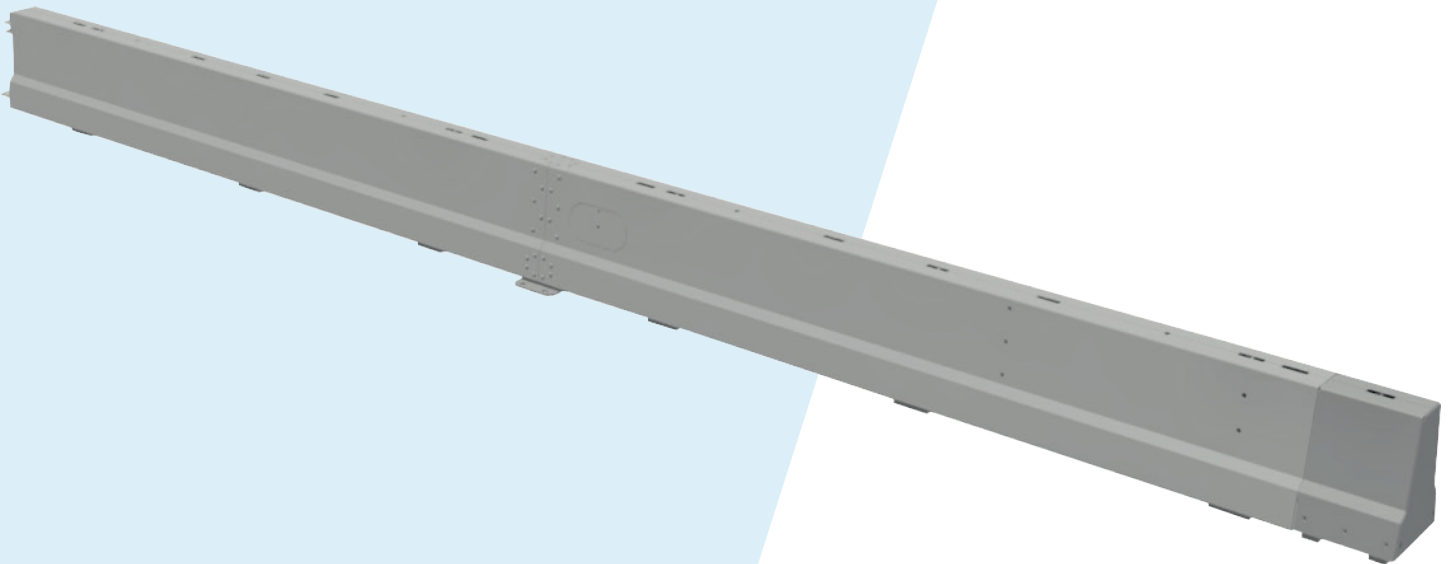


Installation manual
BarrierGuard 800



OBJECTIVE

BarrierGuard 800 installation manual

COUNTRIES

United States
Canada

Test Designation

MASH

VERSION

ver.2.8



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1. Introduction

1.1. General

This section is solely to act as a guide to installers and explains the current requirements. This manual acts as a reference guide for BarrierGuard 800 installers and should be used in conjunction with any local specific requirements.

BarrierGuard 800 is a rapidly deployable Steel Safety Barrier conforming to American and European MASH/NCHRP-350/ EN 1317 test standards.

BarrierGuard 800 is a smooth faced modular vehicle restraint system, anchored to the ground at the end of each run or at intermediate anchor points along its length as required to meet the performance characteristics specified. It consists of single elements of prefabricated 19.7 ft (6.0 m) long steel barrier. Two elements are bolted together at the factory providing 39.4ft (12.0m) long sections with male and female QuickMount connectors to facilitate speedy installation on site. Connection is achieved by simply lining up the barrier and locking the QuickMount connectors together. The permissible length of the system is unlimited as the barrier attains its performance characteristics by a combination of torsional rigidity, anchoring and/or self-weight. BarrierGuard 800 should only be installed where the cross fall is 8% or flatter. Any steeper transverse angles may prevent the system from performing as designed. The Length of Need of BarrierGuard 800 is the total installed length between the two end anchors. These Inner Anchor Shoes are located 19.7 ft (6.0 m) in from the end of each terminal. The minimum recommended installed length of BarrierGuard 800 is 59.1 ft (18.0 m) between Inner Anchors. The closed design of the barrier protects the vulnerable road users because there is no chance of constriction under or between the barrier.

1.2. Deflection chart

Model	Dynamic Deflection	Dynamic Working width
BarrierGuard 800 standard TL3-11	66.5 in (1.69 m)	87.40 in (2.22 m)
BarrierGuard 800 Minimum Deflection TL3-11	1.54 in (0.47 m)	39.76 in (1.01 m)

For the accepted dynamic deflection please consult the website of the Road Authority of the respective Territory.

1.3. Deflection chart multiple impact angles and speed

Speed km/h	Impact angle (degrees)				
	25°	20°	15°	10°	5°
100	66.54 in (1690 mm)	58.80 in (1493,5 mm)	46.79 in (1188,5 mm)	30.51 in (775 mm)	9.96 in (252,9 mm)
90	60.96 in (1548,3 mm)	52.30 in (1328,3 mm)	40.74 in (1034,8 mm)	26.30 in (667,9 mm)	8.96 in (227,6 mm)
80	54.69 in (1389,2 mm)	45.64 in (1159,2 mm)	34.82 in (884,5 mm)	22.26 in (565,3 mm)	7.93 in (201,4 mm)
70	47.74 in (1212,5 mm)	38.82 in (986,1 mm)	29.04 in (737,6 mm)	18.39 in (467 mm)	6.87 in (174,4 mm)
60	40.08 in (1018 mm)	31.86 in (809,2 mm)	23.41 in (594,5 mm)	14.72 in (373,9 mm)	5.80 in (147,4 mm)
50	31.72 in (805,8 mm)	24.74 in (628,3 mm)	17.91 in (454,8 mm)	11.23 in (285,3 mm)	4.71 in (119,7 mm)
40	22.68 in (576,1 mm)	17.46 in (443,6 mm)	12.55 in (318,7 mm)	7.93 in (201,3 mm)	3.60 in (91,5 mm)

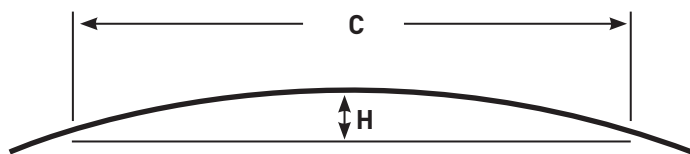
Deflection outcomes are based on crash tests, simulations and extrapolation.

1.4. Curved barrier

In many cases, the barrier may have to follow a curve. There are a number of options depending on the curve. These are described below followed by a table of curvatures that can be achieved and methods of estimating the curvature.

1. Movement at the QuickMount - this allows slight curvature usually sufficient for horizontal curves on motorways and dual carriageways.
2. Slackening the bolts in the standard joint in the middle of a 39.4 ft (12.0 m) section and retightening after "bending".
3. Using a short length of barrier 2.06 ft (0.63 m) which includes an angle and has male and female QuickMount. These normally have a 2½ degree or 5 degree bend.
4. Replacing the joining plates in the middle of a 39.4 ft (12.0 m) section of barrier with plates, with slotted holes. The barrier can then be adjusted using the formula below for angles of bend up to 5°.
5. Using shorter barrier lengths. If methods 3 and 4 are used with 39.4 ft (12.0 m) barrier sections, a 10° rotation can be achieved in 39.4 ft (12.0 m) . If, however, special 9.8 ft (3.0 m) sections are used to produce a 19.7 ft (6.0 m) section with a 10° rotation the radius is effectively halved.

To find radius of curve



To find the radius of the curve, measure the straight-line distance between two points on the curve (C) and measure the maximum distance from this straight line to the curve (H) and use formula.

$$\text{Radius} = R = \frac{C^2 + 4H^2}{8H}$$

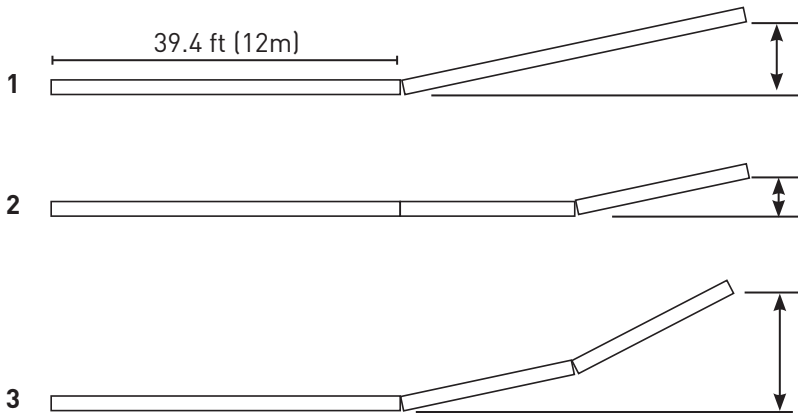
Table of curvatures

Method	Description	Max. Angle °	Radius Feet/Metres	Offset Metres at End of 12m	Type
1	Movement on QuickMount	0.67	3,379.3 ft (1030.0 m)	5.51 in (0.14 m)	1
2	Slackening standard bolted joint	1.5	1,509.2 ft (460.0 m)	5.90 in (0.15 m)	2
3	5 degree bend piece	5.0	449.6 ft (137.0 m)	39.37 in (1.00 m)	1
4	5 degree bend using slotted plates	5.0	449.6 ft (137.0 m)	19.68 in (0.50 m)	2
3 & 4	5° bend piece + 5° slotted plates	10.0	226.5 ft (69.0 m)	61.41 in (1.56 m)	3
3 & 4	As above but (9.85ft + 9.85ft = 19.7ft overall) (3.0m + 3.0m = 6.0m overall)	10.0	114.1 ft (35.0 m)		3

TO FIND THE ANGLE PER 12 METER LENGTH

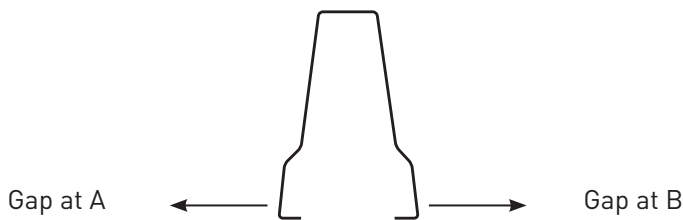
$$\text{Angle} = \frac{688}{\text{Radius}}$$

Diagrams of offset



Barrier angled at bolted joint using slotted plates

Invert the barrier and fit slotted plates in place of standard plates. Use washers 1 57/64 in (48.0 mm) O.D. x 5/32 in (4.0 mm) thick under the nuts. Angle the barrier the required amount.

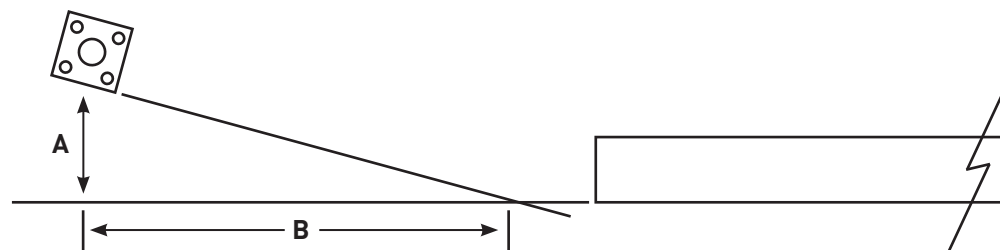


The gap A and gap B should differ by 3/8 in (9.4 mm) per degree of bend required. Tighten the bolts to a minimum torque of 55.32 ft-lb (75 Nm).

1.5. Offset ends to barrier

It is sometimes required that the ends of the barrier are angled away from the traffic flow. This can be achieved in three ways.

1. Install a 5° radius piece between the 39.4 ft (12.0 m) terminal end and the main run of barrier. The end is then offset by 3.3 ft (1.0 m).
2. Fit slotted plates at the bolted joint 59.1 ft (18.0 m) from the end of the barrier and set at a 5° angle. The end is then offset by 5.24 ft (1.6 m).
3. Carry out both 1 and 2 above. The end is then offset by 8.85 ft (2.7 m).



1.6. Delineators

Reflective delineators can be attached to the side wall of the BarrierGuard 800 as required and at the relevant spacings. There are two options of delineators available, one a fixed reflector the second a reflector with a flexible joint which helps makes it resistant to breaking. Reflectors can be also attached on top of the barrier.

In addition to the reflectors there are available specially manufactured brackets that allow cone lamps to be fixed to the top of the BarrierGuard 800.

2. Safety Statements

2.1. Lifting BarrierGuard 800

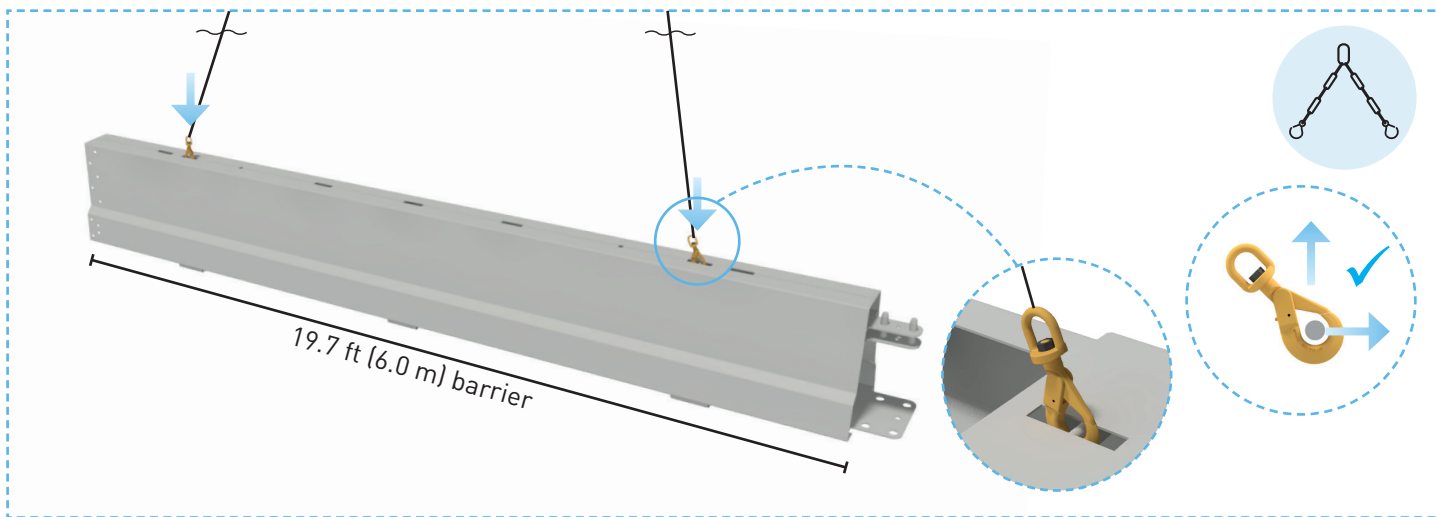
Use lifting equipment that apply to local regulations.

Each standard element of BarrierGuard 800 is 19.7 ft (6.0 m) long and weighs approx. 1,190.5 lbs (540.0 kg). It is supplied with two elements bolted together to form one 39.4 ft (12.0 m) unit with a male and female QuickMount end enabling site assembly of the BarrierGuard 800 to be completed in the least possible time. The weight of one unit is approx. 2,380 lbs (1,080 kg) .



Make sure the chains are not twisted before hooking on. When hooking on to the barrier, make sure the hook is around the bar that runs across the slot. NEVER HOOK ONTO THE SHEET STEEL DIRECTLY. Make sure the hooks face outwards, i.e. the open side of the hook nearest the end of the barrier.

Refer to chapter 10 for lifting guide



2.2.1. Turning the barrier over

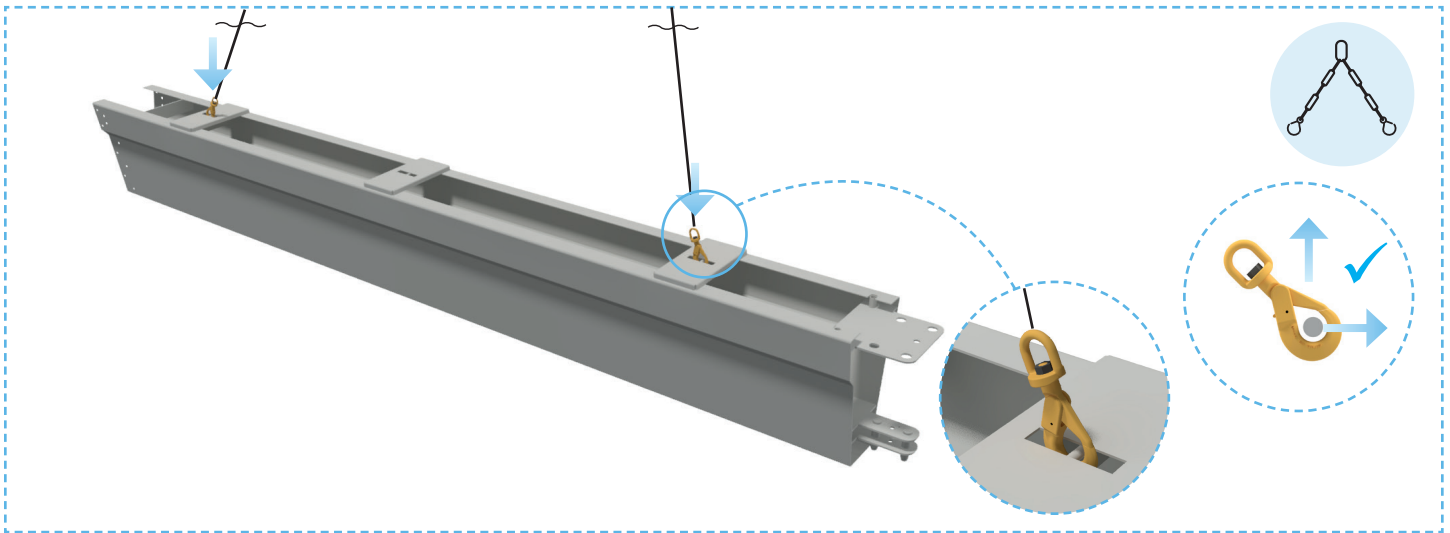
In order to stack the barrier or work on the fastenings inside the barrier it is occasionally necessary to invert the barrier. Do not turn the barrier over by pulling it sideways with the crane. This can cause damage to the crane and chains, which could cause an accident due to failure during subsequent lifting operations.

The following method can be used but note that the chain hooks are subject to side load when using this method. Always, therefore, use hooks that are well-overrated (typically 4,410 lbs (2,000 kg) per hook) and use of the conventional type, not the type where the chain attaches to the extended latching bar.

2.2.2. Inverting the BarrierGuard 800

Lower the barrier onto a wooden block so that the barrier settles on the block near the centre of the barrier clear of cross members and with only one side of the barrier supported by the block. Continue lowering the barrier until it lies on it's side. Transfer the chains from the lifting eyes on the top of the barrier to the lifting eyes on the bottom of the barrier and lift the inverted barrier.

Lifting the 19.7ft (6.0m) barrier from the bottom



2.2.3. Righting inverted BarrierGuard 800

Lower the barrier onto a timber wedge with approximately a one in three slope. The barrier will settle on its side. Transfer the lifting chains from the bottom of the barrier to the top of the barrier and lift in the normal way.

2.4 Moving the barrier with wheel sections

Do not move the barriers (with wheel sections) at a speed higher than 3mp/h (4.0km/h).

2.5 General Safety

- All required traffic safety precautions should be complied with. All workers should wear required safety clothing (high visibility vests, steel capped footwear, gloves etc.)
- Only authorised trained personnel should operate any machinery. Where overhead machinery is used, care must be taken to avoid overhead hazards.
- There are no underground services, waterproof membranes etc. which could be damaged by drilling;
- There are no overhead cables that could be contacted by the lifting operation; and
- There is adequate working room and safety zone.

BarrierGuard 800 **MUST** start with a pinned Full Height Terminal End transitioned to an approved impact attenuator (such as a Crash Cushion). And finish with an end termination. Details of Crash Cushion transitions and connections are available from the Crash Cushion supplier.

3. Required Tools

For the installation of BarrierGuard 800 a metric toolkit is required

<p>Tape measure</p>	
<p>Torque Wrench (24mm and 36mm Socket) (0-220 ft-lb / 0-300Nm)</p>	
<p>Hammer Drill 1.125 in. (30mm)</p>	
<p>Combination Wrench (13mm, 24mm, 30mm, 32mm & 36mm)</p>	
<p>Hammer</p>	
<p>T-Wrench (magnetic) (30mm socket)</p>	
<p>Lifting Chain</p>	
<p>Wooden Beam</p>	

4. Anchoring options on asphalt and concrete

4.1. Foundation Type

Suitable for anchor foundation:

Foundation Type	Concrete Pad			Asphalt over subbase			ASphalt only			Asphalt over concrete			Compacted Subbase/Soil		
Anchor type	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Suitable:	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗

refer to page 17 for anchoring on dirt roads

4.2. Choice of anchoring

Choice of anchoring		
1	Double anchor (bow tie anchor)	
2	Single anchor (intermediate anchor)	
3	Twist-in anchor <i>only to be used in situations where it's not possible to use the anchors on the bolted joints</i>	

4.3. Anchor pin

Anchor pin		Diameter drilled hole	Anchor type	Traffic side	Non traffic side
Flat Top Pin Ø 1 3/16 inch (Ø 30mm) Length: 18 1/2 inch (470mm) 		Ø 1 1/4 inch (Ø 32mm)	1	✓	✓
			2	✓	✓
			3	✓	✓
Flag Top Pin Ø 1 3/16 inch (Ø 30mm) Length: 21 1/4 inch (540mm) <i>Optional to use for terminal ends. Not suitable for concrete.</i> 		Ø 1 1/4 inch (Ø 32mm)	1	✗	✓
			2	✗	✓
			3	✗	✓

Flag Top Pins are to be used only in the area for pinning under the hood.

All M16 bolts to be used for connecting sections of BarrierGuard 800 together to be at least grade 8.8 (ASTM F1554 Grade 105).


5. Standard installation on asphalt and concrete

5.1. Start with Full Height Terminal Male (AS31642628)

1

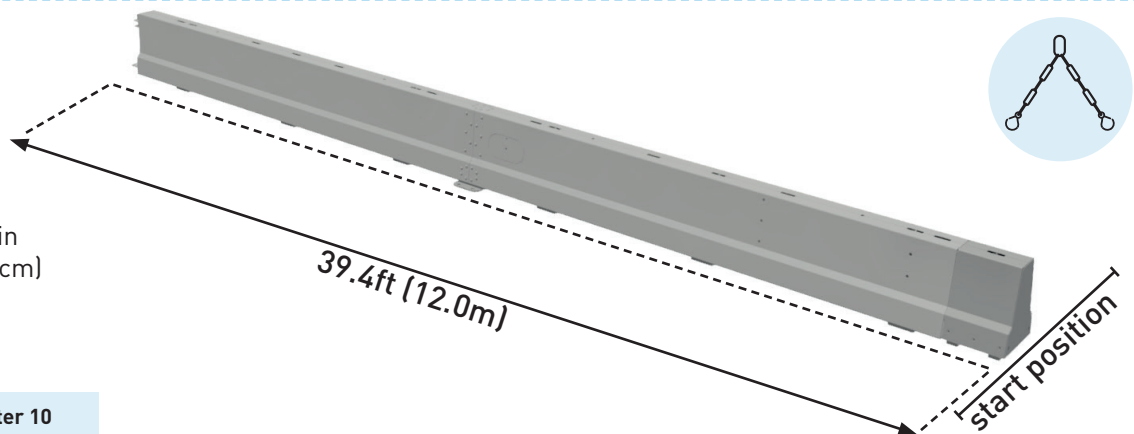
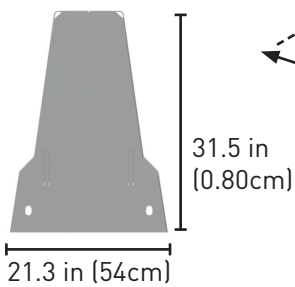



(AS31642628)

 BarrierGuard 800 **MUST** start with a pinned Full Height Terminal End transitioned to an approved impact attenuator (such as a Crash Cushion). And finish with an end termination. Details of Crash Cushion transitions and connections are available from the Crash Cushion supplier.

5.2. Beginning of first string of barriers

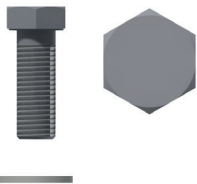
2



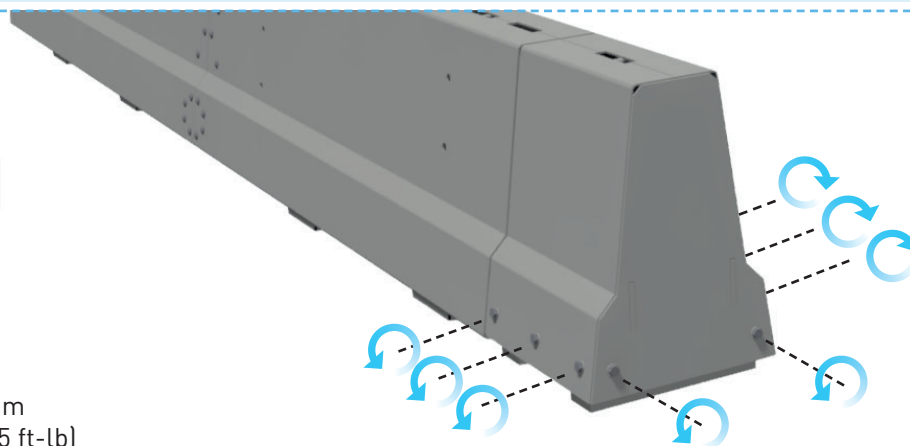
 See lifting guide chapter 10

5.3. End section. Remove pre-installed bolts end terminal hood

3

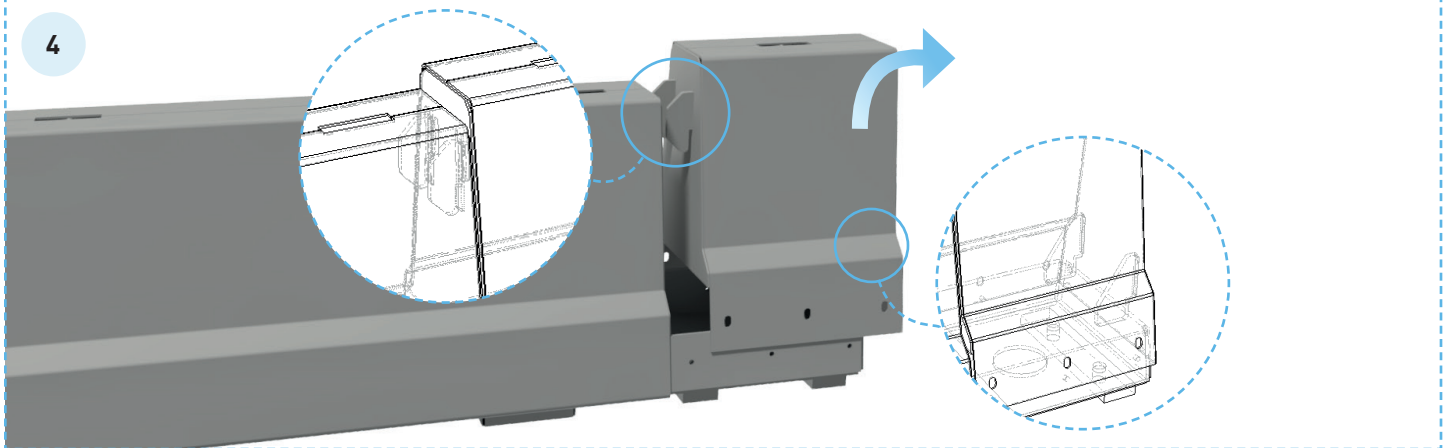


size: m16
length: 45 mm
socket size: 24 mm
torque: 75 Nm (55 ft-lb)

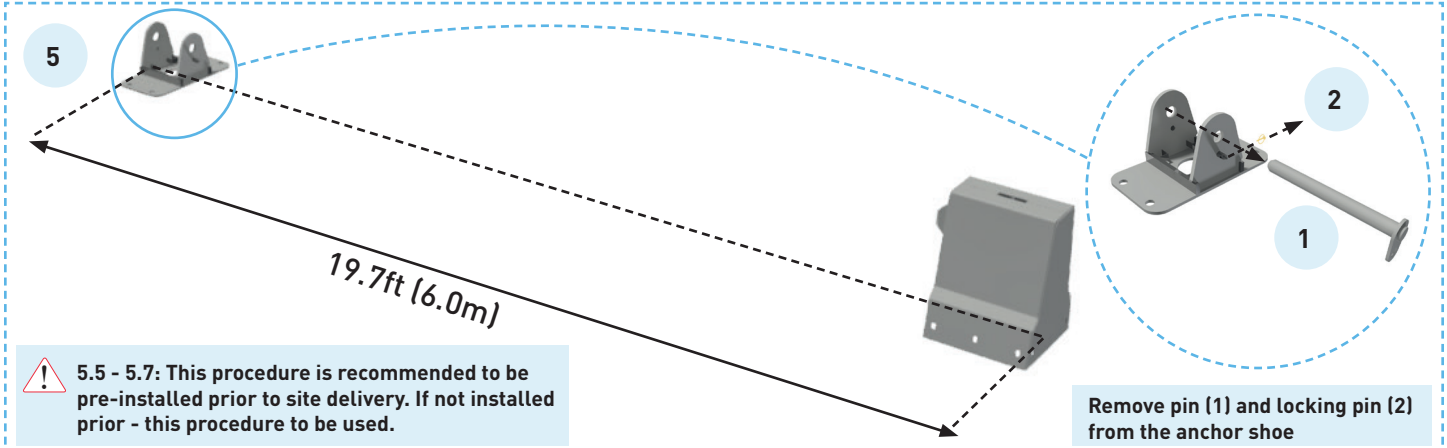


5. Standard installation on asphalt and concrete

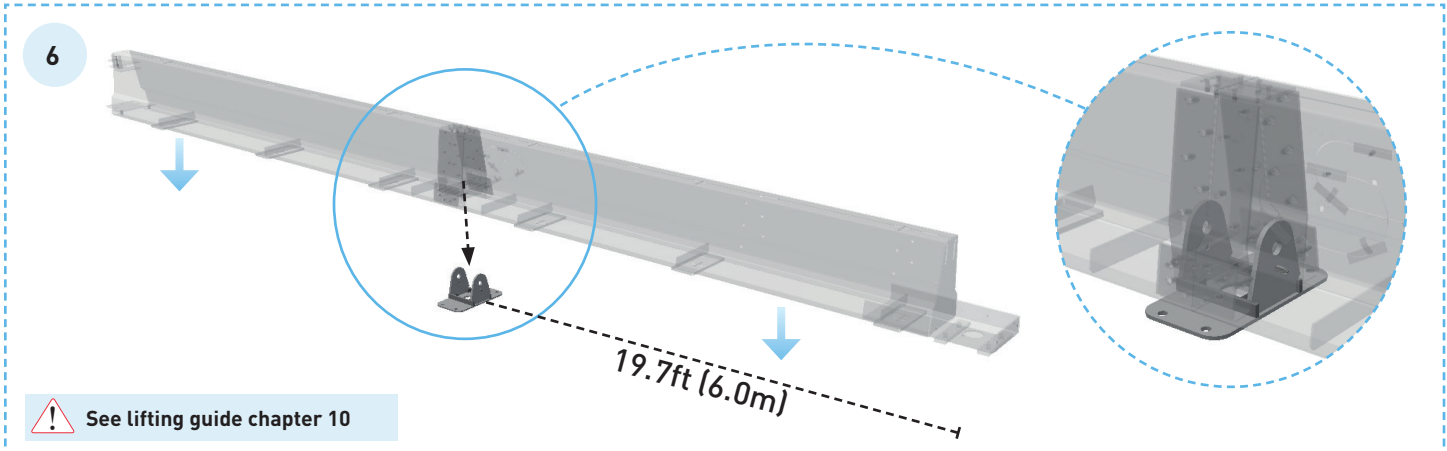
5.4. Remove the hood



5.5. Position the hood and first anchor shoe

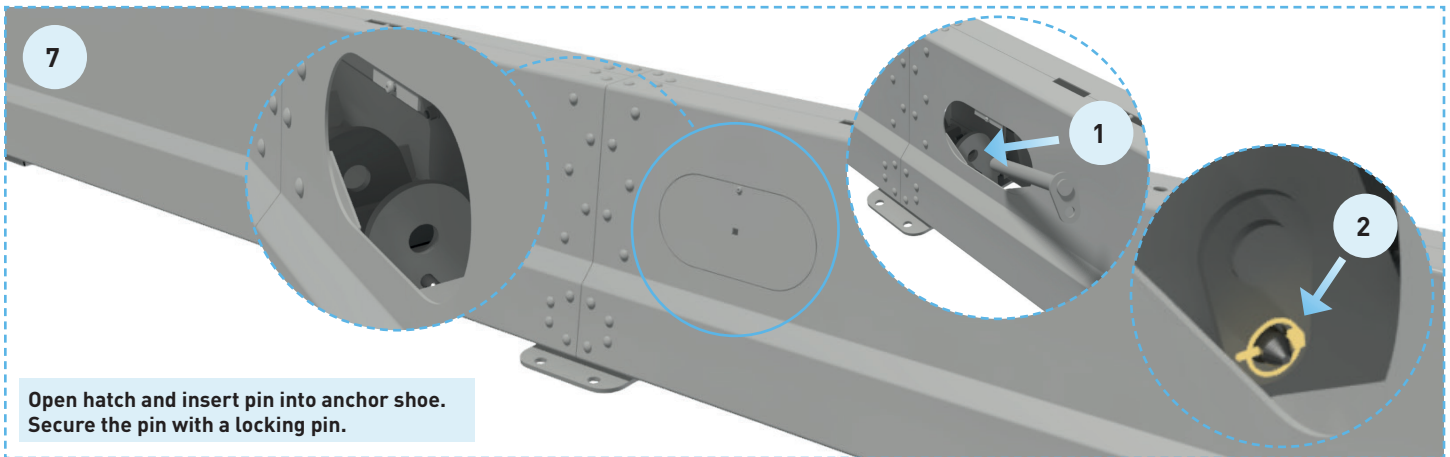


5.6. Slide the barrier over the anchor shoe

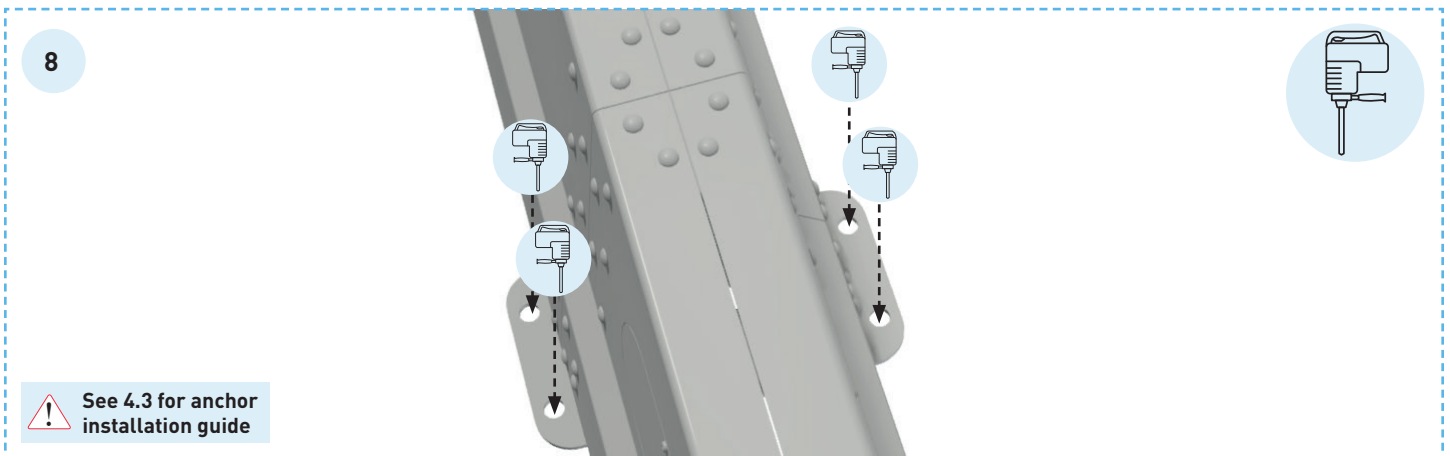


5. Standard installation on asphalt and concrete

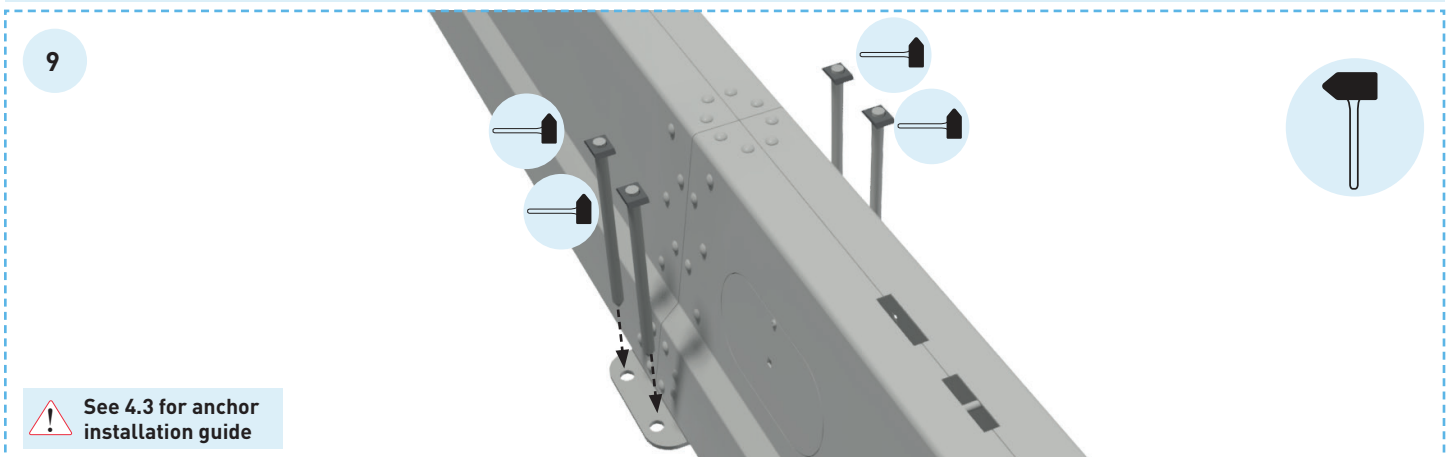
5.7. External anchor installation



5.8. Drill the holes for flat top pins

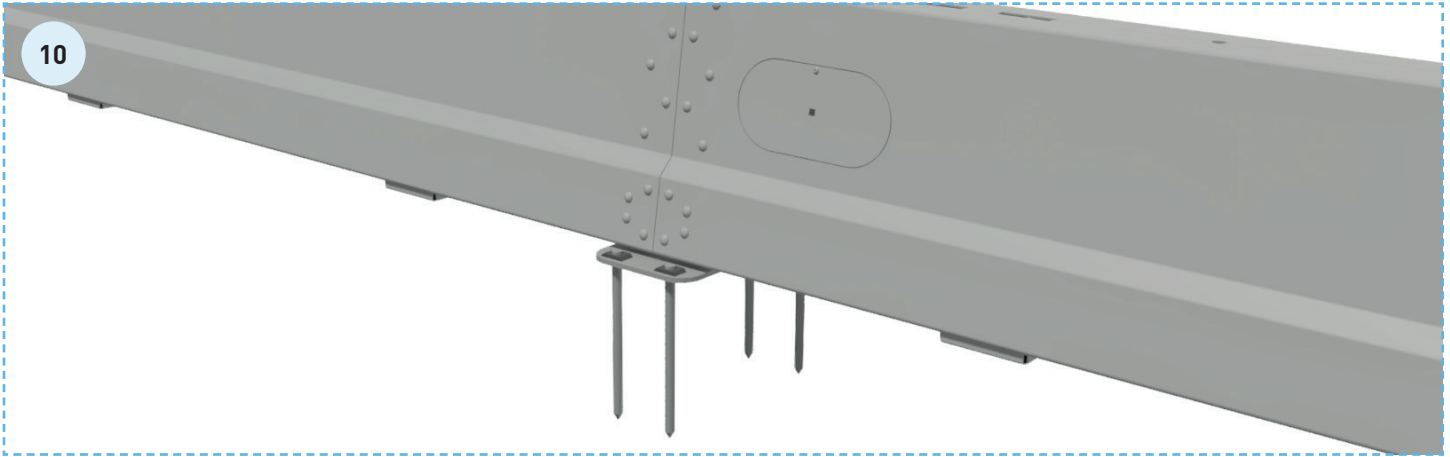


5.9. Insert the flat top pins

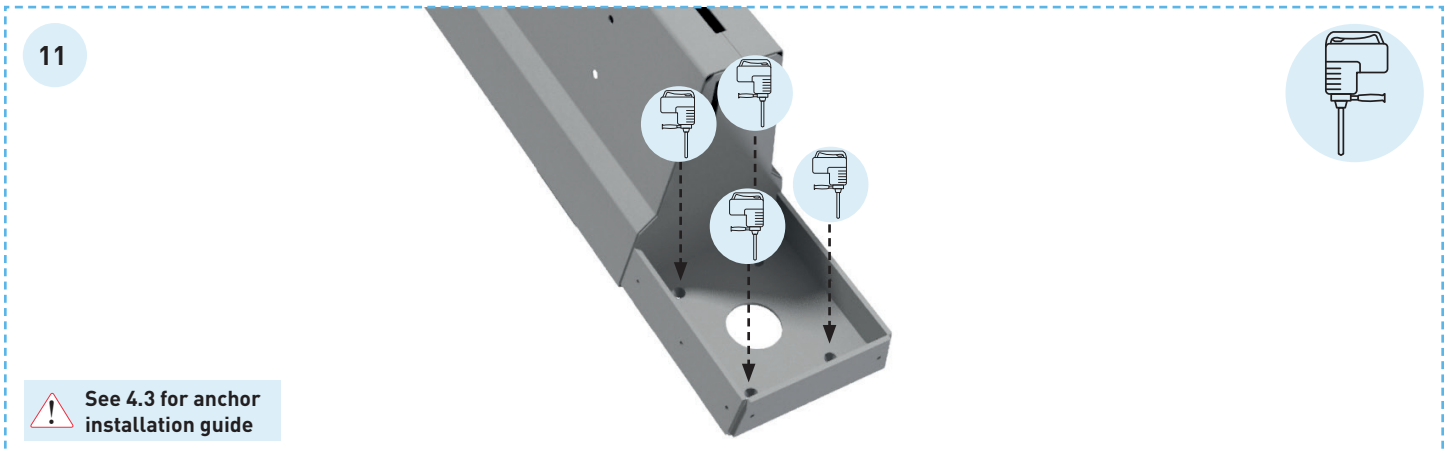


5. Standard installation on asphalt and concrete

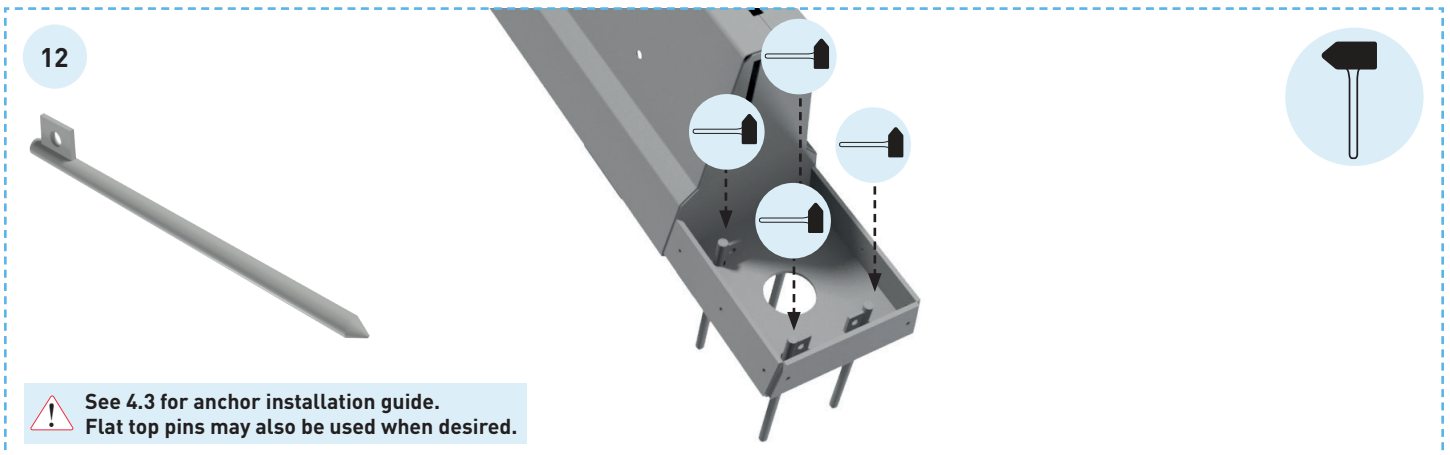
5.10. External anchor installation



5.11. Drill holes for flag top pins end terminal

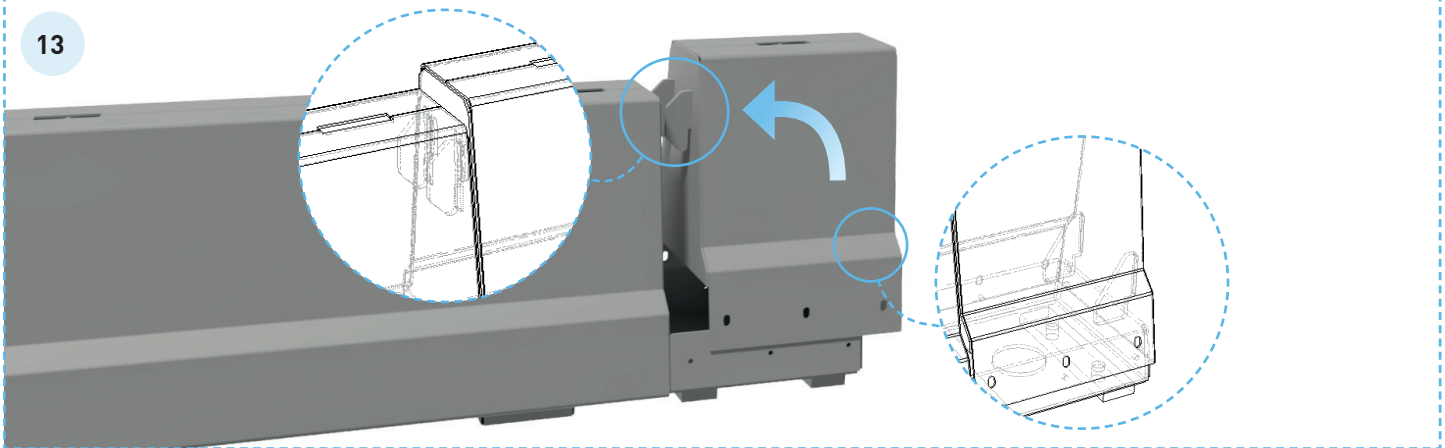


5.12. Insert flag top pins

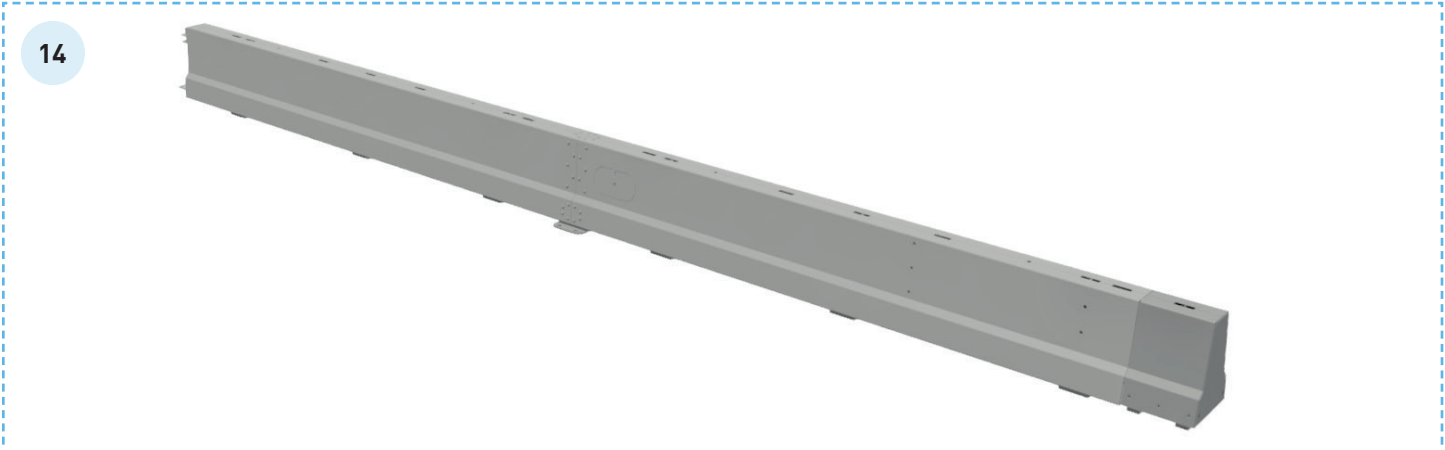


5. Standard installation on asphalt and concrete

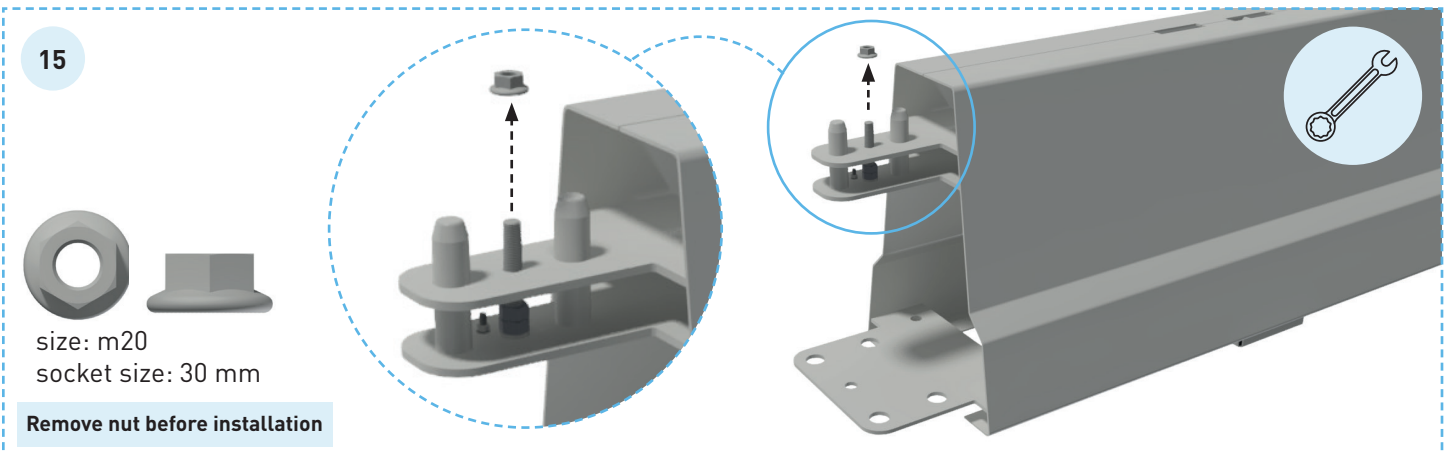
5.13. Put on the terminal end cover



5.14. First section is completed



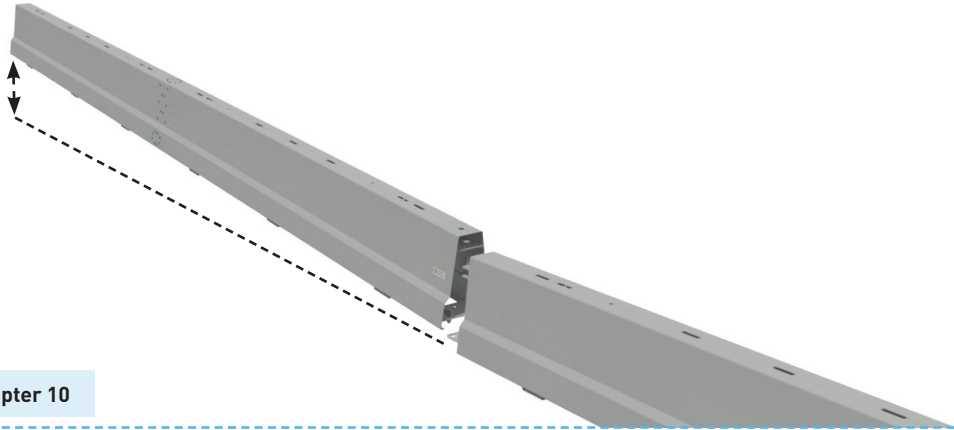
5.15. Quick Connect preparation



5. Standard installation on asphalt and concrete

5.16. Connect the mid sections

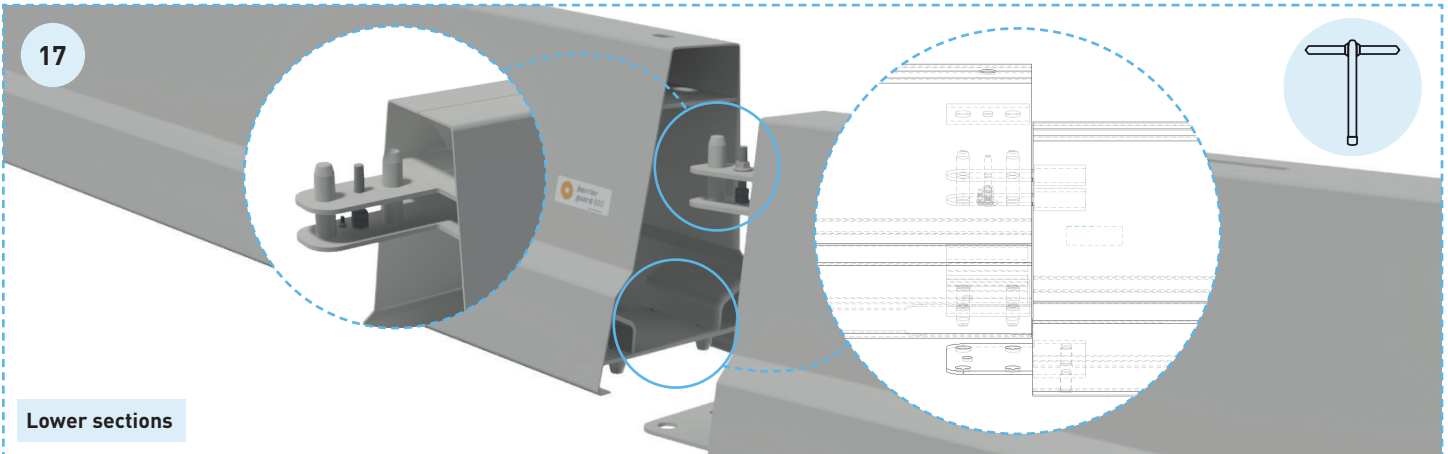
16



⚠ See lifting guide chapter 10

5.17. Lower female section over male section

17



Lower sections

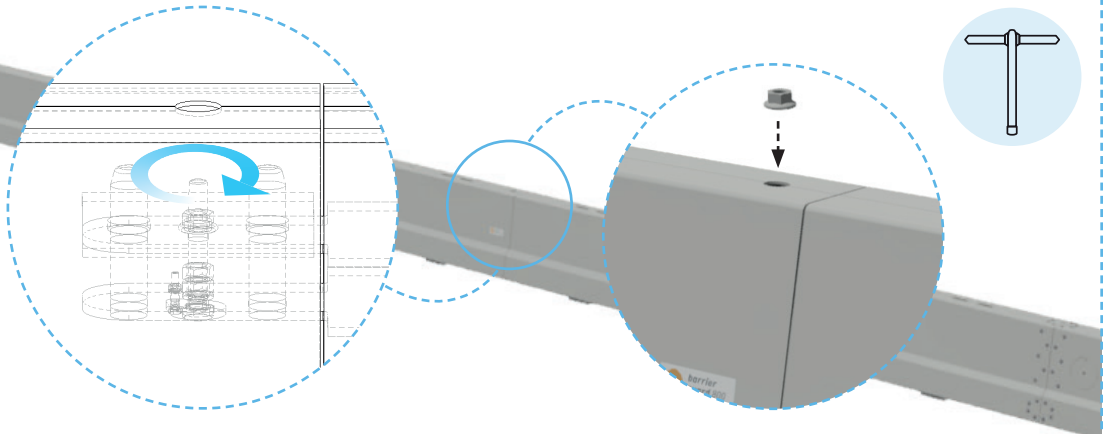
5.18 Tighten the retaining nut

18



size: m20
socket size: 30 mm
torque: 200 Nm (150 ft-lb)

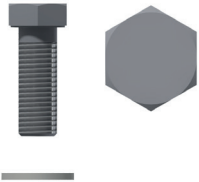
Remove nut male side before
connecting new section



5. Standard installation on asphalt and concrete

5.19. End section. Remove pre-installed bolts female end terminal hood

19

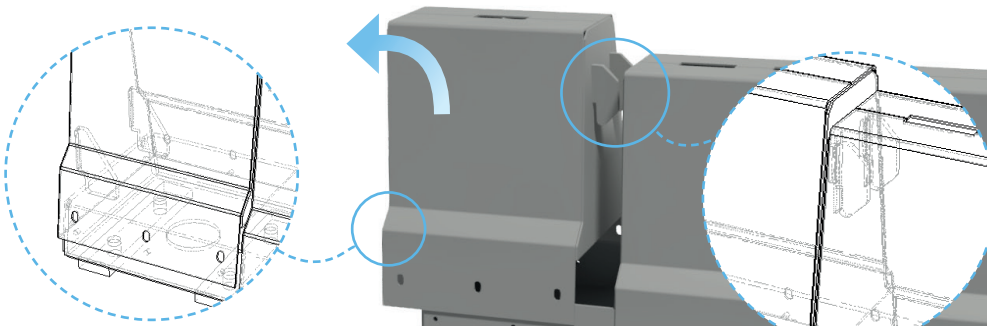


size: m16
length: 45 mm
socket size: 24 mm
torque: 75 Nm (55 ft-lb)



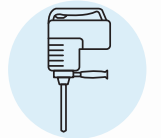
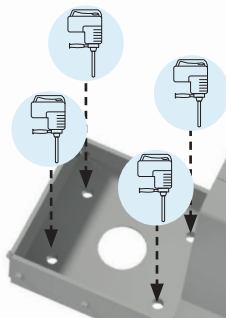
5.20. Take off the terminal end cover


20



5.21. Drill the holes for flag top pins for the end terminal

21

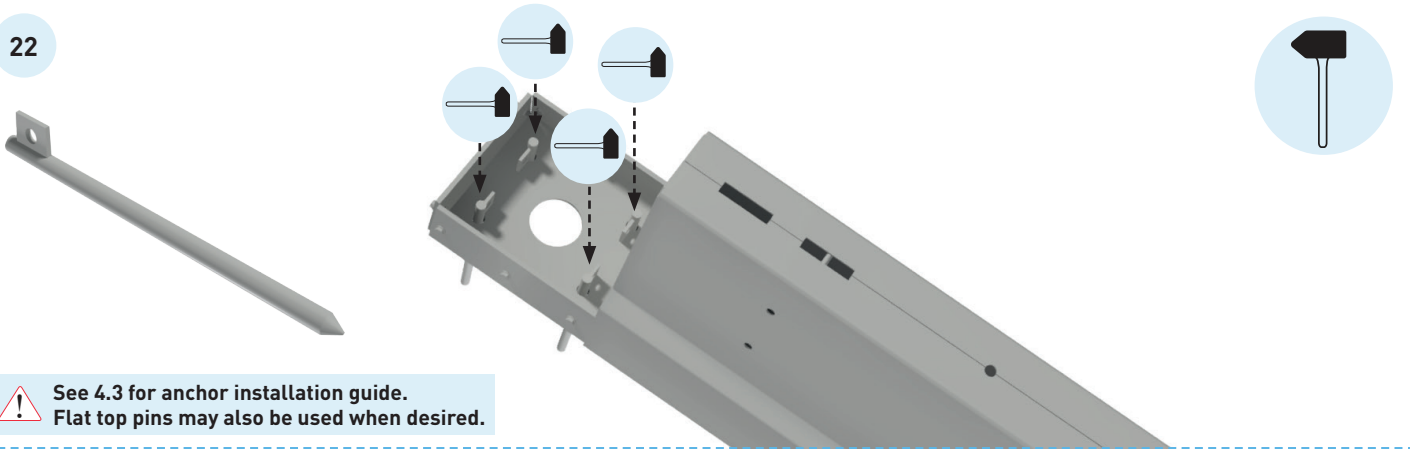


 See anchor installation guide

5. Standard installation on asphalt and concrete

5.22. Insert flag top pins

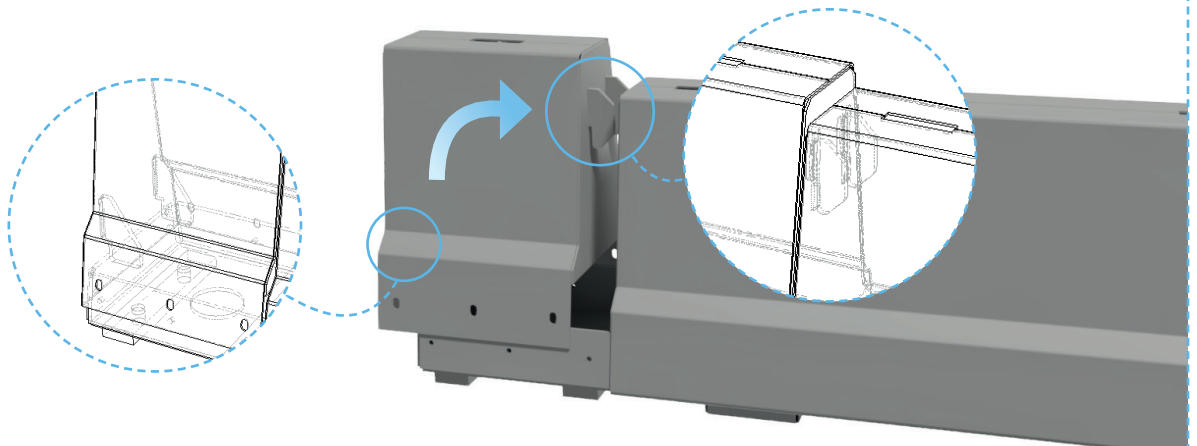
22



! See 4.3 for anchor installation guide.
Flat top pins may also be used when desired.

5.23. Put on the terminal end cover

23

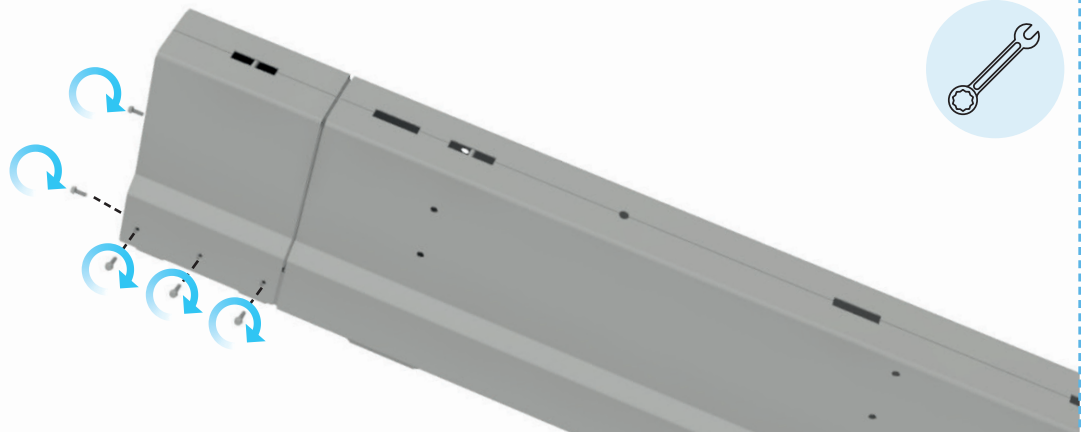


5.24. Tighten the screws

24

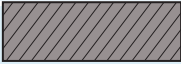
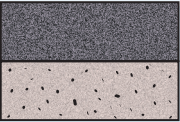
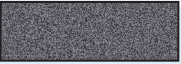
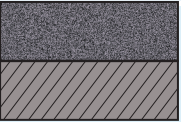
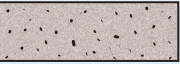


size: m16
length: 45 mm
socket size: 24 mm
torque: 75 Nm (55 ft-lb)



6. Anchoring options on dirt roads

6.1. Foundation Type

Suitable For Anchor foundation:				
Concrete Pad	Asphalt over subbase	ASphalt only	Asphalt over concrete	Compacted Subbase / Soil
				
✘	✘	✘	✘	✔

6.2. Choice of anchoring

Intermediate Anchors		
Anchor Shoe type	Quick Connect	Anchor pile
		

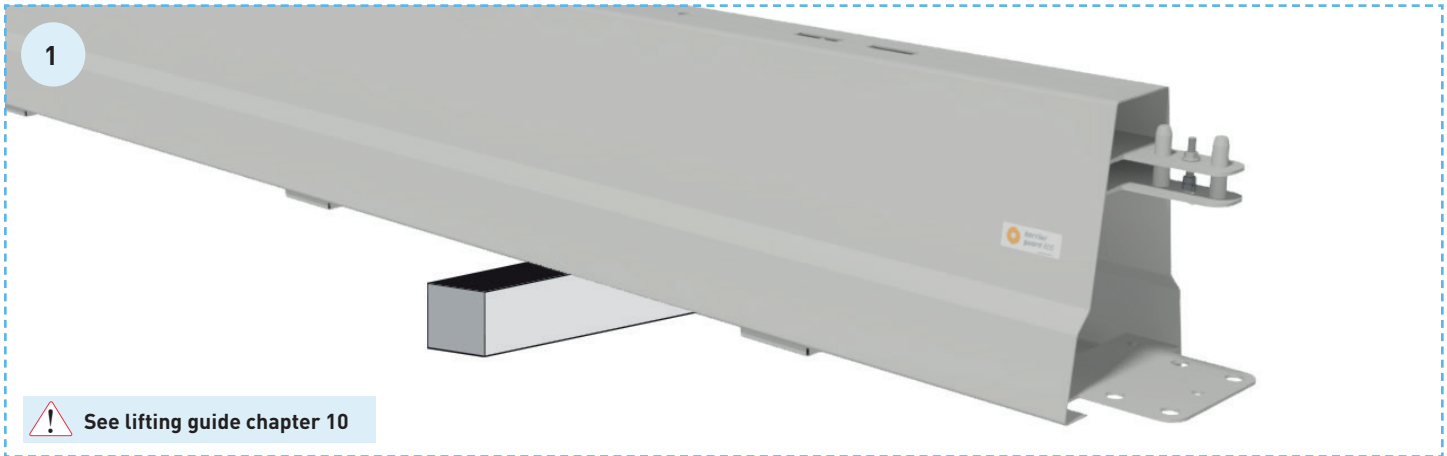
6.3. Anchor pin

Anchor Type	Diameter drilled hole	Suitable
Flat Top Pin Ø 1 3/16 inch / Ø 30mm, length: 18 1/2 inch (470mm)	Ø 1 1/4 inch Ø 32mm	✘
Flag Top Pin Ø 1 3/16 inch / Ø 30mm, length: 21 1/4 inch (540mm)	Ø 1 1/4 inch Ø 32mm	✘
Subbase anchor pile, length: 2ft 9 5/64 inch (840mm)	Ø 5 1/2 inch Ø 140mm	✔

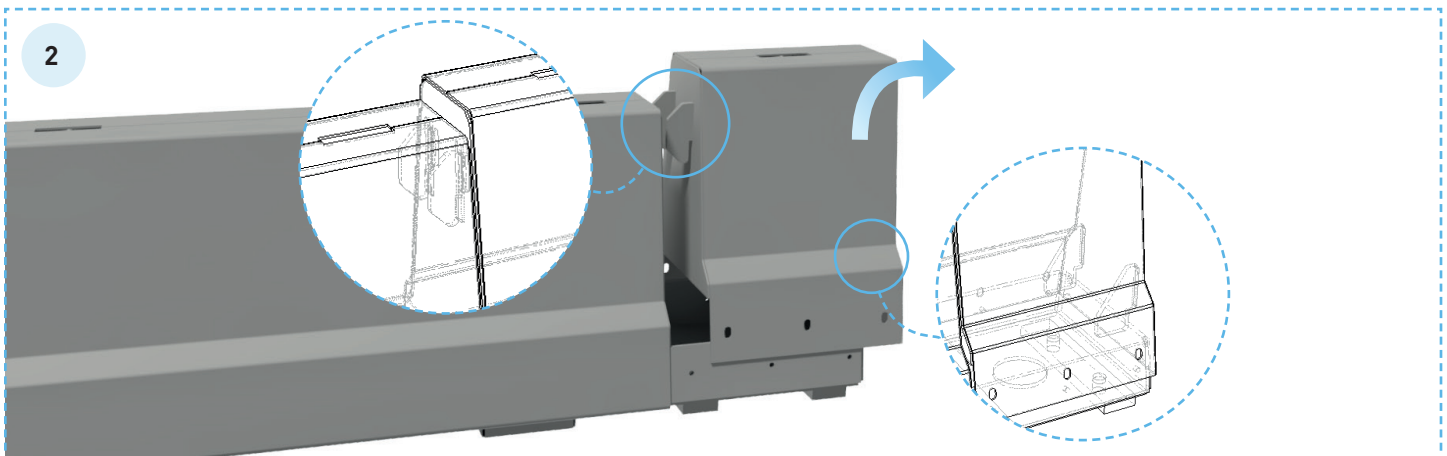
Flag Top Pins are to be used only in the area for pinning under the hood.

7. Installation on dirt roads

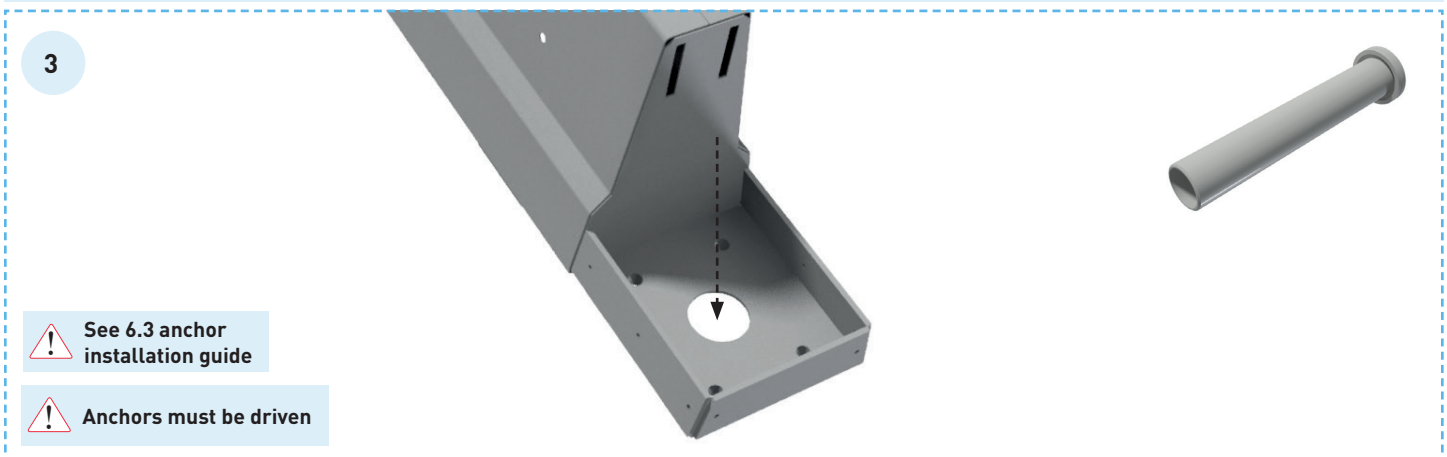
7.1. Raising The Barrier



7.2. Take off the terminal end cover

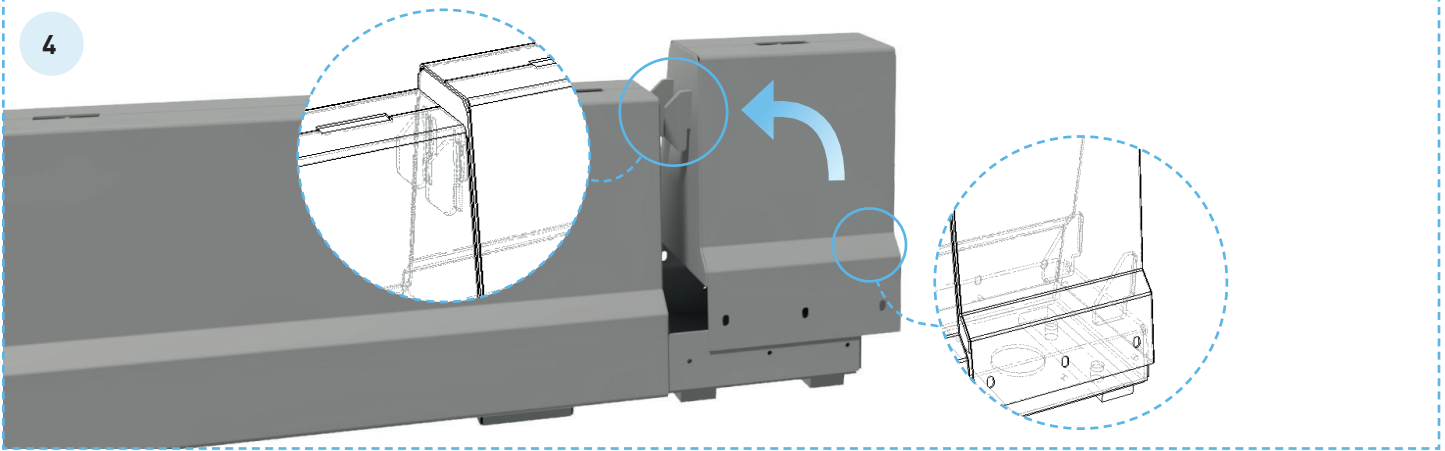


7.3. Use anchor piles for dirt roads to secure the terminal end

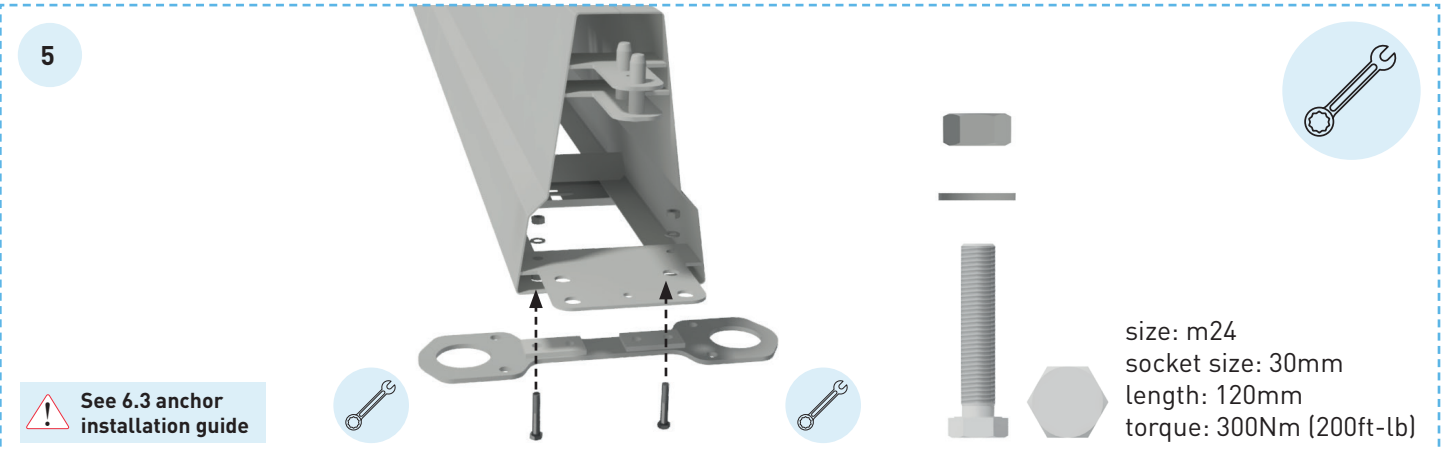


7. Installation on dirt roads

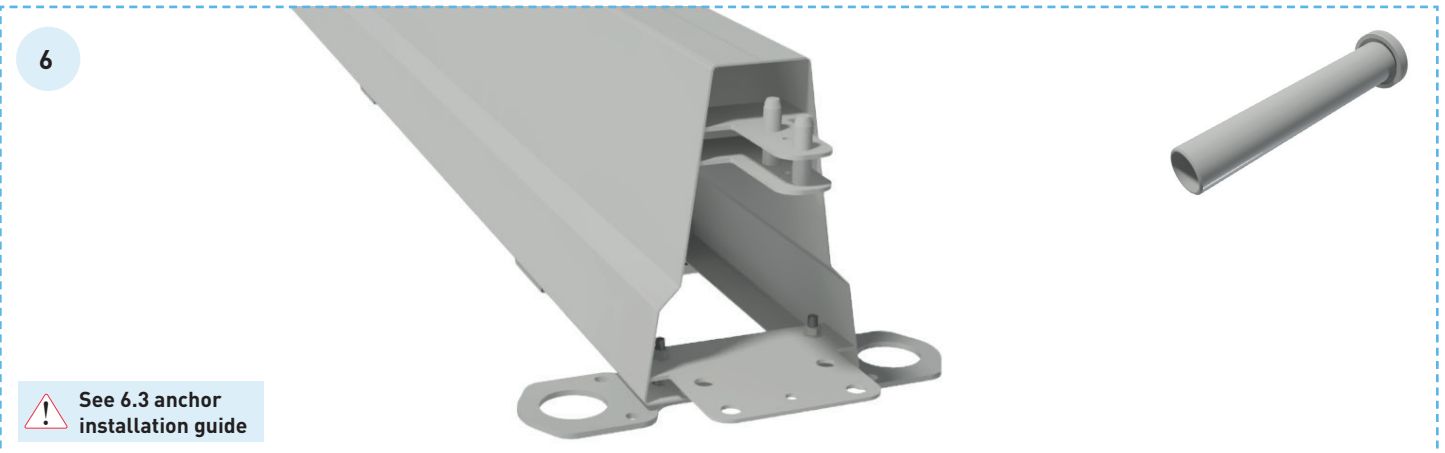
7.4. Put on the terminal end cover and tighten the screws



7.5. Quick Connect intermediate anchor



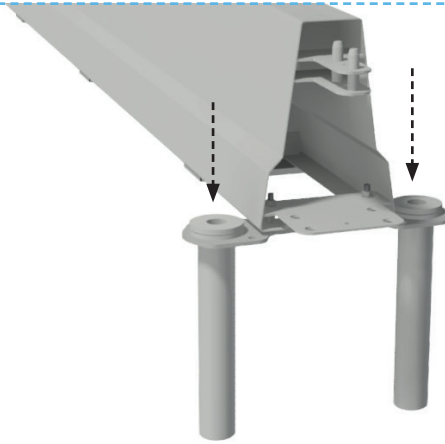
7.6. Use anchor piles for dirt roads




7. Installation on dirt roads

7.7. Anchors must be driven into the ground

7



Please refer to chapter 5 for further installation of the standard sections.

 Anchors must be driven

8. Barrier Guard 800 Minimum Deflection System

8.1. General

The BarrierGuard 800 Minimum Deflection System (MDS) is a rapid deployable system of standard BarrierGuard 800 sections combined with the T-top. Together with a decreased anchor distance, this system offers a very low working width. The BarrierGuard 800 MDS configuration enhances the road workers footprint in which to carry out construction and maintenance work and still perform to a normal containment level. It is particularly beneficial to contractors working on tight construction sites to allow maximum working space together with full safety guideline compliance. The reduced working width of the BarrierGuard 800 MDS also means that it is often possible to maintain full lane widths along the live roadway to help ease traffic flow while still achieving the required working space.

BarrierGuard 800 MDS is a standard installation of BarrierGuard 800 with intermediate anchors every 19.7ft (6.0m) and then fitted with T-Top. The standard sections of BarrierGuard 800 can be installed as per this installation manual (chapter 5). Fit these sections with intermediate anchors every 19.7ft (6.0m). Then the T-Top sections can be added on top of the BarrierGuard 800 sections as per chapter 9. The minimum installation length of BarrierGuard 800 Minimum Deflection System is 1653.5 in (42.00m).

BarrierGuard 800 **MUST** start and finish with a pinned Full Height Terminal End or transitioned to an approved impact attenuator or end terminal. Details of impact attenuator and connections are available from the impact attenuator supplier.



9. BarrierGuard 800 Minimum Deflection System Installation


9.1. Start with Full Height Terminal Male (AS31642628)

1



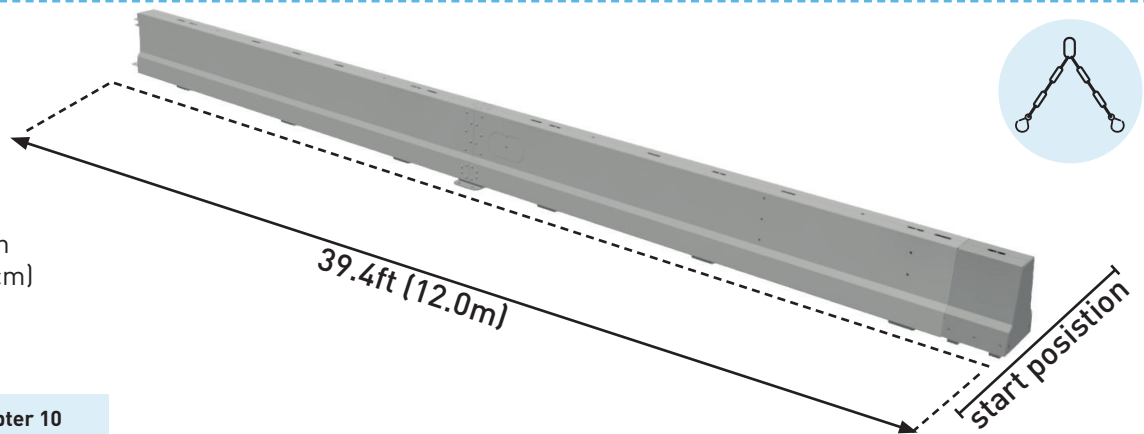
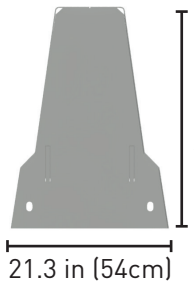
(AS31642628)


BarrierGuard 800 Minimum Deflection System is a standard installation of BarrierGuard 800 with intermediate anchors every 19.7ft (6.0m) and then fitted with the T-Top. The minimum installation length of BarrierGuard 800 Minimum Deflection System is 1653.5 in (42.00m).

 Kelken removable anchors are recommended when the client requires that the anchors have to be removed at the end of the project without leaving threaded rods in the ground. Please contact the supplier for more information and how to use.

9.2. Beginning of first string of barriers

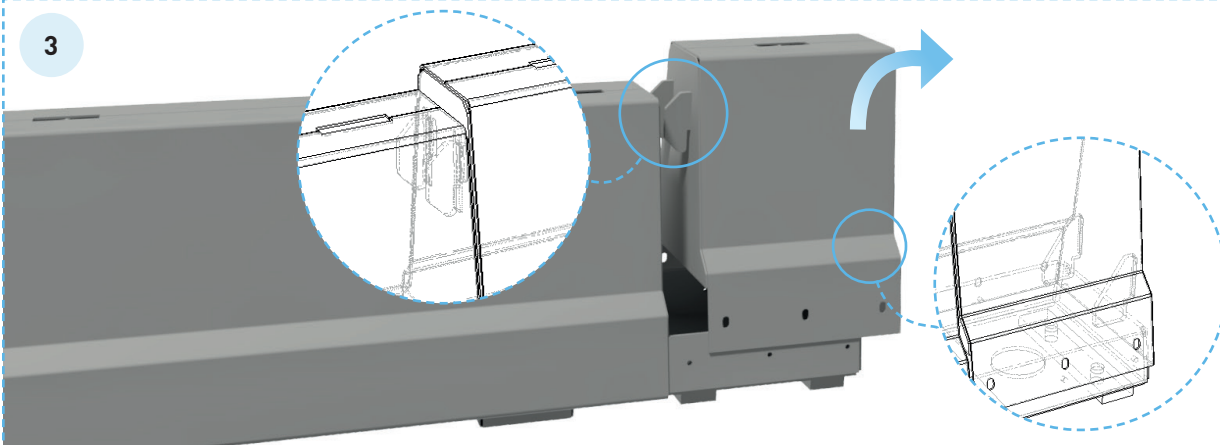
2



 See lifting guide chapter 10

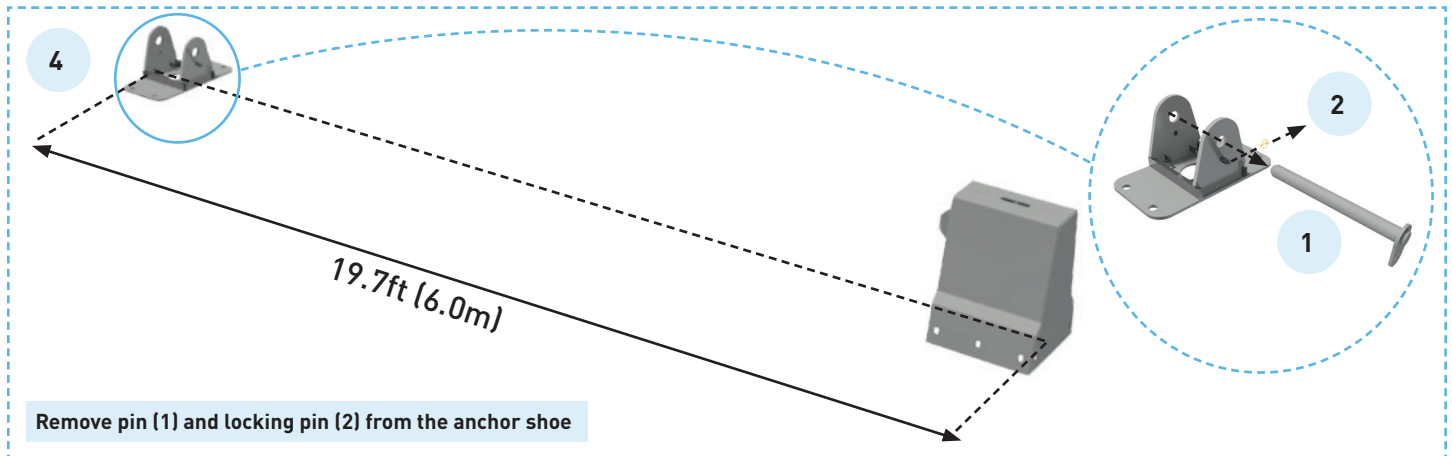
9.3. Remove the hood

3

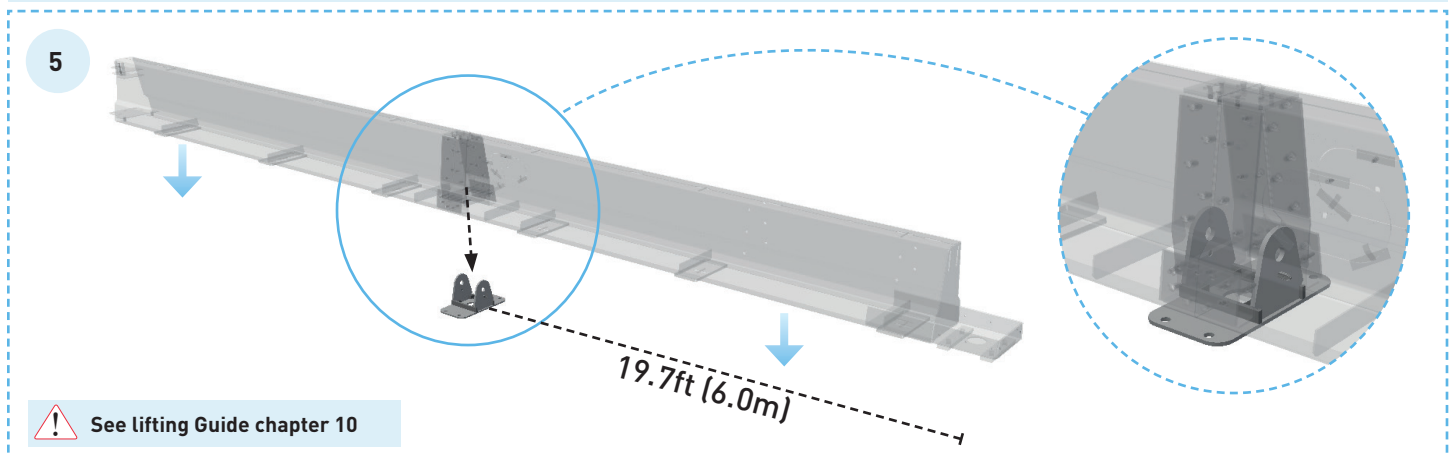


9. BarrierGuard 800 Minimum Deflection System Installation

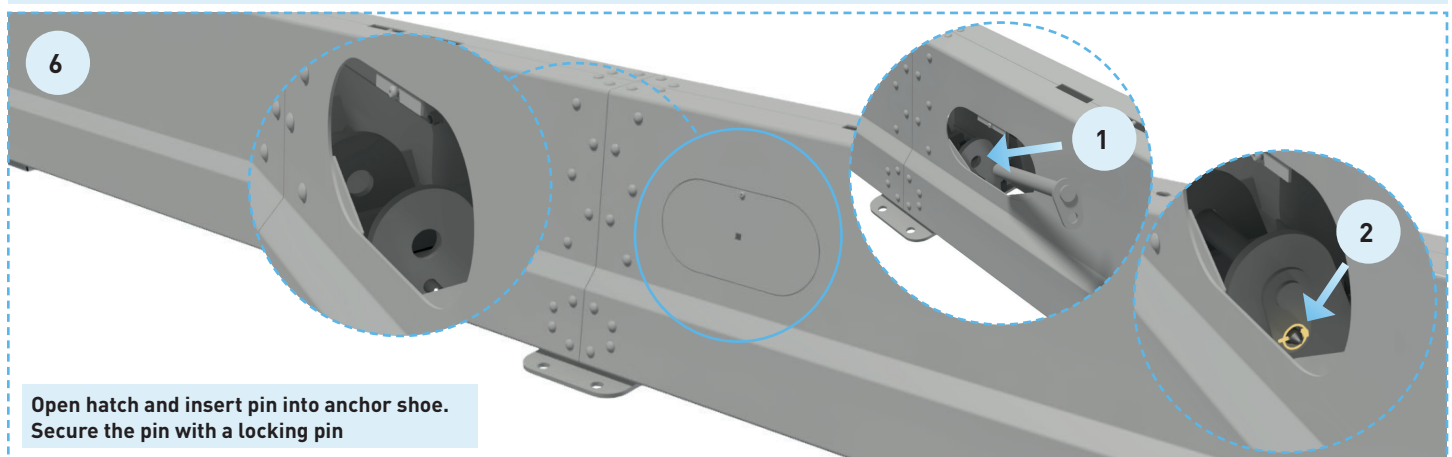
9.4. Position the hood and first anchor shoe



9.5. Slide the barrier over the anchor shoe



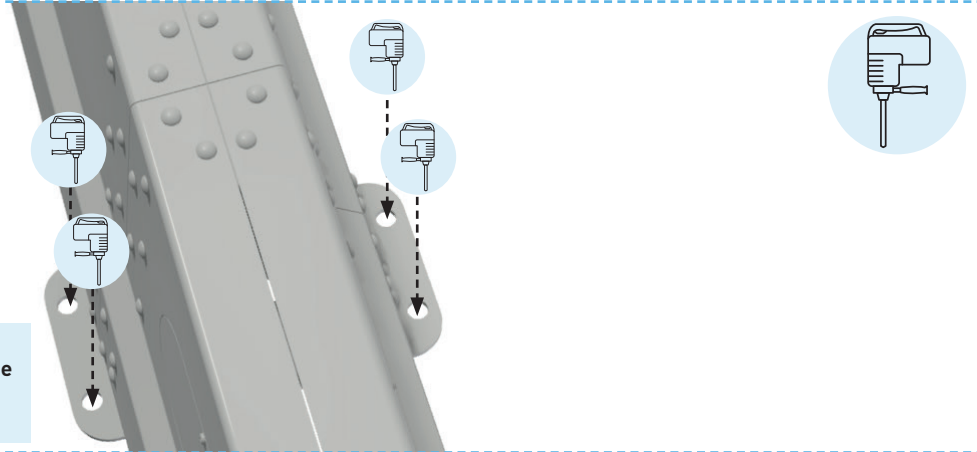
9.6. External anchor installation



9. BarrierGuard 800 Minimum Deflection System Installation

9.7. Drill the holes for the external anchor shoes

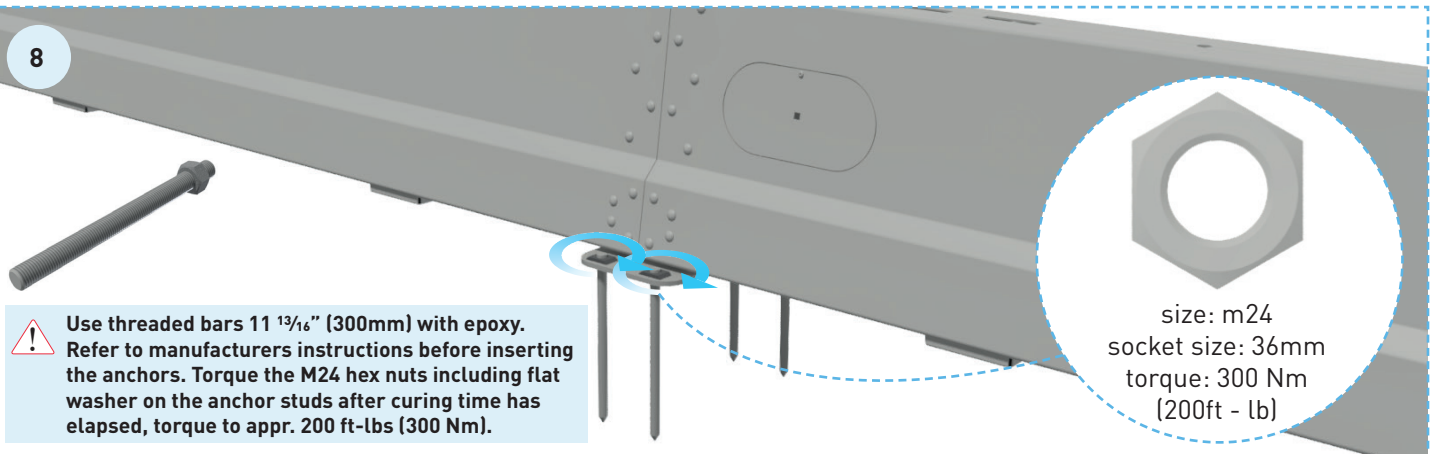
7



! Set the anchors with the recommended epoxy. Clean the holes before adding the epoxy. Contact supplier for more information.

9.8. External anchor installation

8

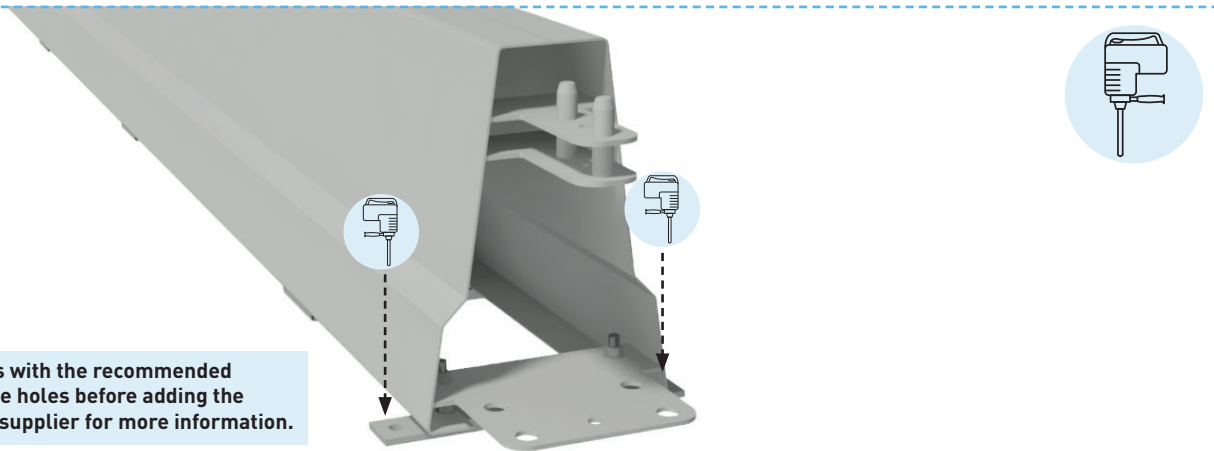


! Use threaded bars 11 ¹³/₁₆" (300mm) with epoxy. Refer to manufacturers instructions before inserting the anchors. Torque the M24 hex nuts including flat washer on the anchor studs after curing time has elapsed, torque to appr. 200 ft-lbs (300 Nm).

size: m24
socket size: 36mm
torque: 300 Nm
(200ft - lb)

9.9. Before the sections are deployed, the quick connect intermediate anchors must be attached.

9

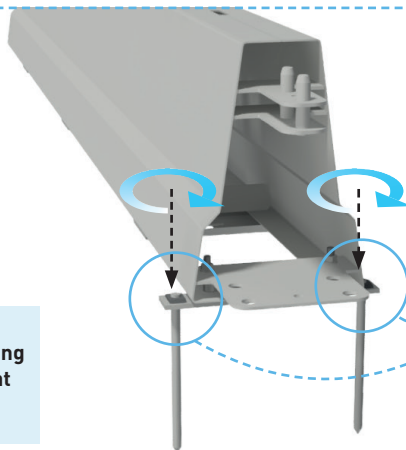


! Set the anchors with the recommended epoxy. Clean the holes before adding the epoxy. Contact supplier for more information.

9. BarrierGuard 800 Minimum Deflection System Installation

9.10. Insert the pins

10



size: m24
socket size: 36mm
torque: 300 Nm
(200ft - lb)

! Use threaded bars 11 ¹³/₁₆" (300mm) with epoxy. Refer to manufacturers instructions before inserting the anchors. Torque the M24 hex nuts including flat washer on the anchor studs after curing time has elapsed, torque to appr. 200 ft-lbs (300 Nm).

9.11. Drill holes for Flag Top Pins End Terminal

11



! See 4.3 Anchor installation Guide

! No chemical (epoxy) anchoring required at the terminal ends

9.12. Insert Flag Top Pins End Terminal

12

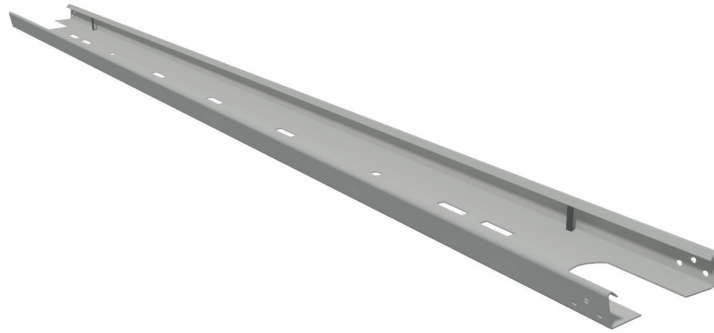


! See 4.3 for anchor installation guide. Flat top pins may also be used when desired.

9. BarrierGuard 800 Minimum Deflection System Installation

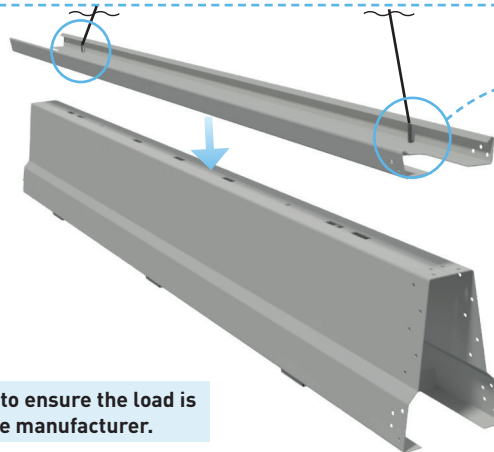
9.13. T-top


13




9.14. Lowering the T-top on top of the barrier with the lifting bars

14

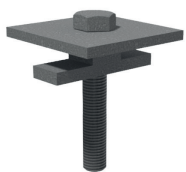


 Use lifting bars welded on the T-top

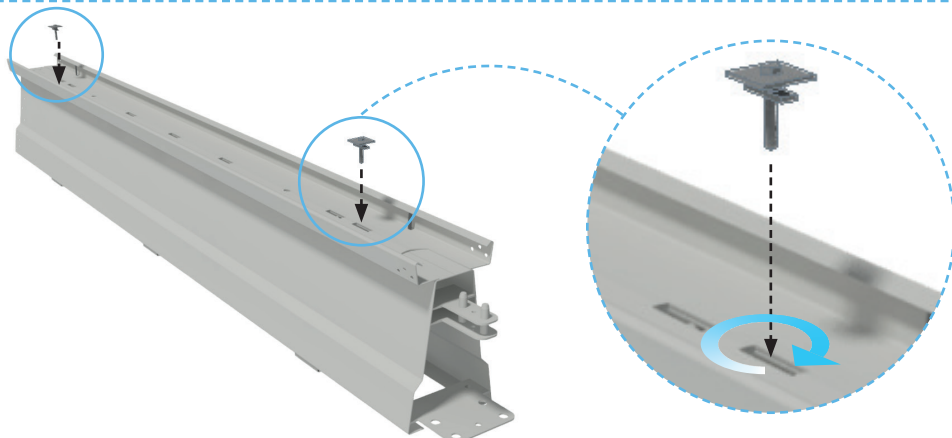
 Shorten the chain using the clutch to ensure the load is level. Refer to instructions from the manufacturer.

9.15. Insert T-pin into the holes and turn sideways

15

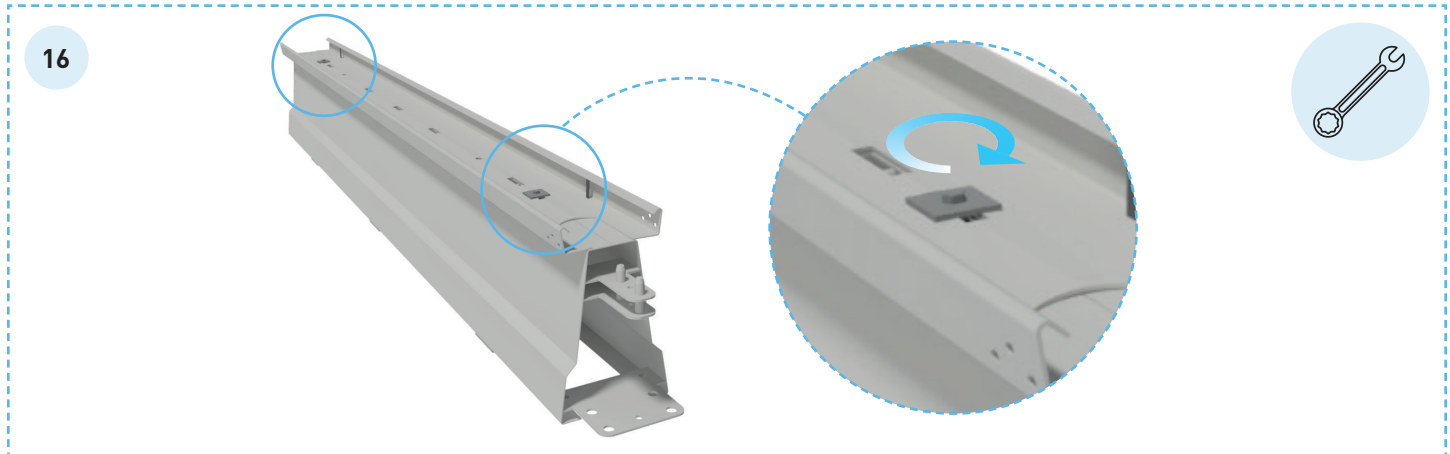


size: m24
socket size: 36mm
torque: 300 Nm (200ft-lb)

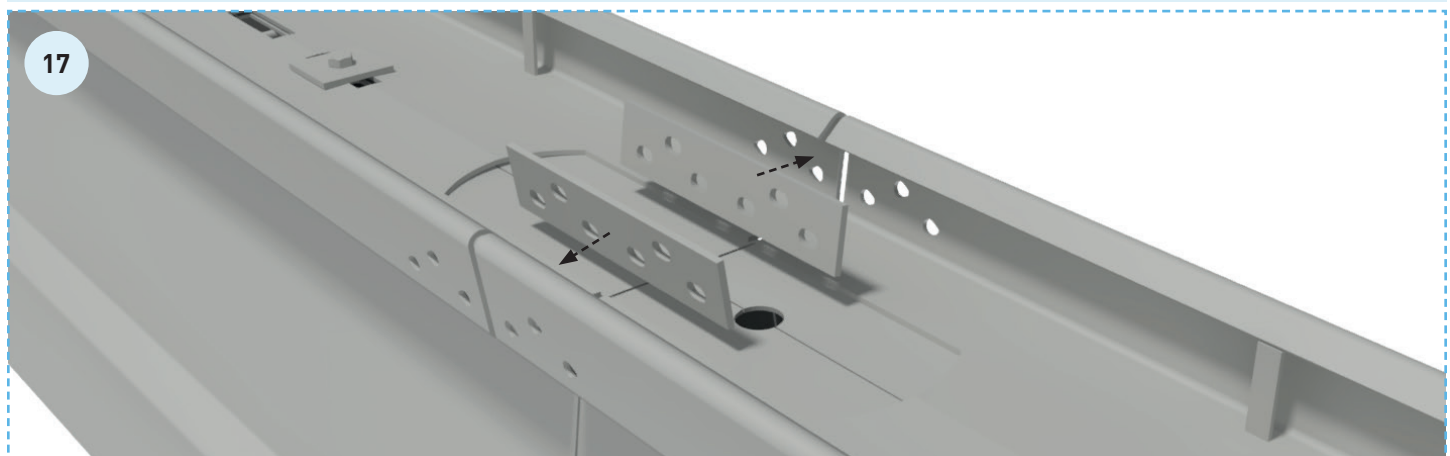


9. BarrierGuard 800 Minimum Deflection System Installation

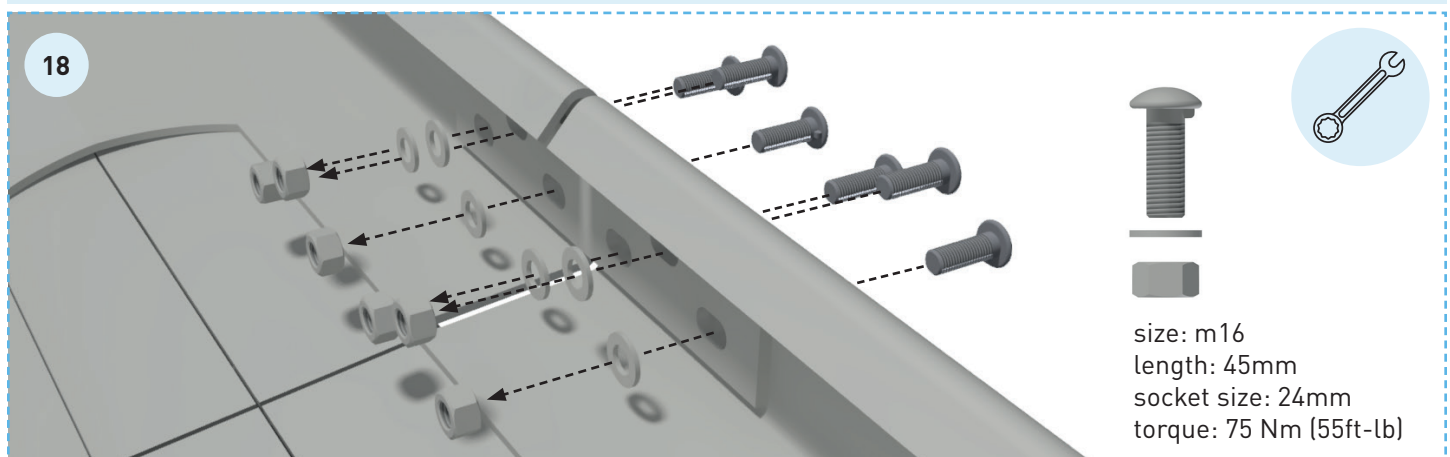
9.16. Tighten bolt of the T-pin



9.17. Install the connecting plates on the t-top

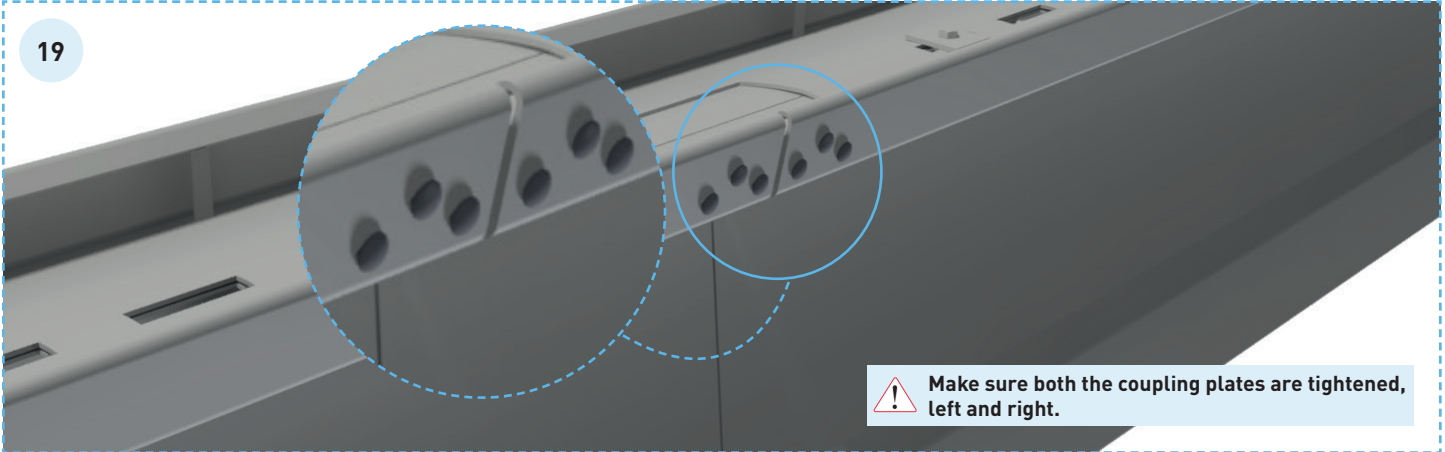


9.18. Tighten the bolts and nuts

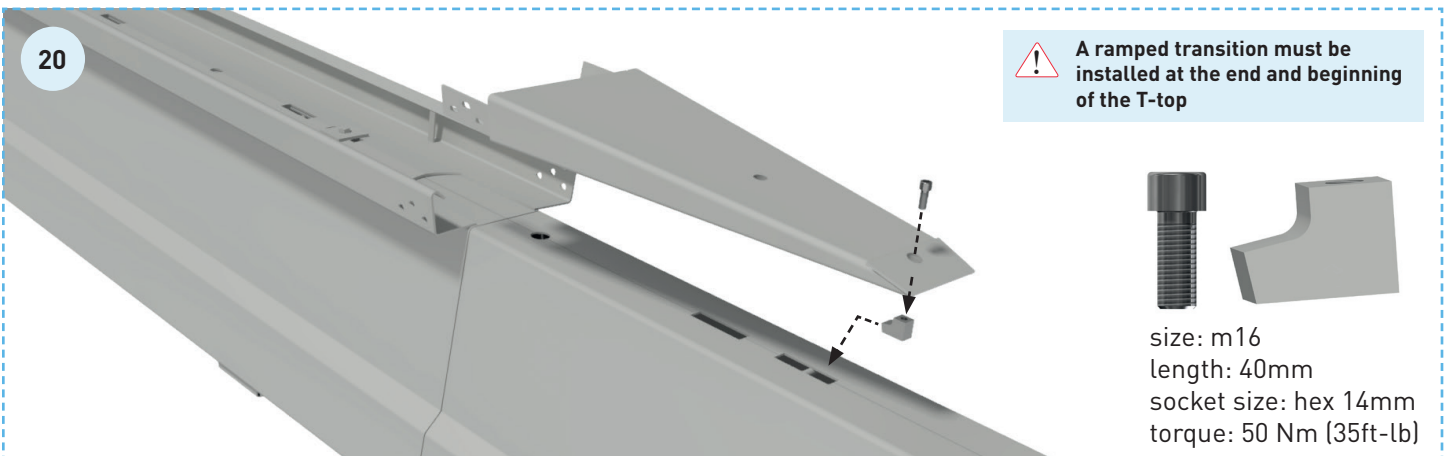


9. BarrierGuard 800 Minimum Deflection System Installation

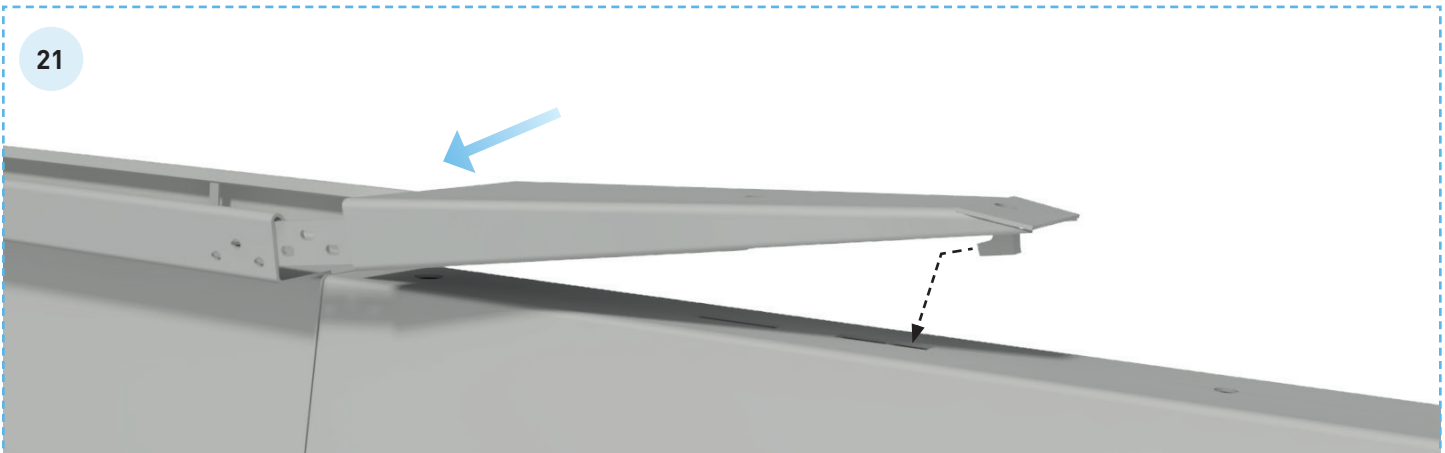
9.19. Connecting plates are installed



9.20. Insert bolt and L-shaped connector at the ramped transition

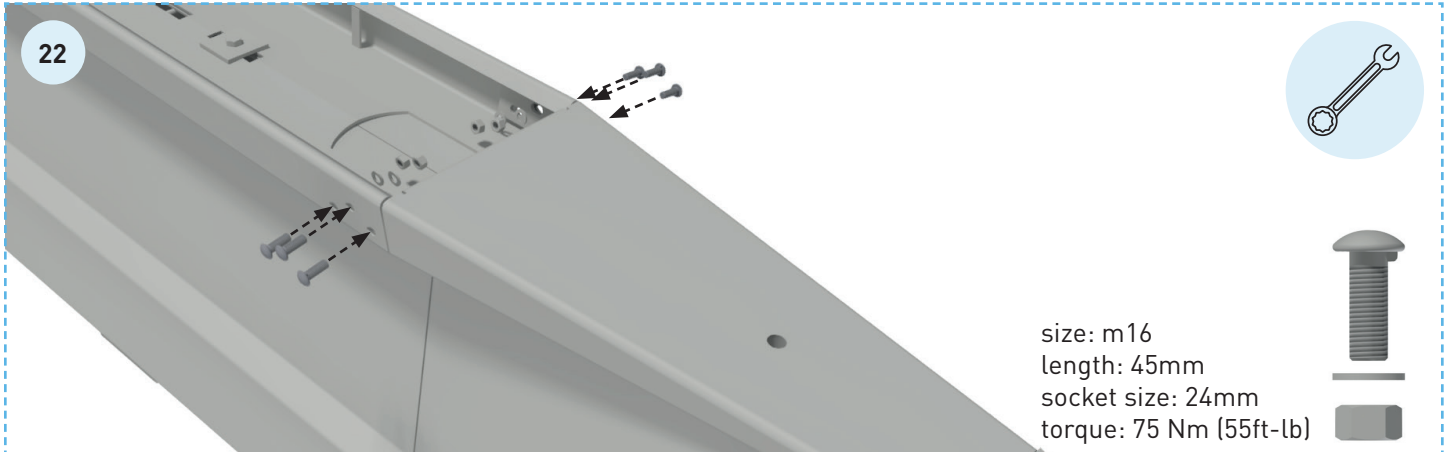


9.21. Slide the ramped section into the T-top

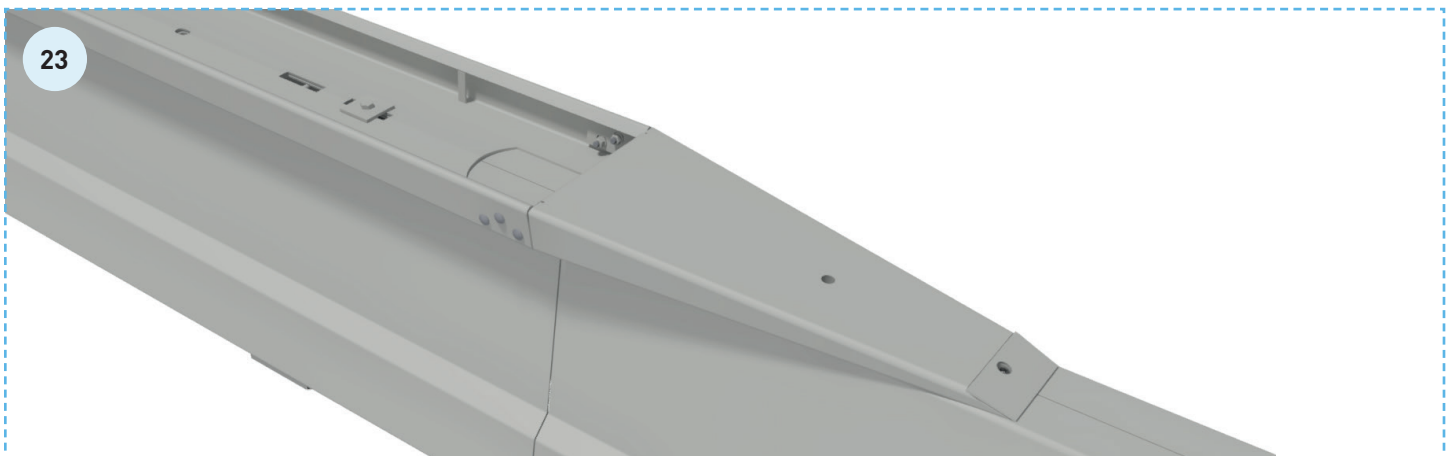


9. BarrierGuard 800 Minimum Deflection System Installation

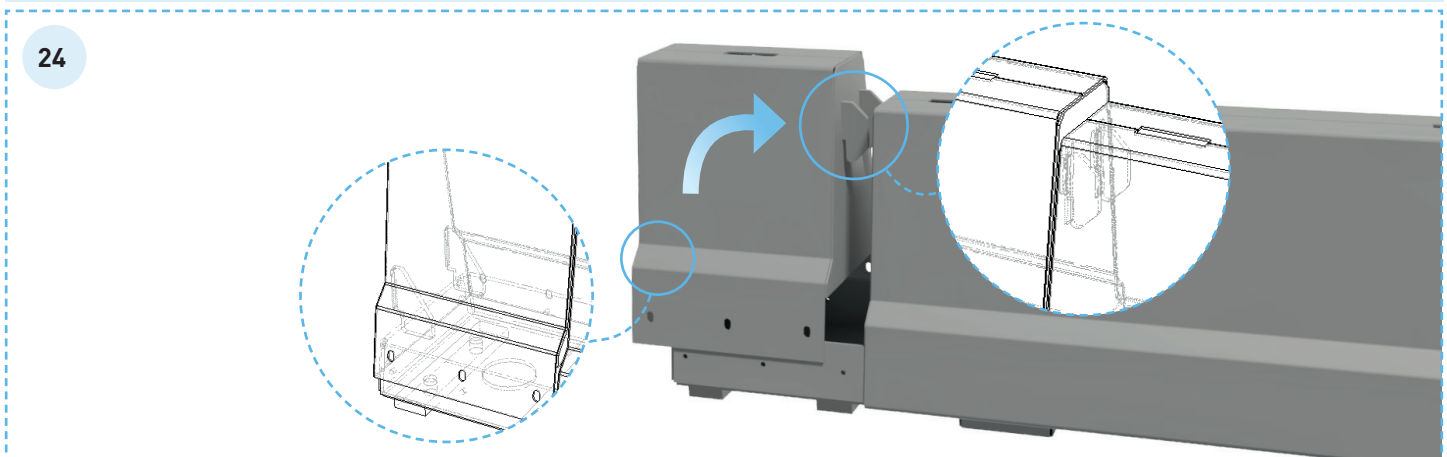
9.22. Tighten bolts and nuts to secure the ramped section



9.23. Ramped transition section installed



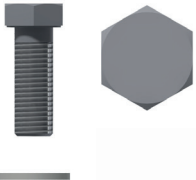
9.24. Take off the terminal end cover



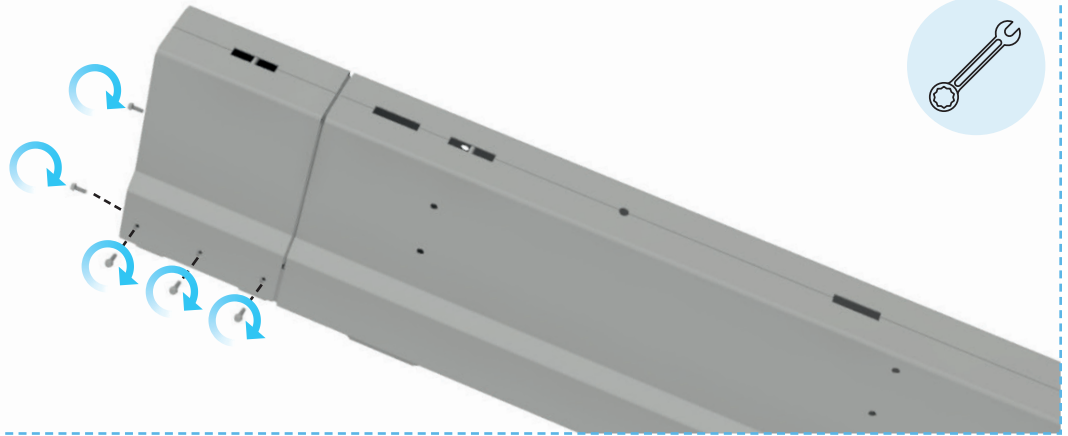
9. BarrierGuard 800 Minimum Deflection System Installation

9.25. Tighten the screws of the end terminal cover

25



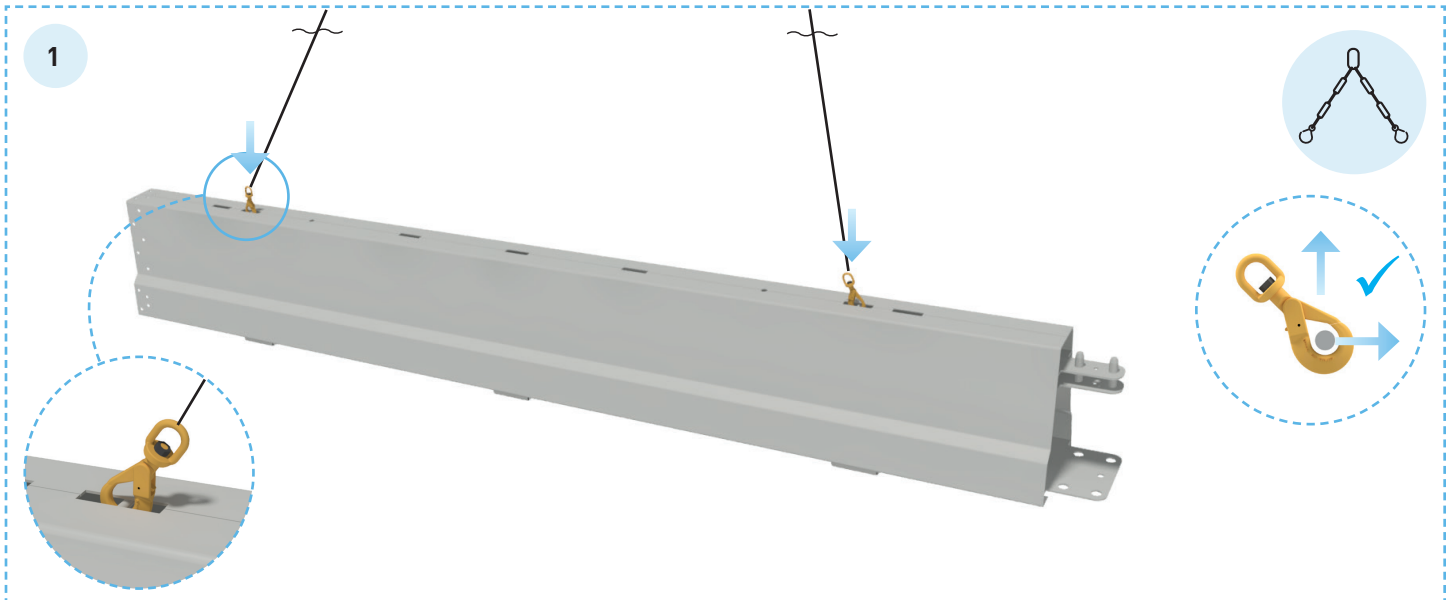
size: m16
length: 45mm
socket size: 24mm
torque: 75Nm (55ft-lb)



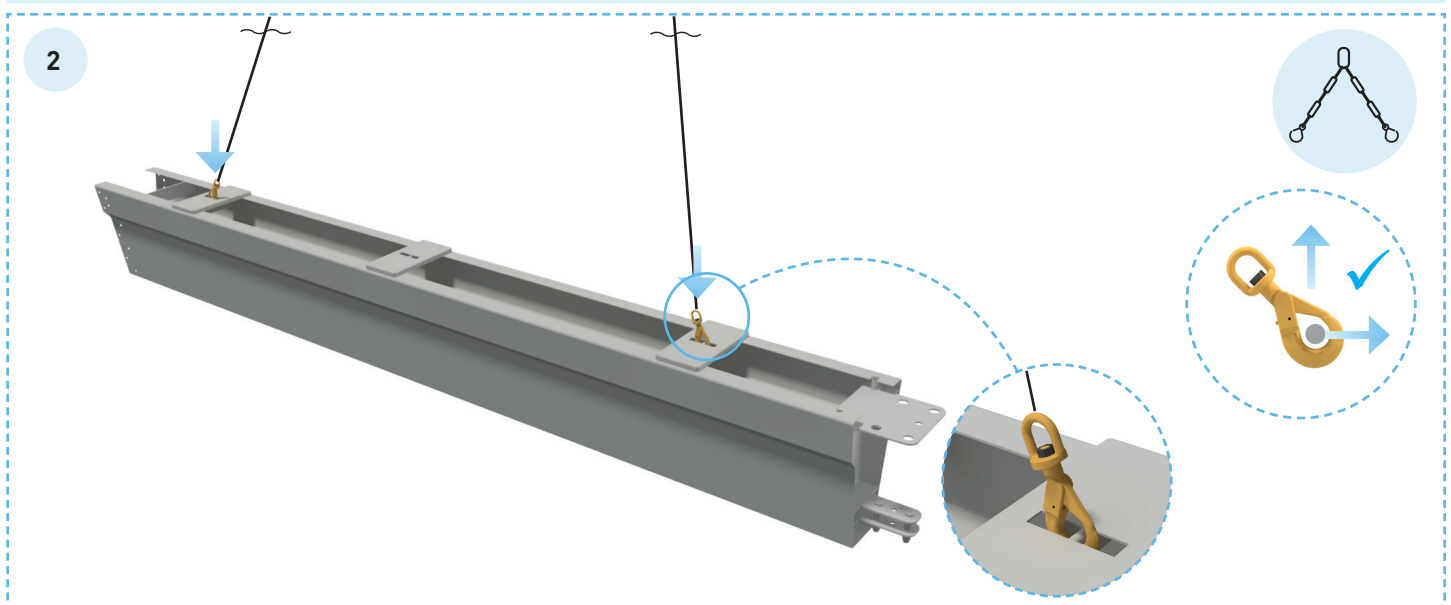
10. Lifting Guide 19.7ft (6.0m) barrier

Item	Lifting Chain Length	Max Weight (lbs/kg)	Required Lifting Capacity
19.7ft (6.0m) barrier	Always follow the manufacturers instruction for correct use of the clutch. Shorten the chain using the clutch to ensure the load is level.	Male 1,239 lbs/ 562.0 kg Female 1,223.6 lbs/ 555.0 kg	Use a suitable crane according official lifting capacity regulations.

10.1. Lifting the 19.7ft (6.0m) barrier from the top



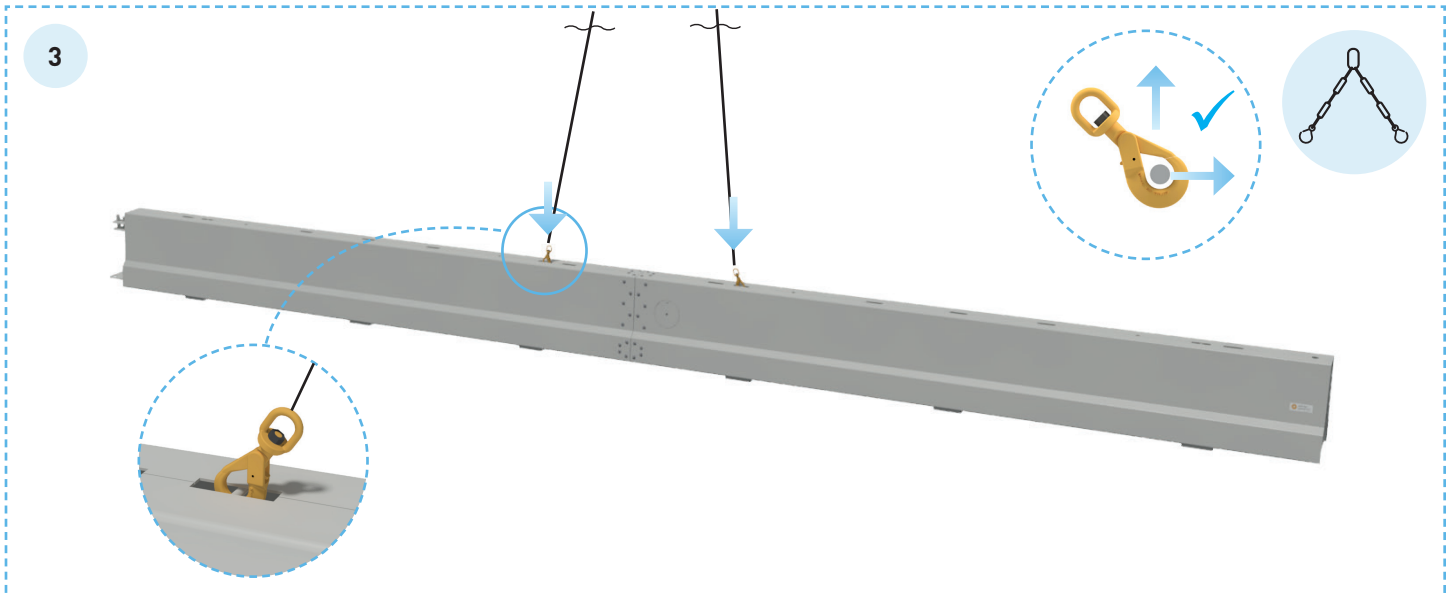
10.2. Lifting the 19.7ft (6.0m) barrier from the bottom



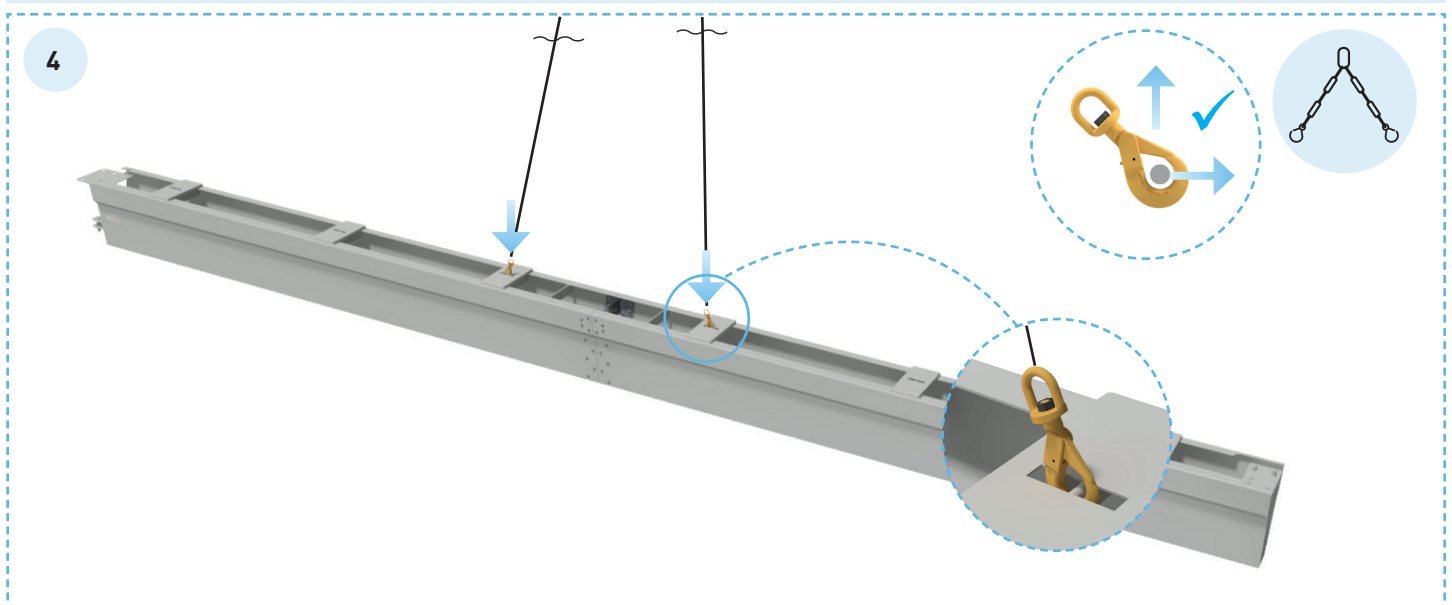
10. Lifting Guide 39.4ft (12.0m) barrier

Item	Lifting Chain Length	Max Weight (lbs/kg)	Required Lifting Capacity
39.4ft (12.0m) barrier	Always follow the manufacturers instruction for correct use of the clutch. Shorten the chain using the clutch to ensure the load is level.	2,546.3 lbs/ 1,155.0 kg	Use a suitable crane according official lifting capacity regulations.

10.3. Lifting the 39.4ft (12.0m) barrier from the top



10.4. Lifting the 39.4ft (12.0m) barrier from the bottom



11. Maintenance and repair

BarrierGuard 800 has an estimated 20-years life cycle. With years of use around the world and through rigorous testing BarrierGuard 800 sections have proven to be very robust and extremely hard wearing. We recommend some very basic maintenance schedules detailed below. BarrierGuard 800 sections should be thoroughly inspected prior to dispatch to the job site, during the inspection make sure that all the fasteners are present, there is no sign of damage to the Quick Connect, the gap between the two sections of barrier at the bolted joint does not exceed $1\frac{1}{32}$ inch (15 mm), and that there is no creases or dents in the barrier that could prevent it connecting together during the installation. If any of the above faults are detected then the damaged section or sections of barrier should be marked and put to one side for further assessments to take place and repairs made before the section of BarrierGuard 800 is used again.

BarrierGuard 800 is predominantly used for road work situations. There is usually personnel driving through the site, and also as the barrier is usually only installed for medium or short term it can be regularly inspected as it is returned to storage and again inspected as it is dispatched to the next job site. The installer can determine a suitable detection interval in connection with accident rate and traffic flow on the relevant route.

The drive by inspection is usually achievable by driving fairly slowly along the length of the installed barrier, depending on the location and site conditions then this may require additional safety systems put in place for example traffic management. During this inspection checks should be made for any damage to the barrier caused by an impact. If there are signs of an extreme impact then a more thorough inspection should be carried out as soon as possible. The barrier sections will need to be replaced in the installation and the damaged sections taken away for further analysis.

Any fasteners that need replacing because of loss or damage must be to the correct specification and performance; the bolts must have an 8.8 strength classification (ASTM F1554 Grade 105) and be the correct type of fastener for the application.

Although tears and deep scratches normally do not affect the performance of the barrier system it should be remembered that this may introduce corrosion to the barrier units, so the application of a protective coat of zinc rich paint may be necessary locally in the area of the damage. Do not use any sections of barrier that show signs of significant thinning of the barrier skin caused by corrosion.

12. Removal

This is a reversal of the installation procedure. To separate the barrier sections, lift with the chain legs at equal length. This will tend to lift the connected end first. If the section of barrier being removed lifts the next section, place a 50 mm (1 ³/₃₂ inch) high block under the foot of the section being removed next to the joint to be separated and lower the barrier. It will then separate.

13. Limitations and warnings

BarrierGuard 800 has been rigorously tested and evaluated per the evaluation criteria in the MASH, NCHRP-350 and EN-1317 guidelines for a longitudinal barrier. The impact conditions recommended in MASH are intended to address typical in-service collisions. When properly installed and maintained BarrierGuard 800 allows an impacting vehicle to be contained or re-directed in a safe and predictable manner under the MASH impact conditions. Vehicle impacts that vary from the MASH impact conditions described for longitudinal barriers may result in significantly different results than those experienced in testing.

14. Contact details

Laura Metaal Road Safety Inc.
Customer Service

Email: sam.arnold@laurametaal.com

Website: www.laurametaal.com

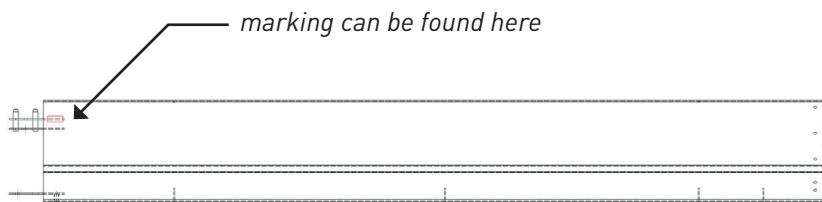
Telephone: 800-758-3050 or 702-664-2009

Marking

Use original Laura Metaal parts only. BarrierGuard 800© is a product from Laura Metaal Road Safety and should only be connected to other BarrierGuard products from Laura Metaal. Barriers marked with this logo are Laura Metaal barriers.



The engraving can be found near the male coupling. See picture below.



Annex 1: Most common BarrierGuard 800 parts



BarrierGuard 800, 39.4 ft (12.0 m) section, male/female QuickLink
AS31642510



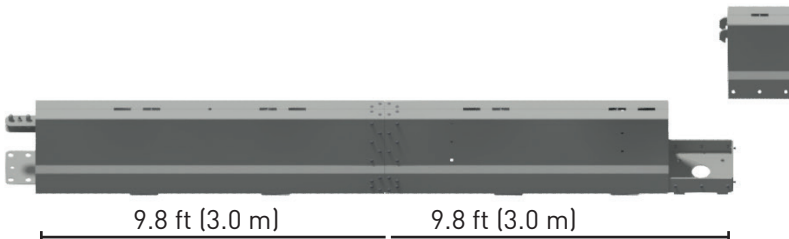
BarrierGuard 800, 19.7 ft (6.0 m) standard section assembly
AS31640399



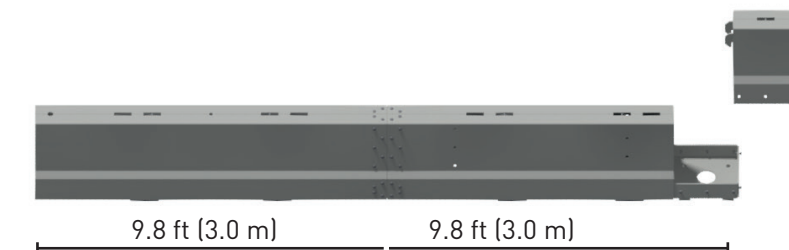
BarrierGuard 800, 39.4 ft (12.0 m) male with full height end terminal
AS31642628



BarrierGuard 800, 39.4 ft (12.0 m) female with full height end terminal
AS31642627

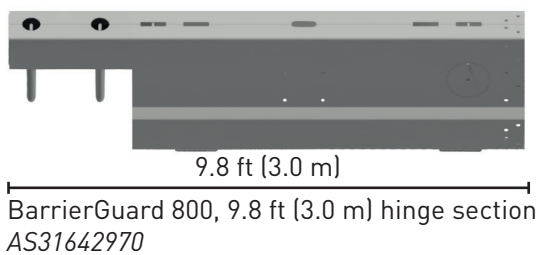
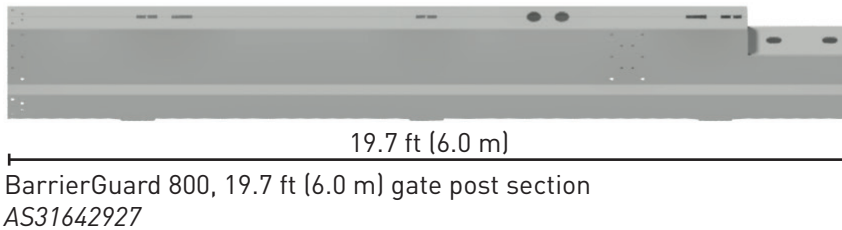
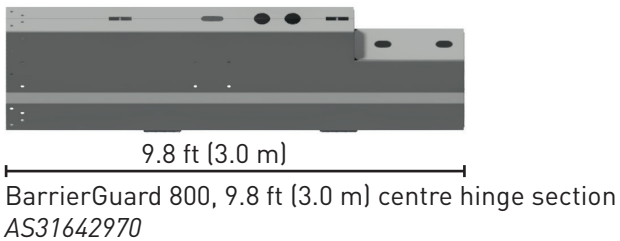
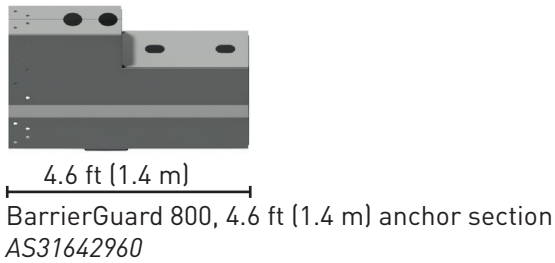
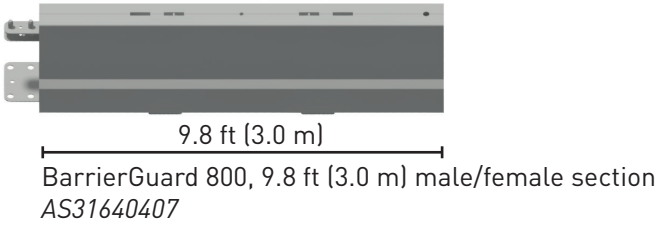
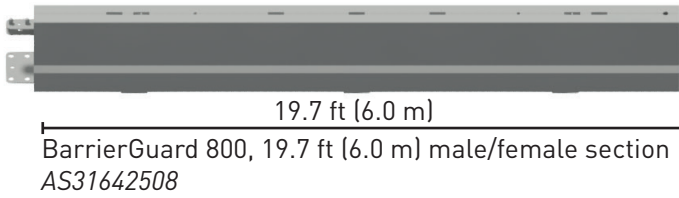


BarrierGuard 800, 19.7 ft (6.0 m) male full height terminal assembly
AS31642632



BarrierGuard 800, 19.7 ft (6.0 m) female full height terminal assembly
AS31642633

Annex 1: Most common BarrierGuard 800 parts



Annex 1: Most common BarrierGuard 800 parts



19.7 ft (6.0 m)

BarrierGuard 800, 19.7 ft (6.0 m) wheeled section
AS31642980



BarrierGuard 800, T-top transition
AS31640340



19.7ft (6.0m)

BarrierGuard 800, 19.7 ft (6.0 m) T-top
AS31640331

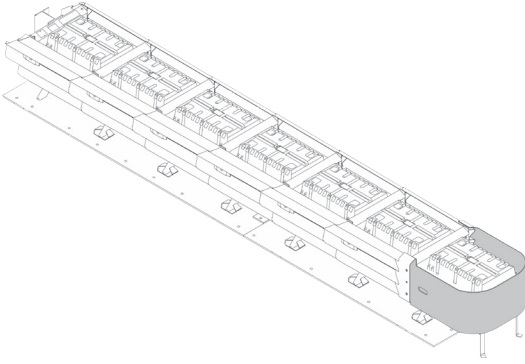


Connection plate t-top
EP31640305

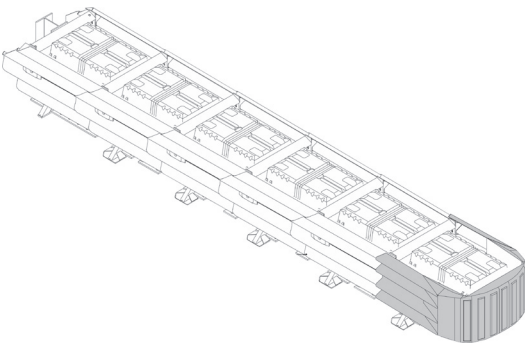


Connection bolt t-top
EP31640301

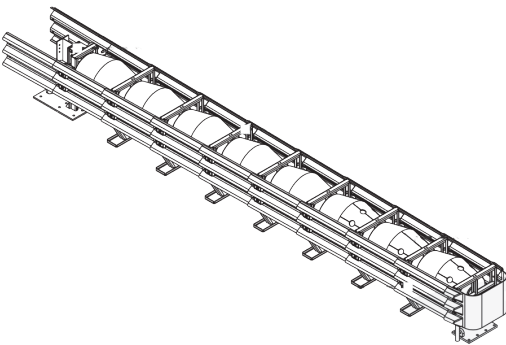
Annex 2: Compatible crash cushions available



QuadGuard CZ crashcushion approved for BarrierGuard 800. Hood or Transition should be fitted prior to the Crash Cushion installed. Please consult us for state specific approval.

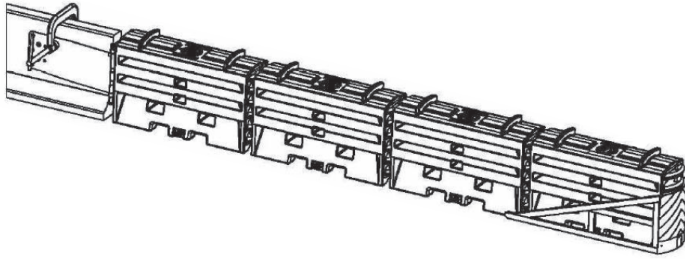


QuadGuard System crashcushion approved for BarrierGuard 800. Hood or Transition should be fitted prior to the Crash Cushion installed. Please consult us for state specific approval.

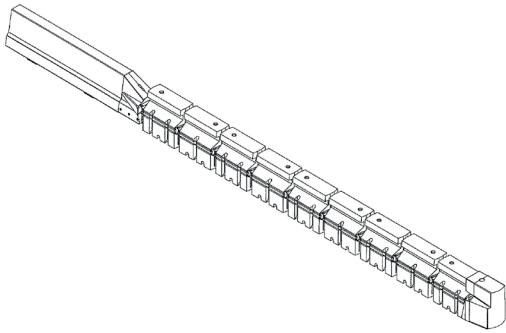


Taull crashcushion approved for BarrierGuard 800. Hood or Transition should be fitted prior to the Crash Cushion installed. Please consult us for state specific approval.

Annex 2: Compatible crash cushions available



Sled crashcushion approved for BarrierGuard 800. Hood or Transition should be fitted prior to the Crash Cushion installed. Please consult us for state specific approval.



Smart Absorb crashcushion approved for BarrierGuard 800. Hood or Transition should be fitted prior to the Crash Cushion installed. Please consult us for state specific approval.