

## DESCRIPTION

The Waukesha Custom Engine Control® (CEC) Knock Detection Module (KDM) offers simple, low-cost, effective knock protection for inline VGF® engines. Two sensors mounted in the crankcase of VGF F18/H24 GL, GLD, and GSID engines give the KDM the ability to monitor each cylinder for knock.

The KDM uses the #1 primary coil and the G-lead of the CEC Ignition Module (IM) or the Altronic III Magneto to determine the number of cylinders of the engine and engine speed. With this information, the KDM calculates and monitors the "window" for each cylinder, when knock is most likely to occur.

Although engines produce many different vibrations at many different frequencies, the KDM is able to filter out and detect the specific frequency that indicates knock. When the KDM detects knock, a signal is produced that can be used to shutdown or off-load the engine.

The KDM is equipped with a light emitting diode (LED) on the front panel that informs site personnel of system status. The light is on when the KDM is powered and functioning properly. The light is off when there is a fault or there is no power to the KDM.

## FEATURES AND BENEFITS

**Enhanced Performance** - KDM permits the engine to be advanced to nameplate timing values as engine and fuel conditions allow. This enhances fuel economy, minimizes emissions, and allows maximum power under adverse conditions while increasing engine uptime and reducing operator intervention.

**Minimal Maintenance** - Once the KDM is installed on an engine, there are no required adjustments and no moving parts to wear out. For convenience, check the KDM's LED at each scheduled oil change to ensure that the system is operating correctly.

**No Programming** - Using the G-lead and #1 primary coil of the CEC IM, the KDM automatically determines the number of cylinders and engine speed, then calculates and monitors the "window" when knock is most likely to occur.

**Engine Protection** - The KDM is an engine protection device that can be used to shut down an engine in knock. When used to power a fuel solenoid valve (up to 3 amps, 36 VDC), the KDM provides a circuit, normally connected to ground, which will disconnect when knock occurs. This circuit can also activate remote devices, such as alarms and lights, or trigger a customer's control panel.

**Diagnostics** - On board diagnostics identify problems with any sensors or harnesses. The LED on the front panel of the KDM will remain lit when the system is functioning normally. If a system fault occurs, the LED will turn off.

## COMPONENTS

The Waukesha CEC KDM system consists of the electronic module, two knock sensors, and wiring harnesses.

## RETROFIT CAPABILITY

KDM is available as an option (Code 9710) for new VGF® F18/H24 GL, GLD, and GSID engines. Retrofit kits are also available for these engines.

## Knock Detection Module



### Custom Engine Control

## KDM

- CSA Certification, Class I, Division 2, Group D
- Enhances performance
- Low cost knock protection for VGF F18/H24 GL, GLD, and GSID engines
- Standard and low compression ratio piston capability
- No programming necessary
- Simple diagnostics/operating status
- Programming Logic Controller (PLC) interface capability

## SPECIFICATIONS

### Module Size

8.69" L  
5.75" W  
2.44" H

### Cylinders

6 or 8

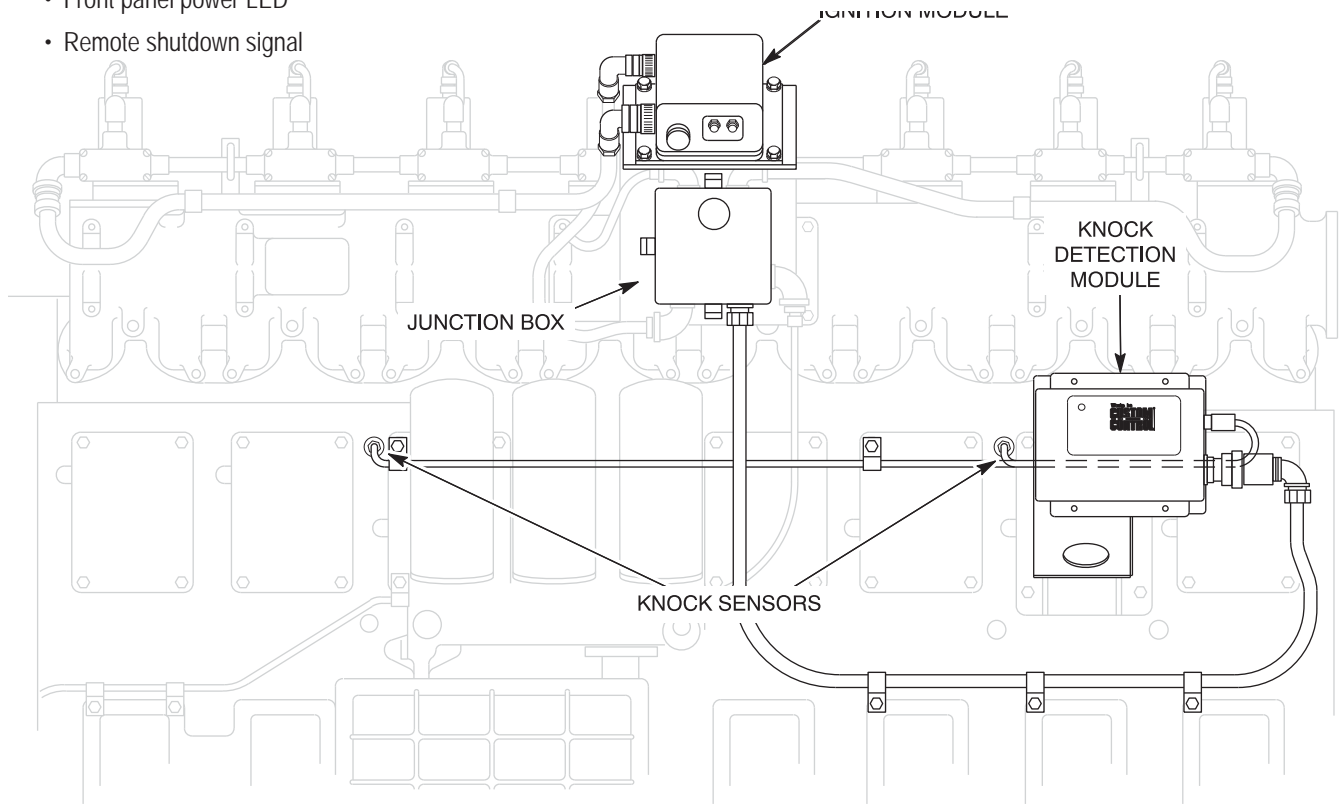
### Nominal Voltage

24 VDC



## KNOCK DETECTION MODULE (KDM) SYSTEM

- For use on VGF F18/H24 GL, GLD, and GSID engines
- Single common unit for all engines
- Front panel power LED
- Remote shutdown signal



TYPICAL VGF H24 ENGINE WITH KDM - CSA APPLICATION

<b>KNOCK SENSORS</b>	<b>ENVIRONMENTAL</b>
<ul style="list-style-type: none"> <li>• Two sensors per engine mounted in crankcase</li> <li>• Sensor harness connects to KDM</li> <li>• Identical sensors for all applications</li> </ul>	<ul style="list-style-type: none"> <li>• Ambient Air Temp. Range ..... -40° F (-40° C) to 150° F (66° C)</li> <li>• Enclosure..... Cast aluminum</li> <li>• Meets CSA Class I, Division 2, Group D, hazardous location requirements</li> </ul>
<b>IGNITION SYSTEMS</b>	<b>OPERATOR INTERFACE</b>
<ul style="list-style-type: none"> <li>• Custom Engine Control® Ignition Module</li> <li>• Altronic III Magneto</li> </ul>	<ul style="list-style-type: none"> <li>• Front Panel LED display .. (On is normal operation, Off is fault/no power)</li> </ul>
<b>POWER REQUIREMENTS</b>	
<ul style="list-style-type: none"> <li>• Nominal Voltage .....24 VDC</li> <li>• Operating Range ..... 12 - 36 VDC</li> <li>• Ripple peak-to-peak ..... Less than 2 VAC</li> <li>• Steady State Operation Current ..... 0.2 amps</li> </ul>	

Consult your local Waukesha Distributor for system application assistance. The manufacturer reserves the right to change or modify without notice, the design or equipment specifications as herein set forth without incurring any obligation either with respect to equipment previously sold or in the process of construction except where otherwise specifically guaranteed by the manufacturer.

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