Vantopia Kit Installation Manual

Model: Mercedes Sprinter 144 / 170 High Roof

Layouts covered: Raised Bed and Dinette

Revision 2026-11-10

How to use this manual

The build runs in eleven steps, in the order below. Every step lists the people needed, the tools, the hardware by bag number, a numbered procedure, and tips. Each step also links to a video. Read the written step first, then watch the video, then do the work.

Steps 1 to 8, 10 and 11 are the same for both layouts. Step 9 has two parts: follow **9A** if you ordered the Raised Bed, or **9B** if you ordered the Dinette.

Step	What you do	People
1	Vehicle Prep	1
2	Vent Install	2 minimum
3	Insulation	1
4	Sanding and Part Prep	1 (2 recommended)
5	Floor	2
6	Walls and Rails	1 (2 recommended)
7	Ceiling and Header	2 recommended
8	Module Assembly	1 (2 recommended)
9	Bed: 9A Raised Bed or 9B Dinette	1 (2 recommended)
10	Module Installation	2 recommended
11	Finishing Details	1

Safety

- Wear safety glasses for every cutting, drilling, sanding and overhead step.
- Wear an N95 mask and gloves when sanding and when using spray adhesive.
- Floor sections and assembled modules are heavy. Lift with a helper.
- Start every bolt that goes into a factory threaded hole by hand. Do not force a bolt that feels tight.

Need help?

Call Vantopia at (949) 755-0337. We are happy to walk you through a step by phone or video call.

Hardware and Parts List

Bags of hardware and loose items share one number series. A step that says **Bag 5** or **Item 38** refers to the number in this list. Not every item is used on every build.

If you need replacement hardware, the Source column gives the McMaster-Carr part number, or contact Vantopia for Vantopia-made parts.

No.	Description	Used for	Source
1	M6 x 45 mm flat head screw	Primary fastener	McMaster 92125A250
2	M6 rectangular nut	Primary nut, placed in T-slots	Vantopia
3	M8 x 90 mm button head screw	Mounting cabinets to floor	McMaster 92095A336
4	Clevis pin, 40 mm, with E-clips	Door latch mechanisms, tray table	McMaster 92735A122
5	Fender washer, 3/8" x 1.5"	Floor hold-downs, floor puzzle joint, bed mechanism	McMaster 90313A115
6	Fender washer, 3/8" x 2"	Raised bed tilt mechanism	McMaster 90313A116
7	Nylon spacer, 3/8" ID x 3/4" OD x 1-1/4" long	Raised bed tilt mechanism	McMaster 94639A863
8	Washer, 3/8" x 7/8"	Island countertop, door latch mechanisms	McMaster 92141A031
9	M6 x 70 mm flat head screw	Tray table mounting bolts	McMaster 92125A258
10	M6 x 30 mm button head screw	Mounting cabinets to rail	McMaster 92095A244
11	M6 washer	Mounting cabinets to rail	McMaster 91116A150
12	Wooden dowel, 1/2" x 1-1/2"	Latch mechanisms, dinette floor board, tray table, shelf supports, header	McMaster 97195A116
13	Fixed casters	Lower cabinet of the Pantry Combo Unit and Window Combo Unit	McMaster 78155T17
14	Wood screws, #8 x 1/2"	Floor trim pieces, flat bar, fixed casters	McMaster 90294A194
15	T-slot frame nut, M6	Mounting cabinetry to rail system	McMaster 5537T67
16	M8 eye bolts	Gear tie-down points in floor and header	McMaster 1700
17	M8 x 35 mm button head bolt	Sprinter header, cover-up boards	McMaster 92095A292
18	M8 x 45 mm flanged head bolt	Transit floor hold-down and floor mounting blocks	McMaster 97654A232
20	M6 x 50 mm flanged head screw	Mounting rail to body frame brackets	McMaster 97654A228

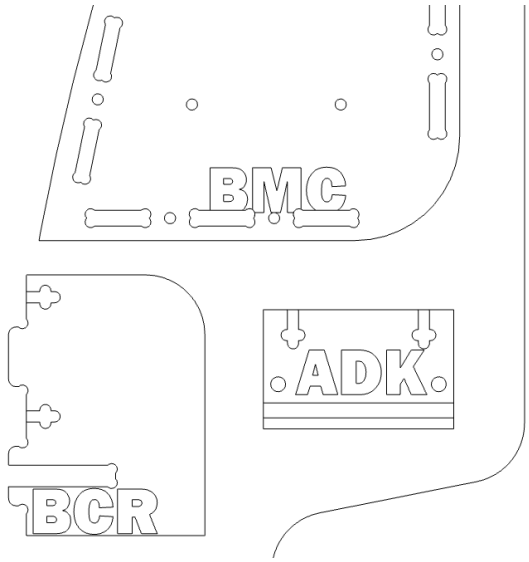
No.	Description	Used for	Source
21	M6 x 20 mm flat head screw	Circular cover-up plates	McMaster 92703A167
22	Steel round-base weld nut, with screws	Floor puzzle joint	McMaster 90563A620
23	Body clips, white	Mounting wall and ceiling panels to body frame	Vantopia
24	Wall panel division strips, 8 ft	Connecting wall and ceiling panels	Vantopia
25	Drawer slides, 20"	Combo unit sliders	McMaster 2712A6
26	Drawer slides, 16"	Kitchen island slider on long vans	McMaster 2712A4
27	Zinc-plated steel insert for wood, M8	Underneath floor, header, cover-up boards	McMaster 98965A410
28	Wood screws for header strip	Header strip	McMaster 90294A247
29	Soft-close hinges	All bamboo cabinet faces	Vantopia
30	Smooth threshold, aluminum	Floors	McMaster 8422A21
31	Anodized aluminum angle, 1" x 1" x 1/16"	Floors	Vantopia
32	Anodized aluminum flat bar, 1.5" x 1/8", 6 ft	Floors	Vantopia
33	Anodized aluminum angle, 3/4" x 3/4" x 1/16", 8 ft	Floors	Vantopia
34	3060 aluminum rail extrusion, 8 ft, pre-drilled	Walls	Vantopia
35	3060 aluminum rail extrusion, 6 ft, pre-drilled	Walls	Vantopia
36	Birch sheets, 1/2" thick	Cabinets, beds, dinettes	Vantopia
37	Birch sheets, 3/4" thick	Cabinets, beds, dinettes	Vantopia
38	Europly floor sections	Floors	Vantopia
39	Foam floor insulation sections	Floors	Vantopia
41	Wall beadboard panels	Walls	Vantopia
42	Ceiling beadboard panels	Ceiling	Vantopia
43	Bamboo countertops / tray tables, brass inserts installed	Countertops	Vantopia
44	Bamboo cabinet and drawer faces	Cabinet faces	Vantopia
45	Bamboo rotary latches	Combo pantry, raised bed garage door	Vantopia
46	Bamboo swing latches, "L" type	Door hardware	Vantopia
47	M6 x 50 mm flanged head screw	Mounting rail to bracket	McMaster 97654A228
48	Toggle bolts with washer and nut	Header (Mercedes only)	McMaster 94040A110

No.	Description	Used for	Source
49	Oval-hole rail brackets	Mounts rail to vehicle (Mercedes only)	Vantopia
50	M8 x 45 mm bolt	Floor hold-down (Sprinter and ProMaster)	McMaster 3327
51	Accent beadboard panels, rear and sliding doors	Walls (Mercedes only)	Vantopia
52	Europly floor hole plugs	Floors (Mercedes only)	Vantopia
53	M8 x 70 mm flat head screw	Mounts combo pantry to floor	McMaster 92125A304
55	Wood screws, #8 x 7/8"	Sliding door trim piece	McMaster 90294A198
56	Sliding door trim piece	Walls	Vantopia
57	Clevis pin, 45 mm, with E-clips (longer pin, bed mechanism only)	Bed mechanism	McMaster 92735A122
58	Spring latch kit	Kitchen island latch	Vantopia
59	Bamboo swing latches, "R" type	Door hardware	Vantopia
60	Dinette cushions	Dinette	Vantopia
61	Table pedestals	Dinette	Vantopia
62	Lag bolts, 1/4" x 3-1/2"	Mounting cabinets to floor	McMaster 92351A556
64	Anti-seize, thread locker, and foam dots for sound damping	Bolts into factory threads; anywhere cabinets touch the walls or ceiling	Vantopia
66	Special hardware pins and rollers	Hardware pack for toilet closet	Vantopia

Quantities. The counts in this manual come from the Vantopia packing lists and differ by van length, by layout, and by whether you ordered floors and walls. The packing list shipped with your kit is the count of record.

How Parts Are Labeled

Most wood parts carry a three-letter code. The **first** letter relates to the van model (some parts are shared between models, so it may not match your van). The **middle** letter is the module the part belongs to. The **last** letter identifies the individual part.



Sort your parts into piles by the middle letter before you start assembling. For example, BCR belongs to the bed (C) and ADK belongs to the closet (D).

Middle letter	Module
A	Flooring
B	Walls
C	Bed
D	Closet Unit
F	Kitchen Island
H	Pantry Combo Unit
I	Fridge Slider
K	Kitchen Island Drawer
L	Combo and Window Unit Drawer
M	Accessory Overhead Cabinet
O	Window Pantry Unit

Each plywood sheet also has a sheet code (for example "Model C, Sheet 1") so you can find which sheet a part is cut from.

Step 1 - Vehicle Prep

Video: Vehicle Prep (Sprinter)

People: 1

Tools

- T45 Torx bit
- Impact wrench (recommended on older vans, where bolts can be stuck)
- Ratchet (fine on newer vans without rust)
- 10 mm socket
- Anti-seize (older vans with rust)
- Safety glasses

Procedure

1. Remove the factory tie-down brackets from the floor with the T45 bit. The factory floor bolts are not reused: the floor is held down with the Bag 50 bolts in Step 5.
2. Remove the plastic conduit that covers the wire harness along the walls, front and rear.
   a. Pull hard on the plastic channel until its anchors release.
   b. Discard the channel pieces and anchors.
3. Remove the foam blocks at the front of the cargo area.
4. Remove any seat belt anchors in the walls.
5. Remove any factory lights on the walls and ceiling, including the light by the sliding door. Lights in the doors can stay.
6. Check that the 8 mm threaded holes in the roof ribs are clear. The ceiling panels mount to these.
7. Sweep out the floor and check the van for damage or earlier modifications.

> **TIP:** Test-thread a bolt into the floor mounting holes now. If it threads easily, no further prep is needed. If not, apply anti-seize.

Step 2 - Vent Install

Video: Vent Install

People: 2 minimum

> **WARNING:** This step uses a ladder and requires climbing onto the roof. Have a second person steady the ladder and assist.
>
> **WARNING:** Cutting the roof throws metal chips. Wear safety glasses. Keep everyone out of the van while cutting: the cut-out panel drops inside.

Tools

- Drill
- Step bit, up to 1"
- Center punch and hammer
- Marker
- Measuring tape
- Jigsaw (or reciprocating saw) with a metal-cutting blade
- Phillips bit
- Caulking gun
- Rubbing alcohol or acetone and a rag
- Safety glasses and gloves

Hardware

No.	Description	Quantity
-	Vent template (supplied by Vantopia)	1
-	MaxxAir vent or equivalent (supplied by customer)	1 per vent
-	Butyl tape or equivalent (supplied by customer)	About 1 roll per vent
-	Sikaflex or equivalent sealant (supplied by customer)	Up to 1.5 tubes per vent
-	Rust-Oleum paint or equivalent (supplied by customer)	

Procedure

1. Choose the position and mark the center from inside the van.
    a. Pick the pair of roof ribs the vent will sit between. A position toward the front or the rear leaves more roof space for solar panels.
    b. Find the centerline of the van by measuring between two fixed points that are symmetric across the van, such as two matching screw holes.
    c. Hold the template in place and confirm it clears the ribs and any structural members.
    d. With the template centered and parallel to the ribs, mark the center hole.
2. Center punch the mark and drill through the roof with the step bit.
3. Move to the roof and mark the cut.
    a. Align the template with the hole you just drilled and square it to the rib.
    b. Trace the outline and mark the four corners.
4. Drill a 1/2" hole at each corner with the step bit. Place each hole about 1/4" inside the corner so its edge just touches your lines.
5. Cut between the four holes with the jigsaw.
    a. Keep a steady grip and keep the saw pressed down on the roof. The roof panel will shake.
    b. Make the cut nearest to you last.

6. Test fit the vent in the opening. Trim with the jigsaw if anything interferes.
7. Paint the bare cut edge with rust-preventing paint and let it dry.
8. Clean the roof around the opening with rubbing alcohol or acetone so the tape bonds well.
9. Build up layers of butyl tape around the opening until you have a flat, even bed level with the top of the roof ribs. Press each layer down firmly so there is no path for water.
10. Apply sealant over the butyl bed, like icing a cake.
    a. Run the sealant over the outer edge of the tape so it also contacts the roof.
    b. Be generous. Up to 1.5 tubes per vent is normal.
11. Set the vent on the sealant and press it down.
    a. The vent hinge faces the front of the van.
    b. Check that no wire is trapped in the sealant or under the rim.
12. Drive all of the screws supplied with the vent around the perimeter, until sealant squeezes out from under the rim.
13. Run another bead of sealant around the perimeter.
14. Cover each screw head with a dab of sealant about the size of a Hershey's Kiss. It looks like a lot, and it is standard practice.

TIP: Check the vent orientation before you set it in sealant. Take your time on the sealing: a careful job now prevents leaks later.

Step 3 - Insulation

Video: Insulation

People: 1. Allow about 2 hours for the whole van.

WARNING: Wear gloves, safety glasses and an N95 mask. You will be spraying adhesive overhead.

Tools

- Sharp, good-quality scissors
- Measuring tape
- Safety glasses
- N95 mask
- Nitrile gloves (recommended)
- Scrap cardboard to catch overspray

Hardware

No.	Description	Quantity
-	Spray contact adhesive, such as 3M 90 (supplied by customer)	
-	3M Thinsulate insulation or equivalent (supplied by customer)	1 roll
-	Seat covers or trash bags (supplied by customer)	

Procedure

1. Cover the front seats with trash bags or seat covers.
2. Start with the ceiling sections between the roof ribs. Cut each piece to length. The roll width matches the width of the van.
3. Spray adhesive onto the metal between the ribs, with good coverage, then press the insulation into place and tuck in any excess. Check that it has bonded before you let go.
4. Measure, cut and fit pieces for the wall panels and the smaller sections the same way.
5. Stuff scraps into any open cavities you can reach.

WARNING: Do not let insulation cover or stand proud of the ribs and mounting points. The wall panels, ceiling panels and rails mount flush to them.

TIP: A single layer is standard. You can double up, and it is worth using the whole roll.

Step 4 - Sanding and Part Prep

Video: Sanding

People: 1 minimum, 2 recommended for moving sheets

WARNING: Wear an N95 mask, safety glasses and gloves. Hearing protection is recommended.

Tools

- Oscillating tool with a serrated blade
- Random orbit (palm) sander
- Spindle sander, for inside corners and pockets (optional)
- 220 grit sanding pads
- Large sheet of cardboard or similar to work on

NOTE: The sanders and the oscillating tool are not included with the kit. See the Vantopia parts list for recommended tools. Use 220 grit pads, or a higher grit if you want a smoother finish.

Procedure

1. Move one plywood sheet at a time onto a clean, flat surface. Use a helper so the sheet frames do not crack.
2. Flip the sheet so the small holding tabs are on top and easy to see. The tabs keep every part in its sheet during shipping.
3. Fit the serrated blade to the oscillating tool, parallel to the tool body, and close the latch.
4. Cut every tab on the sheet. Cut close to the part so there is less to sand.
5. Sand the outside edges of each part with the palm sander.
    a. Line up the holes in the pad with the holes in the sander.
    b. Start on the edge that had the tabs, with the sander tilted about 45 degrees. This avoids tear-out and leaves a slight chamfer.
    c. Repeat on the opposite edge, then finish on the flat of the edge.
6. Sand inside corners and pockets with the spindle sander, using the drum diameter that fits.
7. Keep each sheet frame until that sheet is fully sanded and assembled, and confirm you have every part.

TIP: How much chamfer you sand is personal preference. Make sure every tab stub is gone and the pockets are free of debris, or parts will not seat during assembly.

Step 5 - Floor

Videos: Floor Assembly (Sprinter 144) | Floor Trim Install

People: 2

> **WARNING:** Floor sheets are heavy. Take care when handling them and with where you lean or set them down.

Tools

- T30 Torx bit
- 5 mm Allen key
- Hammer
- Drill
- Chamfer (countersink) bit
- 3/16" drill bit
- Phillips bit
- Center punch (optional)
- Measuring tape
- Hacksaw or power saw for aluminum
- Wood glue, brush and tray (optional)
- Safety glasses and gloves

Hardware

No.	Description	Quantity
38	Europly floor sections	4 (170), 3 (144)
39	Foam floor insulation sections	4 (170), 3 (144)
27	Zinc-plated steel insert for wood, M8	60 (170), 50 (144), whole kit
22	Steel round-base weld nut, with screws	25 (170), 14 (144)
5	Fender washer, 3/8" x 1.5"	
50	M8 x 45 mm bolt	15 (170), 12 (144)
32	Anodized aluminum flat bar, 1.5" x 1/8", 6 ft	1
31	Anodized aluminum angle, 1" x 1" x 1/16"	2 (Raised Bed)
30	Smooth threshold, aluminum	1
14	Wood screws, #8 x 1/2"	30
52	Europly floor hole plugs	5
16	M8 eye bolts	4
64	Anti-seize, thread locker, and foam dots for sound damping	1

Part A: Join the floor sections

1. Lay the floor sections (Item 38) upside down on a clean floor, on cardboard.
2. Hammer a threaded insert (Bag 27) into every insert hole **except** the holes along the puzzle joint.
   a. Each insert has four barbs. Line it up square with the hole before you hammer.
3. Push the mating sections together at the puzzle joint.

4. At each puzzle joint hole, place a fender washer (Bag 5) and tap in an M6 weld nut (Bag 22) so it captures the washer.
    a. Use a light hammer and stop when the nut is seated.
    b. It is a tight fit. If you feel resistance, check alignment instead of forcing it.
5. With a helper, flip the joined floor over, or tilt it up against a wall.
6. From the top side, drive the M6 x 20 mm flat head screws supplied in Bag 22 into the weld nuts along the joint. This pulls the joint flush and locks the boards together.
7. Repeat for any other floor sections that share a puzzle joint.

Part B: Mount the floor in the van

1. Lay the foam floor insulation (Item 39) in the van.
    a. Start with the piece nearest the cab.
    b. Handle the puzzle joints gently so they do not tear.
2. With a helper, carry the front floor assembly into the van.
    a. Set the driver side edge down first, close to the wall. The joined pair is delicate until it is bolted down.
    b. Lower it until it sits flat.
3. Bring in the rear floor assembly the same way.
4. Shift the assemblies until the factory threaded holes show through the counterbored mounting holes in the floor.
5. Bolt the floor down.
    a. Place a fender washer (Bag 5) in each counterbore and thread in an M8 x 45 mm bolt (Bag 50).
    b. Start each bolt by hand. If you feel resistance, back it out and apply anti-seize from Bag 64.
6. Cover each hold-down bolt with a Europly floor hole plug (Item 52). The plugs are cosmetic. Press them in, or glue them in if you prefer.

Part C: Floor trim

1. Fit the flat bar (Item 32) over the seam between the front and rear floor assemblies.
    a. Measure the seam and cut the bar to length if it is long.
    b. Mark screw holes every 12 inches, working outward from the centerline of the van, in two rows so one row lands in each floor section. About 10 holes in total.
    c. Drill with the 3/16" bit and countersink each hole for the screw head.
    d. Fasten with wood screws (Bag 14).
2. Fit the 1" angle (Item 31) at the rear door opening and at the sliding door opening.
    a. Check the fit and cut to length.
    b. Mark from the centerline outward at the rear, and front to back at the sliding door.
    c. These pieces need a single row of screws. Drill, countersink and fasten with Bag 14 screws.
3. Fit the smooth threshold (Item 30) at the front edge of the floor.
    a. Trim to length if needed.
    b. No drilling is needed. Fasten through the existing holes with the supplied screws.

> **TIP:** Practice drilling and countersinking on the offcut from the flat bar before you drill the real piece.

NOTE: The grid of holes in the garage area of the floor takes the M8 eye bolts (Bag 16) or other tie-down hardware. If you ordered passenger seats, the front module mounting holes will likely not be used.

Step 6 - Walls and Rails

Videos: Rail Clip Install (Sprinter) | Wall Installation (Sprinter 144)

People: 1 possible, 2 recommended

WARNING: Wear safety glasses. Panel dust and strip offcuts can get in your eyes.

Tools

- Hammer
- Drill or impact driver
- 4 mm Allen key or bit
- Oscillating tool with a straight blade
- Marker
- Knife
- 1/4" drill bit (only for removing a clip)

Hardware

No.	Description	Quantity
49	Oval-hole rail brackets	12 (170), 10 (144)
34	3060 aluminum rail extrusion, 8 ft, pre-drilled	2 (170)
35	3060 aluminum rail extrusion, 6 ft, pre-drilled	1 (170), 3 (144)
41	Wall beadboard panels	8 (170), 6 (144)
24	Wall panel division strips, 8 ft	9, walls and ceiling
23	Body clips, white	120 (170), 90 (144), walls and ceiling
20	M6 x 50 mm flanged head screw	12 (170), 11 (144)
51	Accent beadboard panels, rear and sliding doors	6
55	Wood screws, #8 x 7/8"	8
56	Sliding door trim piece	1

NOTE: The rail bolts are the M6 x 50 mm flanged head screws in Bag 20, per the packing list. The older video describes M8 bolts. Use Bag 20.

How the wall system works

- Panels fasten to existing factory holes with white body clips (Bag 23). Push the clip body in, then press or tap the center pin. The pin spreads the legs and locks the clip. Nothing is drilled into the van.
- Division strips (Item 24) join neighboring panels. Each has a curved face and a flat back, and a panel edge slots in from each side.
- To cut a strip, hold it in place, mark it with a marker, and cut it with the oscillating tool. Clean a rough cut with a knife.
- Where one strip meets another in a T, cut the end at about 45 degrees so the visible curved faces meet and the hidden backs do not collide.
- Run the longer strips continuously and fit the short pieces to them.
- The lower panels are clipped. The upper panels are held by the aluminum rail.

Part A: Rail brackets

1. The brackets go in the oval factory holes that line up with the bracket cut-outs in the upper wall panels: 12 on the 170 and 10 on the 144. Hold an upper panel in position to find them. If you are unsure which holes to use, call Vantopia before you continue.
2. Slot an oval-hole bracket (Bag 49) into each location. Tilt it in, top first, then the bottom.
3. Tighten the two bolts on each bracket firmly with a power tool.
4. The brass threaded insert in the middle of each bracket is where the rail will bolt on.

Part B: Lower wall panels and strips

1. Start on the driver side. Hold a lower panel (Item 41) against the wall and line its holes up with the factory holes.
2. Fasten it with body clips (Bag 23). Fit the two corner clips first, check alignment, then fit the rest.
3. Measure and cut the vertical division strip, with a 45 degree cut at the top where it meets the horizontal strip, and slide it between the two lower panels.
4. Measure and cut the horizontal division strips with straight cuts and press them onto the top edge of the lower panels.

Part C: Upper wall panels and rails

1. Slot the rear upper panel into the horizontal strip.
2. Measure and cut the vertical strip between the upper panels and press it onto the side of the rear upper panel.
3. Slot the front upper panel into the horizontal strip, then slide it back into the vertical strip.
    a. Use a scrap of division strip as a shoehorn to work the edge in.
4. Hold the rail (Item 34 / Item 35) over the upper panels, lined up with the bracket inserts showing through the panel holes.
5. Start every M6 x 50 mm flanged head screw (Bag 20) by hand into its bracket insert, then tighten with the 4 mm Allen key or an impact driver.
6. Repeat Parts B and C on the passenger side. It has two panels per row because of the sliding door.

Panel codes

Location	Panel codes
Driver side, lower	BBA, BBD
Driver side, upper	BBB, BBC
Passenger side	BBE, BBF
Sliding door accent panels	BBI, BBJ
Rear door accent panels	BBK and BBL (a matching pair), BBM and BBN (a matching pair)
Ceiling	BBG (front), BBH (rear)

NOTE: The door accent panels (Item 51) are included in case your van has no factory door panels. If the factory door panels are in place, skip them.

TIP: Line up the panel edges before you fit all the clips. Panels can be nudged forward or backward. To remove a clip, drill out the pin with a 1/4" bit.

Step 7 - Ceiling and Header

Videos: Header (Sprinter 144) | Wall Installation (Sprinter 144)

People: 1 possible, 2 strongly recommended

WARNING: Wear safety glasses. Dust falls straight down when you work overhead.

Tools

- 7/16" open-end wrench
- 5 mm Allen key
- T30 Torx bit
- Hammer
- Oscillating tool or jigsaw
- Measuring tape and marker

Hardware

No.	Description	Quantity
1	M6 x 45 mm flat head screw	4 (144 kit)
2	M6 rectangular nut	4 (144 kit)
27	Zinc-plated steel insert for wood, M8	7 positions: 3 required, 4 optional
17	M8 x 35 mm button head bolt	3
48	Toggle bolts with washer and nut	3
42	Ceiling beadboard panels	2 (BBG front, BBH rear)
23	Body clips, white	
24	Wall panel division strips, 8 ft	
-	Extension cord, correct gauge for kitchen appliances (supplied by customer)	1
-	12 V ceiling lights (supplied by customer)	

Part A: Header

The header is the wood assembly at the front of the cargo area. It caps off the cab and holds the front edge of the ceiling beadboard. It has four parts: two support brackets and two crossbars that span the width of the van.

1. Hammer threaded inserts (Bag 27) into the back of the first crossbar. Three are required. The other four positions are optional and give you threaded points for a curtain or similar later.
2. Fit a rectangular nut (Bag 2) into the T-slot of each support bracket.
3. Mount each support bracket to the roof with a toggle bolt (Bag 48).
    a. Push the toggle through the mounting hole in the roof structure. The metal tab swings open behind the hole.
    b. Tighten the nut and washer with the 7/16" wrench to pull the bracket tight.
    c. It is easier if you pop a few of the nearby headliner clips loose for access.
4. Fit the first crossbar onto the bracket tabs. Work the tab into the rectangular hole in the crossbar. The slit along the bottom gives you access to the toggle bolts.
5. Bolt the first crossbar to the brackets with M6 x 45 mm screws (Bag 1) into the rectangular nuts.

6. Bolt the second crossbar to the first with three M8 x 35 mm button head bolts (Bag 17) into the inserts: two at the top and one at the side.
7. The channel along the top of the second crossbar receives the front edge of the ceiling beadboard.

> **NOTE:** The hardware shown in the header video has been updated. The bolts you receive will not be the black bolts shown, but they go in the same positions.

Part B: Ceiling panels

1. Press the ceiling lights into the holes in both ceiling panels (Item 42) and let the wires hang to one side.
2. Mark and cut the vent opening in the panel that covers the vent.
   a. Measure from a reference that exists on both the van and the panel, such as a clip hole, to the center of the vent.
   b. Place the vent template on that center, square it to the panel, and trace it.
   c. Cut the opening with the oscillating tool or a jigsaw, on a clean smooth surface, without cutting into the surface underneath.
3. With the header in place, lift the front panel (BBG), slot its front edge into the header channel, and fasten it to the 8 mm holes in the roof ribs with body clips (Bag 23).
4. Run the extension cord through the hole in the panel: female end by the kitchen and sliding door, the other end on the driver side toward the closet.
5. Fit a division strip (Item 24) on the rear edge of the front panel, then lift the rear panel (BBH) into the strip and clip it up. The relief cut in BBH adds strength to the panel.

Step 8 - Module Assembly

Videos: Kit Assembly (general) | Window Combo / Open Pantry Assembly | Toilet Closet Assembly

People: 1 possible, 2 recommended

WARNING: Safety glasses and gloves are recommended.

NOTE: The Kit Assembly video shows modules that are not part of every order. Build only the modules you ordered.

Tools

- Drill (optional)
- T30 Torx bit
- Phillips bit
- Needle nose pliers
- Flat head screwdriver (for E-clips)
- Hammer
- Cardboard, butcher paper or a moving blanket to work on

Hardware

No.	Description	Quantity
1	M6 x 45 mm flat head screw	
2	M6 rectangular nut	
12	Wooden dowel, 1/2" x 1-1/2"	
4	Clevis pin, 40 mm, with E-clips	
8	Washer, 3/8" x 7/8"	
13	Fixed casters	
14	Wood screws, #8 x 1/2"	
29	Soft-close hinges	
25	Drawer slides, 20"	
26	Drawer slides, 16"	

The fastening system

1. Sort all parts by their middle letter (see How Parts Are Labeled) and clear any sawdust from the pockets and slots.
2. Nearly every joint is the same: a tab fits a pocket, a rectangular nut (Bag 2) drops into the T-slot, and an M6 x 45 mm screw (Bag 1) goes through the hole into the nut.
3. Tighten each screw until the head is flush with the surface. Do not sink it into the wood or leave it standing proud.
4. Parts that come as a left and right pair are mirrored. Build one side as the mirror image of the other.

Closet unit (D parts)

1. Assemble the side panels and cross boards.
2. Fit the small wood tabs at the back. These bolt the closet to the wall rail later.
3. Fit the hinge mounting brackets.

4. Fit the fuse panel, which also carries the switches, and its cover. Depending on your van length the fuse panel is on the closet or on the combo unit.
5. Fit the top cabinet face and the mid cabinet face (three hinges).
6. Set the shelves at the height you want on dowel pins (Bag 12) in the side holes.

Pantry combo unit (H parts)

1. Lay the parts flat in a large protected area and assemble the carcass. The unit has three storage compartments at the top, a drawer below them, and a large fridge drawer at the bottom.
2. Fit the fuse panel if it belongs on this unit. The switches face the bed area.
3. Fit the upper cabinet faces (three hinges each) and the middle faces (two hinges each, on their own hinge mounting bracket).
4. Fit the drawer slides.
    a. Push three dowels into the alignment holes in the board.
    b. Rest the slide on the dowels, pressed against the back, and screw it on.
    c. Remove the dowels. The slide cannot retract with them in place.
    d. Fit the slides to the drawer carriage the same way.
5. Screw the fixed casters (Bag 13) to the lower cabinet with wood screws (Bag 14).

Kitchen island (F parts)

1. Start with one face board and add the bottom.
2. Fit the drawer support bars. The recess cut into each one guides the drawer slide.
3. Fit the countertop mounting brackets. Together they give four holes at the top.
4. Fit the remaining face and side pieces, then the hinge mounting brackets, drawers and faces.

Tray table mechanism (P parts)

1. Assemble the two sides as mirror images, with rectangular nuts and screws.
2. Fit each pivot pin and secure it at the back with an E-clip.
3. Fit the track that guides the pin as the tray folds down.

Swing latches

Most cabinet faces have a swing latch. You open the door by slotting a finger through and lifting the bar.

1. Tap a wooden dowel (Bag 12) into the latch until it sits partly recessed, at the depth that rides in the groove of the cabinet.
2. Fit a clevis pin (Bag 4) with one washer (Bag 8) underneath.
3. Add washers (Bag 8) on top, usually three, then snap on the E-clip. The washers take up slack so the latch does not rattle.
4. Check that the latch swings freely.

Window combo / open pantry unit (O parts), if ordered

1. Start with the curved side piece and fit the first board to it.
2. Curve the upper piece by hand and seat it in the slots at the top of the side plate.
3. Fit the middle section boards. The two matching boards are interchangeable.
4. Bolt the parts together as you go.
5. Bend the upper cabinet into its slots and fit the cap on the other side.
6. Slide the countertop into place and bolt it up from underneath.
7. Fit the two drawers.

Toilet closet, if ordered

Assemble the toilet closet with its own hardware pack (Bag 66), following the video.

> **TIP:** Use the scrap material from the packaging as a work surface to avoid scratches.

Step 9 - Bed: Raised Bed or Dinette

Follow **9A** for the Raised Bed layout or **9B** for the Dinette layout.

9A - Raised Bed

Video: Raised Bed Assembly

People: 1 possible, 2 recommended

Tools

- Drill (optional)
- T30 Torx bit
- Pliers (for E-clips)
- Hammer
- 4 mm and 5 mm Allen keys
- Socket or wrench to fit the lag bolt heads
- Moving blanket or cardboard to work on

Hardware

No.	Description	Quantity
1	M6 x 45 mm flat head screw	
2	M6 rectangular nut	
12	Wooden dowel, 1/2" x 1-1/2"	
57	Clevis pin, 45 mm, with E-clips (longer pin, bed mechanism only)	7
7	Nylon spacer, 3/8" ID x 3/4" OD x 1-1/4" long	6 or 7
5	Fender washer, 3/8" x 1.5"	
6	Fender washer, 3/8" x 2"	2 or 3
8	Washer, 3/8" x 7/8"	
4	Clevis pin, 40 mm, with E-clips	
29	Soft-close hinges	
45	Bamboo rotary latches	
10	M6 x 30 mm button head screw	
15	T-slot frame nut, M6	
11	M6 washer	
62	Lag bolts, 1/4" x 3-1/2"	

WARNING: The kit has two kinds of clevis pin. The bed mechanism uses the longer 45 mm pins from **Bag 57**. The cabinet latches use the 40 mm pins from **Bag 4**. Keep them separate.

Part A: Bed frames and upper cabinets (on the bench)

1. Gather the C parts and clear any debris from the pockets.
2. Assemble each bed side frame with Bag 1 screws and Bag 2 nuts. There is one large side piece per side, with a notch at the back for the recliner and a notch at the bottom for the floor mounting bracket.
3. The bed legs look alike. The rear ones are narrower and the front ones are thicker. Check each is in the right place.

4. Bend the upper cabinet piece into its slots on the frame and bolt it. Fit the upper hinge mount plate (BCC) now. It is harder to fit later.
5. Fit the floor mounting brackets into the notches at the bottom of each frame.
6. Fit the mounting blocks at the back of the upper cabinet. They are usually marked C and are sometimes unlabeled. They bolt the cabinet to the wall rail.

Part B: Tilt (recliner) mechanism

1. Fix the first tilt part to the frame with Bag 1 screws, Bag 2 nuts and two wooden dowels (Bag 12).
2. Fit the recliner board on a clevis pin (Bag 57) with a nylon spacer (Bag 7) and a fender washer (Bag 5).
3. On the far side of the pin add a large washer (Bag 5), three small washers (Bag 8) and the E-clip. Snap the E-clip on with pliers.
4. Repeat at each pivot. One pivot uses the 2" washers (Bag 6) with the nylon spacers (Bag 7) and small washers (Bag 8).
5. Build the opposite side as a mirror image. The main recliner bar itself may not be mirrored: it can have T-slots on one side only.
6. Move the mechanism by hand and check that it travels freely.

> **NOTE:** The tilt part has been updated since the video, so its notch looks different. The mounting method is the same.

Part C: Install in the van

The wall rails must already be mounted (Step 6).

1. Tilt one bed side assembly in through the rear doors, stand it up and line it up with the rail. Repeat on the other side. Drop one bed support bar across to hold the two sides while you work.
2. Loosely bolt each side to the rail.
   a. Slide T-slot nuts (Bag 15) into the rail.
   b. Bolt through the mounting blocks with M6 x 30 mm button head screws (Bag 10) and washers (Bag 11): one or two washers on the upper bolts and a couple more on the lower, so the bolts do not bottom out.
   c. If a bolt is hard to start, use a longer Bag 1 screw to pull the block in, then swap to the Bag 10 screw.
   d. Tuck all wires clear before tightening.
3. Position the bed almost all the way to the rear of the van, then tighten the rail bolts.
4. Fit the front face plate (the divider between bed and cabin) with Bag 1 and Bag 2, using the slots at the back along the bed.
5. Fit the large bed platform **early**. It is big and only goes in at an angle past the mechanism. It cannot be fitted once the rear boards are in.
6. Fit the cross bars, then the bed plate with Bag 1 and Bag 2. The slots there are oval, but use the rectangular nuts. Add a washer if you like.
7. Slide the tilt mechanism into the back and connect it with the Bag 57 pins, nylon spacers, washers and E-clips as in Part B.
8. Slide in the bed slats. Some positions are doubled. Move the large platform forward to make room, then slide it back and fit the two extra platform sections at the front.
9. Fit the bar you grab to operate the recliner, then the last board, bolted at each side.
10. If you set the bed at a higher position, fit the two extra upper plates with Bag 1 and Bag 2. At the lowest position they are not used.

Part D: Garage door, latch and floor fixing

1. Fit the hinge plates for the garage access door with Bag 1 and Bag 2, then hang the door on its soft-close hinges (Bag 29).
2. Shim under the door to set the clearance, and check that it does not drag. The hinge screw adjusts it up and down.
3. Fit the rotary latch (Item 45) with clevis pins (Bag 4), one washer (Bag 8) inside and a couple outside for a snug fit, and E-clips.
4. Fix the bed to the floor through the floor mounting brackets with lag bolts (Bag 62) and fender washers (Bag 5).

TIP: When a screw spins in a T-slot, hold the nut lightly from the other side until it bites.

9B - Dinette

Video: Dinette Assembly

People: 1 possible, 2 recommended

Tools

- Drill (optional)
- T30 Torx bit
- Hammer
- Moving blanket or cardboard to work on

Hardware

No.	Description	Quantity
1	M6 x 45 mm flat head screw	
2	M6 rectangular nut	
12	Wooden dowel, 1/2" x 1-1/2"	
29	Soft-close hinges	
60	Dinette cushions	
61	Table pedestals	
62	Lag bolts, 1/4" x 3-1/2"	
5	Fender washer, 3/8" x 1.5"	

NOTE: The dinette video is an animation. Pause it to check part letters as you go. The part codes below come from its captions.

Procedure

1. Bolt part ACC to part ACA with rectangular nuts and M6 x 45 mm screws, the same way as the rest of the kit.
2. At the bottom, put the screws through the lower part, place the rectangular nuts, and fit the cover board (AMH).
3. Fit the floor mounting bracket (ACE). This is what bolts the bed frame to the van floor.
4. Assemble each bed post this way, then fit the upper cabinetry. You can hang the cabinet faces now.
5. Build the opposite side as a mirror image.
6. Fit the rear face plate, which has an opening for a cabinet face, and the remaining AMB parts.
7. Fit the bench tops: nuts in the slots, screws through the top.

8. Fit the floor support pieces (AMG), located on dowels (Bag 12), in all three sections of each bench.
9. Hang the cabinet face that opens toward the rear of the van.
10. Slide both bench assemblies into place in the van and fix them to the floor through the floor mounting brackets (ACE) with lag bolts (Bag 62) and fender washers (Bag 5).
11. Fit the central floor section, then the gray floor cover plates.
12. Fit the bamboo cover plates on the benches.

Step 10 - Module Installation

Video: Module Installation

People: 2 recommended

Tools

- Drill (optional)
- 4 mm Allen key
- 5 mm Allen key
- Socket or wrench to fit the lag bolt heads

Hardware

No.	Description	Quantity
62	Lag bolts, 1/4" x 3-1/2"	14 (170), 12 (144)
5	Fender washer, 3/8" x 1.5"	
15	T-slot frame nut, M6	30 (170), 22 to 26 (144)
10	M6 x 30 mm button head screw	30 (170), 22 to 26 (144)
11	M6 washer	100 (170), 78 to 88 (144)
64	Anti-seize, thread locker, and foam dots for sound damping	1

Procedure

1. Before a module goes in, stick the foam dots (Bag 64) wherever it will touch a wall or the ceiling. They damp rattles and squeaks.
2. Install the bed first (Step 9), through the rear doors.
3. Bring the closet in through the sliding door, back first and tilted, then stand it up and slide it into place.
4. Bring in the pantry combo unit and stand it in place.
5. Lift each upper cabinet (spice cabinet or accessory cabinet) into place on the driver side and the passenger side.
6. Bolt every module to the wall rail.
    a. Slide T-slot nuts (Bag 15) into the rail.
    b. Bolt through the slotted wood mounting tabs with M6 x 30 mm button head screws (Bag 10) and washers (Bag 11).
7. Bolt every floor-standing module to the floor.
    a. Use lag bolts (Bag 62) with fender washers (Bag 5) through each floor mounting bracket.
8. Bring in the kitchen island last and bolt it down.

TIP: Large modules are a tight fit. Follow the angles shown in the animation, and leave the bolts loose until everything is in position.

Step 11 - Finishing Details

Video: Finishing Touches

People: 1

Tools

- Drill
- Phillips bit
- T30 Torx bit
- Needle nose pliers
- Hammer
- Bamboo oil

Hardware

No.	Description	Quantity
25	Drawer slides, 20"	2 pairs
12	Wooden dowel, 1/2" x 1-1/2"	
29	Soft-close hinges	32
4	Clevis pin, 40 mm, with E-clips	27
8	Washer, 3/8" x 7/8"	200
16	M8 eye bolts	4
9	M6 x 70 mm flat head screw	
43	Bamboo countertops / tray tables, brass inserts installed	
44	Bamboo cabinet and drawer faces	
45	Bamboo rotary latches	
46	Bamboo swing latches, "L" type	
59	Bamboo swing latches, "R" type	

Countertop

1. Set the bamboo countertop (Item 43) on the island. Its pre-installed threaded inserts line up with the four holes in the mounting brackets.
2. From underneath, fit an M6 x 45 mm screw (Bag 1) with one large washer (Bag 5) and two small washers (Bag 8) at each hole. Start each by hand so it does not cross-thread, then tighten.

Tray tables

1. Slide rectangular nuts (Bag 2) into the side slots and bolt the tray mechanism on from the inside. There are several height holes. The top position is the usual choice.
2. Pass the M6 x 70 mm flat head screws (Bag 9) through the tray mechanism into the inserts in the bamboo tray table. You may need to tilt each screw to get it through.
3. Tighten by hand first, then fully.

Cabinet faces, drawers and latches

1. Screw the soft-close hinges (Bag 29) to each bamboo face (Item 44) first, then mount the face to its hinge bracket.
2. Fit the drawer slides and drawers using the dowel alignment method from Step 8.

3. Fit any remaining swing latches (Step 8).
4. Fit the rotary latches (Item 45). They hold drawers shut while driving.
    a. Each has two pins with washers on the inside.
    b. On the outside add four washers and an E-clip. If it feels too tight use three. It should be snug.

Upper cabinets (144: two spice racks)

1. The taller cabinet goes behind the driver seat. The other goes above the kitchen island and has a bent panel like the bed cabinets.
2. Assemble both with the standard box joints and T-slots. The slots in the center piece take the wood brackets that bolt to the wall rail.

Cover boards and transition piece

1. Find the unlabeled wire cover boards on sheet B3. Two go in the closet unit and two in the combo unit.
2. Fit one board from each end so the wiring passes loosely through the slot between them. There are no pre-drilled holes. Fix them with ordinary wood screws so you can still get to the wiring later.
3. Fit the front transition piece between the upper cabinet and the front of the van to cover any gap in the beadboard. Its notch matches the van body. Trim it to fit if needed, and fix it with a couple of screws.

Final touches

1. Thread the M8 eye bolts (Bag 16) into the floor or header inserts wherever you want tie-down points.
2. Wipe all bamboo surfaces with bamboo oil.
3. Go around the van and check every bolt, hinge and latch.