

15.0 Selecting Tools

The following is a list of the tools that can be used. Don't worry you don't need them all because the list includes some optional tools.

Concise list of pretty essential tools

- Hammer
- Driver/drill, battery (cordless) or cord operated. Spare battery.
- Driver bits (Philips, square head, or star)
- Skill saw
- Tape measure
- Screw driver, for flat head screws
- Lights, flashlight, head light, LED
- Extension cords
- Parts and tool carrier

- Wrenches or drivers for hex nuts 3/8" and maybe 5/16"
- Ratchet socket wrench

List of optional tools

- Jig for holding horizontal braces up
- Pneumatic nailer(s)
- Fan
- Knee pad
- Cell phone or cordless phone
- Water bottle

Discussions about tools and their use:

Fastening tools: A hammer is the cheapest if for no other reason than you probably already have one. An electric drill/screw driver is another tool that almost every one owns. A battery-powered (cordless) drill/screw driver is also a tool many people have. The issue with a cordless drill is the capacity of its batteries. Most homeowner cordless drills do not have batteries with enough staying power to allow continuous work in attics. A pneumatic nailer is a tool that few people have and it requires dealing with dragging a trailing hose behind you and having a compressor. Some nailers made especially to drive 1-1/4" long nails into straps do not have the ability to drive the 3" long nails required for fastening Horizontal Braces, Retrofit Studs, and Compression Blocks.

Hammer: A hammer can cause damage to brittle or fragile wall or ceiling finishes. Pneumatic nailers impose less impact. Screw drivers impose practically no impact. Using a hammer to drive nails into the bottom of an overhead Horizontal Brace is not easy because you are trying to do it over your head in an attic. Starting a couple nails before lifting a Horizontal Brace overhead does make the task easier. Read about the Horizontal Brace jig later on in this section. You will probably want to keep a hammer nearby if for no other reason than to bend straps and optionally drive nails.

Pneumatic nailers: Pneumatic nailers are unquestionably the fastest tools. Their disadvantages are the cost of the nailers, hoses and compressor, and having to deal with a compressor hose in an attic. Two lengths of fasteners are used in this retrofit work: 1-1/4" ones used to secure straps and 3" ones to secure lumber to lumber (Horizontal Braces to framing members, Retrofit Studs to Existing Studs, and Compression Blocks to Horizontal Braces). Pneumatic nailers are great tools for both lengths. For the 1-1/4" nails used in straps it would be best to have a nailer that is designed for use with metal connectors because they facilitate lining up nails with holes in connectors. Some of these nailers do not drive longer nails such as the 10d 3" long (0.148" diameter) ones needed.

Drill/screw driver, battery or cord operated: Table 4 and the discussion below it may have helped you decide whether you want to use nails or screws. The discussion immediately below further describes the issues involved.

Battery (cordless) driver/drill: If you choose to use a cordless driver/drill, choose one with two good batteries with staying power to drive screws for several hours of work. Such a driver/drill can be costly, well over \$100. The drill does not need to be that powerful, but you will tax the batteries and need to have ones that charge fairly quickly so charging time does not hold you up. Ordinary battery-powered screw drivers simply won't hold a charge long enough to be efficient to use. If your battery screw driver cannot hold a charge for very long and does not recharge fast enough you can use a combination of corded and cordless screw drivers. Battery screw drivers in the less than \$150 range and lower simply are not up to the task of driving screw after screw especially when the screws are 3" long. However, for some people a good driver/drill's advantages may be more than offset by its cost and may provide the excuse one has been looking for to purchase such a handy tool. The battery voltage

should be 14 volts minimum and 18 is better. As of this writing lithium batteries are regarded as the best.

Corded electric drill: Practically any cord operated electric drill can serve the purpose quite well. However, you have to route extension cords to where you will be working and keep them untangled from things in the attic and your body to be sure you don't trip on them. A disadvantage of some corded drills is the lack of a clutch.

Tips for screw drivers: Even magnetic screw drivers tips can fall out so and you could lose them in if they fall into insulation. Screw driver tips tend to chip or dull, especially Phillips drives, and tips tend to develop rounded edges, especially Phillips ones making them ineffective at driving. For these reasons having a half a dozen spares in the attic with you is a good idea. They cost less than \$1.50 apiece so keep them on hand. Again, square head and star head screws tend to cause fewer problems.

Other Tools:

Skill saw: An electric or cordless power saw is a necessity. A battery one is handier because you won't have to fight extension cords, but a line powered one will cut faster. The cost of a battery saw is probably not justified. The saw is necessary to cut Retrofit Studs to length. Compression Blocks can be cut out of the attic and most will end up being droppings from Retrofit Studs. Their length is not critical just so they are long enough.

Tape measure: A tape measure with tape that is less than 3/4" wide tends to be so flimsy that it is not handy to use. You don't need a long tape measure. A 12' or 16' one is long enough.

Screw driver, flat: A medium sized screw driver for flat head screws is handy for prying up staples that hold wires the may be in the way of placing Horizontal Braces on the framing of the attic floor.

Lights: In the attic you will want some general illumination and some focused light where you are installing fasteners. Because you will be working against the gable end wall your body will tend to create shadows exactly over the area where you will be installing nails or screws. Light coming from a couple of sides really makes fighting shadows less of a problem. There are a number of different kinds of lights that can be used none of which have clear advantages over the others. Halogen lights with clamps provide very good lighting but get very hot and are a potential fire hazard should they come into contact with combustibles. Because of the fire hazard it is recommended that halogen light fixtures always be turned off or disconnected when leaving the attic. This discussion is not to discourage you from using halogen fixtures because they do provide excellent lighting. But you must take precautions with halogen lighting. Fluorescent power line operated or battery operated lights provide good illumination if a bit on the dull side. Line powered ones tend to be fragile. Incandescent bulbs (100 watt) mounted in shrouds with clamps provide good illumination, but the bulbs are subject to

burning out when bumped and the clamps tend to not be very secure. If you choose to use incandescent bulbs, then keep spares in the attic. Experience has shown that bulbs made for high shock use are simply bulbs designed to work at lower temperatures which is a disadvantage to you because they don't produce as much light.

Flashlights of the ordinary kind are not too helpful for working. Most require a hand to keep them in position, provide general illumination and have very limited battery life. This is not to say that a flashlight is not handy to have in an attic especially when attempting to view one's immediate work area. Halogen or high intensity flashlights as they are sometimes called are excellent for investigating things in an attic like roof leaks or the existence of straps or hurricane ties at eaves. They are heavy, bulky and don't hold a charge long.

Headlamps provide light where you need it. Most people prefer the LED types, and some like to use LED lights that come on a head band. They provide direct light focused on where one is working, do not require a hand, batteries last long enough to work, they are light weight and relatively inexpensive (\$20 range). Buy one that has several LEDs in it so you get enough illumination to be effective. An advantage of such a light is that even though you may have flood lights of some sort broadcasting light from a couple of directions you can still be working in a shadow that your body creates. They are not good for providing lighting in other than in immediate work areas so general illumination is still necessary.

In summary experienced gable end retrofitters we know prefer one or two incandescent clamp on light fixtures and a LED head band light.

Extension cord: Likely you will need an extension cord for lights, a saw and possibly a drill and a fan. If using more than one of these, you will want a 3-way plug for the cord and probably a branch cord.

Tools for Wall-to-Wall connections: If the wall below is concrete or concrete block, then you will appreciate having a hammer drill. To install the Simpson brand of HGAMs in concrete you will need to drive 5/16" hex head bolts, Tapcon-like concrete screws. If you install USP brand of HGAMs in concrete you will need to drive 3/8" hex head bolts. If you install either brand of HGA or HGAMs you will need a 3/8" hex head driver for the 1/4" diameter hex wood screws. One way to drive is with a socket for a cordless drill. In addition, you may need a socket wrench to drive screws that are not accessible with a cordless drill. When applying HGA or HGAM connectors onto the truss plates, you will probably need a 3/16" drill bit for metal to make a starting hole in the plate.

Tool and parts carrier: A compartmentalized parts tray can be helpful to store nearly everything you need. Having nearly everything in one container makes transporting materials much easier. As the figures show, the carrier is attached to a 1/2" piece of plywood that is long enough to bridge ceiling joists or truss bottom chords. You can secure the carrier to the plywood a few short screws through the bottom of carrier into the plywood. The carrier in Figure 15.1 was made with cleats to help prevent it from

sliding off faming members. They are spaced 26-1/2" apart which is the typical maximum framing spacing of 24" plus the 1-1/2" thickness of a framing member plus another inch to spare. The plywood needs to be wide enough so the carrier does not tip over easily. This one is 7-1/2" although 9" would have made it a bit more stable from tipping sideways. A five gallon bucket also works OK. The parts carrier will be much handier than a tool belt most of the time for most people.



Figure 15.1. This shows the tool carrier with its skid. Who cares if it sags?

Tool/parts belt or pouch: Some people will find a tool belt difficult to use in the attic because it can catch on truss members, and its contents of screws or nails may dump out as a result of the frequent crouching you will be doing during installation.. If the attic is high this may not present problems and a tool belt may be handy. Because not many different kinds of tools that are necessary, a tool belt will likely be used primarily to hold fasteners.

Jig for Horizontal Brace: If you are going to be working alone, and have more than a dozen or so studs to retrofit, you may find it worthwhile to make a jig (Figure 15.2). It is made from 16 gauge strap and a Simpson H6 or a USP LFTA6, so it will require a vice and ideally some flat vice grips to make sharp right angle turns. All these materials are available at most home supply stores and lumber suppliers to contractors. The rounded end was formed over a quarter inch diameter drill bit. After it was shaped, the excess

end that slips under roof sheathing was cut off with a hacksaw and beveled to give it a wedge shape. You should budget about an hour to fabricate the jig. A hole was drilled to tack it in place in case the space between the sheathing and the rafter was loose. With plywood and OSB decking we have found that the bracket consistently stays in place.



Figure 15.2. On the left the jig is shown support the Horizontal Brace under the rafter. By hitting the jig with a hammer it is wedged between the roof sheathing and the top of the rafter. The left figure shows the jig that was fabricated from a twist strap like the one shown, a Simpson H6 or a USP LFTA6. The wedge part of the jig is about 3/4" long.

Fan: A fan can circulate air in the attic. It does not need to be powerful enough to clear the attic of hot air. Just circulating the air in the general vicinity of the work area makes a big difference. A box fan has the advantage of being able to span framing members thus making its positioning easy, and it can move air over a large area.

Knee board: When it comes to making the wall-to-wall connection, a knee board can help spare some stress on your knees and provides a place to rest tools and parts. It can be a piece of 1/2" or 5/8" plywood about 12" or wider. It should be long enough to span framing members but not so long as to be cumbersome to position. A good length is 30". Adding a 1x2 cleat across the short face of the bottom near each end will minimize the chances that the board will slip off framing members. A Cadillac version would have some padding on the top surface. A hole for gripping it would be handy.

Cell phone or cordless phone: A cell phone or cordless phone allows you to call for help without leaving the attic.

Nippers or wire cutters (optional): When pushing a retrofit stud against gable siding, nippers or wire cutters capable of cutting nails may be handy to cut off nails that missed the existing studs. This is not an essential tool. Usually, a hammer is a sufficient tool to knock nails out of the way.

Heavy duty snips or hacksaw (optional): If you use a heavy gauge coil strap, a hacksaw can be used to score the face of the strap making it easier to bend and snap off.

Step stool or ladder: For high attics you will need some way to reach up to fasten horizontal braces, strap and compression blocks.

Magnet: Having a small magnet might be worthwhile to have access to help find something dropped into blown insulation.