

BEST TUGS

— BECAUSE YOUR PLANE DESERVES IT —



ROMEO R5 & R8 USER MANUAL

INTRODUCTION

At BEST TUGS™, we pride ourselves on building the most innovative and advanced tugs in the world. We work diligently to ensure that the quality and workmanship of your tug exceeds your expectations and are confident that you will see the difference in every part of your BEST TUGS™ experience.

We designed this guide to provide you the information needed to make your experience even better... and while we are confident that this guide will answer your questions, we are always here to chat with you on the phone. You can reach us at 800-914-2003.

Thank you again for choosing BEST TUGS™.



BEST AVIATION
PRODUCTS

252 West 3560 North
Spanish Fork, UT 84660
800.914.2003



WHAT'S IN THE CRATE?

External Charger



Remote Control



ROMEO

UNCRATING INSTRUCTIONS

**Please read these instructions
before beginning.
For any questions
call us at 800.914.2003**

Tools Needed:

- Phillips Head Screwdriver
(Drill/Impact is easiest)
- 7/16 Socket

1. Start by removing the screws marked with red paint from the lid. Remove the top lid from the crate.

Keep the lid nearby to be used in step 3. (FIG 1)

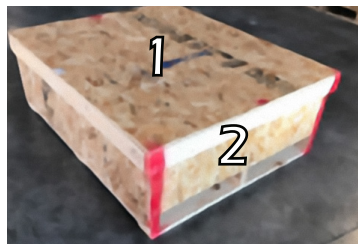


FIG 1

2. Remove the screws from the wall nearest the tug's drive tires (Marked with red paint.)
3. Place the lid on the edge of the crate, creating a ramp for the tug to drive out. We recommend placing your foot on the ramp to add a bit of extra security while pulling the tug out. (FIG 3)



FIG 2

4. Remove four (4) lag bolts with a 7/16 socket from the Romeo's base plate. (Note: The bolts are indicated with tags.) These bolts are securing the tug to the crate.
5. Take the remote out of the packaging. Turn on the remote by pushing the power button behind the steering wheel.
6. Double-check to make sure both E-Stop switches are in the popped-out position by twisting them clockwise.



FIG 3

Note: Foam filled tires have a screw in the tire from the factory. It is safe to remove the screw.

UNCRATING INSTRUCTIONS

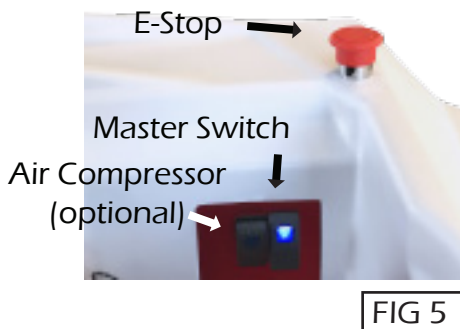
Continued

7. Push the master switch to the "on" position.

Note: The switch next to the master is for an optional air compressor, this switch is present only if you purchased this accompany option.



8. The handheld will display a TX on the screen. Once the Tug responds you will see an RX on the screen. This may take 30 seconds. Next slide the button labeled "E" below the remote power button forwards to turn on the tug. (Slide it back to turn off the tug.) The light on the Master switch turns blue when the tug is on. (FIG 5)



9. Wiggle the steering wheel to center, then Push the throttle away from the handle to drive out of the crate. (FIG 4)



The controller is the first device to be powered on. It is also the LAST device to be powered off.

Failure can lead to severe damage to yourself, your plane and your tug!



We want to keep a picture of your aircraft and tug in our files if you would like to share them.

Please Email cool pictures of your tug and plane to sales@besttugs.com. You may also see it on our website or social media. (By sending images, you expressly permit us to use these images for marketing purposes.)

Remote Control

1. THROTTLE TRIM:

If tug inches forward/backward when throttle is released, use this to remedy.

2. STEER TRIM:

If tug is drifting left/right use this to remedy.

3. ROTATE/LOCK:

Raise/Lower Lazy Susan rotation locking pin.

4. LOAD/UNLOAD:

Locks the loading hook.
See page 6 for more.

5. LOAD/UNLOAD INDICATOR:

Visual image for position of loading hook.

6. LOCK/ROTATE INDICATOR:

Visual image for Lazy Susan locking pin.

7. REMOTE POWER:

Push to turn on.
Hold to turn off.

Always turn the controller off last.

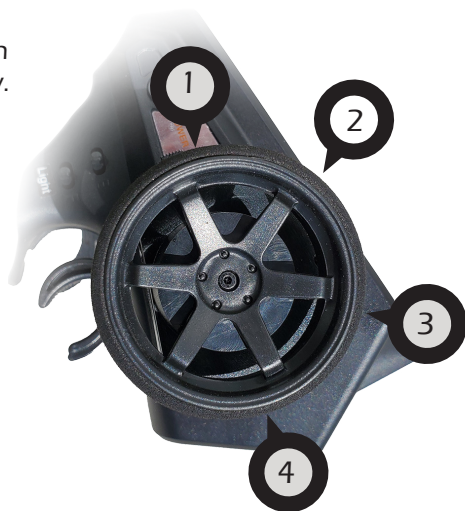
8. TUG POWER

Forward to turn on.
Backward to turn off.

9. Throttle:

Forward/Backward
The more you push/pull it, the faster the tug goes.

Warning: Throttle reversal of direction overrides the Autothrottle, stressing landing gear. Allow the autothrottle to stop the tug—just let go of the throttle and it will auto-park.



USING YOUR TUG

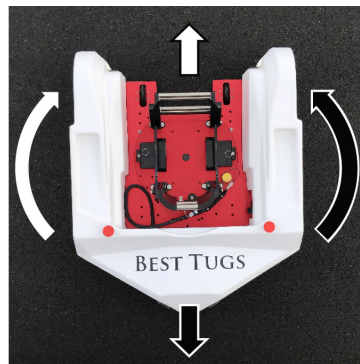
1. Turn on the remote
(if you turn the tug on first, there's a chance the unit will go into "Safety Mode" which will require you to reset the tug by turning it off and back on again.)
2. Turn on the tug
(Ref uncrating instructions)
3. Take a moment to orient yourself regarding the tug's position and the movements you need to make.
4. As you familiarize yourself with how the tug drives and maneuvers, make slow, subtle adjustments.

We strongly recommend driving the tug around the ramp/hangar without an aircraft loaded to get comfortable with the handling.

Please note that directions are relative to the tug only, not to the remote. Keep that in mind as you are driving your tug. Also, Remember you are guiding a massive plane with wings, propulsion systems, and tails, not a small tug.

Reverse the process to shut down. **Turn off the tug first** and then the remote.

Warning: BEST TUGS™ is not liable for damage to your plane or person(s) while using your tug. Be smart, be aware of your surroundings, including the plane itself. Remember this much mass can't stop on a dime.



First Use

If you are using an easy load or Lazy Susan configuration: the tug comes from the factory with the tire cradle in a loaded position. Use the remote to unlock the hook and then physically pull the locking hook back to release the cradle before physically moving the ramp to the loading position. Note: Before each use, double-check your loading tray. Repeat the step of manually lowering the ramp if needed.

See [BestTugs.com](https://www.BestTugs.com) for videos

Lazy Susan/EZ Load Operation

Your Cage can and should be adjusted to more tightly fit your wheel. Both the diameter (thumb-screws) and width (slider) can be adjusted. See Initial Use on page 7 for set up instructions.

If you have a Lazy Susan, lock the rotation before loading or unloading. Locked, the Lazy Susan now behaves as an EZ Load. Be sure your tug and aircraft are in line with each other before loading/unloading to avoid damage to your tug/aircraft.

To lock the Lazy Susan so it cannot rotate, engage the locking mechanism by selecting Load or Unload/Down, depending on what you are going to do, and line up the plane and tug until the locking mechanism engages. You can not unload a plane until the Lazy Susan is aligned AND locked. To allow the Lazy Susan to rotate—push Rotate/UP, to disengage the locking mechanism.

In the Unload/Down switch position (hold the silver button down on older models), the EZ load locking device releases when the weight of the plane's wheel shifts from contacting the ramp and presses against the back of the Cage. Note: this is a safety feature to prevent the tug from releasing while you are pulling your tug.

Loading:

Make sure the ramp is down. If it is not in the down position, select Unload/Down and manually lower the ramp. Drive the tug under your wheel. When your plane is loaded correctly, the ramp automatically locks into the upright and locked position.

Unloading:

Select Unload/Down on the rocker switch (silver button on older models) to allow your plane to unload.

Carefully move the tug towards the chocked aircraft; this causes the nose wheel to contact the back of the Cage, relieving pressure from the ramp and disengages the locking device. Then as you pull away from the plane, the tire pushes the ramp open.

An advanced maneuver is; while moving the plane towards you, press the Unlock on the rocker switch (silver button on older models) to allow the locking device to release when the ramp pressure is removed, then reverse the throttle. The tug's autothrottle allows the plane to continue to move towards you for a moment during the autothrottle's slow-down/reverse. That lets your plane press against the back of the Cage, removing the pressure against the locking device, and then you can pull the tug from under your wheel.

Moving Your Plane

We strongly recommend using your tug without an aircraft attached to get used to the controls and movements; this is a very user-friendly system, but it can take a bit of practice to get familiar with initially. Make sure you are comfortable with the throttle, maneuverability, and functionality of the tug before moving your plane.

Please familiarize yourself with how long it takes for your plane to ramp up/down and stop; that “coast” when slowing is due to the software that protects your nose gear from unnecessary damage and stress. Take the time to get used to this feature and be aware of it as you move your aircraft.

Check your plane's POH to verify the

maximum turn radius for your particular nose gear. The tug can turn your plane at an angle that may exceed the nose gear's maximum turn radius. **BEST TUGS™** assumes no responsibility for any damage caused by the tug operator misusing the equipment. As the operator, you have the responsibility to be familiar with your tug, your plane, and their specific limitations.

Check the surroundings of the plane, remove any obstructions, verify that your path is clear, and your propulsion systems (prop), wings, and tail will clear. Please verify that your wheel is secure on the tug, including strapping it down. Finally, remove the wheel chocks. You are ready to move your plane.

Storage

Store your tug in an area that is dry and safe from the elements. Limited exposure to rain and snow will not affect the electrical systems, however, extended exposure is not recommended.

If you do not plan on using your tug for an extended period of time, leave your tug plugged in and our smart charger will take care of the battery. Always make sure your tug and accessories are **TURNED OFF**.

Maintenance

The Lazy Susan option needs to have the central bolt tightened annually. It is found under the Romeo and centered under the Lazy Susan. Failure to maintain this may cause the failure of the bearing ring. Loosen the locking nut and tighten the central nut until tight, but not so tight that the Lazy Susan cannot rotate. Re-tighten the locking nut after you have completed the adjustments.

If the Lazy Susan's locking mechanism fails to engage, disconnect the wires (unplug the pins) of the

solenoid (Left side when looking from the ramp side and golden in color) and twist counterclockwise to remove. Locate the only opening by manually aligning the Lazy Susan. Clean the opening below of oils and debris. Replace the solenoid and re-plug in the wires. Your tug has a smart charger with trickle charge and battery maintenance cycles. To charge, plug the charger cord into the tug, then the power cord into a standard power outlet. You cannot overcharge when using the included charger.

Battery Care

We suggest charging your tug when the battery falls below around 70% (at rest) for optimal battery life (for sure before 30% at rest). Note: The tug continuously and instantaneously calculates the state of charge, which is why the percentage fluctuates while moving your plane. We have seen as low as a 10% charge displayed when using a fresh battery and moving a heavy plane. To read the resting battery's charge, leave the tug at rest for at least 60 seconds. We have seen a 10% drop from freshly charged just by moving the tug in and out of the hanger. The discharge rate is non-linear.

If you notice shorter times needed between charges, your batteries are beginning to wear out.

Lead Acid batteries are surprisingly delicate—damaged by direct and indirect effects: environmental, user induced, misapplication, and on and on. For instance, charging with a voltage above

14.4 volts or allowing the battery to discharge completely are the two most common ways to damage a lead-acid battery.

You can ruin even new batteries that are discharged too much or left uncharged for too long in just a few weeks; for this reason, Best Tugs cannot warranty the batteries as we have no control over the end-users' actions.

Modern microprocessor-based smart chargers use switching circuits; they are lightweight and designed to protect themselves against reverse polarity connection. They also have an annoying feature of not charging if the battery's voltage is below some arbitrary value. If you left the tug on and it no longer charges, a cheap 12-volt car charger with a volt-meter is your best option to try and restore the battery. Note: Most local battery/automotive stores carry replacement batteries.

To recover the battery pack or diagnose their condition:

- Connect a twelve (12) Volt charger with a meter across the terminals of each battery, one battery at a time.
- If you get a reading of zero (0) volts, a short circuit has occurred, replace the battery.
- If your battery reads less than 10.5VDC when charging, then the battery has a dead cell, replace the battery
- The battery charger indicates fully charged, but the voltage is below 12.4VDC? The battery is sulfated, replace the battery soon.

Are all batteries fully Charged? The tug should be able to resume normal functions.

12 Volt 18 Ah Sealed AGM Battery.

Acceptable brands include Duracell, UPG, Bright Way Group, Panasonic, Interstate, and others. (The previous are registered trademarks of the respective companies.)

Length: 7.17 in
Width: 3.03 in
Height: 6.57 in
Voltage: 12
Lead Acid Type: Deep Cycle
Capacity: 18ah

Chemistry: Lead Acid
Lead Acid Design: AGM
Product Category: Sealed Lead Acid
Product Subcategory: Deep Cycle
Terminal Type:

- M6 Nut and Bolt, NB, Nut, and Bolt.

Critical Cautions

Our tugs do not instantly stop.

This feature is to protect your aircraft's landing gear. Failure to compensate for this soft stop can cause damage to your aircraft. "Slowly" is the word to live by when you are in tight spaces or loading the tug. We recommend practicing with the tug before using it on your aircraft to allow familiarization with this soft stop feature. Exception: E-Stop stops the tug NOW! An emergency stop can damage the landing gear and damage the tug's motor control module. The "E" in E-stop stands for EMERGENCY.

Chock your mains! You don't want to push your aircraft into the hanger wall...

During operation, be aware of your surroundings. Never put yourself between the tug and any object! A tug capable of pushing thousands of pounds of aircraft can push you against an obstacle with thousands of pounds of pressure. There is a risk of serious injury, death, or dismemberment. Proper operation is your responsibility.

Best Tugs™ tugs do not have secondary brakes; the motor/transmission provides all braking. Your aircraft can roll freely if your transmission fails. As the operator, it is your responsibility to keep your aircraft within safe limits. Never

move an aircraft on a slope or environment where the loss of tug breaking would put you or your aircraft in danger.

Overloading the tug and how it affects your transmission. Or---
**Going into the red zone of the Load-
ed Weight chart.**

Example 1: You have an R5 tug you bought for your Meridian, and you do your buddy a favor and move their fully loaded King Air 350i—you have just damaged the gears. Failure is now a matter of when—not if.

Example 2: You used the R5 tug you bought for your Meridian, and pulled your fully-loaded Meridian up a 3-degree slope—you have just damaged the gears. Failure is now a matter of when—not if. The R8 would be a better choice.

If you find that you have the wrong tug for your plane's environment, please call us and exchange it for the appropriate model. We have a 30-day exchange policy; you only pay for the price difference and freight.

Exceeding the parameters of the tug can cause future power train failure. Best Tugs™ tugs load ratings are for hard flat and level surfaces. Use on a slope drastically changes those parameters. The steeper the grade, the more ener-

Critical Cautions

gy it takes to move your plane—it is as if the plane’s load parameter increased. The transmission’s gears have a superior hardened surface; a one-time event that exceeds the tug’s parameters can degrade that surface—eventually leading to total failure.

Rough surfaces, such as grass, can increase the rolling resistance of your tires. The lower your tire pressure, the larger the tire’s contact patch, the more extreme the tire deflection, resulting in more rolling resistance. It now takes more energy to move the airplane—which is functionally equivalent (In regards to the loaded weight charts) to the plane weighing more. Even a ten percent under-inflation could cause your load to be

over the limit—you have just damaged the gears. Failure is now a matter of when—not if.

Understanding the Loaded Weight Charts: You are looking at the load on the tug in pounds against the time (Duty Cycle in 15-minute blocks) that the tug can sustain that load. The load is also a factor of the slope a tug is driven on—flat terrain is easy; once you get started, it takes almost no energy to keep moving. However, when you are going up a slope (degree), or through rough terrain, you are using lots of energy for every inch you pull the thousands of pounds of your plane. That energy is converted to heat, which destroys your power train. Moving aircraft long distances also causes heat buildup,

LOADED WEIGHT

These charts show the load capacity, in U.S. pounds, that each tug is capable of—for a specific grade, in degrees, for a given 15 minute use/rest duty cycle, in percentage.

R5 Load & Duty Cycle				R8 Load & Duty Cycle				R12 Load & Duty Cycle			
Degree	2,500	3,750	5,000	Degree	4,000	6,000	8,000	Degree	6,250	9,375	12,500
0.0	100	100	100	0.0	100	100	100	0.0	100	100	100
0.5	100	100	85	0.5	100	100	86	0.5	100	100	96
1.0	100	83	62	1.0	100	84	63	1.0	100	94	70
1.5	98	65	N/A	1.5	99	66	N/A	1.5	100	74	55
2.0	81	54	N/A	2.0	82	54	N/A	2.0	91	61	N/A
2.5	69	N/A	N/A	2.5	69	N/A	N/A	2.5	78	52	N/A
3.0	60	N/A	N/A	3.0	61	N/A	N/A	3.0	68	N/A	N/A

Optional Accessories

LED Flood Lamp

A high Intensity LED light to assist in loading and unloading your airplane. The control panel light switch controls the action of the light when the main power switch is on. Note: The main power must be on for the LED lamp to light up.

Compressor

Tankless air pump, 110 PSI max. The Control panel switch enables the pump. Note: The compressor turns on automatically at, or below, 90 PSI. Press on the lever at the chuck to allow the air chuck to slip over the air stem. Release the lever to lock the chuck in place. Read aircraft Pilots Operating Handbook to verify the tire pressure required by your aircraft.

Tundra Package

Better operation on grass fields. No user interaction required. Proper air pressure must be maintained, or the inner-tube could slip, ripping the valve stem out. Note the tires use a 3.00x4 inner-tube.

Standard Ramp (R12)

Default tire ramp, handles up to

a 7.5" wide tire.

Double Wide Ramp (R12)

Extra-wide tire ramp, handles up to 14" wide tire.

Easy Load 18" or 22"

Captures the tire in a cradle. Can lock or unlock the cradle from the control panel.

Lazy Susan 16" or 18" (R12)

Captures the tire in a cradle. Can lock or unlock and rotate the cradle from the control panel.

Under Glow

LED accent lights. Depending on the selected options, you have an on/off switch or remote control. Note: Under-glow only functions when the tug is on.

When in doubt, calling the BEST TUGS™ support team is suggested. 800.914.2003

Customization, Tips, and Tricks

The Romeo's tire cradle comes configured to accept a maximum 16" diameter by 7" wide tire. Note: exceeding these parameters may force and hold the locking mechanism into a locking position. The oversized tire must be lifted out of the cradle manually to release it.

After first loading your aircraft into the cradle, adjust the cradle so that it properly cradles your tire and tighten. Note: these bolts are only hand-tightened from the factory. Adjust the side plates to center your tire and tighten. Use a 3/16" allen wrench. Using a metric size may damage the tug.

Exceeding the tug parameters creates situations where the locking hook or Lazy Susan locking pin may not engage or disengage. Carefully jogging the tug back and forth may help. Calling the Best Tugs™ support team is suggested. 800.914.2003

Battery issues

Leaving the master switch on allows the battery to discharge relatively rapidly. A fully discharged battery can lead to a drastically shortened battery life. The tug is always using a small amount of power, even with the master switch off. Keeping our smart three-phase charger (fast charge, trickle charge, and maintenance mode) connected if you are not going to use the tug for a

while will help prevent this. You cannot leave the charger connected for too long. Note: the charger's sensors will not charge a battery bank once it discharges below approximately 50% of the bank's nominal voltage. Instructions for potential recovery are in the battery care section. A discharged battery and freezing temperatures almost always leads to battery replacement.

Strange intermittent issues
Probably a loose connection or corrosion. Wires are crimped in place; they should not come lose with a gentle tug—about the pressure you create by pinching thumb and pinky together and pulling. The battery's nuts and bolts connectors should be tight. Often just loosening the nuts on the battery connector and wiggling the connector back and forth will clear any contact oxidation. Remember, firmly retighten after checking.

Always turn off the master switch when charging.

**Turn on the controller
Before turning on the tug.**

**Turn off the tug before
Turning off the controller.**

**Failure can lead to severe
damage to yourself, your plane
and your tug!**

Warranty

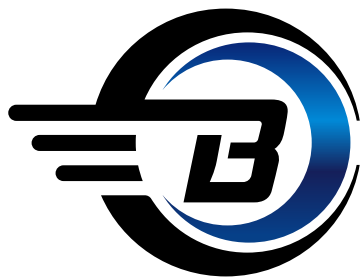
BEST TUGS™ DOES NOT WARRANTY BATTERIES

BEST TUGS™ includes a one (1) year warranty on all parts, including the drive train, from date of delivery. Warranty excludes labor and the cost of shipping. Call sales if you want to purchase the optional extended warranty.

This warranty does not apply to any BEST TUGS™ component(s) that have damage caused by, misuse of the vehicle, accidents, collision or object striking the vehicle, vandalism, fire, explosion, water damage, customer-applied chemicals to painted surfaces, improper handling or application, nor does it extend to BEST TUGS™ parts which have been repaired or altered outside of BEST TUGS™ provided maintenance of an authorized service representative. Furthermore, any modification of BEST TUGS™ electrical system **MUST** be pre-approved and documented in writing by BEST TUGS™. Failure to do so voids the unit's electrical component warranty. BEST TUGS™ parts which have been repaired or altered outside of BEST TUGS™ provided maintenance of an authorized service representative as well as any modification of a BEST TUGS™ tugs **MUST** be pre-approved and documented in writing by BEST TUGS™. Failure to do so voids the warranty.

Exclusions may apply. Visit BestTugs.com for the full and overriding Warranty. Exclusions may apply.





BEST TUGS

Because Your Plane Deserves It

Contact us at support@besttugs.com
or call **1-800-914-2003**

Sales Ext 2
Support Ext 3

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BEST AVIATION
PRODUCTS

252 West 3560 North
Spanish Fork, UT 84660

