



RoadQuake™ Safety System
Product Guide



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ROADQUAKE™ 2F
RETRIEVAL SYSTEM

**Temporary Portable Rumble Strip*

***Rumble Strip Handling Machine*

WHO WE ARE

WE ARE PSS:

For over 40 years, PSS has designed innovative solutions that can safeguard worksites and save lives. Our goal is to design products that allow for safe travel so that everyone may return home safely at the end of the day.

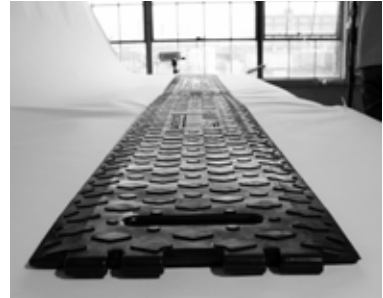
We don't just talk about Innovations for Safety™ — we live it. We believe that bold ideas and hard work produce outstanding results.

PSS strives to create real solutions for real people. Through continuous innovation and with consultation, education, and training, we work to save lives today, tomorrow, and for decades to come.

ROADQUAKE™ SAVES LIVES:

RoadQuake temporary portable rumble strips demonstrate our commitment to continuous innovation. Over ten years we have designed 85 iterations of RoadQuake to deliver the field-proven product in use today.

With a sound and feel comparable to permanent, milled-in rumble strips, RoadQuake focuses the drivers' attention back to the road as they approach an active work zone.



ROADQUAKE™ 2F APPLICATIONS

ROADQUAKE™ 2F TPRS FEATURES (CON'T):

Ideal for work zones where daily installation and removal is required:

- » Pilot car or flagging operations
- » Lane closures
- » Traffic safety checkpoints
- » Routine maintenance projects
- » Paving operations
- » Short-duration, short-term and mobile operations

ROADQUAKE TPRS APPLICATIONS:

In December, 2008, we introduced our first commercially viable RoadQuake Temporary Portable Rumble Strip.

Since then, users have deployed RQ2F arrays in thousands of work zones. Collectively, those strips have experienced well in excess of 5 billion vehicle hits, from motorcycles and sub-compacts to farm equipment and 80,000 lb. semi-trailers.

Field evidence overwhelmingly demonstrates that RQ2F effectively alerts distracted drivers, possibly reducing crashes and saving lives in work zones.

On any given day RoadQuake is used in two-lane, two-way flagging operations across the country. This application is now an accepted safety countermeasure by Departments of Transportation.



ROADQUAKE™ 2F FEATURES



TEMPORARY:

- » Ideal for short duration work zones where daily installation and removal is required.
- » Will not damage roadway surface

DURABLE:

- » Three to five year life under typical conditions.
- » Suitable for use in the rain and in temperatures as low as 0° F (-18° C) and as high as 180° F (82° C).
- » For use in posted speed limits up to 80 MPH.
- » Three-year prorated limited warranty

EASE OF INSTALLATION:

- » No installation equipment needed. A crew of two can install an array in minutes
- » Does not require glue or fasteners.
- » Quick installation and removal.

ADDITIONAL ROADQUAKE 2F FEATURES:

- » RoadQuake 2F generates the similar level of sound and vibration as milled-in shoulder and centerline rumble strips.
- » Covers the entire width of a lane when unfolded.
- » Folds to 66" length. Weighs 105 lbs.
- » Molded handles for installation and handling.
- » The non-slip textured surface helps to keep RoadQuake 2F TPRS in place.
- » Bevels on leading and trailing edges allow motorcycles to traverse the RQ2F safer.
- » Meets Section 6F.87 of the MUTCD, 2009 Edition.
- » In addition to the color black, white and orange are available for usage in the United States. Other colors such as yellow are available to our customers outside the United States.
- » Molded-in red stripe and "This Side Down" label on the bottom-side of strips indicate orientation for correct installation.

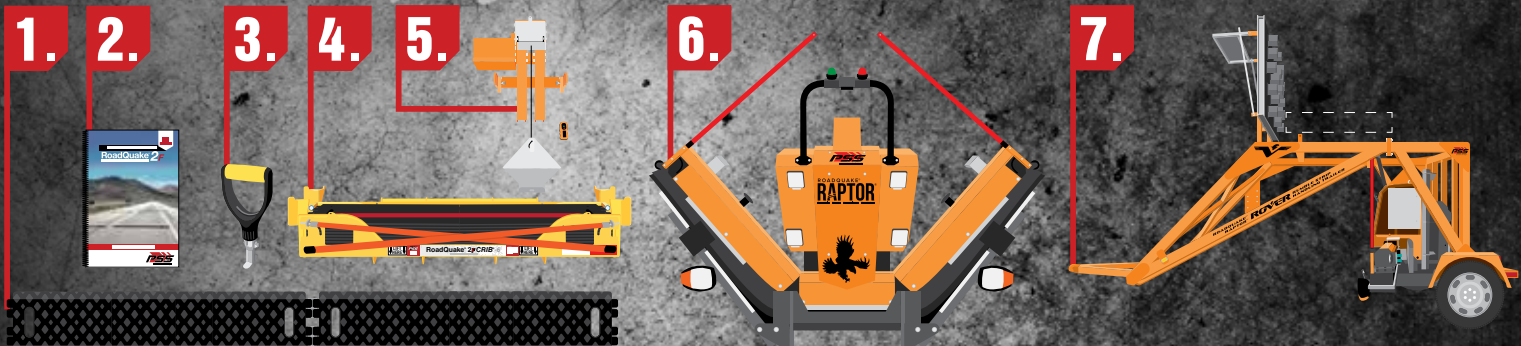
Patents: <http://bit.ly/3cHVTp8>



ROADQUAKE™ SAFETY SYSTEM

ROADQUAKE™ SAFETY SYSTEM:

- 1. RoadQuake™ Temporary Portable Rumble Strip (RQ2F):** RQ2F is the fundamental component of RoadQuake Safety System. Designed to reduce accidents and save lives, RQ2F alerts drivers to changing road conditions.
- 2. RoadQuake Best Practices Guide** provides users with deployment, retrieval, and maintenance practices to achieve optimal performance of RQ2F.
- 3. RoadQuake T-Handle** reduces the potential for superficial injury caused by manually lifting and carrying RQ2F.
- 4. CRIB™ Carriers** helps workers deploy and retrieve RQ2F. Reduces workers' time in live traffic.
- 5. RoadQuake™ Retrieval System** pulls RQ2F into CRIB with little manual effort. Reduces workers' exposure to live traffic and reduces manual exertion, possible injury.
- 6. RAPTOR™ Rumble Strip Handling Machine** transports, deploys, retrieves, and realigns RQ2F in work zones. Keeps workers off the road and safer.
- 7. RAPTOR Rover™** operational trailer for RAPTOR that mounts to half-ton or greater trucks.



DEPLOYMENT AND RETRIEVAL METHODS:

RoadQuake™ TPRS may be deployed and retrieved manually, or by using the RoadQuake handling equipment for faster, easier, and safer use.

1. Manual RoadQuake handling using **T-Handle**.
2. RoadQuake 2F **CRIB™ Cargo Carrier** transports RoadQuake and can assist in the deployment and retrieval of RQ2F.
3. RoadQuake **Retrieval System** pulls RQ2F from the road and back into CRIB.*
4. RoadQuake **RAPTOR™ Rumble Strip Handling Machine** transports, deploys, realigns, and retrieves RQ2F while keeping workers safely off the road.
5. RAPTOR **Rover™ Rumble Strip Handling Trailer** is designed to carry RAPTOR behind any pick-up truck, half-ton or larger.



*CRIB and Retrieval System sold separately.

ROADQUAKE™ OPTIMIZATION

ROADQUAKE BEST PRACTICES GUIDE:

We published our Best Practices Guide to provide RoadQuake users with safe, effective methods to achieve optimal performance of RQ2F.

In this guide, users are instructed on recommended RoadQuake use and handling according to internal field-testing. The guide features our recommended best practices in:

- » Array configuration and placement
- » Manual deployment and deployment with our handling equipment
- » Monitoring deployed arrays
- » Recommended traffic control plans
- » TPRS movement and allowance guidelines

INSTALLATION GUIDANCE:

To reduce the possibility of upside down deployments, PSS has added several indicators for proper orientation on RoadQuake strips:

- » Embedded text reads “THIS SIDE DOWN” on the under side of the strip, near the handles.
- » A red stripe runs down the center of the under side of strips.
- » Red “INSTALL THIS SIDE DOWN” warning labels, in English and Spanish, are applied to two brackets of each strip.

If strips are deployed correctly, workers will not see the warning indicators.

Additionally, a instruction card in both English and Spanish accompanies each strip at time of shipment.



Embedded Text and Red Stripe on Bottom of RoadQuake 2F TPRS (1/2 Strip Shown)

ROADQUAKE RECYCLING PROGRAM

ROADQUAKE RECYCLING PROGRAM:

As another innovative process, PSS offers our RoadQuake Recycling Program. PSS will now pick up users' retired strips that have reached the end of their service life and dispose of them in an environmentally conscious manner. Our program offers a more environmentally friendly, cost-effective, and convenient option than disposing of RQ2F in a landfill.

Users should routinely inspect their TPRS inventory for damage and wear. Users can then determine strips that have reached their end-of-service life.



Under our **PSS RoadQuake Recycling Program**, users simply:

- » Collect enough end-of-service life RoadQuake to fill a pallet: 24 each RoadQuake 2F, **or** 36 each RoadQuake 2 Modular TPRS.
- » Contact your local PSS Regional Manager. (Visit pss-innovations.com/our-team to obtain contact information.) Advise on the type of TPRS and quantity collected for recycling.
- » Band and shrink-wrap RQ on a pallet. RQ must not hang over the pallet edges.
- » Once ready for shipment, e-mail a photo of the pallet to your PSS Regional Manager.

PSS will arrange for a return shipment to our nearest disposal and recycle facility **at no charge to the user**.

PSS will dispose of the strips using best practices for the material and for the environment. Whenever possible, we will salvage and recycle material from the returned RQ2F.

ROADQUAKE™ RAPTOR™

RAPTOR TPRS HANDLING MACHINE:

RAPTOR is an automated handling machine that transports, deploys, realigns, and retrieves RoadQuake 2F in work zones while keeping your workers off the road.

The machine eliminates the need for workers to manually lift RQ2F and deploys a three strip array in less than 90 seconds.

RAPTOR IMPROVES WORK ZONE SAFETY:

RoadQuake allows for expanded application of RQ2F, making it ideal for most short-duration, moving, and mobile work zones.

RAPTOR mounts to the front of the vehicle. The back of the vehicle is free for other safety equipment like a Truck or Trailer Mounted Attenuator (TMA) and/or a flashing arrow board.

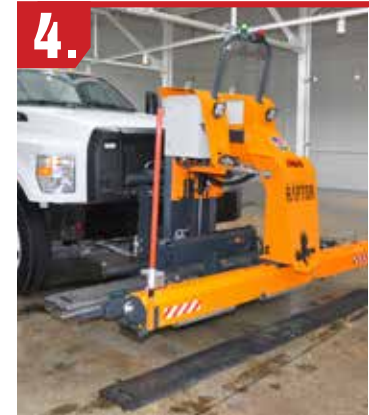


FUNCTIONS OF RAPTOR:

In operation mode, these images demonstrate the deployment of RQ2F.

1. The Magnet Bar pulls out one RQ2F from the tray.
2. The Magnet Bar moves up and out from the tray.
3. The Magnet Bar lowers the RQ2F to the deployment location in the roadway.
4. The Magnet Bar releases the RQ2F onto the road surface.

Repeat process until installation is complete.



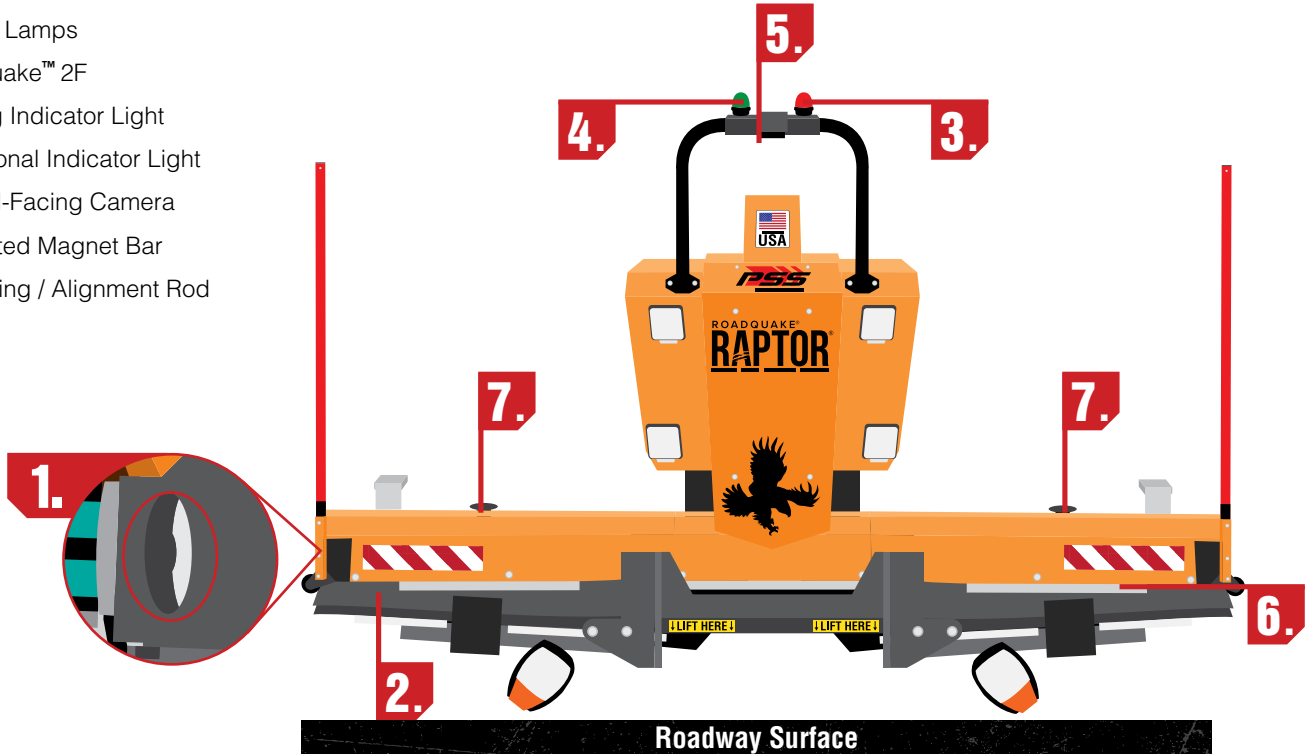
**To understand all of the functions of RAPTOR, please review the RAPTOR Instruction Manual.*

Patents: <http://bit.ly/3cHVTp8>

RAPTOR™ MODES

OPERATIONAL MODE:

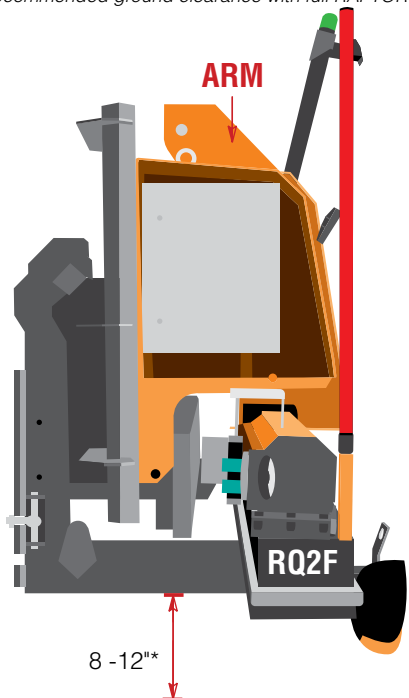
1. Position Lamps
2. RoadQuake™ 2F
3. Warning Indicator Light
4. Operational Indicator Light
5. Forward-Facing Camera
6. Articulated Magnet Bar
7. Positioning / Alignment Rod



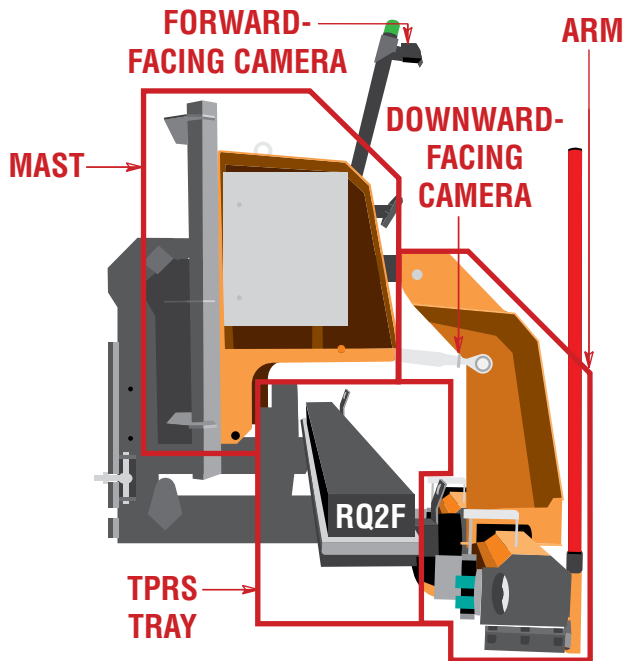
RAPTOR™ OPERATIONAL MODE

SIDE VIEW, ARM RETRACTED:

**Recommended ground clearance with full RAPTOR*



SIDE VIEW, ARM EXTENDED:



RAPTOR™ SPECIFICATIONS

RAPTOR DESIGN:

RAPTOR is designed exclusively for use with RoadQuake 2F Temporary Portable Rumble Strips. **Do not attempt to use RAPTOR to carry any other objects.** For additional vehicle requirements, contact your PSS Regional Manager.

RAPTOR SPECIFICATIONS

Function	Transports, deploys, realigns, retrieves RoadQuake 2F TPRS
Capacity of TPRS	12
Operating System	Electric / Self-Contained Hydraulic
Recommended Mounting Height from Road	8-12" (20-30 cm)
RAPTOR Weight (Empty)	1,530 lbs. (694 kg)
TPRS Individual Weight	105 lbs. (48 kg)
Total Weight (RQ2F & RAPTOR)	2,790 lbs. (1,266 kg)

VEHICLE REQUIREMENTS (Provided by user)

Front Axle Load Capacity	3,000 lbs. (1,360 kg)
Power	12 VDC / 140 peak Amp
Mounting	DIN Plate

OTHER FEATURES

Lights	2 Each Aux. Headlights 4 Each Work Lights
Guide Markers	2 each 48" L (122 cm)
Cameras	1 Forward-Facing 1 Downward-Facing
Remote Control	1 Push-Button Remote

ACCESSORIES TO CONSIDER

DME (Distance Measuring Equipment)	DME not provided by PSS
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RAPTOR ROVER

RAPTOR ROVER RUMBLE STRIP HANDLING TRAILER:

The introduction of RAPTOR Rumble Strip Handling Machine revolutionized the deployment, realignment, and retrieval of RoadQuake 2F Temporary Portable Rumble Strips (TPRS). By keeping workers out of live traffic, the use of RoadQuake TPRS was easier and safer than ever before.

PSS now introduces the RAPTOR Rover to expand fleet compatibility. Instead of requiring a 3,000 lb front-end capacity truck, **RAPTOR Rover allows for a pick-up truck (half-ton or greater) to transport, deploy, and retrieve RoadQuake 2F.**

RAPTOR Rover is designed specifically for the transport of RAPTOR and mounts to the back of the operating vehicle rather than the front. RAPTORs mounted on Rover use the same remote control and monitor feed functions as the original RAPTOR.

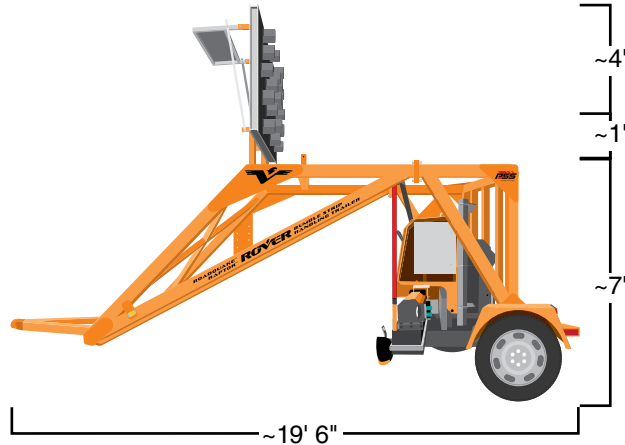
With RAPTOR Rover, more work vehicles are now compatible for automated TPRS use, protecting your crew and making their work more efficient.

This product is a prototype and is subject to design changes.



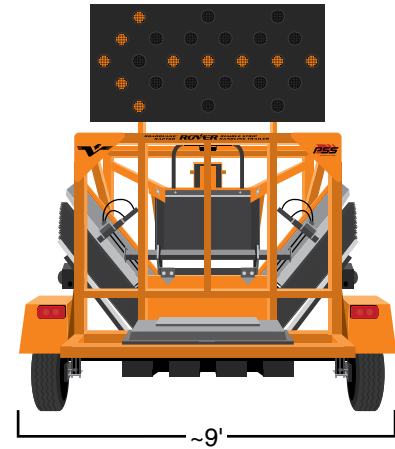
RAPTOR ROVER DIMENSIONS

RAPTOR ROVER DIMENSIONS (SIDE VIEW):



Folded Arrow Board option can add > 1' of height.
Raised Arrow Board option can add > 5' of height.

RAPTOR ROVER DIMENSIONS (REAR VIEW):



RAPTOR ROVER SPECIFICATIONS:

- » Designed exclusively for the transport, deployment and retrieval of RoadQuake2F TPRS.
- » There is no change to RAPTOR functions.
- » Single Axel Capacity: ~7,000 lbs
- » Towing weight: ~4,960 lbs (including loaded RAPTOR)
- » Tongue weight: ~800 lbs
- » On-board battery bank
- » Batteries may be charged by solar panel or trailer plug
- » Arrow Board optional

ROADQUAKE™ 2F CRIB™ FEATURES:

CRIB is a fully integrated cargo carrier designed specifically for the safe transport, deployment, removal, storage, and safekeeping of RQ2F.

CRIB Carrier Sizes:

- » **CRIB-6** holds six RQ2F
- » **CRIB-9** holds nine RQ2F
- » **CRIB-12** holds twelve RQ2F

Each CRIB carries a multiple of three strips, enough for the deployment and retrieval of up to four, three-strip arrays.

- » Shortens workers' time in traffic to deploy and retrieve strips, compared to manual handling.
- » Deployment and removal of RQ2F can be a one-person job.
- » CRIB mounts to exterior of the vehicle. Strips do not consume space in vehicle.
- » Easier to place RQ2F in alignment with the deployment location.
- » CRIB eliminates the inverted installation of RQ2F

Patents: <http://bit.ly/3cHVtp8>

CRIB MOUNTING WITH QUIK-DETACH:

PRODUCT NAME
AND IMAGE

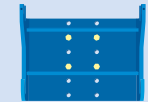
QUANTITY AND TYPE OF
QUIK-DETACH

CRIB-6



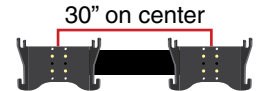
One Black Quik-Detach

CRIB-9



One Blue Quik-Detach

CRIB-12



*Two Black Quik-Detach
30" on center*



CRIB™ SPECIFICATIONS

	CRIB-6	CRIB-9	CRIB-12
Dimensions (WxHxL)	19 5/8" x 15" x 74 1/4"	19 5/8" x 19 9/16" x 74 1/4"	19 5/8" x 24 5/16" x 74 1/4"
TPRS Capacity	6	9	12
Weight (Empty)	92 lbs (41 kg)	111 lbs (50 kg)	133 lbs (60 kg)
TPRS Weight	630 lbs (286 kg)	945 lbs (429 kg)	1,260 lbs (572 kg)
Total Weight (TPRS & Carrier)	722 lbs (327 kg)	1,056 lbs (479 kg)	1,393 lbs (632 kg)
Mounting / Receiver	Class IV or V	Class V, or Custom by User	Custom by User
Pintle Mount	Included (2")	Included (2 1/2")	Not Included
Quik-Detach	1 Each Included (Black)	1 Each Included (Blue)	2 Each Included (Black)
Roadquake™ T-Handle	2 Each Included	2 Each Included	2 Each Included
Guide Markers	36" Included (91 cm)	48" Included (122 cm)	48" Included (122 cm)
Breakaway Pin Kit (1 TPRS)	1 Each Included	1 Each Included	1 Each Included

NOTICE:

UNDERSTAND THE CAPACITIES AND CAPABILITIES OF YOUR VEHICLE PRIOR TO MOUNTING CRIB

CRIB™ FEATURES

CRIB FEATURES:

- 1. Guide Fins*:** The fins guide RQ2F in and out of CRIB for easier handling.
 - » CRIB-6: stack a max. of four loaded CRIB-6.
 - » CRIB-9: stack a max. of three CRIB-9.
 - » CRIB-12: stack a max. of two CRIB-12.
- 2. Guide Markers:** Provides visual queues when the vehicle is traveling in reverse.
- 3. T-Handle Holder:** CRIB stores and transports two RoadQuake T-Handles, which allow for easier manual lifting of RQ2F.
- 4. Quik-Detach Mounting System:** Expidites the removal and installation of the CRIB Carrier.
- 5. Retractable Ratchet Straps:** Straps extend from attached housing to secure RQ2F strips during transport.
- 6. Literature Canister:** Water-tight canister holds a print copy of our RQ2F Best Practices Guide and a Breakaway Pin Connection Replacement Kit. A Best Practices and pin kit with each CRIB shipment.
- 7. Roller Bearings:** Allow for easier retrieval and deployment of RQ2F in and out of the CRIB.
- 8. QR Code:** Scanning the link on the front label directs to a dedicated web page instructing on appropriate RQ2F spacing.
- 9. “Lift Here” Labels:** Decals on the front of CRIB indicating proper fork placement for forklift transport.

**New CRIB models do not stack with older models.*

***Quik Detach for CRIB-6 (black) works for CRIB-6 and CRIB-9. Quik Detach for CRIB-9 (blue) works for CRIB-6, CRIB-9, and CRIB-12.*



CRIB-6 FRONT

We use the CRIB-6 below to show our new design features, CRIB-9 and CRIB-12 also enjoy the same features.



CRIB-6 BACK



ROADQUAKE™ 2F RETRIEVAL SYSTEM

RETRIEVAL SYSTEM FEATURES:

The Retrieval System removes RoadQuake 2F Temporary Portable Rumble Strips (RQ2F) from the roadway with minor worker exposure or effort. Retrieval System incorporates a winch to aid in the removal of RQ2F.

- » Features a powerful 4.1 HP, 12 V electric motor that pulls a 105 lb. RQ2F into CRIB in less than ten seconds.
- » Reduces workers' exposure to live traffic. Also reduces manual handling and exertion.
- » Removal of RQ2F can be a one-person operation.
- » Attaches quickly to either end of CRIB for retrieval of strips from either driver or passenger side.
- » Power pack unit is a self-contained, charging electrical system. Charges from a 12-Volt automotive system. Maintains charge when plugged into running host vehicle. Power pack unit is weather-resistant.
- » For use with CRIB-6, CRIB-9, and CRIB-12.

RoadQuake 2F Retrieval System is designed to only retrieve PSS RoadQuake 2F Temporary Portable Rumble Strips from the roadway.

Patents: <http://bit.ly/3cHVTp8>



RETRIEVAL SYSTEM COMPONENTS:

1. Retrieval Plate
2. Retrieval Winch
3. Retrieval Rope (30 Feet)
4. Power Pack Unit
5. Power Pack Charger
6. Back-up Wired Controller
7. Wireless Remote Controller
8. Roller Bracket Assembly (Two Each)
9. Roller Bracket Clamps (Four Each)
10. Durable Pelican™ Case



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