

INTENDED FOR USE BY PROFESSIONAL EQUIPMENT OPERATORS

OPERATING INSTRUCTIONS



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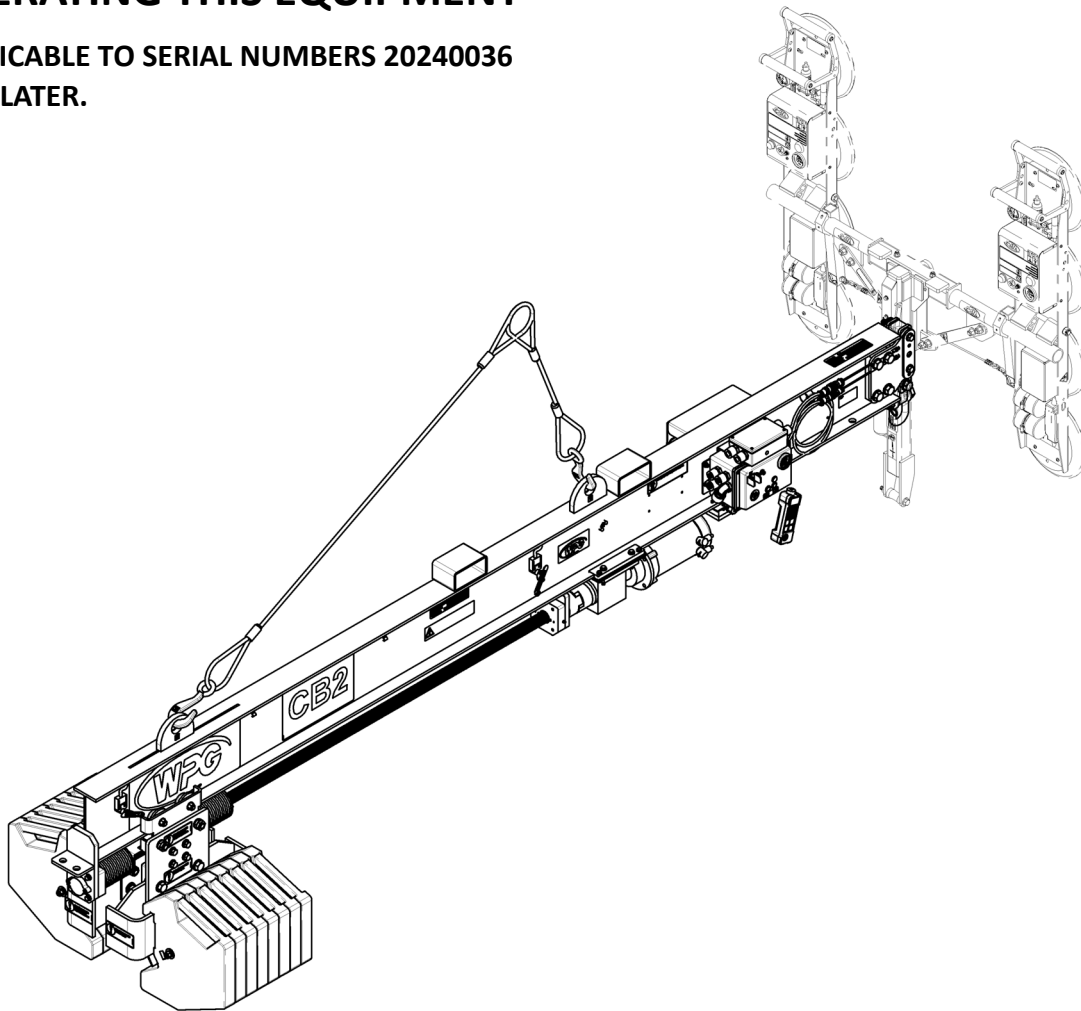
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 **READ AND UNDERSTAND BEFORE
OPERATING THIS EQUIPMENT**

**APPLICABLE TO SERIAL NUMBERS 20240036
AND LATER.**



COUNTER-BALANCER, DC-VOLTAGE, WITH REMOTE CONTROL SYSTEM

Model number: CB2DC (shown with P2 vacuum lifter in inverted position; sold separately)

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

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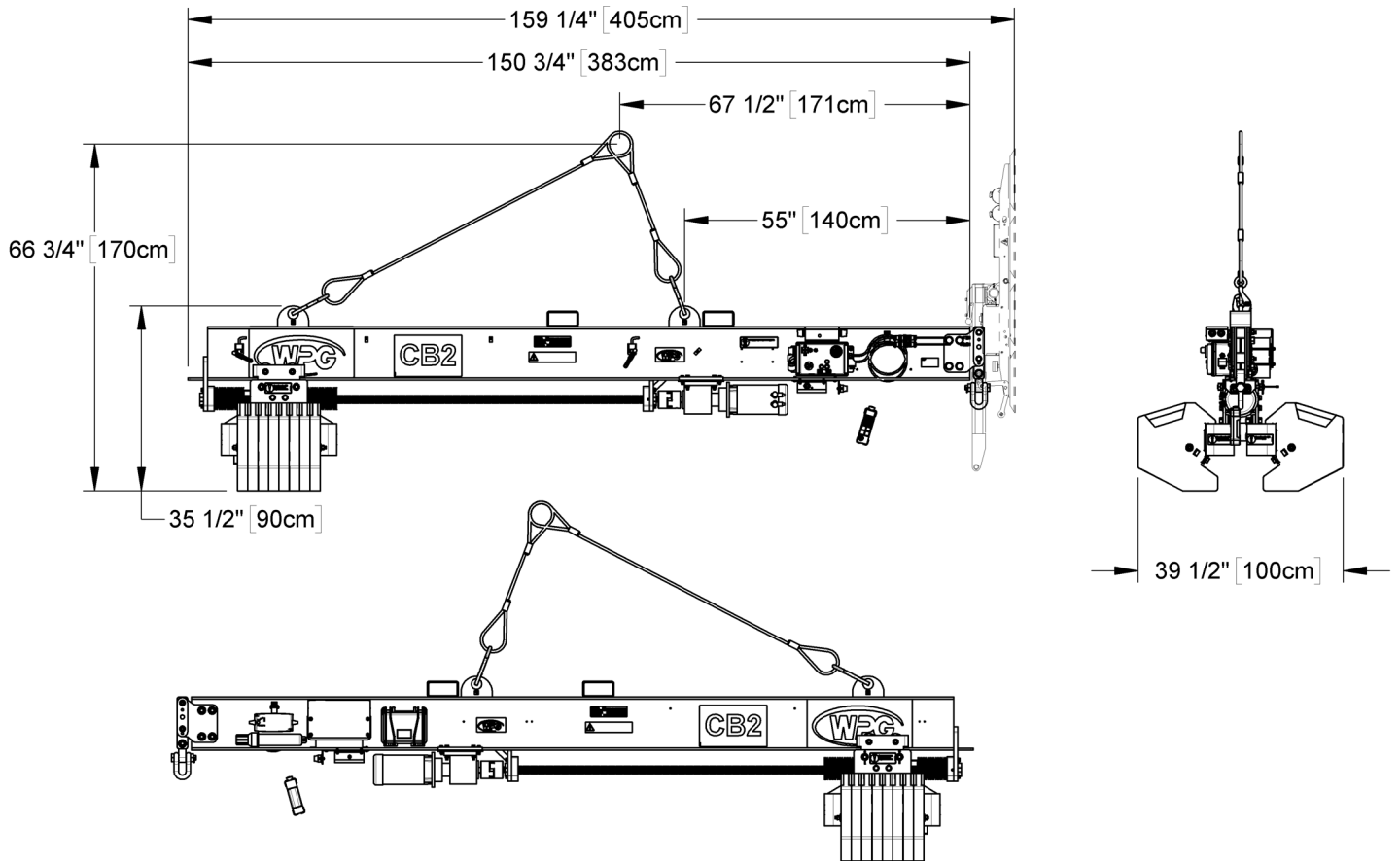
SPECIFICATIONS

Product Description	Designed for use with hoisting equipment, the CB2DC Counter-Balancer handles loads under overhangs by utilizing an adjustable position counterweight to balance the load.	
Model Number	CB2DC	
Overhang Distance	Minimum length: 55" [140 cm] Maximum length: 67½" [171 cm]	
 Maximum Load Capacity	1600 lbs [725 kg] <i>Note: To determine capacity rating requirements for the hoisting equipment, see "ASSEMBLY".</i>	
 Counter-Balancer Weight	Unit weight: 665 lbs [302 kg] Assembled weight (with maximum counterweight): 2,210 lbs [1,002 kg]	
 Counterweight Weight	Sixteen plates (maximum): 1,600 lbs [725 kg]	
Counterweight Drive Nut Indicator Distance	3/8" nominal	<i>Note: If you adjust the Drive Nut Screw (see "Checking and Adjusting the Drive Nut Locking Screw"), enter the new measurement here: _____</i>
Power Source	12 volts DC	
Battery Capacity	55 amp-hours	
Leveling Capability	Powered motion moves counterweight via operator control.	
Control System	Equipped with Remote Control System – FCC, CE, IC, RSM and ACMA compliant ¹	
 Operating Elevation	Not restricted; if using a vacuum lifter, make sure to observe its limitations.	
 Operating Temperatures	32° — 104° F [0° to 40° C]	
Service Life	20,000 lifting cycles, when used and maintained as intended. ²	
ASME Standard BTH-1	Design Category "B", Service Class "0"	

1..... "RSM and ACMA compliant" means that the remote control system is eligible for the Regulatory Compliance Mark (RCM).

2..... Wear-out items are excluded.

SPECIFICATIONS



SAFETY



Wear personal protective equipment that is appropriate for the load material. Follow trade association guidelines.



Do not remove or obscure safety labels.



Do not use a counter-balancer if the Maximum Load Capacity or any safety label appears to be missing or obscured.



Do not use a counter-balancer that is damaged, malfunctioning, or missing parts.



Do not make any modifications to the counter-balancer (see "LIMITED WARRANTY").



Use the counter-balancer only in an approved "OPERATING ENVIRONMENT" (see "INTENDED USE").



Make sure to consider all possible effects of "INDIRECT LOADING" on lifting capacity (see "INTENDED USE").



Do not exceed the Maximum Load Capacity or lift loads the counter-balancer is not designed for (see "INTENDED USE").



Do not remotely operate the counter-balancer unless there is clear communication with all personnel about intended actions (eg, releasing a load).



Make sure to visually verify the status of the counter-balancer, lifter (when applicable) and load prior to remote operations.



Keep unauthorized personnel away from the counter-balancer, to avoid injury in case of an unintended load release.



Make sure the counterweight is correctly positioned, to help maintain a level and balanced lifting system (see "Controlling the Counterweight Position").



Do not allow people to ride on the counter-balancer, lifter or load.



Do not lift a load higher than necessary or leave suspended loads unattended.



Do not position the counter-balancer or the lifter (loaded or unloaded) over people.



Do not touch the vacuum release controls during a lift (relevant when the counter-balancer is attached to a lifter).



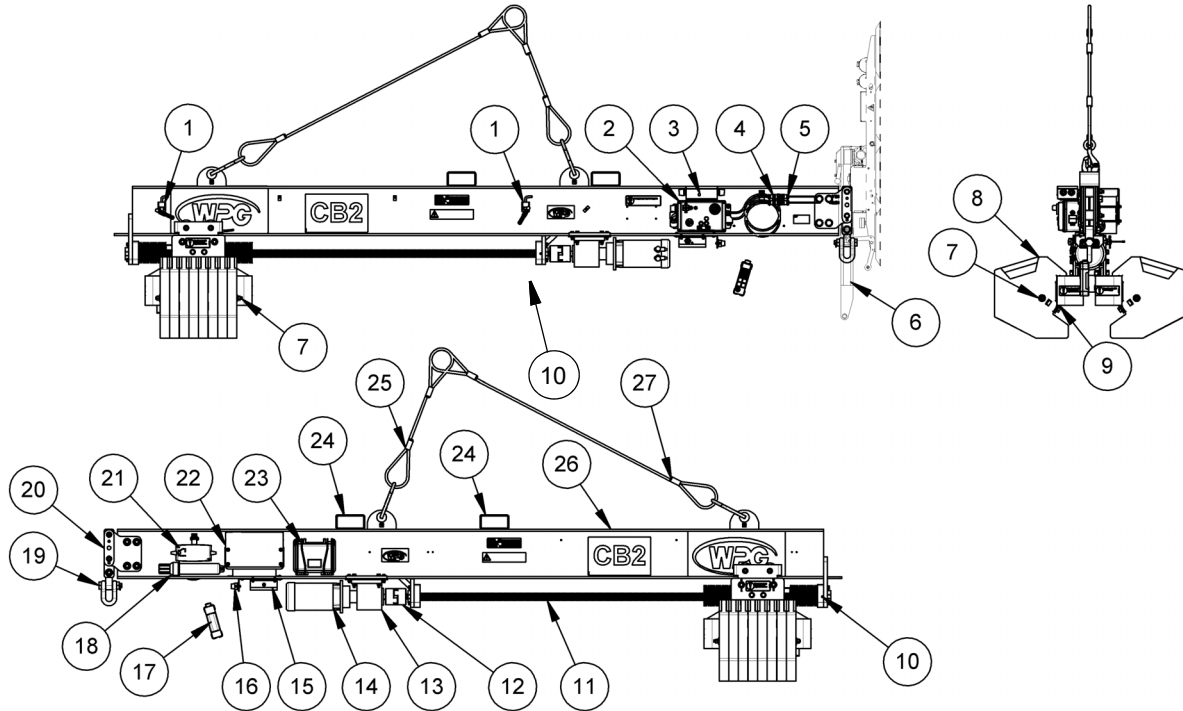
Do not release a load unless it is correctly supported and the counterweights are positioned as far forward as possible.



Before servicing the counter-balancer, make sure the power switch is in the "off" position and disconnect the battery.

OPERATING FEATURES

Features shown here are underlined> on their first appearance in each section following.



- | | | | | | |
|----|---|----|---|----|--------------------------------------|
| 1 | LIMIT SWITCHES | 2 | CONTROL ENCLOSURE | 3 | ANGLE OF INCLINATION LIMIT ENCLOSURE |
| 4 | LIFTER CONTROL CONNECTING CABLE | 5 | DC3-to-DC2 ADAPTER CABLE | 6 | VACUUM LIFTER |
| 7 | COUNTERWEIGHT TYING HARDWARE | 8 | MOVABLE COUNTERWEIGHT | 9 | COUNTERWEIGHT LOCKING HARDWARE |
| 10 | GREASE FITTING (DRIVE SCREW BEARING) | 11 | DRIVE SCREW | 12 | FLEXIBLE SHAFT COUPLER |
| 13 | GEAR REDUCER | 14 | DRIVE MOTOR | 15 | RADIO RECEIVER |
| 16 | STROBE LIGHT | 17 | RADIO TRANSMITTER | 18 | INSTRUCTIONS CANISTER |
| 19 | LIFT SHACKLE (for lifter/load attachment) | 20 | INTEGRATED MOUNTING PLATFORM | 21 | BATTERY CHARGER |
| 22 | BATTERY | 23 | STORAGE (for radio transmitter and spare mount bolts) | 24 | FORKLIFT POCKETS |
| 25 | 3' [91 CM] LIFT CABLE | 26 | LIFTING BEAM | 27 | 6' [183 CM] LIFT CABLE |

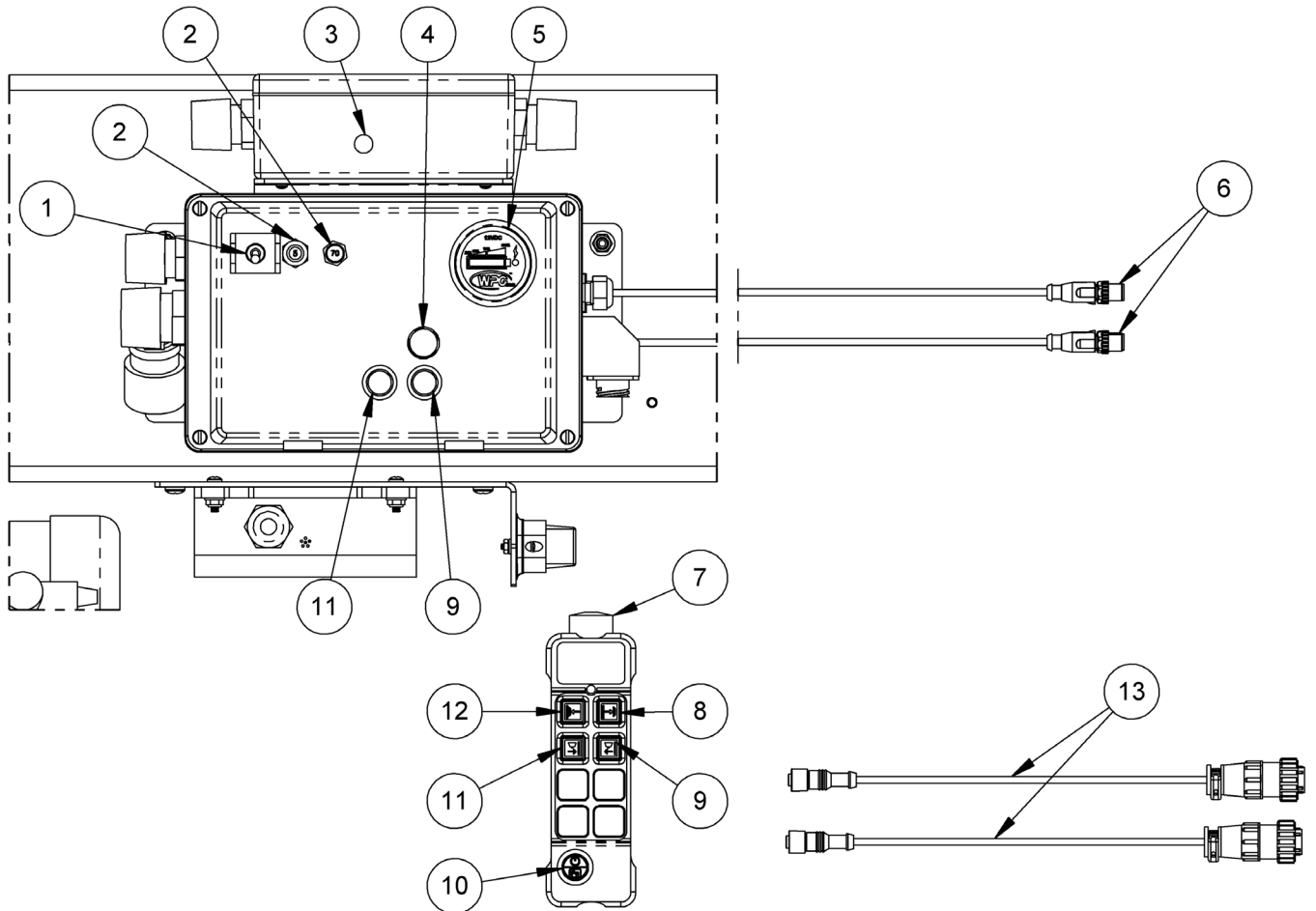
Not shown: PARKING STANDS

Note: Although some of the following photos do not show this specific counter-balancer, they all illustrate how this kind of counter-balancer functions.

For information about specific parts, see [“REPLACEMENT PARTS”](#) and/or the engineering drawings at the end of these *OPERATING INSTRUCTIONS*.

OPERATING FEATURES

CONTROL ENCLOSURE AND RADIO TRANSMITTER — DETAIL



- | | | | |
|----|---|----|--|
| 1 | POWER SWITCH | 2 | CIRCUIT BREAKERS |
| 3 | ANGLE OF INCLINATION LIMIT ENCLOSURE ACCESS | 4 | COUNTERWEIGHT FORWARD POSITION LIGHT |
| 5 | BATTERY ENERGY GAUGE | 6 | LIFTER CONTROL CABLES (DC3) |
| 7 | EMERGENCY DISCONNECT BUTTON | 8 | "RELEASE" BUTTON |
| 9 | COUNTERWEIGHT FORWARD BUTTON | 10 | "ENABLE" BUTTON (plus transmitter power) |
| 11 | COUNTERWEIGHT REVERSE BUTTON | 12 | "ATTACH" BUTTON |
| 13 | DC3-TO-DC2 ADAPTER CABLES | | |

ASSEMBLY

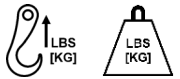
1) Remove all shipping materials. Save them for future use.

2) Connect the short lift cable to the front lifting lug (nearest to the integrated mounting platform) using the supplied hook, and connect the long lift cable to the rear lifting lug using the supplied hook (circled in fig. 2A). Make sure that the restraining latches fully engage, to prevent the hooks from detaching.



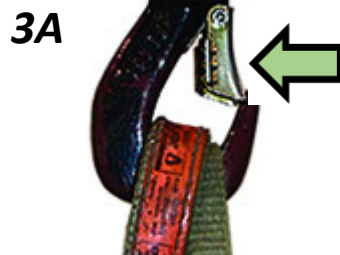
3) Select a crane and/or hoist rated for:

- The combined weight of the counter-balancer, all installed counterweight plates (ie, movable counterweight), any rigging, the vacuum lifter to be attached, **plus**;
- the Maximum Load Capacity of the vacuum lifter (see “SPECIFICATIONS” in these instructions and the lifter’s *OPERATING INSTRUCTIONS*).



Note: Any use of a counter-balancer (and vacuum lifter, if attached) must comply with all statutory or regulatory standards for hoisting equipment in your region.

Attach the lift cables to the hoisting equipment hook (arrow in fig. 3A), using rigging as needed.



! **Make sure hook has restraining latch (see arrow at left).**

ASSEMBLY

- 4) Make sure the counterweight-plate carrier is in the forward-most position (see “Controlling the Counterweight Position”).¹ Then raise the counter-balancer a minimal distance from its parking stands.

Note: Forklift pockets (see arrows in fig. 1A) allow forklift-equipped machinery to remove the counter-balancer from its parking stands and move it around a job site.



However, to minimize weight amplification, use the pockets only when counterweight plates are removed (figs. 1B-C — see “INDIRECT LOADING”).



¹..... If you are unable to move the counterweight as directed, contact WPG.

ASSEMBLY

5) Install the counterweight plates, as follows:

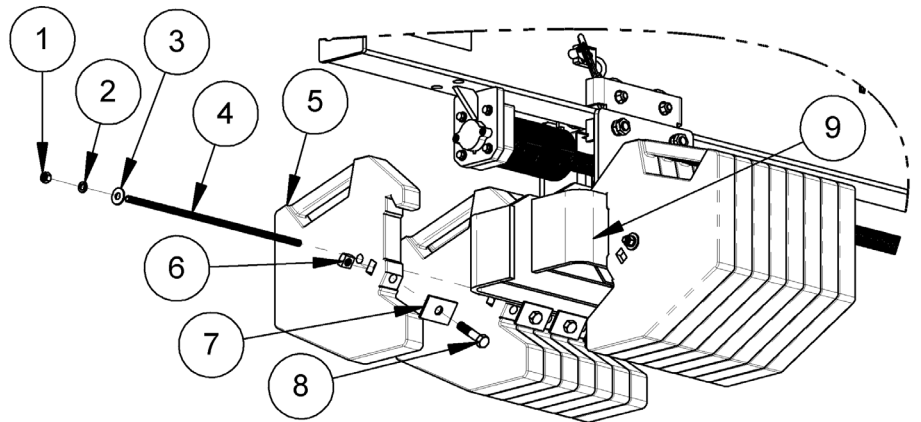
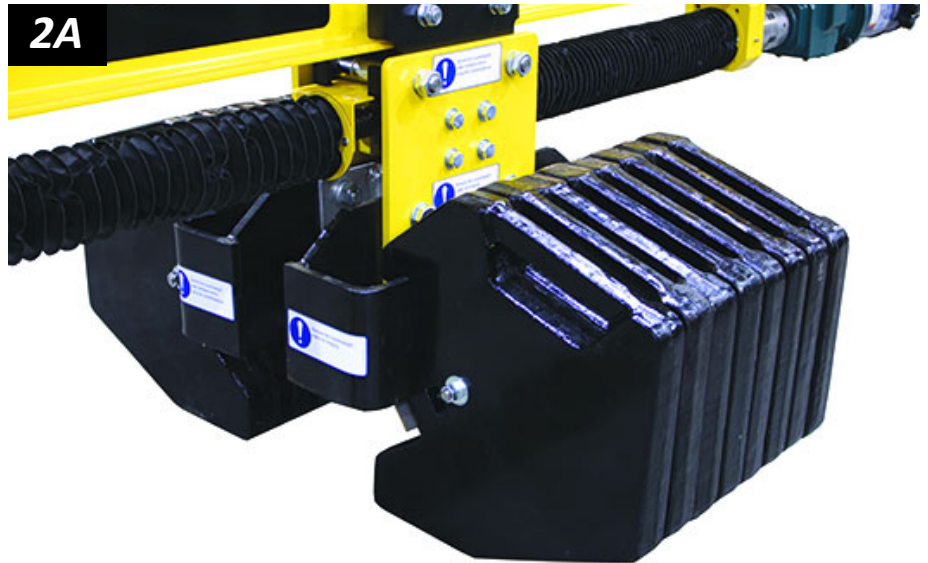


Always check counterweight hardware before using counter-balancer.

5.1) Place 8 counterweight plates on each side of the counterweight plate carrier. Load the plates on the carrier keeping equal number on each side of the carrier (fig. 2A).

5.2) Slide a square nut into the weight plate stack; aligning it with the hole in which a counterweight keeper and a hex head bolt will be installed. Securely tighten these bolts. Keepers are placed at every other weight plate on each side of the carrier, engaging both the plate and the carrier.

5.3) For each side, insert the all-thread rod through all the plates and fasten with a lock washer, flat washer and hex nut on each end. Securely tighten them.



- 1 5/8-11 HEX NUT, 85 KSI
- 2 5/8" LOCK WASHER
- 3 5/8" SAE FLAT WASHER
- 4 5/8-11 ALL-THREAD ROD
- 5 COUNTERWEIGHT PLATE (8 EACH SIDE)
- 6 5/8-11 SQUARE NUT
- 7 COUNTERWEIGHT KEEPER
- 8 5/8-11 X 2½" HEX HEAD BOLT
- 9 COUNTERWEIGHT PLATE CARRIER

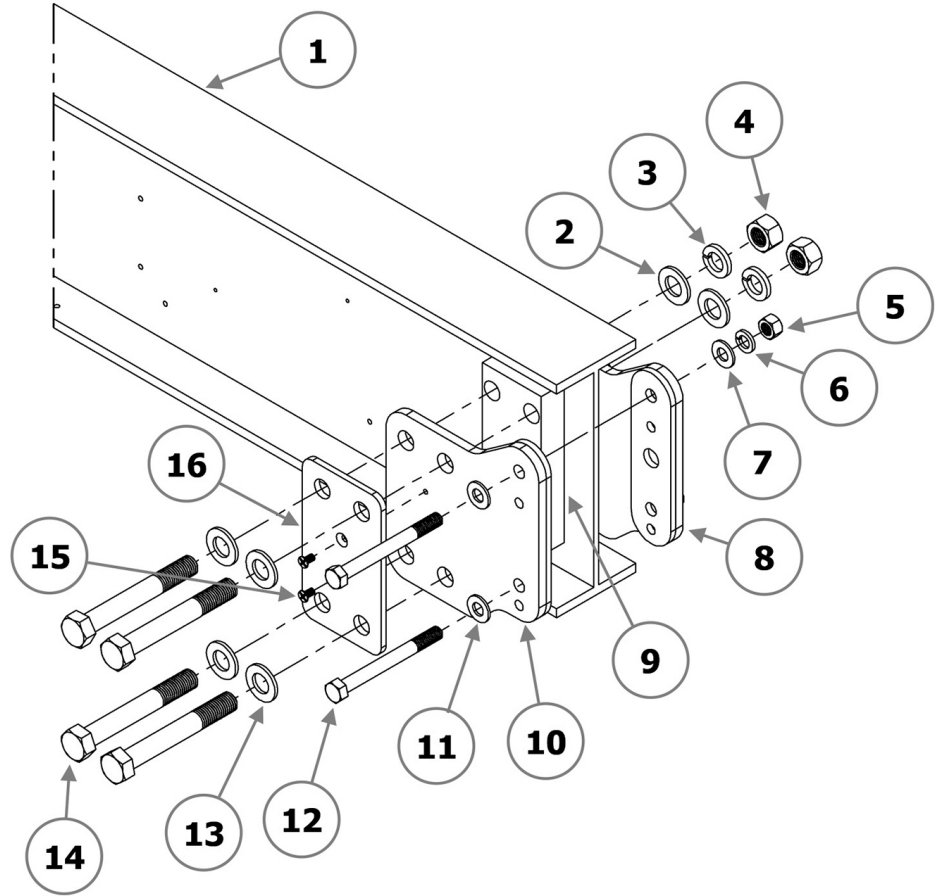
ASSEMBLY

6) Configure the integrated mounting platform:

When paired with certain vacuum lifters, the counter-balancer can accommodate several lifting/load orientations, including angles between horizontal and vertical, and reverse angles. The lift shackle in

Configuration #1 (see next page) allows the vacuum lifter and load to always hang with its center of gravity directly below the lifter's lift point. Alternatively, Configurations #2-7 use rigid bolted connections that lock the angle between the counter-balancer and vacuum lifter, allowing for reverse angles and providing precise control of the load angle.

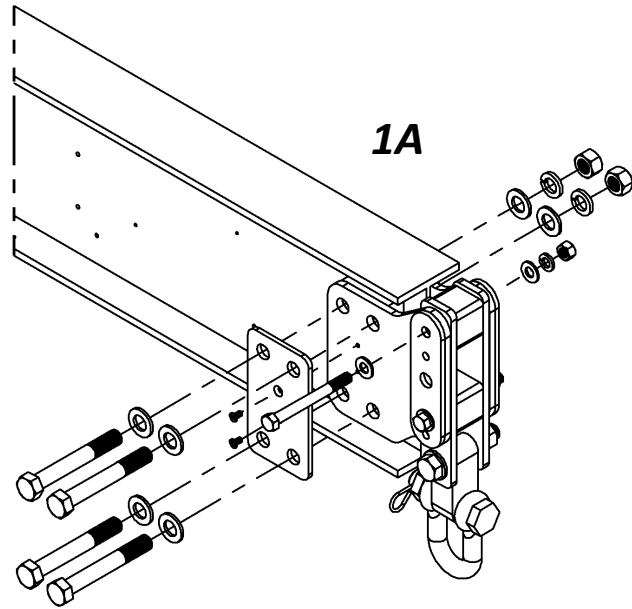
6.1) Select the appropriate configuration, based on the vacuum lifter and application:



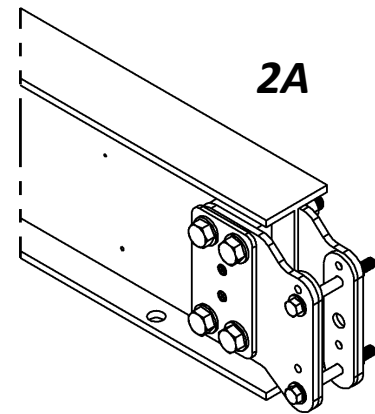
- | | |
|----|---------------------------------|
| 1 | COUNTER-BALANCER BEAM |
| 2 | 3/4" FLAT WASHER |
| 3 | 3/4" SPLIT LOCK WASHER |
| 4 | 3/4-10 HEX NUT |
| 5 | 1/2-13 HEX NUT |
| 6 | 1/2" SPLIT LOCK WASHER |
| 7 | 1/2" FLAT WASHER |
| 8 | LEFT MOUNT EAR |
| 9 | MOUNT SPACER |
| 10 | RIGHT MOUNT EAR |
| 11 | 1/2" FLAT WASHER |
| 12 | 1/2-13 x 5-1/2" HEX HEAD BOLT |
| 13 | 3/4" FLAT WASHER |
| 14 | 3/4-10 x 5-1/2" HEX HEAD BOLT |
| 15 | 3/4-10 x 5-1/2" FLAT HEAD SCREW |
| 16 | ADDITIONAL MOUNT SPACER PLATE |

ASSEMBLY

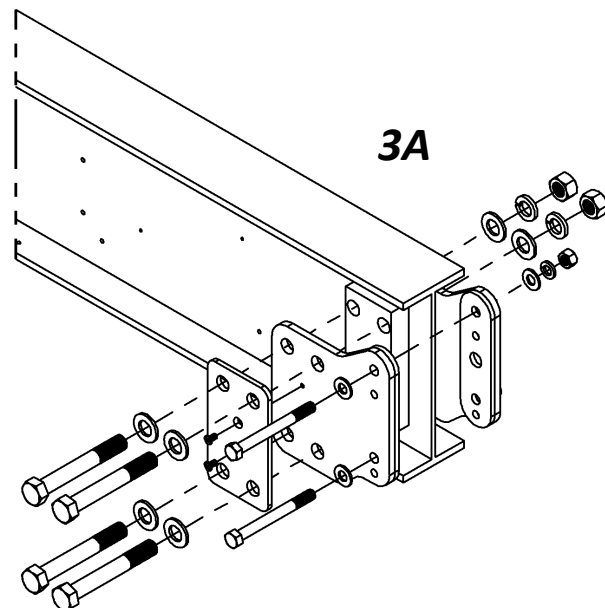
- **Configuration #1 (fig. 1A)** employs a lift shackle for vacuum lifters not specifically designed for use with the CB2DC, or for lifting loads that do not require a vacuum lifter.



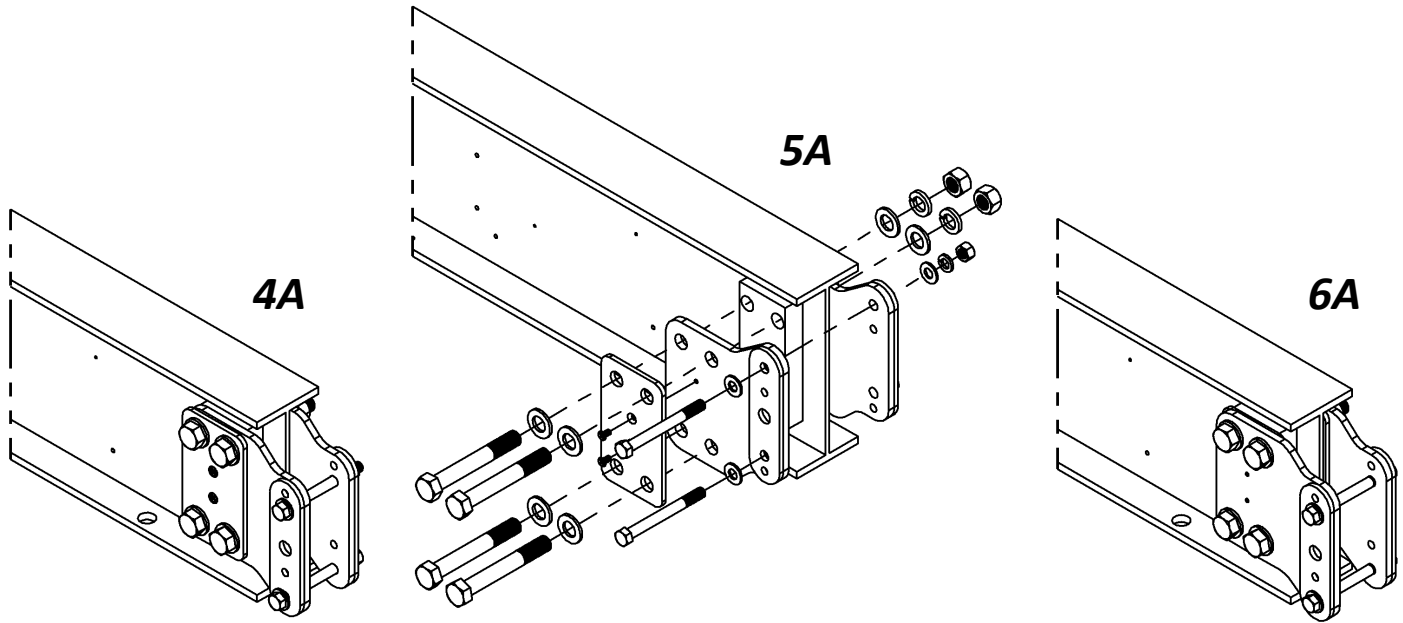
- **Configuration #2 (fig. 2A)** is for mounting a modified older model P1 vacuum lifter in the *standard* orientation (or other lifters with 2" [51 mm] wide lift bar tubes customized for the mount).



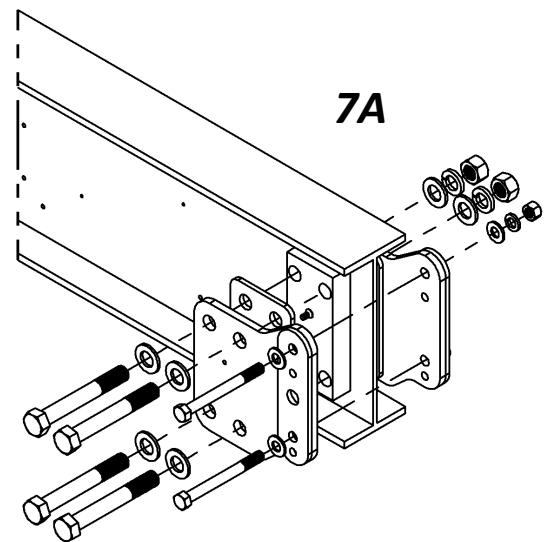
- **Configuration #3 (fig. 3A)** can be fitted with a modified older model P1 vacuum lifter in an *inverted* orientation, to accommodate reverse load angles.



ASSEMBLY



- **Configuration #4 (fig. 4A)** is for mounting a modified model P2 vacuum lifter (or other lifters with a pre-drilled 2-1/2" [63.5 mm] lift bar) in the *standard* orientation.
- **Configuration #5 (fig. 5A)** is for mounting a modified model P2 vacuum lifter in an *inverted* orientation, to accommodate reverse load angles.
- **Configuration #6 (fig. 6A)** is for mounting a model P1 vacuum lifter (or other lifters with a pre-drilled 3" [77 mm] lift bar) in the *standard* orientation.



- **Configuration #7 (fig. 7A)** is for mounting a model P1 vacuum lifter in an *inverted* orientation, to accommodate reverse load angles.

- 6.2) Remove the integrated mounting platform's retaining nuts, bolts and associated hardware.
- 6.3) Adjust the integrated mounting platform to achieve the desired configuration.
- 6.4) Reinstall the hardware necessary to secure the integrated mounting platform to the lifting beam.

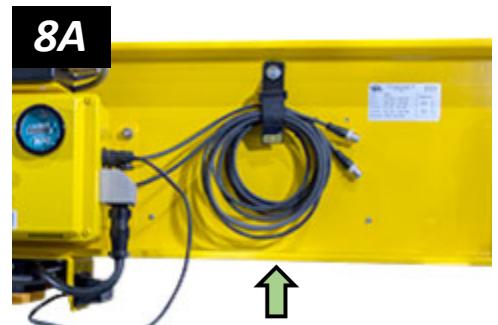
ASSEMBLY

7) Attach the selected lifter:

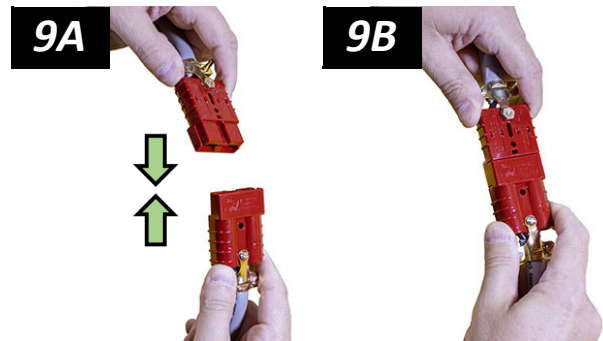
- When using Configuration #1, connect the vacuum lifter's lift point to the lift shackle. Follow the lifter's *OPERATING INSTRUCTIONS* to avoid damage.
- To attach a modified model P1 or P2 vacuum lifter to the counter-balancer¹, place the lift bar of the lifter between the 2 mounting plates at the end of the lifting beam. Insert the attachment bolts and tighten them securely.

Note: Only a P1 or P2 can be mounted in an inverted orientation (ie, with the lift point pointing downward).

- ## 8) If the attached vacuum lifter is equipped with radio controls or is radio ready, you can use the counter-balancer's Remote Control System for select functions: Start by connecting one or more lifter control cables (arrow in fig. 8A) to the compatible connector on the control enclosure of the vacuum lifter.^{2, 3}



- ## 9) Connect the electrical connectors (figs. 9A-B).



- ## 10) Perform tests as required under "TESTING".

1..... If your P1 or P2 lifter does not have mounting holes pre-drilled or are not sure, contact WPG for more information.

2..... If you are connecting a compatible P2 lifter, connect both lifter control cables, one to each pad channel.

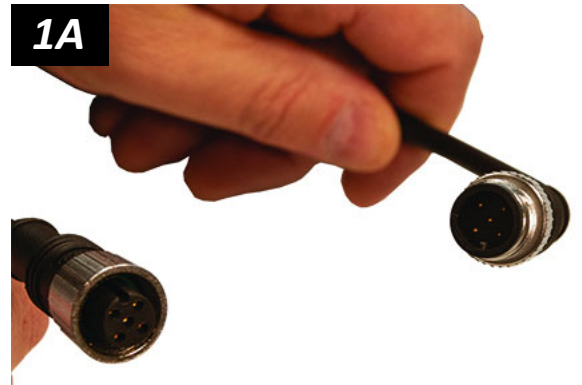
3..... Make sure to secure the cable appropriately, so that it does not become tangled, cut, or damaged during operation.

ASSEMBLY

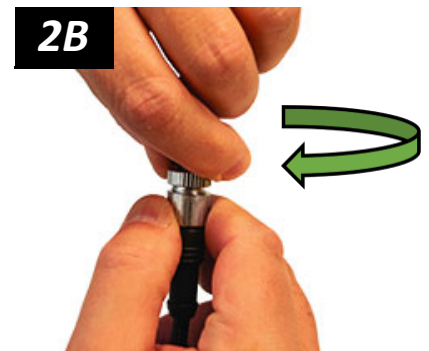
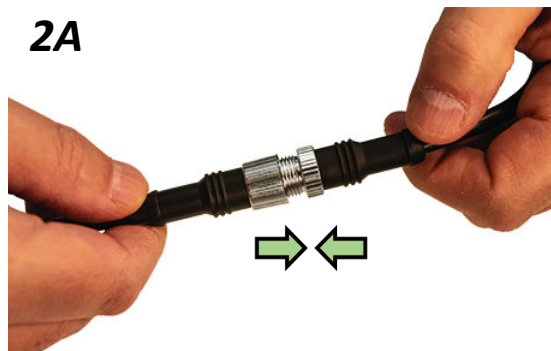
ADAPTING FOR USE WITH A DC2-EQUIPPED LIFTER

The counter-balancer is ready to interface with DC3 radio-ready vacuum systems. To use the counter-balancer with WPG vacuum lifters that have a DC2 vacuum system, complete the following steps to install the supplied DC3-to-DC2 adapter:

- 1) Align the socket of a lifter control cable and the DC3 end of a DC3-to-DC2 adapter cable (fig. 1A).



- 2) Connect the cables (fig. 2A) and tighten the collar clockwise, to secure (fig. 2B).



- 3) On the lifter, remove components as needed to access the Remote Control System connection on the DC2 control unit (see *INSTALLATION INSTRUCTIONS #35233*). Then insert the DC2 end of adapter cable into the lifter's control unit and tighten the collar, to secure (fig. 3A).



Note: Tightening the collar should be easy. Difficulty indicates cross-threading. If resistance is felt, loosen the collar and try attaching again.

Note: When adapting for a model P2 lifter, repeat these steps with the other lifter control cable, adapter cable, and channel lifter control unit.

INTENDED USE

Note: To use a vacuum lifter, follow the lifter's OPERATING INSTRUCTIONS to verify it is suitable for each use.

LOAD CHARACTERISTICS

Make sure the counter-balancer is intended to handle each load.



Do NOT lift explosives, radioactive substances or other hazardous materials.

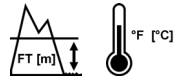
OPERATING ENVIRONMENT

Make sure the counter-balancer is intended for use in each work environment, given the following restrictions:

- This counter-balancer is not intended for any environment that is dangerous to the operator or damaging to the counter-balancer. Avoid environments containing explosives, caustic chemicals and other dangerous substances.
- The work environment is limited by the lifter's Operating Elevation and Operating Temperatures (see the lifter's OPERATING INSTRUCTIONS).^{1, 2}
- The counter-balancer is not designed to be watertight. Do not use it in rain or other unsuitable conditions.
- The work environment must be suitable for using the Remote Control System, as verified by the Remote Control System Test (see "[Remote Control System Test](#)").



Never use counter-balancer in dangerous environments.



Moisture can result in reduced lifting capacity and damage to electrical components.

1..... Although counter-balancer use may be possible at higher elevations, lifting capacity is reduced whenever an attached lifter is unable to attain vacuum in the green range on its vacuum gauges. Contact WPG for more information.

2..... Special provisions may allow the counter-balancer to operate outside the specified temperature range. Contact WPG for more information.

INDIRECT LOADING

Make sure to account for dynamic loading or other inadvertent loading that can negatively affect lifting capacity, such as:

- Weight amplification that results when a loaded vacuum lifter abruptly starts/stops moving, changes direction or bounces up and down (eg, when a telehandler transports a loaded lifter across rough terrain).
- External force that effectively increases the weight of a lifter's attached load (eg, when a load of sheet material reacts to wind gusts).



***Indirect loading
can reduce
lifting capacity.***

DISPOSAL OF THE COUNTER-BALANCER

After the Service Life of the counter-balancer has ended (see "SPECIFICATIONS"), dispose of it in compliance with all local codes and applicable regulatory standards.

Note: Special disposal regulations may apply to the battery.

OPERATION

Note: To use a vacuum lifter, follow the lifter's OPERATING INSTRUCTIONS to verify it is suitable for each use.

BEFORE USING THE COUNTER-BALANCER

Determine whether the counter-balancer is capable of each intended task (see "SPECIFICATIONS" and "INTENDED USE"). Then complete the following preparations:

Taking Safety Precautions

- Be trained in all industry and regulatory standards for counter-balancer operation in your region.
- Follow trade association guidelines about precautions needed for each load material.



Read all directions and safety rules before using counter-balancer.



Always wear appropriate personal protective equipment.

Performing Inspections and Tests

Follow the "INSPECTION SCHEDULE" and "TESTING".

Checking the 12-Volt Battery

Use the battery gauge to determine whether the battery needs to be charged (see "BATTERY RECHARGE").¹ Never use the counter-balancer unless battery energy appears in the green range.



Always check battery energy before using the counter-balancer.

Using Control Lines

Control lines are required to maintain directional control of a lifting system (ie, counter-balancer, vacuum lifter, and load) that is level. Little force applied to control lines should be needed to maintain direction. However, control lines should be added to the counter-balancer as needed.

Caution: Do not use only control lines in an attempt to keep the lifting system level (see "Keeping the System Level"). Instead, position the movable counterweight as needed to make any load angle adjustments (see "Controlling the Counterweight Position").

1..... If the counterweight drive is running or the battery charger is connected to an AC power source, the reading on the battery gauge will not be accurate.

OPERATION

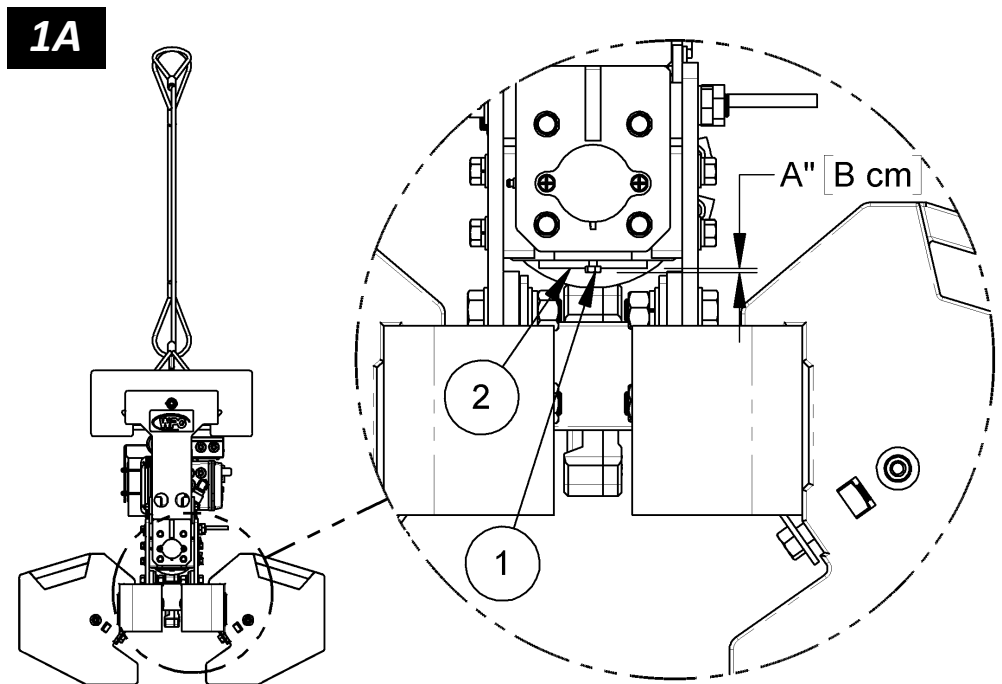
Checking and Adjusting the Drive Nut Locking Screw

The drive nut is located in the middle of the movable counterweight between the counterweight plate stacks; it is locked in place by a $\frac{1}{4}$ -20 x $1\frac{3}{4}$ " hex head screw, which can be seen from the back of the counter-balancer. This screw functions as a lock for the drive nut and an indicator to show whether it is tight or loose.

Check the indicator screw before each lift: Use a wrench to “feel” whether the screw is tight (clockwise to tighten). Do not turn counter-clockwise, as this will loosen the screw.

CAUTION: If screw is not tight, counterweight could move unexpectedly and freely.

When the counter-balance is in use, check the screw before every lift by measuring the distance between the screw head (item 1 in fig. 1A) and the drive nut mounting plate (item 2 in fig. 1A), and compare the measurement (A [B] in fig. 1A) to the distance recorded in “SPECIFICATIONS”. If distance is not greater, the drive screw is tight and no action needs to be taken.



If the distance is greater, the drive nut may be loose and the following steps need to be taken:

- 1) Remove the indicator/locking screw (item 1 in fig. 1A).
- 2) Make sure the drive nut (brass cylinder) is tightly screwed into the flange (steel disk) it is mated to.
- 3) Apply medium strength thread locker to the indicator/locking screw and tighten to 90 in-lbs [1016 N-cm].
- 4) Take a new nominal measurement and record the new measurement in “SPECIFICATIONS” for future reference.

OPERATION

Checking Counterweight Plates

The hardware should be checked before each lift to ensure that the plates of the movable counterweight are secure (see “ASSEMBLY”).



Always check counterweight hardware before using counter-balancer.

Preparing to Use the Remote Control System

The counter-balancer’s radio transmitter (fig. 1A) and radio receiver enable you to control the motion of the movable counterweight and, for a suitably equipped vacuum lifter, engage the “attach” and “release” functions at distances up to 250' [76 m], provided you have a clear and direct view of the counter-balancer and attached lifter and their status indicators.

1A



For remote operation, follow these safety rules:

- Visually verify the status of the counter-balancer, lifter and load prior to lifting.
- Monitor the counter-balancer and lifter at all times to make sure they are functioning as intended.¹
- Make sure the load is lowered and supported correctly before releasing it (see “[TO RELEASE THE PADS FROM THE LOAD](#)”). Additionally, make sure the counterweight is moved to the forward-most position before releasing the load (see “[Controlling the Counterweight Position](#)”).



Make sure nearby personnel are aware of intended remote control actions.

Note: To prevent any radio transmission, press the emergency disconnect button.²

1..... The Remote Control System is designed to prevent multiple units from responding. Nevertheless, radio controls should be tested to make sure each transmitter controls only one counter-balancer/lifter.

2..... To reset the emergency disconnect button, twist the button clockwise and allow it to spring outward to its original position.

OPERATION


Understanding the ‘Enable’ Button

If the vacuum lifter is connected to the counter-balancer via the lifter control cables, then “attach” and “release” functions can be controlled using the counter-balancer’s radio transmitter.

The counter-balancer's Remote Control System is designed to prevent an accidental load release, which could result from unintentionally interrupting the “attach” mode.

The transmitter’s “enable” button and the “release” button are used simultaneously for releasing the load (see “[TO RELEASE THE PADS FROM THE LOAD](#)”).

Note: In order to activate the “release” function remotely, the movable counterweight must be in the forward-most position.¹

When pressed and released, the “enable” button ( in fig. 1A) also “wakes” the transmitter from “sleep” mode.



Understanding the Strobe Light

The strobe light (circled in fig. 1B) flashes as long as the operator is pressing and holding the radio transmitter's “enable” or “release” buttons **and** the movable counterweight is in the forward-most position. It also flashes if any controls to move the counterweight are activated. This serves to show the operator when signals are being transmitted and to warn other personnel of any counterweight movement or intended load release.



1..... The vacuum lifter’s on-board controls will function regardless of the counterweight position.

OPERATION

To ATTACH TO A LOAD

Powering up the Counter-Balancer

 **Never turn power off while lifting.**

Place the power switch in the “on” position (| in fig. 1A). Keep the power on while lifting a load. To activate the radio transmitter, briefly press and hold the transmitter’s “enable” button (⏻ in fig. 1B).¹

If any powered component fails to function while power switch is on, examine each circuit breaker (circled in fig. 1A) to determine whether it has interrupted the electrical circuit to the component. Although the operator can reset the circuit breaker, the power interruption may indicate an electrical problem that requires attention. Correct any deficiency before resuming normal operation (see [ENGINEERING DRAWINGS](#)).



1A



1B

1..... The radio transmitter automatically turns off after a period of inactivity.

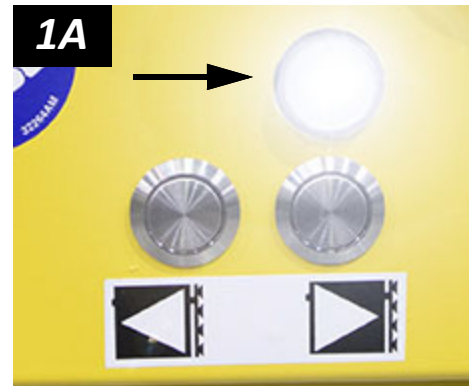
OPERATION

Keeping the System Level

The lifting beam is designed to remain relatively level during all stages of the lift. Only slight adjustments out of level should be made to accommodate minor load angle changes. Powered motion of the movable counterweight provides a way for the operator to adjust the weight center of the system as a load is lifted and before it is released.

When the counter-balancer is not carrying a load, the counterweight should be moved as far forward as possible. The white counterweight forward position light (see arrow in fig. 1A) will illuminate when the counterweight reaches this position.



Note: If the counter-balancer's radio transmitter is being used to control a vacuum lifter, its "release" function will not work unless the counterweight is moved fully forward and the white position light is illuminated.



Controlling the Counterweight Position

Slight angle adjustments can assist when using a rigidly mounted vacuum lifter. Adjust the load angle by moving the movable counterweight. Moving the counterweight forward will lower the front of the counter-balancer, and moving it back will raise it.

To move the counterweight using the on-board controls or the radio transmitter, press and hold the ...

- Counterweight forward button (right-side button in fig. 1A or  in fig. 2A); or the,
- Counterweight reverse button (left-side button in fig. 1A or  in fig. 2B).

Note: The strobe light will flash during any counterweight movement.



OPERATION

Positioning a Vacuum Lifter on the Load

Follow all of the instructions for the vacuum lifter, except for the following:

- When the lift bar of the vacuum lifter is rigidly bolted to the end of the counter-balancer, it is important to attach the lifter's pad frame **slightly above** the load's weight center. This prevents unexpected tilting of the load when the lifter's tilt latch is released.
- When trying to maintain a specific angle with the inverted P1/P2 configuration, the top of the load can be tied back to a forklift pocket.
- If the load is intended to be handled in the vertical orientation throughout the lift (i.e. no tilting), the lifter can be centered on the load (see the lifter's *OPERATING INSTRUCTIONS*).

Attaching a Vacuum Lifter to the Load

If you use the controls on the vacuum lifter to attach, follow the directions in its *OPERATING INSTRUCTIONS*.

If you use the counter-balancer's radio transmitter to attach, follow these steps:

- 1) Make sure the transmitter is activated.
- 2) Press the "attach" button (↵← in fig. 2A) on the radio transmitter. The lifter's vacuum pump will engage.
- 3) Press the lifter onto the load until all the pads seal against it. The lifter must remain in the "attach" mode throughout the entire lift.



OPERATION

TO LIFT AND MOVE A LOAD

Balancing a Load before Lifting

Raise the hoisting equipment slightly, until the front of the counter-balancer is angled slightly downward. Move the movable counterweight toward the back until the system picks the load up and levels.

Note: Counterweight is restricted from moving in a direction that would increase the counter-balancer's angle greater than 6°.

Controlling the Counter-Balancer, Lifter and Load



When the load is balanced and vacuum indicators show that the vacuum lifter is ready, use the hoisting equipment to raise the counter-balancer, lifter and load, making sure to clear any obstacles in their path. Use control lines to keep the counter-balancer, lifter and load in the desired orientation while they are suspended. Once sufficient clearance is established, the lifter can be used to rotate or tilt the load (see the lifter's *OPERATING INSTRUCTIONS*).

TO RELEASE THE PADS FROM THE LOAD

The white counterweight forward position light will illuminate whenever the movable counterweight is in the forward-most position. This indicates that the correct counterweight position for load release. Failing to move the counterweight forward before releasing the load can cause a violent reaction that may result in damage and injuries.



Make sure counterweight is in forward-most position before releasing load.

When the load is at rest and fully supported, follow the vacuum lifter's OPERATING INSTRUCTIONS to release the load. If you are using the counter-balancer's radio transmitter to release the load, press and hold the "enable" button ( in fig. 1A) and the "release" button ( in fig. 1A). The strobe light will flash. Continue to hold both buttons until the vacuum pads release completely from the load. After either button is released, the vacuum lifter will activate the low-power mode.

Before lifting again, perform the Every-Lift Inspection for both the counter-balancer (see "[INSPECTION SCHEDULE](#)") and the lifter (see the lifter's *OPERATING INSTRUCTIONS*).

1A



OPERATION

AFTER USING THE COUNTER-BALANCER

Note: The counterweight plates may be removed when the counter-balancer is not in use, to allow for easier handling. Remove the plates from the carriage evenly from each side. When you are ready to use the counter-balancer again, reinstall the plates as directed in “ASSEMBLY”.

- 1) Place the power switch in the “off” position (○ — fig. 1A). The battery energy gauge (see arrow in fig. 1A) shuts off when powered down.

Note: The counter-balancer’s radio transmitter will automatically power down after a period of inactivity. To shut it off completely, press the emergency disconnect button.

- 2) Power down the vacuum lifter, as directed in its *OPERATING INSTRUCTIONS*.



- 3) If a lack of adequate clearance makes removal of the vacuum lifter necessary, ***make sure the lifter is independently supported, as directed in the lifter’s OPERATING INSTRUCTIONS***, then disconnect the lifter from the integrated mounting platform. Next, follow the steps listed under “AFTER USING THE LIFTER” in the lifter’s *OPERATING INSTRUCTIONS*.
- 4) Lower the counter-balancer onto its parking stands, using the hoisting equipment. ***Caution: WPG strongly recommends removing counterweight plates before lowering the counter-balancer onto parking stands.***
- 5) Detach the hoisting equipment hook from the lift cables.

Storing the Counter-Balancer

Store the counter-balancer in a clean, dry location.

Store the battery between 32° and 70° F [0° — 21° C]. Avoid storage above 100° F [38° C].

OPERATION

Transporting the Counter-Balancer

Use the original shipping materials, with the parking stands placed in their original position and the counter-balancer secured so that all components are protected (fig. 1A).



Make sure the counterweight plates are secured for separate transport (fig. 1B).



INSPECTIONS AND TESTS

INSPECTION SCHEDULE

Perform inspections according to the following frequency schedule. If any fault is found, correct it and perform the next most frequent inspection before using the counter-balancer.

Note: If a counter-balancer is used less than 1 day in a 2-week period, perform the Periodic Inspection before using it.

Action	Every Lift	Frequent ¹ <small>(Every 20-40 hrs.)</small>	Periodic ² <small>(Every 250-400 hrs.)</small>
Make sure drive nut locking screw is tight, as previously discussed.	✓	✓	✓
Examine counterweight plates, counter-balancer controls, counter-balancer indicators, locking hardware and tying hardware for damage. Additionally, make sure all hardware is secure.	✓	✓	✓
Examine counter-balancer's structure for damage.		✓	✓
Check for unusual vibrations or noises while operating counter-balancer.		✓	✓
Check the bearings in each end of the drive screw for lubrication.		✓	✓
Check the drive nut for wear (metallic dust/particles or excessive sloppiness on the lead screw). ³		✓	✓
Perform the "Remote Control System Test" .		✓	✓
Perform the "Lift Cable Inspection" .		✓	✓
Examine entire counter-balancer for evidence of: <ul style="list-style-type: none"> • looseness, excessive wear or excessive corrosion • deformation, cracks, dents to structural or functional components • any other hazardous conditions 			✓
Inspect entire electrical system for damage, wear or contamination that could be hazardous, in compliance with all local codes and regulatory standards. Caution: Use appropriate cleaning methods for each electrical part, as specified by codes and standards. Improper cleaning can damage parts.			✓

1..... The Frequent Inspection is also required whenever the counter-balancer has been out of service for 1 month or more.

2..... The Periodic Inspection is also required whenever the counter-balancer has been out of service for 1 year or more. Keep a written record of all Periodic Inspections. If necessary, return the counter-balancer to WPG or an authorized dealer for repair (see ["REGISTRATION AND LIMITED WARRANTY"](#)).

3..... The drive nut can be inspected at the carrier location.

TESTING

Perform the following tests before placing the counter-balancer in service *initially* and *following any repair*, when directed in the “*INSPECTION SCHEDULE*”, or *whenever necessary*:

Operational Tests

Test all features and functions of the counter-balancer (see “OPERATING FEATURES” and “OPERATION”).

Remote Control System Test

Test the counter-balancer’s Remote Control System where the counter-balancer and attached vacuum lifter are normally used. Use the radio transmitter to activate each of the remote functions.¹ Vary the transmitter's direction and distance from the counter-balancer and vacuum lifter, to make sure transmissions are effective.²

If the Remote Control System is not functioning correctly, ...

- the batteries for the transmitter may need to be replaced, or;
- metal or other electrically conductive surfaces may be causing radio interference. Reposition the transmitter to transmit signals effectively.

If the problem persists, vary the test conditions, to determine whether there is transmission interference in the work environment or the Remote Control System is not functioning. Correct any fault before using the Remote Control System.

Note: See topics to follow in “MAINTENANCE” for additional directions about inspecting and testing specific counter-balancer components.

1..... Use a test material with appropriate “LOAD CHARACTERISTICS” to test the “attach” and “release” functions.

2..... This may require assistance from someone near the lifter, to verify functions are working as intended.

MAINTENANCE

Note: For wiring diagrams, see [ENGINEERING DRAWINGS](#) at the end of this booklet.

BATTERY RECHARGE

Charge the battery whenever the battery gauge shows reduced energy.¹

Caution: Make sure power switch is in the “off” position (○— power off).

Identify the input voltage marked on the battery charger and plug it in to an appropriate power source.²

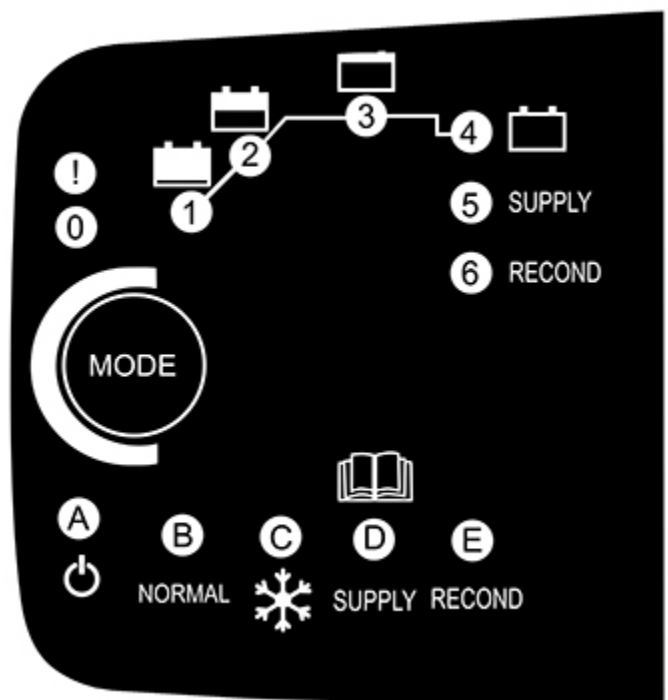


Make sure power source has ground fault circuit interrupter.

Press the “MODE” button to select “NORMAL” mode. Lights 1-4 indicate the charging level attained.³ When the battery is fully charged, light 4 (green) turns on and the charger switches to maintenance mode.

The battery should take no more than 8 hours to charge completely.⁴ After reaching level 3, the charger analyzes the battery condition. If the battery needs to be replaced, the charger's red error light (!) turns on (see [“REPLACEMENT PARTS”](#)).

Before you return the counter-balancer to service, recheck the battery as previously directed.



1..... To maximize the battery's lifespan, charge it promptly after each use.

2..... Any external power supply must conform to all applicable local codes. The counter-balancer is not intended for use while the charger is connected to AC power.

3..... If none of the charging level lights turns on, the battery connection or the battery itself may be faulty. If the red error light (!) turns on immediately, the battery leads may be reversed or the charger terminals may be short-circuited; once the problem has been corrected, the charger should function normally. The red error light can indicate other problems, depending on the mode selected and level of charging; if necessary, contact WPG for assistance.

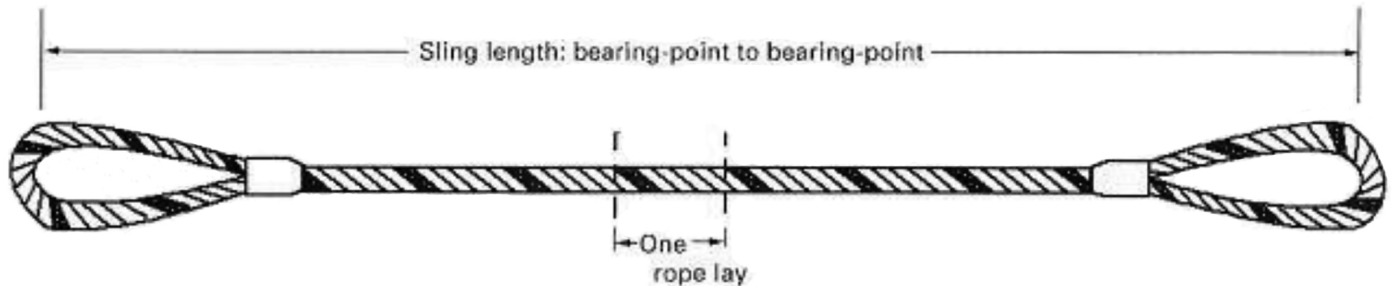
4..... The charger automatically reduces the charging rate when the battery is fully charged.

MAINTENANCE

LIFT CABLE INSPECTION AND REMOVAL CRITERIA



This service should be performed by qualified service personnel.



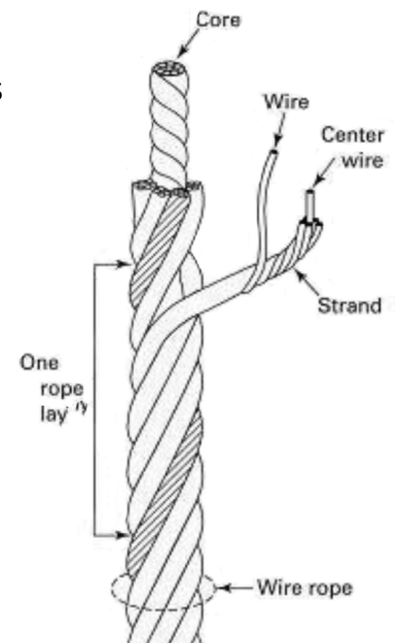
Frequency

Perform a complete inspection of the lift cables after every 40 hours of use.

Action

Remove any lift cable from service and replace, if any of the following are present:

- Missing or illegible lift cable identification.
- Broken wires: 10 randomly distributed broken wires in one rope lay, or 5 broken wires in one strand in one rope lay.
- Severe abrasion with a reduction of 5% or more of nominal 5/8" diameter.
- Kinking or crushing.
- Evidence of heat damage.
- Fittings that are cracked, deformed or have substantial wear.
- Any other visible damage that would cause doubt as to the safety of the lift cable.



GEAR REDUCER SERVICE



This service should be performed by qualified service personnel.

Frequency

Perform service after every 120-160 hours' use; or whenever the counter-balancer has been out of service for 1 year or more.

Action

Locate the oil level plug about mid-body on the output side of the gear reducer. Remove the oil level plug and observe the level. The oil should be level with the bottom of the plug hole.

Lubricant

Maintain the gear reducer with an ISO 220 lubricant. The gear reducer is originally supplied with Mobilgear 600 XP 220.

Note: In the rare instance the gear reducer needs additional service, it must be removed from the counter-balancer. Contact WPG for more information.

DRIVE SCREW SERVICE



This service should be performed by qualified service personnel.

Frequency

Perform service after every workday or whenever the counter-balancer is out of service for 1 month or more.

Action

Check the drive screw for residual lubricant by inspecting it at the screw nut location or by disconnecting and pulling back a protective bellows. If lubricant is visually apparent, no new lubricant is needed.

MAINTENANCE

If the screw appears dry, then lightly apply lubricant to the screw either in front and in back of the screw nut at several locations along the screw or, if the bellows is pulled back, to the length of the screw. With the counter-balancer suspended, change the position of the movable counterweight several times, to distribute the lubricant along the screw. If the bellows was disconnected, then reconnect it, to provide protection of the screw.

Lubricant

Lubricate the screw and nut with a sliding friction grease containing 3% molybdenum disulfide. If the machine is being used in a severely dirty environment, a “dry” lubricant can be used to help prevent contaminants from adhering to the screw.

LEAD SCREW BEARINGS SERVICE



This service should be performed by qualified service personnel.

Frequency

Perform service after every 20-40 hours' use; or whenever the counter-balancer is out of service for 1 month or more.

Action

At the screw ends are tapered bearings that can be inspected by removing the grease covers. Inspect the bearings for the presence of lubricant or excessive wear:

- If lubricant is visually apparent, no new lubricant is needed. Reinstall the grease covers.
- If the bearings appear dry, relubricate them. Lubricant can be applied using the grease fittings near the bearings. Then reinstall the grease covers.
- If the bearings are worn, discontinue use until replacement can be accomplished.

Lubricant

Lubricate the bearings with a good-quality, thickened and water-resistant grease, such as Timken Mill Grease. Some equivalents are Chevron Ulti-Plex EP 2, Ronex Extra Duty 2, or SKF LGHB2.

REPLACEMENT PARTS

Stock No.	Description	Qty.
65385HW	Weight Locking Hardware: <ul style="list-style-type: none"> • 5/8-11 Square Nut • 3-1/4" x 2" x 3/16" Steel Tab (aka Counterweight Keeper) • 5/8-11 x 2-1/2" Hex Head Cap Screw 	8
65385	Counterweight Plate — 98 lbs	16
65323AM	6' Wire Rope Lifting Sling (i.e. Lift Cable) w/Hook and Latch	1
65323	3' Wire Rope Lifting Sling (i.e. Lift Cable) w/Hook and Latch	1
64837	LED Indicator – 12 V DC – White (i.e. Counterweight Forward Position Light)	1
64711EU	Battery Charger – 7 Amp – 240 V AC	1
64682	Battery – 1.5 V DC – Alkaline (for radio transmitter)	2
64668	Battery – 12 V DC – 55 Amp-Hours	1
64590	Battery Gauge	1
64466	Circuit Breaker – 70 A	1
64459	Circuit Breaker – 5 A	1
64374	3/4 Hp 12 V DC Motor (ie, drive motor)	1
64271	Strobe Light – 12 V DC – Amber	1
64233	Power Switch	1
64215	Adjustable Limit Switch Roller Arm	2
64214	Limit Switch – Roller Lever Type	2
64213	Push-Button Switch – Chrome (for counterweight control buttons)	2
12834	3/4" SAE Flat Washer (for lifter interface)	8
12826	1/2" SAE Flat Washer (for counterweight plate assembly)	4
12826	1/2" SAE Flat Washer (for lifter interface)	4
12764	3/4" Split Lock Washer (for lifter interface)	4
12760	1/2" Split Lock Washer (for counterweight plate assembly)	4
12760	1/2" Split Lock Washer (for lifter interface)	2
11126AM	5/8-11 Machine Screw Hex Nut (for counterweight plate assembly)	4
10987MM	5/8-11 All Thread (for counterweight plate assembly)	2 x 20"
12830	5/8" SAE Flat Washer (for counterweight plate assembly)	4
12762	5/8" Split Lock Washer (for counterweight plate assembly)	4
11130	3/4-10 Machine Screw Hex Nut (for lifter interface)	4
11124	1/2-13 Machine Screw Hex Nut (for lifter interface)	4
10382	1/4-20 x 1/2 Flat Head Screw (for lifter interface)	4
10878	3/4-10 x 5-1/2" Hex Head Bolt (for lifter interface)	4
10862AM	1/2-13 x 5-1/2" Hex Head Bolt (for lifter interface)	2
10862	1/2-13 x 5" Hex Head Bolt (for lifter interface)	2

***SERVICE ONLY WITH IDENTICAL REPLACEMENT PARTS,
AVAILABLE AT WPG.COM OR THROUGH AN AUTHORIZED WPG DEALER***

REGISTRATION AND LIMITED WARRANTY

TO REGISTER THIS WPG PRODUCT

Go to the [PRODUCT REGISTRATION](#) page at [wpg.com](#) and complete the form. Registration keeps you advised of important updates and notifications, and simplifies inquiries to WPG regarding your product. Registration is **not** required to activate your Limited Warranty (see next section).

ABOUT THE LIMITED WARRANTY



Note: Read the [WARRANTY RETURN FORM](#) at [wpg.com](#) for important details about the Limited Warranty.

Wood's Powr-Grip® (WPG) products are warranted to be free from defects in manufacturing and materials for 1 year from the date of purchase.

If a problem develops during the warranty period, follow the instructions below to obtain warranty service. If inspection shows that the product has a defect, WPG will repair or replace the product without charge.



Obtaining Warranty Service or Repair Service

For customers in the U.S. and Canada: Go to the [EXCHANGES, REPAIRS, & WARRANTIES](#) page at [wpg.com](#) and click the applicable link. Alternatively, you may contact the WPG Technical Service Department (see contact information below).

For customers in all other localities: Contact the WPG Technical Service Department (see contact information below) or your dealer for assistance.

ADDRESS	EMAIL	PHONE
Wood's Powr-Grip Co., Inc. 908 West Main St. Laurel, MT USA 59044	contactus@wpg.com	(1) 800-548-7341 (1) 406-628-8231

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ENGINEERING DRAWINGS

 INTENDED FOR USE BY QUALIFIED SERVICE
PERSONNEL • READ AND UNDERSTAND BEFORE
ROUTING, WIRING AND/OR ASSEMBLING



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Laurel, MT USA 59044
(1) 800-548-7341
(1) 406-628-8231
www.wpg.com

COUNTER-BALANCER,
DC-VOLTAGE, WITH
REMOTE CONTROL SYSTEM

Model numbers: CB2DC

FILE DIRECTORY:
713-W07 [W07]

FILE (SHEET):
713-W07 [W07]

TYPE:
STANDARD

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WOOD'S POWR-GRIP CO., INC.
LAUREL, MONTANA U.S.A.

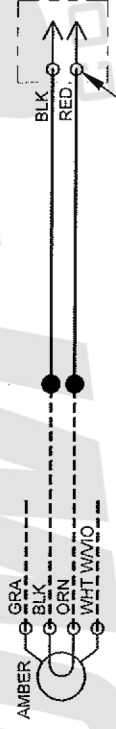
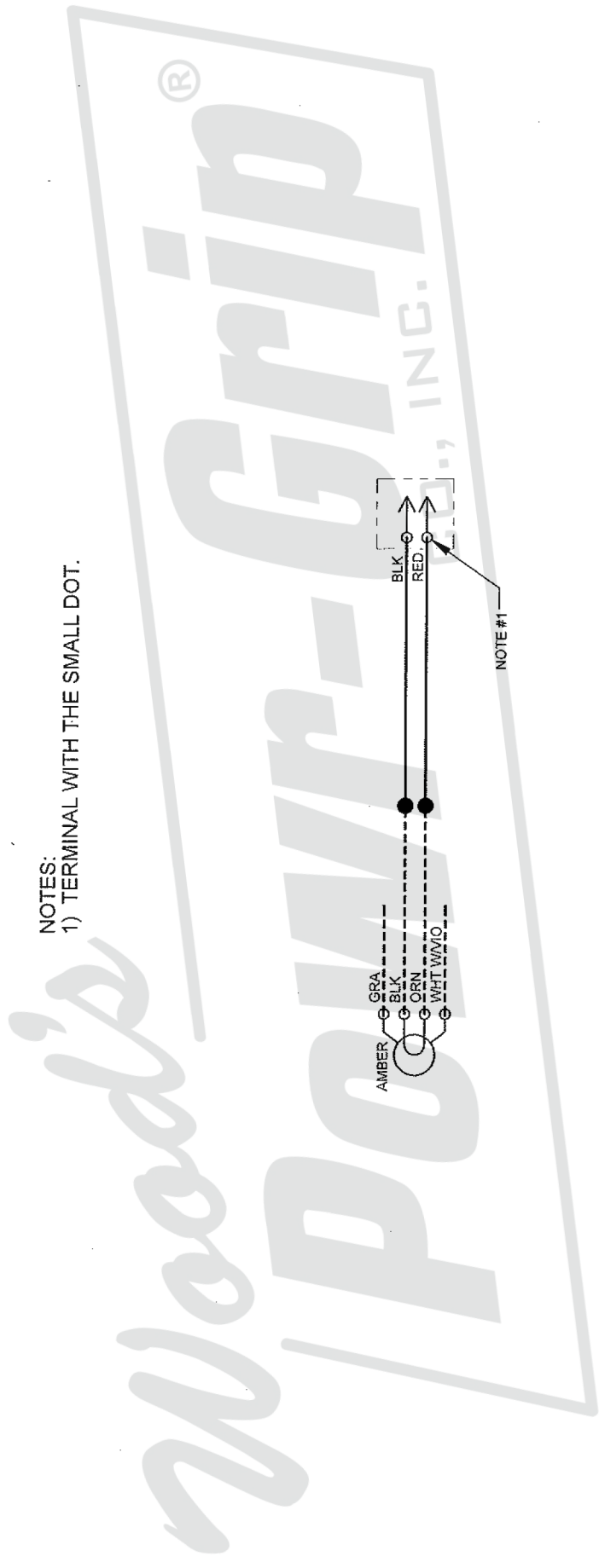
DC2 VACUUM CONTROL SYSTEM
N/A
STROBE LIGHT WIRING SCHEMATIC, LONG
D713-W07 [W07]

SIZE: A SCALE: NONE REVISION: 01.A ECN NUMBER: 4016 ECN DATE: 07/06/2016 ECN BY: JAC EST. WEIGHT: N/A

WIRE LEGEND: CONTROLLED BY
WIRING SYMBOLS DRAWING
EXCEPT AS NOTED AND BELOW.
LINE STYLES AND WIDTHS FOR
WIRE UNLESS NOTED OTHERWISE.
----- 18AWG
----- N/A
----- 20AWG
----- N/A

PRODUCT MANAGER:
SEAN E.
CHECKED: *CR* DATE: 03/04/2013
APPROVED: *SM* DATE: 08-22-16

NOTES:
1) TERMINAL WITH THE SMALL DOT.



FILE DIRECTORY:

FILE [SHEET]:

TYPE: STANDARD

714-001 [W01]

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3 SCFM DC POWER UNIT

N/A

BATTERY CHARGER WIRING DIAGRAM
D714-W01 [W01]

SIZE: A	SCALE: NONE	REVISION: 01.A	ECN NUMBER: 3623	ECN DATE: 01/07/2015	ECN BY: LER	EST. WEIGHT: 0 LBS
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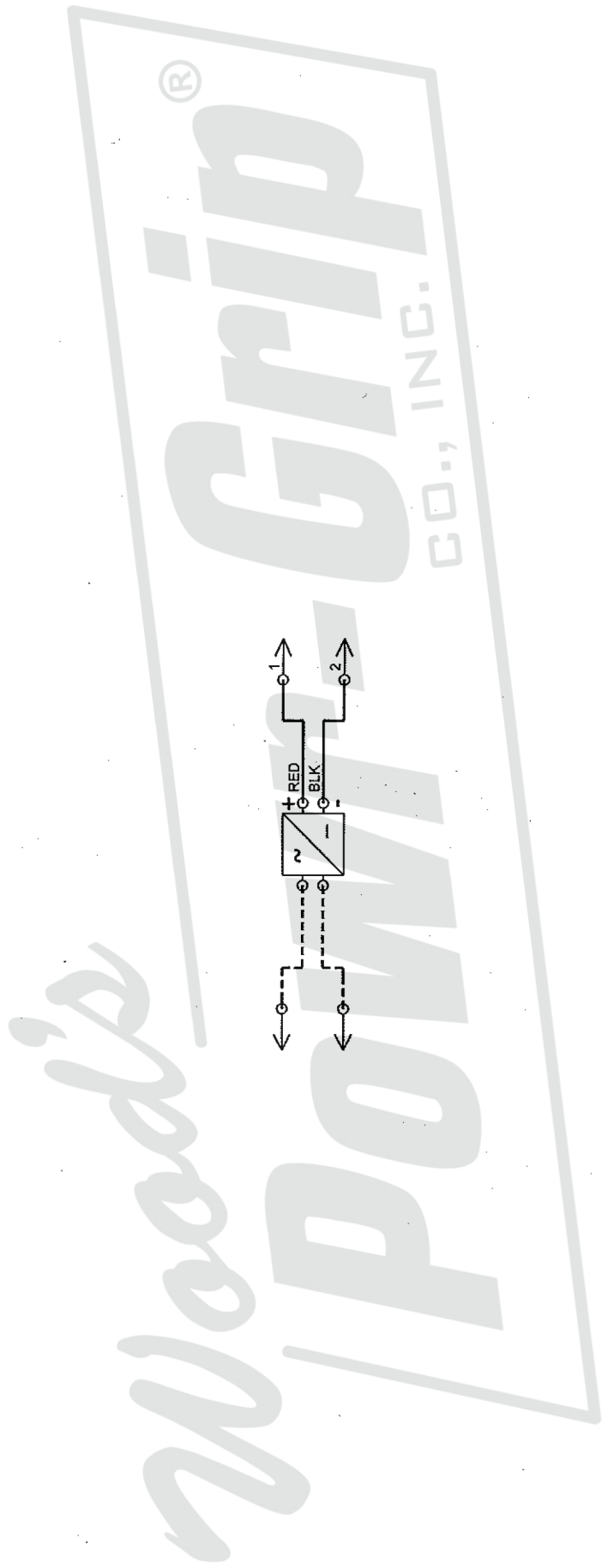
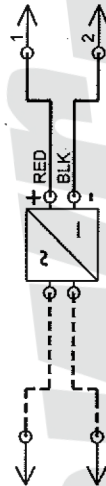
WIRE LEGEND: CONTROLLED BY WIRING SYMBOLS DRAWING EXCEPT AS NOTED AND BELOW.

LINE STYLES AND WIDTHS FOR WIRE UNLESS NOTED OTHERWISE.
--- 18 AWG
--- 16 AWG
--- N/A
--- N/A

PRODUCT MANAGER: NATHAN G.
DATE: 10/21/2009

CHECKED: *CR*
DATE: 01-19-15

APPROVED: *Chmn*
DATE: 2-16-15

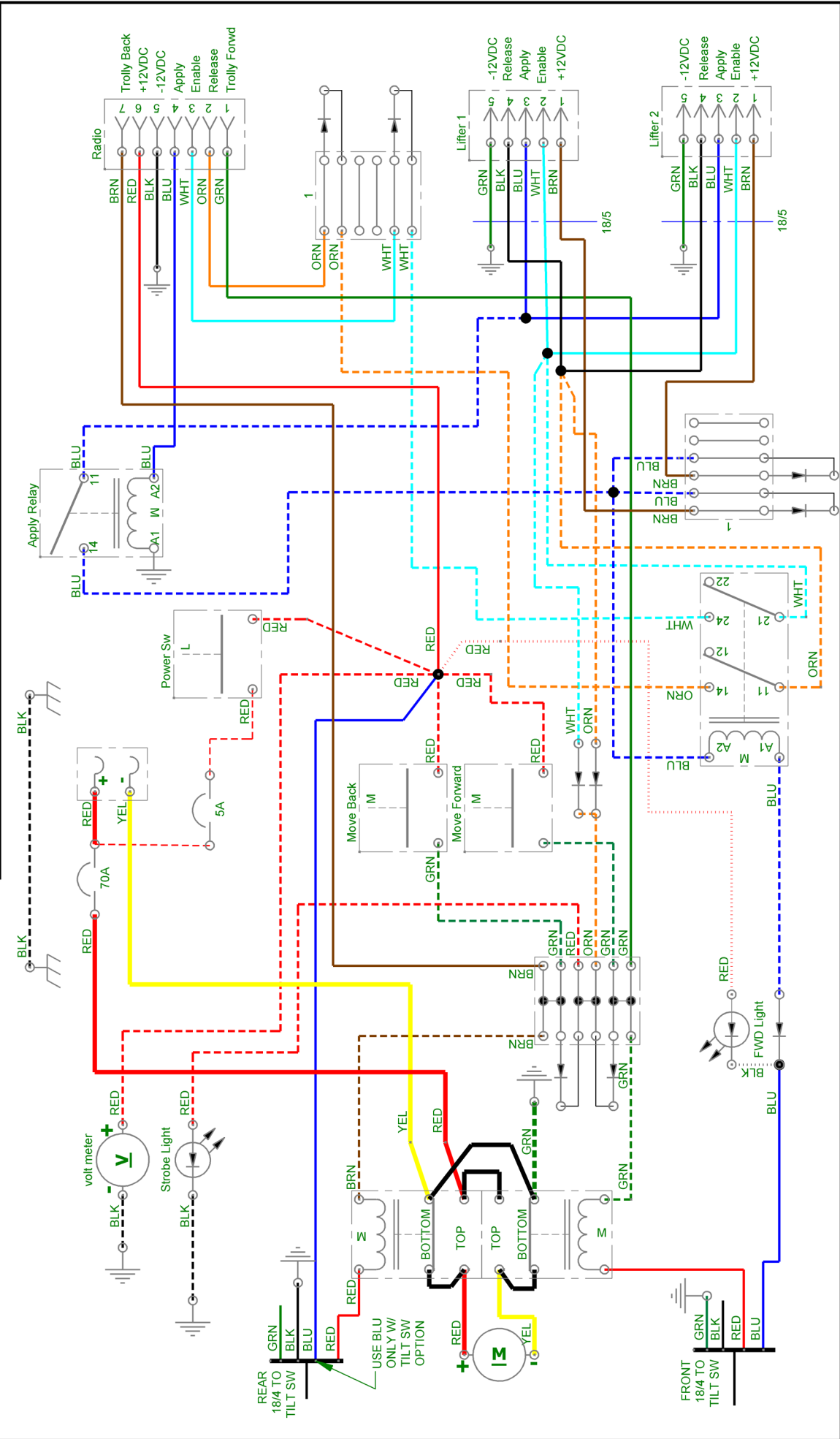


FILE DIRECTORY: 20110102.02.02
 PROJECT: SO252373-W01 [W01]
 WIRE LEGEND: CONTROLLED BY WIRING SYMBOLS DRAWING EXCEPT AS NOTED AND BELOW.
 LINE STYLES AND WIDTHS FOR WIRE UNLESS NOTED OTHERWISE:
 24 AWG - 20 AWG - N/A - 18 AWG - 16-14 AWG - N/A - 6AWG
 PRODUCT MANAGER: KEITH B.
 DATE: 06/23/2014
 CHECKED:
 APPROVED:

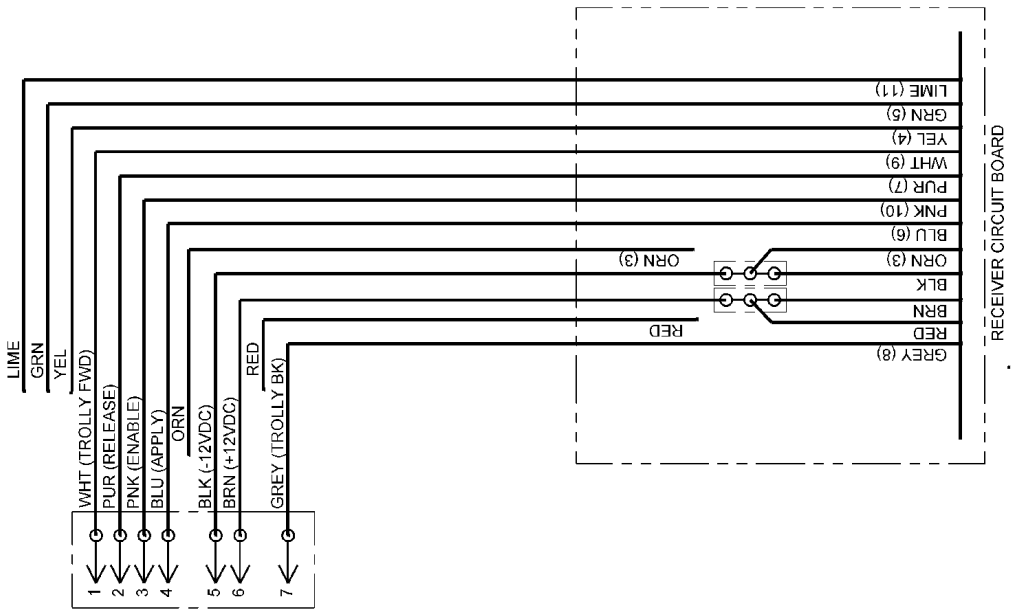
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POWERED COUNTER-BALANCER
 CB2 COUNTER-BALANCER
 CONTROL ENCLOSURE WIRING, DC3 LIFTER INTERFACE
 SO252373-W01 [W01]

ECN NUMBER: 03.B
 REVISION: 03.B
 DATE: 03/14/2022
 ECN BY: KAB
 EST. WEIGHT: N/A



WIRE LEGEND: CONTROLLED BY WIRING SYMBOLS DRAWING EXCEPT AS NOTED AND BELOW. LINE STYLES AND WIDTHS FOR WIRE UNLESS NOTED OTHERWISE. N/A 18 AWG N/A PRODUCT MANAGER: KEITH B. DATE: 02/01/2016 CHECKED: APPROVED:	TYPE: PROJECT THIS DRAWING IS THE PROPERTY OF WOOD'S POWR-GRIP CO., INC., LAUREL, MONTANA U.S.A. 2800# POWERED COUNTER-BALANCER UPDATE POWERED COUNTER-BALANCER RADIO RECEIVER WIRING SCHEMATIC, FCC & CE, W/ MOTION SO266895A-W02 [A-W02]	FILE DIRECTORY: 20110102.01.02 FILE [SHEET]: SO266895A-W02 [A-W02]
REVISION: 02.A SCALE: A NONE ECN NUMBER: VER 02.A ECN DATE: 03/28/2017 EST. WEIGHT: N/A	REVISION: 02.A ECN NUMBER: VER 02.A ECN DATE: 03/28/2017 EST. WEIGHT: N/A	ECN BY: KB



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POWERED COUNTER-BALANCER

CB2 COUNTER-BALANCER TILT SWITCH CIRCUIT BOARD WIRING

DTO289163-W03 [W03]

PRODUCT MANAGER: KEITH B.

DATE: 01/26/2018

PCB TRACE: N/A

24-18 AWG

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

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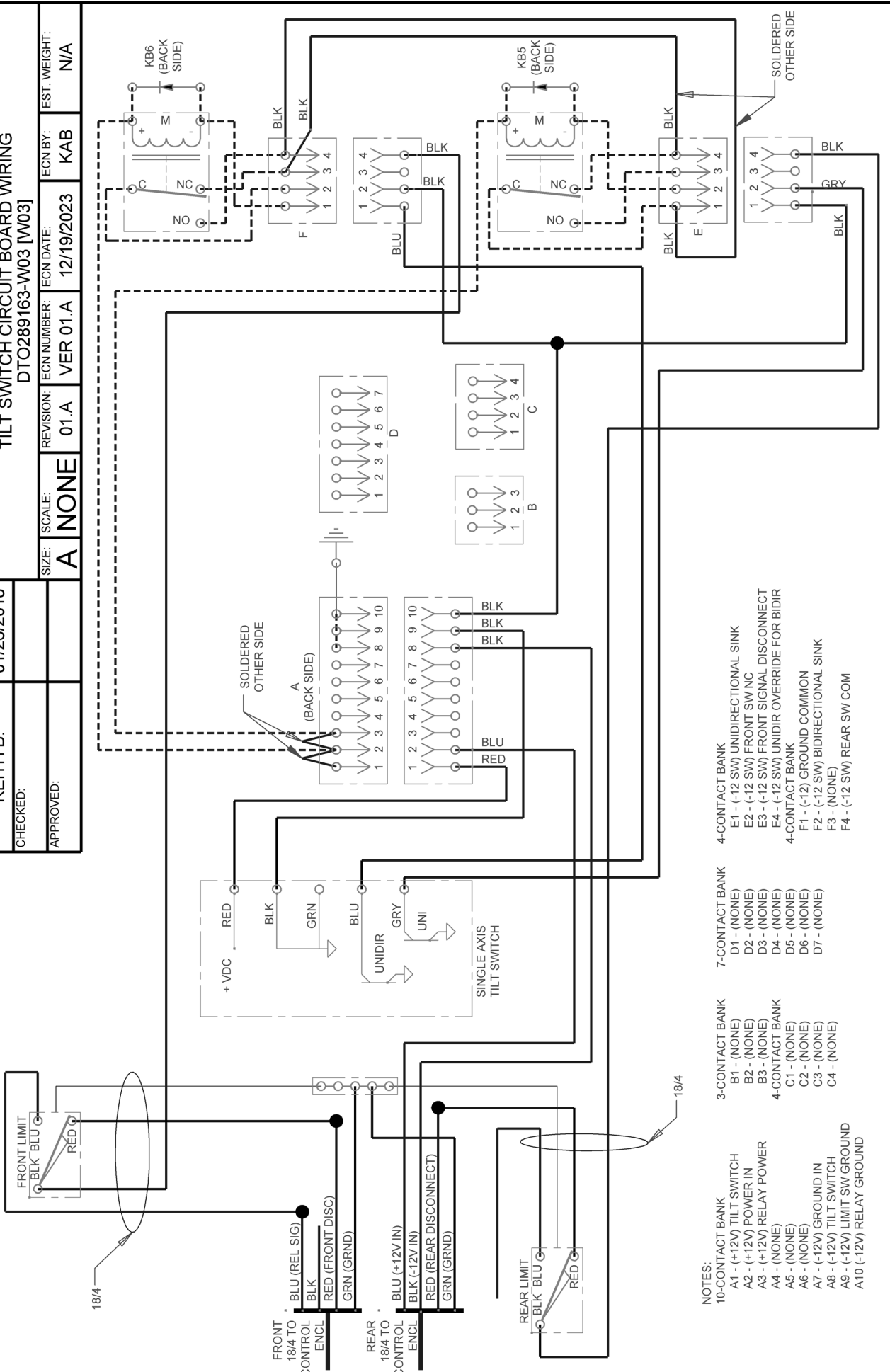
N/A

N/A

N/A

N/A

N/A



- NOTES:
- 10-CONTACT BANK
 - A1 - (+12V) TILT SWITCH
 - A2 - (+12V) POWER IN
 - A3 - (+12V) RELAY POWER
 - A4 - (NONE)
 - A5 - (NONE)
 - A6 - (NONE)
 - A7 - (-12V) GROUND IN
 - A8 - (-12V) TILT SWITCH
 - A9 - (-12V) LIMIT SW GROUND
 - A10 - (-12V) RELAY GROUND
 - 3-CONTACT BANK
 - B1 - (NONE)
 - B2 - (NONE)
 - B3 - (NONE)
 - 4-CONTACT BANK
 - C1 - (NONE)
 - C2 - (NONE)
 - C3 - (NONE)
 - C4 - (NONE)
 - 7-CONTACT BANK
 - D1 - (NONE)
 - D2 - (NONE)
 - D3 - (NONE)
 - D4 - (NONE)
 - D5 - (NONE)
 - D6 - (NONE)
 - D7 - (NONE)
 - 4-CONTACT BANK
 - E1 - (-12 SW) UNIDIRECTIONAL SINK
 - E2 - (-12 SW) FRONT SW NC
 - E3 - (-12 SW) FRONT SIGNAL DISCONNECT
 - E4 - (-12 SW) UNIDIR OVERRIDE FOR BIDIR
 - 4-CONTACT BANK
 - F1 - (-12) GROUND COMMON
 - F2 - (-12 SW) BIDIRECTIONAL SINK
 - F3 - (NONE)
 - F4 - (-12 SW) REAR SW COM

<p>WIRE LEGEND: CONTROLLED BY WIRING SYMBOLS DRAWING EXCEPT AS NOTED AND BELOW.</p> <p>LINE STYLES AND WIDTHS FOR WIRE UNLESS NOTED OTHERWISE:</p> <p>..... N/A --- N/A - - - N/A - - - 22AWG - - - N/A</p> <p>PRODUCT MANAGER: KEITH B.</p> <p>DATE: 10/29/2020</p>	<p>TYPE: PROJECT</p> <p>FILE DIRECTORY: 20110102.02.09</p> <p>FILE [SHEET]: SO68497-02-01-W07 [W07]</p> <p>THIS DRAWING IS THE PROPERTY OF WOOD'S POWR-GRIP CO., INC., LAUREL, MONTANA U.S.A.</p> <p>IT IS LOANED WITH THE UNDERSTANDING THAT NEITHER IT NOR ANY INFORMATION CONTAINED THEREIN WILL BE COPIED, PUBLISHED OR TRANSMITTED TO OTHERS WITHOUT EXPRESS WRITTEN PERMISSION.</p> <p style="text-align: center;">WPG</p> <p style="text-align: center;">POWERED COUNTER-BALANCER</p> <p style="text-align: center;">POWERED COUNTER BALANCER, DC3 INTERFACE DC3/DC2 ADAPTER WIRING SCHEMATIC</p> <p style="text-align: center;">SO68497-02-01-W07 [W07]</p>	<p>SIZE: A SCALE: NONE REVISION: 00.E VER 00.E ECN NUMBER: 03/14/2022 ECN BY: KAB EST. WEIGHT: N/A</p>
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