

NUCOR BUILDING SYSTEMS

VR16 II

SEAMING MANUAL

FOR FIELD USE

PLEASE DISTRIBUTE TO THE ERECTION CREW

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**DUE TO THE PROCESS OF CONTINUOUS IMPROVEMENT, THE
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CHANGE WITHOUT NOTICE**

MANUAL REVISION INFORMATION			
ACTIVITY	ADD. RELEASE #	PAGES REVISED	REVISION DATE
Most Recent	#3	8	2/22/2012
Previous Revisions	#2	Entire Manual	10/5/2010
	#2	1,2,5 & 8	1/28/2010
	#1	Entire Manual	2/27/2009

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1.0 GENERAL

1.1 PURPOSE OF THIS MANUAL

This installation manual is provided to Nucor Builders and their erectors as the recommended procedure for the correct seaming of the Nucor Building Systems (NBS) “VR16-II”™ Roof System.

This manual is intended to be used in conjunction with the “VR16-II”™ Erection Manual and the project’s erection drawings to help plan and organize the installation of the NBS “VR16-II”™ Roof System. The erection drawings govern specific seam requirements. **In the case of conflict between this manual and the erection drawings, the erection drawings will take precedence.**

1.2 BUYER’S RESPONSIBILITY

The buyer must take the responsibility for selecting a competent erector, insist that the work be performed by qualified and experienced standing seam metal roof installers, and insist that the erector take time to study and understand this manual, then assure that the erector correctly follows the manual’s instructions.

NBS does not guarantee and is not liable for the quality of erection. NBS is not responsible for building defects that may be attributed to improper erection or the negligence of other parties.

Clarification concerning the NBS “VR16-II”™ roof installation and seaming should be directed to the **QUALITY SERVICE REPRESENTATIVE** or the Customer Service Manager at the NBS plant. The following is a list of addresses and phone numbers for the Quality Service Representative at each NBS division:

WATERLOO, IN

305 Industrial Parkway
Waterloo, IN 46793
Phone: 260-837-7891
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SWANSEA, SC

200 Whetstone Road
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Fax: 435-919-3101

1.3 MBMA

This building is designed, manufactured, and delivered in accordance with the **2006 M.B.M.A. METAL BUILDING SYSTEMS MANUAL. CONSULT THE INFORMATION IN THE “COMMON INDUSTRY PRACTICES” SECTION.**

1.4 DISCLAIMER

THE PRODUCTS AND PROCEDURES IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE

1.5 RECEIVING AND SHIPPING

Upon receipt of the seaming kit, and before the signing the shipping receipt, check and verify that the seaming kit is received in good condition, without damage or loss of contents. **See section 2.0 for a list of kit contents.**

If there is damage or loss of contents, immediately file the claim with the shipper and notify NBS for replacement instructions.

Upon completion of roof seaming, promptly return the seaming kit, in accordance with the instructions on the return shipping documents. The return shipping documents are included in the seaming kit.

1.0 GENERAL**1.6 HANDLING AND STORAGE**

Provide safe and secure handling of the seaming tools when in use.

The Motorized Seaming Machine weighs 65lbs., and can cause severe damage and injury if it falls.

The machine is too heavy to safely carry up a ladder. Always hoist the machine onto the roof with proper lifting equipment and securely tied to the eye bolt on the machine.

When starting and stopping the seaming machine at the edges of the roof, the operator must be securely positioned so they can safely lift the machine on and off of the seam.

CAUTION: When running the machine in the down slope direction, the machine will have greater downhill inertia and coasting distance.

When not locked to the seam, the Motorized Seaming Machine can **freely** roll on its wheels. Always secure the machine to prevent it from rolling or sliding off of the roof.

When the seaming tools are not in use, they must be stored in the seaming kit chest and in a safe and dry area. The seaming tools must be cleaned and dried before storing.

1.7 INSURANCE

The NBS “VR16-II”™ seaming tools are custom built specialized equipment and are costly to replace. Provide adequate insurance coverage on the seaming tools while they are in your possession.

1.8 POWER SUPPLY

The seaming machine motor requires a minimum electrical power supply of: 20 amps @ 120 volt @ 60 Hz. AC.

1.9 ELECTRICAL SERVICE AND CORDS

The electrical service and cords to the seaming machine must be of sufficient

capacity to provide the full 20 amp @ 120 volts **AT THE SEAMING MACHINE.** If other tools or equipment are being used on the same service, the service and cord capacity must be increased accordingly

IMPORTANT NOTE: LOW VOLTAGE DUE TO INSUFFICIENT SERVICE CAPACITY, INSUFFICIENT CORD SIZE OR EXCESSIVE CORD LENGTH WILL CAUSE OVERHEATING AND BURNOUT OF THE SEAMING MACHINE’S MOTOR.

Cord Requirements for proper voltage chart

Distance (Ft.)	0-50	50-100	100-200	200-300
Wire Gauge(AWG)	12	10	8	6

1.10 ELECTRICAL SAFETY AND CORD CLEARANCE

Check that the power cords are fitted with the correct plug for safe and secure connection to the seaming machine. Check that the power cords are properly grounded and that the service has a ground fault circuit breaker.

Check that the electrical cord is of sufficient length to extend the full length of the area to be seamed, without stress on the cord or its connections. Check that the path for the cord is clear and that the cord is clear of snagging on panel edges or entanglement onto the seaming machine rolls.

1.11 ROOF PERFORMANCE

The roof panels must be correctly installed and seamed before the roof system can provide its designed wind load and weather resistance capability. This means that an un-seamed roof is subject to wind load failure and weather resistance failure. **The erector shall be responsible to ensure that the proper seaming method is followed (“Nucor Vise Lock”™ &/ or “Nucor Vise Lock 360”™).**

2.0**SEAMING KIT****2.0 SEAMING KIT****2.1 SPECIALIZED SEAMING TOOLS**

The seaming of the NBS “VR16-II”™ roof panels requires special seaming tools that are available only from NBS.

CAUTION: THE USE OF ANY OTHER SEAMING EQUIPMENT WILL RESULT IN FAULTY AND/OR DAMAGED SEAMS AND SHALL INVALIDATE THE ROOF SYSTEM'S MATERIAL AND WEATHERTIGHTNESS WARRANTIES.

2.2 SEAMING TOOL SOURCE

The seaming tools are provided by NBS in accordance with the terms and conditions of the NBS contract documents. Contact the NBS Quality Service Department to arrange the scheduling, delivery and return of the seaming tools.

The seaming equipment will normally be provided as a seaming kit. The seaming kit will include the following:

- Seaming Kit Chest (contains and protects the seaming tools during shipment and storage).
- Manual Crimping Tool (for “Nucor Vise Lock”™ or “Nucor Vise Lock 360”™)
- Motorized Seaming Machine (provided for “Nucor Vise Lock”™ seaming applications).
- Seaming Instructions Manual
- Return Shipping Documents
- Misc. Wrenches
- Replacement fiber backer rollers and cam rollers



Shipping Container

2.3Manual Hand Crimper
("Vise Lock" Seam)**2 Station Manual Hand Crimper.**

- Phase 1 Block forms a “Nucor Vise Lock™” Seam.
- Phase 2 Block forms a “Nucor Vise Lock 360™” Seam.

Sent with the “Nucor Vise Lock 360™” Seamer



Bi-directional Motorized Seaming Machine- for Painted or Galvalume Roofs. Produces a “Nucor Vise Lock™” Seam

Seaming Kit Con't

Single Directional Motorized Seaming Machine For Painted or Galvalume Roofs. Produces a “Nucor Vise Lock 360”™ Seam in one pass.



Optional Stand-up Clip Seamer that produces a “Nucor Vise Lock”™ Seam. Can be ordered with the building or separately.

3.0 IMPORTANCE OF SEAMING**3.0 IMPORTANCE OF SEAMING & HAND CRIMPING****3.1 MOTORIZED PANEL SEAMING**

Whenever possible, the installed roof panels must be seamed prior to leaving the roof un-attended and /or at the completion of each day's work. If high winds or rain/snow conditions are imminent, the installed roof panels **must be** seamed before such conditions occur.

CAUTION: Un-seamed roof panels cannot provide their designed wind load and weather resistance.

3.2 HAND CRIMPING THE PANEL SEAM

Hand crimping at ALL roof clips, low eave, high eave and end laps is required during panel installation to **temporarily** secure the panels. The installed roof panels must be mechanically seamed prior to leaving the roof un-attended.

ONLY hand crimp panel into a Vise Lock 360 seam at the low eave prior to running the motorized seaming machine.

Erector Notes:

The roof seam profile is complete only after the entire roof has been mechanically seamed.

If your building has a Nucor Vise Lock 360™ seam, **do not** seam/crimp 16” up from the low eave panel. If the seam has been formed into a VL 360™ seam, the gutter bracket **will not** fit up properly. (See Sec. 16.3 of the VR16 II Erection Manual)

If your building has Horizontal Gutter, it is correct to seam the entire length of the seam. (Horizontal Gutter does not attach to the seams)

4.0**SEAM TYPES****4 SEAM TYPES****4.1 GENERAL**

The NBS "VR16-II"™ roof system is designed for the "Nucor Vise Lock"™ and "Nucor Vise Lock 360"™ seam types.

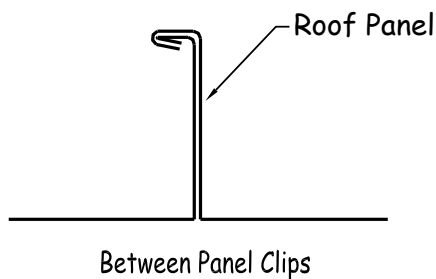
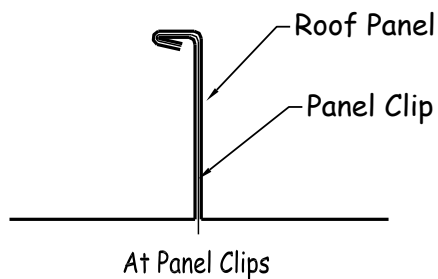
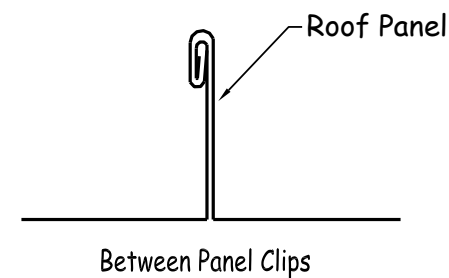
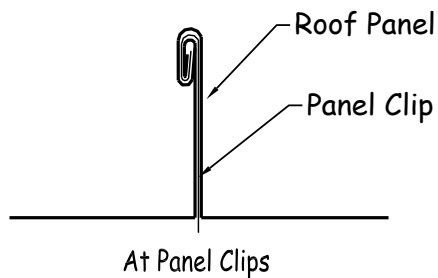
4.2 "NUCOR VISE LOCK"™ SEAM

The "Nucor Vise Lock"™ seam requires hand crimping the roof panel with the manual seaming tool at the starting eave or ridge end of the panels, and at the end laps. Once the hand crimping has been completed, then seam the full length of the roof panels with the Motorized Seaming Machine.

4.3 "NUCOR VISE LOCK 360"™ SEAM

The "Nucor Vise Lock 360"™ seam is achieved by running the single directional seamer over the entire roof. The erector must first hand crimp entire roof panel into the "Nucor Vise Lock"™ seam with the manual seaming tool (as outlined in section 4.2). Before the seamer is locked on, the low end of the panel must be hand crimped into a "Nucor Vise Lock 360"™ seam, utilizing the hand crimper that is supplied in the seamer kit. This will enable you to lock the seamer onto the panel seam. Then seam the full length of the roof panel.

SEE BELOW FOR THE DETAIL OF THE "NUCOR VISE LOCK"™ and "NUCOR VISE LOCK 360"™ SEAM TYPES.

"NUCOR VISE LOCK"™ SEAM**"NUCOR VISE LOCK 360"™ SEAM**

5.0 CHECK PANEL ASSEMBLY

5 ASSEMBLY

5.1 SIDE LAP FIT-UP

Before seaming, inspect the full length of each roof panel side lap. Check that the two panels are properly hand crimped at all clip locations, low eave, high eave and end laps. Any conditions where the panel **is not** crimped properly *must be* corrected before attempting to seam the roof panels.

CAUTION: Un-seamed roof panels cannot provide their designed wind load and weather resistance.

5.2 CLIP ALIGNMENT

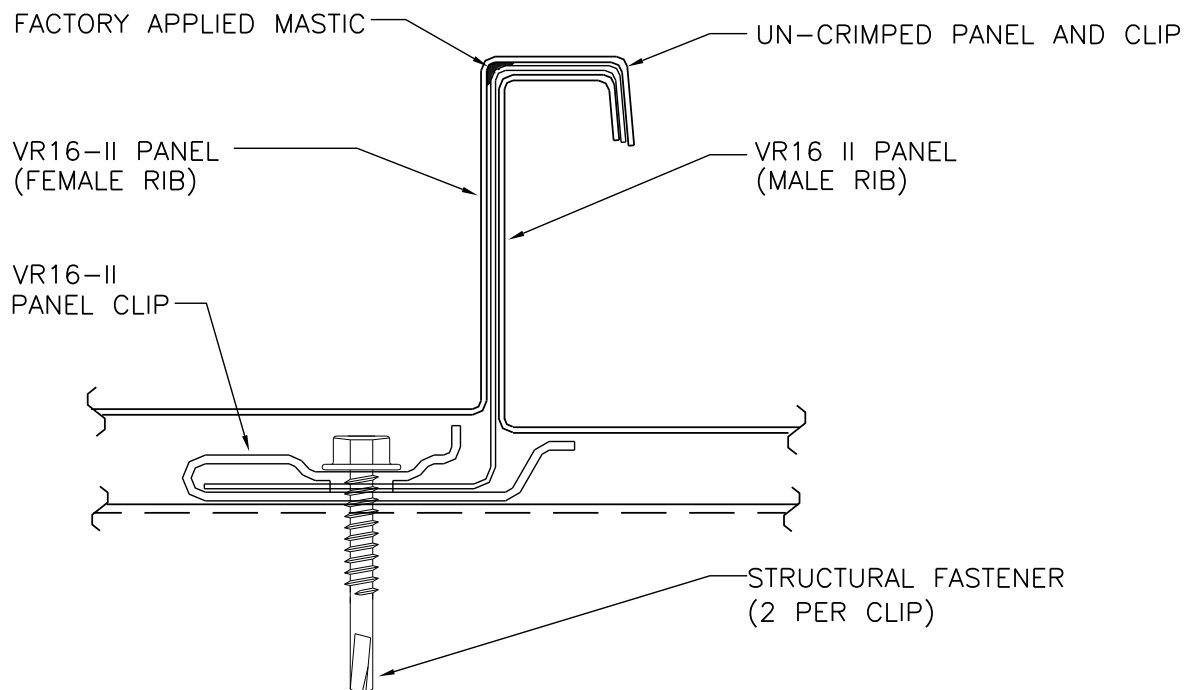
Before seaming, check that each roof panel clip is properly seated in the roof side lap assembly. Any displaced clips must be corrected before attempting to seam the roof panels.

CAUTION: Panel clips that are not properly aligned can cause faulty seaming and objectionable seam appearance.

5.3 SEAM DAMAGE

Before seaming, check that the male and female edges do not have kinks or other distortions. Any such distortions **must be** corrected *before* attempting to seam the roof panels.

CHECKING THE PANEL ASSEMBLY



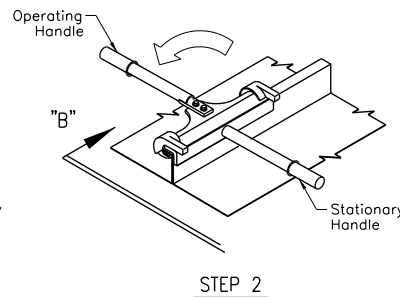
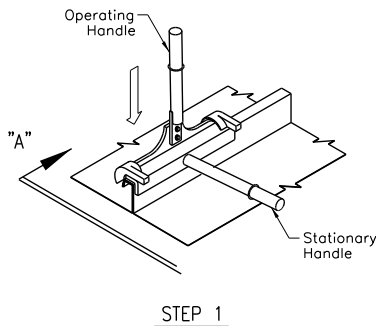
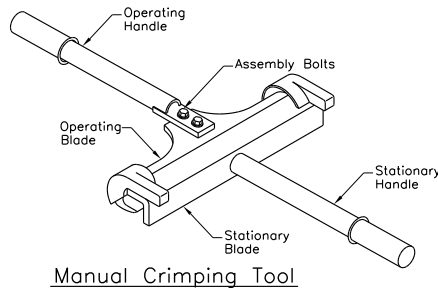
6.0 MANUAL CRIMPING TOOL OPERATION**6 MANUAL CRIMPING TOOL OPERATION FOR "NUCOR VISE LOCK"™ SEAM****6.1 MANUAL CRIMPING TOOL NOMENCLATURE**

Below identifies the operational parts of the manual crimping tool.

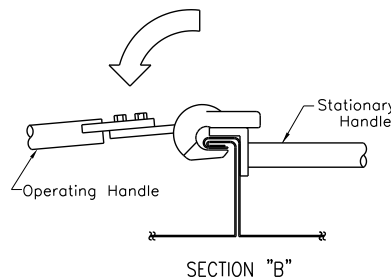
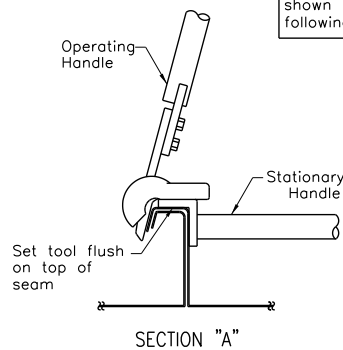
This hand crimper manually forms the "Nucor Vise Lock"™ seam.

6.2 ASSEMBLE THE SEAMING TOOL

When received, the manual crimping tool may be disassembled. Assemble the handle to the tool body with the provided bolts.



NOTE: A Short-Handled Manual Crimping Tool is shown here and on the following pages for Clarity.

**6.3 TOOL ORIENTATION TO SEAM**

Orient the tool to fit correctly onto the roof panel seam as shown in **Section "A"** below. The stationary handle must be in the horizontal position and the operating handle must be rotated up to the open or vertical position.

6.4 FORMING THE SEAM

When the tool is correctly positioned on the panel, push the stationary blade solidly against the top of the seam. While holding the stationary handle in the horizontal position, rotate the operating handle down to the horizontal position. This will form the seam. As shown in **Section "B"**.

6.0 MANUAL CRIMPING TOOL OPERATION**6.5 TOOL POSITION ON THE ROOF PANEL**

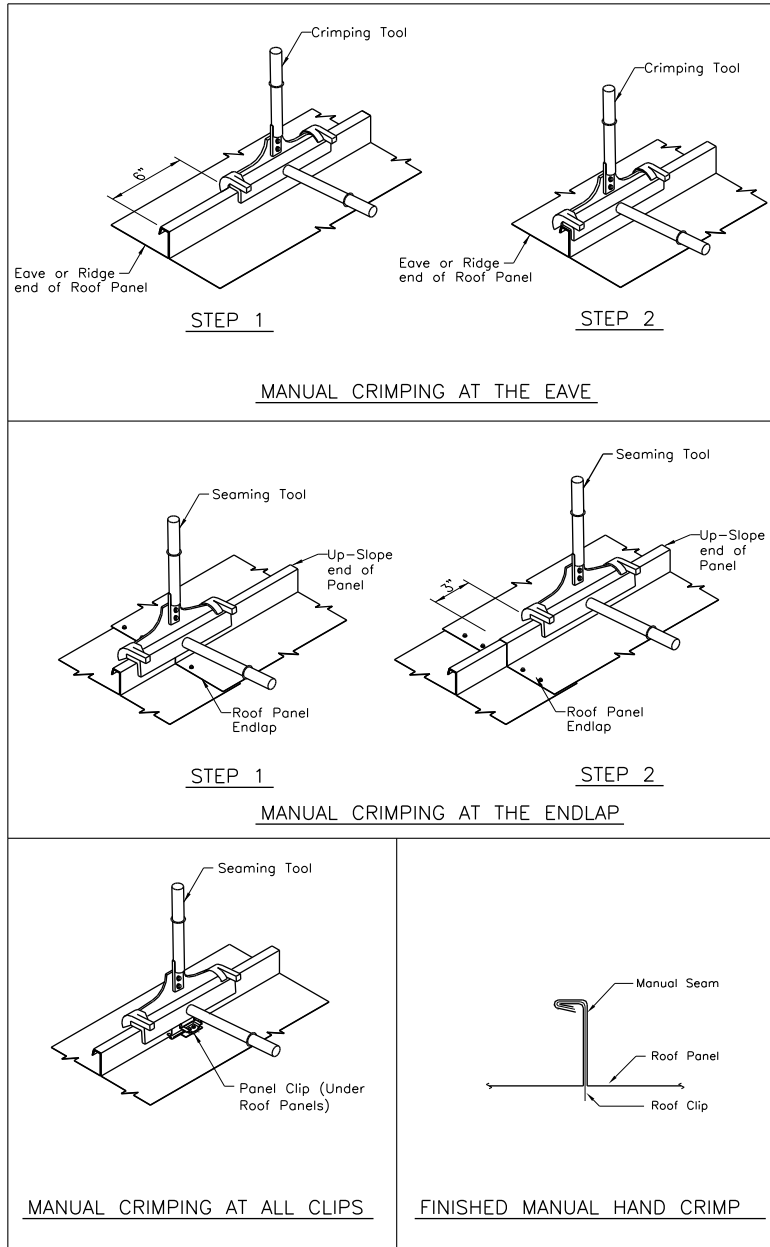
When hand seaming at the low eave, ridge end, end lap and **all** roof clip locations. The seaming must be done in two steps.

STEP 1: Position the crimping tool as shown below in the various areas of the roof. Rotate the moveable handle down to form a “Nucor Vise Lock”™ Seam. Release handle.

STEP 2: Re-position the crimping tool as shown below and repeat **Step 1**.

6.6 CHECKING THE FINISHED SEAM

Rotate the operating handle to the open position, remove the tool and check that the seam is correctly formed, as shown below.



7.0 MOTORIZED "Nucor Vise Lock"™ SEAMING MACHINE

7 **BEFORE OPERATING THE
MOTORIZED "NUCOR
VISE LOCK"™ SEAMING
MACHINE**7.1 **BI-DIRECTIONAL "NUCOR VISE
LOCK"™ SEAMING MACHINE
NOMENCLATURE**

The following details identify the operational parts of the Bi-Directional Motorized Seaming Machine. Seaming tools may have variations from the tools shown in this manual

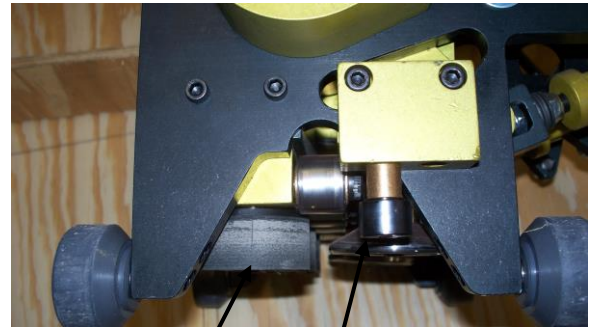


**Two Way Switch
with Directional Arrows**

The "Nucor Vise Lock"™ seam requires a three station single direction Motorized Seaming Tool. It should be clearly labeled with arrows indicating the direction of travel.



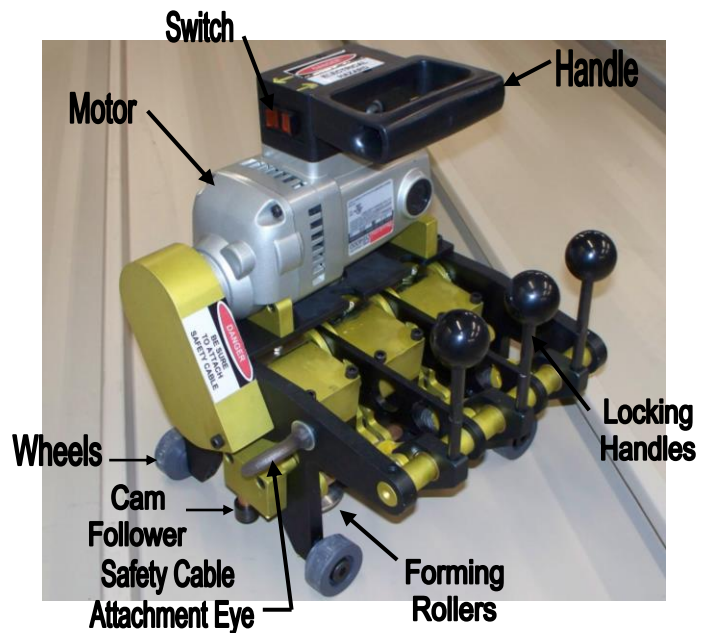
Power Source Plug-in



Backer Rolls **Forming Rolls**

IMPORTANT NOTE:

IF excessive picking of the paint or Galvalume coating is occurring, then discontinue seaming and consult with your NBS quality service representative. Failure to contact NBS MAY void your roof warranty.



**Bi-Directional Seamer
Produces a "Vise Lock" Seam**

8.0 | MOTORIZED “Nucor Vise Lock”™ SEAMING MACHINE**8 | MOTORIZED “NUCOR VISE LOCK”™ SEAMING MACHINE****8.1 | MACHINE ORIENTATION TO THE “NUCOR VISE LOCK”™ SEAM (BI-DIRECTIONAL SEAMER)**

With the Bi-Directional “Nucor Vise Lock”™ seamer, you can run this seamer from eave to ridge or ridge to eave and produce a “Nucor Vise Lock”™ Seam.

8.2 | POSITIONING AND RUNNING MACHINE ON THE ROOF PANEL

With the locking handles down in the open position, set the seaming machine onto the starting end of the roof panel's seam, over the manually seamed portion of the seam.

Roll the seaming machine forward to align the front seaming rolls over the manually seamed

portion of the seam, as shown in the details below. Pull the forward **two** handles up into the locking position, leaving the back handle in the released position. Push the switch to the **ON** position utilizing the directional arrows on top of the switch. These directional arrows aid you on which direction the seamer is going to run.

IMPORTANT NOTE:

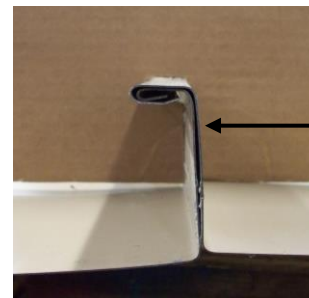
Attaching a safety cable to the machine may prevent the machine from falling to the ground and causing personal injury.

Pay close attention to the directional arrows on the switch. Failure to do so may allow the seamer to run off the roof.

Seam the full length of the panel. Stop machine and un-lock the handles. Pick the seamer up and place directly onto the adjacent seam over the manually seamed portion of the panel. Lock the front two handles and seam the full length of the panel. (As Shown Below)



**Seamer Locked on the
Manually Crimped VR16 II panel**



**Finished "Vise Lock"
Seam**

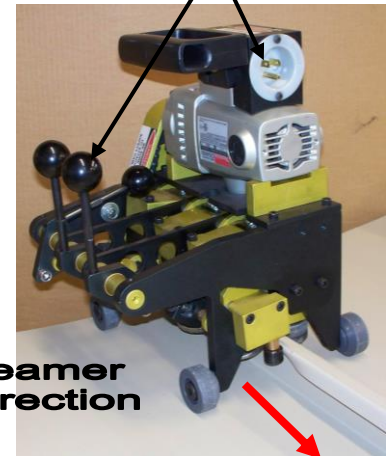
**Note the Orientation of the Seamer
and Locking Handles**



**Unlocked
Handles Down**



**Locked
Front Two
Handles Up**



**Seamer Locked on
the Adjacent Seam**

9.0 | MOTORIZED "Nucor Vise Lock 360"™ SEAMING MACHINE**9 | BEFORE OPERATING THE "NUCOR VISE LOCK 360"™ MOTORIZED SEAMING MACHINE****9.1 | NOMENCLATURE FOR THE HAND CRIMPER THAT IS USED TO START THE "NUCOR VISE LOCK 360"™ SEAMER**

The following details identify the operational parts of the Two Stage Hand Crimper that is supplied in the seamer kit. This tool **IS NOT** intended to be used to hand crimp the roof clips. This Crimper is only to be used to start the VL360 Seamer.

If your building has a Nucor Vise Lock 360™ seam, **do not** seam/crimp 16" up from the low eave panel. If the seam has been formed into a VL 360™ seam, the gutter bracket **will not** fit up properly. (See Sec. 16.3 in the VR16 II Erection Manual)



Two Stage Hand Crimper (Seam Starter) Sent with Seamer.



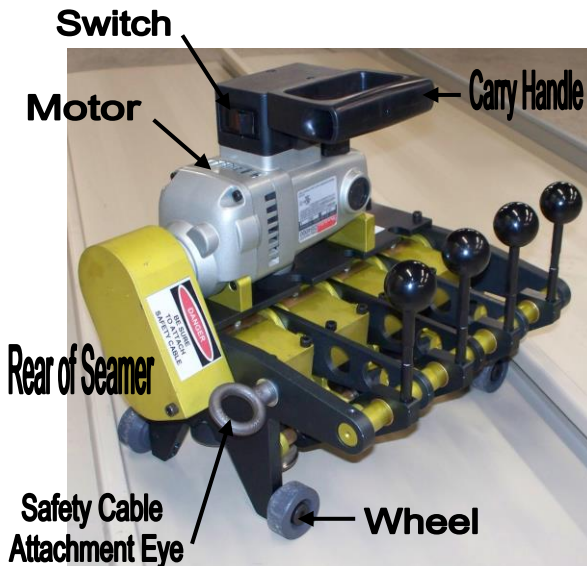
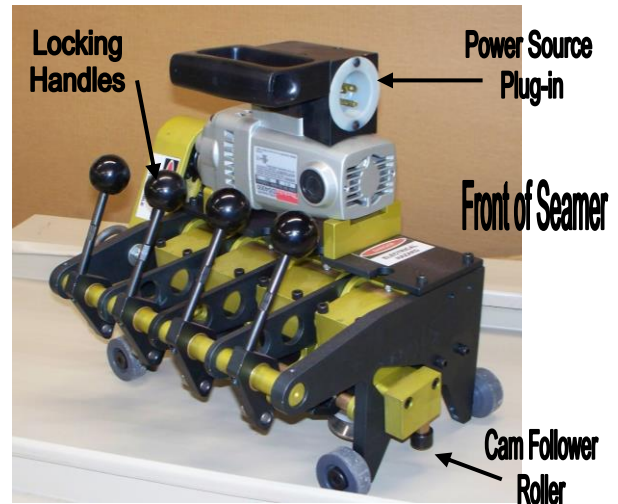
Stage One produces a "Vise Lock" Crimp



Stage Two produces a "Vise Lock 360" Crimp

9.2 | SINGLE DIRECTIONAL "NUCOR VISE LOCK 360"™ SEAMING MACHINE NOMENCLATURE

The following information identifies the operational parts of the Single Directional Motorized Seaming Machine. This type of seamer produces a "Nucor Vise Lock 360"™ seam in one pass.



**Single Directional Seamer
Produces a "Vise Lock 360" Seam**

9.0 MOTORIZED "Nucor Vise Lock 360"™ SEAMING MACHINE

9.3 MACHINE ORIENTATION TO THE "NUCOR VISE LOCK 360"™ SEAM (SINGLE DIRECTIONAL SEAMER)

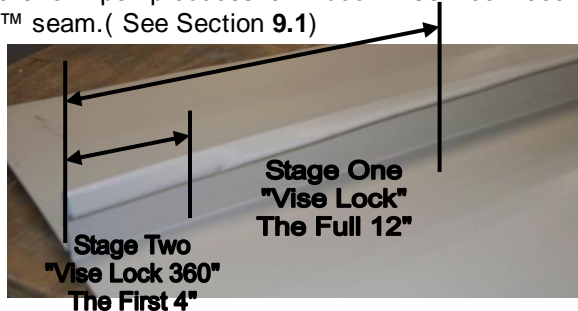
With the Single-Directional "Nucor Vise Lock 360"™ seamer, you can produce a finished VL360 seam in one pass.

9.4 HAND CRIMPING THE LOW EAVE OF THE PANEL (WITHOUT GUTTER BRACKETS)

Before placing the Seamer onto the panel, you need to first hand crimp the low eave of the panel.

First, crimp the panel using **stage one** of the hand crimper. Hand crimp approximately **12"** of the low eave seam. The first stage produces a "Nucor Vise Lock"™ Seam.

Second, use **stage two** and just crimp the first **4"** of the low eave seam. The stage two part of the crimper produces a "Nucor Vise Lock 360"™ seam. (See Section 9.1)

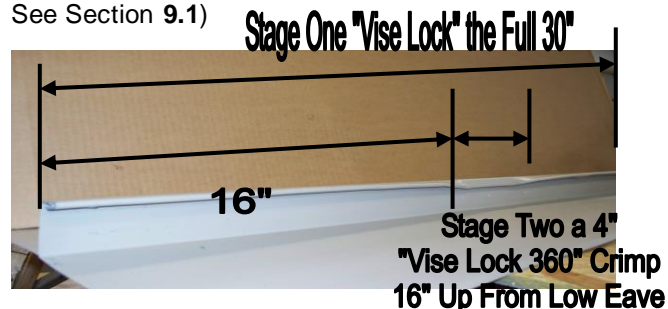


9.5 HAND CRIMPING THE LOW EAVE OF THE PANEL (WITH GUTTER BRACKETS)

Before placing the Seamer onto the panel, you need to first hand crimp the low eave of the panel.

First, crimp the panel using **stage one** of the hand crimper. Hand crimp approximately **30"** of the low eave seam. The first stage produces a "Nucor Vise Lock"™ Seam.

Second, using **stage two**, go up from the low eave **16"** and crimp **4"** of the seam into a VL360 seam. The stage two part of the crimper produces a "Nucor Vise Lock 360"™ seam. (See Section 9.1)



9.6 POSITION AND RUNNING MACHINE ON THE ROOF PANEL

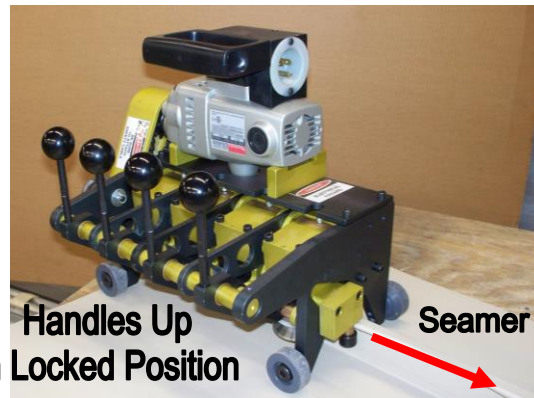
With the locking handles down in the open position, set the seaming machine onto the starting end of the roof panel's seam, over the manually seamed portion of the seam. Refer to Sections 9.4 OR 9.5 to determine what is your low eave hand crimped condition.

Roll the seaming machine forward to align the front seaming rolls over the manually seamed portion of the seam, as shown in the details below.



Handles Down in Un-locked Position Seamer Direction

Pull all handles to the upright position locking the seamer onto the seam. Push the switch to the **ON** position. Seam the full length of the panel. Stop machine and un-lock the handles. Carry or lower the machine back down to the eave. Repeat the previous steps to seam the next panel seam.



Handles Up in Locked Position Seamer Direction

IMPORTANT NOTE:

When the seaming machine is **Un-locked** from the panel seam, it can roll freely. Attaching a safety cable to the machine will prevent the machine from falling to the ground and causing personal injury.



Finished "Vise Lock 360" Seam

10.0 MOTORIZED SEAMING MACHINE (General Information)**10 RUNNING THE MACHINE (GENERAL)**

Check that the machine's path is clear of power cords, tools, debris, etc.

Prior to motor seaming, use the manual crimping tool to seam the roof panels at the starting end of the seam (eave or ridge end, depending on the seaming direction) and at the end laps.

Set the seaming machine at the starting end of the seam, on the area previously seamed with the manual seaming tool.

Start the machine by turning on the machine's toggle switch.

When running the seamer, the operator should look ahead of the seamer for any damaged seams or un-seamed panels. If the operator sees damaged and/or un-seamed panels, then he/she should stop the machine and fix the problem area before continuing. **Failure** to repair such areas and then running the seamer over them could cause the seam to be **un-repairable**.

If the roof panels have end laps, **STOP the seaming machine just before running onto the end lap.** Remove the machine and restart it on the other side of the end lap, on the area previously seamed with the manual seaming tool. **NOTE: Failure to stop and restart the Motorized Seaming Machine at an end lap may cause damage to the roof panel.**

At uncompleted seam areas, where the seaming machine had to be stopped prior to the end lap or ridge end dam, complete the seam with the manual seaming tool.

Watch the machine and the finished seam carefully for any indication of machine malfunction or faulty seaming.

Run the seaming machine to the finished end of the roof panels.

CAUTION: The seaming machine must always be in the vertical position while seaming. **Do not allow the machine to tilt sideways when locking the machine onto the seam or while the machine is running.** On roofs with tall clips, walking or standing on the panel next to the

machine can deflect the panel and cause the machine to tilt. **Do not walk or stand on the panel next to the machine while it is running.**

10.1 UNLOCKING THE MACHINE

After the machine is turned off and has fully stopped, release the locking handle to the open position. With the locking handle released, the machine can be lifted from the seam.

If the machine must be stopped and removed before completing the seam, use a felt marker to mark the position of the machine's front wheel on the panel. The machine can later be repositioned on the mark to complete the seaming.

IMPORTANT NOTE:

When the seaming machine is **Un-locked** from the panel seam, it can roll freely. Attaching a safety cable to the machine will prevent the machine from falling to the ground and causing personal injury.

10.2 STOPPING THE MACHINE

Stop the machine by turning off the machine's toggle switch.

Always allow sufficient space for the machine to coast after turning it off.

CAUTION: Stop the machine immediately, and investigate any indications of machine malfunction or faulty seaming. **Do not run the machine into previously installed ridge end closures or other obstructions. Do not run the machine over damaged seams or un-seamed panels.**

10.3 CHECKING THE FINISHED SEAM

At the completion of each seam, check the full length of the seam for any false seaming or distortions. Refer to sections **8.0 & 9.0** for details of correctly formed finished seams. **NOTE: Seaming options vary from project to project. Refer to the project erection drawings for specific seaming requirements for your project.**

IF excessive picking of the paint or Galvalume coating is occurring, then discontinue seaming and consult with your NBS quality service representative. Failure to contact NBS MAY void your roof warranty.

11.0 Motorized Seaming Machine Maintenance**11 MOTORIZED SEAMING MACHINE MAINTENANCE****11.1 GENERAL**

The Motorized Seaming Machine is a precision fabricated, high performance, portable roll-forming machine. This relatively lightweight machine does the tough job of forming the extra strong “Nucor Vise Lock”™ and the “Nucor Vise Lock 360”™ seam under often rugged field conditions.

Although designed for tough industrial use, the seaming machine requires proper maintenance to assure proper seaming and efficient, trouble-free operation.

CAUTION: Failure to properly maintain the seaming machine, as instructed below, can result in faulty or damaged seams and costly breakdown of the seaming machine.

11.2 SEAMING ROLLS

The seaming rolls require the following regular maintenance:

- a. Assure that the seaming machine's rolls are clear of dirt, grease, sealant, and Galvalume/paint build-up etc. Rollers may be cleaned with mineral spirits. Please follow manufacturer's instructions when using mineral spirits. Make sure rollers are clear of mastic and dry before seaming.
- b. Assure that the seaming machine's rolls are tight on their shafts. Check and tighten the rolls' retainer screws as necessary.

11.3 COOLING VENTS

To prevent motor overheating, the motor has vents and an internal fan to provide a cooling airflow over the internal motor ports.

The cooling vents are located at the front and rear of the motor. At the front of the motor, the vents are the slots between the motor housing and gear box. The rear vents are on the end of the motor housing. Check frequently to assure that these vents are kept clean and clear of debris and string sealant, etc.

While the machine is running, never cover the machine or place it in a position where the cooling airflow to the vents will be restricted.

12.0 Seamer Troubleshooting Guide

12 SEAMER TROUBLESHOOTING GUIDE

The chart below is a list of possible problems and solutions. *If you cannot resolve the problem with this chart, stop work immediately and contact Nucor building Systems.*

Seaming Problem	Possible Cause	Look For	Recommended Fix
Seaming machine drag, stalling at clips, run intermittently, or won't run.	Extension cord too long and/or not heavy enough gauge.	7+amp at motor with no load (locking handle locked). 10+ amps at motor during seaming (between clips).	Use a shorter and heavier gauge cord.
	Generator not supplying proper amps to seamer.	7+amp at motor with no load (locking handle locked). 10+ amps at motor during seaming (between clips).	Use a larger generator.
	Faulty motor.	7+amp at motor with no load (locking handle locked). 10+ amps at motor during seaming (between clips). Motor won't run.	Notify Nucor Building Systems for a replacement unit.
Seam not closed or improper nesting of male to female and/or clip.	Excess panel coverage width (typically ½" +).	Cladding or paint deposits on forming rolls.	Ensure correct coverage width at installation.
	Incorrect profile or damaged (deformed) clip or male/female panel leg.	Seam does not appear to be fully engaged.	Correct the profile of the male/female panel leg. If necessary, hand crimp the corrected area.
Creasing, scuffing, etched line along top of seam, and/or deformation of seam.	Cam roller does not turn freely.	Cam roller bearing frozen, or fouled by sealant.	Clean and lubricate or replace cam roller.
Cladding/paint pick-off.	Incorrect profile or damaged (deformed) clip or male/female panel leg.	Seam does not appear to be fully engaged.	Correct the profile of the clip or male/female panel leg. Hand crimp the corrected area.
	Excess panel coverage width (typically ½" +).	Cladding or paint deposits on forming rolls.	Ensure correct coverage width during installation.