

Easy Access Lever:

Making a Round Door Knob Handle Accessible



Sean Siebert

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REC 140

Rationale and Intent

Opening a door is an essential activity in recreation and daily living. If a person with a disability cannot open a door, they may feel dependent and helpless. According to The Center for Universal Design (2004), The Assistive Technology Network (2004), and Ahmadi and Carlton (2005), people who lack fine finger dexterity have difficulty grasping round door handles, and subsequently may not be able to open a door.

Disabilities such as arthritis, stroke, carpal tunnel, and a dislocated wrist, account for problems with finer finger dexterity (Ahmadi and Carlton, 2005). Lever door handles can benefit these people because it allows them to be independent (The Center for Universal Design, 2004). However, lever handles are not available to all people; they may be costly or hard to install.

The Easy Access Lever (EAL) will make it easier, for people who lack fine finger dexterity, to open a door. It will be constructed so it can be easily secured to round door handles. Also, it will be easily removable so the device can be used temporarily or permanently. Another feature of the EAL is that it will be easy to grasp. Depressing the handle will require little effort. An important characteristic of this device is that it will be cost effective. The materials used to construct the EAL are inexpensive and can be found at any local hardware store. A hose clamp will be attached to a shelf bracket, with a non slip kitchen mat used to aide in grasping.

This device will be helpful in recreation settings because it can be used to encourage independence and autonomy. Accommodations to doors could be needed in the following settings: churches, movie theatres, libraries, restaurants, museums, aquariums, and hotels. People who lack fine finger dexterity should have equal

opportunities in accessing recreational activities. Making an accommodation would eliminate barriers. Even though lever door handles are addressed in the ADA, not all organizations are able to make this accommodation. An adapted device would be ideal for smaller recreational organizations that cannot afford to make accommodations.

According to Home Depot Online, the cheapest lever door handle system costs \$14.98, and requires installation (2005). Able Data sells an adapted handle (one door knob) for \$12.95; the two handles needed for one door can be purchased for \$22.95 (2003). No installation is required. The EAL can be constructed for less than \$8, and functions similarly to the previously mentioned products. Additionally, the EAL has advantages to a lever door handle system; no installation is required and it can easily be adapted to round door knobs. With low cost and easy use, the Easy Access Level is a practical assistive device.

Materials List and Cost

The materials list will be broken down into essential items, and additional items. Essential items are the parts that will be used in assembly of the EAL. Additional items are the materials needed for final assembly, and are not part of the EAL's design. They are items found in the household, or in the workshop. These items will not be figured in with the cost of the EAL.

Some of the materials listed are only sold in multi-packs. The cost for these devices will be broken down into the cost per part, and totaled at the end. Please note that the listed costs will be for one EAL; two EALs will be needed for adaptive use on a door with two round knobs.

Essential Items:

Material Description	8” Single Track Utility Bracket	Flat Washers #8 *	Machine screws #8-32 x 1/2”: round head slotted with nut *	Hose clamp Adjustable: 1 3/4” to 2 3/4” (10 pack) *	No Slip Grip Kitchen Mat (20in by 5 ft) *
Needed Quantity	1	2 (45 per pack)	2 (17 per pack)	1 (10 per pack)	20” L 5 3/4” W
Cost (Rounded)	<u>Per Item: .76</u> Cost of 1: .76	Pack: .83 <u>Per Item: .02</u> Cost of 2: .04	Pack: .83 <u>Per Item: .05</u> Cost of 2: .10	Pack: \$7.48 <u>Per Item: .75</u> Cost of 1: .75	Pack: 5.74 <u>Per Inch: .10</u> Cost of 20”: \$2.00
Store	Home Depot	Wal Mart	Wal Mart	Home Depot	Wal Mart

* Indicates Items sold in large quantities

Cost For All Materials: \$15.64

Total Cost For One EAL: \$3.65

Cost For Two Devices: \$7.30

Additional Items:

Drill Bits: (Must be able to go through Metal) 3/16 for single track bracket. 3/4 for Hose Clamp.	Flathead Screwdriver: Needed for securing clamp on door knob, and for assembly.
Saw: Any kind of saw, mechanical or manual, that will cut through metal.	Adhesive: Any kind of duct tape, although clear duct tape is preferred. Scissors will be needed to cut the duct tape, and Kitchen Mat.

Assembly Directions

These assembly instructions are for adaptation to one round door knob handle.

Make sure the following parts are present before assembly: (1) 8” Single Track Utility

Bracket, (2) #8 Flat Washers, (2) #8-32 x 1/2" Machine Screws with nut, (1) 1 3/4" to 2 3/4" Adjustable Hose Clamp, and a 20" L 5 3/4" W section of Non Slip Kitchen Mat (see figure 1.1). Additionally, use of the following tools will be required: power drill, flathead screwdriver, hacksaw, scissors, and clear duct tape. The instructions will give pre-assembly directions for individual parts, and then it will describe assembly for the whole device.

Take the 8" Single Track Utility Bracket and cut 1" off the smaller end of the bracket (see figure 1.2). A power or manual saw that cuts through metal will be needed. Following, drill two holes 1 1/4" apart on the end that was cut (see figure 1.3). The first hole should be approximately 1/2" from the end of the bracket (see figure 1.3). A 3/16 drill bit is preferable, and the bit should be able to drill through metal.

Take the Adjustable Hose Clamp and open it, so the extra piece of the clamp protrudes 2" (see figure 1.4). Then drill two holes 2/5" from the end of the extension. Make sure the holes are 1 1/4" apart (see figure 1.5). Use a 1/4 drill bit that is rated for use in drilling metal.

Take the No Slip Grip Kitchen Mat and cut a section out measuring 20" in length and 5 3/4" in width. Scissors will be needed for this portion of construction.

Preassembly is finished, now construction of the device begins. Take two machine screws and slip a washer on each screw. After the washer is inserted, put the screws into each hole of the Adjustable Hose Clamp (see figure 1.6). Now screw on the nut to each machine screw, and tighten the machine screw with a flathead screwdriver (see figure 1.7). After the hose clamp and bracket are secured, attach the Kitchen Mat to the single track bracket. Secure the non slip material to the handle by attaching duct tape

to the metal handle and mat (see figure 1.8). Now completely wrap the mat around the handle. Secure two ends of the mat by using a 7" section of clear duct tape; one piece for each end (see figure 1.9). Cut out a ½" by ½" section of the mat, near the screw clamp, so the screw is easily accessible. The device is assembled.

Usage Directions

For proper use of this product carefully follow these directions. Once the EAL is assembled, secure the device to a round door knob handle. When securing the device, it is important that the handle point in the direction of the door hinges (see figure 2.0). Otherwise, it will be difficult to grasp, and it would not have enough space to work properly.

Place the adjustable clamp on the door knob handle. Tighten the device with the adjustable screw on the clamp, using a screwdriver (see figure 2.1). Screw the object until it is secure. It is essential that the clamp be tight, so the EAL can work correctly. The protruding end of the handle should be closest to the user, so it can be easily grasped (see figure 2.2).

The EAL will accommodate round door knobs up to 2 ¼" in diameter. Most residential door knobs are of this size. This product may not be compatible with commercial grade round door knobs because they have a larger diameter. If the product would be primarily used in a commercial setting, then a larger adjustable clamp could be used. However, the creator of the device could not find a larger hose clamp at any hardware store. More research into this problem should be done, if one is using a larger round door handle.

**Appendix: Photos
Taken By: Sean Siebert**



Figure 1.1: Adjustable Hose Clamp, Non Slip Grip Kitchen Mat, 3/16 Drill Bit, Single Track Shelf Bracket, Flathead Screwdriver, machine screws w/ nuts, and washers



Figure 1.2: Adjustable Hose Clamp, Single Track Shelf Bracket, Machine Screws w/ nuts, and Washers



Figure 1.3: Drilled Holes in Single Track Shelf Bracket

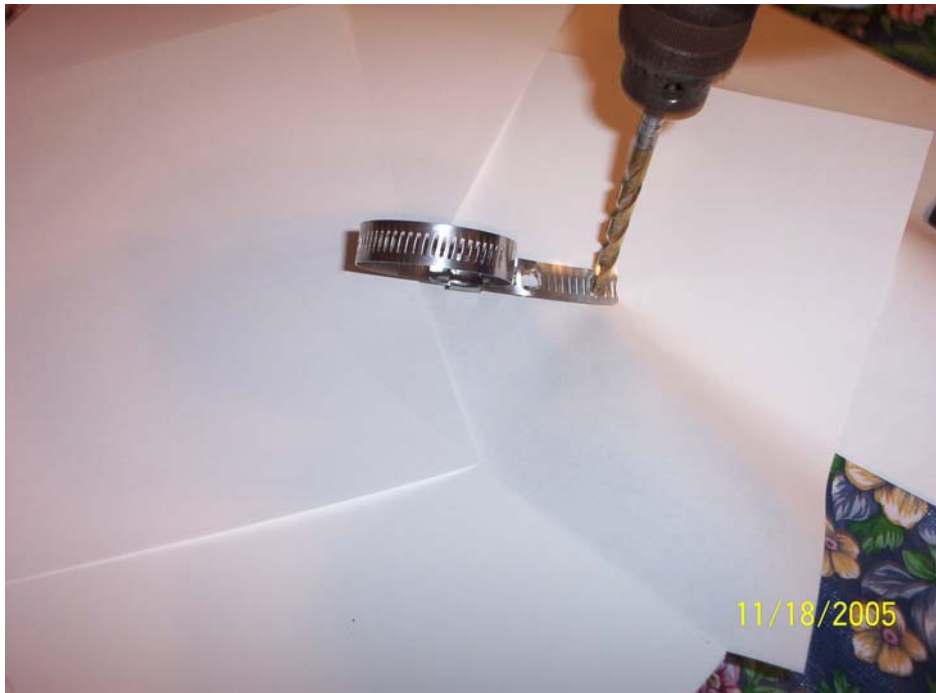


Figure 1.4: Extended Portion of Adjustable Hose Clamp



Figure 1.7: Screwing Machine Screws in Bracket and on Adjustable Hose Clamp



Figure 1.8: Attaching Mat With Clear Duct Tape



Figure 1.9: Securing Each End of the Mat With Duct Tape



Figure 2.0: Handle Points in Direction of Door Hinges



Figure 2.1: Securing Clamp to Door Handle with Screwdriver



Figure 2.2: Protruding Part of Lever is Within Grasp of User

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