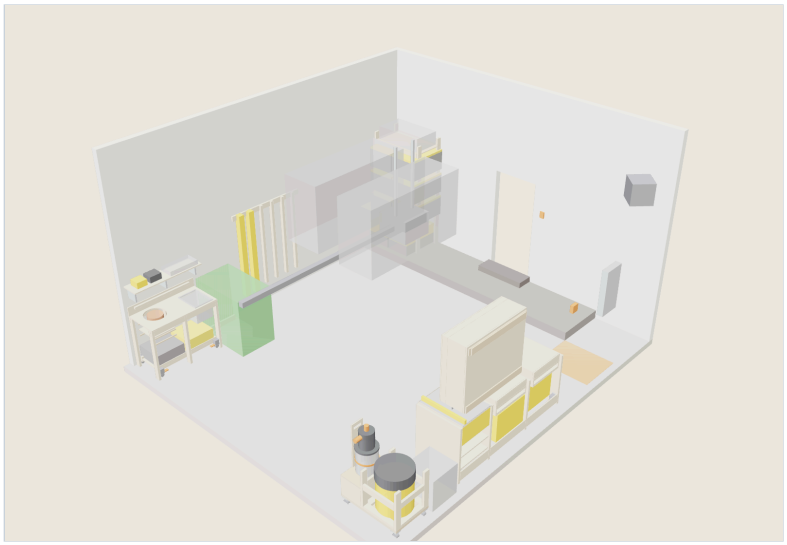
Plan view, north (house) at the top, measured. Blue is built woodwork, orange is electrical, grey dashed is parked or rolling equipment, the shaded band across the back is the 6 in landing. Dimensions in inches; x from the west wall, y from the north wall as on the tables.



Maverick body 72 x 200 in parked at x 50 to 122, front tires 6 in short of the landing curb, nose 13 in over the landing, 23 in from the wall and 11 in short of the house door's step, tail 17 in inside the door; the Forester (182 in) parks the same way with 38 in at the door. Out of the house door you walk east along the landing past the nose and step down into the aisle, so that stretch of landing stays empty. The flip bench under the cabinet, the dust cart and compressor in the front corner and the subpanel by the side door on the east wall; the potting station in the front-left corner, the machine bay nose-to-wall behind it and the hook rail behind that on the west wall; the bulk rack on the landing in the back-left corner; the bikes hoisted either side of the opener rail above the truck's cab; two lights over the plant side and two over the work zone. C-numbers are the circuits on sheet 07.

3D MODEL

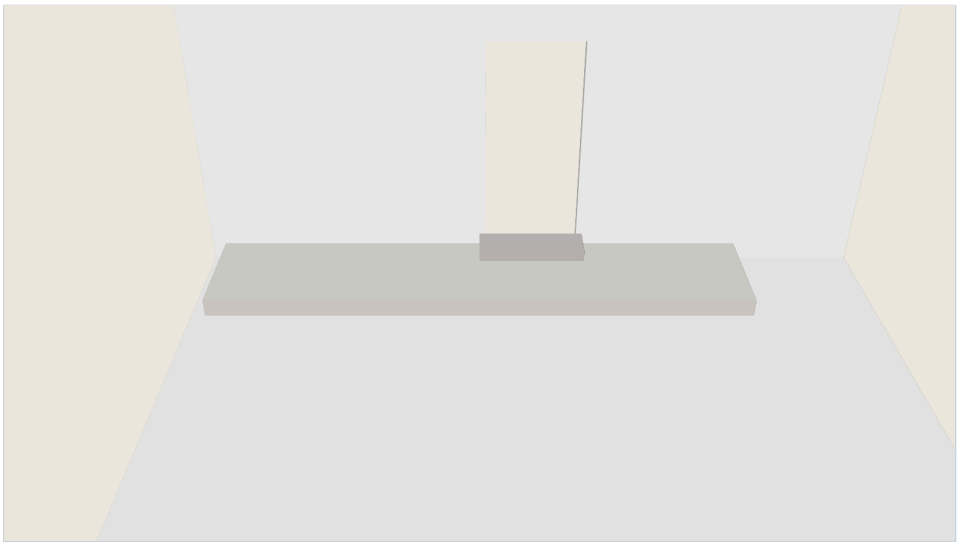
The same numbers build a CadQuery model of the whole garage. Orbit it, switch states (closed up, working, Maverick parked, Forester parked) and toggle components in the interactive viewer; the renders on these sheets hide the vehicle so the landing and the walls read clearly. The geometry checks the model runs are listed on sheet 10.



From the southeast, closed up, vehicle hidden: the 6 in landing across the back with the step at the house door and the bulk rack on its west end, potting station and machine bay along the west wall, the bench under the cabinet on the right, bikes hoisted either side of the opener. Pick a parked state in the viewer to see the vehicle.



From the northwest: the flip bench under the cabinet, the d the front corner, subpanel beside the side door; the bulk rac foreground with the bags under it.



The landing on its own: 6 in tall, 3 ft deep, 15 ft long from the west corner along the back wall, the small step on it in front of the house door, the bulk rack's uprights standing on its west end, and the 3 ft of flat floor at its east end in front of the side door (east wall hidden). Renders on these sheets hide the vehicle; the viewer's "Maverick parked" and "Forester parked" states put it back, nose over this slab.

PLACEMENT, INCHES (X FROM THE WEST WALL, Y FROM THE NORTH WALL)

ITEM	WALL	POSITION
Landing (existing)	North	`x 0 to 180, y 0 to 36`
House door (existing)	North, middle	`x 92 to 124 on the landing, 36 x 12 step in front; opens into the house`
Side door (existing)	East, back	`y 4 to 36; the 36 x 36 of flat floor in front kept clear`

ITEM	WALL	POSITION
	corner	
Subpanel	East	`y 44 to 58, center 60 AFF; working space x 180 to 216, y 36 to 66`
Future EVSE box	East	`y 88 to 92, 66 AFF, above the parked dust cart`
Flip bench, parked in bench mode	East, under the cabinet	`y 92 to 184, 33 out from the wall`
Dust cart, parked end-on	East, front corner	`y 210 to 234, 39 out from the wall`
Tool cabinet	East	`y 136 to 184, 48 to 88 AFF`
Compressor	East, front corner	`y 189 to 208, beside the dust cart`
Heater	NE corner	`bottom 100 AFF above the side door, aimed SW`
Potting station	West, front corner	`y 190 to 238; pot well at its front end, soil bin at its back end`
Upper shelf	West	`y 190 to 238, 56 AFF`
Machine bay	West	`x 0 to 42, y 162 to 188, nose to the wall`
Hook rail: trimmer, edger, long-handle tools	West	`y 100 to 156, 72 AFF`
Bulk rack, bags under it	North, on the landing	`x 0 to 42, y 0 to 24`
Garage door opener (existing)	Ceiling	`rail at x 116 from the door to y 110, motor y 110 to 130, 94 AFF; wall button beside the ho`
Bike hoists	Ceiling	`x 84 to 108 and 124 to 148, y 112 to 180, parked at 96 to 136 AFF`

CLEARANCES CHECKED

- Parking: front tires stop 6 in short of the curb, the nose overhangs the landing by 13 in with the bumper 12 in up over a 6 in step, the tail is 17 in inside the door line. The Forester, with a 36 in front overhang, parks the same axle line and ends 38 in inside the door.
- Driver's door: the front door hinge is at y 82 from the north wall; at 90 degrees the door lies along that line and the counter starts 12 in further back, so it swings over open floor. The truck body sits 50 in off the west wall, 26 in from the counter's edge.
- Aisle between the mirror line (x 128) and the east wall parking (39 in at the end-on dust cart, 33 at the bench, 31 at the tote overhang): 49 in. The bench and the

dust cart roll into the aisle without moving the truck; ripping 8 ft stock needs the truck out.

- Landing: the house door opens onto it with the truck's nose 11 in short of the step; from the door you walk east along the 52 in of landing between the mirror line and its end and step down into the aisle, so nothing is stored there. The bulk rack ends at x 42, 2 in west of the mirror line, and its front is 12 in back from the curb.
- Subpanel: 30 in wide by 36 in deep working space on the flat floor at y 36 to 66, ending at the side door's clear strip, just north of the parked dust cart; it doubles as the walkway from the side door and nothing is stored in it (NEC 110.26).
- Side door: the 36 x 36 in of flat floor in front of it stays clear; the landing ends at x 180 and the walkway north of the bench is 26 in wide.
- The bench parks in bench mode under the cabinet with 10 in between its top and the cabinet's bottom edge, 5 in from the compressor; both cabinet doors swing open above it. Dust cart and compressor share the front corner, 2 in apart and 4 in inside the door track.
- Bikes hoist to 96 to 136 in either side of the opener rail (6 in from it), above the truck's cab roof by 28 in and above an open 7 ft door; nothing hangs in the rail's path.
- Machine bay: nose to the wall, 42 in out by 26 in along it, ending at y 78 where the truck's rear door starts its swing; the mower rolls out through the 26 in lane between the potting station and the truck's bed, or freely with the truck out. The potting station's driver-side edge is 26 in from the truck body.

STILL TO CONFIRM

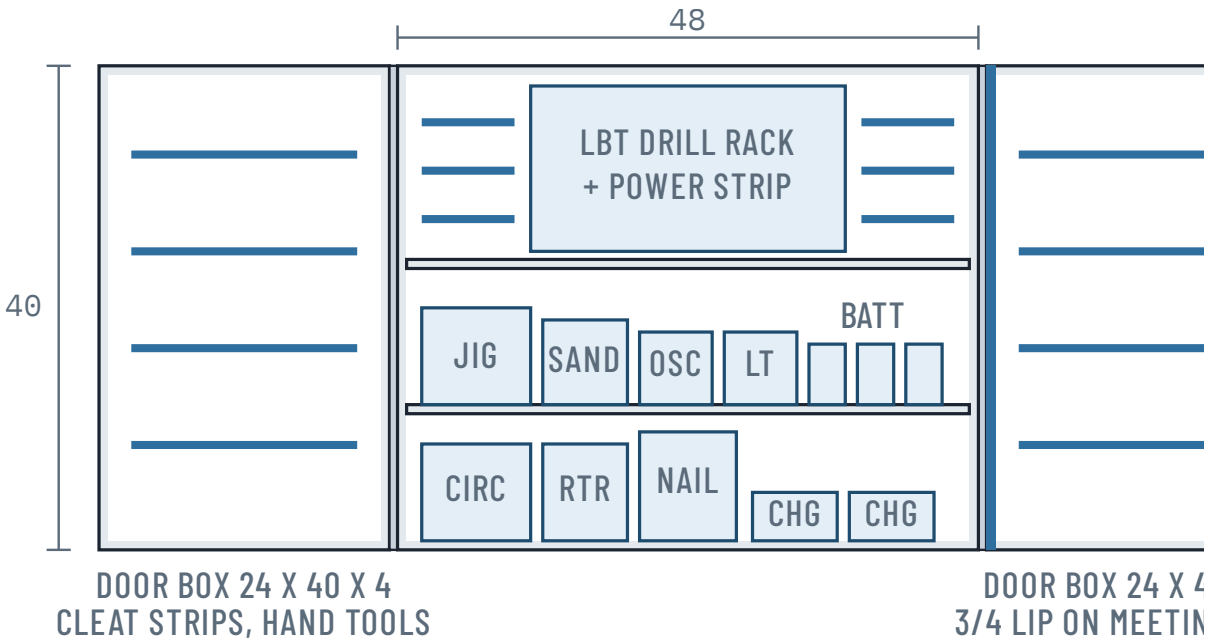
Door height and opener rail height (for the hoists and the C4 drop), the basement panel photo (feeder breaker brand), and the attic framing from the hatch. None of them move a build on this sheet.

OVERHEAD STORAGE OPTION, NOT YET DESIGNED

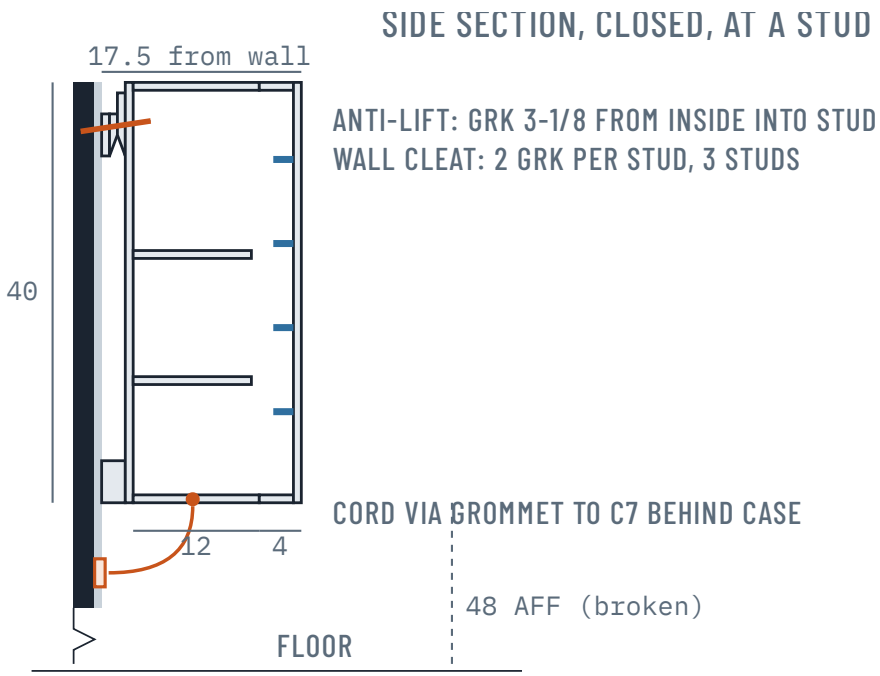
The 12 ft ceiling leaves 3 ft above an open door, enough for a 4 x 8 ft winch platform parked at 100 in over the truck's bed, lowered to waist height with the truck out, to hold the ten totes that no longer fit on the rack. It hangs from the ceiling framing, so it waits on the attic photo: trusses versus joists, spacing and span (garage trusses are usually rated 10 psf on the bottom chord), the garage-to-house fire separation, and the opener rail position. A high-lift door conversion would free the whole ceiling.

Tool cabinet WALL-HUNG, LOCKING

3/4 in birch plywood case, 48 W x 40 H x 12 D, on a French cleat with the bottom edge 48 in above the floor. Two 24 x 40 x 4 in door boxes on 40 in continuous hinges. Closed depth 17.5 in from the wall, counting the 1.5 in cleat stack behind the back.



Front elevation, doors open. Bottom shelf: circular saw, router, brad nailer and two chargers. Second shelf: jigsaw, sander, oscillating tool, light and the batteries. Top zone: the LBT rack hangs the three drills with its power strip as the charger feed, with a cleat strip each side. The right door's face is 3/4 in wider than its box and laps over the left door; the two hasps sit across that joint 6 in from the top and bottom. Printed on the Core One: 20 V battery docks and FlexVolt docks on the second shelf, driver-bit and blade holders and a hex-key rack on the door cleat strips, all in PETG with a cleat hook on the back so they move like the tools do.



Section at the cleat. The case cleat hooks over the wall cleat; the spacer at the bottom keeps the back plumb. Two GRK screws driven from inside the locked case pass through

the back and both cleats into studs, so the case cannot be lifted off its cleat while the doors are locked.



Model, doors open at 90 degrees: two shelves of cordless tools, the LBT rack in the top zone, cleat strips inside the door boxes, hasps across the meeting joint.

CASE

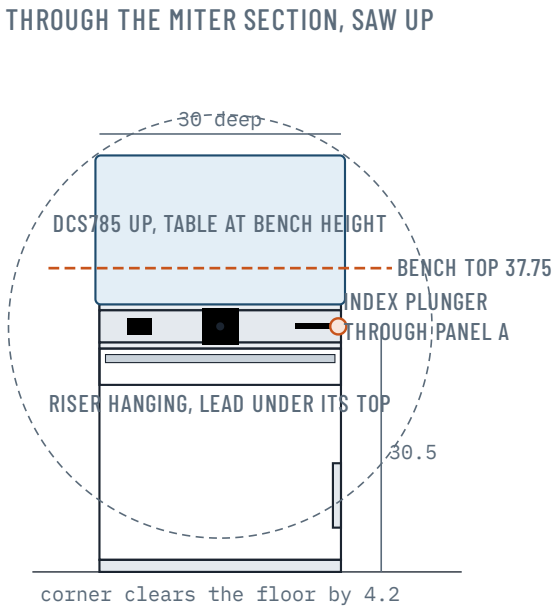
- Sides 12 x 40, top and bottom 12 x 46.5 between the sides, pocket-screwed from the outside faces of top and bottom into the sides (plugs hidden by the doors).
- Back 3/4 in, 48 x 40, overlaid on the case and screwed every 6 in. The back is structural: it carries the cleat load and the anti-lift screws.
- Two fixed shelves 11.25 x 46.5 at 12 and 24 in above the case bottom, pocket-screwed. Shelf 2 sits 3/4 in back from the front edge to clear the door-box contents.
- Top zone: the LBT rack screws to the back panel; a 2.5 in cleat strip on each side of it takes whatever does not fit the doors.
- Case cleat 4 x 46.5, wall cleat 4 x 44, both 3/4 in ripped at 45 degrees. A 4 x 46.5 spacer at the bottom of the back keeps the case plumb.
- Finish: two coats of water-based poly inside and out before assembly; the doors get it on both faces so they do not cup.

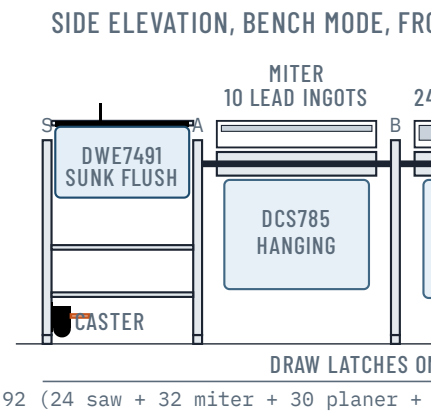
DOORS AND LOCK

- Each door is a box: 3/4 face 24 x 40, 3/4 rails 3.
  nailed around the face, so the box is 4 in deep ou
  for the hand tools; nothing over 5 lb per door.
- Hinges: Everbilt 1-1/2 x 48 in continuous hinge c
  screwed to the case side and the door rail with #
  heads are inside the closed box, unreachable wh
- Meeting edge: the right door's face is 3/4 in wide
  left door, so there is no gap for a pry bar. Close le
- Locks: two Master Lock 730DPF hardened hasps
  from the top and bottom, with 40DPF discus pad
  bolt-cutter bite). The hasp's hinged leaf covers it
- Anti-lift: after hanging, drive two GRK #10 x 3-1/
  through the back and both cleats at the stud pos
  lifted off the cleat without opening the doors.
- Wall cleat: three studs, two GRK #10 x 3-1/8 pe
  250 lb; six structural screws in shear carry many

Flip bench DWE7491 / DCS785 / DW735

One rolling bench, 92 x 30 in, three bays between four 1.5 in panels: the table saw sits in the end bay with its table sunk flush to the bench top, the miter saw is on a flip section in the middle, the planer on a flip section at the other end. Each flip section is a 4 in torsion box on its own 1 in shaft with the tool on one face and a 4.5 in riser bench top on the other, so with both tools down the whole bench is flat at 37.75 in; with the miter up its table is at that same height and the saw section and the planer section are its wings; with the planer up the bench is its infeed. The blade runs along the bench, so the flat sections are 60 in of outfeed for the table saw. Detail page: /projects/garage-shop/flip-bench.





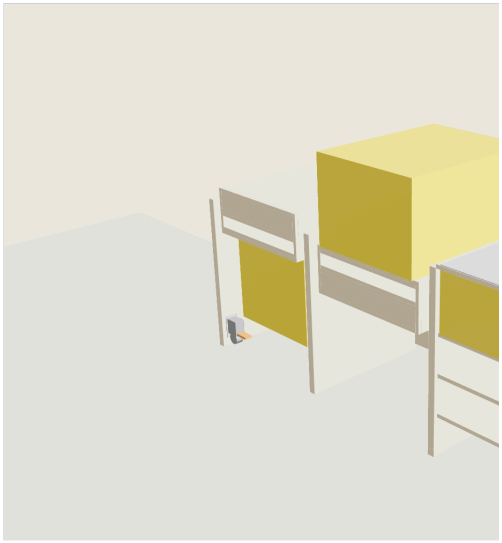
Left: through the miter section, saw up. The box is centred on the 30.5 in shaft, the tool base 2.75 in off the axis, the riser hanging below with its lead; the miter's corner sweeps 26.3 in and clears the floor by 4.2 in; the frame has no side rails, so nothing sits under the swing. The index plunger enters through panel A on the right, the draw latch is on panel B on the left. Right: the whole bench in bench mode. Table saw sunk in the end bay with two shelves under it at 8 and 16 in, a step-down caster on the inside face of each end panel at both long edges (orange: the pedal), the two flip sections with their tools hanging and their risers up, all three tops at 37.75 in.

HANDLING THE LEAD

Lead is harmless to hold and harmful to swallow or breathe, so the ballast is treated as a sealed part. Wear gloves, wash your hands before eating, and spray each ingot with primer before it goes in. Never saw, sand, drill or melt it; to change the weight, swap whole ingots. Keep the ingots away from children and pets until the top is screwed down, and take them to a metal recycler or household hazardous waste drop-off when the bench is done, never the trash.



Bench mode: table saw flush at the near end, both flip sections riser-up, tools hanging inside the frame.



Miter station: the middle section flipped, its table level with

SECTIONS

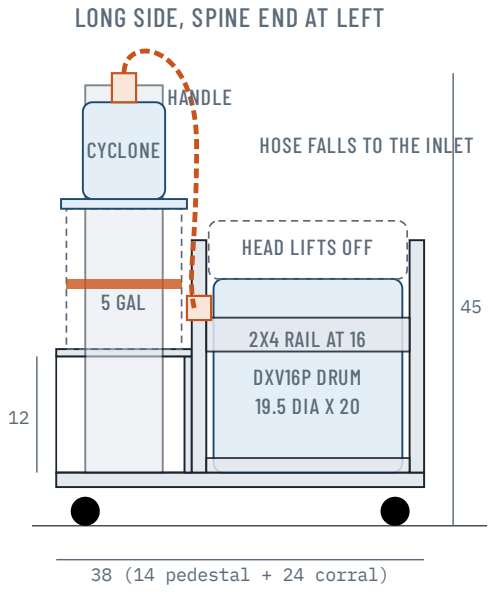
- Bays, from the front: 24 in saw, 32 in miter, 30 in planer, between panels S, A, B and C of 1.5 in laminated plywood, 30 x 33, each standing on a 1-1/2 x 1-1/2 in cross rail on the floor; no side rails, the 3/4 x 6 in apron along the back and the tops tie the panels. About 700 lb loaded.
- Saw bay: the DWE7491 (55 lb, table 13 in above its feet, 22.7 x 29.2 footprint) stands on a platform at 24 in so its table is flush with the 3/4 top around it; the blade runs along the bench and the rip fence rails run across it, extending out the front for wide rips. Two shelves below the platform for blades, push sticks and the miter clamps.
- Flip sections: a 27 in (miter) and a 25 in (planer) torsion box, 30 wide, 4 deep, 3/4 skins, end plates and two ribs, open along both long sides, carried on a 1 in shaft by a clamp-on flanged collar at each end plate; UCFL205-16 flange bearings on the panel faces inside each bay, 2.5 in of bay each end for the bearing and hub. The tool is bolted to a 3/4 plate that fastens to one skin with six 1/4-20 bolts into T-nuts; the other skin carries the riser.
- Risers: a 4.5 in tall plywood box (3/4 top on 3.75 in walls) on the free face of each flip section, with a removable top so the lead can be reached. In bench mode it is the bench top; with the tool up it hangs underneath. Its height is the DCS785's table height, which is what makes the wings flush with the miter table.
- Heights: bench, miter table and saw table 37.75 in, planer bed 39.25 in, with the bench standing on its frame. Step-down casters do not add height: retracted, the bench sits on its cross rails; engaged, it rides 3/4 in higher only while it rolls.
- Casters: four step-down casters, 200 lb or more each, on the inside faces of end panels S and C, 1 in in from each long edge, plates 2 in off the floor, pedals pointing into the bay. The saw bay has room for them under its 8 in shelf; in the planer bay the hanging planer's corner stays 10.5 in either side of centre below 7 in, and the casters start 11.25 in out, 0.8 in clear. Room-side pedals are reached from the front; the wall-side pair only when the bench is out from the wall, so park it with the wall-side pair down and the room-side pair up: it rests on its front rails and cannot roll.

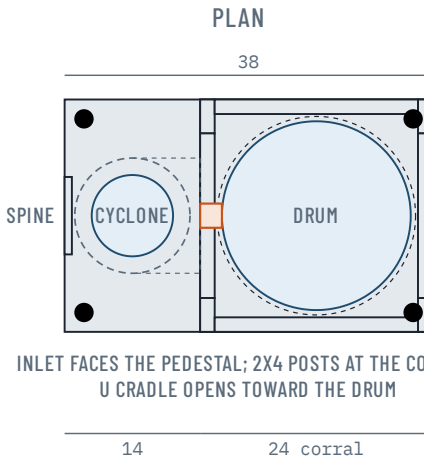
LOCK, BALANCE, USE

- Lock per section: a 1/2 in spring index plunger wi bushing in the outer panel (A for the miter, C for t line toward the room, into one of two bushings in at 0 and 180; an adjustable draw latch on panel Plunger home and latch closed before a tool runs
- Ballast is lead: 5 lb pure ingots, 1 x 2 x 6 in, laid f removable 3/4 plywood deck under each riser to with the screwed-on riser top holding them down ingots (50 lb, rows of 4, 2, 4) leave the miter sect bench edge; twenty-four (120 lb, six rows of 4) le tool-heavy, on the tool side of neutral so a sectio stay centred on the shaft. Because the top unscr trimmed an ingot at a time.
- Miter station: miter up, planer down, table saw a 30 on the other, both at table height; the fence a Planing: planer up, miter down, boards feed alon section and out past the end. Ripping: both flip se bench, 60 in of flush outfeed.
- Parks along the east wall under the tool cabinet against the cabinet's 48 in bottom, between the Roll it out before flipping a tool up.
- Printed on the Core One: plunger keepers, a hols alignment jigs, a 2-1/2 in dust hood adapter for t clearance insert blank for the DWE7491.

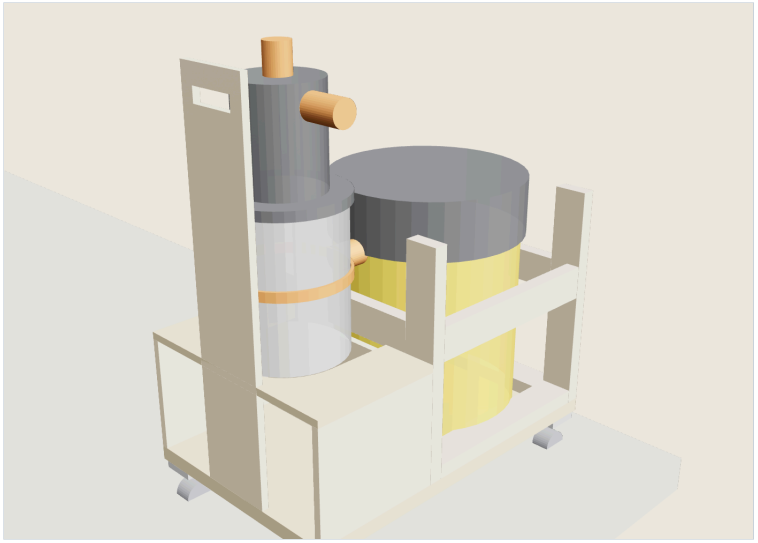
Dust cart DXV16P + DUST DEPUTY

Two bays side by side on one doubled plywood base: the DeWalt 16 gal Stealthsonic drum stands inside a 2x4 corral with its own caster base removed, and beside it a 12 in pedestal carries the Dust Deputy bucket in a U cradle with the cyclone on its lid. An 8 in spine on the outer end takes the bucket strap and the handle. Long and low, nothing stacked over the vac: its head lifts off in place for the filter, and the cyclone drains forward without unhooking a hose. Detail page with more renders: /projects/garage-shop/dust-cart.





Left: the 38 in long side. Doubled 1.5 in base on four 3 in casters at the corners; the pedestal at the spine end is 14 x 24 x 12 in with the cradle on top, the bucket strapped at half height through slots in the spine, the cyclone on the lid with its outlet at 45 in; the drum stands in the 24 x 24 corral, four 2x4 posts with a ring on flat at the base and a ring on edge whose top is at 16 in, above the drum's centre of gravity, with its head free. The kit's hose runs from the cyclone outlet down to the drum inlet, which faces the pedestal. Right: plan; the U in the cradle opens toward the drum so the bucket slides out sideways after the strap is released and the cyclone lifted an inch.



From the front corner: spine and handle at the outer end, bucket and cyclone on the pedestal, the 16 gal drum braced in its 2x4 corral.

NUMBERS THAT SET EVERYTHING

VAC DXV16P-QTA, 19.5 dia	CORRAL 24 sq, rails at 16
FOOTPRINT 38 x 24, 45 tall	LOADED ~85 lb, CG 16 u

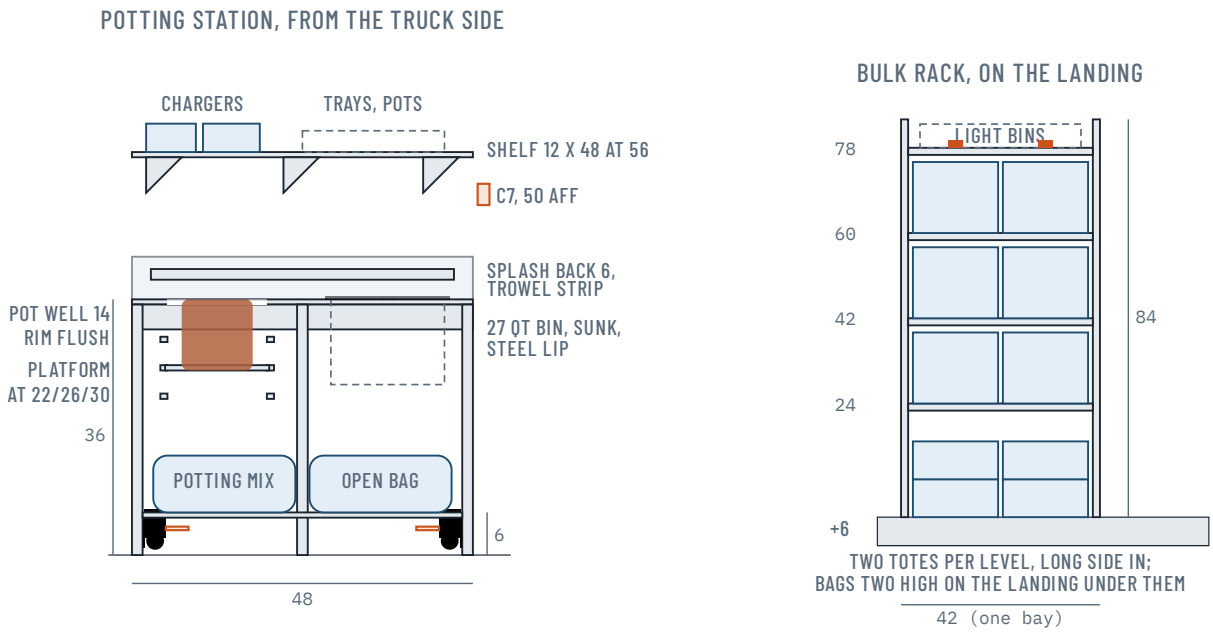
Measure the drum with its caster base off (the base is a sep sits in) and the bucket's bottom before cutting; the corral's hole are the two numbers, the model re-runs the fit, rail-he from them.

BUILD

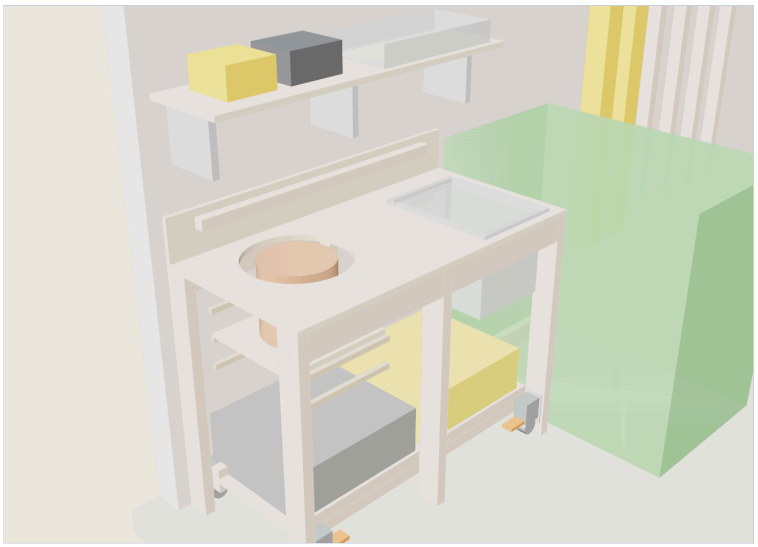
HOSES, POWER, STABILITY

- Base: two 38 x 24 pieces glued and screwed into one 1.5 in slab. Casters at the outside corners, plates flush with the edges, two braked; 85 lb loaded, so four casters rated 75 lb or more each.
- Pedestal: two 14 x 12 sides, a 22.5 x 12 wall between the pedestal and the corral, and the 14 x 24 cradle on top with a 12 in hole cut open to the bay side as a U. The spine is a 14 x 40 piece on the outer end, full width for the bottom 12 in and 8 in wide above, with the handle slot 3.5 in from the top and two strap slots at the bucket's half height.
- Corral: four 2x4 posts 24 in tall screwed down through the base at the bay's corners, a 2x4 ring on flat between them at the base and a second ring on edge with its top at 16 in, 3 in construction screws through the posts. Inside the rails the drum has 3/4 in each side; the rail sits 6 in above the drum's centre of gravity, so the drum cannot tip and no strap is needed. The rings are the handholds when the cart is lifted over a threshold.
- Cradle open to the bay: release the bucket strap, unclip the lid, lift cyclone and lid an inch and slide the bucket sideways out of the U. The drum never moves to empty the cyclone; the head lifts off in place to clean the filter.
- Glue plus 1-5/8 to 2 in screws throughout; predrill every screw that goes into a plywood edge.
- Everything is 2-1/2 in: the DXV16P ships with a 7 Deputy 2.5 takes 2-1/2 cuffs, so no bought reduc cyclone outlet to drum inlet, the vac's 7 ft hose g The DW735 uses the printed 4 to 2-1/2 reducer few boards; plane into the chip bag for batches a saw, sander, router and cleanup.
- The vac's switch stays on its head, in reach. A re start tool switch on C5 turns it on with the tool. 2 parking spot and the C4 drop from the work zone
- Stability: 85 lb with the center of gravity 16 in up narrow way tips at 32 degrees, or 19 lb of sidewa long way is far stiffer. Push from the handle slot,
- Parks end-on in the east wall's front corner besid the wall and 39 in out, 4 in inside the door track; truck in.
- **Printed on the Core One (PETG):** two 2-1/2 in ho the cyclone hoses come off without a clamp, the DW735's port, a snap hose clip and a cord clip or for the strap and handle slots so the strap does r for the cyclone inlet when the cart is parked. The reference for fitting them.

Potting station and bulk rack



Left: the potting station, 48 x 24 x 36 in on 2x4 legs against the west wall at the front, a step-down caster inside each corner leg (front pair drawn, pedals orange). A 14 in pot well is cut in the counter at the front end with a slide-in platform on cleat pairs at 22, 26 and 30 in, so a 14, 10 or 6 in tall pot sits with its rim at the counter and is filled with a scoop; a 27 qt soil bin is sunk into the back end with a steel lip, the bag empties into it; bag shelf at 6 in; a 6 in splash back with a trowel strip; the 12 x 48 upper shelf at 56 in for the chargers, seed trays and small pots, C7 under it. Right: the bulk rack on the landing in the back-left corner, 42 x 24 x 84, one bay: bags stacked two high on the landing under the first shelf at 24, two 27 gal totes per level at 24, 42 and 60 in above the landing, light bins on top. Orange: L-brackets into studs.



Potting station from the truck side: the pot sitting rim-flush in its well, the sunken bin, the splash back and trowel strip, bags on the 6 in shelf, chargers on the upper shelf; the machine bay behind it.



Bulk rack on the landing: bags two high underneath, six tote top, west of the truck's nose.

POTTING STATION

- Counter: six 2x4 legs at 34.5 in, top frame of 2x4 on edge (two 48 in rails, three 21 in stretchers), 3/4 plywood top 48 x 24, back rail against the wall at 32 in (not lagged: the station rolls). Same frame as a workbench, because it is one.

BULK RACK

- Frame: four 2x4 uprights at 84 in (two pairs, 24 i ledgers on edge front and back at each level, sta left corner with its back to the north wall and its

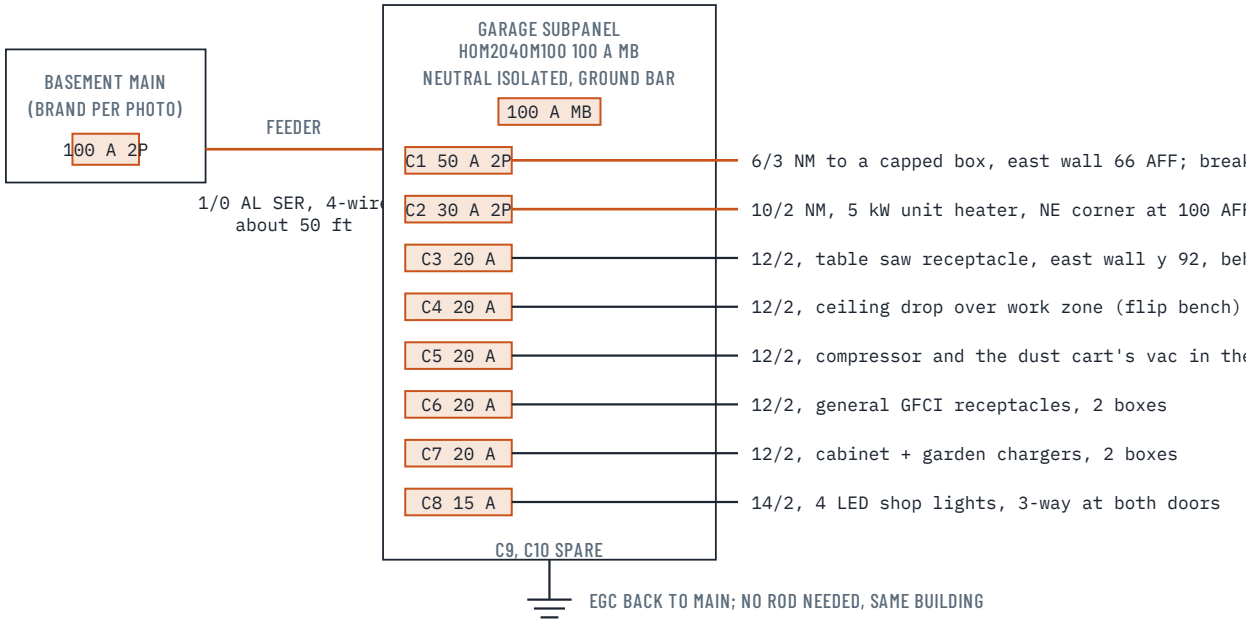
- Pot well: a 14 in hole at the front end, its centre 10 in from the wall and 12 in from the front edge. Below it, three pairs of 3/4 x 3/4 cleats on the legs' inner faces at 22, 26 and 30 in carry a 14.5 x 16 plywood platform: a 14 in pot on the low cleats, a 10 in pot on the middle, a 6 in pot on the top, each with its rim at counter height. Filling is a scoop from the bin, never a lift; the platform lifts out to drop a bucket through for a hanging basket.
- Soil bin: a 27 qt bin sunk through the top at the back end on a cleat frame, a 3/4 in steel lip screwed over its rim so the plywood edge stays dry. Empty a bag into it, keep the lid on it between sessions.
- Splash back: 6 in of 3/4 plywood along the wall edge with a 2x2 strip for trowels, hand fork and scoop on nails. Oil the top and the well's edge with boiled linseed oil, twice.
- Bag shelf: 2x4 ledgers between the legs with their top at 6 in, 3/4 plywood 21 x 45. Two 2 cu ft bags side by side, the open one nearest the bin.
- Casters: a step-down caster on the inside face of each corner leg, centred on the 3.5 in face and pointing along the counter, so the bag shelf and ledgers sit clear of them between the legs. Front pedals from the truck side, back pedals from the station's north end. Retracted it stands on its legs against the wall; roll it out to sweep behind it. The upper shelf stays on its wall brackets.
- Upper shelf: 12 x 48 plywood on three brackets at 56 in. FlexVolt and EGO chargers at the front end on the C7 receptacle (50 AFF, under the shelf), seed trays and small pots behind. Batteries stay on the machines.
- Machine bay: 42 in out from the wall by 26 in along it behind the station, nose to the wall so it ends before the truck's rear door swings, 2x4 wheel stop at the wall, tape on the floor. Mower in summer, snowblower in winter, the other in the basement; hook rail with the trimmer, edger and long tools behind it at 72 in.

39 in bay, so it stops 2 in short of the truck's mir
pocket screws or 3 in construction screws, two p

- Shelves: 7/16 OSB, 24 x 42, dropped onto the le
sheet.
- Shelf tops at 24, 42, 60 and 78 in above the lanc
Under the first shelf, 20 in clear: bags of soil, mu
high on the landing, four across, and more along
27 gal totes per level on the three tote levels, six
- Loading: stand on the landing, which is why the r
sits 12 in back from the curb. Nothing above 60 i
- Anchoring: two 3 in L-brackets from the top rear
- The other totes wait for the overhead platform o
now lives in the shop's front corner beside the du

Electrical 100 A SUBPANEL

A 100 A feeder from the basement main panel through the house wall at the back-right corner, beside the side door, to a 100 A main-breaker subpanel on the east wall, then eight branch circuits. Michigan Electrical Code (2023 NEC base). Permit and two inspections; a homeowner may pull the permit for their own residence.



Feeder and subpanel in orange, 120 V branches in black. The garage door opener keeps its existing ceiling receptacle and is not on the sub. The feeder breaker lives in the basement main and must match that panel's brand; the subpanel is Square D Homeline with its own 100 A main so the garage can be killed at one switch.

LOAD CHECK (NEC 220 STYLE)

LOAD	VA	FACTOR	DEMAND VA
Future EVSE at 32 A, 240 V (continuous)	7,680	1.25	9,600
Unit heater 5 kW	5,000	1.25	6,250
Table saw DWE7491 15 A (C3)	1,800	1.00	1,800
Planer 15 A (largest motor +25%)	1,800	1.25	2,250
Shop vac on the dust cart 12 A	1,440	1.00	1,440
General receptacles, 2 circuits	3,000	1.00	3,000
Lighting, 4 x 55 W	220	1.25	275
Total, everything on at once			**24,615**
Amps at 240 V			**103 A**

Everything simultaneously is the worst case and lands at the feeder rating. In practice a future EV charges at night and the saws run by day; with the EVSE set to 32 A or scheduled after 9 pm the feeder never sees more than about 75 A. The 100 A feeder is sized so the answer is never "unplug the car to plane a board." Check the basement main has 100 A of headroom on its own load calculation before ordering; a 200 A service normally does.

WIRE AND DEVICE SCHEDULE

RUN	CABLE	BREAKER	DEVICES
Feeder	1/0 AL SER	100 A 2P	4-wire; ne
C1 EV (future)	6/3 NM	50 A 2P	Cable cap on the eas cart, brea Hardwire reaches tl bay. No re
C2 heater	10/2 NM	30 A 2P	Fahrenhe in thermo
C3 to C5	12/2 NM	20 A 1P	One GFCI C4 on a ce corner for
C6 general	12/2 NM	20 A 1P	GFCI first, 48 AFF
C7 chargers	12/2 NM	20 A 1P	GFCI behi potting st
C8 lights	14/2 + 14/3	15 A 1P	Two 3-wa LED, 500(

- Every 120 V receptacle in the garage is GFCI pro
  are single dedicated receptacles, still GFCI.
- Inside drywalled walls, NM is fished. Any exposed
  EMT with proper fittings; the ceiling drop for C4 is
  ceiling to a 4 in box at 84 in over the work zone, v
  hook for the cord.
- Subpanel: 4-wire feeder, remove the bonding scr
  x 36 in working space on the flat floor in front of
  curb), which is also the walkway from the house
  no higher than 79 in.
- Lighting: four 4 ft fixtures replacing the single bul
  ft from the west wall (over the potting station an
  over the work zone at 14.3 ft from the west wall
  and over the aisle), chained, about 55 lumens pe
  ceiling hang them on 3 ft chains so the lamps sit
  and easier to reach; the work-zone pair hangs ea
  of it. Switch at the house door and at the overhea
  existing ceiling receptacle.
- Permit: Michigan Bureau of Construction Codes e
  jurisdiction's), rough inspection with the feeder a
  final with devices in. The feeder enters through t
  door's frame in the back-right corner and runs 3
  panel; photograph the path before drywall patch

Cut list

Twelve sheets of 3/4 in plywood (three birch for the cabinet, nine BC pine: seven for the bench, one each for the dust cart and the potting station), one sheet of 7/16 OSB, and 25 studs. Width x length in inches, grain along the length. Rip with the circular saw on a straightedge or track, crosscut on the miter saw.

CABINET, 3 SHEETS BIRCH 3/4

SHEET	PART	QTY	SIZE
B1	Back	1	48 x 40
B1	Sides	2	12 x 40
B1	Door rails, vertical	4	3.25 x 40
B2	Door faces	2	24 x 40 (one 24.75 x 40 for the lip)
B2	Top, bottom	2	12 x 46.5
B2	Door rails, horizontal	4	3.25 x 22.5
B3	Shelves	2	11.25 x 46.5
B3	Case cleat, wall cleat, spacer	3	4 x 46.5, 4 x 44, 4 x 46.5 (two ripped at 45)
B3	Cleat strips, case top zone	2	2.5 x 10 (45 bevel)
B3	Door cleat strips (1/2 in from offcut or 3/4)	8	2.5 x 22.5 (45 bevel)

DUST CART, 1 SHEET BC PINE 3/4 + 3 STUDS

SHEET	PART	QTY	SIZE
P3	Base layers	2	38 x 24
P3	Pedestal sides	2	14 x 12
P3	Pedestal wall (corral side)	1	22.5 x 12
P3	Cradle top	1	14 x 24, 12 in hole o
P3	Spine	1	14 x 40, 8 wide above
2x4	Corral posts	4	24
2x4	Corral rails, bottom ring on flat and top ring on edge	8	21

POTTING STATION, 1 SHEET BC PINE 3/4 + 8 STUDS

STOCK	PART	QTY	SI
P6	Counter top (14 in hole, 16 x 12 bin cut-out)	1	2
P6	Bag shelf	1	2
P6	Upper shelf, splash back, well platform	3	1
P6	Well cleats (3/4 x 3/4) and bin cleat frame	6 + 4	1
2x4	Legs	6	3
2x4	Top rails	2	4
2x4	Top stretchers, shelf cross ledgers	5	2
2x4	Bag shelf ledgers	2	4
2x4	Back rail, hook rail (west wall), machine wheel stop	3	4

BULK RACK, 1 SHEET OSB 7/16 + 9 STUDS

STOCK	PART
2x4	Uprights
2x4	Front and back ledgers
2x4	Cross ledgers
OSB	Shelves

Stud count: 8 potting + 9 rack + 4 bench + 3 dust cart corral =
ledgers two per stick (42 in), cross ledgers four per stick; up

FLIP BENCH PARTS AND CUT LIST, 7 SHEETS BC PINE 3/4 + 4 STUDS

Marks match the sheet layouts below. Sizes are finished, across x along, with a 1/8 in kerf allowed for in the layouts. Rip the long cuts first, then crosscut. Grain direction does not matter on these parts.

MARK	PLYWOOD PART, 3/4 IN	QTY	SIZE	SHEET	NOTE
A	Panel layers	8	30 x 33	W1, W2, W3	Two glued face to face per panel: S,
B	Saw section top	1	30 x 24	W3	Cut last, to the saw in hand; see the
C	Saw well platform and two shelves	3	28-1/2 x 24	W7	Platform at 24 in, shelves at 8 and 1
D	Tool plate and riser plate, miter	2	30 x 27	W4	
E	Tool plate and riser plate, planer	2	30 x 25	W5	
F	Riser top, miter	1	30 x 27	W4	Screwed, not glued, so the lead can
G	Riser top, planer	1	30 x 25	W5	Screwed, not glued
H	Box skins, miter	2	30 x 25-1/2	W6	
J	Box skins, planer	2	30 x 23-1/2	W3, W7	
K	Ballast deck, miter	1	28-1/2 x 25-1/2	W6	Drop-in fit between the riser walls
L	Ballast deck, planer	1	28-1/2 x 23-1/2	W7	Drop-in fit between the riser walls
M	Back apron	1	6 x 89	W1	One piece, top edge 7.5 in off the fl
N	Box end plates	4	4 x 30	W1, W2	Bored with the panels clamped toge
P	Riser end walls	4	3-3/4 x 28-1/2	W1, W2	Between the side walls
Q	Riser side walls, miter	2	3-3/4 x 27	W2	
R	Riser side walls, planer	2	3-3/4 x 25	W2	
S	Box ribs, miter	2	2-1/2 x 25-1/2	W1	
T	Box ribs, planer	2	2-1/2 x 23-1/2	W2	

MARK	SOLID STOCK AND STRIPS	QTY	SIZE	NOTE
U	Cross rails under the panels, on the floor	4	1-1/2 x 1-1/2 x 30	One 2x4 ripped to 1-1/2 wide, t would block the casters.
V	Saw top spacers, on panels S and A	2	1-1/2 x 2-1/2 x 30	One 2x4 ripped to 2-1/2. Carry 34.5 in up to 37.
X	Ballast side strips	2 + 2	1-1/2 x 1-1/8 x 25-1/2, 23-1/2	Two 2x4 ripped to 1-1/8, for X,
Y	Ballast cross strips	4	1-1/2 x 1-1/8 x 24-1/4	Move to sit tight against the row
Z	Filler blocks, the short miter row	2	1-1/2 x 1-1/8 x 6-1/8	The trim slots: swap one for an i

MARK	SOLID STOCK AND STRIPS	QTY	SIZE	NOTE
CL	Deck cleats, plywood offcut from W4	8	3/4 x 1-1/2 x 25-1/2 (2), 23-1/2 (2), 27 (4)	On the riser walls, tops 1-7/8 in

HARDWARE AND BALLAST	QTY	NOTE
Lead ingot, pure, 1 x 2 x 6 in, 5 lb	34	10 miter, 24 planer, 170 lb
Adhesive foam tape, 1/8 x 1/2 in	20 ft	On the decks, so the ingots do not rattle
Cold-rolled steel round bar, 1 in	2	Cut to 33 in (miter) and 31 in (planer) from 36 in bars
UCFL205-16 2-bolt flange bearing, 1 in bore	4	Panel faces inside each flip bay
Bolts for the bearings, washers, nylocks	8 sets	Sized to the bearing's holes, long enough for the 1.5 in panel; pan
Set-screw shaft collar, 1 in	4	
Clamp-on flanged shaft collar, 1 in bore, 2.5 in flange	4	One on each box end plate
1/2 in spring index plunger with pull knob	2	Panels A and C
1/2 in ID press-fit steel bushing	6	Two per box end plate set, one in each outer panel
Adjustable draw latch, steel, 100 lb class	2	On panel B
1/4-20 T-nuts and 1/4-20 x 1-1/4 bolts	24 each	Six per plate: two tool plates, two riser plates
Retractable step-down casters, 200 lb each	1 set of 4	Inside faces of panels S and C
#10 x 2 in flat-head wood screws	1 box	Riser tops into the walls and strips, so the top comes off again
Wood glue	1 qt	Panels, boxes, riser walls; never on the riser tops



Seven sheets, drawn with the 96 in edge running down the page. W4, W5 and W6 leave a long offcut of about 18 x 96 in: cut the deck cleats from W4 and keep the rest for the potting station's strips. Marks too small to size in the drawing are in the table above. The eight panels need three sheets on their own, since only three fit on one, and D through H need three more because no two of them fit side by side.

SAW SECTION TOP: CONFIRM AGAINST THE SAW

As drawn the DWE7491 is 29.2 x 22.7 in in a 30 x 24 in top, which leaves a rim of only 0.15 in along the long edges and 0.4 in across the ends, too thin to survive in plywood. Cut B last, with the saw in hand. If the real saw measures the same, leave B off and let the saw's own table be the top, with the spacers V still tying panels S and A together.

Shopping list

Every priced line is a posted listing read on 2026-09-18 with the store named (quantities updated for revision B on 2026-09-19); store-specific prices vary. Lines marked "not read" were found at the named store but the price did not render; verify at checkout and they are excluded from the totals. The future EVSE, the heater, the compressor, and the vac and cyclone for the dust cart (if not on hand) are owner's choice and not in the totals.

ITEM	STORE	QTY
Woodwork and hardware		
Columbia PureBond birch plywood 3/4 x 4 x 8 (cabinet)	Home Depot	3
Plytanium BC sanded pine 23/32 x 4 x 8 (seven for the bench, one dust cart, one potting station)	Home Depot	9
OSB 7/16 x 4 x 8 (rack shelves)	Home Depot	1
2x4x96 #2 KD studs	Home Depot	25
Kreg #8 x 1-1/4 coarse pocket screws, 100	Home Depot	1
Kreg #8 x 2-1/2 coarse pocket screws, 125	Home Depot	1
GRK RSS #10 x 3-1/8 structural screws, 50	Home Depot	1
Everbilt 1-1/2 x 48 continuous hinge, bright nickel	Home Depot	2
Master Lock 730DPF hardened hasp	Walmart	2
Master Lock 40DPF discus padlock, keyed alike	Master Lock store	2
UCFL205-16 2-bolt flange bearing, 1 in bore	theBigBearingStore	4
1018 cold-rolled steel round bar, 1 x 36 in (one per flip section)	Industrial Metal Supply / Amazon	2
Climax C-100 set-screw shaft collar, 1 in	Home Depot	4
1/2 in spring index plunger with pull knob, threaded body (McMaster or Carr Lane)	online	2
1/2 in ID press-fit drill bushings for the panels and end plates	online	6
Adjustable draw latch, steel, 100 lb class	Home Depot	2
Clamp-on flanged shaft collar, 1 in bore, 2.5 in flange	online	4
1/4-20 T-nuts (24) and 1/4-20 x 1-1/4 bolts (24)	Home Depot	1
Pure lead ingot, 5 lb, extruded 1 x 2 x 6 in (riser ballast; 4 percent off at nine or more; read 2026-11-05, shipping at checkout not included)	RotoMetals	34
DeWalt DWE7491 10 in table saw (the RS stand is not needed on the bench)	Home Depot	1
POWERTEC 17208 3 in dual-lock PU casters, 4-pack (dust cart)	Home Depot	1
Retractable step-down workbench casters, side mount, 4-pack, 200 lb each (flip bench and potting station; any brand to the sheet 01 spec, e.g. WEN CA3060, read 2026-09-26)	Home Depot	2
DeWalt 16 gal 6.5 PHP Stealthsonic wet/dry vac, DXV16P-QTA (Costco item 1992617)	Costco	1
Oneida Dust Deputy 2.5 Deluxe cyclone kit, AXD250004 (if not on hand)	Menards	1
Cam strap 1 x 6 ft, remote-control outlet	Home Depot	1

Not in the totals: 23 studs, the filament for the printed parts, the two shafts, collars, plungers, bushings, latches and flanged collars (about $130 together at 2(the feeder breaker, hardware allowances, the future EVSE, the heater (Fahrenheat FUH54 listed at Lowe's, price not read), the compressor, the DeWalt vac anc The 10/2 price read high against past listings; check it in the aisle, a 50 ft coil has usually been under $100. If the basement panel is Homeline, the feeder bre

ITEM	STORE	QTY
PETG filament for the printed parts (cuffs, reducer, clips, grommets, docks, holders), about 1 spool	on hand	1
Milwaukee 18 x 30 furniture dolly, 1000 lb	Walmart	1
RAD Cycle 1-bike ceiling hoist HWD630542 (one each side of the opener rail)	Home Depot	2
27 qt soil bin with lid, 14 in cleat-frame plywood offcut, 3/4 x 1/8 steel strip for the bin lip, BLO	Home Depot	1
Carriage bolts 5/16 x 2-1/2 (12), 3/8 x 2-1/2 (4), conduit straps 1 in (4), hooks, L-brackets, wood glue, poly	Home Depot	1
Woodwork, priced lines		
Electrical		
Square D Homeline HOM2040M100PC1AVP 100 A 20-space main-breaker value pack	Home Depot	1
100 A 2-pole feeder breaker, basement panel brand	per panel photo	1
Southwire 1/0-1/0-1/0-2 AL SER, by the foot	Home Depot	50 ft
Southwire 6/3 NM-B, 25 ft	Home Depot	1
Southwire 10/2 NM-B, 50 ft	Home Depot	1
Southwire 12/2 NM-B, 250 ft	Home Depot	1
Southwire 14/2 NM-B, 250 ft	Home Depot	1
HOM250CP 50 A 2P	Home Depot	1
HOM230CP 30 A 2P	Home Depot	1
HOM120CP 20 A 1P	Home Depot	5
HOM115CP 15 A 1P	Sutherlands	1
Leviton GFNT2-4W 20 A GFCI, 4-pack	Home Depot	2
Leviton CBR20-WMP 20 A duplex, 10-pack	Home Depot	1
Leviton 5603-2WS 15 A 3-way switch	Home Depot	1 (of 2)
GT-Lite 5000 lm linkable 4 ft LED shop light	Home Depot	4
Boxes, covers, EMT and fittings, staples, ground bar kit, 14/3 for the 3-way, wire nuts	Home Depot	1
Electrical, priced lines		
All priced lines		

Not in the totals: 23 studs, the filament for the printed parts, the two shafts, collars, plungers, bushings, latches and flanged collars (about $130 together at 2(the feeder breaker, hardware allowances, the future EVSE, the heater (Fahrenheat FUH54 listed at Lowe's, price not read), the compressor, the DeWalt vac and The 10/2 price read high against past listings; check it in the aisle, a 50 ft coil has usually been under $100. If the basement panel is Homeline, the feeder bre

Build sequence

WEEKEND 1: CLEAR AND SORT, ELECTRICAL ROUGH-IN

1. Empty the existing shelves into labelled totes on the driveway: keep, donate, trash. Label heavy totes for the 24 to 60 in shelves.
2. Tear out the old shelving and the bench. Patch and paint the wall behind the potting station, the bulk rack and the cabinet while it is bare; take the old bulb down and the four fixtures go up on the C8 rough-in.
3. Photograph the basement panel; buy the feeder breaker to match. Pull the electrical permit.
4. Mount the subpanel on the east wall 3 ft from the back corner, just past the side door's frame, top breaker center at 72 in, its working space on the flat floor in front. Run the SER from the main through the house wall behind that frame to the sub, 4-wire, with the neutral bar isolated and the ground bar kit installed. Leave it dead.
5. Run all branch cables to open boxes: C1 to the future EVSE box at 66 in above the dust cart's parking (cap the conductors, cover plate on), C2 to the NE corner at 100 in, C3 to C7 receptacle boxes at 48 in (50 in at the potting station), the C4 drop from the ceiling to 84 in over the work zone, C8 to the four fixture locations and both switch boxes. EMT for anything exposed below 8 ft.
6. Rough inspection.

WEEKEND 2: ELECTRICAL FINISH, BULK RACK, POTTING STATION

7. Devices, fixtures and heater in; C1 stays capped with its breaker off. Land the feeder breaker last, energize, test every GFCI. Final inspection.
8. Bulk rack: build the two upright pairs flat on the floor with their cross ledgers, stand them on the landing in the back-left corner, add the front and back ledgers level by level, drop in the OSB, L-brackets into studs. Bags onto the landing under it, two high; six totes on the three levels; the rest wait for the overhead platform. Compressor into the shop's front corner on C5 beside the dust cart's spot.
9. Potting station: legs and top frame pocket-screwed, bag shelf ledgers, plywood shelf, a step-down caster on the inside face of each corner leg; stand it in the front-left corner with the back rail against the wall. Cut the 14 in well and the bin opening in the top before it goes on (jigsaw, then a router with a bearing bit on a circle template); well cleats on the legs at 22, 26 and 30 in; bin cleat frame; top on, splash back and trowel strip, steel lip over the bin, two coats of oil. Upper shelf at 56 in; hook rail at 72 in behind the machine bay. Machines into the bay nose to the wall, wheel stop at the wall; bikes hoisted either side of the opener rail.

WEEKEND 3: CABINET

10. Cut all birch parts; sand and finish every face flat
11. Case: pocket-screw top and bottom to one side, side. Square it, screw the back on every 6 in.
12. Rip the cleats at 45 degrees. Screw the case clea down, top edge 1 in below the case top; the spac
13. Door boxes: glue and nail rails around each face; with the lip toward the center. Cleat strips inside
14. Hinges: cut two 40 in lengths, pre-drill, hang eacl lip clear. Check the right door closes over the left
15. Wall cleat: find three studs, level at 87 in to the b stud. Hang the case; drive the two anti-lift screw
16. Hasps 6 in from top and bottom across the meet the LBT rack in the top zone, cord out the gromm the case.

WEEKEND 4: FLIP BENCH

17. Base: four 30 in cross rails on flat, one under eac laminated and bored together: 1-1/16 shaft hole C (B gets a bearing on each face, so its hole is a b 1/2 in plunger bushing holes in A and C 10 in tow down onto their cross rails, apron along the back the inside face of S and of C, 1 in in from each lon Saw bay: platform at 24 in, two shelves, the 3/4
18. Boxes (two): end plates bored 1-1/16 on centre a side, ribs, then the skins with their T-nuts presse on each end plate, shaft through, collars tightene walls glued to the riser plate, cleats on the walls, foam tape on the deck; leave the top off. Prime t
19. Each box into its bay from above with the bearing panel faces, set-screw collars outboard. Spin: fre A and C, latches on B; check each plunger snaps latch closes with the box tight.
20. Tool plates: miter saw and planer bolted to their plates bolted to the boxes' tool faces, risers bolt swings over the floor, past the apron, and the pla lives under them. With the sections hung and the in one at a time, rows centred on the shaft, and s test with the real tools: pull the plunger with the toward the tool side, not fall; swap a filler block f it does. Drop the table saw onto its platform and
21. Balance each section: plunger out, latch open, tu should hold or drift slowly toward the tool. Then p run all three tools; the flat sections take the mite roller.

WEEKEND 4, AFTERNOON: DUST CART

22. Lift the drum out of its caster base and measure the corral width and the cradle hole on sheet 05. casters on at the corners.

23. Pedestal sides and wall onto the base, cradle wit
outer end with the handle slot 3.5 in from the to
half height. Corral: the four posts screwed down
ring on flat, then the drum in, then the top ring or
every edge screw. Print the cuffs, reducer, clips a
cures.

24. Bucket into the cradle and strapped to the spine,
short hose from the cyclone outlet to the drum ir
inlet. Check the tip: lean it 20 degrees at the han
it should come back.

CHECKS THE MODEL RUNS ON EVERY BUILD

Flip bench swing clearance for each hanging tool
25.7 in, 4.8 in; miter 26.3 in, 4.2 in; riser 16.7 in)
its step-down casters (0.8 in); the saw bay's 8 in
200 lb casters under a 700 lb bench; flange bear
panel; plungers inside the panel width; each sect
and 13 lb (planer) at the bench edge with its lead
lead rows fit under the riser tops, centred on the
6 in back apron (0.9 and 1.6 in); the saw sunk flu
bench 10 in under the cabinet; the bench betwee
Maverick tail 17 in inside the door line; front tires
13 in over the 6 in landing under a 12 in bumper;
the nose 52 in long and empty; nose 11 in short
counter 20 in west of the mirror line; driver's doo
the counter; 57 in aisle from the mirror; subpane
floor and clear of the parked dust cart; the side d
tote rack 4 in clear of the cabinet doors; the com
rack's bottom bay; north cabinet door at 90 degr
cart by 6 in; cabinet bottom above a 44 in car do
degrees, the drum fits its corral with 1.5 in to spa
centre of gravity, the cyclone outlet 19 in above t
top tote level at 68 in; bike hoists above an open
changes re-runs all of them.

ORDER OF OPERATIONS THAT MATTERS

Electrical before anything is fixed to a wall; the ca
the case. The tote rack before the cabinet so the
things; the dust cart after the bench so its caster
the same trip; the lead ordered before the risers
cut to the ingots that arrive. Shaft holes and bush
panels (and the box end plates) clamped togethe
measurement.

Operating guide

DAILY

- Roll the bench and the dust cart into the work zone, lift all four of the bench's pedals so it stands on its frame, lock the cart's casters, plug the bench into the C4 drop (table saw on C3) and the vac into C5 or C6, never the same circuit as the planer. Nothing goes under the flip sections' swing; the frame is open there on purpose. The bench only flips a tool up once it is out from under the cabinet.
- Flip sections: plunger home and latch closed before starting a tool. Miter head locked down and slide locked before every flip; open the latch, pull the plunger, turn, listen for the plunger to snap, close the latch. Miter station is miter up, planer down; planing is planer up, miter down; ripping is both down.
- Planer chips: the DW735 blows into its chip bag; the dust cart takes the miter saw, sander, router and cleanup. Empty the bucket at two-thirds, sideways out of the U, without lifting the cyclone off; the 16 gal drum only sees what the cyclone misses.
- End of session: tools back on their shelves, doors closed left then right, both padlocks on, both carts parked against the east wall spine and shaft to the wall, the bench with its wall-side casters down and its room-side pair up, the cart's casters locked, the truck's front tires to the curb.

SEASONAL

- April: snowblower out of the bay onto the dolly, mower in. October: reverse. Batteries stored at 40 to 60 percent indoors in winter.
- Ice-melt bags onto the landing under the bulk rack in November; potting mix onto the potting station's shelf in March, the open bag nearest the bin.
- Heater: thermostat at 45 F when idle, 60 F to work. A 5 kW unit heater lifts this 18 x 20 ft, 12 ft tall garage (4,300 cu ft, half again the volume of an 8 ft room) about 20 F above outdoor temperature at steady state; on a 10 F day expect 30 to 35 F unless the door seals are good, and the warm air pools under the 12 ft ceiling, so a ceiling fan on low pays for itself. Never store anything within 3 ft of its face.

ELECTRICAL

- Test every GFCI monthly with its button. A trippe wall general receptacles only; the bench, the tab on their own circuits.
- When the EV arrives: hardwire the EVSE to the C the charger allows) and schedule it after 9 pm. C time is fine; charging, planing, dust collecting anc the feeder is sized for but not designed to live at.
- The subpanel main is the garage kill switch. Labe number from sheet 07.

MAINTENANCE

- Bearings: a shot of grease in each of the four zer screws, the flanged collars' bolts and the latch te each section's balance whenever a tool or a plat
- Padlocks: a drop of dry lube in the keyway each f sits in them.
- Cleat screws: once a year, open the cabinet and are snug.
- Bulk rack: nothing above 60 in heavier than a ligh landing. Potting station: empty the well platform wet work; re-oil the top each spring.
- Dust cart: strap snug and the casters' brakes on cuffs seat every few sessions, a leak at the cyclo nothing.

CABINET LOADED	FLIP BENCH ON CASTERS
~250 lb	~700 lb
FEEDER WORST CASE	**FEEDER TYPICAL**
103 A	< 75 A