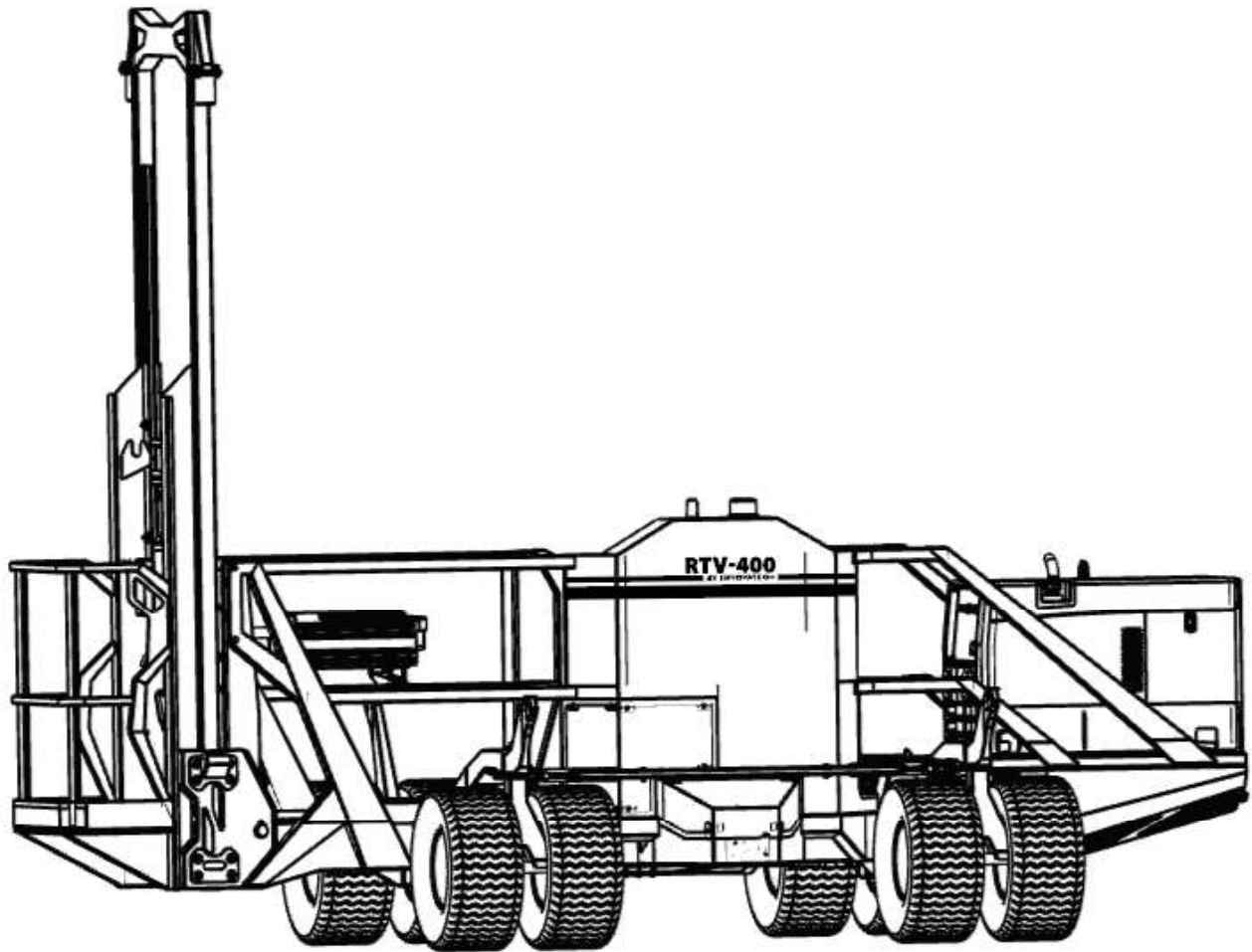


InnovaTech RTV

EQUIPMENT SAFETY, OPERATION, AND MAINTENANCE



INNOVATECH
ENGINEERED TO DO MORE.

RTV | 400 Series

INNOVATECH, LLC | HC 65 PO BOX 218 | KANARRAVILLE, UT 84742

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Document Info

This manual is intended to be used for the following Roof Top Vehicle model numbers: **RTV-400 Series**

InnovaTech, LLC, reserves the right to make technical changes for product improvement. This manual may contain illustration and photographs (for demonstration purposes) that may deviate from the actual product.

Safety information provided in this manual is a basic guide to help ensure safe operation. Warnings shown herein and on the Roof Top Vehicle are NOT all-inclusive. InnovaTech, LLC, cannot anticipate every circumstance that might involve a potential hazard, and does not take responsibility for misuse of their products. Therefore, the Roof Top Vehicle user takes full responsibility to follow safety guidelines and use common sense to avoid accidents.

If you have any questions or concerns about the content of this manual, we want to hear from you. Please e-mail us at support@innova.tech or contact us by mail at:

INNOVATECH, LLC
4360 North WECCO Rd
Cedar City, UT 84721

InnovaTech, LLC, is continually improving their equipment to bring you the latest in building system technology. For that reason, your RTV may differ slightly from what is described in this document. If you have any questions, please contact us at **Email** support@innova.tech.

The InnovaTech, LLC, Roof Top Vehicle is under US PATENT PENDING protection.

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InnovaTech Roof Top Vehicle

Overview

The InnovaTech Roof Top Vehicle (RTV) is intended to create a safer and more efficient workspace for workers involved in the erection of steel structures.

The RTV was engineered as a lightweight mobile platform to specifically improve the effectiveness of a weld worker. It enables him to lower himself down to an ergonomic work height and have all the necessary tools, supplies, and equipment to complete his job quickly, safely, and efficiently.



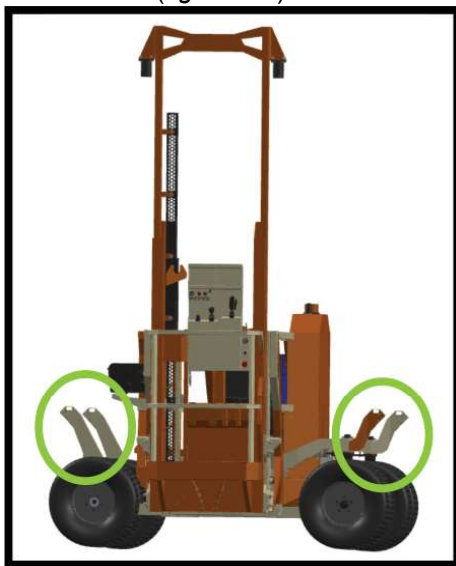
InnovaTech Roof Top Vehicle

The RTV has been specifically designed to provide a safer and more efficient access for roof top welding operations, specifically, optimal positioning between joists and beams for final welding connections. This lightweight vehicle is engineered to be hoisted onto a building structure after a series of panelized roof or deck sections have been completed. The RTV is designed to travel on top of corrugated steel roof decking without damaging the corrugation to transport a worker and his tools. The RTV is positioned beside the open roof gap left between panel sections for welding access, which allows a welder to work at an optimum level, reducing ergonomic strain, and allowing greater efficiency and accuracy.

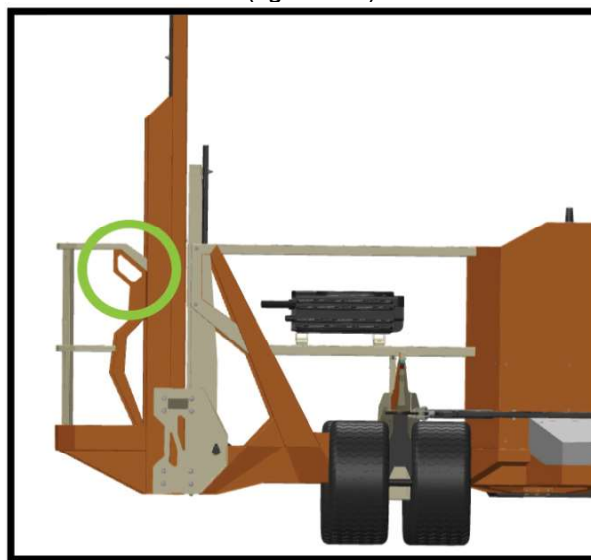
The RTV is fitted with deck sensors that stop all motion when close to an edge, gap or opening (see figure 1.1). The RTV is controlled from an attached man-basket assembly which is lowered beside joist sections to safely reach ergonomically optimal positions for welding. (see figure 1.3)

The manbasket features a tie off point which should be utilized while operating the machinery. (see figure 1.2)

(figure 1.1)



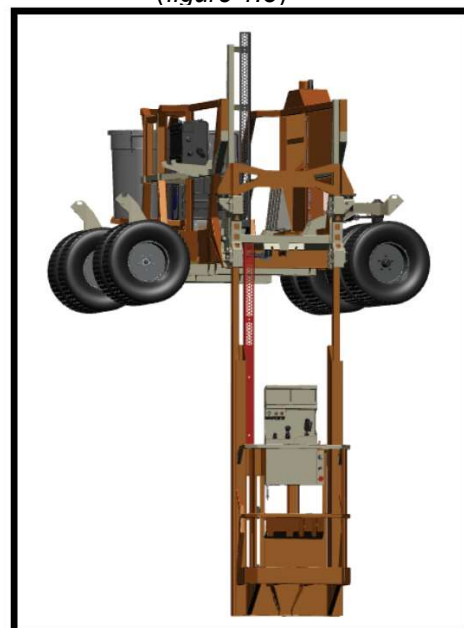
(figure 1.2)



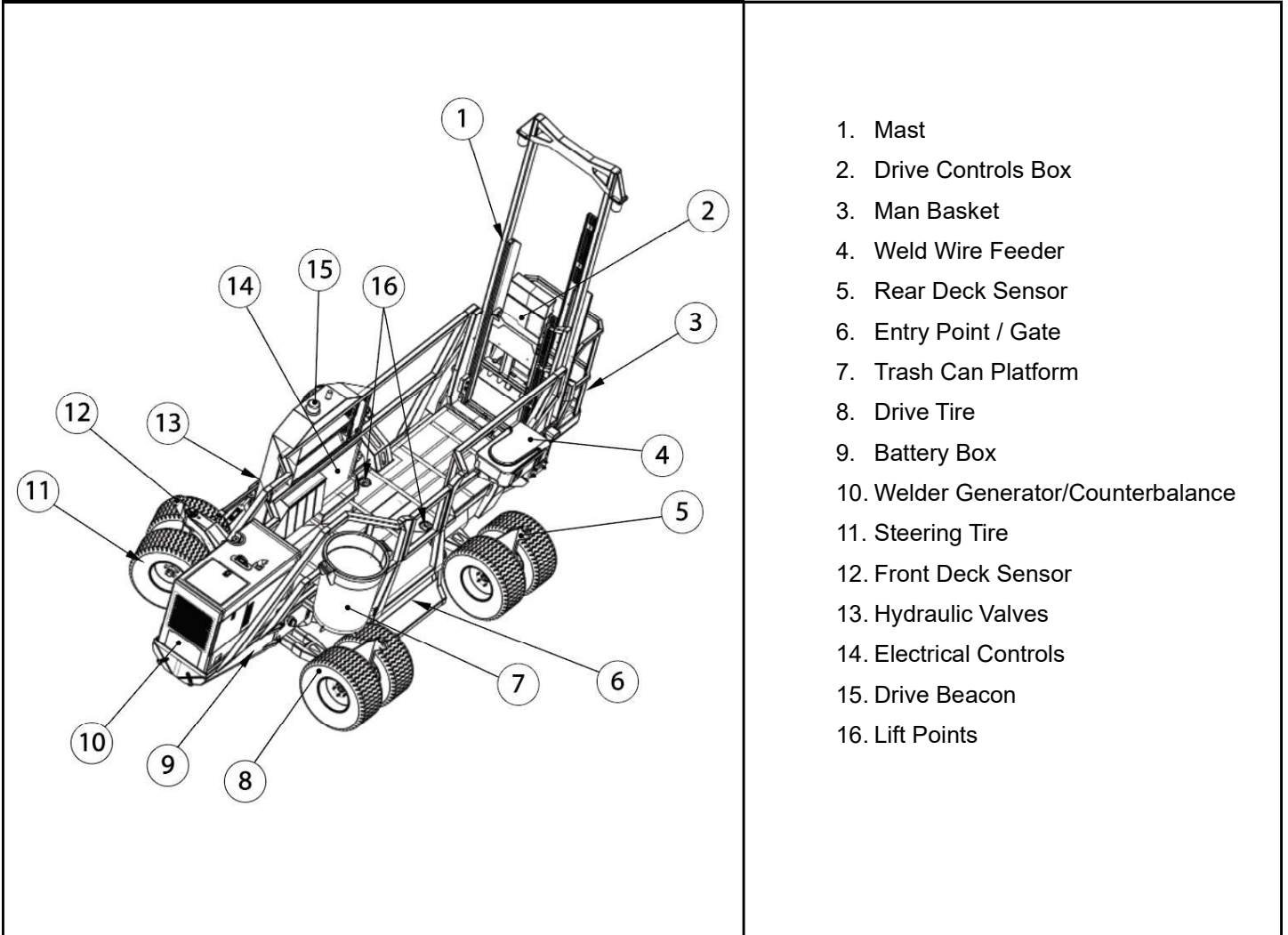
(figure 1.3)

When the joint connection weld is complete, the manbasket is raised and the RTV is advanced to the next joint section where the man-basket is again lowered to the optimal welding position. (see figure 1.3)

When the entire length of the open roof gap joints has been completed, the RTV is repositioned to the next length of roof gap joints and the process is repeated.



Nomenclature



1. Mast
2. Drive Controls Box
3. Man Basket
4. Weld Wire Feeder
5. Rear Deck Sensor
6. Entry Point / Gate
7. Trash Can Platform
8. Drive Tire
9. Battery Box
10. Welder Generator/Counterbalance
11. Steering Tire
12. Front Deck Sensor
13. Hydraulic Valves
14. Electrical Controls
15. Drive Beacon
16. Lift Points

Safety

This equipment was specifically designed to enhance safety in the steel construction work environment. InnovaTech endeavors to prevent accidents and create a safe, efficient, and productive work environment by producing safe equipment and machines.

Pre-Task Safety Analysis

Although the RTV is designed to enhance safety, it remains important for workers to carefully analyze the work to be performed. Identifying work methods, planning actions, communicating clearly, maintaining a positive attitude, teamwork, and compliance to worksite authority, all contribute to a safe worksite.

Use of the RTV should be included in a steel erection pre-task safety analysis at the beginning of each shift. Some topics to consider during pre-task safety analysis may include weather conditions, worksite surface conditions, underground features, site specific plans, and restricted access zones. This Equipment Operation and Maintenance Manual provides information needed to safely operate the RTV. This manual should be considered an appurtenant part of the RTV, and kept in the protective enclosure located with the RTV.

Notice

This Safety, Equipment Operation and Maintenance Manual provides information needed to safely operate the RTV. This manual should be considered an appurtenant part of the RTV, and kept in the protective enclosure located on the attachment.

Before operating the RTV, read this operators manual completely and carefully to understand the safety instructions and the operation of controls and safety equipment. You must comply with all DANGER, WARNING, and CAUTION notices. Refer to the Safety Markers section for detailed information on safety marker definitions.

Safety information provided in this manual is a basic guide to help improve safety and prevent accidents. InnovaTech Products cannot foresee every circumstance that might involve a potential hazard. Warnings in this manual and on the RTV do not encompass all potential safety hazards. You are responsible for safe operation of the RTV. You must satisfy yourself that the techniques, operating procedures, work methods, and systems are safe and will work for your situation.

The safety of everyone around the RTV depends significantly on your knowledge and understanding of all correct and safe operating practices and procedures. You can help prevent accidents by remaining alert and recognizing potentially hazardous situations.

Follow State and Federal health and safety rules and/or local regulations for operating and maintaining the RTV. This manual does not replace any laws and regulations. The operator is required to comply with all applicable laws and regulations.

Safety

Safety Markers

Safety Markers are provided to remind the operator of hazardous situations. InnovaTech Products provides these symbols to help inform all operators of as many potential hazards as possible. These symbols cover many, but not all, potential dangers and hazards associated with operating the RTV.

Make safety the priority while operating the RTV. Learn and follow all safety messages in this manual and on RTV labels to prevent death, serious injury, or equipment damage.

The following pages include a list of some of the safety symbols that may be used on this RTV.



THIS IS THE SAFETY ALERT SYMBOL. IT IS USED TO ALERT YOU TO THE POTENTIAL PERSONAL INJURY HAZARDS. OBEY ALL SAFETY MESSAGES THAT FOLLOW THIS SYMBOL TO AVOID POSSIBLE INJURY OR DEATH.

CAUTION

INDICATES A POTENTIALLY HAZARDOUS SITUATION. IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY. IT MAY ALSO ALERT AGAINST UNSAFE PRACTICES. THIS DECAL WILL HAVE A YELLOW BACKGROUND.

WARNING

INDICATES A POTENTIALLY HAZARDOUS SITUATION. IF NOT AVOIDED COULD RESULT IN SERIOUS INJURY OR DEATH. THIS DECAL WILL HAVE AN ORANGE BACKGROUND.

DANGER

INDICATES AN IMMINENTLY HAZARDOUS SITUATION. IF NOT AVOIDED, WILL RESULT IN SERIOUS INJURY OR DEATH. THIS DECAL WILL HAVE A RED BACKGROUND.

Safety

⚠ WARNING

Use proper safety procedures and avoid hazardous situations while operating the RTV to prevent death, serious injury, or property damage.

Hazards

Operators must read and understand all DANGER, WARNING, CAUTION, and operating instructions on the machine and in this manual. This equipment cannot be used for any purpose other than positioning personnel, their tools and equipment.

Here is a list of potential hazards to consider:

Pinch Point Hazards

Approved head gear and gloves must be worn by all operating personnel and ground personnel. Check work area for clearances around man basket and keep hands and feet within the railing while basket is in motion. Keep all tools, power cords, and lanyards in proper arrangement and stowage while equipment is in motion.



Trip and Fall Hazards

Entering and exiting the platforms could pose a Slip/Trip hazard. Watch your step while entering and exiting. Passenger(s) should ride only within the enclosed platform. Do not ride outside the rails.

Failure to use proper safety procedures when mounting and dismounting the RTV could result in death or serious injury.

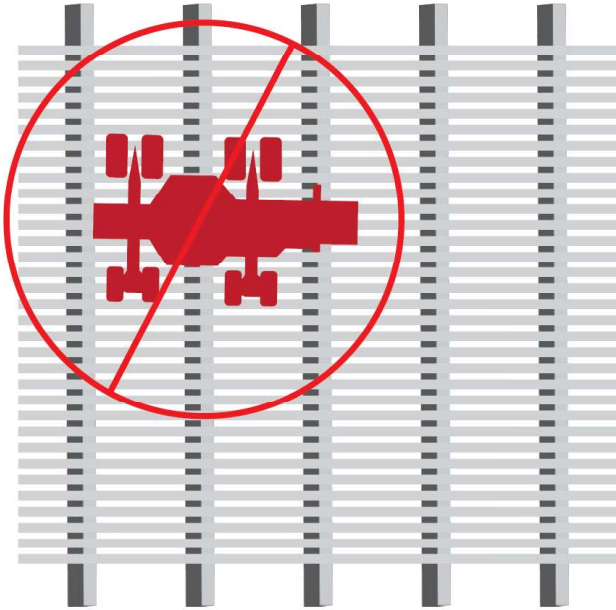
- Keep clear of dirt, snow, ice, debris, and other hazards.
- Face the RTV for mounting and dismounting.
- **DO NOT** use the controls as hand holds or steps. Avoid accidentally engaging or disengaging a control.
- **DO NOT** jump from the RTV. Clothing can get caught. Landing on uneven surfaces could result in death or serious injury.

⚠ WARNING	
<p>FALLING HAZARD</p> <p>DEATH or SERIOUS INJURY could result from falling.</p> <p>DO NOT ride in undesignated locations.</p>	 A black and white line drawing of a person falling from the back of a piece of machinery. The machinery has a vertical post and a horizontal frame. The person is shown in mid-air, having lost their footing from the back of the machine.

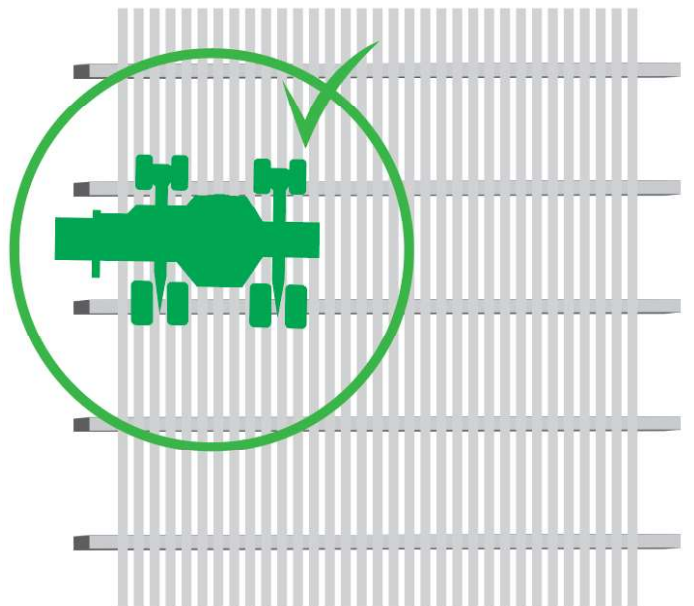
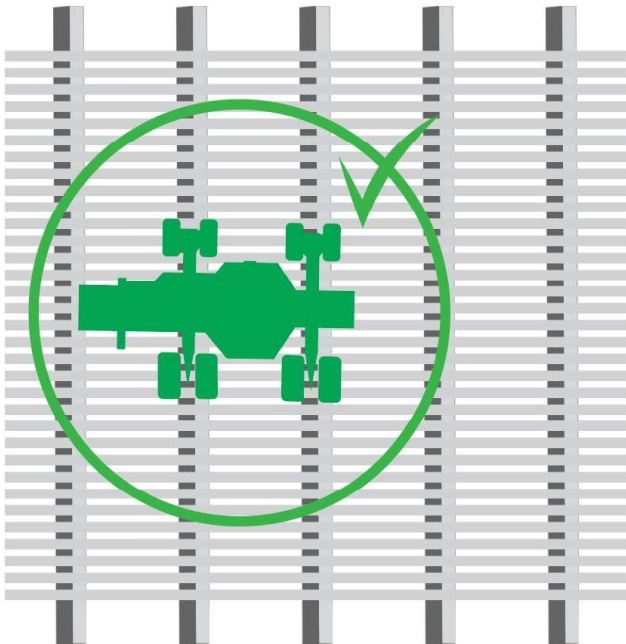
Safety

Driving Hazards

To prevent corrugation damage, avoid parking the RTV with the wheels centered in-between the joists.



Avoid parking perpendicular to the decking without being on top of joists.



Safety

Other Hazards

Do not use machine as a ground for welding. When performing welding or metal cutting operations, precautions must be taken to protect the chassis from direct exposure to weld and cutting splatter.

Do not refuel the machine with the engine running.

Battery fluid is highly corrosive, avoid contact with skin and clothing at all times. Charge batteries in a well ventilated area.

Be aware of equipment maintenance condition; avoid pressurized fluid leaks.



Modifications

WARNING

Modifications to the RTV or attachments could affect capacity and/or stability which could result in death or serious injury. Modifications cannot be made to the RTV or attachments without prior written approval from InnovaTech Products. Where such authorization is granted; capacity, operation, and maintenance instruction plates, tags, or labels shall be changed accordingly.

- Unauthorized modifications or alterations will void the warranty.
- **DO NOT** modify, disable, or bypass any safety devices.
- **DO NOT** burn or drill holes in the RTV.

Safety

Support Equipment

In conjunction with the RTV equipment, workers should adhere to the safety requirements and the proper operation and maintenance of support welders, fastening tools, lifting equipment, material handling equipment, and maintaining a realistic understanding of their own physical strength and endurance.

Personal Protection Equipment (PPE)

PPE should be utilized according to the type of work and environmental conditions a worker is exposed to. These items may include reflective vests, gloves, helmets, eyewear, face shields, hearing protection, respiratory protection, and fall protection.

Welder Generator

The RTV utilizes a welder generator for the source of power in addition to counterbalance action. The welder generator should weigh no less than 620lbs and be able to provide at least 2400W (120V , 20A) 60 Hz power. Refer to the RTV nomenclature section in this manual for mounting position. This series of RTV includes specifications for a MILLER TRAILBLAZER 325 Diesel CV/DC. Refer to the welder generators manufacturer documentation for safety, operation and maintenance recommendations. Contact InnovaTech for acceptable substitutions.

Weld Wire Feeder

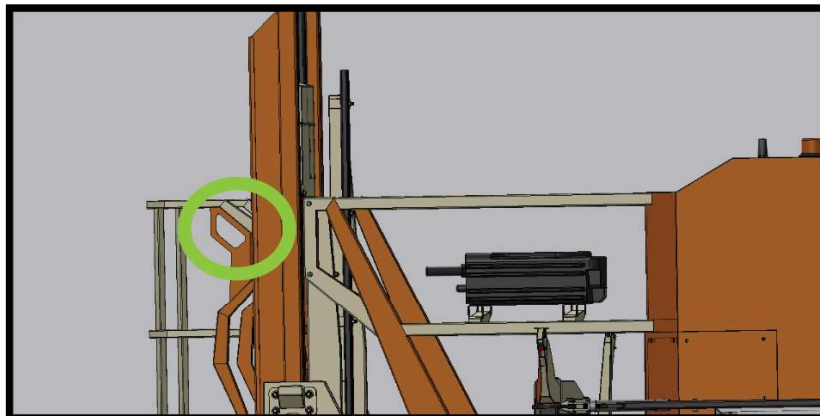
The RTV is designed to accommodate a weld wire feeder for efficient welding. Refer to the RTV Nomenclature section in this manual for mounting position. All model series RTV's include specifications for a LINCON LN-25 PRO. Refer to the weld wire feeder manufacture documentation for safety, operation, and maintenance recommendation. Contact InnovaTech for acceptable substitutions.

Fall Protection

In addition to the guard rails and optical sensors on the RTV equipment, operators must use 100% tie-off at all times while outside of a safety control line where fall protection is required. Be sure to use the designated tie-off location on the RTV. (see figure 2.1).

The RTV is designed for use perpendicular to joist or beam connections where the RTV physically could not fall from the roof. There may be some rare instances where the RTV may approach an unprotected leading edge. The laser sensors will automatically stop the RTV if it approaches too close to the edge. The operator should maintain a distance of at least 15 feet from an unprotected leading edge where perpendicular members are not installed.

(figure 2.1)



Pre-Operation

Perform a pre-operation inspection and functional tests at the beginning of each work shift. **DO NOT** perform the pre-operation inspection with the engine running or hot. Contact with moving or heated parts could cause death or serious injury.

- Perform the pre-operation inspection and functional tests in an open area and away from any other obstacles or equipment.
- Become familiar with all safety and hazard labels, regulations, and procedures. Make sure all proper safety and hazard labels are attached to the RTV and remain legible.
- A brief description of controls, indicators, and instruments is provided as a convenience for the operator. These descriptions **DO NOT** provide complete operation instructions.
- Read and understand the entire manual before operating the machine.

Inspection Checklist

Walk around the **ENTIRE** RTV while visually performing the pre-operation inspection.

- Verify “Do Not Operate” tags (lock-out, tag-out) have not been placed on the RTV.
- **General** - Check for cleanliness, leaks, or evidence of damage to hardware elements including: cracks, sharp edges, deformation, corrosion, chemical attack, excessive heating, alteration, and excessive wear.
- **Manuals and Decals** - Check that the Operation and Safety Manual is in the protective case and legible. Check that all labels are present and legible. Replace any damaged or illegible labels.
- **Platform Assembly** - Gate opens and latches properly, guardrails in place, fasteners free of damage, lanyard tie-off points are undamaged.
- **Elevator Assembly** - Cable assembly free of damage, excessive wear, cracks, or distortion.
- **Chassis** - Wheel rim nuts secure, tires properly inflated and seated about rim bead, and rims free from damage.
- **Functions and Controls** - All controls should be in good working order, not modified, disabled, or blocked.
- **Electrical System** - Check battery fluid levels; check for corrosion, cracks, melted or damaged parts. Check electrical wires and connectors. Check that all instruments and gauges are working properly.
- **Welding System** - Secured to platform, free from damage. Controls, gauges, and display work properly.
- **Welder Generator** - Check for loose or damaged belts, hoses, and radiator fan blades. Check coolant and oil levels.
- **Hydraulic System** - Check cylinders and hydraulic lines for wear, leaks or damage, check sight gauge for fluid level. Add hydraulic fluid if necessary.

Functionality Check

The Functionality Check should be performed prior to work being started. Ensure all switches, gauges, and emergency stops are functioning according to their design. If the machine does not operate properly, turn off the machine and report the problem to the proper maintenance personnel. Lock-out and tag-out the machine and do not operate until it is declared safe for operation.

Operation

Check warning indicators and gauges frequently during operation. If a warning indicator is illuminated or a gauge shows abnormal readings, stop the use of the RTV. Have a qualified mechanic service or repair the machine before placing it into service again.

Control

The machine is operated from within the man-basket by two joystick controls.

The operator should stand in the man-basket and FACE THE FORWARD DIRECTION OF TRAVEL. Facing forward is important for the operator to be properly oriented to the controls.

The machine controls are operated one with one hand.

This equipment features variable speed controls:

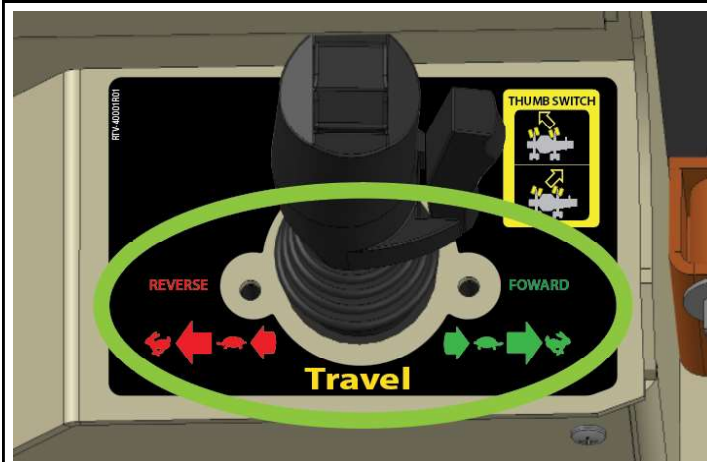
- To achieve LOW SPEED of moment, apply partial pressure in the direction of movement desired.
- For MEDIUM SPEED movement, apply full pressure in the direction of movement desired.



For steering movement, take hold of the large joystick and squeeze the safety switch to achieve the control.

For LEFT TURN movement, move the steering switch located on the top of the joy stick in the direction consistent with the left turn illustration on the labeling.

For RIGHT TURN movement, move the steering switch located on top of the joystick in the direction consistent with the right turn illustration on the labeling.



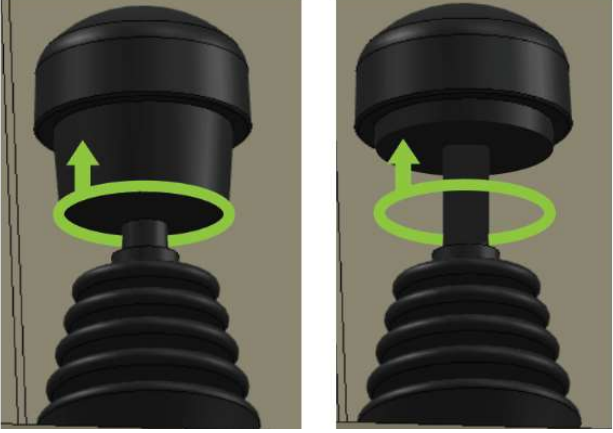
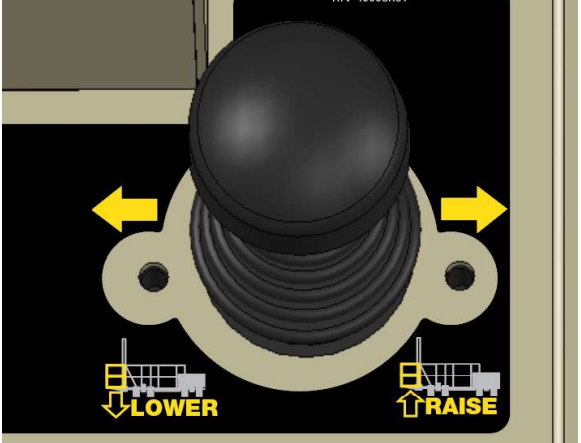
For drive movement, take hold of the large joy stick and squeeze the safety switch to activate the control.

For forward movement, apply pressure on the joystick in the direction consistent with the FORWARD labeling.


For reverse movement, apply pressure on the joystick in the direction consistent with REVERSE labeling.

Operation

⚠ CAUTION: Do not attempt to lower the manbasket without proper travel clearance.

	<p>For man basket movement, take hold of the small joy stick and squeeze the safety switch upward to activate the control.</p>
	<p>To raise the man basket, move the joystick lever in the direction consistent with the RAISE labeling.</p>
	<p>To lower the manbasket, move the joystick lever in the direction consistent with the LOWER labeling.</p>

To adjust the DRIVE SPEED, turn the switch to HARE for higher speed or, for lower speed turn the switch to TORTOISE.


--

Operator Qualifications

All operators must be trained before operating the RTV. Training standards must be approved by InnovaTech. Operators must use the RTV according to ALL appropriate safety regulations. Operator trainees must remain under constant observation and supervision of an experienced operator. Operators must be in good physical and mental condition, with appropriate reflexes, reaction time, vision, depth perception, and hearing.

Operators must read this manual completely and carefully to understand the safety instructions and the operation of controls. A brief description of controls, indicators, and instruments are provided as a convenience for the operator. These descriptions DO NOT provide complete operation instructions, and should not be substituted for proper operator training.

Operators must have the required training, skills, and tools to perform installation, operation, maintenance, or repair procedures properly and safely. The operator is responsible to operate and maintain the RTV (and attachments) according to manufacturer's instructions.

If any doubt or question arises about the correct or safe methods for operating the RTV, operators **must not** proceed until obtaining expert assistance from a qualified person.

Operators must understand and comply with all DANGER, WARNING, and CAUTION notices. (Refer to the Safety Markers section for detailed information on safety marker definitions.)

WARNING



The RTV is potentially dangerous if proper safety procedures are not followed. Workers who operate, maintain, or work near the RTV can be at risk of run over incidents or can be crushed or caught by the RTV or its parts which could result in death or serious injury if the RTV is not properly operated or maintained.

Read the Operation and Safety Manual BEFORE operating the RTV. Follow all safety instructions and labels. Only operate the RTV if you understand the safety instructions and warnings the manual. Always follow all State and Federal health and safety laws and/or local regulations. You must have the required training, skills, and tools to perform installation, operation, maintenance, or repair procedures properly and safely. Make sure the RTV and attachments will not be damaged or made unsafe by any procedures you choose.

BEFORE operating the RTV, do the following:

- Read the Operation and Safety Manual
- Read all the Safety Labels on the RTV
- Clear all people out of the way of any moving parts
- Establish an erection path and restricted access zone if applicable

Educate yourself and practice safe use of the RTV controls in a safe, clear area, BEFORE you operate this RTV on a worksite.

DO NOT operate the RTV if you are using drugs, alcohol, or any medication that might impair your judgement or ability.

It is your responsibility to observe applicable laws and regulations and to follow the manufacturer's instructions on the RTV operation and maintenance.

Specifications

Dimensions, Weights, Capacities

Description	Transport Mode	Operating Mode
Drive Speed		
Machine Weight	3,890 lbs.	3,890 lbs.
Turning Radius		20 ft.
Hydraulic System		240 DC
Platform Load Capacity		
Man Basket Capacity		
A. Overall Length		200 in
B. Overall Width		100 in
C. Overall Height		150 in

*Total Vehicle weight includes a full tank of fuel in welder generator, hydraulic fluids, and one wire feeder roll in mounted wire feeder. Platform and Man Basket payload should not be exceeded, which is additional to the RTV's GVW.

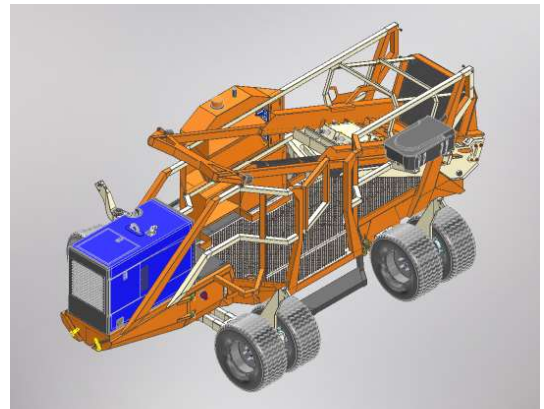
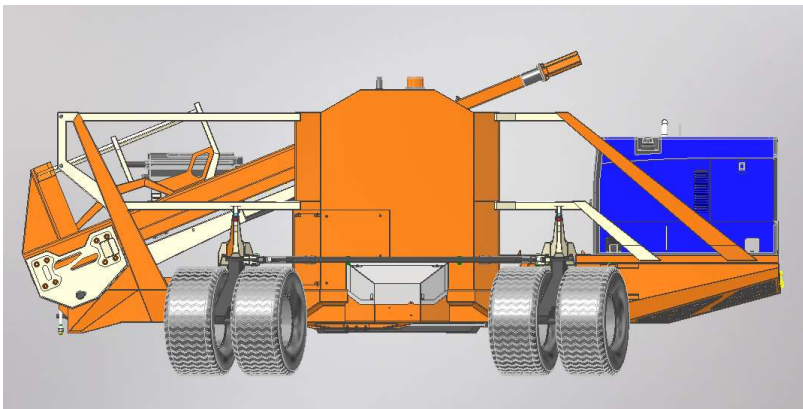
Setup

Shipping Mode

Illustrations represent the shipping configuration.

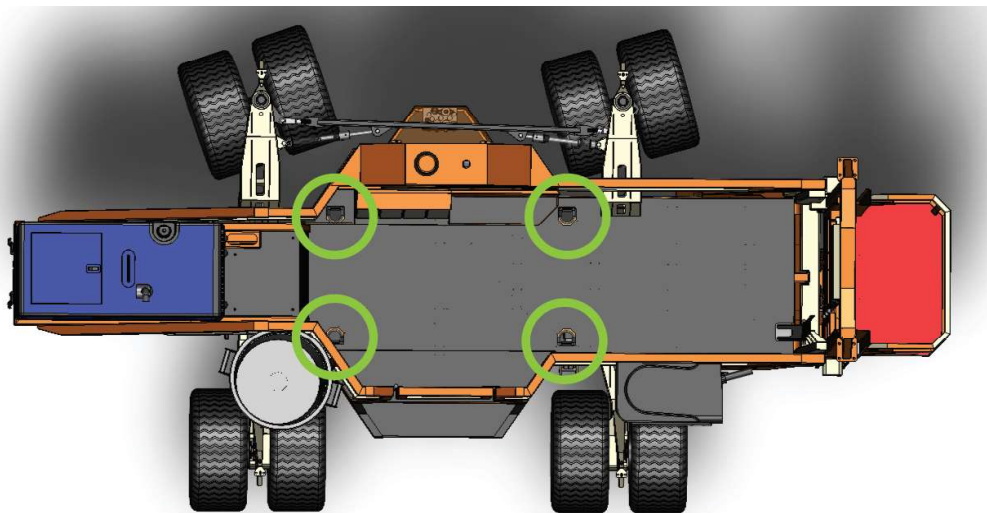
- Remove all loose items from the machine.
- Ensure all pivot points are locked into stowage position before shipping.
- The Mast pivots downward into the railing area and mounts to stowage eyelets.
- The Man Basket remains in the default UP position.
- The Fall Arms fold upward to a vertical stowage position.

DO NOT attempt to ship equipment while set up in Operating Mode. Failure to comply may result in equipment damage.



Hoisting

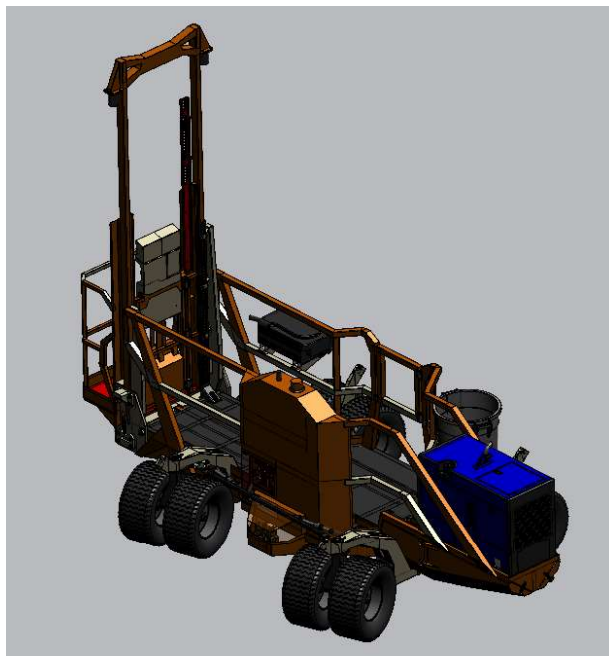
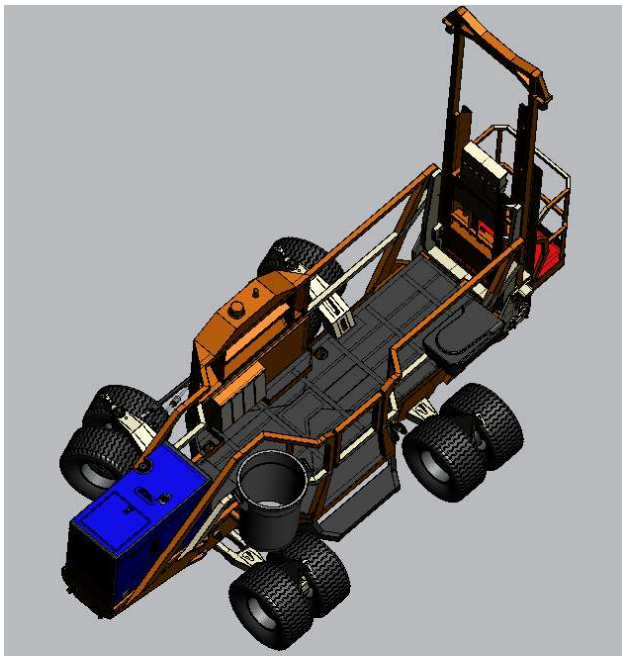
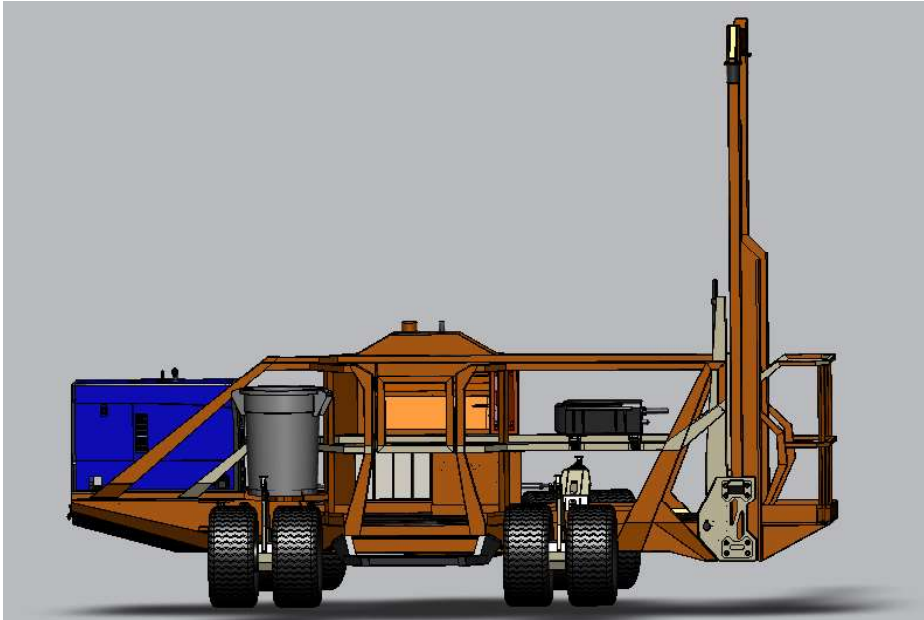
When hoisting the RTV, raise mast to operating mode to allow stowage of tools and materials. Use the hoist sling supplied with the RTV.



Operating Mode

Illustrations represent configuration for Operating Mode.

Ensure all pivot points are locked into position.



Operating Conditions

- Steel Corrugated Decking- Default staging surface for lowering ManBasket into truss and joist sections that require welding connections.
- Adverse weather conditions may limit operation.

Automatic Grounding Arm

RTV model 400 features an automatic grounding arm to facilitate grounding of welder during welding operations. The grounding arm eliminates the need for grounding lead cable to be routed to the man-basket. The grounding arm linkage is controlled by the position of the man basket platform.

When the man-basket platform lowers from home position, the grounding arm linkage allows contact to connect with the deck surface allowing welding procedures. After welding is complete, and the platform is raised fully to the home position, the grounding arm linkage disconnects the grounding contact from the decking surface. This Automatic Grounding Arm feature is completely insulated from the RTV chassis must not be used as a ground for welding.

Deck Sensor Position

RTV Model 400 has been upgraded with a new deck sensing system. Previous model RTV's feature the moveable fall arm brackets with deck sensors on the end of each fall arm. The RTV 400 series now feature a fixed bracket where the new deck sensors are mounted.



Maintenance

In order to maintain the highest level of safety and operation efficiency, InnovaTech recommends an established service interval. Contact your InnovaTech service representative for recommendations. Have the information on the RTV Vin-Tag available when contacting the InnovaTech service representative.

Recommended Lubricants

Use approved lubrication products recommended by an InnovaTech Service Technician.

Replacement Parts

Contact InnovaTech for information regarding replacement parts. If in the event repairs need to be made during jobsite deployment, in many instances, parts may be sourced from areas local to the equipment location. Your InnovaTech service agent will assist in identifying appropriate replacement parts.

Service Life

InnovaTech Products and Services are constantly being improved for serviceability and durability. If any portion of the equipment is deemed unsafe, or in poor repair, appropriate procedures should be initiated for repair or replacement. InnovaTech recommends complete service procedures be performed prior to site deployment. If onsite repairs are necessary, appropriate Lock-Out/Tag-Out procedures must be initiated. No portion of damaged equipment should be operated for any length of time.

Supplemental Equipment Manuals

The manuals to each of the support equipment specified in this document can be found on our website or from a link to the manufacturer's website. Manufacturer documentation may be available for download via these websites. This list may be incomplete. Contact an InnovaTech representative for information on compatible support equipment.

Replacement Manuals, Decals

Replacement manuals and decals for the RTV can be obtained by contacting us by phone, mail, or email.

Model/Serial

When contacting our service representatives, have the RTV Vin-tag information available. The Vin-Tag will be placed on the RTV....

Contact Us

INNOVATECH, LLC

4360 North WECCO Rd Cedar City, UT 84721

Email support@innova.tech