

General Installation Requirements

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Tools for Cutting and Fastening

> Hardie Trim<sup>®</sup> Boards/Battens

## **General Product Information**

### JOBSITE STORAGE OF JAMES HARDIE® PRODUCTS

The James Hardie family of siding and trim products, including James Hardie<sup>®</sup> products with ColorPlus<sup>®</sup> Technology, should be stored in their original packaging in a garage, shed, or in some other covered area protected from weather whenever possible. These products must be kept covered on a pallet off of the ground; they must never be stored in direct contact with the ground.



James Hardie products stored in their original packaging.

If James Hardie products are stored outside they should be protected with an additional waterproof covering. All scrap siding and trim pieces, cutoffs or material left on scaffolding must be covered and protected from the elements. If James Hardie products become saturated, they must be laid on a flat surface and allowed to dry completely prior to installation.



If stored outside protect with an additional waterproof covering.

### IMPORTANCE OF KEEPING JAMES HARDIE PRODUCTS DRY

James Hardie siding and trim products must be kept dry at all times prior to installation. If products become saturated before they are installed, the following problems may occur:

### **OPEN JOINTS DUE TO SHRINKAGE**

If installed wet, joints between planks may open up requiring repair or replacement. However, shrinkage of fibercement is significant only if the product becomes saturated prior to installation. Under normal environmental conditions fiber cement has significantly greater dimensional stability than wood or vinyl-based exterior products.

### DIFFICULTY IN HANDLING

Saturation increases the weight and flexibility of fiber-cement products, making them difficult to handle.

### STAINING

Staining is a deposit of soluble salts, usually white in color, which sometimes appears on the surface of masonry or concrete construction.



James Hardie is not responsible for damage due to improper storage and handling of its products.

HardiePanel<sup>®</sup> Vertical Siding

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### **PROPER HANDLING OF JAMES HARDIE® PRODUCTS**

To help avoid injury and product damage, lap siding, trim and soffit material should always be carried on edge. James Hardie recommends that these products be carried by two people whenever possible with each person positioned near the end of the load. To carry a plank solo, a person should hold it on edge in the middle with arms spread apart for maximum support of the product. Lifting or carrying lap siding or trim flat may break or bend the product.

James Hardie recommends that two people always carry panel products. Workers should hold the panel near each end and on edge. Because of reduced visibility when handling panel products, take extra care to avoid damaging the corners and edges of the panel.



One person should hold planks on edge in the middle with arms spread apart for maximum support of the product



Two people should always carry panel products.

**TIP:** When handling panel products, manufactured panel carriers or caddies can give workers better control.



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### **Working Safely with James Hardie® Products**

### MINIMIZE AND MANAGE SILICA DUST

Silica (SiO2) is the second most common mineral in the earth's crust, and it's a common ingredient in many building products, including James Hardie<sup>®</sup> fiber-cement materials. Intact, these products do not pose a silica risk. However, when cut, drilled or abraded during installation, the resulting smaller, silica-containing dust can pose a potential health hazard as inhalation of excessive quantities over an extended period can cause silicosis, lung-cancer or other lung-related diseases, potentially leading to death.

To protect workers from potential health effects, OSHA established and enforces a permissible exposure limit (PEL) for respirable silica set effectively at 0.100 mg/m3. This PEL is an 8-hr. time-weighted average and is measured with special industrial hygiene equipment. Any exposure above this level requires that the installer take additional protective measures that might include a documented respirator program and medical monitoring.

James Hardie always encourages installers to take every possible precaution to minimize dust exposure levels. In any situation, properly-fitted NIOSH approved respirators (e.g. N95) can be used in conjunction with the proper tools and cutting methods to further limit silica dust exposures and to provide a safer workplace.

If additional concern regarding dust exposure levels exists, or if there is concern about exceeding OSHA's PEL, or if the conditions of your jobsite do not allow you to conform to recommended practices, please contact James Hardie at 1-888-JHARDIE (542-7343), or consult with a qualified industrial hygienist (IH). A directory of independent IH consultants can be found at www.aiha.org.

### WORK SAFE: FOLLOW JAMES HARDIE PRODUCT CUTTING INSTRUCTIONS

To create and maintain safer jobsites, James Hardie has developed the following "tiered" system to help select the best tools and methods for any given job. *Note:* For maximum protection (i.e. the lowest respirable dust exposures), James Hardie recommends using "Best" cutting methods and tools whenever possible. Please contact James Hardie or consult with a qualified industrial hygienist if unable to adhere to the recommended cutting instructions.

Rating	Tools	Cutting Method	Cutting Volume	Ventilation
Best	or	Handheld Shears, Platform Shears, Score and Snap	No Limitations	Indoor/Outdoor
Better	and the second s	Dust-reducing saws with HardieBlade <sup>®</sup> saw blade coupled with HEPA vacuum extrac- tion	No Limitations	Outdoor
Good	and white the second se	Dust-reducing saws with HardieBlade saw blade	Low to Moderate	Outdoor

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### **CUTTING STATION SET UP**

Set up all cutting tables or workstations in well-ventilated outdoor areas so that any generated dust is carried safely away from workers. If an area with adequate ventilation is not available, a NIOSH approved respirator should be used.

### **CLEAN UP AND DISPOSAL OF DEBRIS**

When cleaning up dust and debris from cutting James Hardie<sup>®</sup> products, never use a broom or brush if the debris material is dry. Sweeping



dry material may send dust particles into the user's breathing area. Instead, wet down the debris with a fine mist to suppress dust during sweeping, or use a HEPA vacuum. Waste pieces of James Hardie siding and trim products can be disposed of in landfills according to local ordinances. No special handling is required.

Never use high-speed power tools when cutting James Hardie products indoors.



Prior to using any James Hardie products, all users must read all applicable warnings (including MSDS) and comply with all installation instructions. Failure to do so may result in serious personal injury.

#### WARNING: AVOID BREATHING SILICA DUST

James Hardie® products contain respirable crystalline silica, which is known to the State of California to cause cancer and is considered by IARC and NIOSH to be a cause of cancer from some occupational sources. Breathing excessive amounts of respirable silica dust can also cause a disabling and potentially fatal lung disease called silicosis, and has been linked with other diseases. Some studies suggest smoking may increase these risks. During installation or handling: (1) work in outdoor areas with ample ventilation; (2) use fiber cement shears for cutting or, where not feasible, use a HardieBlade™ saw blade and dust-reducing circular saw attached to a HEPA vacuum; (3) warn others in the immediate area; (4) wear a properly-fitted, NIOSH-approved dust mask or respirator (e.g. N-95) in accordance with applicable government regulations and manufacturer instructions to further limit respirable silica exposures. During clean-up, use HEPA vacuums or wet cleanup methods-never dry sweep. For further information, refer to our installation instructions and Material Safety Data Sheet available at www.jameshardie.com or by calling 1-800-9HARDIE (1-800-942-7343). FAILURE TO ADHERE TO OUR WARNINGS, MSDS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

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### **General Installation Requirements**

### FRAMING AND SHEATHING

James Hardie<sup>®</sup> siding and trim products can be installed over braced wood or steel studs spaced at a maximum of 24 in. on center or directly to <sup>7</sup>/<sub>16</sub>-in. thick OSB or equivalent sheathing. These products can also be installed over solid-foam insulation board up to 1-in. thick.

Irregularities and unevenness in framing, sheathing, foam and other wall assembly components, including under driven nails, can telegraph through to the finished siding and trim. These irregularities should be corrected before the siding is installed.



3.1

Braced stud wall

Water-resistive barrier

#### WATER-RESISTIVE BARRIER

Prior to siding, make sure the water-resistive barrier is properly installed according to the manufacturers' instructions.

#### **STAGING**

Heavy building products and components such as roofing, drywall and floor coverings should be stored throughout the structure prior to the installation of the siding. Distributing the weight in this manner will reduce the possibility of floor plate compression on two or more story homes.

### FLASHING

When using James Hardie siding and trim products, make sure that roof flashing, water table flashing, window and door flashing, and flashing for other building envelope penetrations are properly installed and lapped so that moisture drains down and to the exterior. Note: The successful installation of flashing requires thorough planning before installation of roofing or siding. Scheduling and sequencing are important factors as well as having the correct flashings available on site at the correct time. James Hardie does not recommend the use of mill finished, raw aluminum flashing or any other product that may bleed or adversely react with cement products. Painted or coated aluminum flashings are recommended.

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### **ROOF-TO-WALL FLASHING**

Because of the volume of water that can run down a sloped roof, one of the most critical flashing details is where a roof intersects with a sidewall. Install a selfhealing adhesive-backed membrane along the roof/wall intersection before flashing. Membrane on the wall should extend behind the eaves framing, and should be installed before the subfascia or trim goes on.

The roof should then be flashed to the wall with step flashing positioned at every shingle course. Where the roof begins at its lowest point, install a kickout flashing to deflect water away from the siding. Kickout flashing can be made by cutting and bending a piece of step flashing at an angle. The water-resistive barrier on the wall should then lap over the step flashing.



#### GUTTERS

If gutters are installed, they should not terminate against siding or trim. Maintain a 1-in. clearance between the siding and the gutter end-cap. Kickout flashings should be installed on the roof above to divert roof runoff into the gutters and away from the 1-in. gap.



TIP:

James Hardie recommends the use of rain gutters whenever possible.

### PENETRATIONS

For penetrations in the building envelope such as hose bibs and holes 1 1/2" diameter or larger, such as dryer vents, a block of HardieTrim<sup>®</sup> 5/4, 4/4 boards should be installed around the point of penetration. To install a block around an existing vent pipe, it may be necessary to cut the block into two pieces. In this case, weather-cut the trim to fit it into place. Install flashing over the top of the trim block.



HardieShingle<sup>®</sup> Siding

HardiePanel<sup>®</sup> Vertical Siding

### **VALLEY FLASHING**

For added protection at roof valleys, James Hardie requires one of the following options:

**1. Rain gutters** <u>are</u> **present:** As the roof is being shingled, have the roofer extend the shingles at least 1 in. out from the fascia to direct water directly into the gutters (figure 3.V-A).

**2. Rain gutters** <u>not</u> **present:** When rain gutters are not present, have the roofer extend the valley flashing at least 2 in. out from the corner to direct water further away from the building (figure 3.V-B).

**3.** If the roof is already flashed and shingled, add a short piece of flashing to extend the valley in compliance with figure 3.V-B.

#### TIP:

James Hardie recommends the use of rain gutters whenever possible.

### **BUTTING TO MORTAR OR MASONRY**

James Hardie<sup>®</sup> siding and trim products should not be butted directly against mortar or masonry, including stone, brick or concrete block. In these situations, a flashing should be installed to isolate the trim or siding from the mortar or masonry.





#### **CLEARANCES**

James Hardie specifies clearances to ensure the long-term durability of their products and the buildings on which they are installed. Failure to provide the proper clearances, as specified below, may affect performance of the building system, violate building codes or James Hardie requirements, and may void any warranty on the products.

#### SIDING TO GROUND CLEARANCE

James Hardie products must be installed with a minimum of 6-in. clearance to the ground on the exterior of the building. Clearances greater than 6-in. may be required in accordance with local building codes. Foundations are typically required to extend above the adjacent finished grade a minimum of 6-in. or as required by local building codes.



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### SIDING TO FLASHING CLEARANCE

A <sup>1</sup>/<sub>4</sub>-in. clearance must be maintained between James Hardie<sup>®</sup> siding and trim products and any horizontal flashing.



### SIDING AND TRIM TO SOLID SURFACES

A clearance of 2 in. must be maintained between James Hardie siding and trim products and roofs, decks, paths, steps, driveways or any other solid surfaces.



### CLEARANCES FOR SHELTERED AREAS

Porches or other structures that maintain a minimum 1:1 ratio of the wall height to the overhang length provide extra protection, which keeps rain and other weather elements away from the siding. These areas may be designated as Sheltered Areas. In these areas, a minimum 1/2-in. clearance is required with appropriate flashing between the bottom of James Hardie trim or siding and solid horizontal surfaces.



James Hardie siding and trim products must not be installed such that they remain in contact with standing water.





Examples of details that can help improve the aesthetics of clearance requirments. Check with a design professional and local building officials to ensure that the chosen details are correct for their intended purpose and location.





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### **General Fastener Requirements**

Each product section of the James Hardie Installation Guide contains fastener requirements for that specific product. In general if siding is to be installed over a non-structural sheathing such as foam, gypsum or builder board, increase the length of the fastener by the thickness of that sheathing.

For siding installation over a framed wall with structural sheathing such as plywood or OSB, the fastener length does not need to be increased. For example, if a  $1^{1}/_{4}$ -in. fastener would normally be required for an application, but the siding is being installed over  $1^{1}/_{2}$ -in. foam sheathing, increase the fastener length by  $1^{1}/_{2}$ -in. for  $1^{3}/_{4}$  fastener length.



When installing siding over foam sheathing, care must be taken not to overdrive the nails and compress the foam. The resulting unevenness in the wall could distort the siding and give the wall an unsightly wavy appearance.

### PNEUMATIC FASTENING

James Hardie<sup>®</sup> siding and trim products can be hand-nailed, but fastening with a pneumatic nailer is recommended for speed and consistency. Nails should be driven snug or flush with the surface of the siding.

For pneumatic nailing, set the air pressure so that the nails are driven to the proper depth. A flush mount attachment on the head of the nailer is recommended. If setting the nail depth proves difficult, choose a setting that slightly under-drives the nails. Then drive any under-driven nails snug to the surface with a smooth-faced hammer.

If nails are driven too deep, countersink them with a nail set, fill the space above the nail head with caulk, and drive another nail near by to the proper depth. Never use staples to attach James Hardie products.

**TIP:** Stainless steel fasteners are recommended when installing James Hardie products.





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### Finishing

### FINISHING JAMES HARDIE<sup>®</sup> SIDING AND TRIM PRODUCTS

For best results when painting factory-primed James Hardie<sup>®</sup> siding and trim products, use high-quality exteriorgrade acrylic topcoats. For best results with unprimed James Hardie siding and trim products, prime first with exterior-grade acrylic primer, and then finish with high-quality exterior-grade acrylic topcoats. Two finish coats of paint are recommended.

Use primers and topcoats that are designed and recommended for cement-based building materials such as fibercement, masonry, brick or stucco.



Finish factory primed James Hardie siding and trim products within 180 days of installation. Finish unprimed James Hardie siding products within 90 days of installation.



The use of oil-based paints on unprimed fiber cement could result in increased surface roughness, loss of adhesion, cracking or excessive chalking.

Do not use stain on James Hardie products.

Never apply paint to saturated product.

### **COLORPLUS® TOUCH-UP**

Nicks, scrapes and nail holes may occur during the installation of James Hardie siding and trim products with ColorPlus<sup>®</sup> Technology. Touch-up pens and edge coaters with matching colors are available at ColorPlus product dealers.

Touch-up pens should be used sparingly. If any area larger than a dime requires touch-up, replace the damaged siding with a new section of ColorPlus plank or panel.

Edge coating is required for any cuts made in ColorPlus products. Edge coating seals the cut edges of the board as well as making joints and seams in the boards less visible. ColorPlus edge finishes can be applied with James Hardie Edge Coater.





Note: Edge Coaters or Touch-up Pens should not be used to touch-up any area that is larger than a dime.



Do not allow ColorPlus touch-up paint to freeze. Apply touch-up paint when temperature of the air and the siding products is above 50°F (10°C).

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High pressure water blasts (e.g. pressure washers) and sand blasting will damage the surface of fiber-cement. James Hardie does not recommend these methods of cleaning. Low pressure water spray, or a medium bristle (nonmetal) brush are more suitable for cleaning fiber cement products.

\*Refer to your paint manufacturer for washing and recoating requirements related to paint performance. James Hardie Products with ColorPlus Technology can be cleaned using water and a soft brush or rag. For stubborn dirt or stains, a mild detergent and a soft brush may be used.

HARDIETRIM<sup>®</sup> 5/4, 4/4 BOARDS PROTECTIVE LAMINATE SHEET

When installing HardieTrim<sup>®</sup> 5/4, 4/4 boards with ColorPlus<sup>®</sup> Technology, leave the protective laminate sheet on the plank during cutting and installation. To install HardieTrim 5/4, 4/4 boards with ColorPlus Technology, first fasten the trim using a finish nailer with the nails driven through the laminate sheet. Using a touch-up pen that matches the color of the trim, cover up the nail heads through the laminate sheet at the point of entry. After the nailing and touch-up are complete, remove the protective laminate sheet.



### CAULK

James Hardie recommends the use of caulks and sealants that remain permanently flexible. Look for the words "permanently flexible" written clearly on the label or in the accompanying literature.

For best results use an Elastomeric Joint Sealant complying with ASTM C920 Grade NS, Class 25 or higher, or a Latex Joint Sealant complying with ASTM C834. Caulking/sealant must be applied in accordance with the caulking/ sealant manufacturer's written instructions or ASTM C1193.

James Hardie does not warrant and does not accept liability for the appearance or the performance of field-applied caulks and sealants.

### **REPAIR PATCHING**

Dents, chips, cracks and other minor surface damage in James Hardie siding and trim products can be filled with cementitious patching compound.

### BACK PRIMING/BACK SEALING

James Hardie does not require any of its siding products to be back sealed or back primed prior to installation in the field.

### MAINTENANCE

### General

The extent and nature of maintenance will depend on the geographical location and exposure of the building. As a guide, it is recommended that normal maintenance tasks shall include but not be limited to:

- Washing down the exterior surfaces every 6 to 12 months with a garden hose or low pressure water spray to dirt and debris.\*
- Re-applying of exterior finishes.\*
- Maintaining the exterior envelope and connections including joints, penetrations, flashings, and sealants (caulking) that may provide a means of moisture entry beyond the exterior cladding.
- Cleaning out gutters, blocked pipes, and overflows as required.
- Pruning back vegetation that is touching the building. Clearance between the siding and shrubs is recommended.
- Ensuring required external ground clearances and drainage slopes are maintained.



### **Tools for Cutting and Fastening Fiber-Cement Products**

James Hardie promotes certain tools and products for the safest and best way to cut their fiber-cement products, consistent with its best practice recommendations (please refer to page 6-7). However, please consult tool manufacturer instructions and guidelines for the safe operation of specific tools. The tools listed here are not made for, or by, James Hardie Building Products, Inc. and James Hardie accepts no liability for their use or misuse.

### **SHEARS**

Because shears produce less dust than high-speed tools, they are the preferred method of cutting lap siding and panel siding products. Both electric and pneumatic shears are available, and they may be used for cutting indoors as well as outdoors. Shears are available that can make straight or radius cuts in fiber cement products with relative ease. Shears cannot be used to cut HardieTrim® boards.

> TIP: When cutting James Hardie<sup>®</sup> siding products with a shear or circular saw, cut the board face down for the smoothest cuts. When using a miter saw, cut the board face up. If installing James Hardie siding products with ColorPlus® Technology, leave the protective laminate film in place while cutting.

### **CIRCULAR SAWS**

When cutting any James Hardie siding, soffit or trim product with a circular saw, use only tools that are designed specifically for dust reduction. A dust-reducing circular saw has either a deflector to direct any dust away from the user's breathing area or a collection box to capture the dust. James Hardie recommends that a HEPA-equipped vacuum system be used in conjunction with any circular saw. (Circular saws should only be used in outdoor, wellventilated areas.)

The HardieBlade® saw blade is specifically designed to cut fiber cement products while minimizing the amount of respirable silica dust. Never use continuous-edge diamond blades, abrasive discs, or high tooth count circular saw blades when cutting James Hardie siding products. ONLY blades with the HardieBlade saw blade trademark should be used when cutting.

> Always make sure the saw manufacturer's safety equipment is in place and in good working order.









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### **Tools for Cutting and Fastening Fiber-Cement Products**

### HEPA VACUUMS

Always use a vacuum equipped with a HEPA filter to help minimize the amount of respirable dust during power saw cutting and clean-up. Many vacuums are designed to connect directly to power tools and run only when the power tool is being operated. In addition to a HEPA filter, using a disposable drywall or collection bag is recommended to extend the life of the HEPA filter and make disposal easier and safer.





**Caution:** Tools and blades designed to reduce breathable silica do not always result in safe levels by themselves. Many other factors can influence dust exposure including jobsite ventilation, the amount of material being cut and breathing protection being used. If uncertain about exposure or protection in a specific situation, always consult a qualified industrial hygienist to determine actual exposure levels.

### **POWER MITER SAWS**

Like circular saws, power miter saw should only be operated outdoors in wellventilated areas. Power miter saws should be equipped with a HardieBlade<sup>®</sup> saw blade and should be used in conjunction with a vacuum equipped HEPA filter for maximum dust protection.



Never use high-speed power tools when cutting James Hardie<sup>®</sup> products indoors.



### SAW BLADES

Traditional blades that are not designed for cutting James Hardie products may generate excessive dust, cut slowly or exhibit premature wear. The HardieBlade<sup>®</sup> saw blade is a unique circular saw blade designed to generate less respirable dust than a traditional saw blade or continuous rim diamond blade. The HardieBlade can also be used to cut the full line of James Hardie products and are available in 7 <sup>1</sup>/<sub>4</sub>-in., 10-in. and 12-in diameters. To extend the life of a HardieBlade saw blade, do not use it to cut any materials other than fiber cement.



#### **JIG SAWS**

Jig saws equipped with a fiber-cement cutting blade may be used to cut service openings, curves, radii, scrollwork, and other irregular shapes in James Hardie<sup>®</sup> products. Because most jig saws are not equipped with dust collection capabilities, these tools also should only be used outdoors in well-ventilated areas and for limited amounts of cutting.



### **POWER NAILERS AND DIRECT-TO-STEEL FASTENING TOOLS**

Pneumatic nailers and cordless nailers can be used to attach James Hardie products to wood, steel or masonry substrates. Pneumatic tools require the use of an air compressor with a hose. Finish nailers should be used for HardieTrim® 5/4, 4/4 boards only. Additionally direct-to-steel tools such as those made by ET&F are designed specifically for fastening to steel framing. Refer to the product-specific installation instructions in each section for fastener choices.

Power nailers recommended for attaching James Hardie products are siding nailers, roofing nailers and finish nailers. Below is a chart showing the appropriate nailer for each of the James Hardie siding and trim products. Be sure that the nailer chosen fires the fastener recommended for each product for the specific installment situation.

#### PNEUMATIC NAILER USAGE WITH JAMES HARDIE® PRODUCTS

Siding Guns



HardiePlank® Lap Siding HardiePanel® Vertical Siding HardieShingle® Panels HardieSoffit® Panels

#### Roofing Guns



HardiePlank<sup>®</sup> Lap Siding HardiePanel<sup>®</sup> Vertical Siding HardieShingle<sup>®</sup> Panels

Finish Guns



HardieTrim 5/4, 4/4 boards

**TIP:** If framing nailers are used to install James Hardie products, be sure they are fitted with a flush mount attachment to control nail seating depth.

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### NAIL GUNS AND ET&F GUNS

Pneumatic nail guns can be used to attach James Hardie products to wood, steel or masonry substrates. Finish nail guns can be used for HardieTrim<sup>®</sup> 5/4, 4/4 broad only. Refer to the product specific installation instructions for fastener choices. Below are examples of commonly used nail guns.

**Hitachi** (www.hitachi.com)\* (NT65A2) 2<sup>1</sup>/2" 16 guage Finish Nailer (NV65AH) 2<sup>1</sup>/2" Siding Nailer (NV45AB2H) 1<sup>3</sup>/4" Coil Roofing Nailer (NV75AG) 3" Coil Nailer

**Duo-Fast** (www.duo-fast.com)\* (CNP-65Y) Siding Coil Nailer **Dewalt** (www.dewalt.com)\* (DC616KA<sup>†</sup>) 1<sup>1</sup>/4"- 2<sup>1</sup>/2" Heavy Duty XRP Finish Nailer

**Porter Cable** (www.portercable.com)\* (COIL250) 2<sup>1</sup>/2" Coil Nailer **ET&F Fastening Systems** (www.etf-fastening.com)\* (500) Nailer to Steel Studs (510) Nailer to Steel Studs (610) Nailer to Steel Studs (110) Finish Nailer to Steel Studs





NV65AH

CNP-65Y

**USEFUL HAND TOOLS** 

Smooth-faced hammer

25-ft. contractors tape measure



NT65A2

ET&F 510

installation of James Hardie<sup>®</sup> siding and trim products.

In addition to the power tools listed above, certain hand tools are necessary for the

NV45AB2H

610 ET&F



NV75AG

110 ET&F



DC616KA<sup>†</sup>



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Leg

Speed square4-ft. or longer level

That list includes:

Torpedo levelPencil or pen

**TIP:** If hand nailing, use a smooth faced hammer. Waffleheaded hammers should not be used when hand nailing James Hardie siding and trim products.

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