



# Build a Fold-down Bed and Get Two Rooms From One



The economic downturn has forced many people to rethink the way they live in their homes. Many are opting to reconfigure their houses to be more flexible, instead of adding on or moving. A flexible home, one that can adapt to changing family dynamics or play host to extended stays from guests, has become paramount as the demands on our existing homes have increased. Incorporated into built-in cabinetry, a fold-down bed makes it possible for a room to do double duty. The room can have one function by day—an office or playroom, for instance—and serve as sleeping quarters by night. The beauty is in the bed's concealment: It simply disappears when not in use. However, designing a fold-down bed so that it looks great and functions well is no easy task. Here, I'll share my design process for integrating a fold-down bed into an existing room. In "8 tips to a smooth bed

How to design and install a built-in bed to increase the flexibility of living spaces

BY LYNN HOPKINS

## DESIGN A BED FOR ANY ROOM

The key to a well-designed fold-down bed is functionality, and that can be determined only by the needs of the particular home or space. Take care to consider all the demands on the unit, and craft it accordingly. To help spark your creativity, here are four variations on a fold-down-bed design.



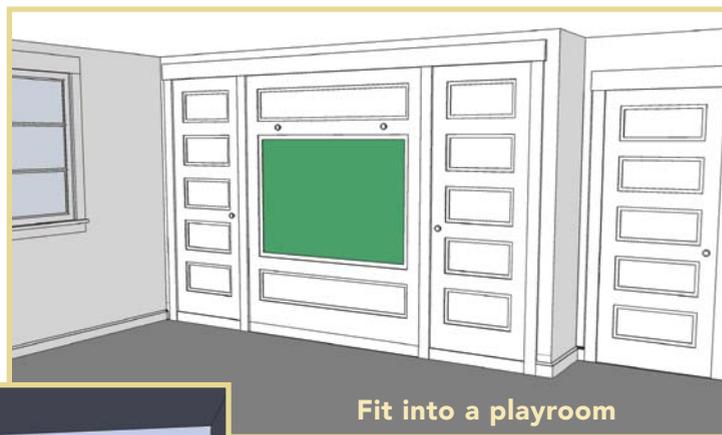
**Solve the small-room dilemma**

A bed placed horizontally does not project into a room as far as a bed with a vertical orientation. In small rooms, this enables adequate clearances around the bed for comfortable entry. The bookcases flanking the bed are recessed, giving the otherwise flat unit a bit of visual interest.



**Use an alcove**

Consider a horizontal arrangement for beds in small spaces. While the alcove restricts entry to the bed to only a single side, it provides guests with needed privacy. Simple storage boxes give the unit a bit of height to keep it in proportion with the room.



**Fit into a playroom**

This vertical fold-down bed, placed in a basement, is flanked by two closets that house games and toys. It's adorned with a chalkboard to maximize daytime functionality. The built-in, which extends from floor to ceiling, takes cues from the existing door paneling and trim, making the new unit feel as though it's always been there.

The arrangement of sleek cabinetry at the periphery of this room enables the vertically positioned bed to fold down unimpeded. Modern pulls and simple trim elements keep the fold-down bed in sync with the rest of the cabinetry.



**Expand a modern office**

installation” (facing page), finish carpenter Gary Striegler will share his tips on how best to build the bed, install the necessary hardware, and ensure smooth operation for years to come.

### Location is everything

Because a wall bed's primary function is providing a place to sleep, it makes sense to locate the bed in a room that will provide privacy. A home office is the ideal location. Demands on the home office are such that it generally can be given up for a few days to out-of-town visitors, especially in the evenings.

Another possible location might be a playroom or recreation room, as long as there is some physical separation from the rest of the house.

The disadvantage of putting a bed in a more public room such as a recreation room, however, is that Jimmy may want to play while Uncle Henry is trying to take a nap. Rooms located in basements are good options, too, and can work rather well as guest rooms. Whenever you add sleeping space in a basement, though, make sure you have met local codes for egress. Many codes require at least one window with a minimum net clear opening of 5.7 sq. ft. and windowsills that are no higher than 44 in.

### Determine bed orientation

Concealed beds most frequently stand vertically and fold down from the headboard end. A standard 5-ft. by 6-ft. 8-in. queen-size bed with

# 8 tips to a smooth bed installation

by Gary Striegler

I've been asked to build several fold-down beds in my time as a finish carpenter. While the construction of these beds is simple, there are a few areas where you can get hung up.

First, be sure to select the proper hardware. I like Häfele bed-lift products ([www.hafele.com](http://www.hafele.com)) best because they have few parts and can be installed quickly. However, be sure to have a metric-conversion chart on hand when installing these German-engineered products. Create-A-Bed systems ([www.wallbed.com](http://www.wallbed.com)) are a good option, but I find them a bit more difficult to install.

With either system, choose gas pistons rated for the weight of the bed you are building.

When beginning the project, start with the bed case and work your way out to each wall. This way, all the extra storage cabinets can be built to fit.

I won't cover any of the cabinet construction here, but be sure to check out my article "Built-ins, Anywhere" (FHB #212 and online at [FineHomebuilding.com](http://FineHomebuilding.com)) for practical lessons on cabinet and built-in construction techniques. The lessons you'll find there apply to this project as well.



## CASE CONSTRUCTION

**1 Plan panel seams carefully.** The bottom of the bed box will be wider than a 4-ft. sheet of plywood. To address this, position the plywood seam in a location that will be covered by a stile when the face frame is applied to the face of the bed box. On this project, pocket screws join the pieces of plywood together. Alternatively, you can use biscuits and glue or a spline.



**2 Install the feet first.** Although it may seem out of sequence, install the feet as soon as the bottom of the box is fastened to its frame (above). This way, you can be sure that you leave proper clearance when installing the support ribs (left).



**3 Create a clean bottom that's removable.** Positioned roughly every 12 in., these 1 $\frac{5}{8}$ -in. by  $\frac{3}{4}$ -in. ribs add structural strength to the bed box. Cover the ribs by screwing down—not nailing, stapling, or gluing—a layer of  $\frac{1}{4}$ -in. plywood. This cleans up the bottom of the box and adds even more strength. The screws allow access to the feet should they need repair or replacement in the future. You'll also need to gain access to the bottom of the box when installing handles or pulls.

## HARDWARE INSTALLATION

**4 Follow directions.** Don't open the hardware box, ditch the directions, and get to work. The Häfele directions serve as a template to drill pilot holes for the hinge locations on both the bed case and bed box. On the bed case, be sure to adjust the template to accommodate the 3/4-in. solid nosing that will be applied later.



**5 Use an impact driver.** The hex-head bolts on the hardware are difficult to install by hand. An impact driver makes easy work of both the bolts and wood screws that come with the hardware.

**6 Dry-fit the box in the case.** With the hinges and feet installed, secure the box in the case, and check for proper clearances and reveals. Use a scrap block to mimic the height of the mattress, to be sure there is proper clearance between it and the case when the bed is opened and closed. Install the gas pistons only after the bed box and case have been trimmed out.



this orientation functions best when there is enough space on both sides and the end for occupants to walk around. Allow a minimum of 24 in. to 30 in. on these three sides for access. The clear floor space in front of the bed cabinet will be about 9 ft. to 10 ft. wide and 7 ft. to 8 ft. deep. The cabinet will project at least 19 in. from the anchor wall. This vertical orientation is most convenient when the bed will be occupied by two people, because access is possible from both sides.

Alternatively, the bed can be hinged on the long side and folded down horizontally. A horizontal fold-down bed is quite space efficient and can be tucked into an alcove. However, it is not as convenient for those sharing the bed. Climbing in and out of bed is a "first in, last out" scenario. The inboard person will also be half-

covered by the enclosure cabinet, a somewhat uncomfortable arrangement. The horizontal fold-down works best for a twin-size or single-person bed, or where floor space or ceiling height is especially limited.

### Get the built-in details right

A built-in that houses a fold-down bed is a pretty big piece of furniture. The design of such a substantial thing is most successful when the piece becomes part of the architecture of the room, borrowing trim, molding, and paneling details from the existing space. Look at the existing doors and trim for inspiration.

Locating additional cabinets or shelves on either or both sides of the bed cabinet can further tie the unit to the architecture of the room,

## TRIM APPLICATION



**7 Install blocking and stops.** To support baseboard molding, glue and nail blocking to the base of the bed case. Install wood stops at the top of the case to prevent the bed from closing too far and potentially damaging interior trim.

**8 Add a decorative face frame.** A face frame that's slightly wider and taller than the bed box will conceal the feet when the bed is up and hide the gap between the bed case and the bed box.



especially if the bed-cabinet assembly stretches from wall to wall. If the cabinets also run from the floor to the ceiling, the unit stops being a piece of furniture in the room and becomes a wall that defines the room. Thoughtful treatment of the bed-cabinet panels and the spaces on each side of the bed can actually minimize the unit's presence in the room. (For more ideas, see "Design a bed for any room," p. 50.)

### Arrange the room to optimize functionality

Switching back and forth between the bed-down, bed-up configurations will be most convenient if the rest of the furniture in the room doesn't need to be moved each time the bed is lowered or raised. For

smaller rooms, this means most of the other furniture will be located around the perimeter. This approach can work well in offices where desks, file cabinets, and bookshelves can be positioned against the walls, leaving the center of the room open. In larger rooms, this centrifugal arrangement can leave the middle of the room feeling empty. A table or lightweight desk that can easily be moved out of the way before the bed drops down will improve the functionality of the room without greatly complicating the switch-over process. □

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