PROVISO™ PLUS

Operator's Manual

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Proviso™ Plus P300-EM

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Proviso™ Plus P300-EM Automatic Lift-Axle Control System

Produced by:

WHEEL MONITOR® INC.
TECHNOLOGY FOR SAFE TRANSPORTATION

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.

⚠ CAUTION	**Read this manual carefully before attempting the operation. Be sure that you understand all instructions before you begin.**
⚠ WARNING	**In certain weather and road conditions, even when the front axle weight meets the minimum requirements, it may be difficult to steer the truck. Always drive according to road and weather conditions.**
NOTICE	**There is no manual override to put the axle down while driving. SPIF requires automatic controls only.**
NOTICE	**The maximum load of the lift axle is limited. The axle-load equalization may be out range if the truck is overloaded. DO NOT overload the truck.**
NOTICE	**Proper loading of the truck is required to allow maximum weight to be carried. Wheel Monitor assumes no responsibility of improperly loaded trucks of any configuration.**
NOTICE	**Recalibration is required if the vehicle is involved in a collision or suspension repairs.**
NOTICE	**This manual describes the current recommended operating procedures for Proviso™ Plus P300-EM from WHEEL MONITOR, INC. (WMI) at the time of printing and are subject to change without notice or liability.**

Need Help?

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

General Information

The Proviso™ Plus P300-EM system (also known as the P300) is designed specifically for Ontario Safe, Productive, Infrastructure Friendly (SPIF) regulations on tri-axle straight trucks with one self-steering lift axle. The P300-EM automatically controls the lift axle to comply with SPIF schedule 21 and 23 regulations.

The system automatically lifts the axle in reverse, when the 4-ways are activated, and when the measured weight is low enough to no longer require the lift axle. The P300-EM automatically lowers the axle when all of the lift features are not active, and the measured weight is indicating one or more axles are overweight. When the axle is down, the P300-EM regulates the pressure in the lift-axle suspension.

The lift-axle pressure is regulated to maintain a minimum front axle weight and equalize the lift axle weight to the tandem axle weight, if properly loaded. Whenever the load changes, both emptying and loading, the P300-EM requires roughly 10 seconds to take a new stable reading, while the truck is stopped.

The P300-EM also provides a display in the cab of the truck that shows the measured weight of each axle group, the front axle percentage of gross weight, and a status message.

Details about each feature are explained in detail later in this manual.

Axle-Lift Conditions

- **Empty Lift**—The axle automatically lifts when the truck is empty. The empty load is determined during calibration by weighting the truck.
- **Reverse Lift**—The axle lifts after 8 inches of constant reverse movement. The axle remains lifted until the vehicle is moved forward a pre-set distance of 15 meters or 50 feet.
- **Emergency Lift Axle Override (2024 trucks or newer)**—The lift axle can be lifted for 3 minutes, using the 4-way flashers and the Emergency Lift Axle Override switch, while travelling under 60 kilometers per hour (km/h). The activation requires both switches to be ON. When the 4-way flashers are on, the axle can stay down by turning of the Emergency Lift Axle Override Switch.
- **Four-Way Flasher Emergency Lift (2023 trucks or older)**—The axle can be lifted using the 4-way flashers while travelling under the pre-set speed of 60 kilometers per hour (km/h). When the 4-way flashers are on, the axle can stay down by pressing the 4-way override button on the display.
- **Low Lift-Axle Weight**—The axle will automatically lift if the lift axle minimum weight cannot be maintained with the axle down while maintaining the minimum front percentage.
- **Fault**—If the system detects a fault and cannot control the axle, it lifts the axle for safety reasons. A warning message and fault reason are displayed. The module also turns on a red indicator LED on the module itself.

Axle-Lower Conditions

The lift axle automatically lowers only if all of the lift conditions are not met, and the truck is loaded enough to require the lift axle. The reasons the lift axle may lower include:

- **Load Control Lower**—The axle only lowers when the weight of the vehicle is loaded and located where it can maintain the minimum front axle weight. The truck must be stopped to deploy the axle. The axle automatically lowers when loaded.
- **Forward Distance after Reverse**—The axle lowers when the vehicle has travelled forward after the axle was lifted due to reversing. The vehicle must be loaded.
- **Emergency Lift Axle Override Deactivation (2024 trucks or newer)**—When the lift axle is lifted by the Emergency Lift Axle Override, the axle will lower if:
    - The truck stops
    - The truck exceeds 60km/h
    - The Emergency Lift Axle Override switch is turned OFF
    - The 4-way flashers are turned OFF
    - The Emergency Lift Axle Override has been active for 3 minutes
- **Four-way Flasher Deactivation (2023 trucks and older)**—The axle lowers when the 4-way flashers are turned OFF. Turning the turn signal ON overrides the 4-way flasher. The axle also drops if the vehicle goes over the pre-set speed usually 60 KM/H. The vehicle must be loaded.

NOTE: All of the above descriptions assume that none of the other lift reasons are active.

Manual Override Lift

The manual override is available for the operator to hold the axle up if needed. The override has two positions: Override ON or Normal Operation. The override allows a truck to operate with the axle up.

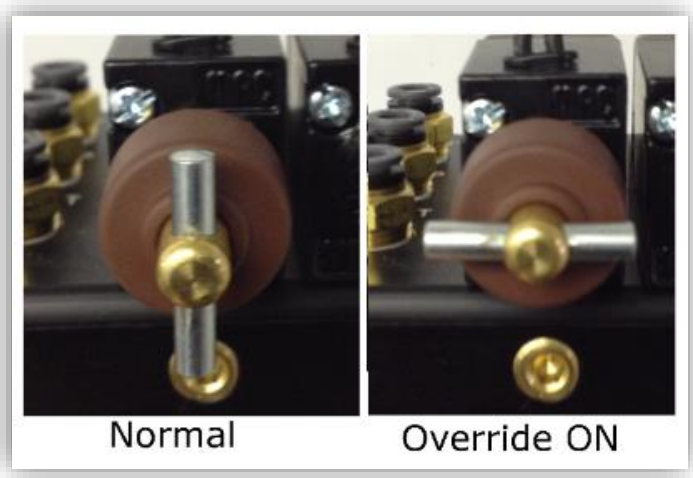

Figure 1 – Override ON

Lift-Axle Weight Control

The P300-EM system, when correctly calibrated, regulates the lift-axle pressure to adjust the weight that the lift axle is carrying. The system alters the weight for two reasons:

Front Axle Percent (%) of GVW—The minimum weight the front axle must carry is legislated as a percentage of the Gross Vehicle Weight (GVW).

1. The front axle must be above this minimum percentage to be considered SPIF compliant. This minimum percentage is also an important factor in the steering ability of the truck.
    - SPIF Schedule 21 requires 19% of the GVW.
    - SPIF Schedule 23 requires 23% of the GVW.
2. Equalization with the Tandem Axles to carry the maximum allowable weight, under the SPIF regulations, the lift axle weight must be “equalized” to the tandem axles weight, +/- 500 kg. Equalized refers to carrying a percentage of the tandem weight.
    - SPIF Schedule 21 requires 33% of the tandem axles weight.
    - SPIF Schedule 23 requires 50% of the tandem axles weight.

In many cases, both the front percentage and equalization cannot be maintained at the same time. When this happens, the P300-EM maintains the front percentage first, as steering ability is more important than maximizing GVW.

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.

The Display

Figure 2 – P300-EM Display (2023 and older version)

The P300-EM system includes a touch screen mounted in the cab of the truck. The information on the display can be broken into the following categories:

- **Weight Display**—The weights that the P300-EM is currently measuring will be displayed on the screen. It will regularly update and turn red if the weight is over the legal maximum.
- **Front Percentage Display**—The front percentage is critical for the truck to maintain SPIF compliance. The percentage will turn red if it is below the legal minimum.
- **Legal Limits**—The legal weight limits for each axle are displayed on the screen. The limits are based on the current condition of the truck. The limits may change due to the axle being up or down and the axle being equalized or not.
- **System Status**—The system displays a status message showing the current direction and why the axle is up or down. It will display any warnings or issues the P300-EM has detected.

The display also provides two buttons on the main screen:

- **Four-way Lift Disable (2023 trucks and older)**—This button defaults to the 4-way lift enabled. By touching the button, the lift axle lowers when the 4-ways are ON or remains down. The button resets to enabled after the 4-ways are turned off.
- **Options**—This button changes the display to the options screen. The options screen includes buttons for restarting the system, remove any product in the trailer (TARE) the weight, clean the lift tires, and screen brightness adjustment.

The Display Options

The P300-EM's display Option screen

- **Restart the System**—This button makes the system reset to the same behaviour as if the truck had just been turned ON.
- **Clean the Lift Tires**—This button lowers the axle for a short time to allow the tires to touch the ground and scrub off debris they may have built up while off-road.
- **Screen Brightness**—The + and - buttons allow the screen brightness to be adjusted to the driver's preference.
- **TARE the System**—This button begins a process of offsetting the weight of the system to match the current sensor readings. The process is described the next section.

Resetting the TARE Weight

To RESET the TARE Weight Readings

1. Press the **Options** button on the right side of the display.
2. Press the **Begin** button next to the **Reset Empty Readings** label.
3. Make sure the truck is ready to be reset. This includes:
   - The truck is empty.
   - The truck is on level ground.
   - The dump box or deck is down or the crane is in the correct position.
   - The lift axle must be UP. It can be lifted by using the 4-ways or the manual override.
   - The truck must be STOPPED.
   - No auxiliary equipment such as a pup is attached. The empty weight is based on the truck alone.
4. Press the **Reset** button on the display.
5. Wait for a RESULT to be displayed.
6. If the RESULT displays Succeeded, the reset has finished. Press the **Cancel** button, followed by the **Back** button to return to the weight screen.
7. If the RESULT displays **Failed**, the reason is displayed. See the table below.

RESULT Message	Action Needed
“Failed, Wait 60 seconds (s) after power up”	Wait 60 s and try again
“Failed, stop truck, try again.”	Stop the truck and try again
“Failed, Front too light.”	Unload the truck if it is loaded, try again
“Failed, Front sensor error.”	Repair the front sensor
“Failed, Front sensor out of range.”	Repair the front sensor
“Failed, Tandem sensor error.”	Repair the tandem sensor
“Failed, Tandem sensor out of range.”	Repair the tandem sensor
“Failed, Encoder error.”	Repair the tandem sensor
“Failed, Tandem air sensor error.”	Repair the tandem sensor
“Failed, Tan. should be 10 to 50 PSI.”	Make sure the tandem bags have pressure, try again
“Failed”	Older systems only display “Failed”

Troubleshooting

If the system has detected a problem, it will display an error code in the status message on the display. This error code can be used to pinpoint the issue over the phone.

If the system is not behaving correctly, try the following:

1. Restart the truck or restart the system through the **Options** menu. This resets the P300-EM and allow it to start fresh.
2. If the same issue returns, call the installer or Wheel Monitor to determine the fastest way to resolve it.
3. Stop the truck on level ground for 15–30 seconds to let the system take new readings. The axle only lifts and lowers, based on weight, while the truck is stopped.
4. Reset the TARE weight readings. Follow the procedure on the earlier section of this manual.
5. If the issues persist, contact the installer or Wheel Monitor to determine the best course of action.

Contact Us

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

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