VERSATILE STORAGE CART
The most surprising thing about this cart is how much you can store in it. The pivoting drawers stand out as a clever storage feature. But when you add the fixed shelves and an array of parts bins, you end up with a top-notch supply station.

As you can see, the cart is small enough to tuck under a tool or the end of your workbench. Finally, plywood and simple joinery means you can build one for your shop in a short time.

Unique pivoting drawers, a set of shelves, and simple bins pack a lot of storage potential into this easy-to-build shop cart.
**Materials & Hardware**

- Top/Bottom (2) 18½ x 18½ - ¾ Ply.
- Upright (1) 18½ x 25 - ¾ Ply.
- Divider (1) 12½ x 25 - ¾ Ply.
- Sides (2) 5½ x 24½ - ¾ Ply.
- Lip (1) ¾ x 94 rgh. - ½ Hdbd.
- Shelves (2) 6 x 12½ - ¾ Ply.
- Shelf Ends (3) ½ x 1 - 5/8
- Shelf Sides (3) ½ x 1 - 11/8
- Small Drawer Ends (8) ½ x 2½ - 11/8
- Small Drawer Sides (8) ½ x 2½ - 11/8
- Drawer Bottoms (7) 11½ x 11½ - ¼ Hdbd.
- Corner Blocks (14) ½ x 3 - 3
- Large Drawer Ends (6) ½ x 4½ - 11/8
- Large Drawer Sides (6) ½ x 4½ - 11/8
- Magnet Strip (1) ¾ x 2 - 24½
- Plate (1) ¾ x 1 - 2

- (8) #8 x 1½" FH Woodscrews
- (4) 3" Locking Swivel Casters
- (16) #12 x ¾" Sheet Metal Screws
- (16) #12 Flat Washers
- (5) ½" x 17" - ½" Aluminum Bars
- (5) 1" x 17" - ½" Aluminum Bars
- (22) #6 x ½" FH Woodscrews
- (20) 4" Plastic Parts Bins
- (1) ½"-Dia. x 25½" Steel Shaft
- (14) ½" I.D. x ½" Sleeve Bearings
- (7) ½" Thrust Bearings w/Washers
- (7) ½" Rare-Earth Magnets, Cups, and Washers
an unusual

Case

While the storage features of this cart steal the show, it’s the case that makes it all possible. A quick glance at Figures 1 and 2 lets you know that this isn’t your ordinary, box-shaped assembly. Instead, the case consists of an interior framework that in turn creates three compartments for each type of storage.

All this makes building the case for this cart unique. But there isn’t anything here that’s more complicated than you’ll find in a traditional case.

Top & Bottom. I began with the plywood top and bottom panels and worked my way in. These square pieces capture the other parts of the casework. To do this, you need to cut a dado and a stopped groove on the inside face of each. This is shown in the Top View detail.

I used a hand-held router, a straight bit, and a straight-edge guide to cut the case joinery. The key part of this is making sure the bit matches the thickness of the plywood for a solid assembly.

The top and bottom panels also serve as the supports for the swing-out drawers. The drawers pivot on a steel shaft that’s installed in the top and bottom. So you can drill these holes at this point. A good way to make sure the holes are perfectly aligned in each piece is to tape them together and drill the holes in both pieces at the same time. Figure 1c shows an important detail. The hole in the bottom panel is a through hole, while the hole in the top is stopped.

The final detail to add on the top and bottom is to ease the corners with a gentle radius.

The Inside. The task of connecting the top and bottom, as
well as creating the storage compartments, falls to the upright and divider panels, as you can see in Figure 1.

The upright is the bigger of the two pieces and the more involved. A groove on one face holds the smaller divider panel. It aligns with the stopped dadoes in the top and bottom (Top View). In addition, narrower grooves on the opposite face accept a pair of sides added later, as in Figure 1b.

The other bit of joinery to take care of is cutting a pair of stopped dadoes. These hold one end of a couple of fixed shelves. Figure 1 shows the locations for these.

The divider is the same length as the upright, and its width is sized so that it’s flush with the edge of the top and bottom. Two dadoes align with those in the upright to hold the back edge of the shelves (Figure 1a).

**Assembly.** I assembled these four case pieces at this point. The grooves and dadoes register the parts and make the gluing and clamping process less hectic.

**Sides.** The assembled case provides a good reference point for sizing the length of two sides, as shown in Figure 2. A tongue along one edge interlocks with the groove in the upright, as in Figure 1b. The other edge of the side has a roundover to match the radius of the top and bottom.

The tongue and groove joinery is glued and the sides are screwed and glued to the top and bottom (Figure 2a).

**Divided Top.** The top of the cart makes a handy worksurface or staging area. To keep small parts organized and prevent them from falling to the floor, I added a gridwork of hardboard strips to the top, as detailed in the Top View, below.

Adding a set of 3” casters to the bottom completes the case of the cart, as in Figure 2b.
Completing the case sets the stage for adding the storage to the cart. Versatility is the name of the game, here.

**Bin Rack.** Over the years, I’ve come to appreciate how handy plastic parts bins can be. The compartment formed by the upright and sides provides space for up to twenty 4” bins. The bins hang on the simple cleat system that’s shown in Figures 3 and 3a. The cleats are made from two strips of aluminum bar stock. A lip on the back of the bins fits over the cleat.

I glued the two strips together with some super glue. This holds the pieces together while drilling the mounting screw holes. The Side View below shows the spacing for the cleats.

**Fixed Shelves.** Moving to the next side of the cart, you can add two shelves. They fit into the dadoes routed in the upright and divider. The shelves are sized to be flush with the ends of the upright and divider when glued into the dadoes. The outside corner of each shelf is eased just like the radius on the top and bottom, as you can see in Figure 3b.

To keep items stored on the shelves from falling off while moving the cart, I added hardwood strips to form an end and side for each shelf. The end is profiled to match the shelf radius. The pieces are simply glued to the top face of the shelf, flush with the edges.

I also added an end and side to the case bottom. This creates a third shelf, as shown in Figure 3.

**Pivoting Drawers.** The drawers give this cart its unique twist. The idea was inspired by the small supply carts used by artists. Pivoting on a steel shaft allows for total access to the drawer without the need for metal slides.

To keep the drawers from sagging, there’s a pair of sleeve bearings in one corner of the drawer. Between the drawers, I used thrust bearings (right margin photo next page). These support the weight of the drawers and allow them to open and close smoothly.

**Simple Joinery.** You make the drawer boxes first. They’re assembled with tongue and dado joinery, as illustrated in Figure 4a. Note: the groove that houses the drawer bottom is exposed...
on the drawer sides. I cut small plugs to fill the gap after assembling the drawer.

Three of the corners have a roundover that matches other details on the cart, as in Figure 4c. The pivoting corner has a larger radius so the drawer won’t catch as it opens or closes (Figure 4a).

I used a core box bit in the router table to form a finger pull on one side, as in Figure 4c. A magnet strike installed on one side completes the drawer.

Corner Blocks. The next step is to add corner blocks so the drawers can fit onto the steel shaft. Drill the hole for the sleeve bearing at the drill press so the blocks are consistent (Figure 4a).

After gluing the sleeve bearings into the corner blocks, glue the lower block to the underside of the drawer. Before you add the upper corner block, you need to drill through the drawer bottom at the drill press. It’s a good idea to make a backing block to fit inside the drawer. This prevents tearout as the bit exits the workpiece. Then you can glue the upper corner block flush with the top of the drawer (Side View at right).

Installing the drawers is a matter of sliding the shaft in from the bottom, adding one drawer at a time. Just be sure to install a thrust bearing and washers between each drawer. A hardwood plate keeps the shaft in place (Figure 4b).

The final piece of the puzzle is a thin magnet strip. It houses rare-earth magnets that hold the drawers closed and is glued in place.

A few coats of wiping varnish adds a little color and protection. Considering how much stuff this cart can hold, you’re sure to end up with a neater shop.
Storage Cart

Materials List

A Top/Bottom (2) 18⅛ x 18⅛ - ¾ Ply.  O Magnet Strip (1) ⅛ x 2 - 24½
B Upright (1) 18½ x 25 - ¾ Ply.  P Plate (1) ⅛ x 1 - 2
C Divider (1) 12½ x 25 - ¾ Ply.  • (8) #8 x 1⅜ Fh Woodscrews
D Sides (2) 5¼ x 24½ - ¾ Ply.  • (4) 3” Locking Swivel Casters
E Lip (1) ⅛ x 94 rgh. - ¼ Hdbd.  • (16) #12 x ⅜” Sheet Metal Screws
F Shelves (2) 6 x 12½ - ¾ Ply.  • (16) #12 Flat Washers
G Shelf Ends (3) ⅛ x 1 - 5¼
H Shelf Sides (3) ⅛ x 1 - 11¾
I Small Drawer Ends (8) ½ x 21⁄2 x 117⁄8
J Small Drawer Sides (8) ½ x 21⁄2 x 117⁄8
K Drawer Bottoms (7) 11¼ x 11¼ - ¼ Hdbd.  • (22) #6 x ⅜” Fh Woodscrews
L Corner Blocks (14) ⅛ x 3 - 3  • (1) ½”-Dia. x 2½” Steel Shaft
M Large Drawer Ends (6) ½ x 4½ - 11¾  • (14) ½” I.D. x ½” Sleeve Bearings
N Large Drawer Sides (6) ½ x 4½ - 11¾  • (7) ½” Thrust Bearings w/Washers
• (8) #8 x 1½” Fh Woodscrews  • (7) ½” Rare-Earth Magnets, Cups, and Washers
• (4) 3” Locking Swivel Casters
• (16) #12 x ⅜” Sheet Metal Screws
• (16) #12 Flat Washers
• (22) #6 x ⅜” Fh Woodscrews
• (1) ½”-Dia. x 2½” Steel Shaft
• (14) ½” I.D. x ½” Sleeve Bearings
• (7) ½” Thrust Bearings w/Washers
• (7) ½” Rare-Earth Magnets, Cups, and Washers

Cutting Diagram

⅛” x 5½” - 96” HARD MAPLE (3.7 Sq. Ft.)

⅛” x 5½” - 96” HARD MAPLE (3.7 Sq. Ft.)

⅛” x 5½” - 96” HARD MAPLE (3.7 Sq. Ft.)

⅛” x 4” - 24” HARD MAPLE (¼ Sq. Ft.)

NOTE: PARTS O AND P ARE PLANED TO 3/16” THICK
**Cutting Diagram cont.**

48" x 96" - ¾” BIRCH PLYWOOD

48" x 48" - ½” HARDBOARD
Project Sources

- McMaster-Carr
  3” Swivel Casters . . . . . . . 2426T55  
  Steel Shaft . . . . . . . . . . . 1346K19  
  Thrust Bearings . . . . . . 6655K17  
  Sleeve Bearings . . . . . 2868T9  
  Rare-Earth Magnets . . . . . . . 3506K25

Manufacturers and retailers will periodically redesign or discontinue some of their items. So you’ll want to gather all the hardware, supplies, and tools you need before you get started. It’s easy to adjust dimensions or drill different-sized holes to suit your hardware.