

COMPACT PRODUCT GUIDE

High Quality Parts and Accessories for Gas Engines



GAS ENGINE TECHNOLOGY

reliable • efficient • worldwide

Ignition Systems

The MOTORTECH Ignition Controller Platform

MOTORTECH has devolved its ignition controller platform which is designed to meet the special needs of cutting edge industrial gas engines. Gas engines with up to 20 cylinders can be controlled efficiently and reliably.

High adjustable ignition energies (MOST), accurate spark timing and diversified online diagnostics help to improve engine efficiency, spark plug lifetime and availability of the equipment under the strictest emission regulations. The controller is fully customer configurable via Laptop.

- Adjustable spark duration and intensity
- Constant spark intensity via adjusted duration
- 300 to 500 mJ primary energy
- Ignition diagnostics (primary and secondary)
- Fault memory with trend data
- Integrated CANopen and Modbus RTU interface
- Easy access per USB port
- Patented technology (Patent No.: US 8,839,692 B2)

MIC3+
MOTORTECH IGNITION CONTROLLER



MIC4
MOTORTECH IGNITION CONTROLLER



MIC5
MOTORTECH IGNITION CONTROLLER



| | MIC3+ | MIC4 | MIC5 |
|------------------|--------|-----------|-----------|
| Primary Energy | 300 mJ | 300 mJ | 500 mJ |
| Start-Up Boost | 500 mJ | 500 mJ | 600 mJ |
| Ignition Outputs | 6 / 12 | 8 / 16 | 20 |
| Pickups | 1 or 2 | 1, 2 or 3 | 1, 2 or 3 |

Housing Styles

| Housing Style | MIC3+ | MIC4 | MIC5 |
|--------------------|-------|------|------|
| Panel Mount (IP20) | | X | |
| Light Duty (IP54) | X | X | |
| Heavy Duty (IP65) | | X | X |

(Full technical data and information at www.motortech.de)

PowerView3
MOTORTECH ENGINE INFORMATION MONITOR



Complete visualization of MIC3+/MIC4/MIC5 operating data, inclusive error diagnostic, via optionally available HMI module (Human-Machine-Interface).

The touchscreen guarantees an intuitive navigation through different display pages and menus.

The PowerView3 is also available for data visualization of detonation control (DetCon) and temperature monitoring (TempScan).

MICT
MOTORTECH INTEGRATED CONFIGURATION TOOL

The MICT is the graphical user interface for all controllers of the MIC3+/MIC4/MIC5 series. With a laptop all configurations can be done and run time data of the engine can be checked and adjusted.





The Alternative for CATERPILLAR® Gas Engines

The rising demand for specialized ignition coils has led MOTORTECH to the decision to design a new series of ignition coils, specially made for use with CATERPILLAR® series G3400, G3500 and G3600 gas engines.

- Supports CATERPILLAR® ignition systems
- Spark plug extensions made of high quality Teflon® for high dielectric strength

- Innovative spring-loaded secondary terminal for a secure connection with the spark plug (patented design)
- Improved construction without metal ring
- Automated series production with high quality standard
- Versions for CSA applications

High Performance Ignition Coils

Ignition coils are becoming more and more important in modern, up to date ignition systems. MOTORTECH made it its business to develop a series of new high performance ignition coils produced in the German facility:

- Use of high-quality material
- Ideally suited for ignition of alternative fuels such as biogas
- Applicable for ASC – Automatic Spark Control of MOTORTECH ignition controller
- MOST



Flange Ignition Coils

Same winding configuration as in the standard epoxy coils but molded to a 3-hole steel flange. This allows installation directly on the valve cover. Flange ignition coils with the same winding configurations are also available as version with diagnostic interface. This enables the possibility to measure the high voltage via MOTORTECH SparkView or digital oscilloscope.



Standard Ignition Coils

Standard unshielded epoxy coils for non-shielded applications. Available in different colors and variations to replace any existing coil.



Shielded Ignition Coils

Coils are encapsulated in a steel housing with welded lids and meet CSA Class I; Division 2; Group D requirements for hazardous areas. Canned coils are available with standard and extended duration characteristics. Standardly available with 3-pin primary and 3/4" spark plug lead connector (interchangeable with ALTRONIC® coils). Also available with a more rigid 2-pin primary and a 1" spark plug lead connector.



Integral Ignition Coils

Coils designed to mount directly to dual threaded spark plugs. Top cover has a special SAFETY-DESIGN to prevent the coil body from blowing out of the shell when spark plugs leak. Available with standard, but also with long spark duration. Capable of providing double the amount of energy to the spark plug. Can be ordered in various length from 6" to 14.5"! Perfect for applications like the WAUKESHA VHP series. Meet CSA Class I, Division 2, Group D environment.

■ Ignition Systems

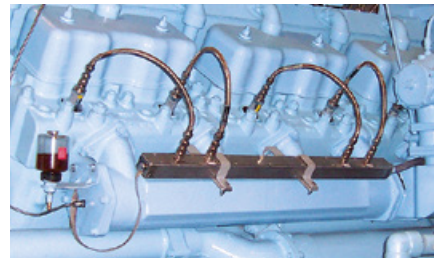
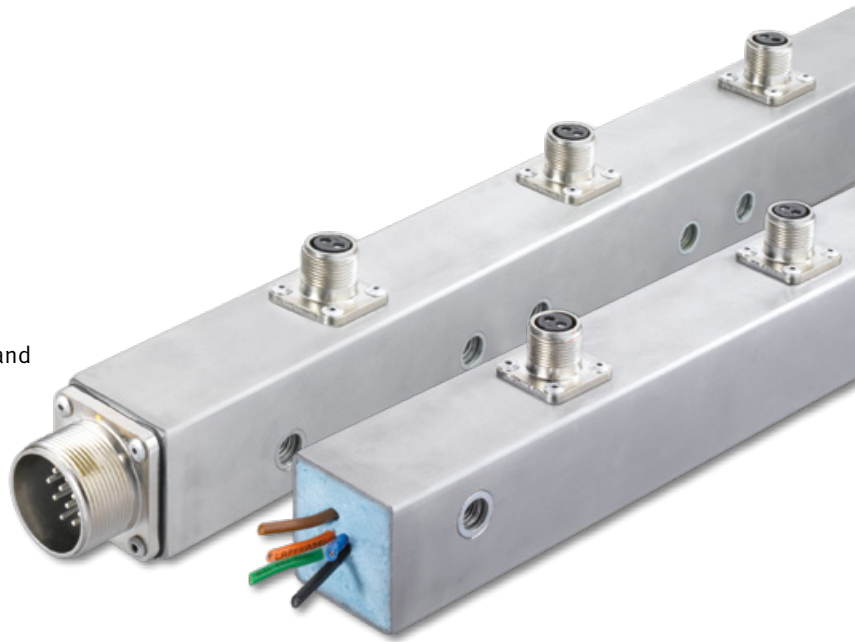
AlphaRail MOTORTECH IGNITION RAIL SYSTEM

Wiring Rails

Made from stainless steel profile, foam filled for long life and designed to last.

Available as:

- Ignition for standard or CSA certified applications
- Detonation control
- Temperature monitoring



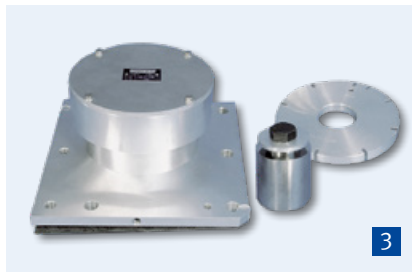
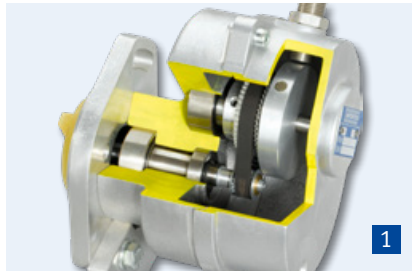
Ignition Kits

Complete ignition kits designed to easily fit particular engines. The kits are available complete with rails, pre-made primary wire harness, ignition coils, ignition controller, pickup and corresponding brackets. Plug and play!





For applications where access to the camshaft is difficult and no trigger disc can be mounted, this trigger device (1) is an easy and reliable mechanical solution. Mounted to the position of the former ignition magneto or other drive shafts, it will sense all necessary trigger signals. The heavy duty bearings and smart design offer high reliability! Also available are other engine specific solutions for CATERPILLAR® (2), WHITE SUPERIOR® (3), MAN® (4) etc.



Trigger Discs available in all Variations

- With magnets
- With steel inserts
- For WAUKESHA® VGF, VHP and CATERPILLAR® applications



Trigger Magnets and Reluctor Pins

Precision made to ensure accurate trigger impulses on flywheel or camshaft referenced ignition systems.



Magnetic Pickup (MPU)

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



Hall Effect Pickup

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



Inductive Pickup

Small sensor (M12 thread) for use in applications where there is not much available installation space. It can operate in oil. High temperature resistance. Available in standard or CSA certified versions.

Ignition Systems



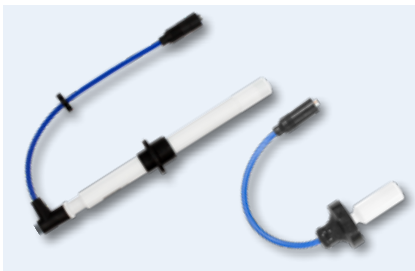
Shielded High Tension Leads

Available in conventional or MOT-Blues style to replace any product in the market. The MOT-Blues spark plug wire is a MOTORTECH development with a special multilayer design to ensure that no humidity can be trapped in the lead.



Shielded Primary Leads

MOTORTECH primary leads are available as standard version or in new 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.



High Tension Leads for NON Shielded Applications

PolyMot™ patented spark plug leads are the most reliable high tension leads in the industry. 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. Variations for nearly all engine models in combination to spark plugs are available.

Spark Plug Extensions

In applications where ignition coils are mounted right on top of the valve cover, a spark plug extension is required. PolyMot™ Extensions outlast any OEM product. Made from a combination of Ceramic, Teflon® and Silicone, the patented design increases availability of equipment.

CATERPILLAR® Ignition Coil Repair Kits

Improve the OEM coil product by using a more reliable Teflon® extension. Coupled with a unique and patented design stainless steel terminal it eliminates the use of the metal ring and all electrical punctures through the extension.

- Repair kits for G3400 & G3500 coils (mounted under the valve cover)
- Extension for G3600 ADEM® coil

Ignition Systems



SparkView MOTORTECH HIGH VOLTAGE INDICATOR



The newly developed handheld device monitors the high voltage required by the spark plugs while the engine is running. The condition of the spark plugs and the time at which they need to be replaced can be determined with the SparkScan1 high voltage clamp or with a BNC cable.



SparkScan1 MOTORTECH IGNITION ACCESSORIES

The high voltage clamp SparkScan1 is coupled to a SparkView or a digital scope and allows the operator to measure real time data from his spark plug lead (conventional spark plug wire 0.28") to analyze cylinder malfunctioning. A service tool that saves time and money.



ScopeLite MOTORTECH TIMING LIGHT

The ScopeLite timing light can take an impulse through shielded primary and secondary ignition leads. Unique LED design.



Oscilloscope not in scope of delivery.

Ignition Coil Tester

This test equipment is designed to offer service companies a professional tool to test all different kinds of coils that are used by engine manufacturers or aftermarket companies. A built in CD ignition, high voltage clamp and a spark gap allow realistic testing.



Test Adaptor for MIC3/3+, MIC4 and MIC5 Series Ignition Controller

To enable operators and service personnel to check input signals to the ignition controller in a simple way, MOTORTECH offers a Test Adaptor that links between the 35 pole input connector and the appropriate harness.

Terminals located around the test box allow easy access to each input signal entering the ignition controller.

Spark Plugs & Accessories

XT-Plugs MOTORTECH EXTENDED SPARK PLUGS

For special applications there is a request for long spark plugs to reach down to the bottom of the spark plug well. Available with aircraft style thread for high tension lead connection or with a female thread to accept an integral coil. Center and ground electrodes are equipped with Iridium (J-type).

The **“S2-Type”** has a 3/4 in. male thread and used to be called the AIRCRAFT STYLE spark plug. This spark plug is designed to be connected to a shielded spark plug lead.



The **“DCP-Type”** has a female thread to adapt to a short integral ignition coil. This combination is popular in applications, where customers have had bad experiences with shielded spark plug leads.



The **J-type** ground electrode ensures better combustion, particularly on lean burn gas engines.

The **“C-Type”** is an extended barrel plug that has a conventional ceramic insulator on the top end. This allows the use of a standard spark plug boot. Preferable the connector includes a 5 kΩ resistor to suppress electromagnetic interference (EMI).



XTL-Plugs MOTORTECH EXTENDED SPARK PLUGS

For engine applications equipped with extreme tight spark plug well, conventional ignition leads show its limits. The solution are specially designed spark plugs with extended metal housing. XTL-Plugs are manufactured with an integrated 7 mm spark plug lead, which allows a direct connection to an externally mounted ignition coil. Can be ordered with different barrel and lead lengths, different lead outputs from the barrel and a wide range of ignition coil connectors. XTL-Plugs are designed for unshielded applications and offer long runtimes.



Spark Plug Gap Setting Tool

The innovative gap setting tool is a smart device from MOTORTECH. It enables gas engine operators and external service personnel to professionally and carefully set the electrode gap of spark plugs.



Extended Barrel Magnetic Spark Plug Sockets

Installing spark plugs can be a pain. The extended barrel spark plug socket (available up to 36" length) has strong magnets incorporated that hold the spark plug when being installed in a deep spark plug well.



MHP-Plugs MOTORTECH HIGH PERFORMANCE SPARK PLUGS

MHP spark plugs are designed to meet the requirements, both of modern and common engine developments and reliably deliver highest voltages and thus a strong spark down into the combustion chamber.

- Hot lock technology ensures increased spark plug durability even in high compression engines
- J-type electrode design for enhanced combustion
- Supplies even highest voltages of modern ignition systems like MOTORTECH's MIC series
- Long design insulators for best flashover protection
- Advanced spark erosion resistance
- Suppression of electromagnetic interference (EMI)
- Less spark plug changes reduce operation costs
- Available with different thread sizes and reaches
 - M14
 - M18
 - M22
 - 7/8-18 UNS



DetCon20

MOTORTECH DETONATION CONTROL SYSTEM

The DetCon20 control unit offers full protection for gas, diesel and dual fuel engines from 2 to 20 cylinders. Microprocessor controlled, it will detect any detonation in the early stage and will send an analog signal (4-20mA/0-5V) out to the ignition system to retard in a linear function. If detonation cannot be cured a signal will be sent for load reduction and finally an engine STOP signal. CAN Bus interface included.



DetCon20 Software

The DetCon20 comes with a WIN based software package that allows the operator to analyze all data in real time on his PC.



Knock Sensor

Can be installed on any cylinder head bolt or stud as the sensor is smaller than 1.5" in dia. It measures the combustion signal and transfers it to the controller.



PowerView3 for DetCon20

The PowerView3 HMI module supports the full visualization of the most important operating and trend data like knocking intensity for each cylinder or the current analog output signal levels.



ALL-IN-ONE

MOTORTECH GAS ENGINE MANAGEMENT

ALL-IN-ONE is a complete gas engine management system (upper controller). It allows you to monitor, control, regulate and protect your entire system. This controller will open new cost reduction possibilities in the service sector, thanks to the remote data access and long distance data transmission features. All system parameters, performance and historical data can be transferred via modem, internet or SMS. These features will significantly increase your customer's system availability.

ALL-IN-ONE Features:

- Mains monitoring and protection
- Import/export control
- 3 operation modes: island, standby (emergency) or parallel to mains
- Forward and Reverse synchronization without interruptions
- Generator monitoring (U, I, cos φ, T)
- Engine monitoring (P, T, p, min-1, etc.)
- Lean Burn control
- Speed measurement and control
- CAN Bus Interface
- Extendable up to 32 modules



- Binary input (status LED on board)
- Binary output (status LED on board)
- Analog input (mA, PT100, NiCr-Ni, etc.)
- Analog output (mA, V)
- Alarm list records and historial data
- 7 levels of password protection
- Remote control via modem, internet, GMS connection
- SMS, e-mail, and warning call service

Air/Fuel Ratio Control System



- For naturally aspirated and turbocharged engines
- For use with natural gas, biogas (minor H2S content), mine gas, etc.
- Available as Series 50, 100, 140, 200
- Butterfly diameter 42-115 mm (1.65-4.53 in.), other dimensions available on request
- Rigid design

- High resolution stepper motor
- Applicable for temperatures up to 257 °F/125 °C, high temperature types (-HT) up to 392 °F/200 °C
- Controlled by MOTORTECH VariStep3 stepper motor driver



The VariFuel2 is a high-tech variable Venturi type mixer that can constantly adjust to any fuel changes and allows the engine to operate at its most efficient point. Series 100, 140, 200, 250, 300 and 350 are available for engines with an air requirement up to 12,000 m³/h. Coupled to an air/gas mixer, lean-burn or stoichiometric, it precisely regulates the mixture. It is very popular for applications with constant changes in calorific value of fuel.

VariFuel2 uses a high precision stepper motor with an exclusive reprogrammable driver board (VariStep3). Various flow bodies and flexible inlet and outlet configurations allow fully flexible cross section adjustment.

Suitable for nearly all gas types:

- Natural gas
- Biogas
- Landfill gas
- Sewage gas
- Wood gas
- Wellhead gas
- Mine gas



VariFuel2 – Accessories



The stepper motor driver control developed by MOTORTECH guarantees the ideal control of the various types of MOTORTECH VariFuel2 air/gas mixers and throttle bodies with integrated stepper motor.

- Precise mixer and throttle adjustment due to microstep operation
- Integrated CANopen and Modbus RTU interface
- Easy access to connectors and switches
- Configuration via MICT software
- Protection class IP 20



Thermocouples

Thermocouples are used on gas engines, e. g. for measuring the combustion chamber or exhaust gas temperature. MOTORTECH offers a wide range of different versions for retrofitting or replacing the thermocouples used by engine manufacturers (CATERPILLAR®, MAN®, MWM®, WAUKESHA®, etc.).



Oxygen Sensors

A variety of oxygen sensors are available. Including versions to replace CATERPILLAR® OEM sensors.





OLC

MOTORTECH OIL LEVEL CONTROLLER

Oil level monitoring, oil refill, and even an automated oil change – in other words, the complete management of the oil cycle – can be realized in a completely reliable manner with MOTORTECH’s OLC oil level controller. Available as variant with float switches or with analog level sensor.

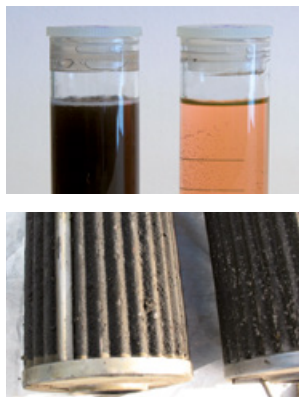
Advantages for Users

- Elimination of regular monitoring of the oil level
- Operation is not interrupted for monitoring the oil level
- Operating errors are avoided, no overfilling/lack of oil
- Automated oil change possible
- Less work for staff, increase in operational safety
- Visual surveillance of the oil level during operation is possible
- Remote monitoring from a central location

CoolantFilter

MOTORTECH CUSTOM MADE STAINLESS STEEL FILTERS

These bypass filters with stainless steel filter elements clean coolant liquids of any deposits. Elements can be washed and do not need to be disposed. Increases water pump life, cylinder head efficiency and equipment availability. Reduces service and maintenance cost. Filter elements available in 50 micron (standard) and 25 micron (optional) rating.



LubeOilFilter

CUSTOM MADE STAINLESS STEEL FILTERS

Custom made stainless steel lube oil filters. Over 800 different filters – all to your exact specifications. All filters are 100% stainless steel construction. Filters are available in ratings of 3 to 400 micron absolute. Standard seal buna „N“ – Viton, Silicone etc. – optional.

Features

- Cleanable
- Consistent
- Environmentally friendly
- Reduce hazardous contaminants
- High payback
- Direct replacement
- Greater fluid flow
- Extends maintenance intervals
- Improves performance
- Provides predictive tool
- Reduces inventory
- Extends equipment life



Technical Training at MOTORTECH

The Key to your Success!

More details about our training are available for download at www.motortech.de. The MOTORTECH training team is happy to be at your disposal for every special question you might have.



MOTORTECH Service

Phone: +49 5141 93 99 220
E-Mail: training@motortech.de

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MOTORTECH GmbH

Hogrevestr. 21-23
29223 Celle
Germany
Phone: +49 (5141) 93 99 0
Fax: +49 (5141) 93 99 99
www.motortech.de
sales@motortech.de

MOTORTECH Americas, LLC

1400 Dealers Avenue, Suite A
New Orleans, LA 70123
USA
Phone: +1 (504) 355 4212
Fax: +1 (504) 355 4217
www.motortechamericas.com
info@motortechamericas.com

MOTORTECH Shanghai Co. Ltd.

Room 1018 Enterprise Square,
No. 228 Meiyuan Road,
Zhabei District, 200070 Shanghai
China
Phone: +86 (21) 6380 7338
www.motortechshanghai.com
info@motortechshanghai.com

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