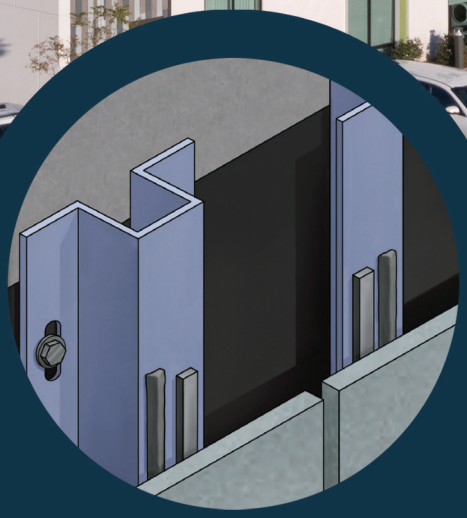
AMERICAN FIBER CEMENT

Standard Installation Guidelines

ARCHITECTURAL PANELS



Adhesive Hidden Attachment

DYNAMIC BONDING SYSTEMS

AIA Continuing Education Provider

DYNAMIC BONDING SYSTEMS

These guidelines represent an abbreviated illustration for proper installation of AFC Surface (formerly Cembrit Cover), AFC Stone (formerly Cembrit Patina), AFC Core (formerly Cembrit Solid), AFC Matte (formerly Cembrit Transparent), and AFC Rustic (formerly Cembrit Deco) architectural panels in a ventilated rainscreen application. Additional guidelines for interior applications, hidden adhesive attachment, sealing, and weather barrier attachment can be found at **americanfibercement.com**.

Note: The online copy of the Installation Guidelines obtained at americanfibercement.com supersedes any printed copy.

The following products may be attached using these instructions:

- AFC Stone
- AFC Core
- AFC Surface
- AFC Matte
- AFC Blast

Dynamic Bond

- For panels up to 1250 mm by 3050 mm (48″ by 120″).
- Based on MS-hybrid-polymers, one component.
- Cures by humidity.
- Dynamic Bond is isocyanates- and solvent free.
- High-quality product with KOMO certificate.
- Fire class B-s1,d0 according to EN 13501-1.
- Can be used throughout the year.

Working Details and Design

This bonding system is designed for ventilated façade constructions. An air cavity between the exterior wall to the back of the panel is required.

Metal Substructure

Panel Run	Air Cavity
0 – 60 ft	min. 25 mm (1″)
> 60 ft	Use mechanical fasteners and see AFC Standard Installation Guidelines

Wood Substructure

Panel Run	Air Cavity
0 – 15 ft	min. 19 mm (¾″)
15 – 60 ft	min. 25 mm (1″)

- This prevents large temperature ranges from occurring between the front and back of the panels.
- A lower temperature difference retains the thermal insulating capacity.
- The ventilation created from the air space evaporates condensation and moisture.
- These instructions should be applied in conjunction with AFC's Standard Installation Guidelines.
- Do not apply metal trim or flashing pieces directly against the façade panel.
- The beginning and end of panel runs must also incorporate 19mm (¾″) ventilation openings.

Horizontal (Soffit & Ceiling) Applications

For horizontal applications, such as ceilings or canopies, the maximum on center fastening distance is 400mm (16″). While following these installation guidelines, it's necessary to temporarily support the panels until the adhesive is cured. Air flow openings are also required just as they are on wall applications.

Interior Applications

For interior applications, many requirements for exterior setups are not required. See page 9. Follow all other instructions listed on pages 4 through 10.

Exterior Applications

Follow instructions listed on pages 4 through 10.

Instruction for Dynamic Bond Use with Fiber Cement Cladding

Maximum Panel Size

The elastic properties of Dynamic Bond prevent possible deformation of the façade panels due to thermal expansion. This means that façade panels with a maximum diagonal can be bonded with Dynamic Bond. The maximum panel size is 1250 mm by 3050 mm (48″ by 120″).

Open Joint Size

Standard joint width is 10 mm (⅜″).

Supporting Wall Structure

The construction of the supporting wall structure is an essential element when bonding façade cladding. This supporting structure is often executed in steel, aluminum, or wood and should be tested to valid national guidelines. Fixing structures need to be installed according to manufacturer's and supplier's instructions.

- Determine the exact dimensions of the façade surface with regard to gridlines and levels.
- Check the supporting wall structure (concrete: pressure or tension zone, or brickwork).

Metal (Steel or Aluminum) Supporting Structure

- Attach the supporting point and sliding point upright to each other.
- The vertical elements, Z or Hat profiles are connected which sustain the cladding slabs. Note: one fixed point and multiple sliding points by means of screws through slotted holes per length.
- The minimum width of the bonding leg is 32mm (1¼″).
- Steel profiles must be a minimum of 16-gauge, and Aluminum profiles must be a minimum of 2 mm (0.079″) thick.
- Check the supporting structures regarding flatness and strength.
- The support center distance depends on the bending strength of the panel, thickness, and the panel manufacturer's instructions. See the Dynamic Bonding Systems KOMO Certificate for adhesive strength data. The maximum allowed support spacing is 16″.
- For thin panels that will only be applied onto one vertical element, contact American Fiber Cement.
- The number of fixing points per area of the supporting structure is determined by the weight of the façade panel and the calculated wind load/ tension to the façade panels.
- Bonding of the panel directly onto the aluminum should only be performed after the Dynamic Clean has fully evaporated (5 –10 minutes).

Note: If the metal profiles are provided with a coating, it should be determined if the coating is the weakest part of the construction. Bonding of the panels is, therefore, not possible. If the metal profiles are powder coated, an adhesion test should be performed to determine if the bond between the coating and the metal is strong enough.

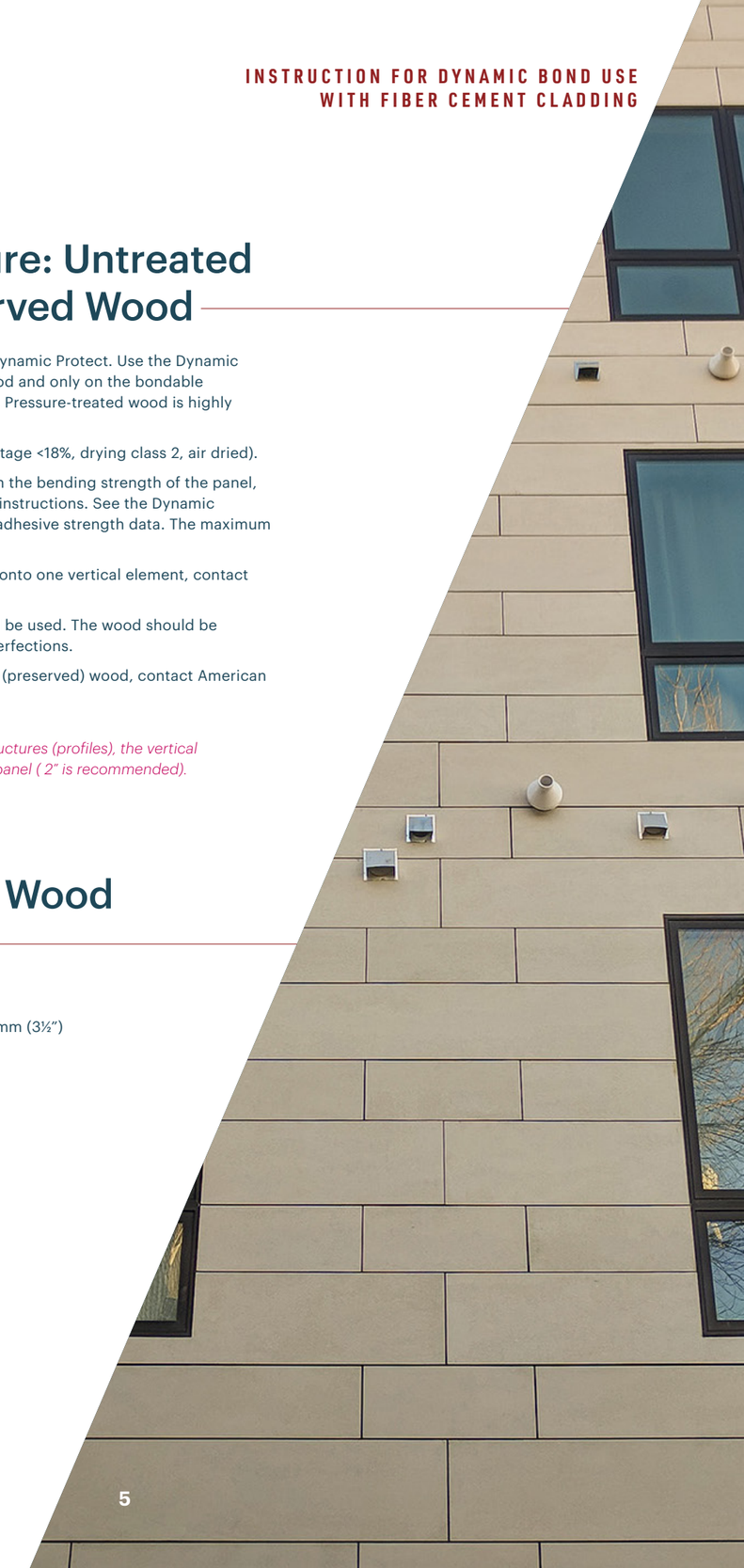
Supporting Structure: Untreated Pinewood or Preserved Wood

- When bonding onto wood, always use Dynamic Protect. Use the Dynamic Protect all around for untreated pinewood and only on the bondable side when using pressure-treated wood. Pressure-treated wood is highly recommended.
- The wood must be dry (humidity percentage <18%, drying class 2, air dried).
- The support center distance depends on the bending strength of the panel, thickness and the panel manufacturer's instructions. See the Dynamic Bonding Systems KOMO Certificate for adhesive strength data. The maximum allowed support spacing is 16″.
- For thin panels that will only be applied onto one vertical element, contact American Fiber Cement.
- Economy-grade lumber or better should be used. The wood should be smooth with relatively little surface imperfections.
- For bonding onto other various types of (preserved) wood, contact American Fiber Cement.

Note: For both metal and wood supporting structures (profiles), the vertical profiles must be 1.5″– 6″ from the edge of the panel (2″ is recommended).

Required Width for Wood Supporting Beams

- Vertical battens: min. 38mm (1½″)
- When joint profiles applicable: min. 89 mm (3½″)



Application Bonding System

- **Necessary Materials**
  - Dynamic Bond® — Super strong, one component, elastic adhesive on hybrid-polymer base.
  - Dynamic Clean® — Universal cleaner and degreaser.
  - Dynamic Tape® — Double-sided self-adhesive foam tape for the first (temporary) bonding of the cladding.
  - Dynamic Protect® — Preserving material for (impregnated) wood.
  - Dynamic SI Epoxy® — Impregnation for fiber cement panels.

Product	Length Coverage | m/(ft)	Area Coverage | m²/(ft²)	Notes
Area Coverage Dynamic Bond 310 ml cartridge	5.8/(19)	1.9/(20)	based on V-9 x 9 mm
Notes Dynamic Bond 600 ml aluminum sausage	11.6/(38)	3.8/(40)	based on V-9 x 9 mm
Dynamic Clean 500 ml aerosol	-	18/(193)	-
Dynamic Clean 5 Liter can	-	180/(1935)	-
Dynamic Tape roll	25/(82)	7.2/(77)	cross section: 12 x 3 mm
Dynamic SI Epoxy 1 kg can	83/(272)	7.7/(83)	based on 100 mm SI surface
Dynamic Protect 1 Liter can	230/(754)	23.5/(253)	based on layer 19 x 45 mm

Note: Quantities are based on a center distance of 406 mm (16") and vertically oriented 1250 mm x 3050 mm (48"x 120") panels. More or less may be required depending on the panel layout and on center spacing.

Working Conditions

Recommended working temperature of the Dynamic Bond system is between +5°C (41°F) and +40°C (104°F). The bondable surfaces must be clean, dry, and free from dust and grease. During the bonding process, the relative humidity is maximum 90%, and the substrate temperature must be 3°C (5.4°F) higher than the dew point. In the event of diverging conditions, we advise you to contact Dynamic Bonding Systems.

Aluminum and Steel Supporting Structure

On anodized or mill finish aluminum and G90 galvanized steel, Dynamic Bond can be bonded directly to the metal surface after using Dynamic Clean.

- The surfaces to be bonded must be dry, dust-free, and grease-free. Use Dynamic Clean.
- Cover the front of the metal base construction with Dynamic Clean and wipe off in one direction using a paper tissue or a clean lint-free cloth.
- Allow the Dynamic Clean to evaporate fully for 10 minutes.
- Ensure that the bondable surface is protected against dirt.

Pressure treated wood or untreated pinewood supporting structure

- In case of an exterior application, the untreated pinewood has to be protected all around with Dynamic Protect.
- Pressure-treated wood has to be pre-treated on the bondable side with Dynamic Protect.
- The vertical frame construction must be dry (wood moisture percentage <18%, drying class 2 (NEN-EN 5461), air dried) and free from dust and grease.
- For the application of Dynamic Protect, use a clean, fine-structure paint roller. Shake Dynamic Protect thoroughly before use.
- Apply Dynamic Protect in just one thin, full-cover layer. n Do not use Dynamic Protect on painted wood, multiplex, aluminum, or other types of metal.
- Dynamic Protect is not an adhesion primer and can be pre-processed after the drying time of 2 hours.

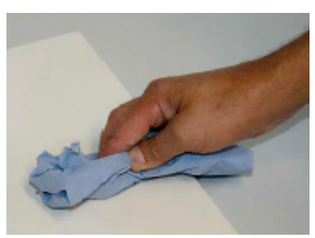
Pre-treatment of AFC panels

STEP 1: Sand the panel well with 80-grit only on the bondable area.

- The panel must be dry, clean, and free from dust and grease. Use Dynamic Clean (P) to achieve this.

STEP 2: Degreasing panels with Dynamic Clean

- Ensure the panel is dry, clean, and free from dust and grease.
- Cover the back of the façade panel with Dynamic Clean and wipe off in one direction using a paper tissue or a clean cloth.
- Let the Dynamic Clean fully evaporate for 10 minutes.
- Make sure the bondable surface is protected against dirt.
- Dynamic Clean is not an aggressive degreaser, and using it has no negative effect on the panels.



Pre-treatment of AFC panels (continued)

STEP 3: Pre-treatment of Fiber Cement Panels with Dynamic SI Epoxy

- For optimum results, pre-treatment with Dynamic SI Epoxy is necessary. Before treatment, the façade panel must be clean, dry, and free from grease. To achieve this, use Dynamic Clean.
- Mix both components, component A (resin) and component B, (hardener) well for minimum 2 minutes with a stirrer or by shaking. Do not add water or other supplements. The mixture will get warm to the touch as the components are mixed. Note: always use the full content of the packages.
- Apply Dynamic SI Epoxy vertically to the bondable area with a fine structure paint roller or brush in one thin but full cover layer of ±10cm wide. *Note: the SI epoxy should never be applied to the entire backside of the panel.*
- Apply and process the Dynamic SI Epoxy within 30 minutes.
- Ensure that the treated adhesive surface is fully protected against dirt.

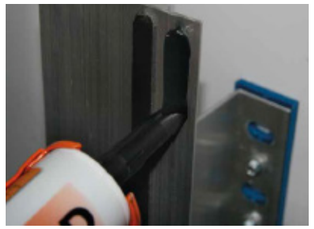
Note: Bonding of the panels is only possible after the prescribed drying time of minimum 12 hours.

Application of Dynamic Tape

- Dynamic Tape provides the first adhesion of the panel and guarantees the minimum required glue bead thickness of 3mm.
- Apply the Dynamic Tape after the Dynamic Clean is evaporated or the Dynamic Protect has fully dried.
- Position the Dynamic Tape vertically in an unbroken strip on the vertical wooden or metal frame. Then press down the Dynamic Tape firmly and cut.

Apply Glue Bead

- To obtain the prescribed width/thickness of minimum 12 mm x 3 mm, use the supplied V-nozzle. The V-shape is necessary to prevent air bubbles from being trapped and guarantees the calculated output.
- Then cut open the cartridge or sausage, fit the nozzle and apply the glue bead.
- Apply the adhesive at least 7mm (¼") away from the Dynamic Tape in an unbroken required V-shape bead.



Attach Panels

- After the prescribed drying time of Dynamic SI Epoxy, the façade panel can be applied.
- Press the cleaned side of the panel slowly against the adhesive to enable possible correction. Press down the panel firmly when it is correctly positioned so that the façade panel makes good contact with the Dynamic Tape.
- Place the façade panel within 10 minutes, otherwise, a skin will form on the adhesive.
- Use 10mm (⅜") spacers when attaching adjacent panels to create the correct sized open joint.

Dynamic Bond Interior Applications

For interior applications, high-density fiber cement does not need to be installed in a ventilated rainscreen system. An airspace behind the fiber cement panels is not required. Weather barriers are also not required. Depending on the wall construction, American Fiber Cement can be installed in one of the following ways using the Dynamic Bond hidden attachment system supplied by AFC.

Note: Dynamic Bonding Systems installation instructions must be followed. For interior applications, portions of the instructions do not need to be followed and are listed below.

Plywood Sheathing

- Sheathing thickness must be ½" or greater to fasten the panels directly to the sheathing.
- Apply Dynamic Protect onto the plywood sheathing in horizontal or vertical rows spaced 16" on center or less.
- The Dynamic Protect must be applied where the Dynamic Bond glue bead strips will be run.
- Follow the Dynamic Bond Installation Instructions.
  - Dynamic Clean and Dynamic Tape must be used.
  - Dynamic SI Epoxy does not need to be applied to the back of the fiber cement board for the AFC Core, Surface, or Matte but is required for AFC Stone, Groove, Blast, Rustic, and Minerit product lines.

Steel/Wood Studs with Interior Sheathing

- Fasten horizontal metal strapping spaced at 16"–24"o.c. into the studs.
  - Metal strapping min. thickness is 18-gauge for steel and 1.5 mm for aluminum
- Use Dynamic Bond to fasten the panels onto the horizontal strapping. Follow the Dynamic Bond Installation Instructions.
  - Dynamic Clean and Dynamic Tape must be used.
  - Dynamic SI Epoxy does not need to be applied to the back of the fiber cement board for the AFC Core, Surface, or Matte but is required for AFC Stone, Groove, Blast, Rustic, and Minerit product lines.

Masonry Wall

- Apply Dynamic SI Epoxy onto the Masonry wall in horizontal or vertical rows spaced 16" on center or less. The Dynamic SI Epoxy must be applied where the
- Dynamic Bond glue bead strips will be run.

  Follow the Dynamic Bond Installation Instructions.
  - Dynamic Clean and Dynamic Tape must be used.
  - Dynamic SI Epoxy does not need to be applied to the back of the fiber cement board for the AFC Core, Surface, or Matte but is required for AFC Stone, Groove, Blast, Rustic, and Minerit product lines.

Concrete Masonry Unit (CMU)

- Fasten vertical or horizontal metal strapping spaced at 16" o.c. into the CMU.
  - Metal strapping min. thickness is 18-gauge for steel and 1.5mm for aluminum
- Use Dynamic Bond to fasten the panels onto the horizontal strapping. Follow the Dynamic Bond Installation Instructions.
  - Dynamic Clean and Dynamic Tape must be used.

For interior applications, Dynamic SI Epoxy does not need to be applied to the back of the fiber cement board for the AFC Core, Surface, or Matte but is required for AFC Stone, Groove, Blast, Rustic, and Minerit product lines.

Guarantee

Dynamic Bonding System guarantees that the Dynamic Bond bonding system meets the technical specifications as described in the relevant technical information sheets.

Primary conditions

- The applier must meet and follow the instructions for use from Dynamic Bonding Systems and the guidelines from the panel manufacturer.
- The products are only used as a system (Dynamic Bond, Dynamic Tape, Dynamic Clean, Dynamic Protect, Dynamic SI Epoxy).
- Contact American Fiber Cement for any technical assistance and always ask for a written confirmation if the application deviates from the guidelines.

Dynamic Bond Product Information

	Dynamic Bond	Dynamic Tape	Dynamic Clean	Dynamic Protect	Dynamic SI Epoxy
Base	One component, Hybrid MS-Polymer	Double sided self-adhesive tape	Cleaner and degreaser	Mixture for the treatment of (preserved) wood	2-component surface improver
Type of surface	Fiber Cement	Every surface	Every surface	(Preserved) wood	Fiber Cement
Working temperature	+5°C to +40°C (+41°F to +104°F)	+5°C to +40°C (+41°F to +104°F)	+5°C to +40°C (+41°F to +104°F)	+5°C to +40°C (+41°F to +104°F)	+5°C to +40°C (+41°F to +104°F)
Drying time	Ca. 3-4 mm per 24 hours	N.A.	10 minutes to evaporate	2 hours	12 hours
Condition of the surface	Clean, dry and free of grease	Clean, dry and free of grease	N.A.	Clean, dry and free of grease	Clean, dry and free of grease
Packaging	310 mL car-tridge or 600 mL sausage	Roll 25 meter (12 x 3mm)	Aerosol 500 mL or 5L can	Can 1L	Can 1 kg
Shelf life	18 months *	18 months *	18 months *	12 months *	12 months *
Details	Open time is 10 minutes	None	None	Wood moisture percentage < 18%	Open time is 30 minutes

** In original, closed and undamaged packaging stored at a cool and dry place.*

Product Sustainability Statement

AFC is committed to providing the highest quality high-density compressed fiber cement panels to the U.S. and Canadian building markets. In order to do this, we feel it necessary to provide not only high-quality products, but sustainable products that can contribute to green (LEED) building projects, which in turn benefit the environment we all live in. AFC products currently have a potential contribution to various LEED credits including but not limited to:

Direct Contribution
Materials and Resources:
- Environmental Product Declarations
- Material Ingredients
- Building Life-cycle Impact Reduction

Indirect Contribution
Indoor Environmental Quality:
- Thermal Comfort

Energy and Atmosphere:
- Optimize Energy Performance

One of the most important sustainable attributes is the durability of AFC panels. With their long lifespan, virtually requiring no refurbishment, AFC panels can contribute to less replacement of materials and to drastically lower maintenance costs over the useful life of the building.

The Ventilated and Insulated Rainscreen Cladding (VIRSC) system, which is used to affix AFC panels to the exterior of a structure, offers many benefits and green attributes to the performance of the building envelope. Durability and resistance to moisture and mold build-up are noteworthy benefits. Equally important is its ability to accommodate external insulation.

In addition, AFC is dedicated to further research and analysis of our products to achieve additional LEED credits, and help further the cause of building sustainable and efficient buildings.

Warranty information available upon request.

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For the nearest authorized fabricator, call 303.972.5107.

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Limited Warranty

American Fiber Cement (AFC) warrants that its products are manufactured in accordance with its applicable material specifications and are free from defects in materials and workmanship using AFC's specifications as a standard. Only products which are installed and used in accordance with applicable AFC instructions and specifications are in any way warranted by AFC. This warranty is applicable only to claims made in writing and received by AFC within thirty (30) days after the defect was discovered and within ten (10) years after the date of the shipment of the product by AFC. All other claims are waived. If a claim is made, you must allow reasonable investigation of the product you claim is defective and you must supply samples that adequately demonstrate the problem you claim for testing by AFC.

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Limitation of Liability

This limited warranty is your sole and exclusive remedy. It is expressly understood and agreed that the limit of liability will be, at AFC's option, repair, resupply of a like quantity of non-defective product, or refund of purchase price of the material. All labor and service charges which may be incurred with respect to either the original or replacement product are excluded. AFC shall have no liability except where the claim results solely from breach of AFC's limited warranty.

AFC SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES. FURTHERMORE, AFC SHALL NOT BE LIABLE FOR DAMAGE TO THE PROPERTY TO WHICH THE PRODUCT IS APPLIED OR ITS CONTENTS, LOSS OF TIME, PROFITS, OR ANY INCONVENIENCE ARISING OUT OF ANY BREACH OF THIS LIMITED WARRANTY OR OBLIGATIONS UNDER THIS LIMITED WARRANTY. AFC SHALL NOT BE LIABLE FOR ANY DAMAGES WHICH ARE BASED UPON NEGLIGENCE, BREACH OF WARRANTY, STRICT LIABILITY, OR ANY OTHER THEORY EXCEPT THE LIMITED WARRANTY SET FORTH ABOVE. INCIDENTAL AND CONSEQUENTIAL DAMAGES SHALL NOT BE RECOVERABLE EVEN IF THE REPLACEMENT REMEDY FAILS OF ITS PURPOSE OR FOR ANY OTHER REASON.

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