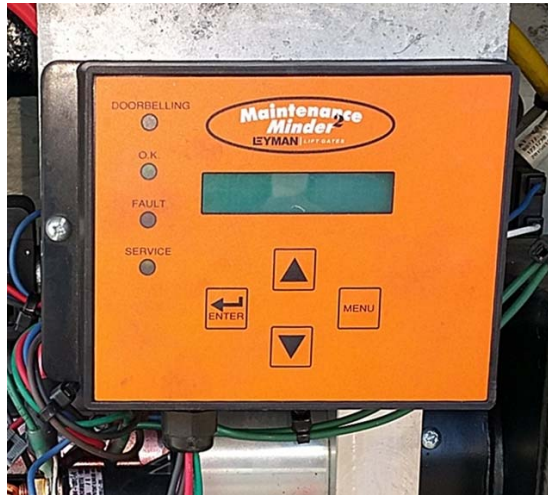


Maintenance Minder²

What is it and how it works



The Maintenance Minder² is a Monitoring System that protects critical components of the power unit while letting you know some of the problems that have occurred when they arise. It also collects data between maintenance periods and various data from the life of the gate. Display current data of batteries. Used correctly it can be a useful tool for both the mechanic, driver, and fleet manager. The Maintenance Minder² has audible beeps with visual display on four critical functions.

1. **Service Fault** When you reach 3000 lifts maintenance is required this does not stop the operation of the gate just beeps every lift past 3000
2. **Low Voltage Fault** When the batteries reach 10 Volts or less operation stops until batteries are charged back above 10 Volts
3. **High Temp Fault** When the motor internally reaches a temperature of 232 degrees or higher the gate will shut down until the motor cools below 232 degrees. The MM2 self-resets and allows the gate to operate again
4. **Max Run Time Fault** If the gate runs longer than 3 minutes continuously the gate shuts down. NOTE: if the starter solenoid has stuck then it doesn't shut down. The MM2 only cuts the power to the small hot wire that engages the solenoid.

How the Maintenance Minder² Helps the Mechanic, Driver, and Fleet Manager.

- **Mechanic:**

Service Fault: Lets the mechanic know it's time to PM the Gate

Low Voltage Fault: Helps the mechanic know to look at the charging system, battery condition, circuit breaker, ect.

High Temp Faults: Brushes in the motor may be worn causing high amp draw, batteries low causing higher amp draw, ect.

Max Run Time: Short in wiring causing the motor to continuously to run

- **Driver:**

Whenever one of these four faults occur not only do you get a beep code but the screen comes on for 5 minutes letting you know what the problem is. The driver can relay this back to the mechanic and he can suggest certain options before a road call is made.

- **Fleet Manager:**

He can look at the lifetime history of a gate and see how many times the gate is being used, if any one gate has been more troublesome, how many times PM's were performed, ECT.

If used correctly and can be a great tool in many areas of your fleet.

Let's you see, PM's, Usage, problem area's (batteries, charging, ECT), and an array of useful data.

MENU 1
LIFTGATE INFO

General information about the lift gate

MODEL NUMBER
LHLP5500

Model Number of the lift gate

SERIAL NUMBER
234977-M1

Serial Number of the lift gate (must have for warranty & ordering parts)

VEHICLE NUMBER
10993647

Vehicle Unit Number (almost always not used)

MANUFACTURE DATE
01/10/2004

Date gate was manufactured (entered day it ships)

FIRMWARE
v212

Firmware Version (Used mainly by Leyman reflects changes)

SOFTWARE
10011

Software Version (Used mainly by Leyman reflects changes)

LIFT TYPE
PU/GD

Liftgate Type (Whether it's Power Up & Down or Gravity Down)

MENU 2
PERIOD INFO

Information Gathered between Maintenance Schedules (This Screen is resettable)

LIFTS
589 / 3000

Number on left is how many lifts have been made to 3000. Number on right is how many lifts can be made until PM is due.

MOTOR ON (MIN)
89

How many minutes the minutes the motor has run during this maintenance period

SERVICE FAULTS
6

How many lifts past 3000 when maintenance was supposed to be performed during this maintenance period

LOW VOLTS FAULTS
4

How many low voltage faults occurred during this maintenance period

MAX TIME FAULTS
0

How many times the gate ran over 3 minutes continuously during this maintenance period

HIGH TEMP FAULTS
1

How many high temperature faults occurred during this maintenance period

HIGH PRES FAULTS
0

How many high pressure faults occurred during this maintenance period
(Not Used)

RESET ALL INFO
HOLD RESET

Used to reset only Menu 2 back to zero when maintenance is performed this maintenance period. Follow instructions in the pamphlet.

MENU 3
LIFE TIME INFO

Life time history on the usage of the lift gate

LIFTS
4641

How many lifts the gate has made during the lifetime of the gate

MOTOR ON (MIN)
871

How many minutes the motor has run during the lifetime of the gate

SERVICE FAULTS
42

Number of lifts made past the 3000 when PM is supposed to be done during the lifetime of the gate

LOW VOLTS FAULTS
12

How many low voltage faults were made during the lifetime of the gate

MAX TIME FAULTS
1

How many times the gate has run more than 3 minutes continuously during the lifetime of the gate

HIGH TEMP FAULTS
11

How many high temperature lifts were made during the lifetime of the gate

HIGH PRES FAULTS
0

How many High Pressure faults has the gate made during its lifetime (Not Used)

RESET HISTORY
PRESS ENTER

Press Enter Button shows how many times Menu 2 was reset. Show number of each time reset, Minutes on Motor, and Number of Lifts

MENU 4
LAST LIFT INFO

Displays various information on what went on during the last lift

SUPPLY VOLTAGE - V
12.6 / 13.4

This displays what the voltage of the batteries were before the lift started (Right Hand Number) and what the lowest voltage the batteries dropped to while the lift was being made. This screen can also be used to see what the state of charge the batteries are at.

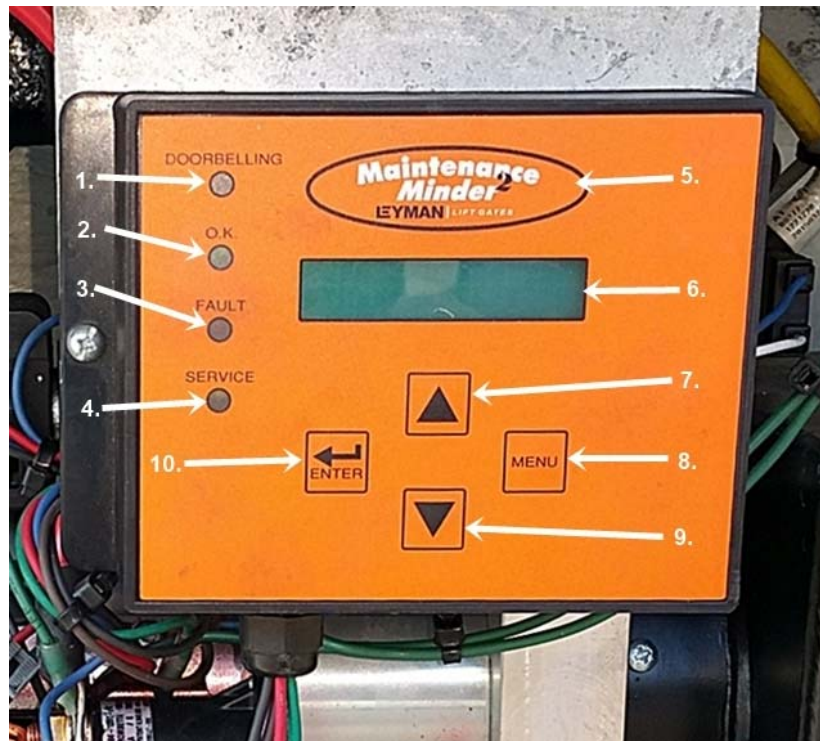
MOTOR ON TIME-S
9

This show how long the gate ran in seconds during the last lift.

WINDOW TIME-MS
50

This screen will actually tell you in Milliseconds (1000 Milliseconds equals one second) the gate stayed between 6 and 8 volts. Allows this low of a voltage drop for 3 seconds, if the voltage goes below 6 volts the gate motor instantly shuts down. There is a 3 second time delay below 10 Volts to allow the motor to start spinning. Once the motor gets up to speed (milliseconds) if the batteries are charged they will jump back above 10 volts allowing the gate to keep running with no interruption of the operation. If the batteries DO NOT come back above 10 volts in that 3 second delay then the MM2 shuts the motor down and shows a low voltage fault. You should never see readings on this screen if Batteries are charged, connections are clean and tight, and you have a good clean tight ground. If all your grounds and connections are good and tight, your batteries are fully charged and you see high reading on this screen 1500 or higher than the brushes in the motor are at the end of their life and need to be changed, motor rebuild, or new motor installed.

Maintenance Minder² Identifications



- 1. Doorbelling:** This is when you repeatedly engage and dis-engage the starter solenoid which the Maintenance Minder² will not allow. It shuts the voltage off to the Starter Solenoid until the rapid engagement is stopped. Once stopped for 1 second it will allow the motor to run.
- 2. O.K.:** Light will constantly flash green when all is in working order.
- 3. Fault:** When a fault occurs this red light will flash until whatever fault occurred is fixed.
- 4. Service:** This light flashes when xxxx lifts have been reached service has been performed and Menu 2 has been reset
- 5. MM2 Logo:** This is the Hidden reset button for resetting Menu 2. At Screen 8 (RESET ALL INFO HOLD RESET) you will hold the reset button behind the Logo continuously read the screen and push the appropriate button you are told to push without letting go of the reset button until the screen has told you that it has been reset.
- 6. L.E.D. Screen:** This is a backlighted display screen for all the menu and coded faults
- 7. Up Arrow:** This key is used to scroll up between menus and screens inside menus
- 8. Menu:** This is used to away and turn on the screen to get to the Menu you want to open
- 9. Down Arrow:** This key is used to scroll down between menus and screens inside menus
- 10. Enter Key:** Once you have scrolled to the Menu you want use this key to get to the screens inside that menu