



MOTOCRANE RADICAL



HEAVYLIFT

RADICAL Heavylift Operation Manual v1.0
NOVEMBER 2021

⚠️ WARNING

To minimize risk of serious injury, death or damage, before using MotoCrane RADICAL Heavylift, all drivers and operators must read this Operation Manual and all on-product labels.

All practices and procedures stated herein are required for the proper and safe operation of the RADICAL Heavylift.

If there are any questions, please contact MotoCrane Support at support@motocrane.com.

Keep this Operation Manual near your RADICAL Heavylift for future reference.

Safety Signal Words

This manual and the safety labels attached to this equipment utilize signal words that signify safety hazards with different levels of severity. The words are preceded by a triangle signifying that these are safety related. Below are the words used and the definitions for these words:

- **⚠️ WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury or damage
- **⚠️ CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury or damage
- **NOTICE** is used to address practices not related to physical injury

The terms IMPORTANT and NOTE are also used to describe ideas for better and more efficient use of the RADICAL Heavylift.

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Before the First Drive

Do the following before using the RADICAL Heavylift for the first time.

1. Read this Operation Manual
2. Read the Warranty in the Terms of Sale
3. Watch any available video tutorials at www.motocrane.com/knowledge-base
4. Recommended: Attend MotoCrane Training for in-person demonstration

IMPORTANT PRODUCT AND SAFETY INSTRUCTIONS

Safety

The MotoCrane RADICAL Heavylift is not a toy and can cause serious injury, death or damage if not used properly. You must exercise caution during use of the RADICAL Heavylift to ensure a safe filming environment for everyone. This Operation Manual describes safe operation and should be read in conjunction with the applicable online training videos or additional in-person training.

IMPORTANT: Restricted Use Statement

The RADICAL Heavylift must only be used by trained operators 18 years of age or older. Only appropriate motor vehicles driven on a closed course with paved or finished surfaces (for example, asphalt, concrete, or tarmac) or moderate off-road (for example, gravel or dirt roads) conditions may be used. In addition, the speed and acceleration of the motor vehicle must not exceed system ratings for MotoCrane products as set forth in this Operation Manual.

Do not modify or adjust the RADICAL Heavylift. The RADICAL Heavylift has been calibrated before it is shipped to you. No modification or adjustment to the RADICAL Heavylift is allowed without the express written approval of MotoCrane, LLC.

Disclaimer and Limitations of Liability

You agree that you are responsible for your own conduct and any content created while using the RADICAL Heavylift, and for any consequences thereof. You agree to use this product only for purposes that are proper and in accordance with local laws, regulations or other legal requirements.

You also agree:


1. Any part of this disclaimer is subject to change without prior notice. Refer to www.motocrane.com/knowledge-base for the latest version.
2. MotoCrane, LLC reserves the right of final interpretation of this disclaimer.
3. MotoCrane, LLC has no control over the use, setup, assembly, modification or misuse of the RADICAL Heavylift, and therefore no liability shall be assumed or accepted by

MotoCrane, LLC for any resulting damage, death, or injury incurred directly or indirectly from the use of the RADICAL Heavylift. By the act of use, setup or assembly, the user accepts all resulting liability.

Limited Warranty

The RADICAL Heavylift has a limited manufacturer's warranty on parts and assembly. See the Terms and Conditions of Sale for your RADICAL Heavylift for a complete description of this limited warranty. This Limited Warranty is incorporated by reference into this Operation Manual.

Intellectual Property

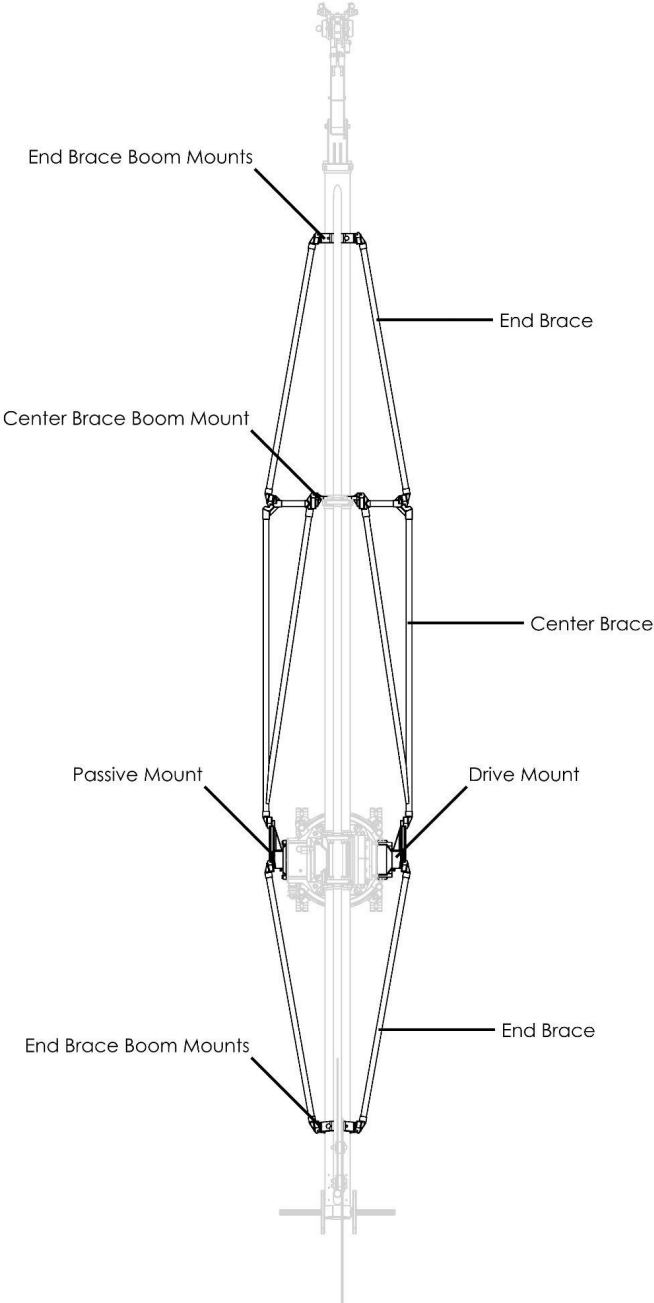
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Intended Use of RADICAL Heavylift

RADICAL Heavylift increases RADICAL's maximum payload by 10 lbs; from 35lbs to 45lbs. It strengthens areas of high stress with mechanical braces and reinforcements. The use of RADICAL Heavylift does not alter any other specs of RADICAL aside from maximum payload and All Up Weight (AUW). While RADICAL Heavylift increases the overall strength of the system, it is not designed for more aggressive off-road terrain or for payloads in excess of 45lbs.

Parts of the RADICAL Heavylift

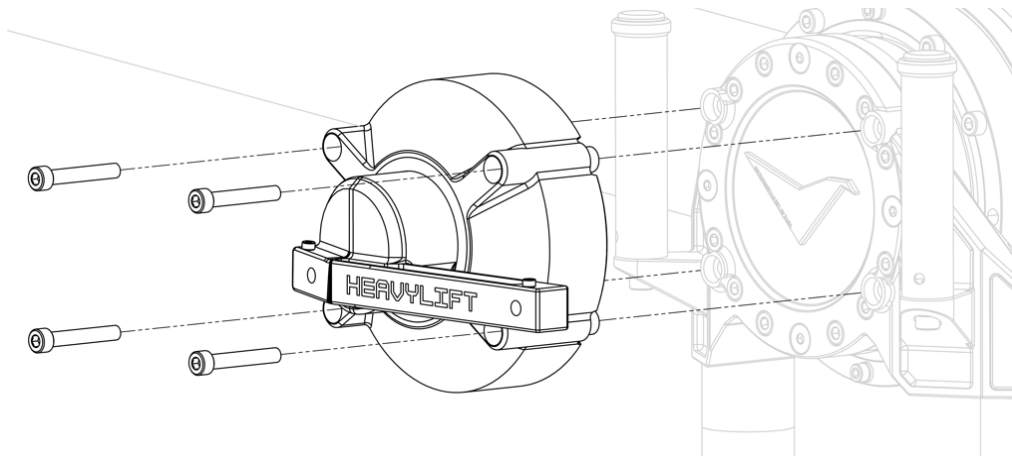
RADICAL Heavylift System Overview



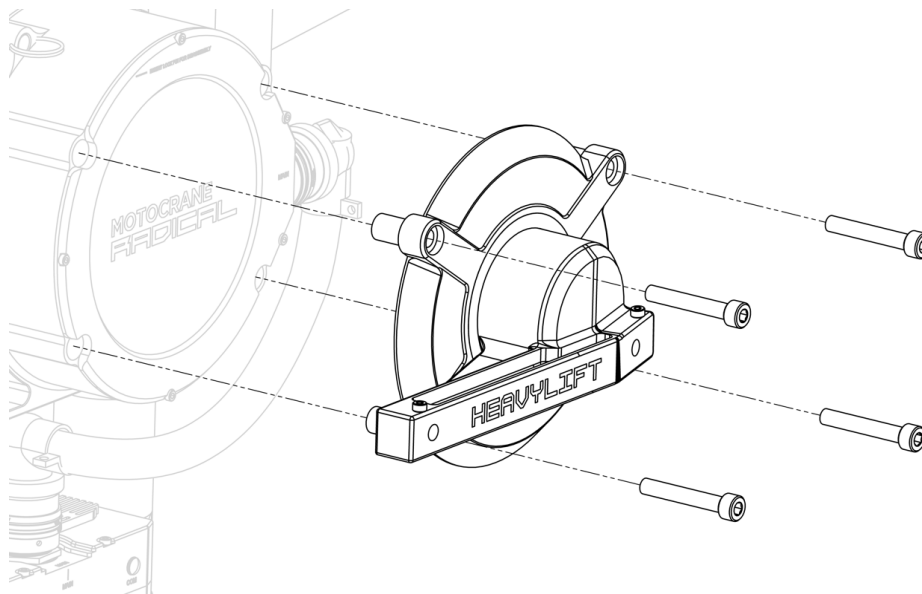
Installing RADICAL Heavylift Components

Installation of Heavylift should occur after RADICAL is completely built, but before payload and counterweight are added.

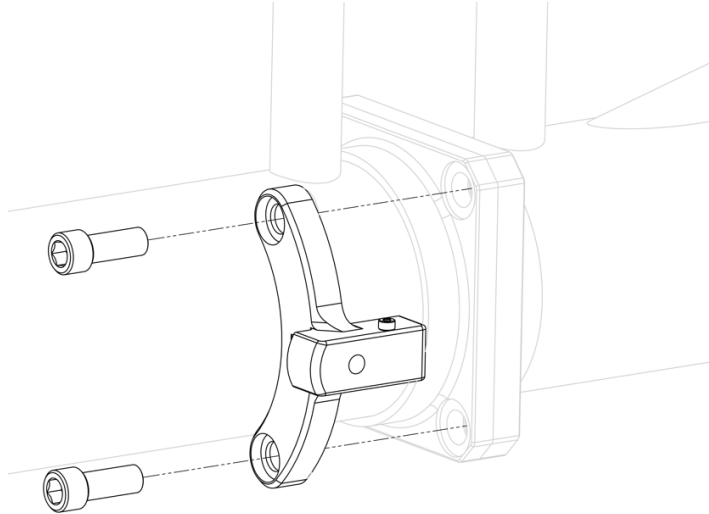
1. Install the Heavylift Drive Mount to the Fulcrum drive side (with the MotoCrane Badge) using 4X SHCS M8X50. Apply appropriate torque to the fasteners.



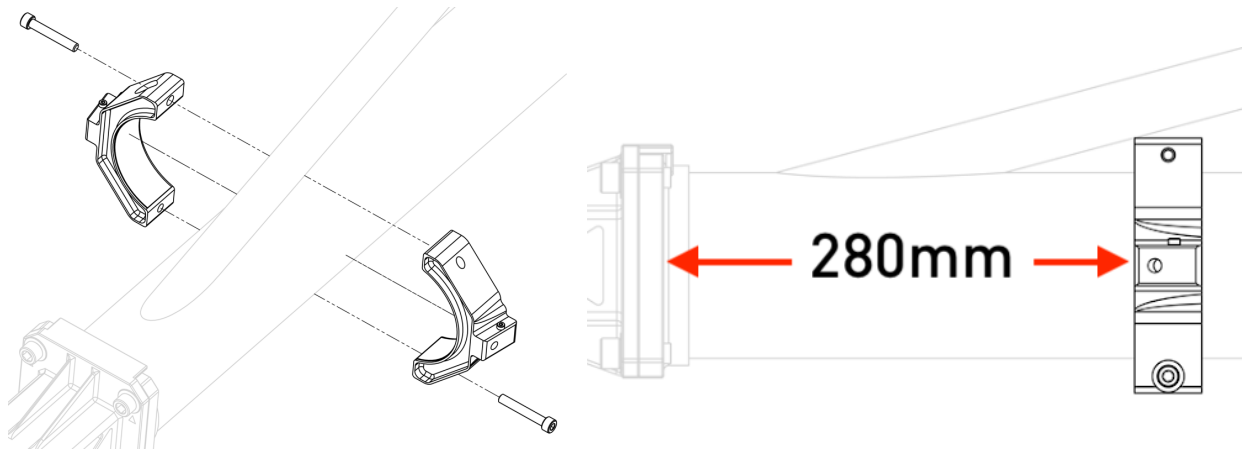
2. Install the Passive Mount to the Fulcrum passive side using 4X SHCS M8X50. Apply appropriate torque to the fasteners.



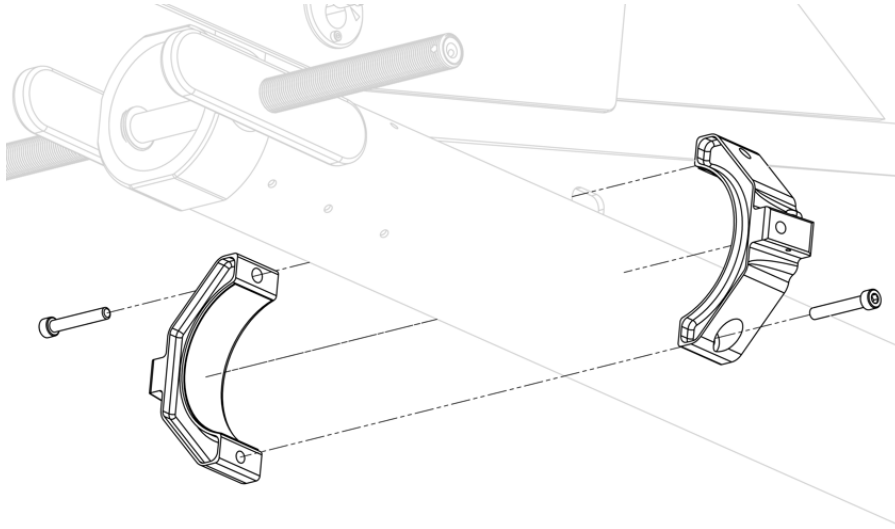
3. Install both Center Brace Boom Mounts to the Middle boom plate using 2X SHCS M12X30 for each side. Apply appropriate torque to the fasteners (existing fasteners need to be removed before installation).



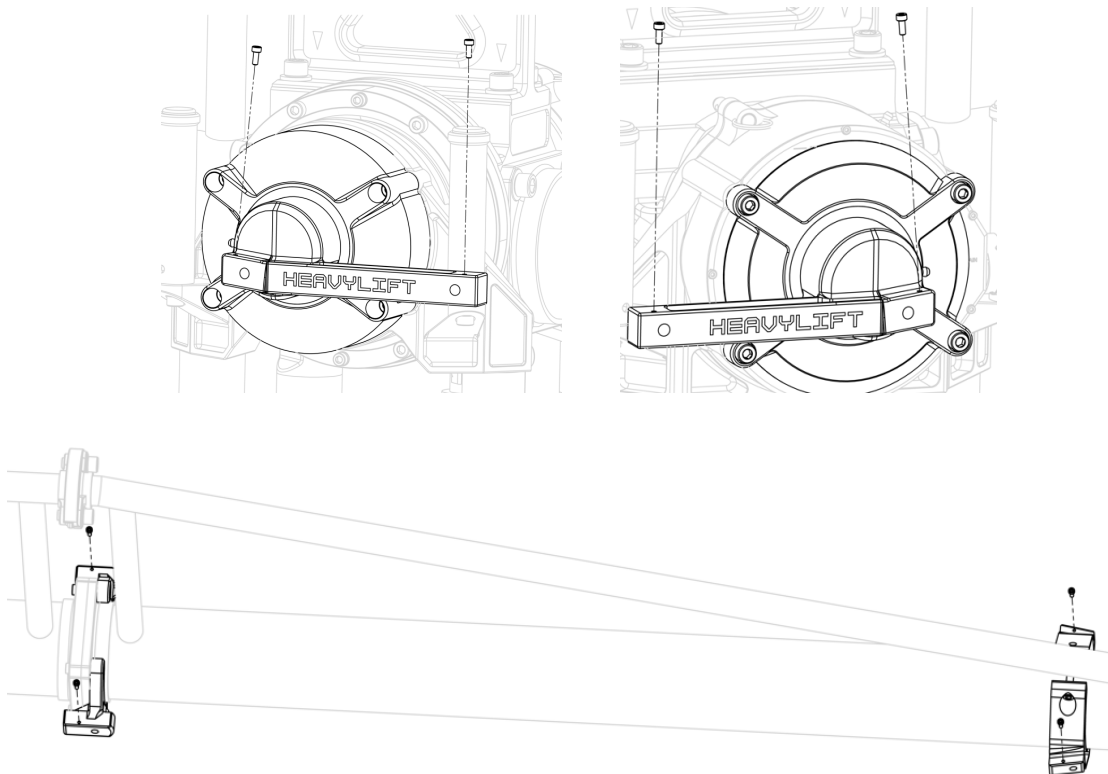
4. Install the End Brace Boom Mounts to the Front Boom section using 2X SHCS M8X50, 280mm away from the Isolator clip receiver. The sloped/threaded features should tapered towards the Isolator, with the pre-installed M4 fasteners pointed up, if applicable. **Keep the M8 fasteners loose for later adjustment.**

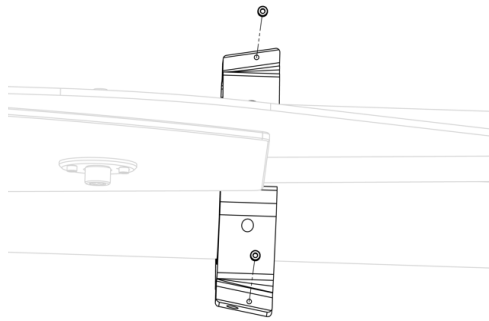


5. Install the End Brace Boom Mounts to the Rear Boom section using 2X SHCS M8X50, and have the top fastener pass through the cutout section. The sloped/threaded features should tapered towards the counterweight, with the pre-installed M4 fasteners pointed up. **Keep the M8 fasteners loose for later adjustment.**



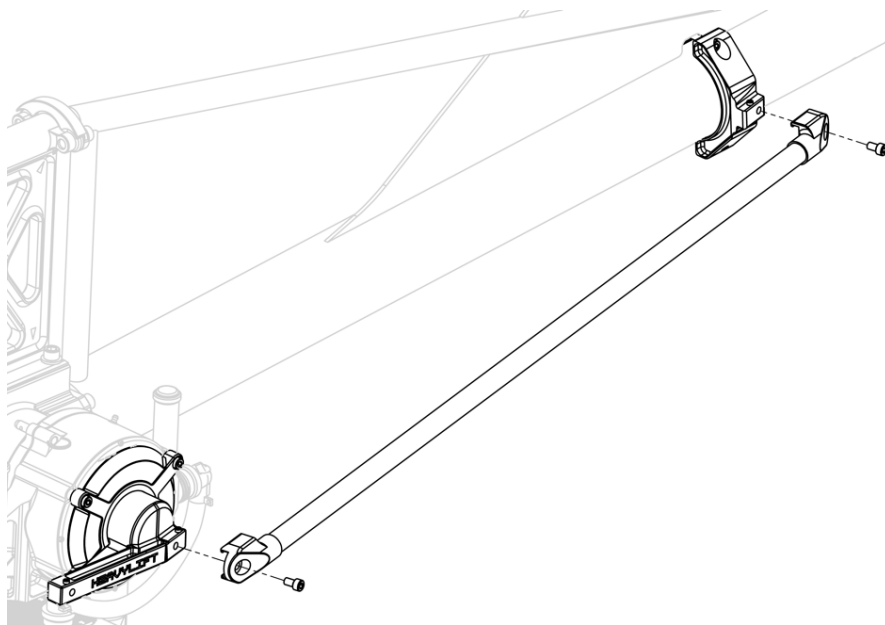
6. For the first time setup, install M4 fasteners as shown. Skip this step if M4 fasteners are installed.



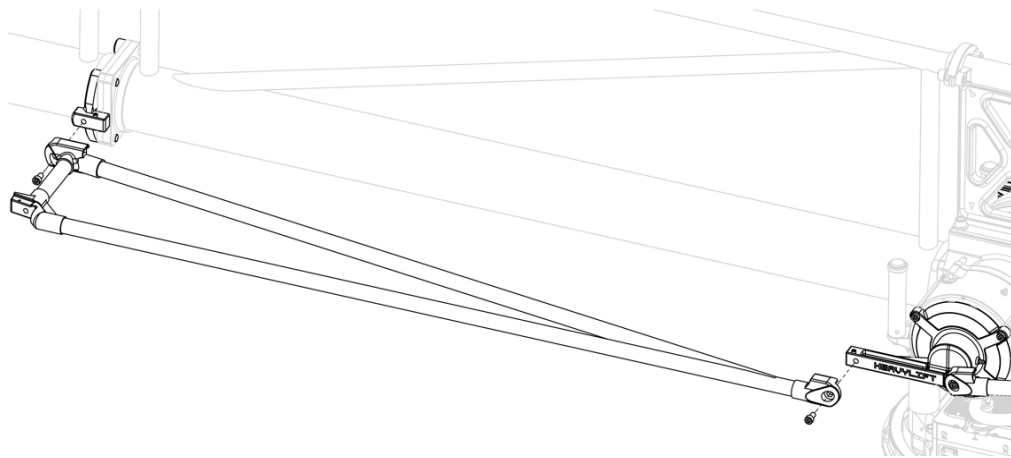


(Install M4 fasteners continued)

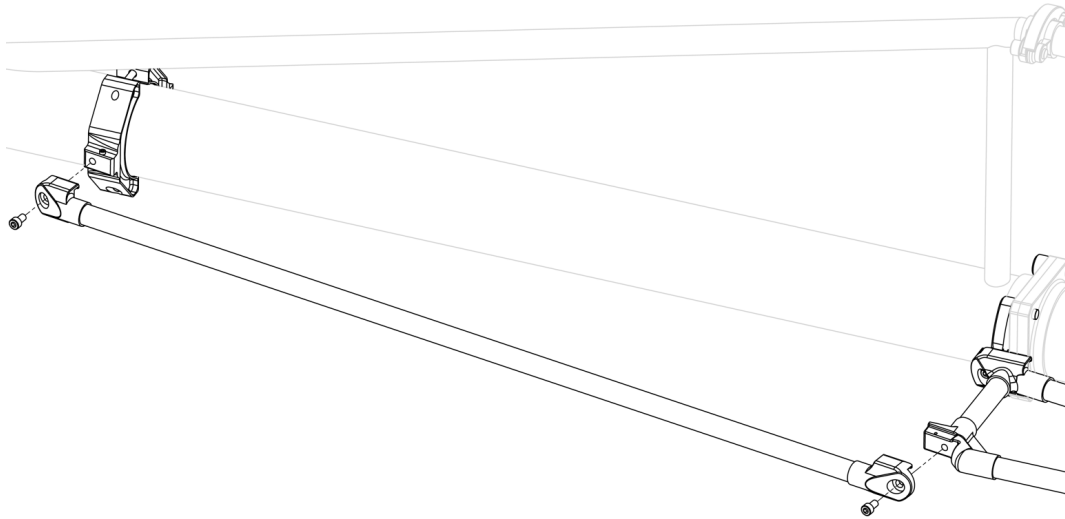
7. Attach an End Brace to the Passive Mount and End Brace Boom Mount using 2x SHCS M8x14. Make sure the clip receivers are hooked over the M4 fastener heads before letting go. Apply appropriate torque to the fasteners.



8. Attach a Center Brace to the Passive Mount and Center Brace Boom Mount using 2X SHCS M8X14. Make sure the clip receivers are hooked over the M4 fastener heads before letting go. Apply appropriate torque to the fasteners.



9. Attach an End Brace to the Center Brace and End Brace Boom Mount using 2x SHCS M8x14. Make sure the clip receivers are hooked to the M4 fastener heads before letting go. Apply appropriate torque to the fasteners.



10. Repeat step 7, 8, & 9 on the other side. Apply appropriate torque to the brace clamp fasteners once all tubes are installed.

WARNING Failure to secure the booms first can lead to a weak mounting point and could cause a mechanical failure in RADICAL. Mounting the RADICAL Heavylift components before the booms are secured would cause the RADICAL Heavylift braces to resist the force of tightening the boom mounting bolts. Mount RADICAL Heavylift after booms.

NOTICE Make sure split lock washers are used.

You should loosen the mounts to make slight adjustments, making sure the braces are centered, and are not crooked. After adjustments have been made, ensure all fasteners are properly tightened.

⚠ WARNING Loose mounts will not support the additional payload and can result in a failure. Remember to tighten all hardware before use.

After completing these steps, proceed to “Attaching Payload & Counterweight” as described in the RADICAL Operation Manual (found on the [MotoCrane Knowledge Base](#))

RADICAL Heavylift Weight Chart

Measure the All-Up Weight (AUW) of the payload then use the chart below to determine how much counterweight (CW) should first be installed before mounting the payload, and if any is needed after. "Payload" includes everything hanging from the RADICAL Isolator including AVM's like Tranquilizer, stabilized head, camera and accessories. You must weigh for accuracy. "Tallying" of weight often leads to balancing error.

CAUTION The Lift axis is equipped with a fail-safe brake. Failure to observe the proper counterweighting method will result in excessive imbalance beyond the max permissible limit, and may cause permanent system damage.

EXTENDED Payload All Up Weight [AUW] vs Counterweight [CW] Pre-load Chart

Payload AUW	Counterweight Pre-load
Empty/No Payload	45.00 lbs/20kg
15lbs/7kg	81.25 lbs/37kg
20lbs/9kg	93.25 lbs/42kg
25lbs/11kg	105 lbs/48kg <i>Add 100.00lbs/45.5kg, mount payload, add 5.00lbs/2.3kg after</i>
30lbs/14kg	117 lbs/53kg <i>Add 100.00lbs/45.5kg, mount payload, add 17.00lbs/7.7kg after</i>
35lbs/16kg	128.75 lbs/58kg <i>Add 100.00lbs/45.5kg, mount payload, add 28.75lbs/13.0kg after</i>
40lbs/18kg	140 lbs/63.5kg <i>Add 100.00lbs/45.5kg, mount payload, add 40.00lbs/18.2kg after</i>
45lbs/20kg	152 lbs/69kg <i>Add 100.00lbs/45.5kg, mount payload, add 52.00lbs/23.6kg after</i>

NOTE: The values/weights listed above are "coarse" measurements that take into account the weight of provided fairing and counterweight lock knobs. You are responsible for "fine-tuning" the counterweight to your exact payload. To achieve "fine-tuned" balance, please refer to the BALANCE TEST feature of the COMMAND Console. This is explained in detail within the COMMAND Console Operation Manual.

Maximum allowable Counterweight Pre-load without payload attached to the RADICAL Isolator is 100lbs/45.5kg!

Known Hazards

⚠ WARNING The following list represents a list of known hazards that exist when operating the RADICAL Heavylift. This is not exhaustive, but represents some common hazards to watch out for.

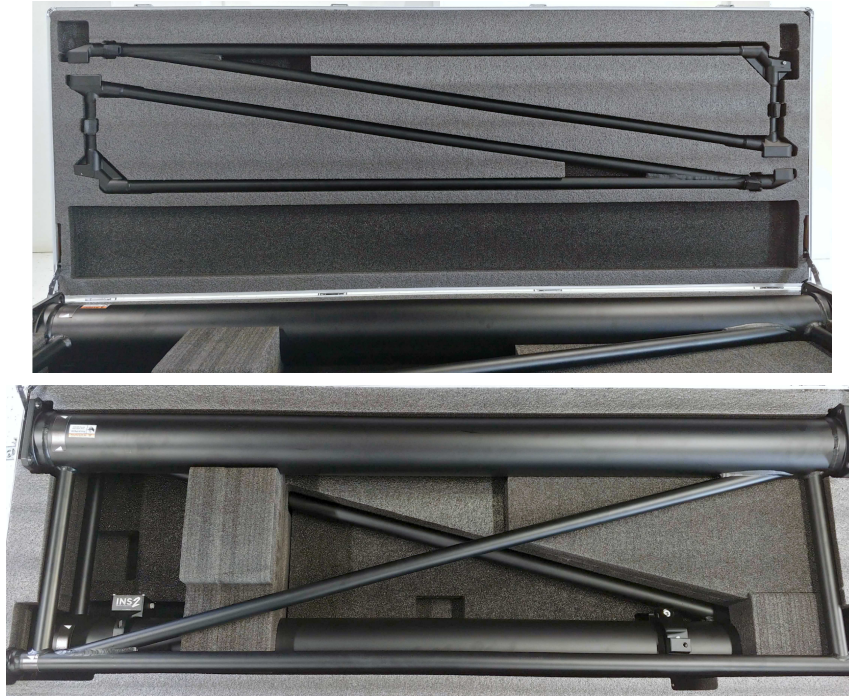
- RADICAL Heavylift mounting. Make sure the RADICAL Heavylift is secured and does not shift around during operation. All fasteners must be tight and secured, as per the setup instructions.
- RADICAL Heavylift mounting. Tighten the RADICAL Heavylift braces AFTER securing the booms.

Transporting the RADICAL Heavylift

The RADICAL Heavylift Drive mount, Passive mount, Center Brace Boom Mount and hardware are designed to fit into the RADICAL Tooling case.



The Center Brace Mounts are designed to be removed and stowed in the top lid of the Front Boom Case. The End Brace Boom Mounts should always remain installed onto the Front Boom.

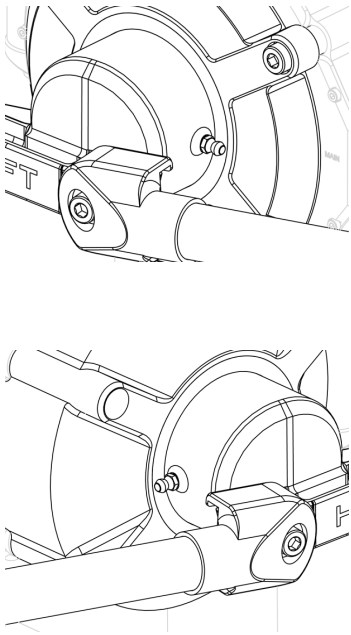


The End Brace Boom Mounts should always remain installed onto the Rear Boom, while the End Braces are designed to be removed and stowed in the Rear Boom Case during transportation and/or while not in use.



Maintenance

RADICAL HEAVYLIFT needs maintenance to keep it running smoothly. This includes cleaning after use and lubricating or replacing moving elements. Please see the table below or contact support@motocrane.com to discuss appropriate maintenance for your use.

Exercise	Frequency	Indicators
Wipe down the entire system with a dry cloth.	After every use.	Prevent surface rust on steel, keep the system clean and functioning smoothly.
Lubricate cross roller bearing 	Every six to twelve months	Unlubricated swing bearing will cause jerky movement. Required grease: Base Type: Lithium Group No: Grade 2

CAUTION Over-lubrication can result in internal seal failure and may cause permanent equipment damage. We recommend contacting support@motocrane.com to confirm that your unit needs re-lubrication before proceeding.

Weather & Water

RADICAL Heavylift parts are weather resistant. After using RADICAL Heavylift in wet or dusty conditions, wipe all components down with a soft dry cloth.

Revision History

Revision	Date	Description
1.0	NOV 2021	Initial Release

MotoCrane Technical Support
support@motocrane.com

This content is subject to change.

Download the latest version from
www.motocrane.com/knowledge-base

If you have any questions about this document, please contact MotoCrane, LLC by sending a message to contact@motocrane.com.

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