

APPLICATION GUIDE

For CATERPILLAR[®] G3500 Series



GAS ENGINE TECHNOLOGY

reliable • efficient • worldwide

Ignition Coils

Ignition Coils



- **Flange ignition coil**
- For unshielded and shielded applications
- For G3508, G3512, G3516 e.g.

P/N 06.50.034

Equivalent to:

CATERPILLAR® P/N 7W-4377
ALTRONIC® P/N 591012

Optional:

- **Flange ignition coil with diagnostic interface**
- To monitor high voltage traces in a simple way
- With a MOTORTECH SparkView or digital Scope Meter the operator can receive real time data
- Due to same coil winding interchangeable with P/N 06.50.034, P/N 7W-4377
- For unshielded and shielded applications
- For G3508, G3512, G3516 e.g.



P/N 95.09.154

- **CATERPILLAR® Style ignition coil**
- Incl. ignition coil extension
- For unshielded applications
- For G3508, G3512, G3516 e.g.



Equivalent to:

P/N 06.50.151

CATERPILLAR® P/N 418-4861, 232-6346,
165-1589, 124-0749

- **CATERPILLAR® Style ignition coil**
- Incl. ignition coil extension
- For unshielded applications
- For G3516B, G3520/B e.g.



Equivalent to:

P/N 06.50.153

CATERPILLAR® P/N 437-4106, 232-6350,
199-9011

Ignition Coils



Ignition Coils

■ CATERPILLAR® Style ignition coil

- Incl. ignition coil extension
- For unshielded applications
- For G3512E, G3516E, G3516H e.g.

P/N 06.50.159 Equivalent to:
CATERPILLAR® P/N 356-3701



■ CATERPILLAR® Style ignition coil

- Incl. ignition coil extension
- For shielded applications
- For G3508, G3512, G3516 e.g.

P/N 06.50.152 Equivalent to:
CATERPILLAR® P/N 437-4047, 232-6347,
165-1590



■ CATERPILLAR® Style ignition coil

- Incl. ignition coil extension
- For shielded applications
- For G3508/B, G3512/B, G3516/B, G3520B e.g.

P/N 06.50.154 Equivalent to:
CATERPILLAR® P/N 418-4862, 259-2078



Ignition Coil Extension Overhaul Kits

Extension overhaul kits include:

- Teflon extension and spark plug seal
- Extension seal (CSA applications only)
- Lip seal
- Secondary terminal (Patent No. US 7,455,536 B2)

| | Fits Ignition Coil: | |
|---------------|---------------------|-----------|
| P/N 06.80.751 | MOTORTECH P/N | 06.50.151 |
| P/N 06.80.752 | MOTORTECH P/N | 06.50.152 |
| P/N 06.80.753 | MOTORTECH P/N | 06.50.153 |
| P/N 06.80.754 | MOTORTECH P/N | 06.50.154 |
| P/N 06.80.764 | MOTORTECH P/N | 06.50.159 |



Ignition Coils



Ignition Coils

- **CATERPILLAR® Style ignition coil**
- Incl. ignition coil extension
- For unshielded and shielded applications
- For G3512E, G3516C/E, G3520C/E e.g.

Equivalent to:

P/N 06.50.164

CATERPILLAR® P/N 438-5682, 310-3180,
283-5269, 232-6351,
191-9346



Ignition Coil Extension

- **Improved design with new and innovative extension to coil termination**
- Patented spring-loaded secondary terminal inside ensures proper and reliable connection to spark plug (Patent No. US 7,455,536 B2)
- Teflon extension incl. spark plug seal

Fits Ignition Coil:

P/N 06.80.600

MOTORTECH P/N 06.50.164

Design Improvements

Ignition Coil

- Ⓐ New high voltage termination
- Ⓑ New extension to coil termination
- Ⓒ Extended housing with longer flashover distance for improved dielectric strength

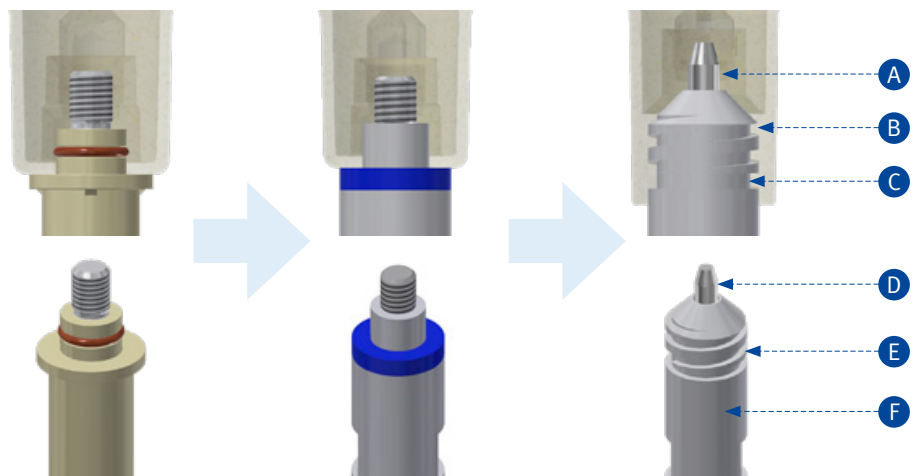
Ignition Coil Extension

- Ⓓ Spring-loaded secondary terminal rod
- Ⓔ Large thread for extension to coil termination
- Ⓕ New Teflon® ignition coil extension

CATERPILLAR® Design

MOTORTECH 2014 Design

MOTORTECH New Design



■ Ignition Coils

Tools & Test Equipment

■ SparkView high voltage indicator incl. BNC cable

Quick and comfortable monitoring on a running engine makes it possible to detect

- Wear of spark plugs
- Failure of the ignition system (damaged ignition coil, spark plug lead or ignition controller)
- Faulty compression of a cylinder

P/N 06.90.099-105

For use with flange ignition coils with diagnostic interface



■ Ignition coil tester

- Professional tool to test all different kinds of ignition coils
- Built in CD ignition, high voltage clamp and a spark gap allow realistic testing
- Incl. standard adaptor kits for flange and CATERPILLAR® style ignition coils

P/N 06.98.054



■ Pickups & Trigger Drives

Camshaft Trigger Magnet



- **Strong magnet**
- Rigid design
- Magnet protected by aluminum housing
- Thread M8 x 1.25, HEX 3/4 in.
- Easy installation due to use of existing threaded holes in camshaft gear

P/N 06.60.925

Equivalent to:

CATERPILLAR® P/N 142-8608

ALTRONIC® P/N 260605, 260604



Primary Leads



Primary Leads for shielded Applications

■ Available as Conventional Style and New Flex Style

- Ignition coil connector 3 pole, socket, 90°
- 2 wire conductor
- 1/2-14 NPT outlet box adaptor

P/N 95.01.020-60 Equivalent to:
CATERPILLAR® P/N 1N-3735
ALTRONIC® P/N 593027-60

Optional:
P/N 95.01.120-60 New Flex Style



P/N 95.01.020-72 Equivalent to:
CATERPILLAR® P/N 1N-3736
ALTRONIC® P/N 593027-72

Optional:
P/N 95.01.120-72 New Flex Style



P/N 95.01.020-84 Equivalent to:
CATERPILLAR® P/N 1N-3738
ALTRONIC® P/N 593027-84

Optional:
P/N 95.01.120-84 New Flex Style



P/N 95.01.020-96 Equivalent to:
CATERPILLAR® P/N 1N-3739
ALTRONIC® P/N 593027-96

Optional:
P/N 95.01.120-96 New Flex Style



Conventional Style



New Flex Style

Primary Leads

Primary Leads for shielded Applications



New Flex Style

P/N 95.01.020-108 Equivalent to:
CATERPILLAR® P/N 1N-3740
ALTRONIC® P/N 593027-108

Optional:
P/N 95.01.120-108 New Flex Style



P/N 95.01.020-120 Equivalent to:
CATERPILLAR® P/N 1N-3741
ALTRONIC® P/N 593027-120

Optional:
P/N 95.01.120-120 New Flex Style



P/N 95.01.020-48 Equivalent to:
CATERPILLAR® P/N 4W-5467
ALTRONIC® P/N 593027-48

Optional:
P/N 95.01.120-48 New Flex Style



P/N 95.01.020-12 Equivalent to:
CATERPILLAR® P/N 4W-6741
ALTRONIC® P/N 593027-12

Optional:
P/N 95.01.120-12 New Flex Style



P/N 95.01.020-24 Equivalent to:
CATERPILLAR® P/N 4W-6742
ALTRONIC® P/N 593027-24

Optional:
P/N 95.01.120-24 New Flex Style



Primary Leads



Primary Leads for shielded Applications

P/N 95.01.020-42 Equivalent to:
CATERPILLAR® P/N 4W-6743
ALTRONIC® P/N 593027-42

Optional:
P/N 95.01.120-42 New Flex Style



P/N 95.01.020-54 Equivalent to:
CATERPILLAR® P/N 4W-6744
ALTRONIC® P/N 593027-54

Optional:
P/N 95.01.120-54 New Flex Style



P/N 95.01.020-132 Equivalent to:
CATERPILLAR® P/N 4W-6745
ALTRONIC® P/N 593027-132

Optional:
P/N 95.01.120-132 New Flex Style



P/N 95.01.020-138 Equivalent to:
CATERPILLAR® P/N 4W-6746
ALTRONIC® P/N 593027-138

Optional:
P/N 95.01.120-138 New Flex Style



P/N 95.01.020-150 Equivalent to:
CATERPILLAR® P/N 4W-6747
ALTRONIC® P/N 593027-150

Optional:
P/N 95.01.120-150 New Flex Style



Conventional Style

■ Spark Plug Leads & Extensions



Spark Plug Lead

- **PolyMot™ spark plug lead**

- Fits spark plug P/N 301-6663 e.g.
- For G3508, G3512, G3516 e.g.
- Consult factory to get suitable spark plug lead, specified for your engine application

- **Flange Kit for use with PolyMot™ spark plug leads**

- Used for conversions of flange ignition coil and spark plug extension to externally mounted ignition coil and spark plug lead
- Kit includes metal flange and gasket for sealing
- For G3508, G3512, G3516 e.g.

P/N 06.51.248

Spark Plug Extensions



- **PolyMot™ spark plug extension**

- Ceramic insert with 5 kΩ resistor for EMI suppression
- Critical high voltage areas are protected with seals
- Top thread for easy removal with special tool P/N 44.99.912
- Fits spark plug P/N 301-6663 e.g.
- For G3508, G3512, G3516 e.g.

Equivalent to:

P/N 06.80.320-T

CATERPILLAR® P/N 123-4710



- **Spark plug extension removal tool**

- Fits extension top thread to ensure easy removal

P/N 44.99.912

■ Spark Plug Leads & Extensions



Ignition Coil Extension Overhaul Kits & Accessories

For MOTORTECH or Original CATERPILLAR® Ignition Coils

Extension overhaul kits include:

- **Teflon extension incl. spark plug seal**
- Extension seal (CSA applications only)
- Lip seal
- Spring-loaded secondary terminal (Patent No. US 7,455,536 B2)



| | | |
|----------------|---------------------|----------------------------------|
| | Fits Ignition Coil: | |
| P/N 06.80.515H | CATERPILLAR® P/N | 232-6346, 165-1589, 124-0749 |
| P/N 06.80.751 | MOTORTECH P/N | 06.50.151 |
| P/N 06.80.752 | MOT/CAT® P/N | 06.50.152, 232-6347, 165-1590 |
| P/N 06.80.480 | CATERPILLAR® P/N | 232-6350 |
| P/N 06.80.753 | MOTORTECH P/N | 06.50.153 |
| P/N 06.80.754 | MOT/CAT® P/N | 06.50.154, 259-2078 |
| P/N 06.80.764 | MOTORTECH P/N | 06.50.159 |

- **Spring-loaded secondary terminal (Patent No. US 7,455,536 B2)**
- For use with MOTORTECH or original CATERPILLAR® ignition coils

| | | |
|---------------|---------------------|---|
| | Fits Ignition Coil: | |
| P/N 02.85.870 | MOT/CAT® P/N | 06.50.152, 06.50.154, 06.50.159, 232-6347, 259-2078, 165-1590 |
| P/N 02.85.881 | MOT/CAT® P/N | 06.50.151, 06.50.153, 232-6346, 232-6350, 165-1589, 124-0749 |



- **Lip seal**
- For use with MOTORTECH and original CATERPILLAR® ignition coils
- For G3508, G3512/E, G3516/B/C, G3520/B/C e.g.

| | | |
|---------------|------------------|----------|
| | Equivalent to: | |
| P/N 06.81.051 | CATERPILLAR® P/N | 135-2651 |



■ Spark Plug Leads & Extensions

Ignition Coil Extensions



■ Standard design

- Patented spring-loaded secondary terminal inside ensures proper and reliable connection to spark plug (Patent No. US 7,455,536 B2)
- Teflon extension incl. spark plug seal
- For G3512E, G3516C/E, G3520C/E e.g.

P/N 06.80.459H

Equivalent to:

CATERPILLAR® P/N 308-1380, 283-5271,
264-5323, 150-2050

Fits Ignition Coil:

MOT/CAT® P/N 06.50.161, 283-5270



■ Improved design with new and innovative extension to coil termination

- Patented spring-loaded secondary terminal inside ensures proper and reliable connection to spark plug (Patent No. US 7,455,536 B2)
- Teflon extension incl. spark plug seal

P/N 06.80.600

Fits Ignition Coil:

MOTORTECH P/N 06.50.164



■ Teflon extension incl. spark plug seal

- For G3508, G3512, G3516 e.g.

P/N 06.80.356H

Equivalent to:

CATERPILLAR® P/N 133-5078

P/N 06.80.360H

CATERPILLAR® P/N 169-4295



■ Silicone seal rings

- For spark plug leads and extensions
- Pack of 100 pcs.

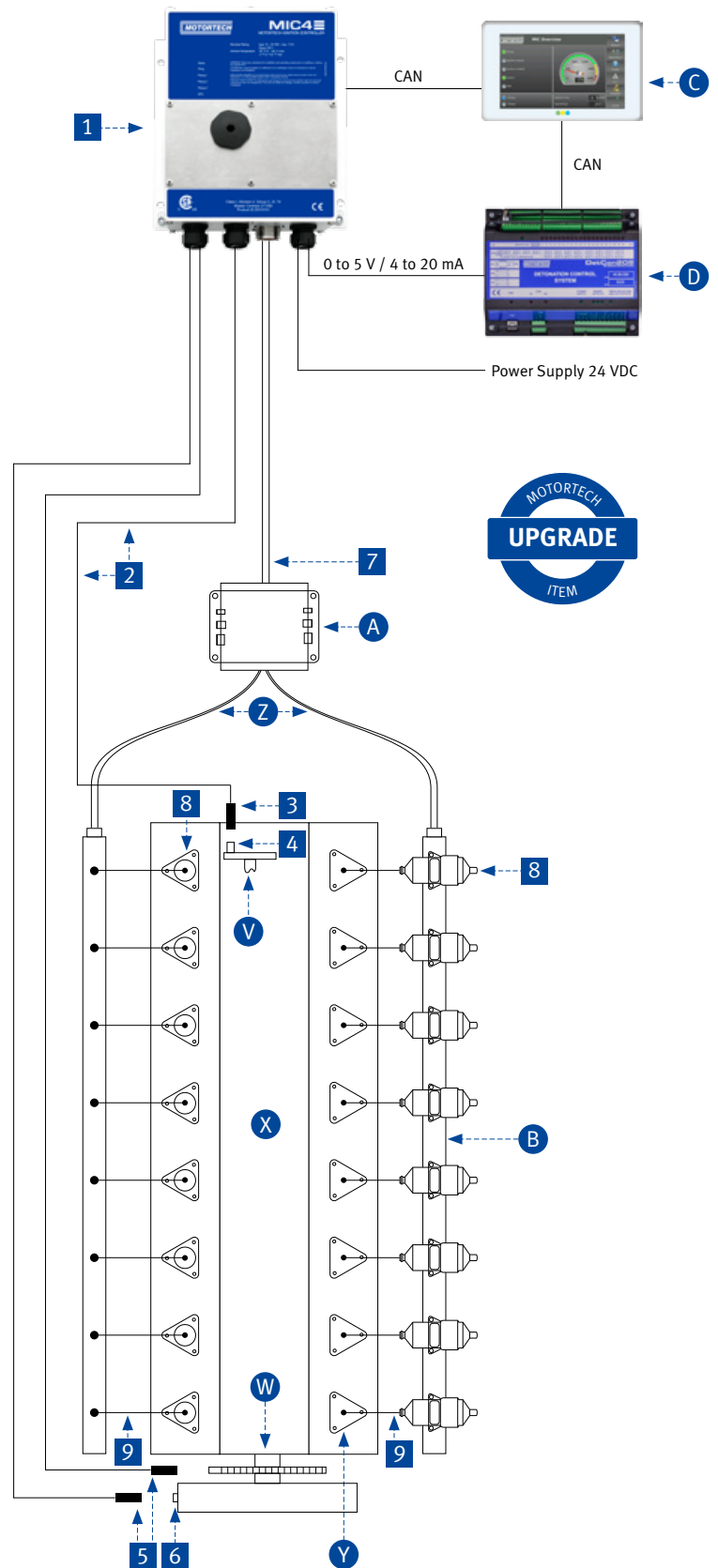
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Ignition Wiring Rails & Hardware

Ignition Control Upgrade for CATERPILLAR® G3500 Series Gas Engines

MOTORTECH offers complete ignition system upgrades for CATERPILLAR® G3500 series gas engines. Prefabricated and prewired components make the conversion easier and reduce costs based on engine downtime. Please consult the factory or your nearest MOTORTECH Sales Partner to get a complete unshielded or shielded system solution specified for your engine application.

Upgrade your engine to the latest ignition system and increase reliability and efficiency.



Necessary Components

- 1 MIC4 ignition controller
- 2 Pickup lead*
- 3 1 Hall effect pickup*
- 4 Trigger magnet
- 5 2 Magnetic pickups
- 6 Trigger pin
- 7 Output harness*
- 8 Ignition coil*
- 9 1 Primary lead/PolyMot™ spark plug lead per ignition coil*

Accessories

- A Junction box
- B AlphaRail ignition wiring rail

System Enhancement

- C PowerView3 – HMI module
- D DetCon20 – Detonation controller

Description

- V Camshaft
- W Crankshaft
- X Engine
- Y Cylinder
- Z Harness to connect the ignition wiring rails and the junction box

* Shielded and unshielded versions available.

Preferred Pickup Arrangement

3-Pickup Arrangement for 4-Stroke Engines

- 1) Crankshaft (Reset)
Magnetic pickup
(holes, pins, teeth, screws)
- 2) Crankshaft (Speed)
Magnetic pickup
(holes, pins, teeth, screws)
- 3) Camshaft (Reset)
Hall effect pickup
(magnets)

■ Ignition Wiring Rails & Hardware



1 MIC4 Ignition Controller

Efficiency-enhanced engines, stricter emission regulations, highly compressed mixtures, as well as the use of a great variety of gas types are putting even greater demands on the entire ignition system. Based on the MOTORTECH ignition controller platform, the MIC4 series fulfills these greater demands.

With 300 mJ primary energy, the MIC4 series provides a reliable combustion on engines up to 16 cylinders even with weakest or fluctuating calorific values of the gas. Next to high variable ignition energy (MOST) an accurate spark timing and diversified online diagnostics help to improve engine efficiency, spark plug life and availability of the equipment under the strictest emission regulations.

- Adjustable spark duration and intensity
- Constant spark intensity via adjusted duration
- Patented technology
- 300 mJ primary energy (500 mJ boost for start phase)
- Ignition diagnostics (primary and secondary)
- Fault memory with trend data
- Integrated CANopen and Modbus RTU interface
- Easy access per USB port



3 Hall Effect Pickup

High temperature resistant pickup. Triggers off any magnet. Available in standard or CSA certified versions and both possible polarities.



5 Magnetic Pickups (MPU)

Reliable design in a variety of different lengths. Available in standard or CSA certified versions.



8 Ignition coils

Special ignition coils are designed for use with latest technologies of MOTORTECH ignition controllers. Different designs are available either for direct rail mounting in combination with spark plug leads or as flange ignition coil to allow installation directly on the valve cover. Flange ignition coils are also available as version with diagnostic interface. This enables the possibility to measure the high voltage via MOTORTECH SparkView or digital oscilloscope.



■ Ignition Wiring Rails & Hardware



9 Primary Leads

MOTORTECH primary leads are available as Conventional Style or in New Flex Style that is produced with a special multilayer wire. The new primary leads offer a significant higher flexibility than conventional leads, shielded with braided steel, while being highly resistant to all kinds of environmental conditions. Primary leads are available with rigid terminations in several different configurations with durable 90° and 180° 2-pole and 3-pole connectors.



9 Spark Plug Leads

MOTORTECH PolyMot™ spark plug leads are unique and offer several advantages when being compared to the OEM or aftermarket competition. Made from a combination of ceramic, Teflon® and silicone they transfer nearly any rate of high energy spark from the coil to the spark plug. The unique structure has achieved tremendous reliability records in the field.

B AlphaRail Wiring Rail System for Ignition Control

MOTORTECH stainless steel, vibration resistant rail assembly will withstand any harsh environment commonly found in the oil & gas industry. The proven design is made for engine manufacturers and the global aftermarket. Do not go Low-Tech and take the risk of engine down time because of equipment being under repair. Eliminate the need for constant rewiring, connector exchanges or straightening out weak and bent aluminum wiring rails.



- Made of stainless steel
- Rigid military style connectors
- Rails are filled with special foam to ensure that all wires are separated from ground and will not vibrate
- Water proof design – built to last in uncovered environment
- Ignition rails can be used for shielded and unshielded applications
- Due to base rail structure easy for stocking
- Quick service access with quick-disconnect connections

■ Ignition Wiring Rails & Hardware



● C PowerView3 Ignition Control Visualization

The operating data of the MIC4 ignition controller will be completely visualized via HMI module (Human Machine Interface). The overview screen shows the relevant information as engine speed, ignition timing and status of pickups, ignition outputs or active parameter set.

The PowerView3 also allows justification of various ignition parameters such as ignition timing and energy. Functions as the self-test for error diagnostics can also be executed via HMI module. The control keys guarantee simple navigation through different display pages and menus. All in all the PowerView3 HMI module is also able to provide error diagnostics on-site without requiring a laptop!



● D DetCon20 Detonation Control System

The DetCon20 control unit offers full protection for gas engines from 2 to 20 cylinders. Microprocessor controlled, it will detect any detonation in the early stage. Please also see page 23 for further information.



■ Spark Plugs & Accessories

Spark Plugs (M18x1.5 Thread Size – 0.750 in. Thread Reach)



- **CHAMPION® spark plug**
- J-type electrode (Ir/Pt)
- Recommended for natural gas

P/N FB77WPCC

Equivalent to:

CATERPILLAR® P/N 301-6663, 243-4291,
194-8518

CHAMPION® P/N RB77WPCC, KB77WPCC



Optional:

- **DENSO® spark plug**
- J-type electrode (Ir/Pt)
- Recommended for natural gas

P/N G13-3



Optional:

- **DENSO® spark plug**
- J-type electrode (Ir/Ir)
- Recommended for special gas

P/N G13-5

■ Spark Plugs & Accessories



Tools

■ Spark plug gap setting tool

- For easy setting of spark plug gaps
- Basic kit includes M18x1.5 thread adaptor
- Required accessory kit needs to be ordered separately

P/N 07.98.120-18

■ Accessory kit for J-type spark plugs

- Including base insert and feeler gauge

P/N 07.98.122-A

- | | |
|---------------|---------------------------------------|
| P/N 07.98.037 | ▶ Feeler gauge clamp |
| P/N 07.98.059 | ▶ Feeler gauge, gap 0.008 in./0.20 mm |
| P/N 07.98.034 | ▶ Feeler gauge, gap 0.010 in./0.25 mm |
| P/N 07.98.035 | ▶ Feeler gauge, gap 0.012 in./0.30 mm |
| P/N 07.98.036 | ▶ Feeler gauge, gap 0.014 in./0.35 mm |

■ Spark plug cleaning kit

- Removes oil residues and deposits in the electrode area by high pressure
- Special blasting grit for gentle cleaning of the electrode and thread area

P/N 44.01.023

■ Extended barrel magnetic spark plug sockets

- 1/2 in. drive
- 16 in. length

P/N 07.99.022-3-16 HEX 7/8 in.
(22.2 mm)

Fits Spark Plug:
301-6663, 243-4291,
194-8518, FB77WPCC,
GI3-3, GI3-5,
346-5123, 284-8313,
199-9012



■ Spark Plugs & Accessories

Tools



- **Torque wrench**
- 1/2 in. drive

P/N 07.98.065



- **Seat & thread reconditioner**
- M18x1.5 thread size
- 3/4 in. thread reach

P/N 07.98.118-34



- **SparkView high voltage indicator**
- For use with flange ignition coils with diagnostic interface or spark plug leads

Quick and comfortable monitoring on a running engine makes it possible to detect

- Wear of spark plugs
- Failure of the ignition system (damaged ignition coil, spark plug lead or ignition controller)
- Faulty compression of a cylinder

P/N 06.90.099-100 For use with spark plug leads

P/N 06.90.099-105 For use with flange ignition coils with diagnostic interface

Accessories



- **Spark plug gaskets**
- For M18x1.5 thread size
- Pack of 100 pcs.

P/N 02.85.016-100



- **Thread lubricant**
- Can 4 oz / 115 g

P/N 07.98.718

Gas Engine Control Systems

Detonation Control Upgrade for CATERPILLAR® G3500 Series Gas Engines

Next to the ignition system, MOTORTECH also offers complete system upgrades for detonation control. Prefabricated and prewired components make the conversion easier and reduce costs based on engine downtime. Please consult the factory or your nearest MOTORTECH Sales Partner to get a complete system solution specified for your engine application.

Upgrade your engine and increase availability of the equipment!

Necessary Components

- 1 DetCon20 control unit*
- 2 Detonation sensor lead
- 3 Detonation sensor

Accessories

- A AlphaRail detonation wiring rail

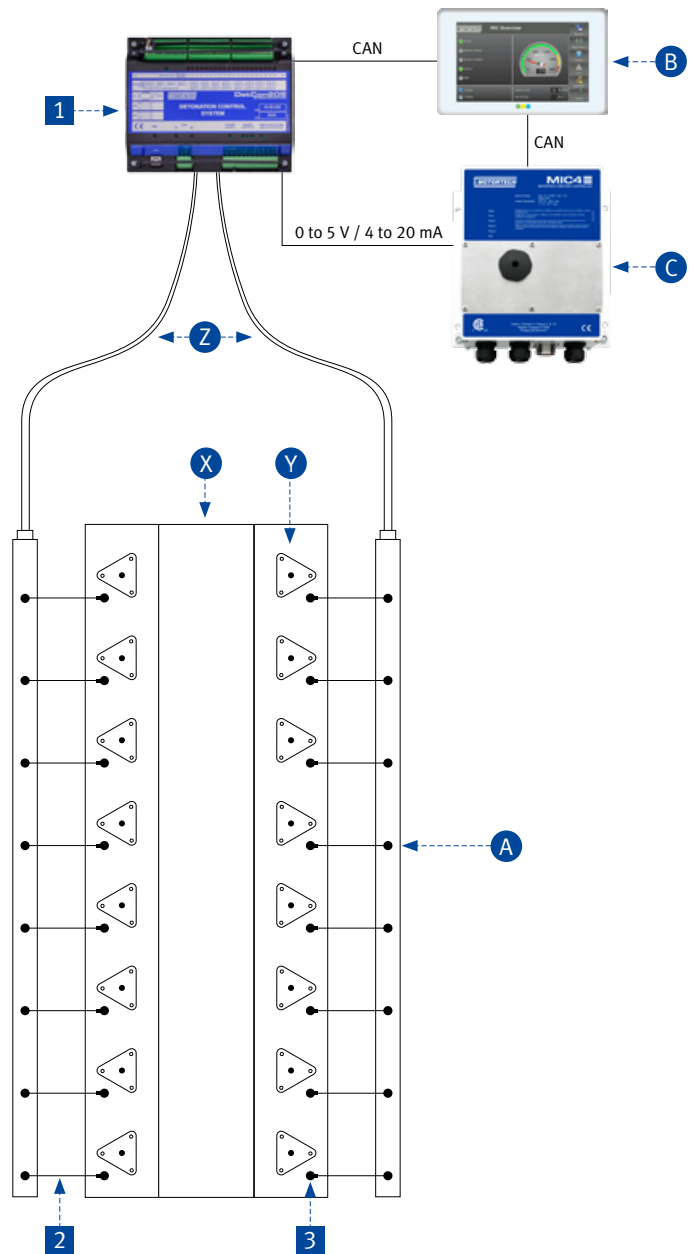
System Enhancement

- B PowerView3 – HMI module
- C MIC4 – Ignition controller

Description

- X Engine
- Y Cylinder
- Z Harness to connect the detonation wiring rails and the control unit

* Shielded and unshielded versions available.



Gas Engine Control Systems

1 DetCon20 Control Unit

The gas engine operators are calling for increased power output from their engines. More load means higher temperatures, pressures and tougher operation. This mostly ends in catastrophic engine damages due to detonation or pre-ignition.

As MOTORTECH has proven for years, detonation can be detected professionally with the DetCon20. Single cylinder sensors constantly monitor the sound level of the combustion chamber. Once the controller detects soft detonation on one of the sensors (this is a specific stage before real detonation occurs), several steps will take place:

- Alarm signal turns on
- Ignition retard by 0 to 5 V or 4 to 20 mA analog output
- If this action does not cure the detonation, the load reduction output will be activated.
- If the load drop does not stop the engine from detonating the engine STOP output will be activated.



3 Detonation Sensor

Can be installed on the cylinder head screw. Measures the detonation signal and transfers it to the controller.



A AlphaRail Wiring Rail System for Detonation Control

MOTORTECH stainless steel, vibration resistant rail assembly will withstand any harsh environment commonly found in the oil & gas industry. The proven design is made for engine manufacturers and the global aftermarket. Do not go Low-Tech and take the risk of engine down time because of equipment being under repair. Eliminate the need for constant rewiring, connector exchanges or straightening out weak and bent aluminum wiring rails.

- Made of stainless steel
- Rigid military style connectors
- Rails are filled with special foam to ensure that all wires are separated from ground and will not vibrate
- Water proof design – built to last in uncovered environment
- Ignition rails can be used for shielded and unshielded applications.
- Due to base rail structure easy for stocking
- Quick service access with quick-disconnect connections



B PowerView3 Detonation Control Visualization

The operating data of the DetCon Detonation Control system will be completely visualized via HMI module (Human Machine Interface). The overview screen shows the relevant information as engine knocking, knock intensity and status for activated load reduction or emergency shutdown of engine.

The control keys guarantee simple navigation through the different display pages and menus. All in all the PowerView3 HMI module is also able to provide error diagnostics on-site without requiring a laptop!



Thermocouples & Accessories



■ Thermocouple

- Type K (NiCrNi), 90°
- For G3508, G3512/B, G3516/B, G3520/B e.g.

P/N 56.01.092-28

Equivalent to:

CATERPILLAR® P/N 383-2989, 241-9591,
175-5341, 6I-0407 ¹⁾

¹⁾ If the MOTORTECH thermocouple is used to replace thermocouple 175-5341 or 6I-0407, the engine wiring harness must be modified by replacing the bullet connector with kit P/N 75.30.046. Please order separately with each thermocouple.



■ Thermocouple

- Type K (NiCrNi), 90°
- For G3516C/E, G3520C/E e.g.

P/N 56.01.098-34

Equivalent to:

CATERPILLAR® P/N 383-2988, 152-0807



■ Connector kit

- Required when thermocouple P/N 175-5341 or P/N 6I-0407 should be replaced by P/N 56.01.092-28.
- Incl. housing, wedge lock (P/N 155-2270) and contacts (P/N 186-3736)
- Use extraction tool P/N 06.98.046 and crimping tool P/N 06.98.013 for connector upgrade

P/N 75.30.046

Oxygen Sensors & Accessories

■ Oxygen sensor

- For unshielded applications
- For G3508, G3512, G3516/B, G3520/B e.g.

P/N 19.60.027 Equivalent to:
CATERPILLAR® P/N 196-5391, 3E-7639

■ Oxygen sensor

- For shielded applications
- For G3508, G3512, G3516 e.g.

P/N 19.60.029 Equivalent to:
CATERPILLAR® P/N 141-2494

■ Heat shield

- Can be screwed on top of weld hub
- Protects the sensor against high temperatures from the hot exhaust manifold

P/N 19.60.022

■ Weld hub

- Welded into the exhaust pipe to increase oxygen sensor life time
- A heat shield can be screwed on top

P/N 19.60.023



Gas Engine Accessories

Coolant Filtration



- **Bypass filters with stainless steel filter elements**
- Cleans and maintains coolant system from rust and contaminants
- Increases water pump and life cylinder head efficiency
- Stainless steel filter elements can be cleaned – NO WASTE
- Easy to install and to service – Ideal for retrofitting

P/N 25.00.009-50

- ▶ 50 micron element
- ▶ 9 in. length
- ▶ Flow indicator

P/N 25.00.009-50-30

- ▶ 50 micron element
- ▶ 9 in. length
- ▶ Flow indicator
- ▶ 30 in. stand



Lube Oil Filtration

- **Lube filter element kit**
- Including reusable stainless steel filter element and shipping case
- Triple length element (30.00 in.), OD 7.00 in.
- For G3508, G3512, G3516 e.g.

P/N 25.00.300-1-CA



- **Lube filter element**
- Standard length element (10.00 in.), OD 7.00 in.
- For G3508, G3512, G3516 e.g.

P/N 25.00.302-CA

Equivalent to:

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