CAB GUIDE
LOWBOY OPERATION

Keep this guide in the cab at all times.
For more information, refer to the Operation Manual.

Ground Force Manufacturing, LLC dba TowHaul

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VERSION 1

1: PRIOR TO OPERATION

- ► Perform the mine's daily truck inspection.
- ► Inspect the Trunnion Pin for damage.
- ► Inspect the hydraulic system for leaks, including but not limited to valves, hoses and cylinders.
- ► Inspect the Gooseneck for cracks or any irregular wear.
- ► Inspect walkways and walkway supports for cracking. Ensure all bolts are present.
- ► Inspect fenders and fender supports for any cracking or irregular wear.
- ► Clear all obstacles from the path of the machine. Beware of hazards such as overhead wires, ditches, other vehicles, etc.
- ► Test all controls and protective devices.
- ► Adjust mirrors for optimal visibility.
- ► Know all hand signals and their use while operating the TowHaul Lowboy.
- ► Operators must wear all personal protective equipment required by mine regulations.

NOTICE

Refer to the Operation Manual for more information.

► PRECAUTIONS

- All established and recognized rules of the mine must be followed before, during and after operating the TowHaul Unit.
- Operators, signal person/spotter and maintenance personnel must complete TowHaul training before operating or maintaining this machine.
- Accept hand signals from one qualified person only. This person must be trained for the task.
- Do not allow unauthorized personnel on the TowHaul Unit.
- Before operating the TowHaul Unit, make sure ground personnel are at a safe distance from the unit. Refer to mine policies for safe distances.
- To determine operating speed, assess road conditions, weather, visibility and all environmental factors. When operating the TowHaul Unit, always maintain a speed that is safe and prudent for the conditions.
- When navigating grades, maintain a speed that will ensure safe control and allow effective retarding and braking under current conditions.

WARNING

Use caution and slow speeds when operating the Lowboy.

Use caution when operating the Lowboy under suspended high voltage lines or overpasses. Know the height of the load.

NOTE

TowHaul does not recommend speeds greater than 5 MPH (8 KPH) when fully loaded and 22 MPH (34 KPH) when empty.

- Do not stop or park on a haul road unless necessary. If you must stop, move the TowHaul Unit to a safe place, apply the park brake, block wheels securely and notify maintenance personnel.
- Cab doors should remain closed at all times.
- Obey all mine truck safety protocols when operating the TowHaul Unit.
- Do not move the TowHaul Unit into or out of a building without a ground signal person present.

► PRECAUTIONS

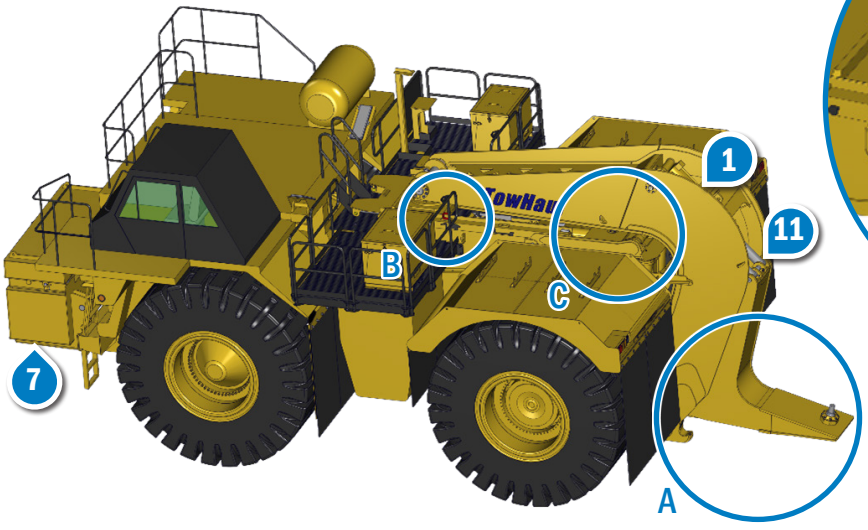
- Be aware that equipment may shift. Make sure all personnel are clear of the exclusion zone prior to operating the TowHaul Unit. Follow all mine safe-operating procedures regarding working around equipment.
- Actuate the prime mover and Lowboy brake systems at least twice prior to operating and moving the unit. This includes but may not be limited to individual activation of the prime mover service brake, park brake and retarder and the Lowboy park brake and emergency trailer brake from the operator's cab. Activate each brake system individually with the engine running and the air system, if equipped, fully charged.
- If there is any problem or sluggishness upon application or release of any brake, shut the unit down and notify maintenance personnel.

WARNING

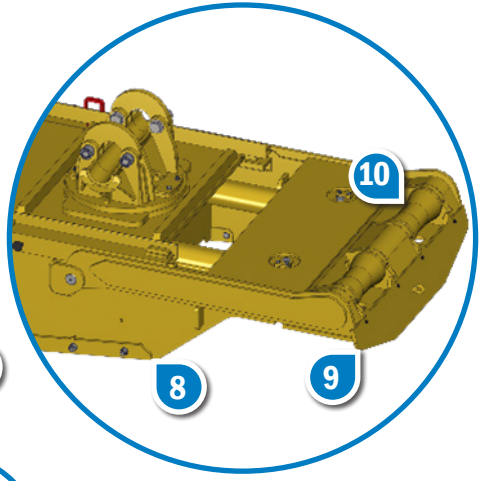
Do not operate the TowHaul unit until all brake systems are fully operational.

- When turning the TowHaul sharply, take care that the leading edge of the disabled truck does not interfere with the Gooseneck. When turning sharply and connected to the Lowboy, ensure that the Lowboy ramps do not contact the prime mover and that the Gooseneck doesn't contact walkways or other structures mounted on the prime mover.

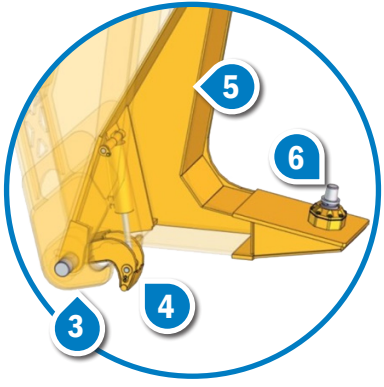
TOWHAUL PRIME MOVER & GOOSENECK



DETAIL B



DETAIL C



DETAIL A

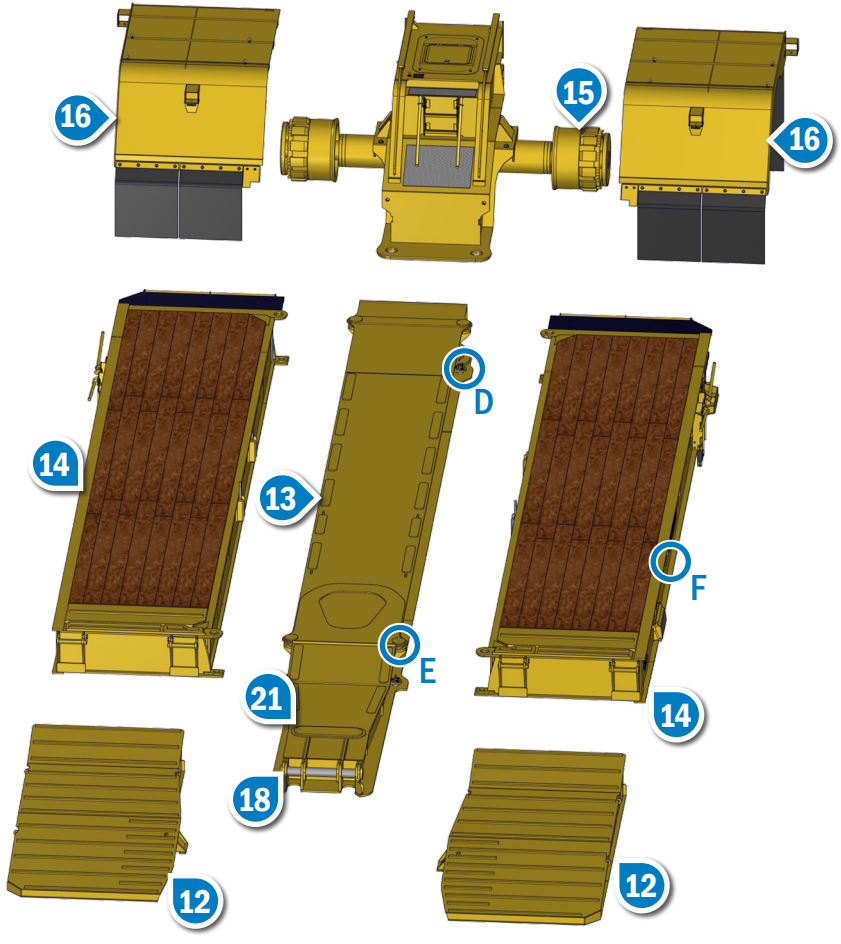
1. Gooseneck
2. Bayonet Pin
3. Gooseneck Pick-Up Hooks
4. Grab Hook
5. Toe Assembly
6. Trunnion Pin
7. Counterweight
8. Subframe
9. Apron
10. Apron Rollers
11. Main Lift Cylinders

TOWHAUL LOWBOY

DETAIL D

DETAIL E

DETAIL F



12. Load Ramp
13. Center Section
14. Load Wing
15. Axle
16. Fender
17. Upper Load Wing Pin
18. Pick-Up Shaft
19. D-Ring[1]
20. Lower Load Wing Pin
21. Bearing Pad

1 For tie-down purposes only. Not a lifting point.

The Plus+1 control screen provides access to TowHaul functions. **It is not a touch screen**.

Press a white button on the left side of the screen to operate any function or view information. The control screen has a one-minute timer; if another button is not pressed within one minute, the control screen will revert to the main menu.

The directional pad ▼ ▲ ◀ ▶ buttons must be held to operate the function. When released, that function will stop, except the **Park Brake Release** function, which is the only on/off function.

If a critical error is active, the error screen will display. To return to the main menu at any time, press **Esc**.

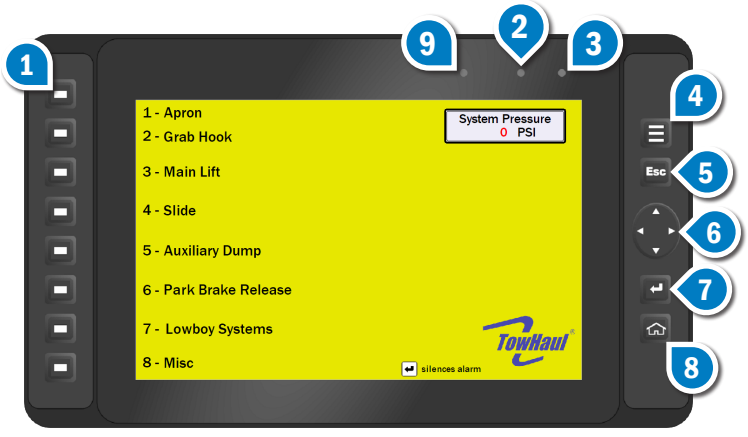
Two LED lights in the top right corner will flash when certain errors occur.

- Right LED (red): CAN error
- Left LED (red): critical error
- Left LED (yellow): filter error

The HOME button returns to the main menu, unless there is a critical screen that requires the user to press ENTER.

The MENU button opens the settings menu, unless there is a critical screen that requires the user to press ENTER.

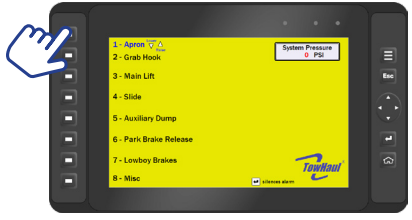
The ENTER button will silence the audible alarm for three minutes, or accept a statement or caution.



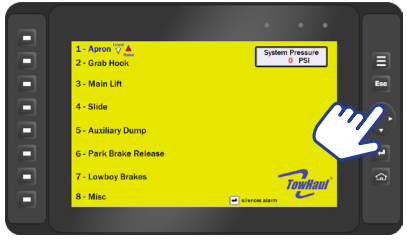
1. TowHaul functions
2. Critical/Filter error indicator
3. CAN error indicator
4. Menu
5. Escape
6. Directional pad
7. Enter
8. Home
9. Light sensor for auto brightness

► APRON

Select **Apron** in the Main Screen and use ▲ and ▼ on the directional pad to raise or lower the Apron.



*Press the **Apron** function button.*

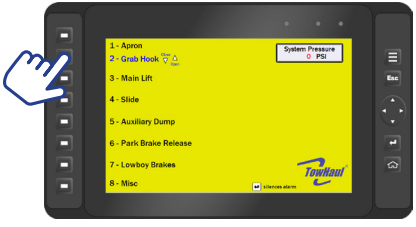


Use ▲ on the directional pad to raise the Apron.

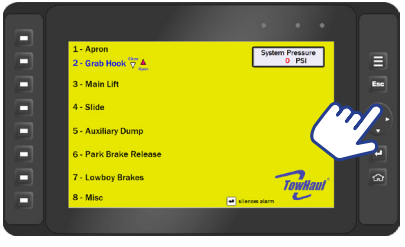
Use ▼ on the directional pad to lower the Apron.

► GRAB HOOK

Select **Grab Hook** in the Main Menu screen and use ▲ and ▼ on the directional pad to operate the Grab Hook.



*Press the **Grab Hook** function button.*



Use ▲ on the directional pad to open the Grab Hook.

Use ▼ on the directional pad to close the Grab Hook.

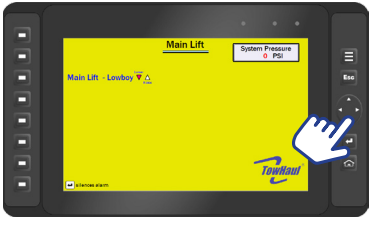
► MAIN LIFT

Select **Main Lift** on the Main Menu screen and use ◄ and ► on the directional pad to choose Towing or Lowboy.

► MAIN LIFT - LOWBOY

*Press the **Main Lift** function button, then press ► to choose Lowboy mode.*

Use ▲ on the directional pad to raise the main lift.



Use ▼ on the directional pad to lower the main lift.

► MAIN LIFT - TOWING

*Press the **Main Lift** function button, then press ◄ to choose Towing mode.*

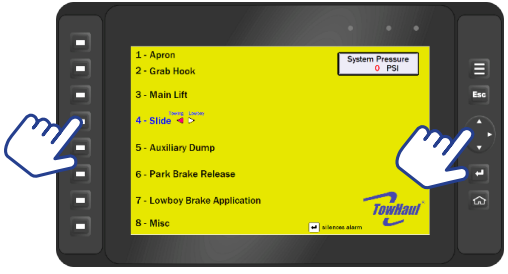
Use ▲ on the directional pad to raise the main lift.

directional pad to lower the main lift.

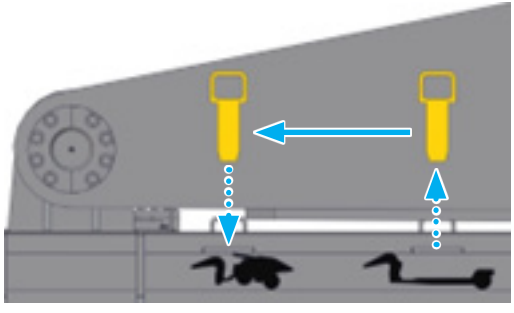
Use ▼ on the

► SLIDE - TOWING POSITION

To move the slide to **Towing** position, physically pull the pins on the subframe.



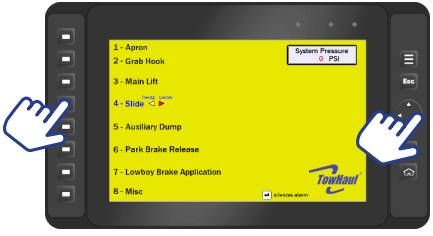
*Press the **Slide** button. Use ◄ to move the slide to **towing** position.*



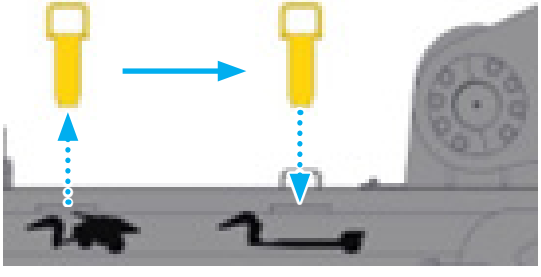
Reinstall the pins in the forward holes.

► SLIDE - LOWBOY POSITION

To move the slide to **Lowboy** position, physically pull the pins on the subframe.



*Press the **Slide** button. Use ► to move the slide to **Lowboy** position.*



Reinstall the pins in the rear holes.

CAUTION

The Bayonet Pins MUST go back in the correct slots to prevent damage to the TowHaul unit.

► *AUXILIARY DUMP*

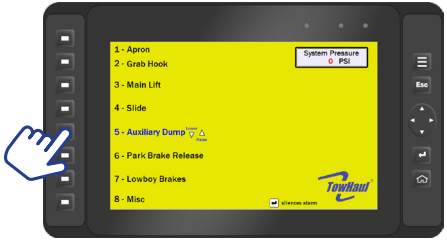
Connect the appropriate hoses to the disabled haul truck according to instructions in the **TowHaul Operations Manual**, and mine procedures.

Press **Auxiliary Dump** on the Main Menu screen, and use ▲ and ▼ to raise and lower the body of the disabled truck.

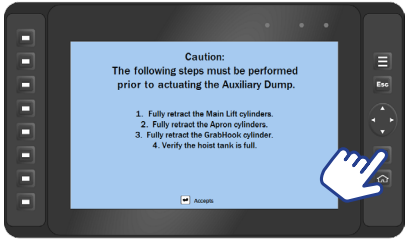
CAUTION

The following steps must be performed prior to actuating the Auxiliary Dump:

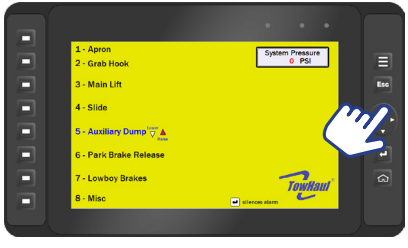
1. **Fully retract the Main Lift Cylinders**
2. **Fully retract the Apron cylinders**
3. **Fully retract the Grab Hook cylinder**
4. **Verify that the prime mover's hoist tank is full**



Press 5 - Auxiliary Dump. A caution screen will appear on the display.



Verify each step has been performed, then press Enter to accept the caution message.



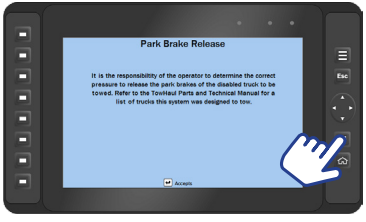
Use the ▲ to raise the disabled truck's dump bed.

Use the ▼ to lower the disabled truck's dump bed.

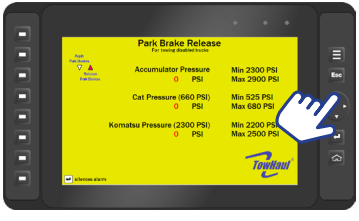
► PARK BRAKE RELEASE

Connect the appropriate hose to the towed truck according to instructions in the TowHaul Operations Manual and mine procedures.

To release and set the towed truck park brake, select **Park Brake Release** on the **Main Menu** and use ▲ and ▼ on the directional pad to apply or release the brakes. Park brake release system pressures are displayed in this screen.



*Press **Enter** to accept the caution message.*



Use ▲ on the directional pad to release park brakes on the towed vehicle.

Use ▼ on the directional pad to apply park brakes on the towed vehicle.

After each power-up, the operator will be required to acknowledge responsibility for determining that the pressure is correct for the truck being towed. The system was designed to be used with the following trucks:

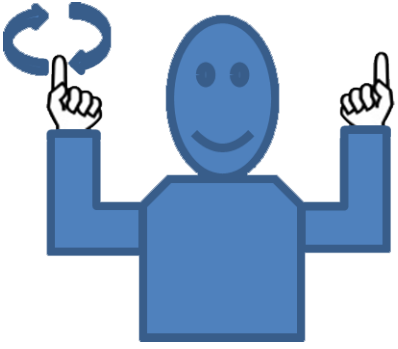
- **Caterpillar trucks with an approximate release pressure of 660 psi (46 bar)**
- **Komatsu trucks with an approximate release pressure of 2500 psi (172 bar)**

Other trucks must be evaluated to determine their compatibility with this system.

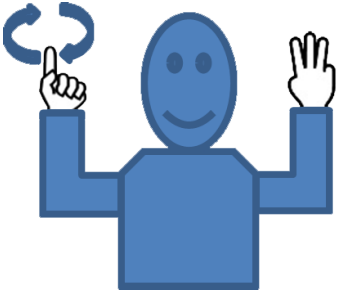
► POSITIVE COMMUNICATION AND TOWHAUL HAND SIGNALS

All TowHaul operations should be conducted by a properly trained two-person team. The spotter must be standing in an easily visible position for the operator and communication must always be acknowledged both ways.

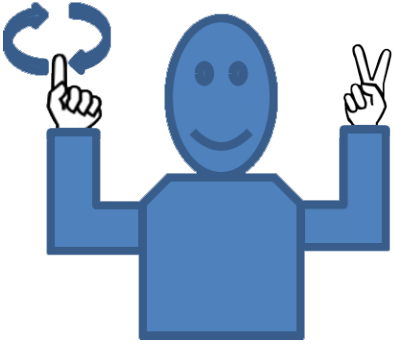
TowHaul has developed an easy and clear set of hand signals that can be used during daytime with good visibility. When visibility is reduced, or if operating at night, use two-way radio communication.



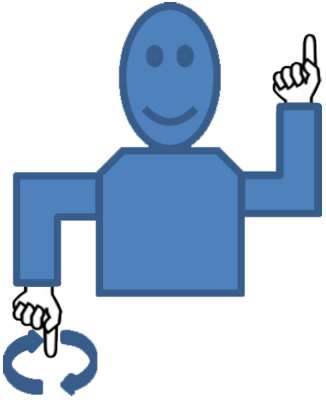
Raise Apron: one finger up, circle upward



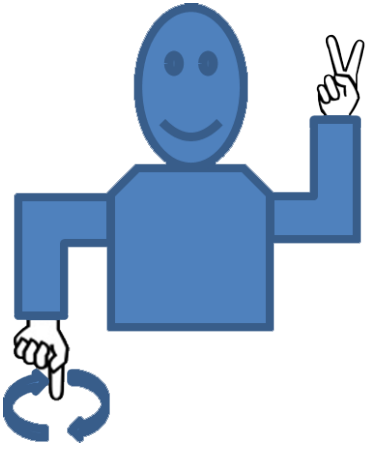
Raise Lowboy: 3 fingers up, circle upward



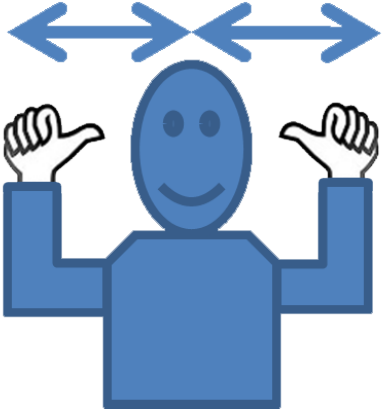
Open Grab Hook: two fingers up, circle upward



Lower Apron: one finger up, circle downward

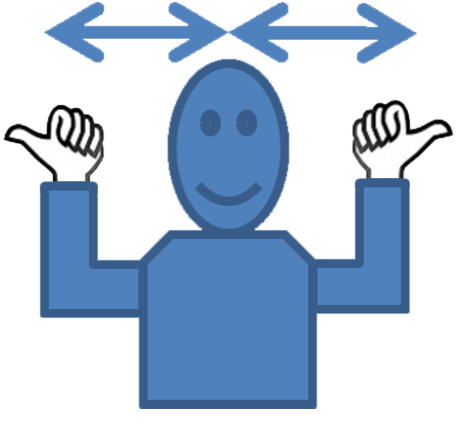


Close Grab Hook: two fingers up, circle downward



Release Lowboy brakes: indicate inward

Lower Lowboy: three fingers up, circle downward



Set Lowboy brakes: indicate outward

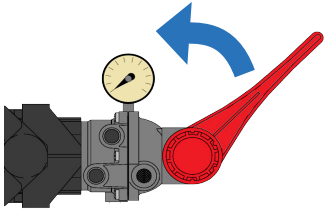
► PARKING

1. Park on a flat and level surface. If it is necessary to park on a grade, use wheel chocks to block the TowHaul unit.
2. Apply the service brake to stop the TowHaul unit, shift the transmission into neutral, then engage the prime mover park brake.
3. Lower the Lowboy to the ground and apply the Lowboy park brake.
4. Lower the Apron to rest the Gooseneck on the ground when not connected to the Lowboy.
5. Turn off engine.
6. Turn the ignition key to the off position.
7. Isolate the prime mover with the isolation switch.

► BRAKING

- The Lowboy brakes apply with the prime mover service brakes when the service brake pedal is actuated.
- Lowboy Park Brake – The Lowboy park brake is separate from the prime mover park brake. To release the Lowboy park brake, push down on the red button in the cab. To set the Lowboy park brake, pull up on the red button in the cab.

- In an emergency, the lowboy brakes can be fully applied by pulling the red emergency Lowboy brake lever in the operator's cab.



NOTE

During normal operation, the Lowboy service brakes should not be used when retarding the machine.

WARNING

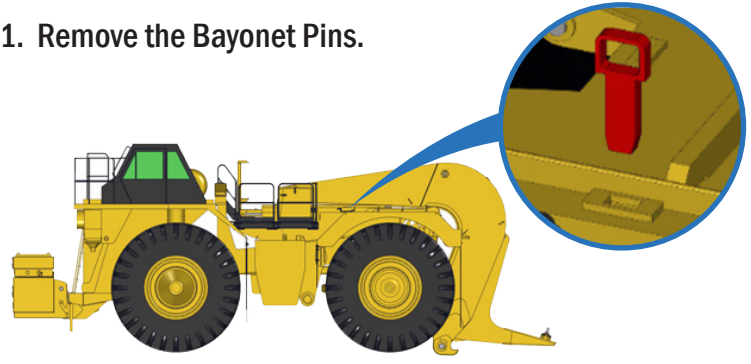
Slippery, rough or changing haul road conditions may adversely affect braking.

► GOOSENECK POSITIONING - LOWBOY TO TOWING

WARNING

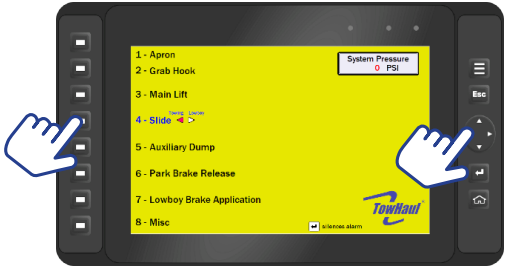
Visually confirm that the Gooseneck is in the correct position and that the subframe Bayonet Pins are inserted in the correct position before operating.

1. Remove the Bayonet Pins.

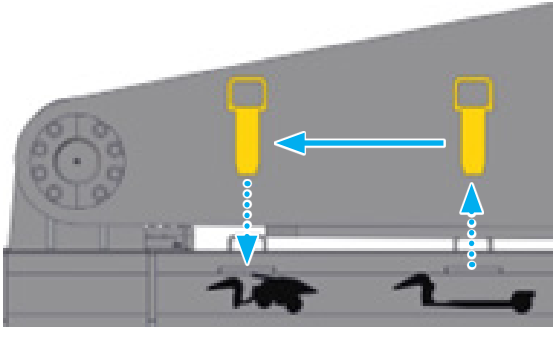


2. Utilizing the **Apron Raise/Lower** function, position the Gooseneck approximately 18” (46 cm) above ground level.

3. Use the **Slide** function to move the Gooseneck fully forward into the **Towing** position.

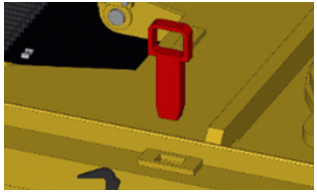


4. Insert Bayonet Pins in forward (towing) holes.

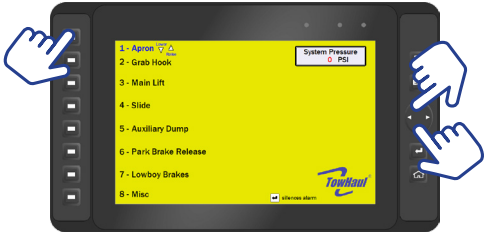


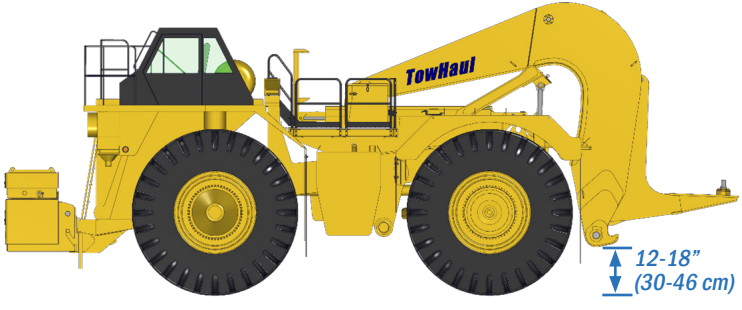
► GOOSENECK POSITIONING - TOWING TO LOWBOY

1. Remove the Counterweight, if equipped.
2. Remove the Bayonet Pins.

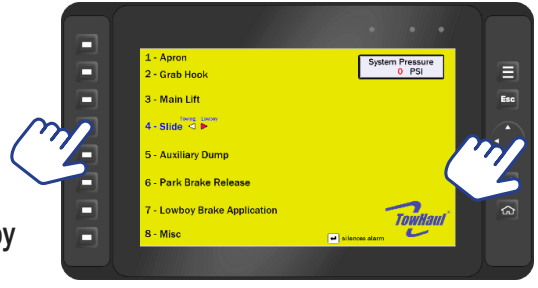


3. Using the **Apron** function, position the Gooseneck approximately 18” (46 cm) off the ground.

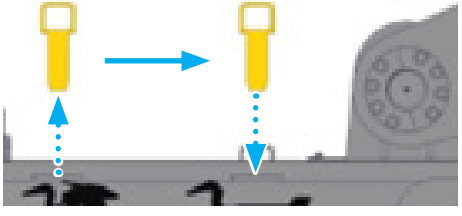




4. Use the **Slide** function to move the Gooseneck fully rearward into the Lowboy position.



5. Install the Bayonet Pins in rearward holes.



CAUTION

The Bayonet Pins must go back in the correct slots to prevent damage to the TowHaul unit.

► PRIME MOVER OPERATION WITHOUT LOWBOY

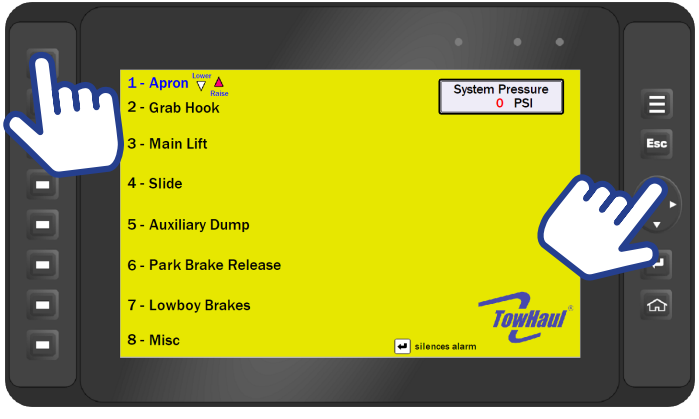
CAUTION

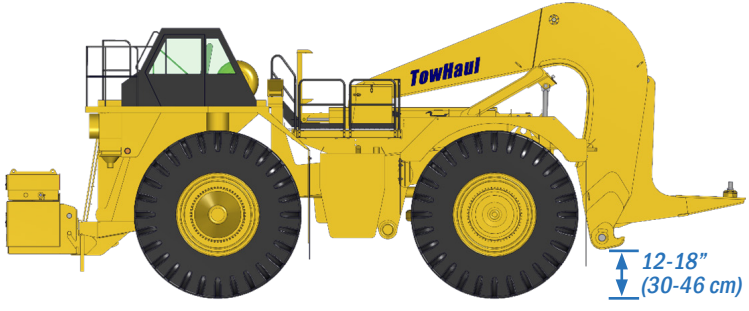
TowHaul does not recommend speeds greater than 5 MPH (8 KPH) when fully loaded and 22 MPH (34 KPH) when empty.

NOTE

TowHaul recommends transporting the empty Gooseneck in the forward (towing) position. The Gooseneck can be transported at up to 22 MPH (34 KHP) in the towing position. The empty Gooseneck may be transported in the rearward (Lowboy) position at slower speeds (5 MPH / 8 KPH or less).

1. Raise the **Apron** until the Gooseneck Pick-Up Hooks are approximately 12-18” (30-46 cm) above ground level.



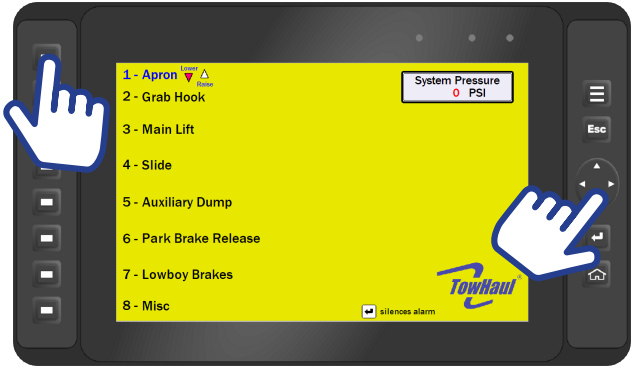


2. Release the prime mover park brake and proceed at the proper speed according to the Gooseneck position as defined above.

► PARKING PROCEDURE WITHOUT LOWBOY

1. Park on a flat and level surface. If it is necessary to park on a grade, use wheel chocks to block the TowHaul Unit.
2. Apply the service brake to stop the TowHaul Unit, shift the transmission into neutral, and then engage the prime mover parking brake.

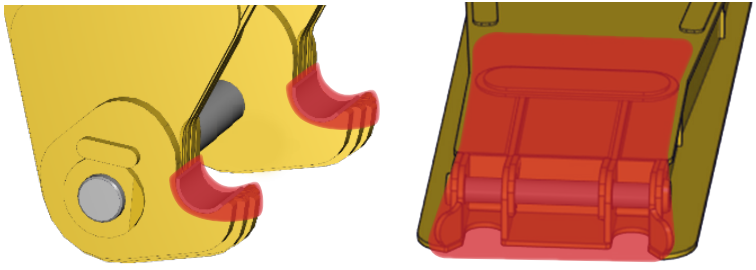
3. Lower the **Apron** until the Gooseneck is resting on the ground and a gap is present between the Apron rollers and the Gooseneck.



4. Turn the ignition key off.
5. Isolate the prime mover with the isolation switch.

► CONNECTING TO LOWBOY

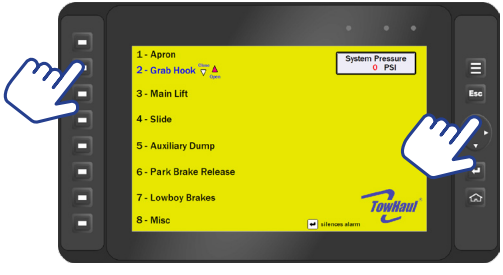
1. Before connecting the Gooseneck to the Lowboy, ensure all dirt, rocks and debris are cleared from the Gooseneck Pick-Up Hooks and Pick-Up Shaft area on the Lowboy.



Clean the areas highlighted in red.

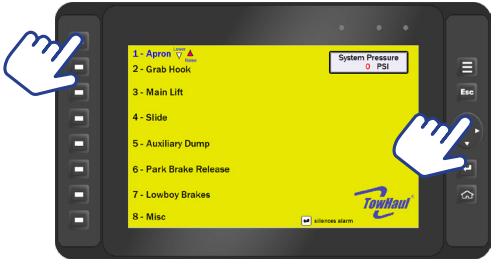
2. Ensure the Gooseneck is in the Lowboy position and that the Bayonet Pins are in the correct location.

3. Use the **Grab Hook** function to fully open the Grab Hooks.

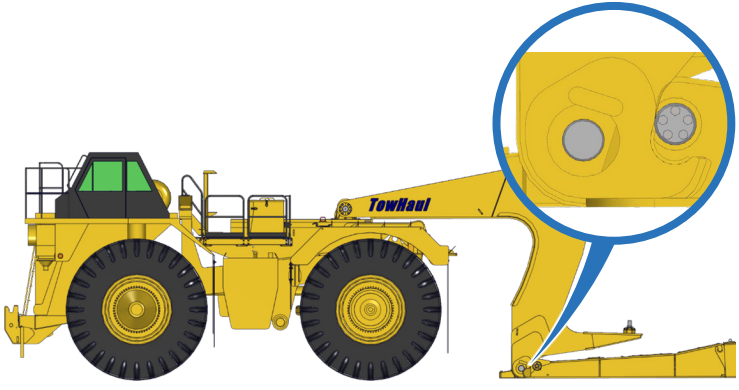


4. Use the **Main Lift - Lowboy - Lower** function to lower Lowboy/ retract the Toe.

5. Use the **Apron - Raise** function to position the Gooseneck approximately 2” (5cm) from the ground.

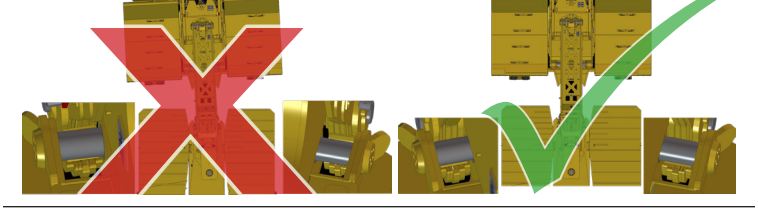


6. Back the prime mover up until <u>both</u> Gooseneck Pick-Up Hooks are positioned under the Lowboy Pick-Up Shaft.

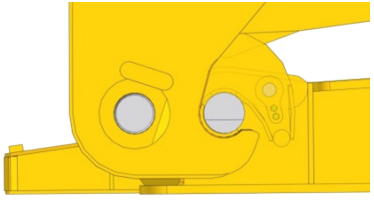


WARNING

Ensure both Gooseneck Hooks are aligned evenly beneath the Pick-up Shaft. If there is a gap larger than 1/2" between the Gooseneck Hooks and the Pick-up Shaft on either side, realign the Gooseneck and prime mover.

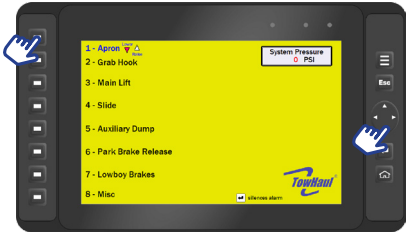


7. Close the **Grab Hook** to properly align the Gooseneck Pick-Up Hooks with the pick-up shaft.

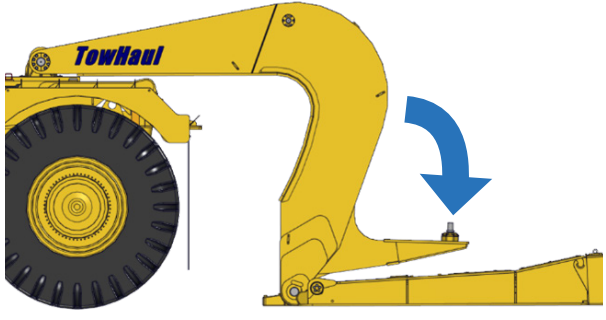


8. Apply the prime mover park brake.

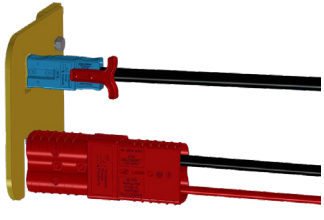
9. Fully lower the **Apron**.



10. Use the **Main Lift - Lowboy** function to raise the Lowboy/ extend the Toe. Stop when the Toe contacts the bearing pad on the front end of the Lowboy.

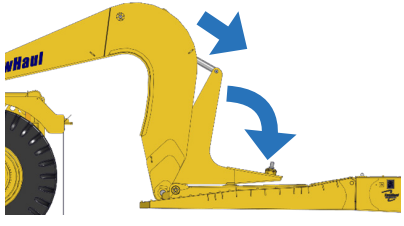


11. Connect the air hoses, if equipped, and all electrical cables between the Lowboy and the Gooseneck.



12. Release the Lowboy park brake before raising the Lowboy.

13. Use the **Main Lift - Lowboy** function to raise the Lowboy until the Main Lift Cylinders are fully extended. Ensure the Lowboy tires turn while raising.



NOTE

Ensure that lights, brakes, other systems and the unit in general are in overall good working condition.

WARNING

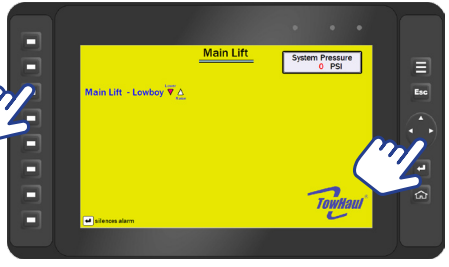
Never attempt to raise the Lowboy with the Apron. Doing so may cause unwarrantable damage.

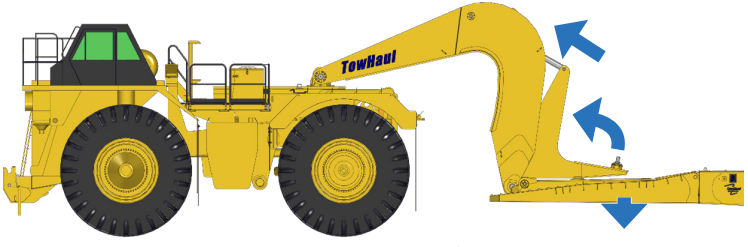
CAUTION

Use slow speeds when pulling the TowHaul Lowboy. TowHaul does not recommend speeds greater than 5 MPH (8 KPH) when fully loaded and 22 MPH (34 KPH) when empty.

► DISCONNECTING THE LOWBOY

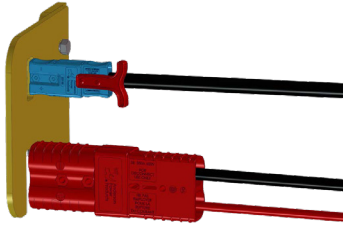
1. Park on a flat and level surface. If it is necessary to park on a grade, use wheel chocks to block the TowHaul Unit.
2. Use the **Main Lift - Lowboy - Lower** function to lower Lowboy until the Toe starts to separate from the Bearing Pad.





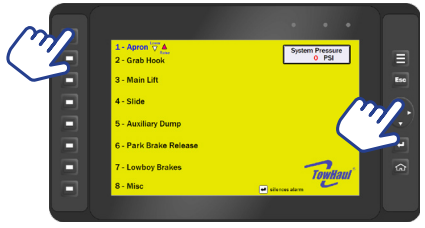
3. Apply the Lowboy brake by pulling up on the button.

4. Disconnect the air hoses, if equipped, and electrical cables. Ensure that the dust caps are reinstalled on all plugs and connectors.

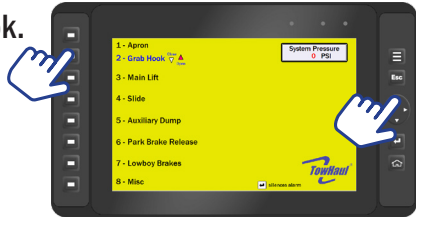


5. Use the **Main Lift - Lowboy - Lower** function to lower Lowboy until the Main Lift cylinders are fully retracted.

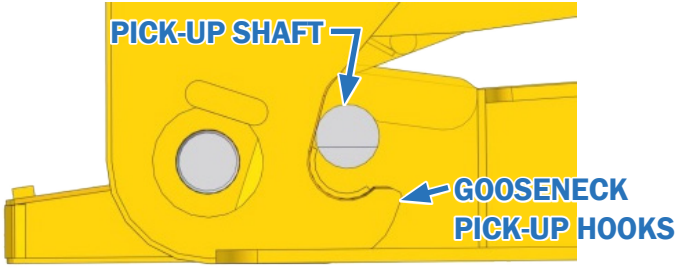
6. Raise the **Apron** until it just slightly contacts the Gooseneck. Do not raise the Gooseneck with the Apron.



7. Fully open the Grab Hook.

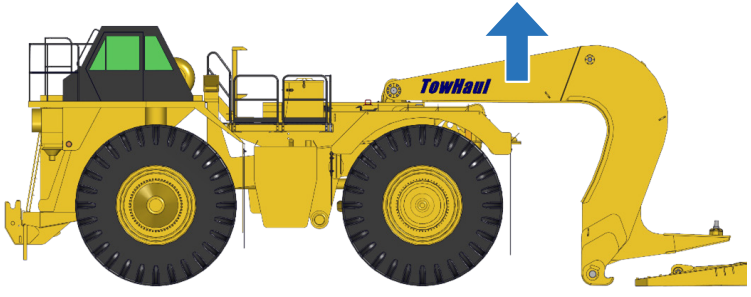


8. Ensure the tips of the Gooseneck Pick-Up Hooks have dropped below the Pick-Up Shaft.



9. Slowly move the prime mover forward until the Gooseneck Pick-Up Hooks are clear of the Pick-Up Shaft.

10. Raise the **Apron** until the Gooseneck is 12-18” (30-45 cm) off the ground.



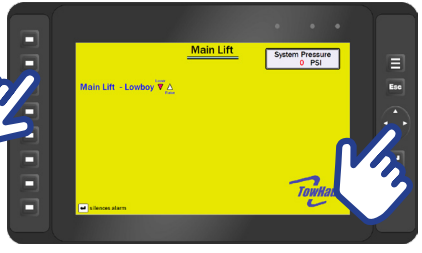
11. Move the prime mover to the desired location at a slow speed.

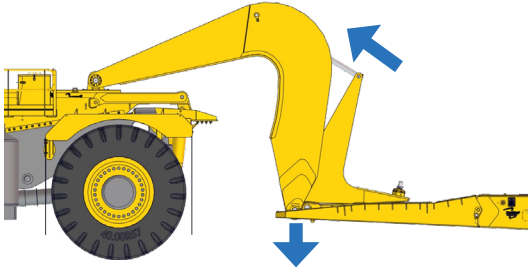
CAUTION

Use slow speeds when pulling the TowHaul Lowboy. TowHaul does not recommend speeds greater than 5 MPH (8 KPH) when fully loaded and 22 MPH (34 KPH) when empty.

► PARKING PROCEDURE WITH LOWBOY

1. Park on a flat and level surface. If it is necessary to park on a grade, follow all mine policies.
2. Come to a complete stop and apply the prime mover park brake. Ensure the Lowboy park brake is released.
3. Use the **Main Lift - Lowboy - Lower** function to Lower the Lowboy to the ground.



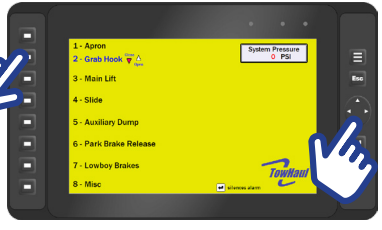


CAUTION

Do not park with the Lowboy suspended. Always fully lower the Lowboy to the ground and chock the wheels as required by mine policy.

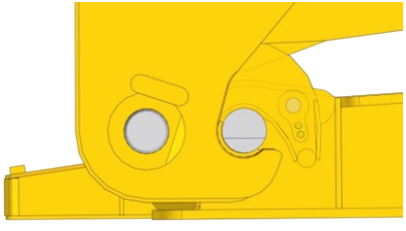
4. Apply the Lowboy park brake once the Lowboy is fully resting on the ground by pulling up on the red button.

5. Always fully close the **Grab Hook** prior to raising the Lowboy when parked while connected.



NOTE

During the raising process, the Grab Hook cylinder is forced in by the extension of the Toe. During the lowering process, the Grab Hooks gaps away from the Pick-up Shaft, causing the Gooseneck Hooks to move down and away from the Pick-up shaft once all the weight of the Lowboy is on the ground. Ensure the Grab Hook is fully closed before raising the Lowboy.

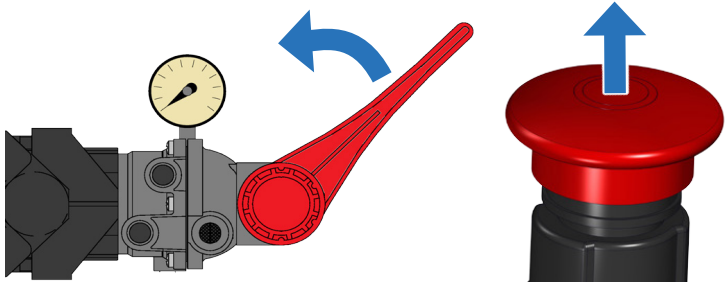


► STOPPING ON AN ASCENDING GRADE

WARNING

TowHaul does not recommend stopping the TowHaul Unit on an ascending grade. If the operator finds it necessary, use extreme caution.

- The prime mover coupled to a Lowboy is a specialized combination unit with a gross weight that can exceed what the loaded prime mover would weigh when in use as a haul truck.
- When coming to a stop on an ascending grade, fully apply the Lowboy emergency trailer brake handle once the unit has come to a complete stop, immediately followed by the prime mover service brake and/or park brake as well as the Lowboy park brake, to prevent rolling backwards.



- Never allow the unit to gain momentum in a backwards direction.

WARNING

Never apply the retarder alone if backwards motion is allowed to develop.

- Always operate the TowHaul Unit in accordance with the mine's equipment operations and safety procedures.

► PREPARATION FOR LOADING

WARNING

Do not exceed the maximum payload capacity of the Lowboy. This information can be found on the Lowboy serial plate located on the front left-hand side of the load wing.

- A trained TowHaul operator must supervise all loading and unloading operations.
- Loading must only occur with the Lowboy parked on a firm, flat, level surface.
- The leading edge of the Lowboy must be well supported.
- The Lowboy park brake must be operational and fully applied.
- TowHaul recommends using a spotter. The spotter can stand on the deck initially, but once the machine is loaded, the spotter should move to the ground.
- Alternatively, the prime mover can be parked behind the Lowboy and the operator can stand in a safe location on the deck of the truck, to spot the loading.

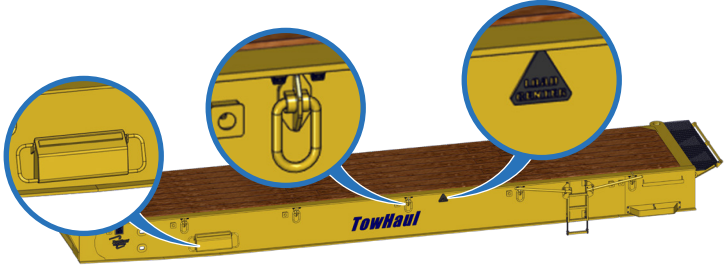
CAUTION

Turning or racking equipment, especially tracked equipment, on the Lowboy deck may result in damage.

► SECURING THE PAYLOAD (TIE-DOWN SYSTEM)

Use the D-rings on the Lowboy in conjunction with chains, cables, steel straps, fiber webbing etc. in compliance with mine safety procedures.

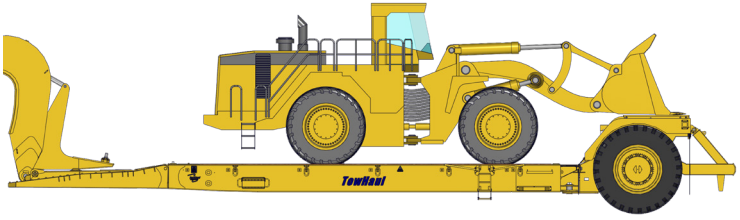
Personnel tying or securing any equipment to the Lowboy must have completed a basic lifting course conducted by an approved training organization, or as per mine policies.

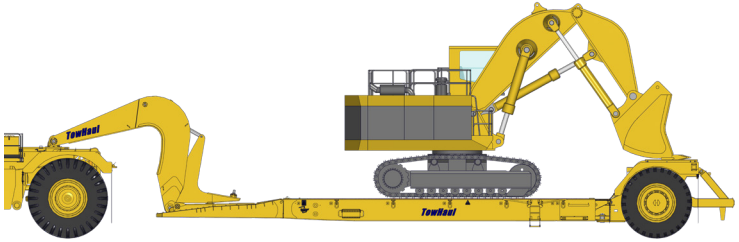


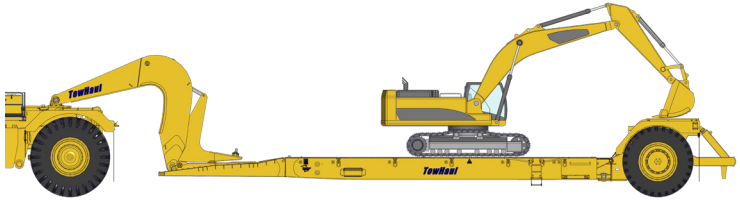
Use loading blocks, D-rings and the load center markers to properly secure the equipment.

► RECOMMENDED LOADING DIRECTION

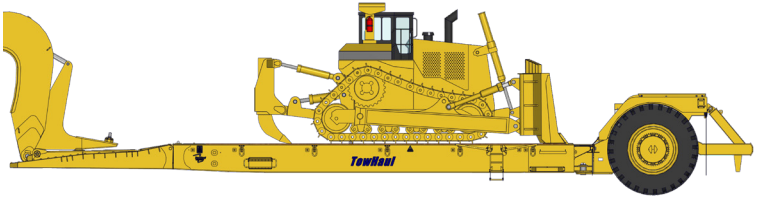
Shovels, excavators and wheel loaders: engines off, park brake applied and bucket lowered to the main Lowboy deck or resting on top of the bucket platform.



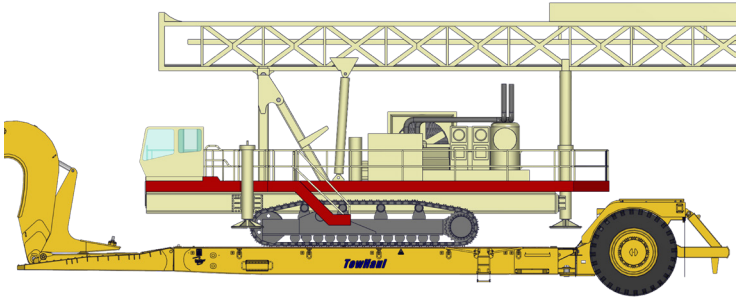




Dozers: engines off, park brake applied, with blade and ripper lowered. The ripper should be curled all the way in so the heel rests on the deck.



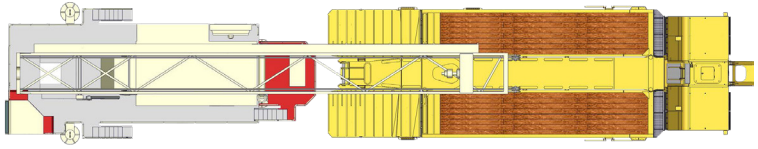
Drills: engines off, park brake applied and stabilizer pads raised and clear of the deck before being tied down. The mast should be down and facing the rear. Use loading blocks if necessary.



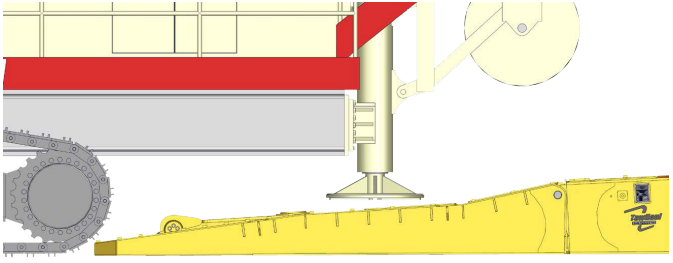
► LOADING BLOCKS

Loading blocks are used for equipment — usually drills — that interfere with the pick-up area and/or Load Ramps. The blocks are placed in front of the Lowboy and allow the equipment to allow the equipment to gain more clearance in the interference area. Once an interference has been identified, follow the steps below for placement of the loading blocks. The loading blocks are located near the front on each side of the Lowboy.

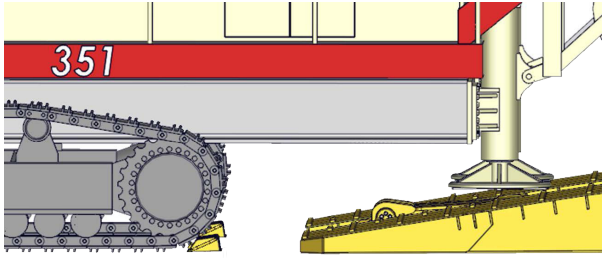
1. Center the equipment relative to the Lowboy.



2. Drive the equipment close to the Lowboy and stop the machine just before interference occurs.



3. Mark the ground at the leading edge of each track near the Lowboy ramps.
4. Reverse the equipment away from the Lowboy
5. Place the back side (tall end) of loading block on the mark on each side of the Lowboy.



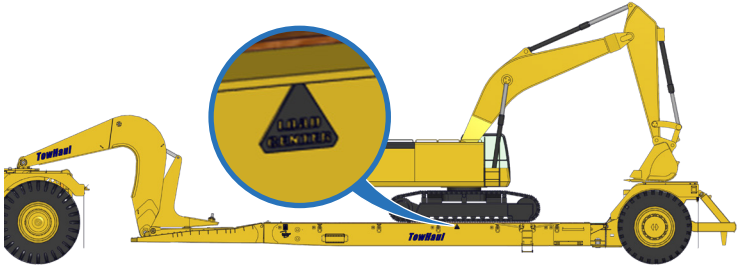
NOTE

The loading blocks are heavy and should be moved using a 2-person lift or the use of the hand cart.

6. Load the equipment slowly, ensuring the equipment does not interfere with the Lowboy.
7. Before returning the loading blocks to the side of the Lowboy, measure out the distance the blocks are from the Lowboy, as they will be needed again when unloading.

► LOADING PROCEDURE

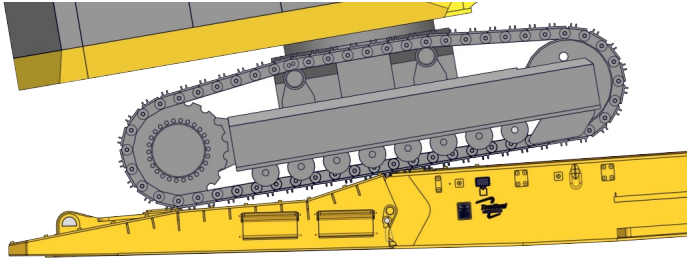
1. Use loading blocks, if provided, for additional clearance.
2. Center the machine with the Lowboy before loading.
3. Load equipment with its center of gravity as close to the load center as possible.



CAUTION

The marked load center on the Lowboy is intended as a reference point only. The final load center location may vary from machine to machine due to machine length and other variables.

4. Load the machine slowly onto the Lowboy with the aid of a qualified TowHaul operator/signal person.



CAUTION

When loading tracked machines, use care to avoid significant impacts to the Lowboy deck.

WARNING

Use caution and slow speeds when operating the Lowboy while empty or loaded.

Use caution when operating the Lowboy under suspended high voltage lines or overpasses. .

► TOWING DISABLED HAUL TRUCKS

WARNING

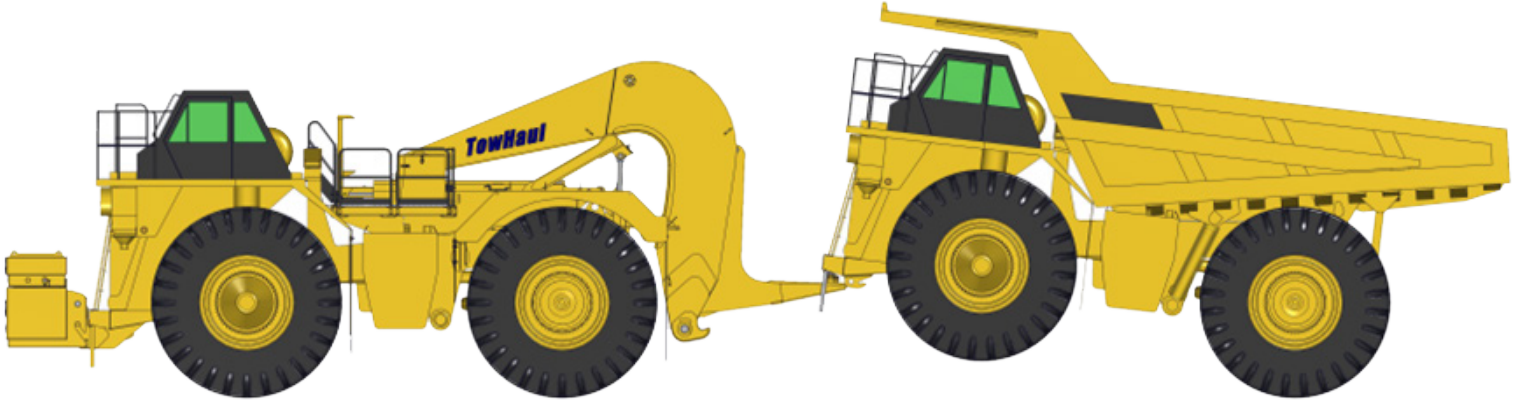
Do not tow disabled haul trucks without the required Counterweight installed.

Do not tow disabled haul trucks that have any remaining payload in the body. See Auxiliary Dump section for instructions.

Do not attempt to tow disabled haul trucks with the Gooseneck in the Lowboy position.

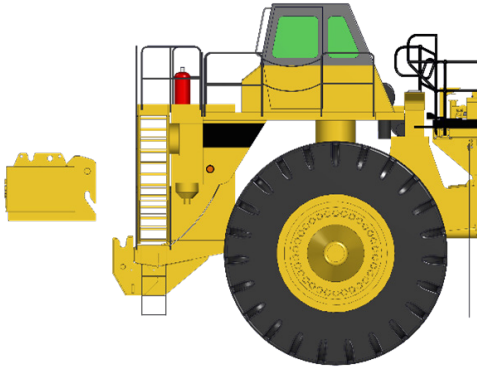
Remove the Counterweight from the prime mover when pulling the Lowboy. The Counterweight provides better weight distribution for traction and steering and is only necessary when towing disabled haul trucks. Removing the Counterweight helps prevent unnecessary wear on the prime mover.

Refer to unit-specific documentation for the correct Counterweight configuration for the truck being towed.



► COUNTERWEIGHT INSTALLATION

1. Lift the Counterweight into place with a forklift or a crane. Make sure the lifting device is rated to handle the weight of the Counterweight.



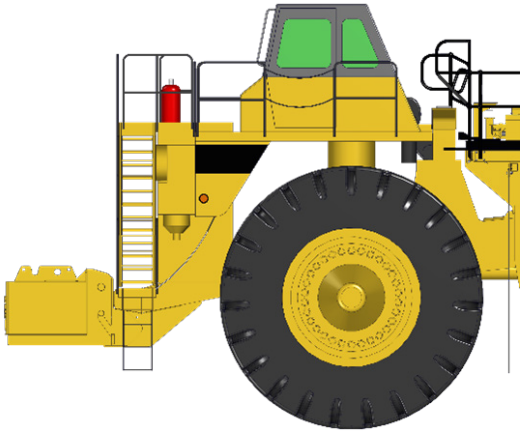
WARNING

Do not tow disabled haul trucks without the required Counterweight installed.

Do not tow disabled haul trucks that have any remaining payload in the body. See Auxiliary Dump section for instructions regarding dumping the payload in a disabled truck.

Do not attempt to tow disabled haul trucks with the Gooseneck in the Lowboy position.

2. Install the Counterweight on the prime mover's Counterweight brackets. Secure the Counterweight with the locking pins (if equipped).

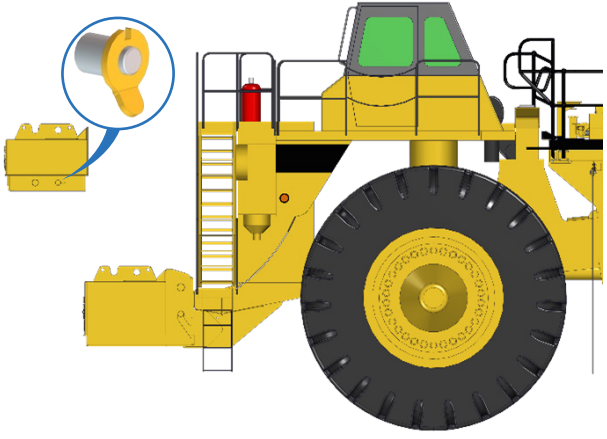


CAUTION

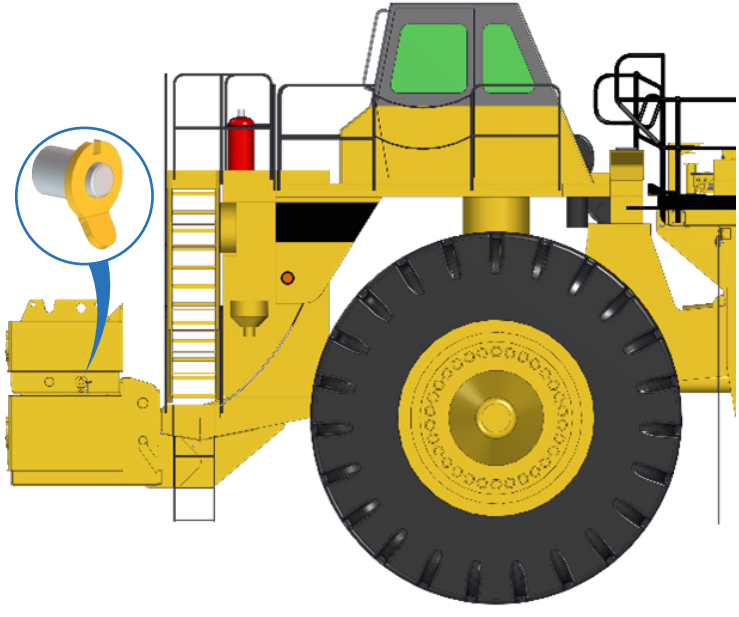
When pulling the Lowboy, remove the Counterweight from the prime mover. The Counterweight provides better weight distribution for traction and steering and is only necessary when towing disabled haul trucks. Removing the Counterweight helps prevent unnecessary wear and tear on the prime mover.

► COUNTERWEIGHT INSTALLATION – STACKED

1. Remove the Counterweight lock pins (qty. 2).



2. Raise the Counterweight into place with a forklift or a crane. Make sure the lifting device is rated to carry the weight of the Counterweight.
3. Position the second Counterweight on top of the base Counterweight.
4. Insert Counterweight lock pins (qty. 2).



5. Repeat steps 1-4 above to install the third Counterweight if applicable.

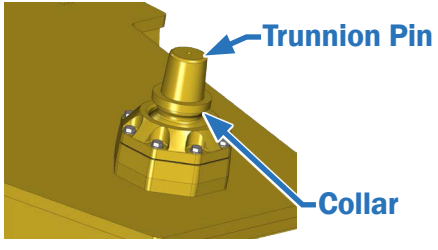
► CONNECTING TO DISABLED HAUL TRUCK

1. Ensure the Gooseneck is in the **Towing** position before attempting to tow a disabled truck.

CAUTION

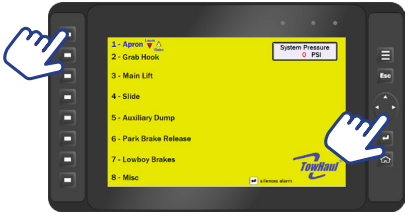
The Bayonet Pins must go back in the correct slots to prevent damage to the TowHaul unit.

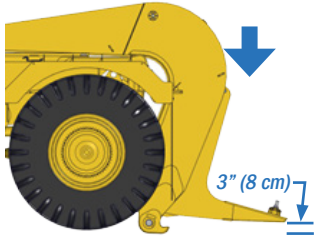
2. Inspect the Trunnion Pin and ensure the bolts are tight and there is no damage to the pin, collar and/or housing. Clean the Trunnion Pin so it is free of dirt and grease. Apply a coating of fresh grease to the Trunnion Pin before connecting to the disabled haul truck.



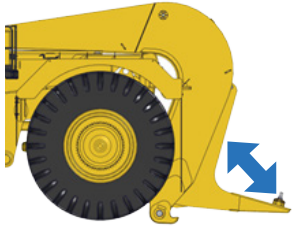
3. Inspect the receiver on the disabled haul truck and ensure it is clean and free of damage that could cause the Trunnion Pin to not seat fully or to get stuck in the receiver.

4. Using the **Apron - Lower** function, lower the Gooseneck until the Gooseneck is approximately 3” (8 cm) off the ground.





5. Using **Main Lift - Towing - Raise/Lower**, position the Toe so the Trunnion Pin has adequate clearance to fit under the disabled haul truck bumper/receiver.



6. Center the prime mover in front of the disabled haul truck. With a qualified spotter guiding the operator, slowly reverse the prime mover until the Trunnion Pin aligns with the receiver.

NOTE

Watch for clearance issues between the Toe and the front of the disabled haul truck.

7. Stop the prime mover once the Trunnion Pin is directly below the receiver in the disabled haul truck.
8. Set the prime mover park brake.
9. Use both **Apron - Raise** and **Main Lift - Towing - Raise** functions to lift the Trunnion Pin into the receiver on the disabled haul truck. Raise the front bumper of the disabled truck approximately 6” (15cm) to ensure a positive connection.

NOTE

The Apron moves the Trunnion Pin vertically. The Toe will raise the Trunnion Pin up or down, but also forward and back. Using a combination of the **Apron** and **Main Lift** functions will give some adjustment forward and back if the Trunnion Pin is not perfectly lined up. Turning the front tires in a static position will move the Trunnion Pin side to side.

10. Connect the park brake release hose from the TowHaul prime mover to the disabled haul truck (if equipped).

NOTE

Use only the correct hose with the correct pressure for the haul truck to be towed.

► *LIFTING DISABLED HAUL TRUCK*

1. Release the park brake on the disabled haul truck before beginning to lift and tow (reference the Park Brake Release Procedure, if equipped).
2. Use the function **Main Lift - Towing - Raise** to lift the disabled haul truck until the top of the Toe is horizontal.

3. Remove any chock blocks from the disabled truck once the front tires are 2” / 5 cm off the ground.
4. Lift the disabled haul truck until the front tires are approximately 12-18” (30-45 cm) off the ground.
5. Utilizing **Apron - Raise**, lift the disabled haul truck until the front tires are approximately 12-18” / 30-45 cm off the ground.

NOTE

If applicable, adjust the **Main Lift** to get the Trunnion Pin centered in the cap/housing.

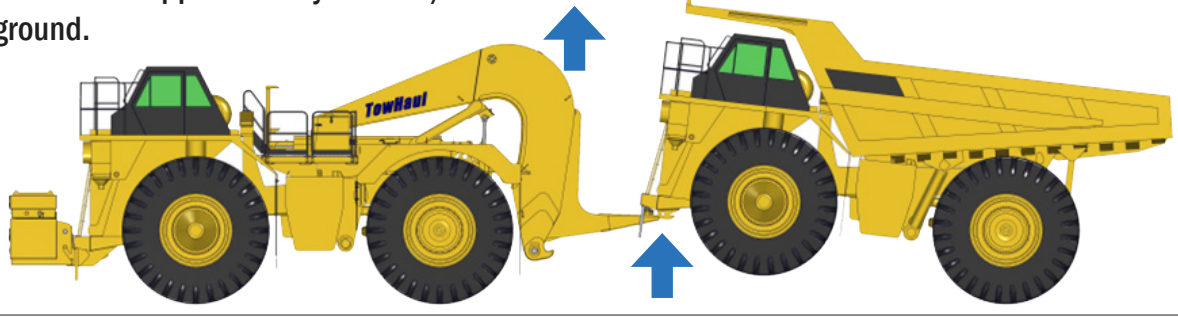
CAUTION

TowHaul does not recommend speeds greater than 5 MPH (8 KPH) when towing a disabled haul truck.

The turning radius of the prime mover is limited when towing a disabled haul truck. It is up to mine personnel to determine the exact limitations prior to towing a disabled haul truck.

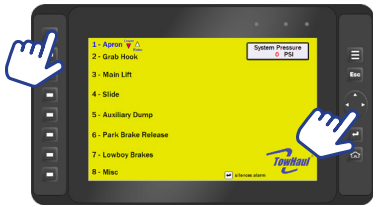
WARNING

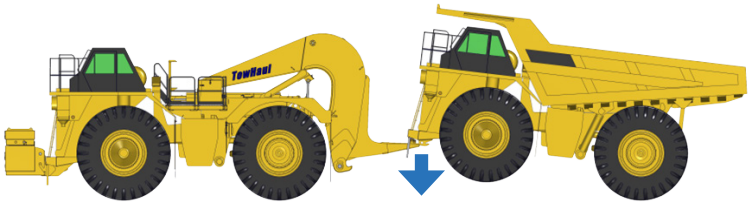
Do not park with disabled haul truck suspended.



► LOWERING DISABLED HAUL TRUCK

1. Stop on a flat, level surface.
2. Apply the park brake on the prime mover only.
3. Use both **Main Lift - Towing - Lower** and **Apron - Lower** functions to lower the disabled haul truck until the front tires just touch the ground, or the cylinders are fully extended.

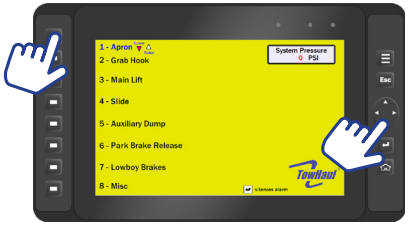


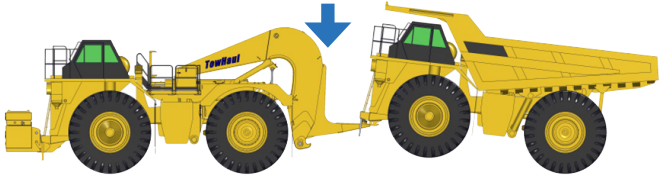


NOTE

Watch for clearance issues between the Toe and the front of the disabled haul truck.

4. Place wheel chocks in front of and behind the rear tires of the disabled haul truck, leaving 4” to 6” (10-15 cm) between the tire and chock to allow the truck to move while it is being lowered.
5. Use the **Apron - Lower** function to lower the disabled haul truck with the until most of the weight of the disabled vehicle is still being supported by the Gooseneck.





6. Apply the park brake on the disabled haul truck (reference Park Brake Release Procedure, if equipped).
7. Disconnect all hydraulic lines between the prime mover and disabled haul truck. Safely park the prime mover.

► DISCONNECTING DISABLED HAUL TRUCK

1. Stop on a flat, level surface.
2. Apply the park brake on the prime mover only.
3. Use the **Apron - Lower** and **Main Lift - Towing - Lower** functions to lower the disabled haul truck until the front tires just touch the ground.

4. Place wheel chocks in front of, and behind the rear tires of the disabled haul truck, leaving approximately 4” to 6” between the tire and chock to allow the truck to move while it is being lowered.
5. Use **Apron - Lower** to lower the disabled haul truck until most of the weight of the truck is not being supported by the Gooseneck.

6. Apply the park brake on the disabled haul truck.
7. Position wheel chocks properly on disabled truck.
8. Disconnect all hydraulic lines between the prime mover and the disabled haul truck.
9. Use the **Apron - Lower** and **Main Lift - Towing - Lower** functions to disengage the Trunnion Pin from the receiver on the disabled haul truck.

NOTE

While lowering the Apron, watch for a gap between the Apron Rollers and the Gooseneck. If a gap is present, the Trunnion Pin may be stuck in the receiver. Raise the Apron until the rollers touch the Gooseneck, then release the prime mover brakes momentarily.

10. Once the Trunnion Pin is fully disengaged and clear of the bumper, drive the prime mover forward until it is clear of the disabled vehicle.

CAUTION

Ensure that all hydraulic lines between the prime mover and disabled haul truck are disconnected prior to pulling the prime mover away from the disabled haul truck or damage may result.

► AUXILIARY DUMP

WARNING

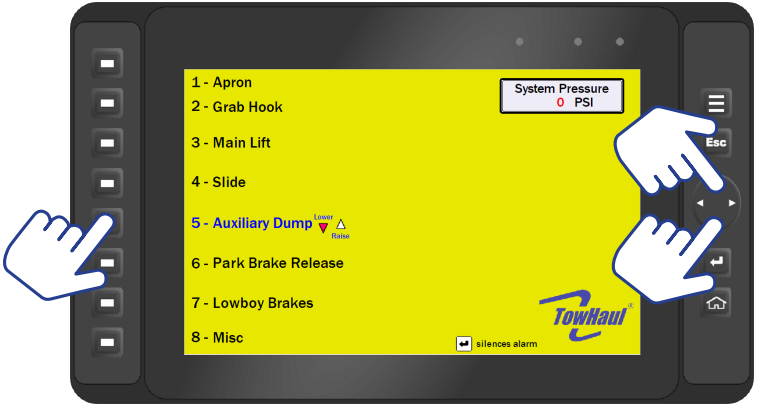
Prior to emptying the dump body of the disabled haul truck, ensure all personnel and vehicles are clear of the dump area.

CAUTION

The following steps must be performed prior to actuating the Auxiliary Dump function:

1. Fully retract the Main Lift Cylinders
2. Fully retract the Apron cylinders
3. Fully retract the Grab Hook cylinder
4. Verify the hoist tank is full

1. Connect the Auxiliary Dump hydraulic lines to the disabled haul truck in the location specified by the disabled truck OEM.
2. Select Function **Auxiliary Dump** on the main screen of the PLUS+1 system.
3. Use the up and down arrows to raise and lower the dump body of the disabled truck.



► RELEASING THE PARK BRAKE ON A DISABLED HAUL TRUCK

WARNING

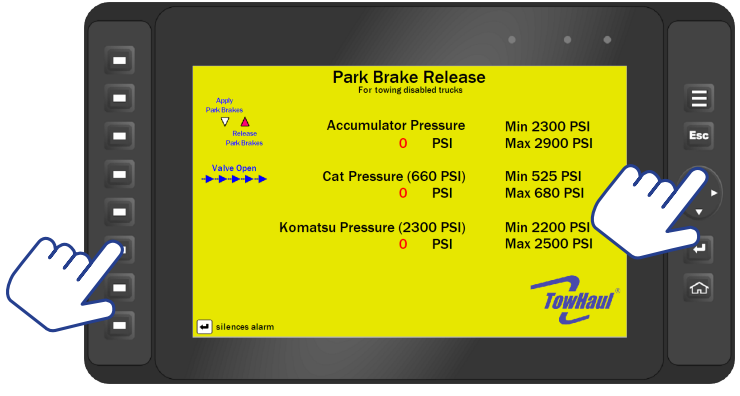
Always visually confirm that the disabled vehicle is properly chocked and positively connected with the Trunnion Pin prior to releasing the brakes.

1. Select the correct Park Brake Release hydraulic hose to provide the required pressure for the disabled haul truck to be towed. Verify OEM requirements before connecting.
2. Select function **Park Brake Release** on the main screen of the PLUS+1 system. Press **Enter** to accept the warning message.

CAUTION

Prior to utilizing the Park Brake Release option, the disabled haul truck OEM specifications for required brake release pressure must be confirmed.

3. Use the up arrow to release the park brake on the disabled haul truck.



CAUTION

Ensure all the pressures are within the set parameters before continuing with any other function.

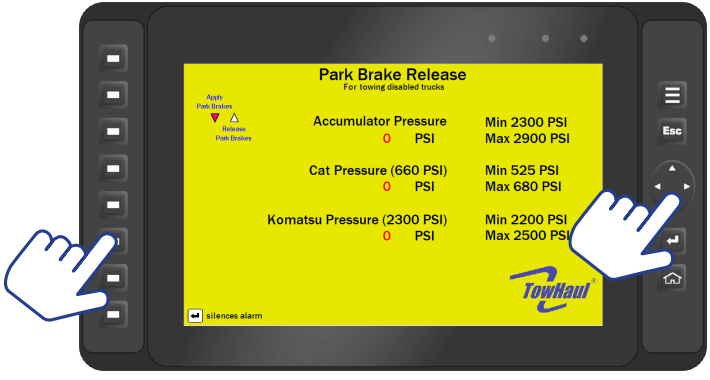
► APPLYING THE PARK BRAKE ON A DISABLED HAUL TRUCK

WARNING

Do not apply the park brake prior to lowering the disabled haul truck.

1. Select function **Park Brake Release - Apply Park Brake**, on the main screen of the PLUS+1 system. Press Enter to accept the warning message.

2. Use the down arrow to apply the park brake on the disabled haul truck.



3. Disconnect the Park Brake Release hose and reel it into the cabinet.

CAUTION

Using the PLUS+1 Screen, ensure all the pressure has been relieved from the system before disconnecting the park brake release hose.

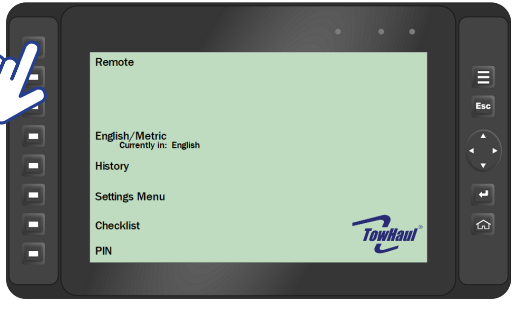
► WIRELESS REMOTE ACTIVATION

NOTE

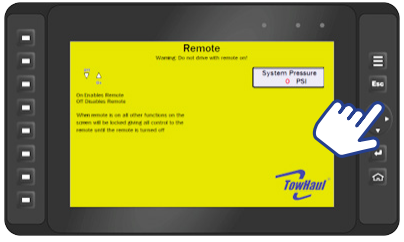
When the PLUS+1 screen is set to remote, only the functions available on the wireless remote are available.

1. Select function **Misc** on the PLUS+1 screen.

2. Use ▼ and ▲ to select function 1 - **Remote**.



3. Press the up arrow to activate the wireless remote.



4. On the wireless remote, turn the power switch **on**, then press and hold the green **Function Enable** button for 3 seconds to link the remote to the PLUS+1 system.

NOTE

The wireless remote will be activated for 1 minute. If you do not perform a wireless remote function in that time, press and hold the green Function Enable button for 3 seconds, then perform the function needed.

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