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EyeMax®
TECHNICAL MANUAL

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F1277 REV C
**HOW IT WORKS**

When the filter is new, the fuel level in the filter will be very low. The EyeMax indicator light will self check at start up, then remain unlit during operation.

Fuel level remains low. Immediately after start up, EyeMax will allow the fuel in the cover to stabilize for six minutes before sending information.

The EyeMax indicator light will illuminate when the fuel rises to one half inch (approximate) from the top of the filter cartridge - before engine performance is affected. The filter should be changed as soon as practical.

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**VEHICLE INSTRUMENT PANEL**

**DAVCO FUEL PROCESSOR**

Diagram showing wiring from EyeMax sensor to EyeMax indicator light. The diagram includes labels for (+) KEY ON and (-) GROUND.
Introduction

EyeMax is a DAVCO patented liquid level sensor that uses infrared (IR) technology to detect the presence of a liquid. EyeMax is able to detect the presence of fuel in the clear cover of a DAVCO fuel processor. Once the fuel level reaches the EyeMax sensor level, the EyeMax indicator light will illuminate, indicating the fuel filter should be changed.

Normal Operation Mode

EyeMax is powered when the vehicle ignition is on. When the ignition is first switched on, the EyeMax indicator light will flash twice to verify the indicator light is operating correctly. When the fuel level inside the filter assembly is below the black band on the filter, the indicator light will remain off. There is approximately a six minute delay from the time the fuel level rises at or above the EyeMax sensor to the time the EyeMax indicator light illuminates. This delay is designed to prevent false indications which could occur due to extreme operating conditions.

Should the fuel level drop back below the EyeMax sensor while the vehicle ignition is on, the indicator light will turn off after approximately six minutes.

The ignition needs to be in the off position during filter change out. Changing the filter while EyeMax is powered may cause unexpected sensor readings which will interfere with proper EyeMax operation. If this occurs, use the Eyemax reset function to turn off the indicator light (see “EyeMax Reset” section).

When the filter change is complete, be sure to close the hood of the vehicle or equipment before turning on the ignition to avoid exposure to excessive ambient light.

EyeMax has built-in precautions to prevent false readings, but the following steps should be taken by the user to further reduce such potential:

- Do not expose EyeMax to direct or indirect sunlight while the ignition is on. The infrared (IR) spectrum of the sun will overpower the EyeMax IR signal, resulting in a false reading.
- Use only the filters designed for EyeMax operation that include the large black band at the top of the filter wrap. The black band reduces IR interference and is essential for reliable operation of the EyeMax. (See Figure 1.)

Environmental Conditions

EyeMax is designed to sample the fuel level only under certain environmental conditions. Conditions that are outside of EyeMax limits will cause EyeMax to stop sampling while these conditions are present. The following conditions will stop sampling:

- Ambient temperature below 40°F or above 150°F.
- Excessive ambient light from sunlight or other artificial light sources.

In addition to the temperature restriction, if the ambient temperature falls below 20°F, there will be an automatic twenty (20) minute delay before any sampling will occur. This will allow time for any frost or condensation that has formed on the clear filter cover to dissipate.

During the time sampling of the fuel level is suspended, the indicator light will not react to changes in the fuel level status until the ambient conditions are within the EyeMax operating criteria.
IMPORTANT SAFETY PRECAUTIONS

WARNING: When diesel fuel is circulated through an operating engine, it can become very hot. To prevent personal injury:

⚠ Scalding hazard! Do not allow fuel to come in contact with eyes or unprotected skin. Allow the engine and fuel to cool to ambient temperature before replacing the fuel filter or performing service operations which could result in spillage of fuel from the fuel system. If this is not possible, protective equipment (face shield, insulated hat, gloves, and apron) must be worn.

⚠ Fire Prevention! Heated diesel fuel can form combustible vapor mixtures in the area around the fuel source. To eliminate the potential for fire, keep open flames, sparks or other potential ignition sources away from the work area. Do not smoke during filter replacement or service operations.

⚠ Inhalation Prevention! Always perform engine or vehicle fuel system maintenance in a well ventilated area that is kept free of bystanders.

⚠ The ignition key must be in the off position.
Installing the EyeMax cover
1. Remove the vent cap and open the drain valve on the bottom of the fuel processor to drain the fuel below the collar level.
2. Remove the collar (using a DAVCO wrench) then remove the clear cover.
3. Remove the filter, grommet, cover and vent cap seals. Dispose of them properly.
4. Using a clean shop rag, clean the threads on the fuel processor body.
5. Install a new EyeMax compatible fuel filter and grommet. Install the new seals on the cover and vent cap.
6. Install the EyeMax-equipped clear cover.
7. Tightening the collar with the wrench: by simultaneously apply downward pressure to the top of the clear cover until it is seated on the body of the Fuel Pro and hand tighten the collar until it no longer spins freely. Torque the cover assembly by rotating the collar clockwise two additional ribs using the collar wrench (~18 ft-lbs).
8. Prime the unit by filling the clear cover through the vent cap opening with clean diesel fuel until it reaches the top of the filter.
9. Install and tighten the vent cap.
10. Start the engine and run for one minute. Slowly open the vent cap and allow the fuel to drop to about one inch above the collar.
11. Tighten the vent cap. It is normal for the fuel level to vary after the initial start-up and during engine operation. Filter performance is not affected.

Installing the EyeMax LED Indicator LIGHT
1. Find a location on the instrument panel or an area where a ½" hole can be drilled to mount the EyeMax LED indicator light. This location should be visible from driver seat and allow for wiring access for electrical connection.
2. Drill a ½" hole in the instrument panel.
3. Insert the EyeMax LED indicator light into hole.
4. Install EyeMax indicator label.

Connecting the EyeMax Sensor to the Indicator Light
1. Attach the 15 foot long harness to the connector on the EyeMax cover.
2. Route the harness towards the firewall and secure appropriately.
3. Locate a knock out or an acceptable location to drill an access hole into the cab.
4. Use the supplied grommet and route the harness into the cab.
5. Route the harness to the EyeMax indicator light and secure.
6. Connect the white signal wire (indicator light to the EyeMax sensor).
7. Connect the red power wires (indicator light/EyeMax sensor and 6 foot power lead).
8. Connect the black ground wires (indicator light/EyeMax sensor and 6 foot ground lead).
9. The preferred method of connecting the wires is to “pigtail” the wires together and use the close end butt connectors accordingly. Cable tie the bundle together once all connections are complete.
10. Route the red power lead to a "key on", switched power source and secure as needed.
11. Connect the 6 foot power lead to the switched source using the supplied fuse link and butt connector.
12. ATO and ATC Add-a-Fuse adapters can be used for ease of installation.
13. Find a suitable ground and attach the 6 foot black ground lead using the supplied grounding eyelet.
14. Install the three amp fuse.

Using the EyeMax Indicator LIGHT
1. Turn the key to the “Accessory” position.
2. The amber indicator light should flash for one second (this is a bulb test).
3. The EyeMax system is now functioning.
4. As the fuel filter becomes contaminated, the fuel level will rise, the indicator light will illuminate when the fuel rises to the level of the EyeMax sensor.
DIAGNOSTICS

Test Mode
In the event the user wants to verify the fuel level without the six minute delay, EyeMax may be put into Test Mode. Test Mode increases the sample rate and reduces the six-minute indicator light delay to approximately ten (10) seconds. The Test Mode also overrides temperature and ambient light restrictions (see “Environmental Conditions” section). To initiate the EyeMax Test Mode perform the following steps:

1. Before entering test mode the fuel level must be below the bottom edge of the Eyemax sensor (open the vent cap and drain the fuel level down as needed).
2. Turn the ignition on for 2 to 5 seconds. Then turn the ignition off for 2 to 5 seconds.
3. Once again, turn the ignition on for 2 to 5 seconds. Then turn the ignition off for 2 to 5 seconds.
4. Turn the ignition on a third time, this time leave it ON. EyeMax is now in Test Mode.
5. Remove the vent cap and pour clean diesel fuel into the cover until it reaches the top of the filter. Note: The indicator should illuminate after 6 seconds.

Test Mode is exited once the ignition is turned off for at least 8 seconds. The previous steps must be repeated to reenter Test Mode.

Reset Mode
In the event of a system error, such as the indicator light is on but the fuel level is below the sensor level, EyeMax should be reset. To reset EyeMax, perform the following steps:

1. Turn the ignition on for 2 to 5 seconds. Then turn the ignition OFF for 2 to 5 seconds.
2. Repeat the previous step three more times for a total of 4 cycles.
3. When EyeMax is properly reset, the indicator light will turn off on the 4th ignition cycle.

| Supply Voltage | 9 – 16 volts |
| Supply Current | 2mA (average); 20mA (max) (indicator light off) |
| | 22mA (average); 40mA (max) (indicator light on) |
| Operating Temperature | -55°C to +125°C |
| Sensor Output | 0 volts (Fuel level high) |
| | 5 volts (Fuel level low) |
| | (+/- 0.1 volts) |

EyeMax® is a registered trademark of DAVCO Technology, LLC. EyeMax® technology is protected under U.S. Patent #7,508,312.
## EYEMAX® KIT FOR DIESEL PRO® 243

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Indicator light, EyeMax (Figure 2)</td>
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</tr>
<tr>
<td>Connector, butt inline (14-16 AWG)</td>
<td>1</td>
</tr>
<tr>
<td>Fuse, ATO 3 AMP</td>
<td>1</td>
</tr>
<tr>
<td>Harness, interconnecting</td>
<td>1</td>
</tr>
<tr>
<td>Harness, power</td>
<td>1</td>
</tr>
<tr>
<td>Terminal, ring, Ø38” 16-22 AWG</td>
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</tr>
<tr>
<td>Terminal, ring, Ø25” 16-22 AWG</td>
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</tr>
<tr>
<td>Grommet, snap</td>
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</tr>
<tr>
<td>Connector, closed end crimp</td>
<td>5</td>
</tr>
<tr>
<td>Cover assembly (Figure 3)</td>
<td>1</td>
</tr>
<tr>
<td>Seal, o-ring</td>
<td>1</td>
</tr>
<tr>
<td>Fuse holder, inline</td>
<td>1</td>
</tr>
<tr>
<td>Cable tie, black nylon (6.00”-9.00”)</td>
<td>5</td>
</tr>
</tbody>
</table>

**Figure 2**
3/4 Side View

**Figure 3**
Front View (with label)
## EYEMAX® KIT FOR FUEL PRO® 382

### KIT FOR FUEL PRO 382 (DAVCO P/N 104409)

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<thead>
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<tr>
<td>1</td>
<td>Fuse, ATO 3 AMP</td>
</tr>
<tr>
<td>1</td>
<td>Harness, interconnecting</td>
</tr>
<tr>
<td>1</td>
<td>Harness, power</td>
</tr>
<tr>
<td>1</td>
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<tr>
<td>1</td>
<td>Terminal, ring, Ø 25&quot; 16-22 AWG</td>
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<tr>
<td>1</td>
<td>Grommet, snap</td>
</tr>
<tr>
<td>5</td>
<td>Connector, closed end crimp</td>
</tr>
<tr>
<td>1</td>
<td>Cover assembly (Figure 5)</td>
</tr>
<tr>
<td>1</td>
<td>Seal, o-ring</td>
</tr>
<tr>
<td>1</td>
<td>Fuse holder, inline</td>
</tr>
<tr>
<td>5</td>
<td>Cable tie, black nylon (6.00&quot;-9.00&quot;)</td>
</tr>
</tbody>
</table>

---

**Figure 4**

- Front View (with label)
- 3/4 Side View

**Figure 5**

- Front View (with label)

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DAVCO Technology, LLC 1600 Woodland Drive, Saline, MI 48176-1629 800-328-2611 www.davco.com
## EYEMAX® KIT FOR FUEL PRO® 482

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Indicator light assembly, EyeMax (Figure 6)</td>
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<td>1</td>
<td>Connector, butt inline (14-16 AWG)</td>
</tr>
<tr>
<td>1</td>
<td>Fuse, ATO 3 AMP</td>
</tr>
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<td>1</td>
<td>Harness, interconnecting</td>
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<tr>
<td>1</td>
<td>Harness, power</td>
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<td>Grommet, snap</td>
</tr>
<tr>
<td>5</td>
<td>Connector, closed end crimp</td>
</tr>
<tr>
<td>1</td>
<td>Cover assembly (Figure 7)</td>
</tr>
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<td>Seal, o-ring</td>
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<tr>
<td>1</td>
<td>Fuse holder, inline</td>
</tr>
<tr>
<td>5</td>
<td>Cable tie, black nylon (6.00&quot;-9.00&quot;)</td>
</tr>
</tbody>
</table>

![Figure 6](image1.png)

![Figure 7](image2.png)
WARRANTY POLICY

Please review DAVCO’s Product Warranty terms and conditions carefully before installing and/or using a DAVCO product.

Diesel Pro® 243 and 245, Fuel Pro® 382, 482, 483, 485, 487 and 488, Industrial Pro®, Pro-Chek®, Sea Pro®

DAVCO Technology, LLC warrants these products to be free of defects in material and workmanship for five years, 500,000 miles or 10,000 hours (whichever comes first) and electrical parts for two-years, 200,000 miles or 4,000 hours (whichever comes first) from the purchase date*.

Shop Pro®

DAVCO Technology, LLC warrants the Shop Pro (except for the motor) to be free of defects in material and workmanship for two years from the date of purchase. The Shop Pro motor is warranted for one year from date of purchase.

REN Products, EyeMax®, and Fuel Pro® 384

DAVCO Technology, LLC warrants these products to be free of defects in material and workmanship for two-years or 200,000 miles (whichever comes first) from the purchase date.

By installing and/or using the product, you agree to be bound by the following:

This Warranty does not apply to:

• Failure or inadequate performance due to improper installation, misuse, misapplication, faulty installation, alteration/modification, poor maintenance, neglect, accident, or conditions resulting from actions outside DAVCO’s control, including but not limited to the use of contaminated, corrosive, and unapproved fluids.

• Downtime, loss of use, loss of profits or income, loss of capital, cost of substitute equipment, living expenses, claims by purchaser’s customers or other third parties, or other incidental, special or consequential damages.

• Attachments, accessory items, and parts not manufactured or distributed by DAVCO.

• Any aftermarket or OEM component not approved specifically to work with a DAVCO manufactured product.

• Product that has been installed with aftermarket parts or altered or modified in any way.

• Normal wear and tear, abuse, vandalism, acts of God, improper storage or handling, disasters such as flood, fire, or war, failure to operate, maintain or repair in accordance with instructions, or failure to repair the vehicle into which the product is installed in accordance with the vehicle manufacturer’s instructions or common maintenance practices.

This warranty is the sole warranty made by DAVCO. DAVCO makes no other warranties, expressed or implied, of merchantability or fitness for a particular purpose.

In the unlikely event of a defective product, DAVCO will either rework the defective product or replace it at DAVCO’s discretion. If you feel you have a warrantable issue, contact DAVCO at 800-328-2611 for a Return Goods Authorization (RGA) number **. An RGA number is required prior to the return of any product.

* Purchase Date: The date of the first retail purchase of a new vehicle or piece of equipment from the OEM dealer or factory. For “Over the Counter” purchase: The date of sale to the first retail customer.

**Products submitted for Warranty consideration will be inspected by DAVCO personnel. Re-work or replacement will be based on DAVCO’s Warranty procedure and/or the results of their evaluation. DAVCO’s Warranty Program does not in any way constitute a product guarantee.
A Return Goods Authorization (RGA) must be obtained from DAVCO prior to returning any products. Returns may be accepted under the following circumstances:

- **Order Shipping Error:** A credit against the original invoice, including freight charges for both ways will be issued for returns in which DAVCO inadvertently shipped incorrect quantity or product.

- **Overstock:** Returns for ordering more product(s) than required, or incorrect part(s), will be accepted within 60 days from the date of purchase. Proof of purchase will be required, i.e.: original invoice/delivery receipt. These types of return(s) are subject to a minimum restock fee of 40% or $40.00, whichever is higher. Additional restock fees may apply. Product(s) will be inspected for “like new” condition and additional costs will be the responsibility of the customer. No obsolete parts may be returned.

- **Freight charges for return(s) will be the responsibility of the customer.**