

PRODUCT MANUAL



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Australian Version 1.2
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Preface

For optimum performance, Saferoads HV2 Safety Barrier must be designed, installed and maintained as per this manual. Please thoroughly review and understand this manual before using HV2 Safety Barrier.

Local requirements may also impose restrictions. Please refer to local governing body for further information.

If more information is required please contact Saferoads:

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Introduction

Saferoads HV2 Safety Barrier is a free standing temporary longitudinal barrier system successfully crash tested to MASH TL-4.

The patented hybrid technology, and unique connectors, allow Saferoads HV2 Safety Barrier to offer high containment and low deflection, while remaining economical to transport and deploy, with no time-consuming anchoring required.

Saferoads HV2 Safety Barrier provides several unique advantages over other temporary barrier systems including:

- High containment
- Low deflection
- Safe, consistent and reliable redirection
- Fast deployment and retrieval
- No anchoring required
- No loose parts
- Economical to transport
- Maintenance free
- Durable

Applications

Saferoads HV2 Safety Barrier is tested to provide positive protection of work sites by safely redirecting errant vehicles up to 10,000kg (22,000lbs) at 15° and 90km/h (56mph), or 2,270kg (5,000lbs) at 25° and 100km/h (62mph). This allows HV2 Safety Barrier to be suitable for use on any roadside work zone from highways to low speed local streets.

Since the HV2 Safety Barrier is free standing, it can be used on any firm surface including concrete, asphalt, spray seal, unsealed compound pavements, and uniform natural surfaces.



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Limitations

Saferoads HV2 Safety Barrier has been tested to MASH TL-4 requirements, as required by FHWA and AS3845.1. Installations not in accordance with this manual, or impacts outside of MASH TL-4 testing may result in unpredictable performance.

Barrier Segments

A HV2 Safety Barrier installation is constructed from a series of individual barrier segments. Each segment is constructed from steel with concrete ballasting. The dimensions of each segment are:

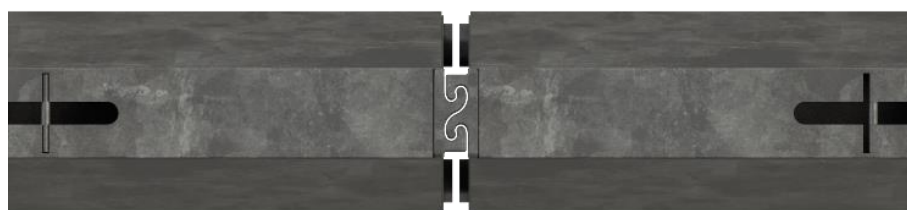
| | |
|------------------|--------------------|
| Installed length | 5,800mm (19ft) |
| Segment length | 5,846mm (19ft 2in) |
| Segment width | 450mm (18in) |
| Segment height | 900mm (35in) |
| Weight | 2,088kg (4600lbs) |



Barrier segments are fastened by an integrated, interlocking joiner, which simply slides together when barriers are lowered into position.



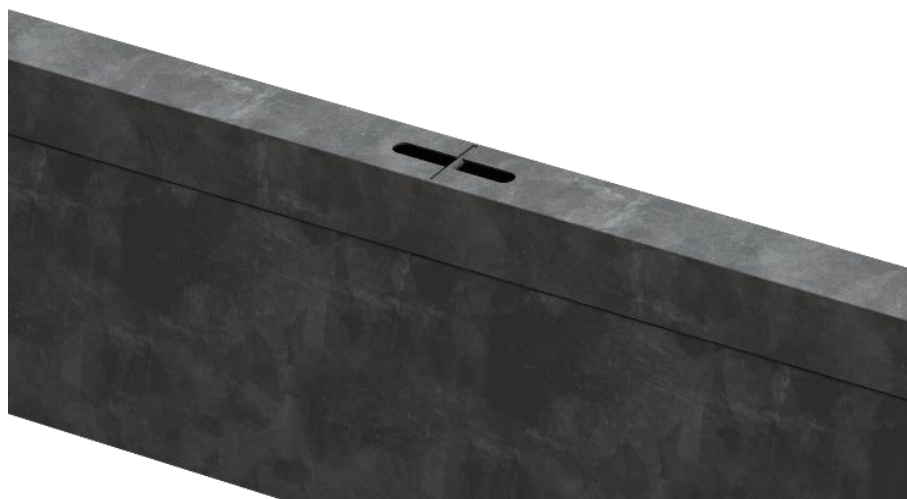
These connectors are bidirectional, allowing barriers to be installed in either orientation.



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Barrier segments feature three integrated lifting points. Barriers can be safely lifted from the centre lifting point, or the outer two lifting points.



Barrier segments can be stacked for storage or transport, but appropriate bearers should be used between layers.



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Minimum Deployment

HV2 Safety Barrier installations require a minimum deployment length of 17 HV2 Barrier segments (98.6m/323ft 6in), in addition to the required end treatments.

End Treatment

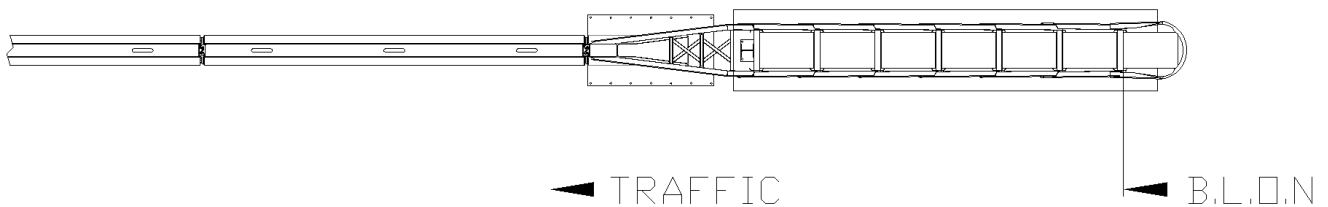
HV2 Safety Barrier installations require appropriate end treatments to ensure occupant safety in the event of an impact to the end of the system.

The QuadGuard Crash Cushion has been successfully tested with the HV2 Safety Barrier using a HV2 transition. This configuration requires anchoring of the end terminal and transition.

Length of Need

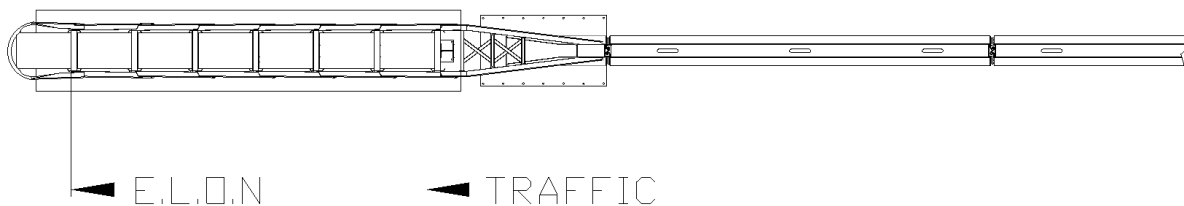
Beginning of Length of Need

When using a QuadGuard Crash Cushion at the beginning of the system, the length of need begins at the first fender panel of the QuadGuard. Refer to the QuadGuard product manual for further information.



End of Length of Need

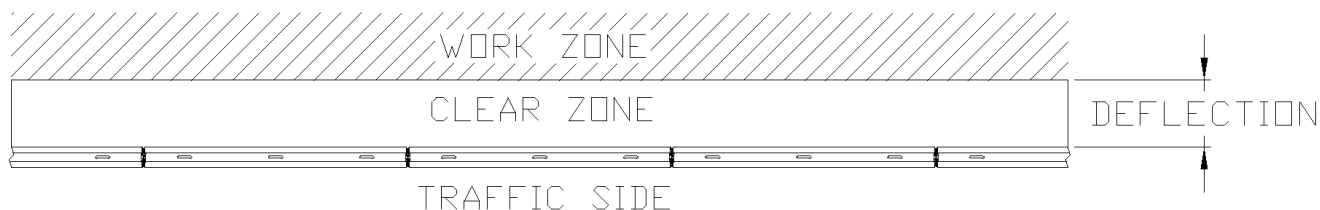
When using a QuadGuard Crash Cushion at the end of the system, the length of need ends at the last fender panel of the QuadGuard. Refer to the QuadGuard product manual for further information.



System Deflection

A sufficient clear zone must be allocated between the HV2 Safety Barrier and the work zone to allow for deflection of the barrier during an impact. The tested deflections are shown in the below table.

| Test Level | Vehicle | Speed | Angle | Deflection |
|------------|----------------------|-----------------|-------|------------------|
| TL3 | 2,270kg (5,000lbs) | 100km/h (62mph) | 25° | 1.47m (4ft 10in) |
| TL4 | 10,000kg (22,000lbs) | 90km/h (56mph) | 15° | 2.37m (7ft 10in) |



Site Considerations

While Saferoads HV2 Safety Barrier can be installed on most worksites, some obstacles must be avoided. HV2 Safety Barrier should not be installed if there is:

- Curvature tighter than 80m radius
- Cross slope steeper than 5%
- Longitudinal slope steeper than 5%
- Crest sharper than 5%
- Ditch sharper than 5%
- Kerbs or similar obstacles restricting deflection

For more information please contact Saferoads or the relevant road authority.

Barrier Deployment

Before beginning deployment, ensure there is adequate traffic management, and whenever possible personnel should remain on the non-traffic side of the installation. Also ensure appropriate lifting equipment is used and operated by competent personnel.

1. Beginning at the upstream end of the installation, unload the first barrier segment and place in the correct position. Orientation is not important as segments are bidirectional.
2. Working downstream of the first barrier segment, unload the second barrier segment and align the connectors while lowering the segment into position. The connection is made in the top 200mm of the barriers. Remain cautious of potential pinch and crush points when lowering and connecting barriers.
3. Repeat until all barrier segments are placed into the correct position and joined to adjacent barrier segments.
4. For installing an end terminal refer to the relevant deployment section below.



QuadGuard Crash Cushion Deployment

When deploying the system with a QuadGuard Crash Cushion, a HV2 Transition must be used between the QuadGuard and the end HV2 Barrier segment. A 610mm (24in) QuadGuard (model number QS2406) should be used.

1. Replace the side panels (part number 2760141-0000) between the rearmost fender panels and the tension strut backup of the QuadGuard with the HV2 Transition. This transition can remain attached to the QuadGuard, including during transport.



QuadGuard parts excluded for clarity

2. Align the connectors of the HV2 Transition with the connectors of the end HV2 Barrier segment while lowering the QuadGuard and HV2 Transition assembly into position.
3. Anchor both the HV2 Transition and the QuadGuard. The HV2 Transition should be anchored using Hilti HIT-RE 500 V3 epoxy or equivalent. QuadGuard should be anchored according to the QuadGuard product manual.

| Surface | Minimum Foundation Depth | Anchor |
|-------------------------|--|---|
| Concrete | 150mm (6in) Concrete | 180mm (7in) Stud 140mm (5.5in) Embedment |
| Asphalt Over PCC | 76mm (3in) Asphalt 76mm (3in) Concrete | 460mm (18in) Stud 420mm (16.5in) Embedment |
| Asphalt Over Subbase | 150mm (6in) Asphalt 150mm (6in) Compacted Subbase | 460mm (18in) Stud 420mm (16.5in) Embedment |
| Asphalt | 200mm (8in) Asphalt | 460mm (18in) Stud 420mm (16.5in) Embedment |

Maintenance and Repair

No ongoing maintenance is required for the Saferoads HV2 Safety Barrier. Barriers should be inspected regularly and any segments with cracking, tearing, bending or perforation of steel components should be disposed of. Damaged barrier segments can be removed and replaced from between undamaged segments. Repair of barriers is not recommended.



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Safe Work Method Statement

| Activity | Hazard Identified | Controls Required | Risk Before Controls | Person Responsible | Residual Risk | Sign Off |
|----------------------|------------------------------------|--|----------------------|--------------------|---------------|----------|
| Lifting HV2 Segments | Lifting equipment failure | Ensure machinery and operators are appropriately certified. Ensure all equipment is in good, working and tagged condition. | M | | L | |
| | Contact with overhead services | Ensure there are no hazards above the area. If unsure arrange a spotter. | H | | L | |
| | Contact with people or property | Ensure hazards are cleared from area, and do not use lifting equipment in adverse weather. | M | | L | |
| Placing HV2 Segments | Crushing under or between segments | Where possible personnel should be away from area. If personnel are required body parts should be clear when lowering and joining barrier segments. Appropriate PPE should also be worn. | M | | L | |
| | Arriving or departing worksite | Abide by worksite speed limits and transport routes. Ensure nearby personnel are wearing high-vis clothing. | L | | L | |
| Attending worksite | Environmental hazards | Personnel should wear appropriate clothing and foot wear for environmental conditions. | L | | L | |
| | Excess noise | Where required personnel should wear appropriate hearing protection. | M | | L | |
| | Falling items or debris | Where required personnel should wear appropriate protective gear such as helmets, boots and eye protection. | M | | L | |





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