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Proviso™ Plus P160A-EM

Operator's Manual

The Proviso[™] Plus P160-EM system controls the operation of multiple lift axles on trailers with air suspension.

The Proviso[™] Plus system automatically lifts and lowers the lift axle(s) based upon several factors, each of which is described within.



Produced by:





Safety Notices

IMPORTANT: WHEEL MONITOR, INC. (WMI) cannot anticipate every possible circumstance that might involve a potential hazard. Therefore, the warnings and cautions in this manual are not all inclusive. Use care and good judgment in the installation, removal, and operation of the equipment. Always take precautions to protect yourself and others. Follow all applicable national, local, and industry-specific safety regulations and standards. Always follow your company's safety procedures when installing, removing, or operating this equipment.

Read this manual carefully before attempting the operation. Be sure that you understand all instructions before you begin.

Important Notice

This manual describes the current recommended operating procedures for Proviso[™] Plus P160A-EM from WHEEL MONITOR, INC. (WMI) at the time of printing and are subject to change without notice or liability.

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Call our technical support department at 905-641-0024 or visit the Documentation section of <u>www.wheelmonitor.ca</u> for additional product and service information.



Axle Lift Conditions

- **Reverse Lift**—The axle will lift after 8 inches of constant reverse movement. The axle will remain lifted until the vehicle is moved forward a pre-set distance of 15 meters or 50 feet.
- Load Control Lift—The axle(s) will lift when the weight of the vehicle is under the pre-set weight. Each lift axle can be set for a different weight. This means the axle(s) will automatically lift and lower as the vehicle weight is changed.
- **4-way Flasher Emergency Lift**—The forward most self-steering axle can be lifted using the 4-way flashers, while travelling under the pre-set speed of 60 kilometers per hour (km/h). The activation sequence is as follows:

3 Blinks ON 3 Blinks ON, Axle Lifts Axle Stays UP until 3 Seconds OFF



Note: The 4-way Flasher Emergency Lift feature can be disabled by the installer.

- Emergency Lift Axle Override—The forward most self-steering axle can be lifted using the 4-way flashers and the Emergency Lift Axle Override switch, while travelling under the pre-set speed of 60 kilometers per hour (km/h). The activation requires both switches to be ON.
- **Fault Detected**—If the Proviso[™] Plus P160A-EM detects a fault, the axle(s) will be lifted to allow the vehicle to safely drive to a repair shop. If the axle(s) is lifted by a fault, the Light Emitting Diode (LED) on the control module will be blinking RED.



Axle Lower Conditions

- Load Control Lower—The axle(s) will lower only when the weight of the vehicle is over the pre-set amount. Each lift axle can be set for a different amount of weight on the vehicle. This means the axle will automatically lower when the vehicle is fully loaded, and none of the lift features are active. See the above section for the list of left features.
- Forward Distance after Reverse—The self-steering axle(s) will lower when the vehicle has travelled forward a pre-set distance, after the axle was lifted due to the Reverse Lift feature. The weight of the vehicle must be over the same pre-set amount(s) to trigger the load control lower.
- Four-way Flasher Deactivation—The forward most self-steering axle will lower when the 4-way Flasher Emergency Lift feature is turned OFF. The feature can be turned OFF by driving over the pre-set speed, usually 60 km/h, turning the 4-way flashers OFF or by turning one of the turn signals ON. The weight of the vehicle must be over the same pre-set amount(s) to trigger the load control lower.
- Emergency Lift Axle Override Deactivation—When the Emergency Lift Axle Override is used to lift the axle, the axle will lower if:
 - The trailer stops
 - The trailer exceeds 60km/h
 - The Emergency Lift Axle Override switch is turned OFF (toggle type)
 - If a momentary switch is used, the switch turning OFF will do nothing
 - The 4-way flashers are turned OFF
 - The Emergency Lift Axle Override has been active for 3 minutes
 - The trailer power is turned OFF

Manual Lift Control

The lift axle can also be manually raised by using the manual override. The override may be equipped on the same valve the P160A-EM is controlling. The two most common manual override types are shown below.



Figure 2: Override Operation

When the manual override is used, the axle is held up. The axle remains lifted until the manual override is turned off.



Optional Features

- **Steer Lock Control**—The lift axle's steering lock is engaged when the axle(s) is lifted due to the Reverse Lift feature. This will lock the axle straight while in the UP position.
- **Max-Load Lamp**—The Max Load light will turn on when the primary suspension is operating at a pre-set max pressure entered during the calibration. It will remain on for five minutes or until the truck is moved forward. This will let the operator know when the system is at or above its maximum weight.

Lift-Axle Weight/Equalization

The Proviso[™] Plus P160A-EM system does not directly control the weight on the lift axle. The weight on the lift axle is controlled by the weight on the primary axles using the primary suspension pressure. In most cases, to get the lift-axle weight to equalize to the weight on the primary axles, within 500 kilograms (kg), a proportioning valve is required. This valve adjusts the lift axle suspension pressure, as needed, to meet the weight requires of Safe, Productive, Infrastructure Friendly (SPIF).

NOTES:

- The lift axle must carry average axle weight of the primary axles, within 500 kg, to be considered equalized.
- If the lift axle is a "Smart Lift Axle," the primary suspension pressure can be used directly without proportioning.
- When the Lift Axle is not equalized, the allowable Gross Vehicle Weight (GVW) is reduced. Refer to the SPIF legislation for more details.

Verify the System's Performance

The Proviso[™] Plus P160A-EM's performance is important to be able to meet the requirements of SPIF. This is why verifying the performance of the P160A-EM system is important to avoid issues with SPIF compliance. To verify the system is working correctly, check that:

- The axle lifts at the correct times—When in reverse, using the 4-way lift, and when the weight on the primary axles is below the pre-set amount.
- **The axle lowers at the correct times**—When the weight of the primary axles is over the pre-set amount or when the reverse lift or 4-way lift is turned off.
- **The lift axle is equalized when lowered**—This requires weighing the lift axle and primary axles and determining if the lift axle is within 500 kg of the correct weight.
- The optional features that are installed are working as described above.



The system's performance should be verified as often as possible but at least once a month.

Troubleshooting

The Proviso[™] Plus P160A-EM is equipped with a diagnostic LED on each module. The LED is located on the bottom-left corner of each module. See the image below.



Figure 3: Provsio P160A-EM showing LED

The P160A-EM LED can be used determine if the module is detecting any problems. The LED colour code is:

FLASHING GREEN—The module has power and is not detecting wheel movement.

SOLID GREEN—The module has power and is detecting wheel movement.

FAST FLASHING RED—The module has an internal fault and needs to be replaced.

FLASHING RED AND YELLOW (ORANGE)—The module has detected a fault external to the module.

In general, if the LED is not GREEN when the system's power is ON, there is an issue. If there is an issue, first try restarting the power to see if the problem returns. If the problem returns, the vehicle needs to be serviced.

IMPORTANT: It is the responsibility of the manufacturer, installer, or owner to ensure the auxiliary axle is load equalized after calibration. Calibration depends on the load used during calibration. When properly calibrated the lift axle should be load equalized to the tandem axles within SPIF regulations.



Contact Us

If you have any questions or comments, feel free to contact us at:

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