en

Operator Manual

Haul Truck

T 282 C-532

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Manufacturer	Liebherr Mining Equipment Newport News Co.
Address	4100 Chestnut Avenue Newport News, Virginia 23607 USA

Conformity

Customer

Customer	Merlin
Model	T 282 C
Serial no. from	532

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5. Air Cleaner
6. Front Control Arms
7. Front Brakes
8. Exhaust
9. Fuel Tank
10. Grid Box
11. Control Box
12. Main Blower
13. Fuel and Hydraulic Tank
14. Rear Suspension
15. Rear Brakes
16. Rear Wheel Drive Assembly
17. Hoist Cylinder
18. Central Service Assembly
19. Steering Cylinder
20. Tie Rod
21. Front Suspension
22. Battery Disconnect
23. Hydraulic Stair
24. Payload Weigh System
25. Rear Control Arm
26. Axle Box
27. Hydraulic Skid
28. Traction Alternator
29. Diesel Engine
30. Frame AC Assembly
31. Hydraulic Oil Cooling
32. Gear Oil Cooling

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2.4.2 Rear Haul Truck Lighting

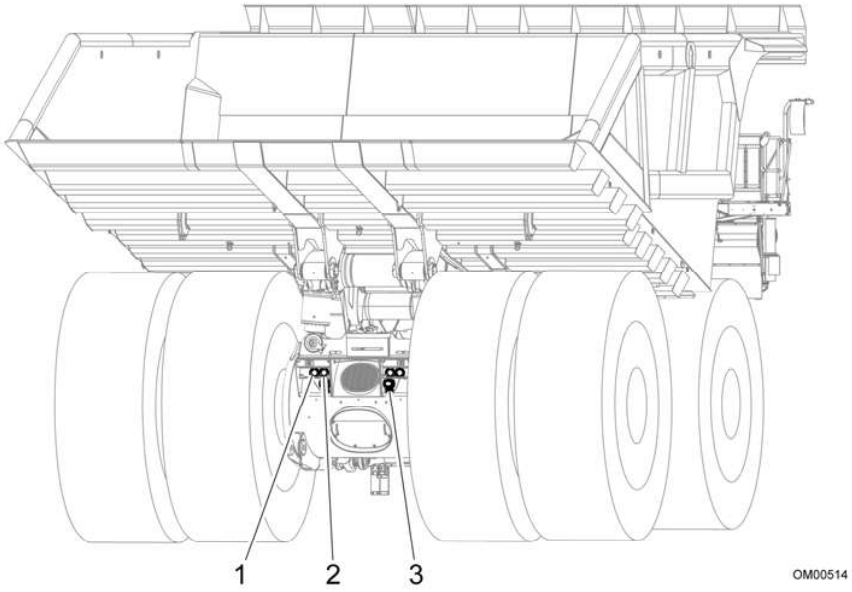
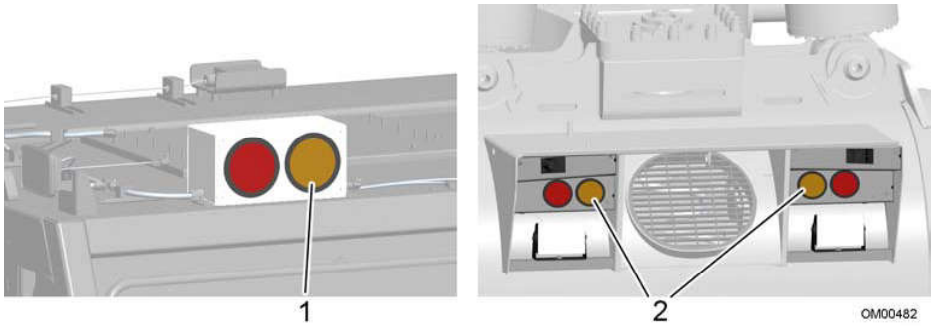


Fig. 2.4-4: Standard Rear Lighting Configuration

Legend:

1. Service Brake, Tail, and Directional Indicator Lights
2. Dynamic Braking Lights
3. Backup Lights

2.4.3 Dynamic Brake Lights



Legend:

1. Dynamic Brake Lights (top of operator cab)
2. Dynamic Brake Lights (axle box)

There are two standard dynamic brake lights located on the axle box and one located on the top of the operator cab. These lights illuminate while dynamic braking is in use.

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3.1.10 Clothing and Jewelry

- Do not wear loose clothing or jewelry while you operate the haul truck. Some moving parts can hold loose clothing or jewelry, and cause injury.
- Keep your pockets empty to prevent small objects from falling into moving parts, and operating equipment.

3.1.11 Crush Hazards

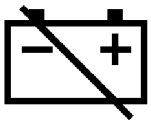
- Some moving parts are crush-hazards that can crush the skin, body parts, and cause injury. Keep away from moving parts.
- Keep body parts, for example, your hands and fingers, clear of operating equipment.

- Do not position any part of the body between heavy parts or energized equipment.
- Know the crush-zone areas and the haul truck crush-hazards.

3.1.12 Burn Prevention

- Hot liquids or fluids can scald and cause injury. Keep from components that contain hot fluids and material.
- Do not touch any part of an engine in operation.
- Do not touch any hot components or areas on the haul truck.
- Get immediate medical attention if you get burned.

3.1.13 Batteries



- Some batteries can contain dangerous acids and gases. If the battery acid or gas get into the eyes, or touches the skin, immediately flush the area with clean water. Get medical attention while you continue to flush the area.
- An expansion at the end of a battery indicates the battery is frozen. Carefully follow the battery manufacturer repair, service, and maintenance instructions.

3.1.14 Chemicals

- Follow the manufacturer instructions for the correct directions of use for specified chemicals.
- Make sure you know the site system for identifying hazardous chemicals. Know and understand the specific health and safety hazards of the chemicals with which you work and follow the recommended safety precautions.

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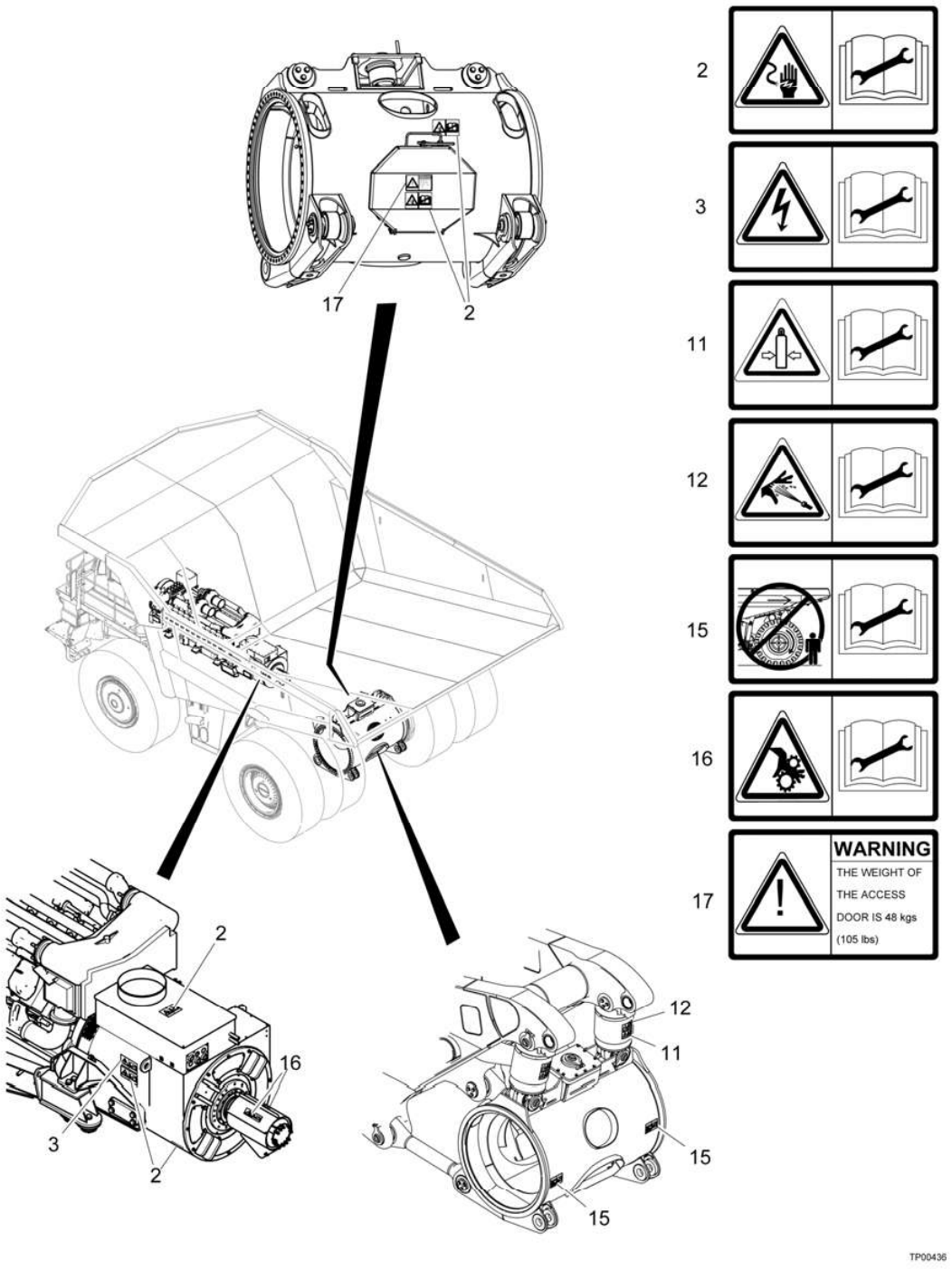

Fig. 3.3-11: Visual Safety Alerts on the Haul Truck (Page 3 of 5)

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- Make sure the loading or dumping areas are without obstruction.
- Stop the haul truck on level ground, if possible.
- Stay in the operator cab during loading or dumping operations.
- The haul truck weight can cause an edge of a slope to break. Keep at least one truck width away from the edge of a slope.
- Monitor the weather conditions. The fluctuation in temperatures can decrease the strength of the loading and dumping areas. Even in acceptable weather conditions, loading or dumping operations can be dangerous.
- Make sure enough light is available for the loading or dumping operation.
- Never load the haul truck more than the specifications allow. Get the load specifications from the correct service person.
- Always follow the applicable site safety procedures for loading and dumping operations.

WARNING
The hand brake is designed to hold the haul truck in position during loading and dumping operations!

► The parking brake components can get damaged if the parking brake is applied during loading and dumping operations.

► Apply only the hand brakes during loading and dumping operations.

3.4.3 Dump Body Safety Precautions

Make sure the dump body is away from power lines, other persons, and equipment while the dump body is hoisted or lowered.

3.4.4 Towing Safety

Do not tow a disabled haul truck unless you have the correct authorization.

WARNING
Incorrect towing procedures can damage the haul truck!

► Only the service personnel with the correct authorization and approval must tow the haul truck.

3.4.5 Rollover Protective Structure (ROPS)

The operator cab has a rollover protective structure ROPS that can help to keep the operator in the protective zone during a rollover condition. Seat belts give additional protection in case of a rollover condition. Always make sure your seat belt is correctly fastened while you are in the operator seat.

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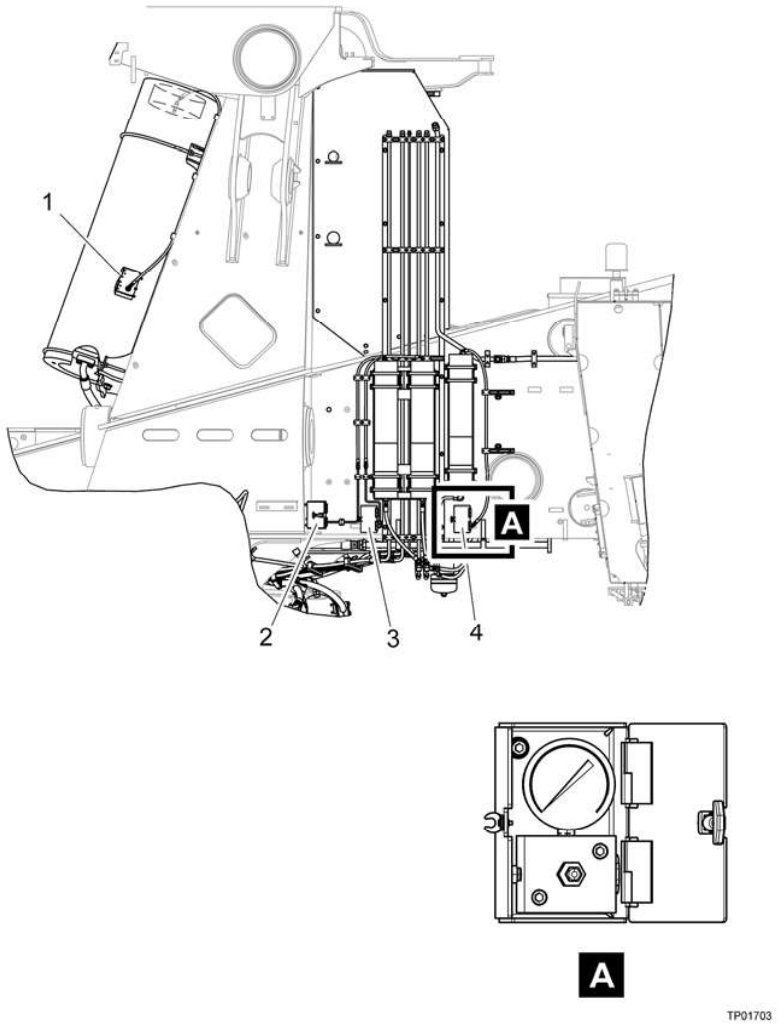

Fig. 3.6-23: Brake, Steering, Rear and Front Brake, and Unloader Accumulators Pressure Gauges

Legend:

1. Steering Accumulator Pressure Gauge
2. Rear Brake Accumulator Pressure Gauge
3. Front Brake Accumulator Pressure Gauge
4. Brake and Steering Unloader Pressure Gauge

Pressure Gauge	Minimum
Steering Accumulator Pressure	117 bar (1700 psi)
Rear Brake Accumulator Pressure	117 bar (1700 psi)
Front Brake Accumulator Pressure	117 bar (1700 psi)
Brake and Steering Unloader Pressure	117 bar (1700 psi)

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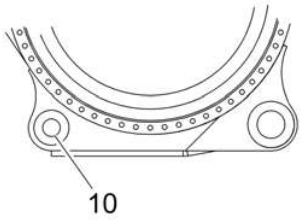
Horizontal Drag Link Pin Axle Box



- Hole (10) rated at 136077 kg (300000 lb) each 10 degree maximum angle deviation from straight line pull.
- Customer to supply rigging. Load must be spread over entire pin surface.

Towing Label Location and Identification

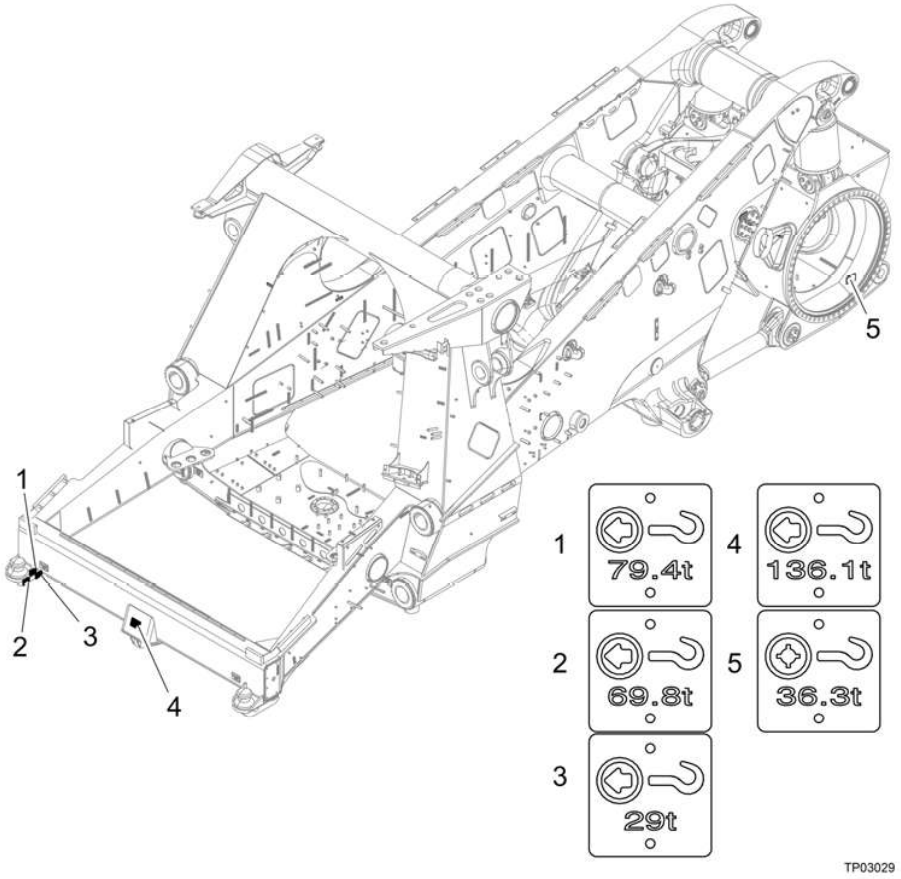


Fig. 3.8-24: Towing Label Locations

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Parking on a Grade

- Come to a full stop by using the dynamic brake pedal.
- Position the front wheels accordingly.
- Position the shift selector lever to the NEUTRAL (N) position while continuing to fully press the dynamic brake pedal.
- Set the parking brake and make sure it holds after releasing the dynamic brake pedal.[Reference: If the parking brake does not hold, page 103]

4.4.5 Hill-start with the use of the Service Brake

When conditions occur where you must stop on a steep grade with a fully loaded haul truck, a hill-start can be done with the use of the service brake. It is recommended to use the hill-start procedure during steep grade conditions where the haul truck does not have sufficient torque to move without rolling slightly. Use this procedure to create enough torque in the wheel motors for an immediate takeoff, and to keep the anti-rollback mechanism from automatically engaging.

Conditions	Procedure
• The truck is fully loaded and stopped on a grade. • The grade is steep enough to apply a hill-start use. • The truck requires immediate torque to prevent any movement in the opposite direction of the shift selector.	1. With the haul truck stopped on a grade apply the service brake pedal to full pressure. 2. Make sure that the shift selector is in the direction of travel, forward or reverse. 3. Release the handbrake and parking brake (if activated) and continue to hold the haul truck in position with the service brake. 4. Press and hold the dump body override button, keep full pressure on the service brake. 5. Press the accelerator pedal fully, hold the override button and keep pressure on service brake pedal. 6. At 1700 rpms or higher, release the service brake. 7. When the truck starts to move, release the override button and continue to press the accelerator pedal at full application.

4.4.6 Anti-Rollback

When the Anti-Rollback Applies

The following chart refers to when an operator starts with the shift selector in position and then attempts to move the haul truck.

Shift Selector Position	Operator Action	Anti-Rollback Action
Forward (F)	Haul truck moves forward	No action
Forward (F)	Haul truck moves in reverse	Anti-Rollback activates

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WARNING
To stop the haul truck during an EMERGENCY condition,

► continuously apply the dynamic braking and service brake pedals together until the haul truck quickly comes to a stop.

DANGER
Damage to the service brakes can occur after one application of the service brake pedal.

► Make sure to have the service brakes inspected by approved personnel after each application of the service brakes.

5.1.2 Dynamic Braking

The dynamic braking pedal is the center pedal of the foot pedal controls. The dynamic braking pedal is used to maintain, slow, and stop the haul truck.

The dynamic braking operates within a dynamic braking envelope, or limit. Exceeding this limit would require the service brakes to be used to stop the haul truck.

When to use the dynamic braking pedal

Dynamic Braking Pedal	Operator Application
Normal operations	• Use the dynamic brake pedal to maintain, slow, and stop the haul truck. • When 0 speed is reached, brake blending is applied to hold the haul truck.

WARNING
To stop the haul truck during an EMERGENCY condition,

► continuously apply the dynamic braking and service brake pedals together until the haul truck quickly comes to a stop.

5.1.3 Brake Blending

The haul truck can be configured with one of two different brake blending modes:

Mode 1*	allows brake blending when the haul truck travel speed has decreased to an almost stationary position, and the dynamic brake pedal is being pressed near full pedal motion. An electrical signal is sent to both the dynamic brake and the service brakes to stop the haul truck.
Mode 2	allows brake blending at any dynamic pedal position >0% and requires 0% pedal position before releasing the blended brake. An electrical signal is sent to both the dynamic brake and the service brakes to stop the haul truck.

* Haul Truck Default Brake Blending Mode

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Propel Inhibit Switch

The propel inhibit switch **5** has an ON and an OFF position. The propel inhibit switch must be in the ON position to enable normal haul truck propulsion.

When the propel inhibit switch is in the OFF position, haul truck propulsion is prevented. During a propel inhibit condition, the propel inhibit indicators on the indicator panel illuminate. [Reference: Indicator Panel, page 134]

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Parking Brake Switch (9)

The parking brake switch is a maintaining switch operated to set the parking brake. This switch also operates as an interlock to prevent haul truck start if the parking brake is not set during the haul truck start procedure.

- Press the bottom half of the switch to set the parking brake.
- Press the top half of the switch to release the parking brake.

Dynamic Braking Speed Control Activation Switch (10)

The dynamic braking speed control system ON/OFF switch is a maintaining switch operated to start or stop the dynamic braking speed control system.

- Press the bottom half of the switch to energize the dynamic braking speed control system.

Dynamic Braking Speed Control Adjustment Switch (11)

The dynamic braking speed control UP/DOWN switch is a momentary switch operated to increase or decrease the dynamic braking speed control system set speed.

- Continuously press the top half of the switch to increase the dynamic braking set speed.
- When the set speed selection is reached, discontinue pressing the dynamic braking speed control UP/DOWN switch.

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7.8.2 Heating and Air Conditioning System Control Panel (2)

Fig. 7.8-66: Heating and Air Conditioning System Controls

The heating and air conditioning system control panel is an electronic controller that permits the operator to adjust the interior cab temperature.
[Reference: Heating and Air Conditioning System, page 184]

7.8.3 12 VDC Power Plug (3)

The power plug is an electrical connector that supplies direct current (DC) power. Power outlets are located below the heating and air conditioning system control and two on the right dash panels.

7.8.4 Air Vent (4)

Manually operate the bottom vent thumb-wheel for vertical air flow adjustment, or the top vent thumb-wheel for horizontal air flow adjustment. All cab air vents are opened, adjusted, and closed through the operation of the thumb-wheel on the specific air vent.

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7.9.3 Shift Statistics Screen (3)

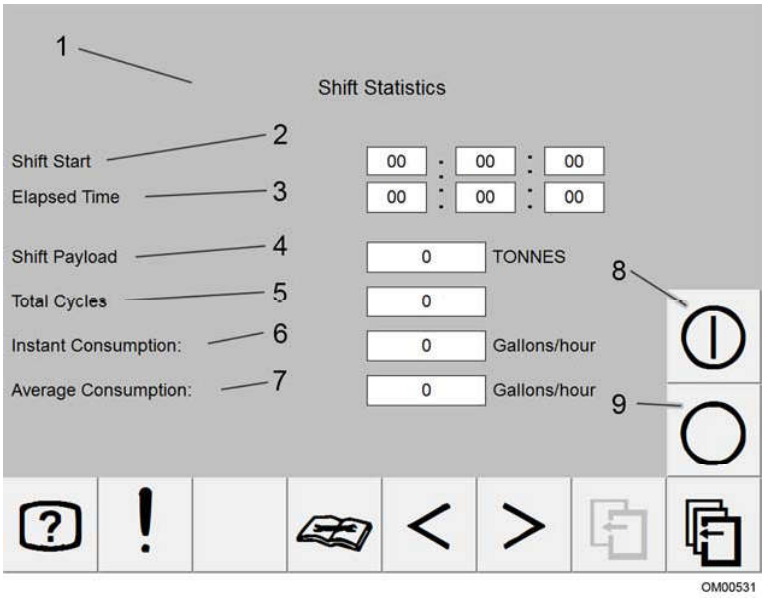

Fig. 7.9-74: Shift Statistics Screen

Legend:

1. Shift Statistics Screen
2. Shift Start
3. Elapsed Time
4. Shift Payload
5. Total Cycles
6. Instant Fuel Consumption
7. Average Fuel Consumption
8. Shift Statistics Screen Start
9. Shift Statistics Screen Stop

The shift statistics screen is a screen that gives the operator a visual reference to their shift information. This information cannot be recorded, or saved for future use.

When the Start **1** icon is touched, the timers begin and the other statistics will start to accumulate data. If the Start icon is pressed again, all information will be cleared and lost. If the STOP icon is pressed, the information will freeze on the screen. The only way to restart the timers is to press the Start icon which will erase the data. If timers and counters must continue, Do not press the START or the STOP icons. Navigate to this screen, view and record the information, then navigate off the screen. The timers and counter will continue to operate even if the screen is not selected. Once the data is erased, there is no way to recover this information.

Shift Start (2)

The shift start shows the operator shift start time.

Elapsed Time (3)

The elapsed time displays the time passed from the start of the shift.

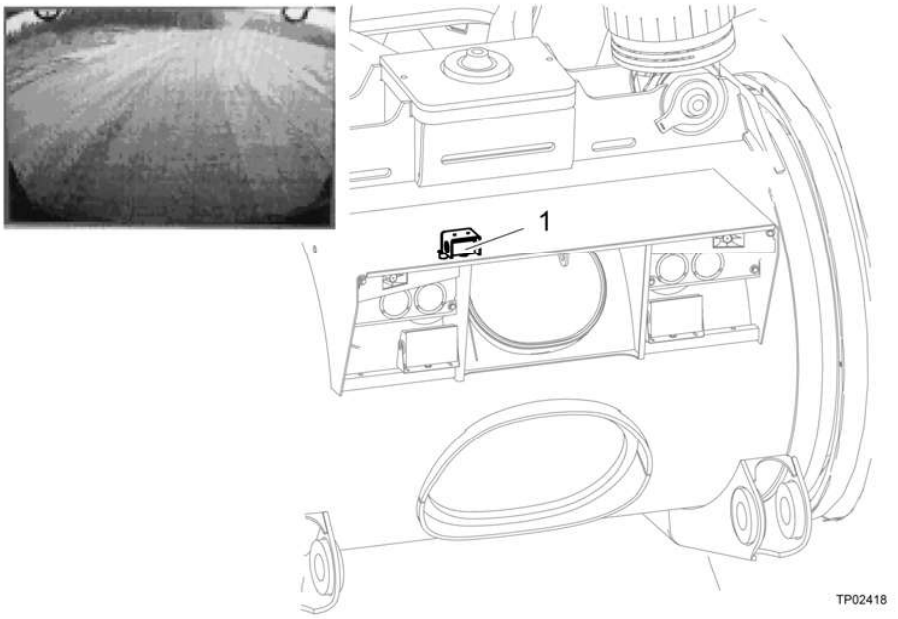

Fig. 7.11-87: Axle Box Mounted Camera

Legend:

1. Axle Box Mounted Rear View Camera

Video streamed from the external cameras are captured on the in-cab 12.7 cm (5 in) liquid crystal display (LCD) monitor mounted below the headliner panel.

One camera is mounted on the rear axle box (1), and the other is installed on the off driver side (ODS) superstructure (2).

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7.13.5 Tilt and Telescopic Lever (5)

The tilt and telescopic lever **5** is operated to extend and retract the steering column for personal comfort

To extend or retract the steering column,

- push the tilt and telescopic lever down to unlock the steering column and pull the steering wheel to extend, or push to retract the column.
- release the lever when you have the correct position, and secure the lever to make sure the steering column is locked into position.

To tilt the steering column,

- push the tilt and telescopic lever down to unlock the steering column, and tilt the column to the correct position.
- release the lever when you have the correct position, secure the lever to make sure the steering column is locked into position.

7.13.6 Horn Button (6)

The horn button **6** is in the center of the steering wheel.

- Push the horn button to operate the horn.

7.13.7 Hazard Flasher Switch (7)

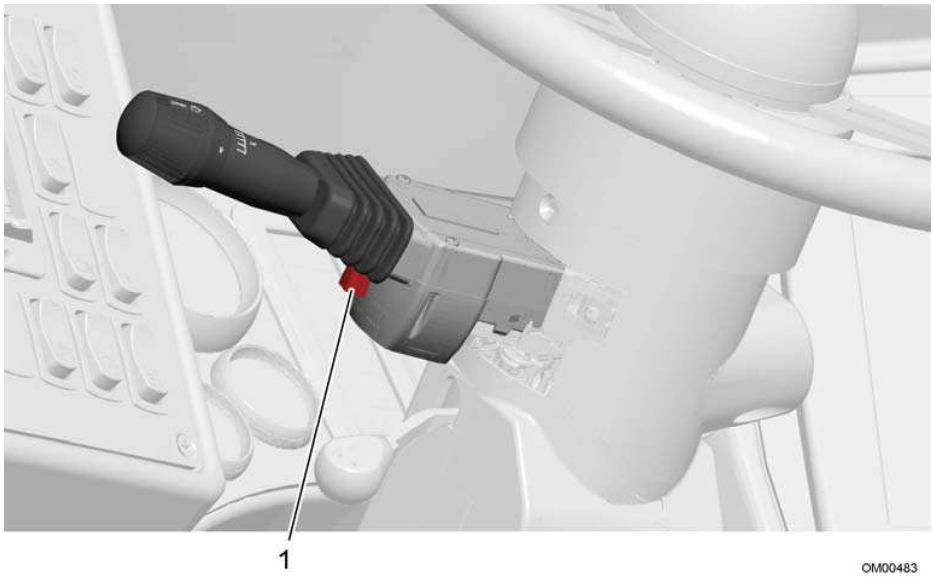

Fig. 7.13-93: Hazard Flasher Switch

Legend:

1. Hazard Flasher Switch

7.15.6 Console Storage Box (6)

The console storage bucket is conveniently in this location for the operator to stow small items as necessary.

7.15.7 Circuit Breaker Panel (7)

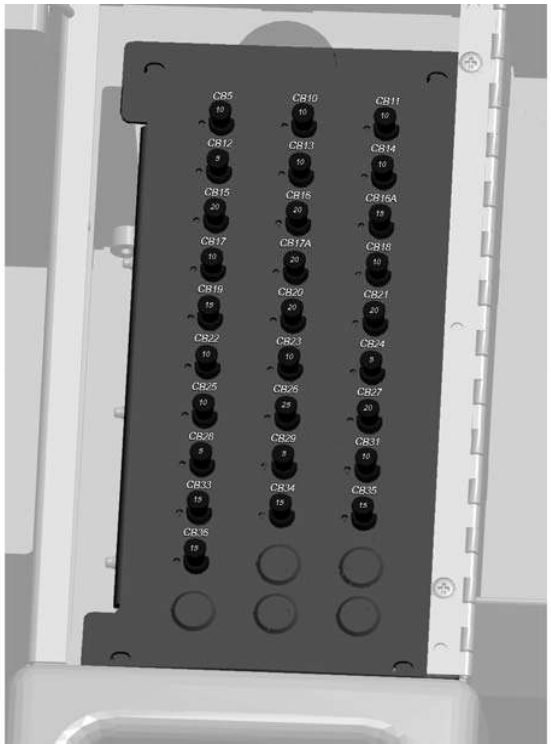

Fig. 7.15-102: Circuit Breaker Panel

The circuit breaker panel has the circuit breakers that operate to protect electrical circuits. If a system does not have power, you can access this panel to make sure that none of the circuit breakers have opened. The are other circuit breakers in the battery disconnect box on the ground level. Contact the correct service person to know the circuits protected by the circuit breakers in this panel and those in the battery disconnect box.

Circuit Breaker	Location/ Amps	Electrical Circuit
CB5	CIC / 10A	Ignition Switch, Main Programmable I/O Module
CB10	CIC / 20A	Ladder Lights, Ladder Service Lights
CB11	CIC / 5A	Clearance Lights
CB12	CIC / 5A	Control Relay Low Beam, Control Relay Truck ID Lights
CB13	CIC / 10A	ODS Low Beam Lights

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8.1.2 Exterior Mirrors (standard)

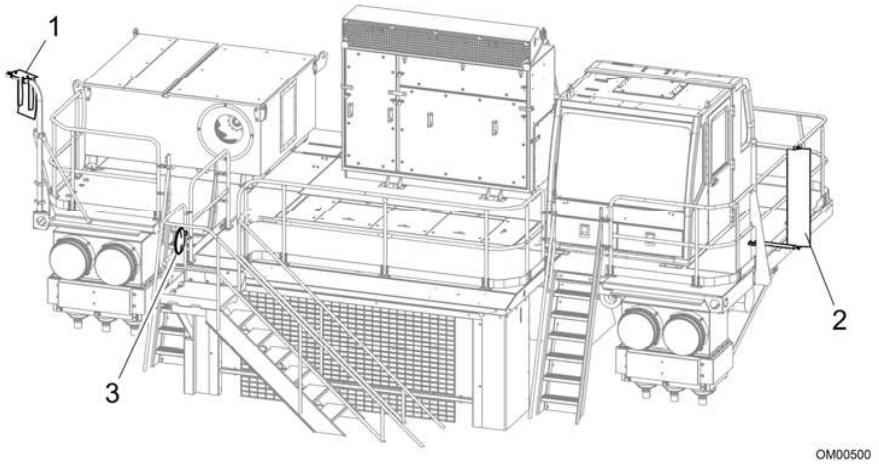

Fig. 8.1-106: Exterior Cab Mirrors

Legend:

1. DS Exterior Mirror
2. ODS Exterior Mirror
3. Platform Mirror

The haul truck has exterior mirrors. One on the driver-side **1**, and one on the off-driver side **2**. They are both mounted on the superstructure of the haul truck.

Before you start operations, make sure the mirrors are free of dirt and that you have good visibility. A mirror **3** is also located on the platform to give visibility to persons on the platform, persons below the diagonal ladder, and on the ground level to be easily seen.

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8.3.10 Height Adjustment Switch (9)

The height adjustment switch is operated to raise or lower the seat. You must position the seat height so you can get a good view out of the windshield, and position your legs to easily reach the foot pedals.

The height adjustment switch (+/-) is operated to activate the seat height adjustment control.

- Press the "+" part of the seat height increase/decrease switch to raise the seat.
- Press the "-" of the seat height increase/decrease switch to lower the seat.

When you have the correct seat height position,

- release the seat height increase/decrease switch to lock the seat height position.

8.3.11 Seat Cushion Shock Absorber Adjustment Lever (10)

The shock absorber adjustment lever is operated to help control the movement of operator seat cushion.

- Lever up position: Soft suspension — minimum damper force
- Lever down: Hard suspension — maximum damper force

8.3.12 Shoulder Angle Adjustment Lever (11)

The shoulder angle adjustment lever is operated to tilt the upper backrest forward and backward.

- Lift the shoulder angle adjustment lever to the highest point to permit the upper backrest to return to the start position.
- Slowly and carefully use your shoulders to push the upper backrest into the correct angle position.

When you have the correct position,

- release the lever to lock the position.

8.3.13 Shoulder Belt Height Adjustment Button (12)

The shoulder belt height adjustment button is operated to change the height of the shoulder belt.

- Press the button in and slide up or down to the desired height, then release to lock the position.

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