

INSTALLATION GUIDE



1520-PHL Single Clamp Ladder Rack

Promaster 159" Wheelbase High Roof (Aluminum)

RANGER
DESIGN

QUICK START GUIDE

Phase 1 - Assembly

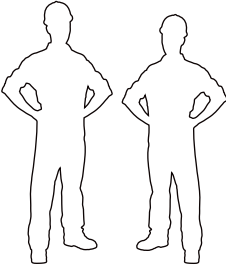
- 1.1 Setup..... 3 - 5
- 1.2 Ladder Rack Assembly..... 5 - 13

Phase 2 - Installation

- 2.1 Mounting Tracks Installation..... 14 - 16
- 2.2 Ladder Rack Installation..... 17 - 20
- 2.3 Note..... 21

REQUIRED ITEMS

NOTE: Use Sawhorses if possible, or use the box as a flat protective surface on the ground or table.



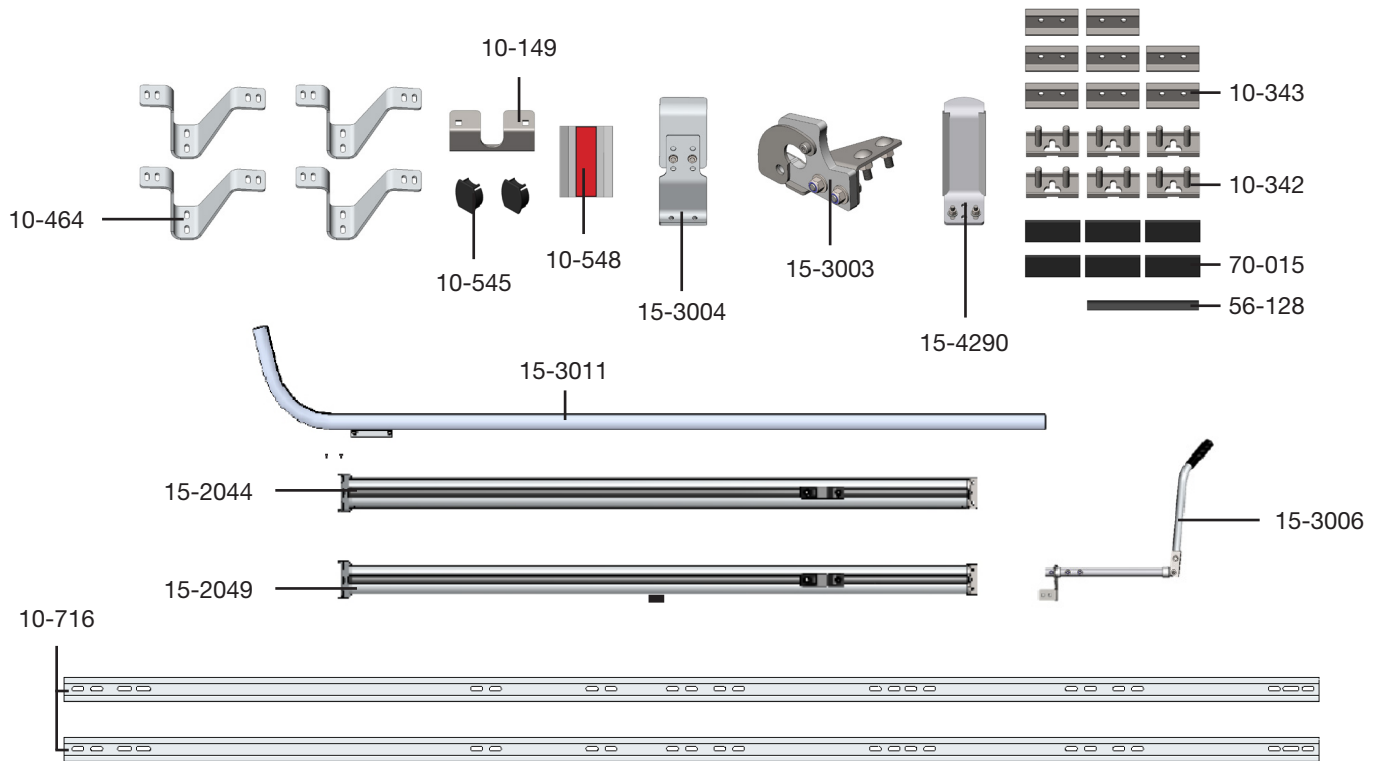
**2
PERSONS**

- Cordless Impact
- Ratchet
- Tape Measure
- Mallet
- Marker
- Ladder
- Cutter
- 1/2" Socket
- Sawhorse (Optional)
- Box
- Knife
- 1/2" Wrench

PHASE 1 – ASSEMBLY

1.1 SETUP

1.1.1 Unpack components; compare with the bill of materials.



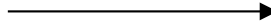
1.1.2 Verify all parts are present.

BILL OF MATERIALS

Item No.	Description	Qty.
10-149	Clamp Handle Support	1
10-342	Roof Clamp	6
10-343	Top Roof Clamp	8
10-464	“V” Foot	4
10-545	Ski Plastic Plug	2
10-548	Hook Protector (4 - 3/8" L)	1
10-716	Mounting Track	2
56-128	Rubber Edge Trim (QTY in Inches)	13
70-015	Foam Sheet	6
15-2044	Front Crossbow	1
15-2049	Rear Crossbow	1
15-3003	Ladder Clamp Hasp	1
15-3004	Ladder Clamp Rear Hook	1
15-3006	Ladder Clamp Bar (Passenger Side)	1
15-3011	Ski (Right)	1
15-4290	Front Hook	1
94-1005	Assembly Fastener Kit	1
96-1009	Install Fastener Kit	1

1.1.3 Fastener kits.

94-1005 Fastener Kit




Fastener Assembly

2x  **# 90-487** Carriage Bolt
5/16"-18 x 3/4"
SS304

19x  **# 90-491** Carriage Bolt
5/16"-18 x 1"
SS304





23x  **# 94-105** Hex Nut
5/16"-18
SS316wax

1x  **# 98-160** Spacer
SS18-8




23x  **# 98-117** Flat Washer
5/16", O.D 3/4"
SS18-8

23x  **# 98-123** Lock Washer
Regular 5/16"
SS304




2x

 **#90-487 Carriage Bolt** 5/16" x 3/4"
 **#98-117 Flat Washer**
 **#98-123 Lock Washer**
 **#94-105 Hex Nut**






18x

 **#90-491 Carriage Bolt** 5/16" x 1"
 **#98-117 Flat Washer**
 **#98-123 Lock Washer**
 **#94-105 Hex Nut**

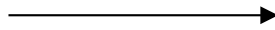
2x

 **#98-117 Flat Washer**
 **#98-123 Lock Washer**
 **#94-105 Hex Nut**

1x

 **#90-491 Carriage Bolt** 5/16" x 1"
 **#98-160 Spacer**
 **#98-117 Flat Washer**
 **#98-123 Lock Washer**
 **#94-105 Hex Nut**






96-1009 Fastener Kit







Fastener Assembly

4x		# 90-205	Hex Bolt 5/16"-18 x 3/4" SS304
8x		# 90-209	Hex Bolt 5/16"-18 x 1" SS304
16x		# 94-105	Hex Nut 5/16"-18 SS316wax
8x		# 94-150	Channel Nut 5/16"
28x		# 98-117	Flat Washer 5/16", OD 3/4" SS18-8
24x		# 98-123	Lock Washer 5/16" SS304




4x

	#90-205 Hex Bolt 5/16" x 3/4"
	#98-117 Flat Washer
	#98-123 Lock Washer
	#98-117 Flat Washer
	#94-105 Hex Nut

8x

	#90-209 Hex Bolt 5/16" x 1"
	#98-123 Lock Washer
	#98-117 Flat Washer
	#94-150 Channel Nut

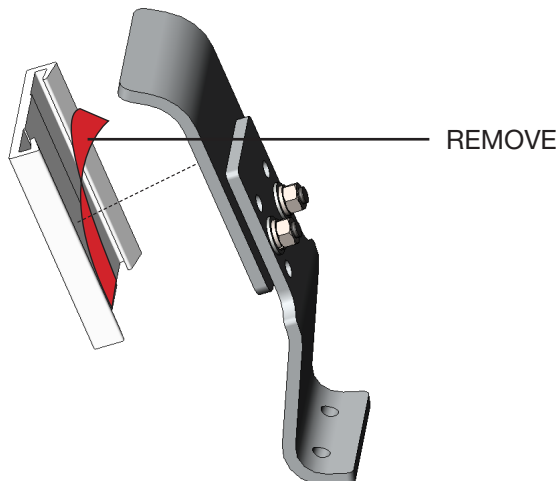
12x

	#98-117 Flat Washer
	#98-123 Lock Washer
	#94-105 Hex Nut

PHASE 1 – ASSEMBLY

1.2 LADDER RACK ASSEMBLY

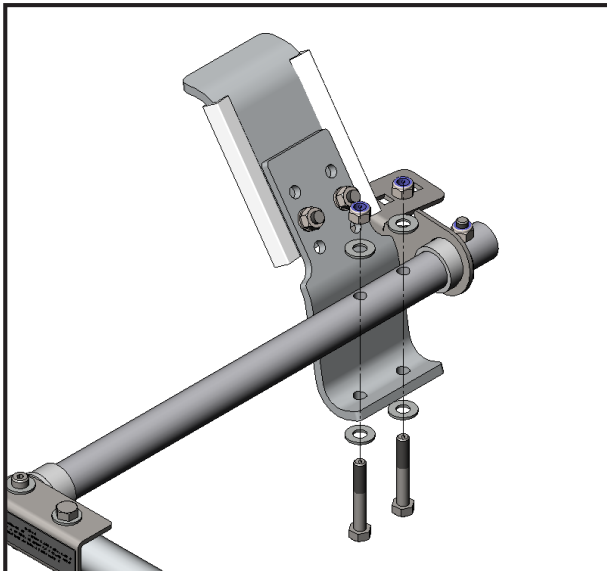
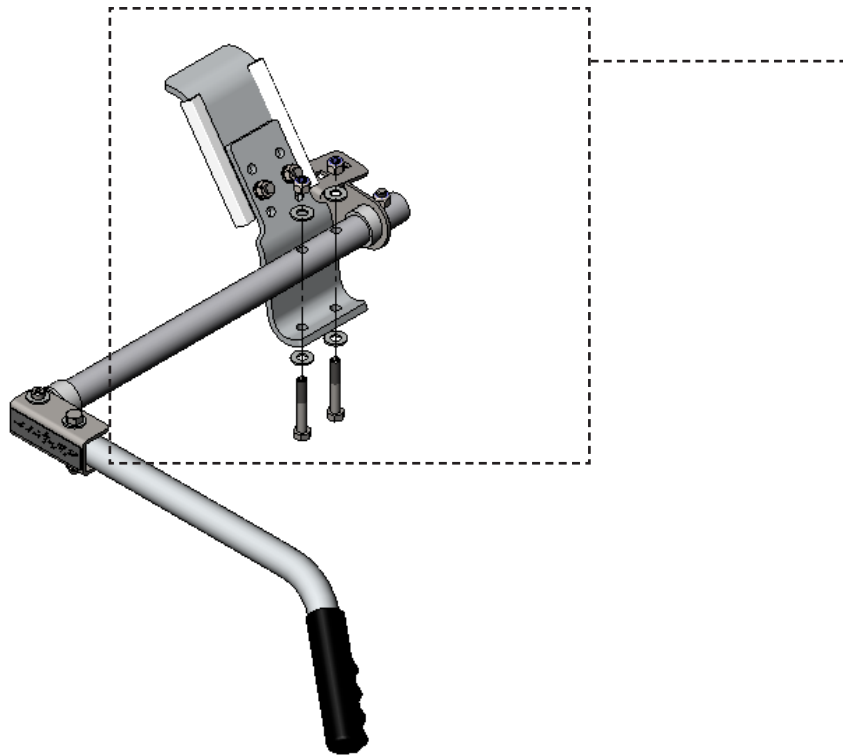
1.2.1 Peel the backer off of the adhesive on the hook protector, then attach the hook protector to the upper rear hook.



TOOLS

- Knife

1.2.2 Attach the rear hook to the ladder clamp, with the pre-assembled hardware on the pivot bar.

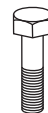


TOOLS

- Cordless Impact
- 1/2" Socket
- 1/2" Wrench

HARDWARE USED

2x HARDWARE IS PRE-ASSEMBLED.



#90-225 Hex Bolt
5/16" - 18 x 2" SS304



#98-117 Flat Washer



#98-117 Flat Washer

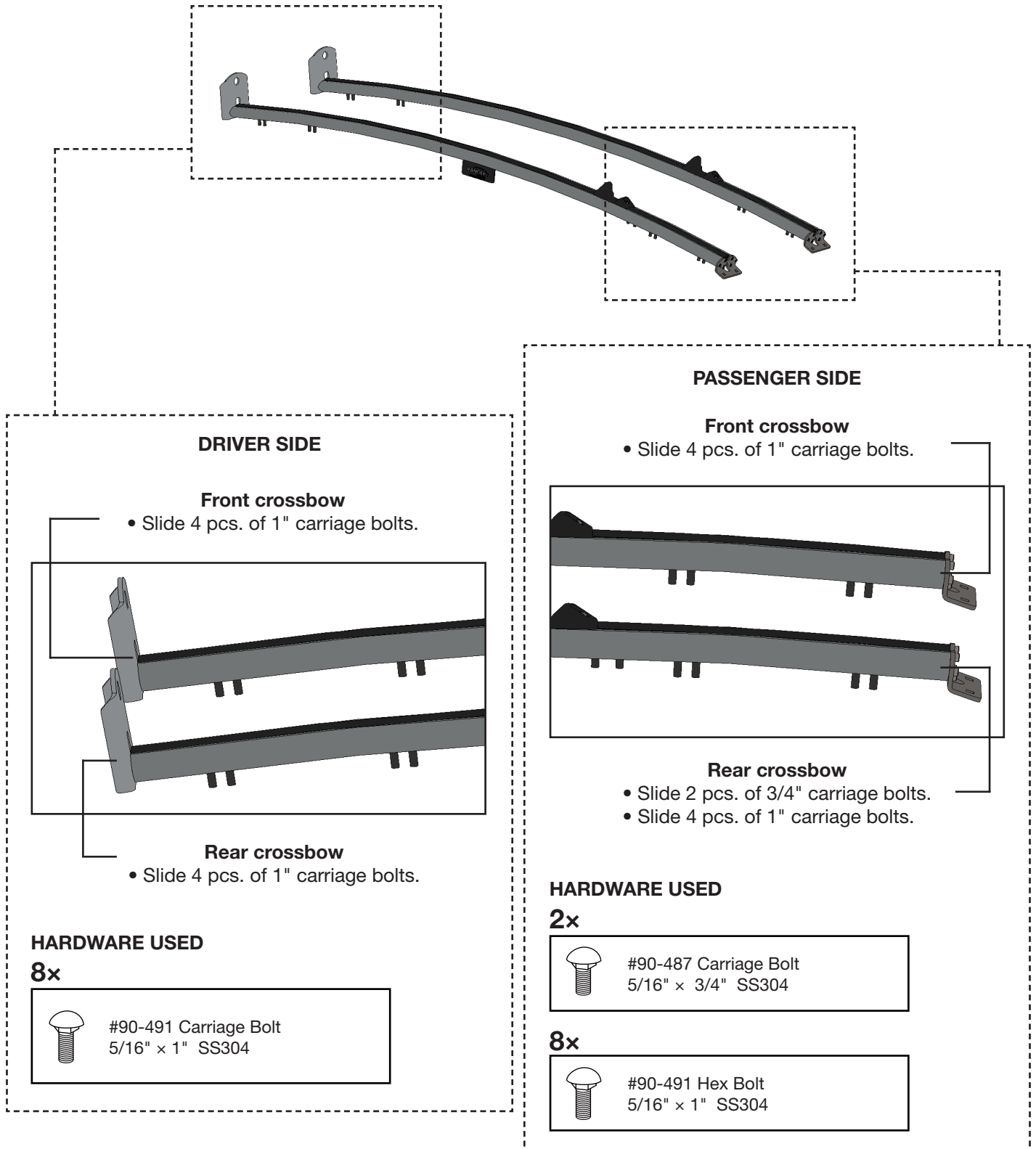


#94-111 Lock Nut

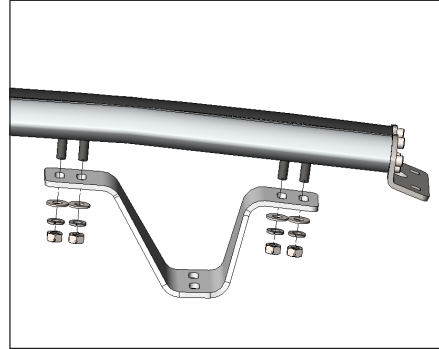
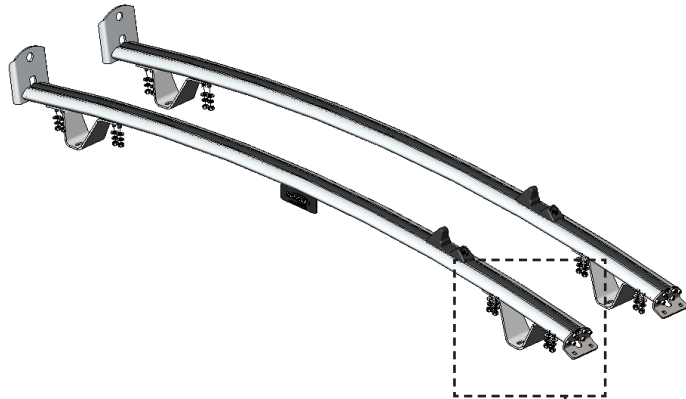
1.2.3 Slide carriage bolts on the bottom face of the crossbows.

NOTE: The track plug must be removed from the underneath of the front crossbow, and reinstalled after the feet have been installed in the final position.

TIPS: Use tape to keep the bolts from sliding off.







1.2.4 Install the feet on the Front, and Rear Crossbows.

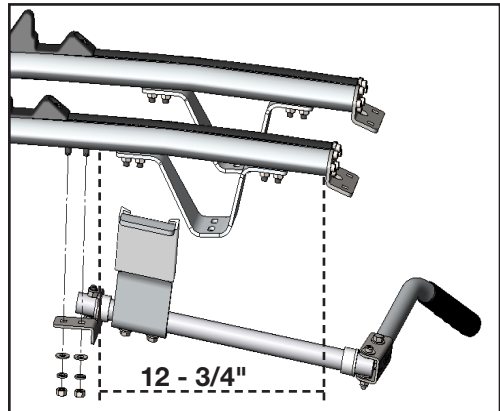
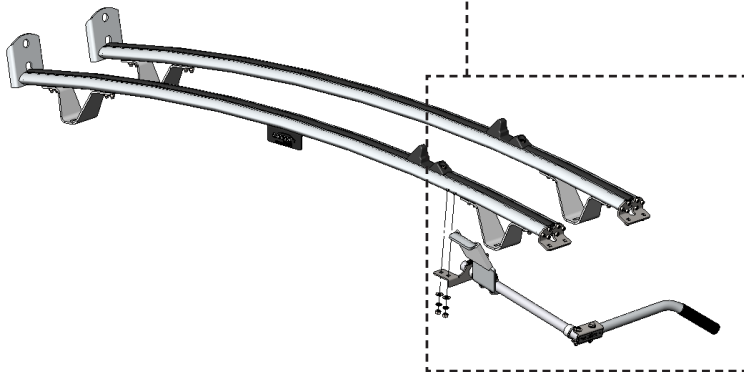


HARDWARE USED

16x HAND-TIGHTEN THE NUTS.

-  Carriage bolts are already on the crossbows.
-  #98-117 Flat Washer
-  #98-123 Lock Washer
-  #94-105 Hex Nut

1.2.5 Fasten the Ladder Clamp assemblies to the Rear Crossbow.







TOOLS

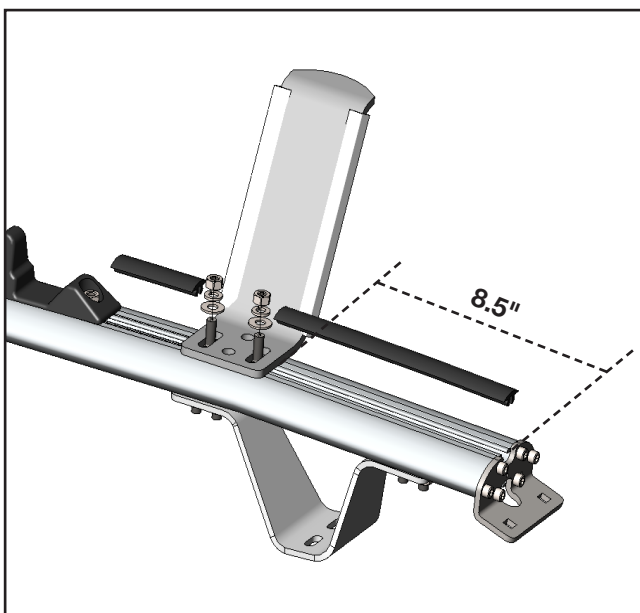
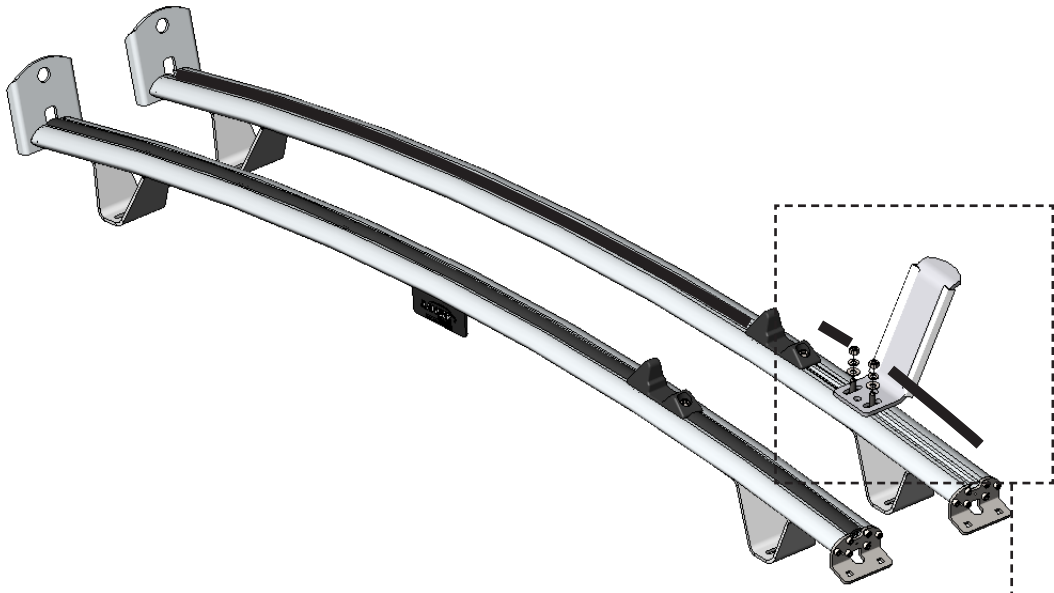
- Cordless Impact
- 1/2" Socket
- Tape Measure
- Marker

HARDWARE USED

2x

-  Carriage bolts are already on the crossbows.
-  #98-117 Flat Washer
-  #98-123 Lock Washer
-  #94-105 Hex Nut

- 1.2.6**
- Pull out the 14.5" track plug on the passenger side of the front crossbow.
 - Loosen the pre-assembled hardware on the front hook and slide the hook onto the passenger side of the front crossbow to the position shown below.
 - Cut the track plug, then attach it back to the crossbow.



Tighten the nuts just to hold the front hook for adjustment.

TOOLS

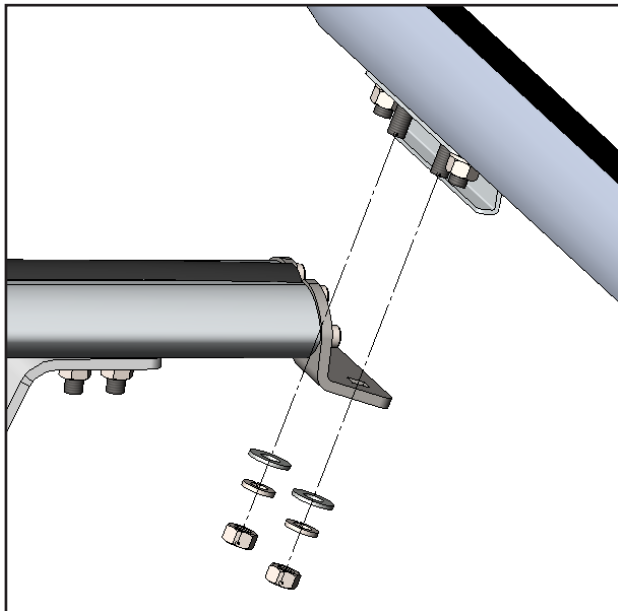
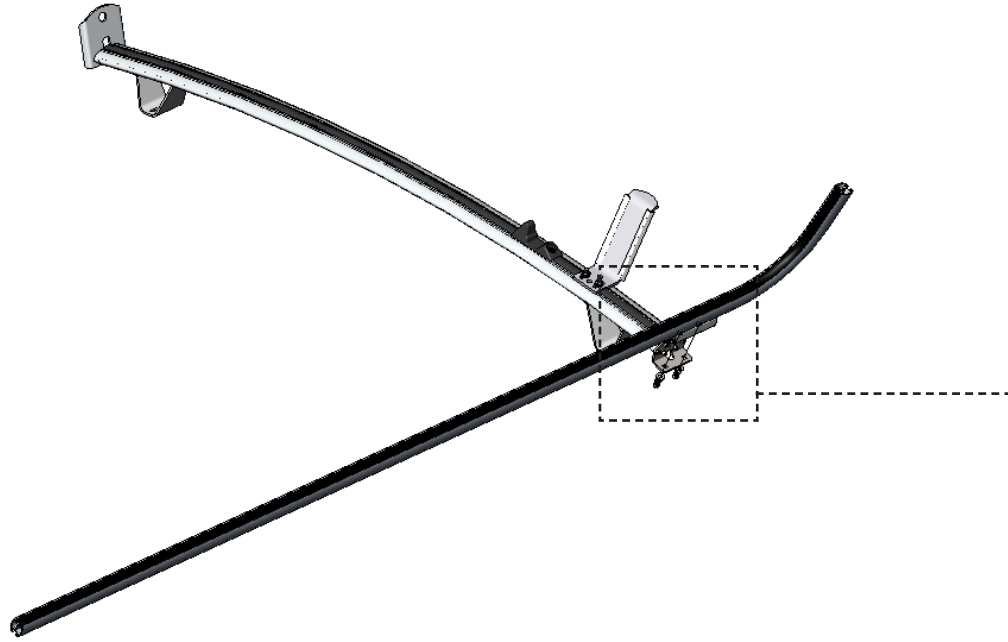
- Marker
- Tape Measure

HARDWARE USED

2x HARDWARE IS PRE-ASSEMBLED.

-  #90-491 Carriage Bolt 5/16" x 1"
-  #98-117 Flat Washer
-  #98-123 Lock Washer
-  #94-105 Hex Nut

1.2.7 Install the front crossbow to the ski.



TOOLS

- Cordless Impact
- 1/2" Socket

HARDWARE USED

2x



Carriage bolts are already on the ski.



#98-117 Flat Washer

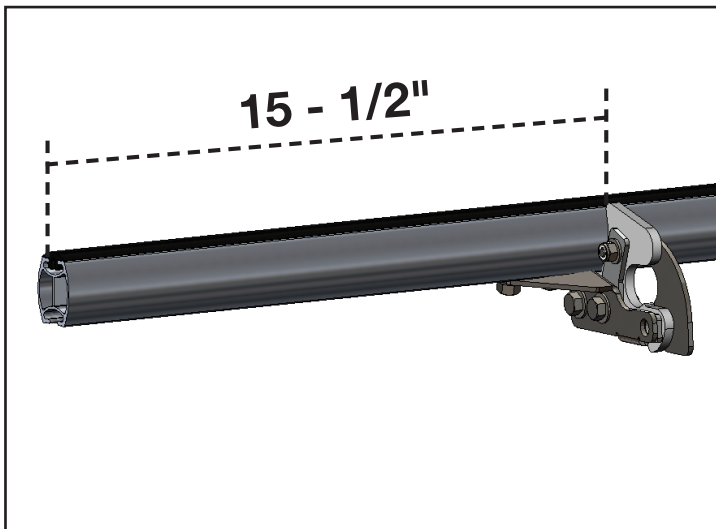
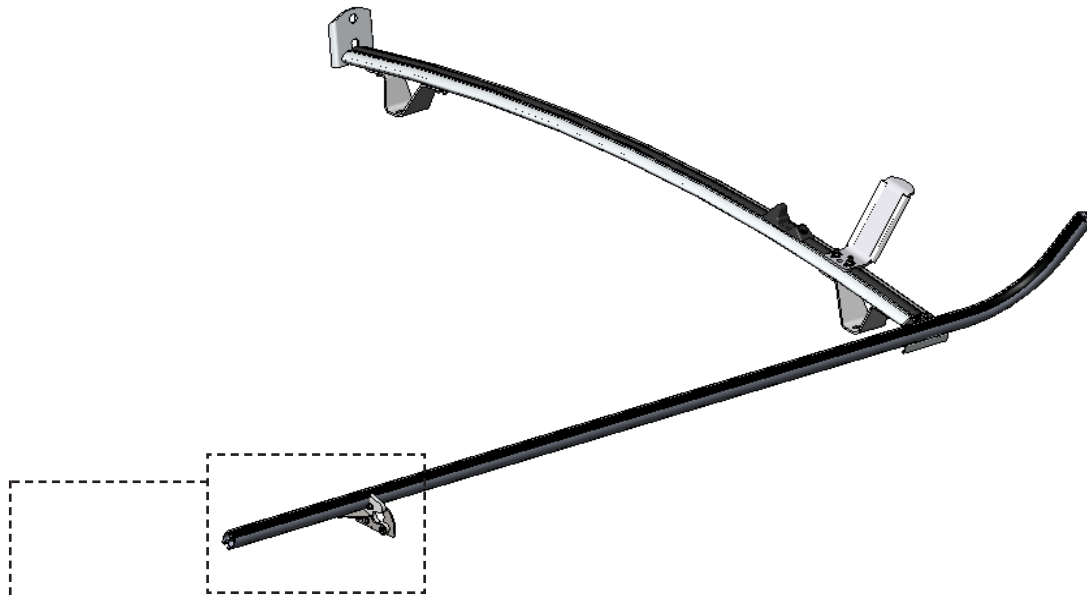


#98-123 Lock Washer



#94-105 Hex Nut

1.2.8 Loosen the pre-assembled hardware on the ladder clamp hasp, slide the hasp on the ski to the position shown below, and tighten the nuts.







TOOLS

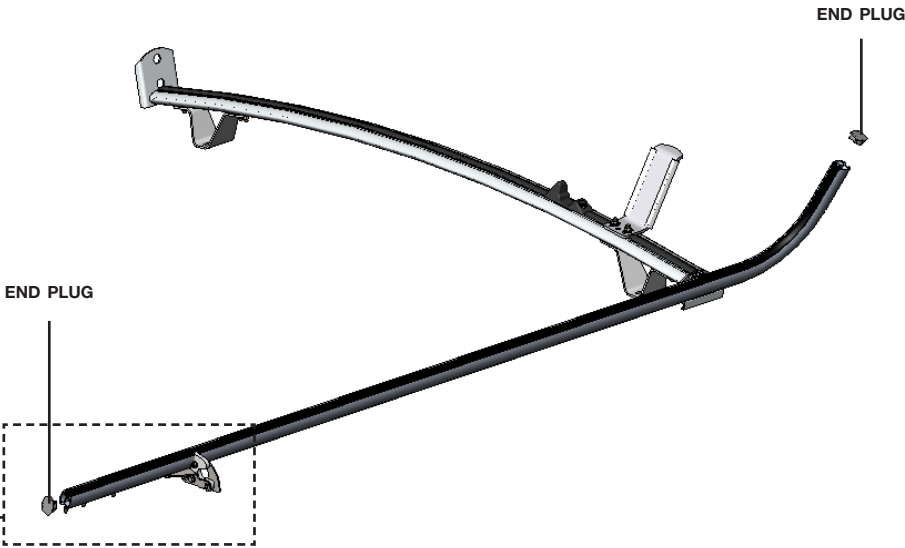
- Cordless Impact
- 1/2" Socket
- Tape Measure
- Marker

HARDWARE USED

2x HARDWARE IS PRE-ASSEMBLED.

- | | |
|--|------------------------------------|
|  | #90-487 Carriage Bolt 5/16" x 3/4" |
|  | #98-117 Flat Washer |
|  | #98-123 Lock Washer |
|  | #94-105 Hex Nut |

1.2.9 Slide 3pcs. of carriage bolts on the rear end of the ski, then attach end plugs on both ends of the ski.




TOOLS

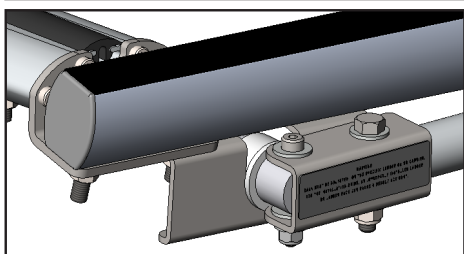
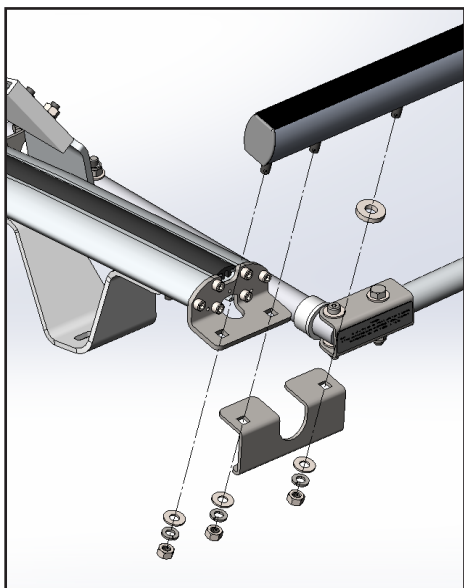
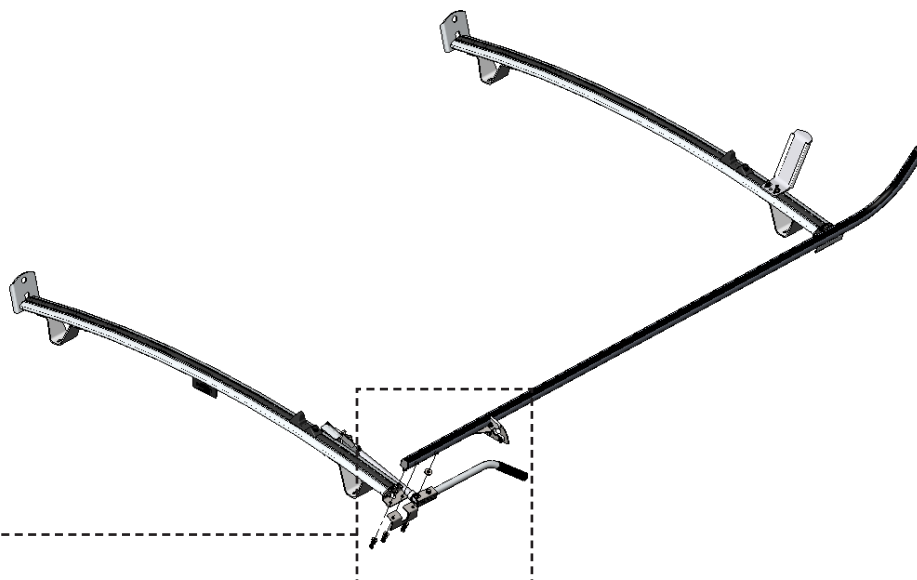
- Mallet

HARDWARE USED

3x

	#90-491 Carriage Bolt 5/16" x 1" SS304
--	---

1.2.10 Install the Rear Crossbow to the ski with the clamp handle support, aligning the rear surface of the crossbow bracket to the rear surface of the ski.







TOOLS






- Cordless Impact
- 1/2" Socket

HARDWARE USED

2x

-  Carriage bolts are already on the ski.
-  #98-117 Flat Washer
-  #98-123 Lock Washer
-  #94-105 Hex Nut

1x

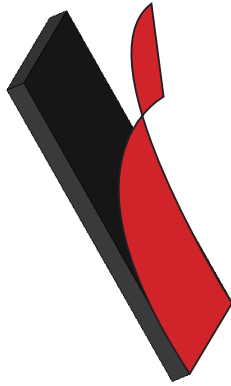
-  Carriage bolts are already on the ski.
-  #98-160 Spacer
-  #98-117 Flat Washer
-  #98-123 Lock Washer
-  #94-105 Hex Nut

PHASE 2 – INSTALLATION

2.1 MOUNTING TRACKS INSTALLATION

2.1.1 Peel the backer off of the foam sheet.

6x



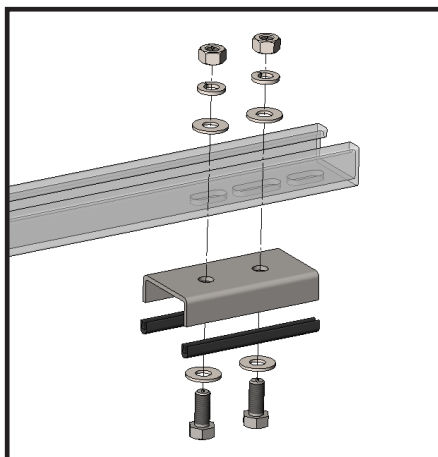
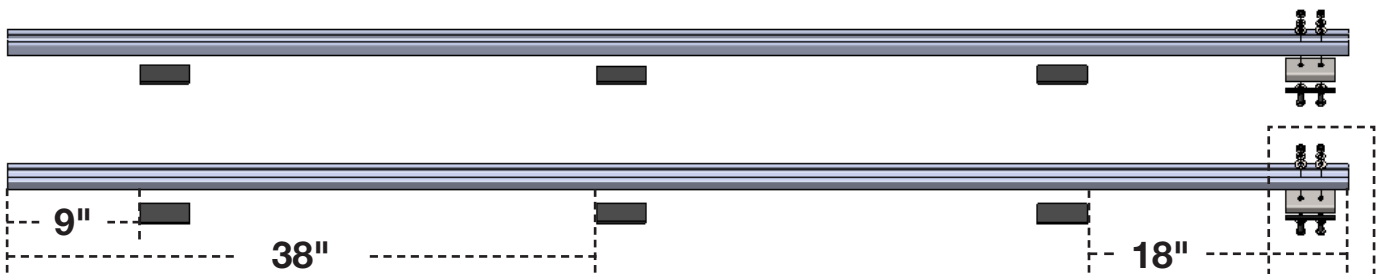
TOOLS

- ☐ Knife

- 2.1.2
- Attach 3 foam sheets, to the back of each mounting track.
 - Attach top roof clamps with rubber edge trims on the front end of the mounting tracks.

REAR
4 HOLES

FRONT
3 HOLES








TOOLS

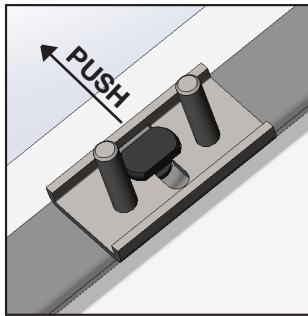
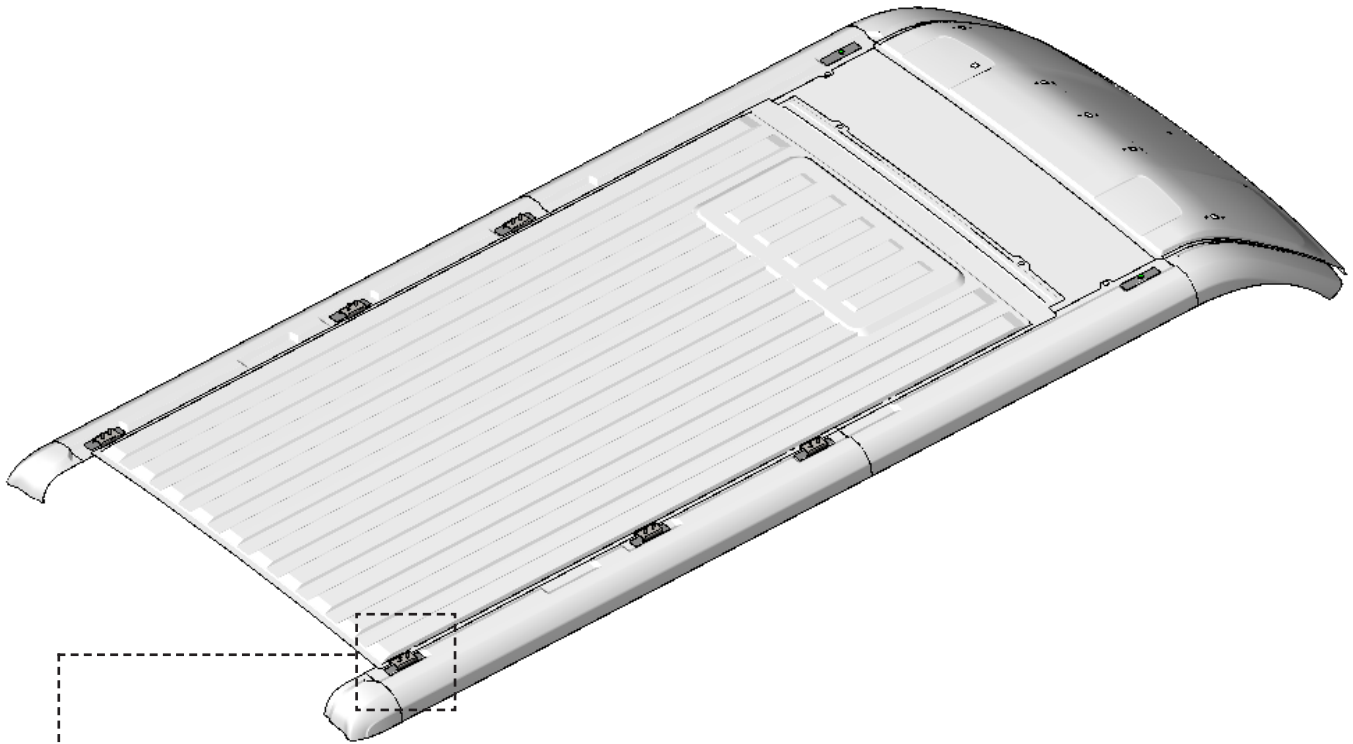
- ☐ Cordless Impact
- ☐ 1/2" Socket

HARDWARE USED

4x

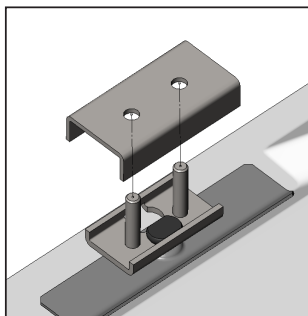
-  #90-205 Hex Bolt 5/16" x 3/4"
-  #98-117 Flat Washer
-  #98-123 Lock Washer
-  #98-117 Flat Washer
-  #94-105 Hex Nut

2.1.3 Attach the roof clamps and top roof clamps onto the roof.



Attach the roof clamps to the roof.

6x



Add the top roof clamps on the roof clamps.

NOTE: The top roof clamp should lay flat on the roof clamp and not slant.

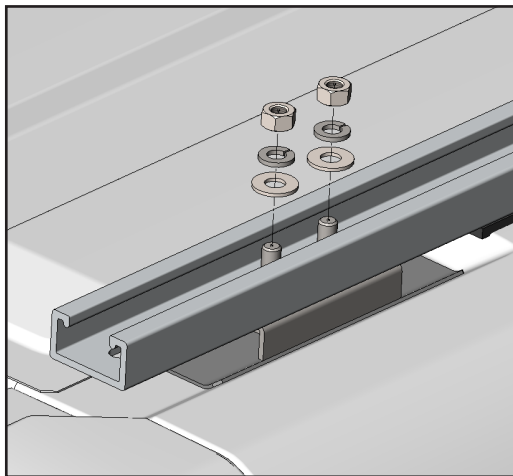
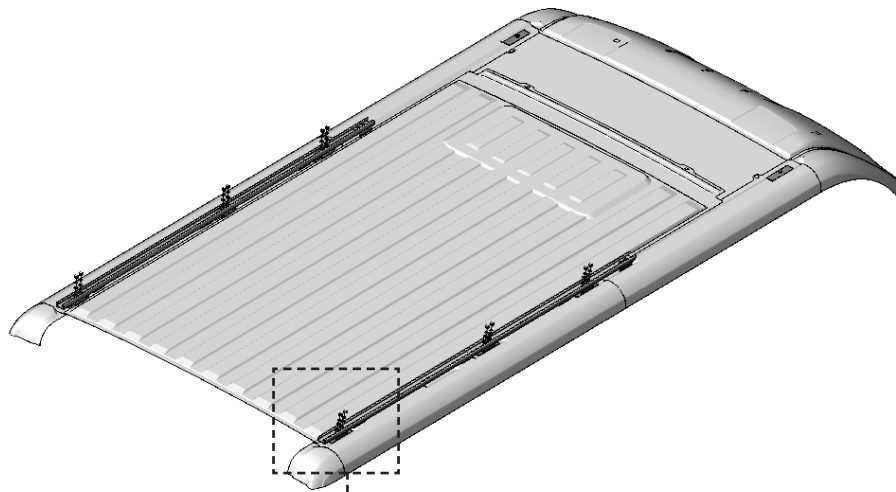
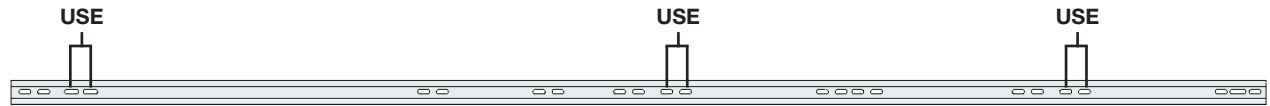
6x

2.1.4 Install the mounting tracks onto the clamps.

Mounting Track Orientation

REAR
4 HOLES

FRONT
3 HOLES






TOOLS

- Cordless Impact
- 1/2" Socket

HARDWARE USED

12x

- | | |
|---|---------------------|
|  | #98-117 Flat Washer |
|  | #98-123 Lock Washer |
|  | #94-105 Hex Nut |

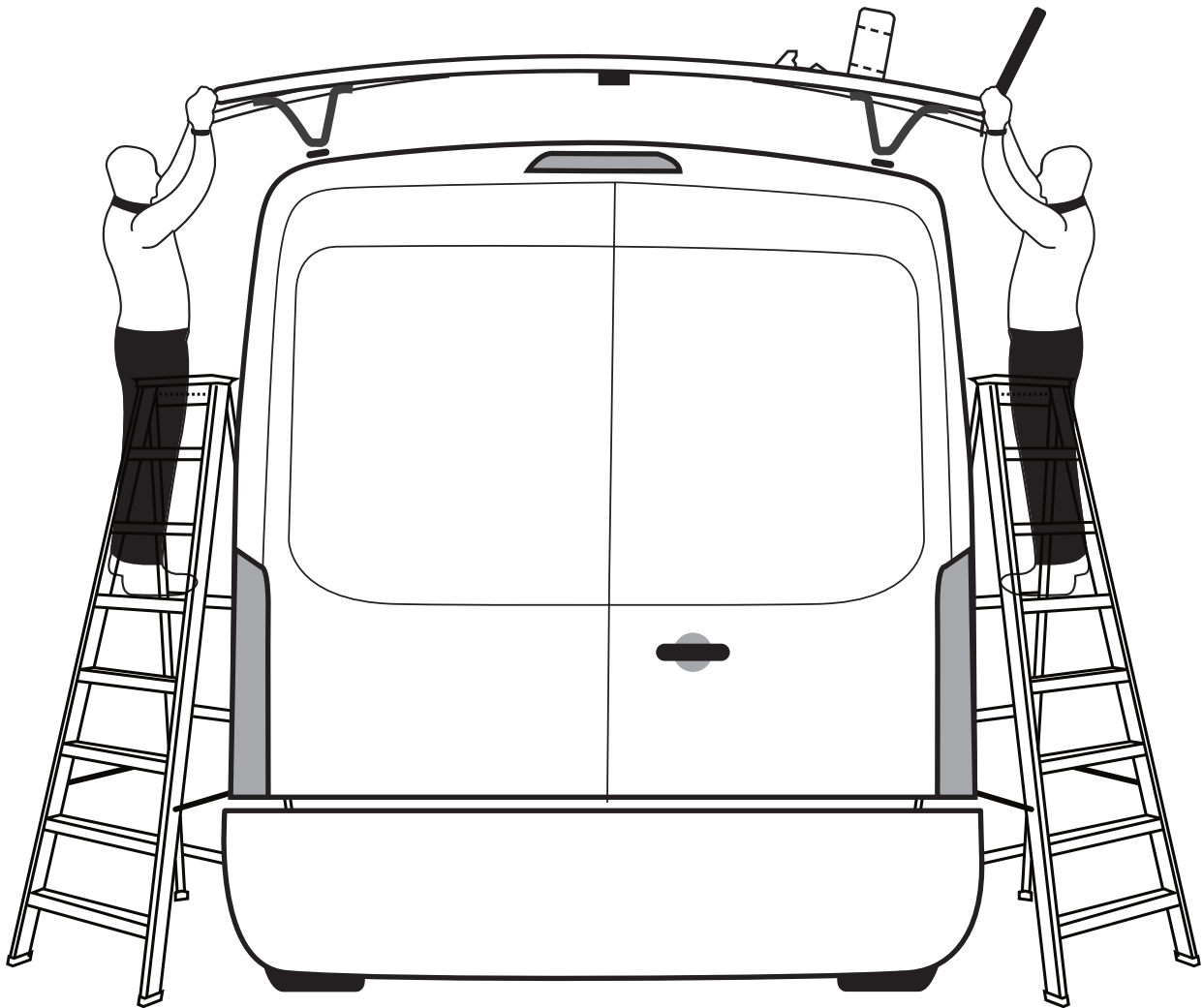
PHASE 2 – INSTALLATION

2.2 LADDER RACK INSTALLATION

2.2.1 Position the Ladder Rack (**minimum two persons**) on the vehicle so that the feet are on the tracks.

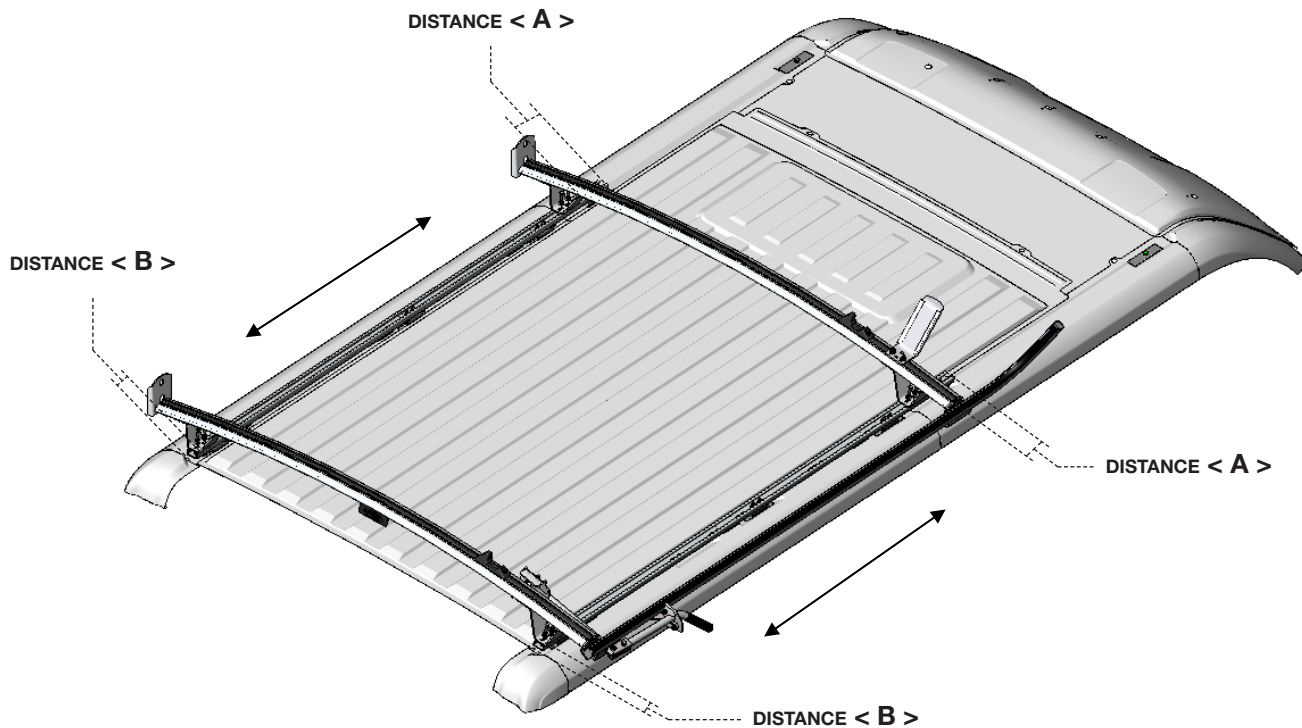
NOTE: If you do not have a hoist, lift the ladder rack onto the roof manually.

Ladder Rack



2.2.2 While making sure the crossbows are parallel to each other, slide the rack to the appropriate position, then attach all the “V” feet to the mounting tracks.

DISTANCE < FOOT TO END OF TRACK >







TOOLS

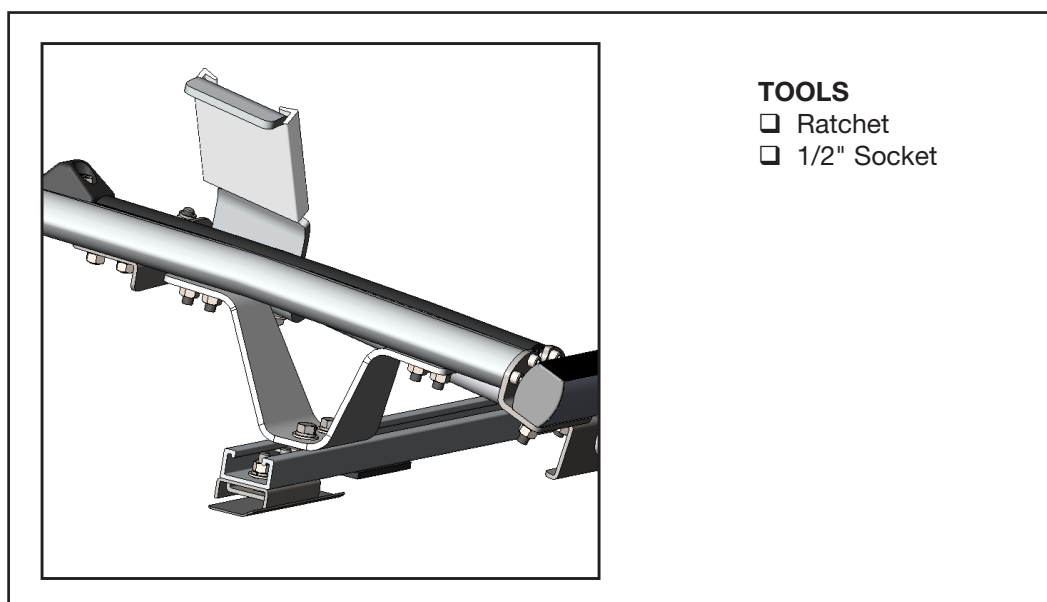
- Ratchet
- 1/2" Socket
- Tape Measure

FASTENERS USED

8x

	#90-209 Hex Bolt 5/16" x 1"
	#98-123 Lock Washer
	#98-117 Flat Washer
	#94-150 Channel Nut

2.2.3 Center the crossbows on the vehicle, then tighten all the “V” feet to the crossbows.



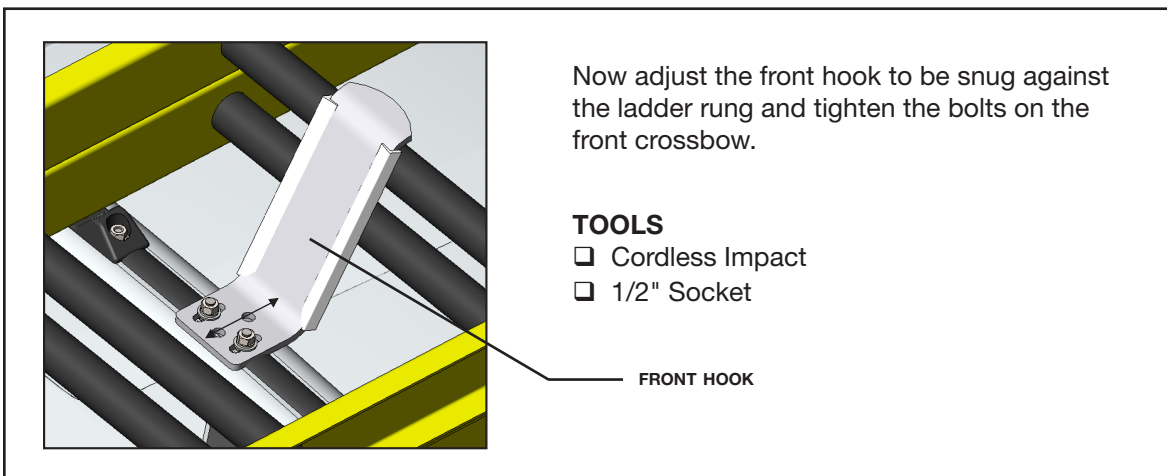
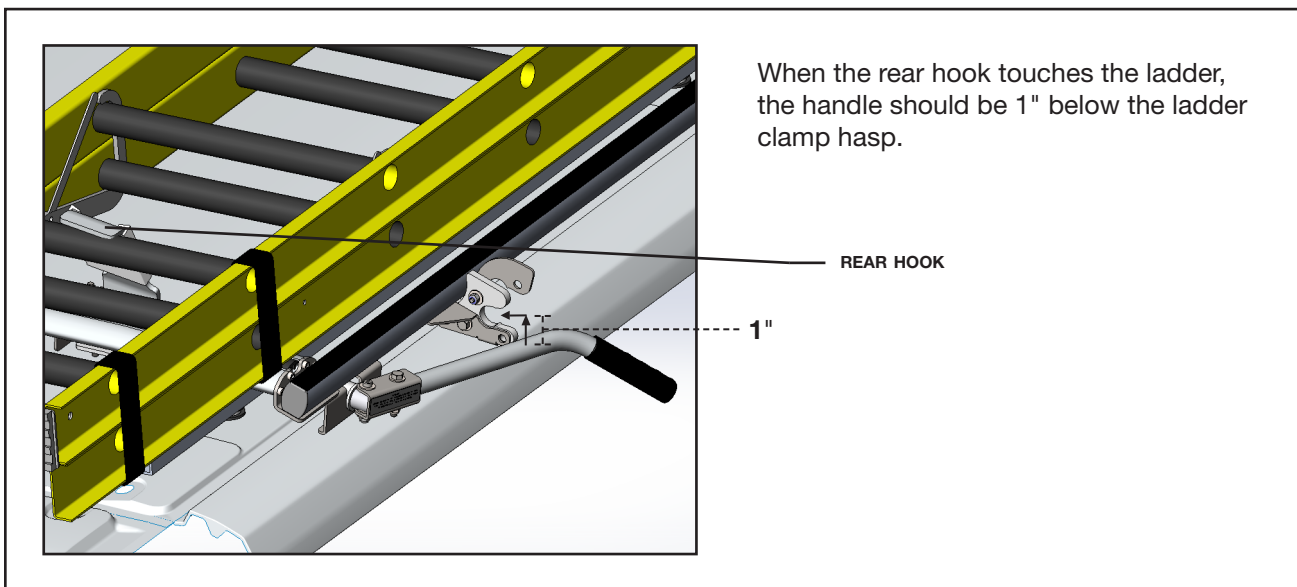
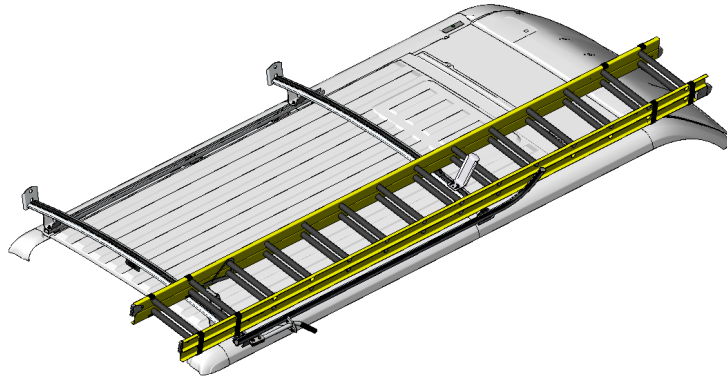
- TOOLS**
- Ratchet
 - 1/2" Socket

2.2.4 Ladder Rack adjustment.

NOTE: The ladder cannot extend beyond the rear bumper of the vehicle.

IMPORTANT:

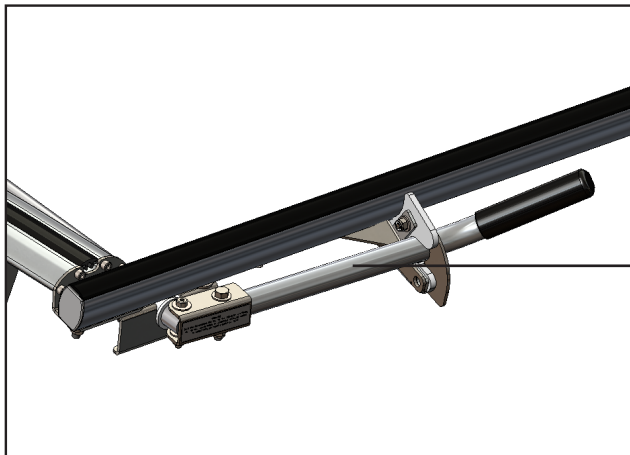
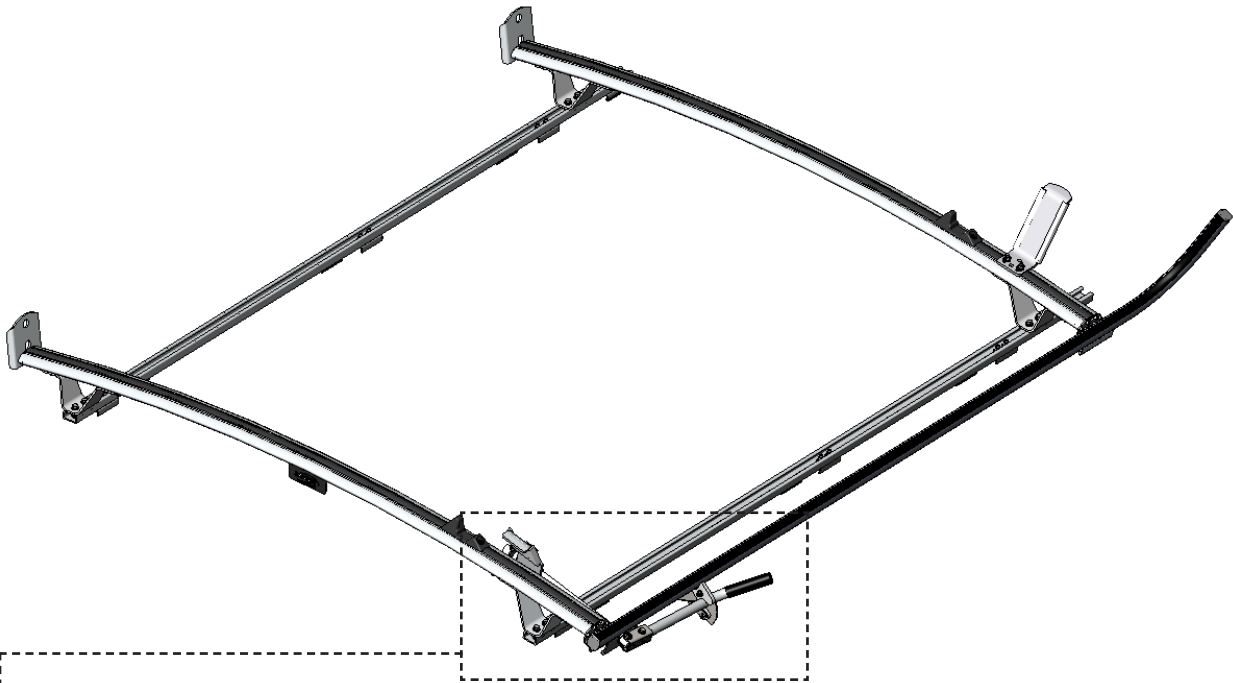
- After installation is complete, cut the track plug underneath the front crossbow to fill all the unused space.
- Place the ladder rack warning label on a visible area, recommended on a partition.



PHASE 2 – INSTALLATION

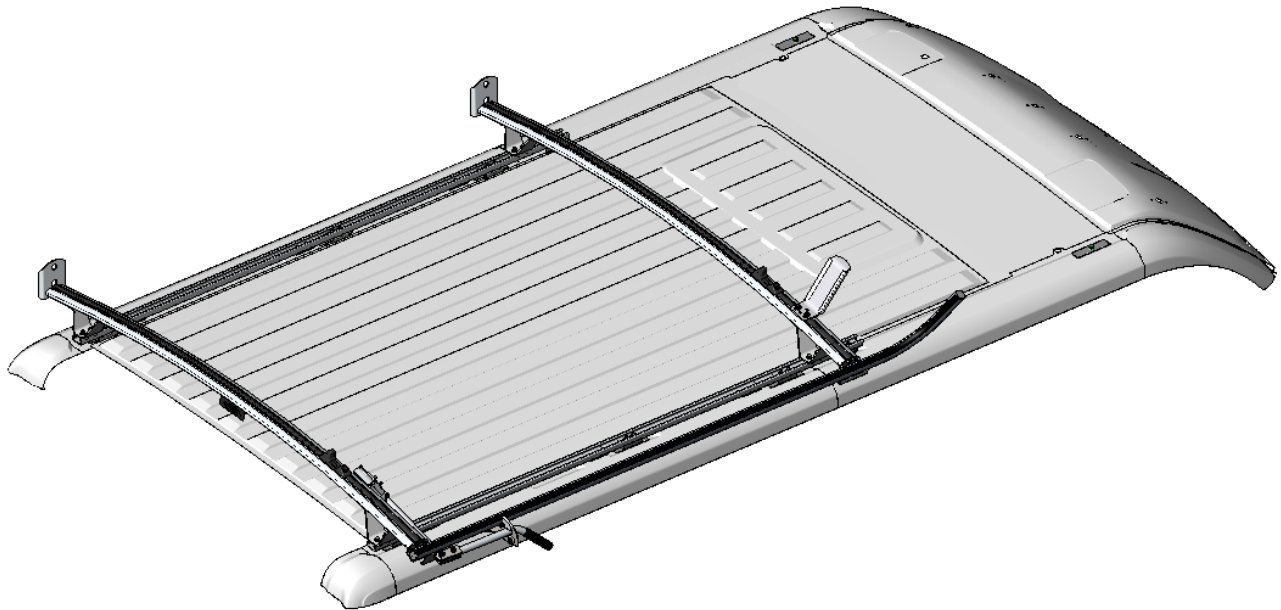
2.3 NOTE

2.3.1 If the handle is interfering with the door or roof of the vehicle, the handle can be installed in an alternate position.



If the handle is interfering with the door or roof of the vehicle, disassemble the handle, then assemble it in an alternate position as shown.

Handle



**“You have successfully installed your
1520-PHL Ladder Rack**

Thank you for doing business with us.”

For any feedback or suggestions you might have, please contact: cs@rangerdesign.com

