Ignition Controllers & Harnesses

MIC3+CEC Ignition Controllers

- High energy retrofit ignition controller 1)
- More than double the ignition energy (300 mJ)
- Plug & play solution enables quick conversion without great effort
- Predefined configuration data can be easily uploaded to the ignition controller
- For use with VHP F2895, F3521

Equivalent to:

P/N 66.00.358-8

WAUKESHA® P/N 740608A, 740608
CEC Models 811/811A
MOTORTECH P/N 06.00.515-6/-8
MOTORTECH MIC500

1) Patented technology (Patent No. US 8,893,692 BS)
Ignition Controllers & Harnesses

Due to the same connector configuration, the existing input and output wiring can be re-used. Additional connectors for CAN Bus (PowerView3) and analog input (DetCon20) connection.

Special bracket kit to mount the ignition controller on the position of the WAUKESHA® device.

Due to the same connector configuration, the existing input and output wiring can be re-used. Additional connectors for CAN Bus (PowerView3) and analog input (DetCon20) connection.

Required components
- MIC3+CEC ignition controller

Accessories (optional)
- DetCon20 detonation control system
- PowerView3 HMI module

Description
- Hall effect pickup
- Camshaft
- Engine
- Cylinder
- Ignition coil
- Spark plug lead
- Input wiring
- Output wiring

2 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 and will send an analog signal (4 to 20 mA / 0 to 5 V) out to the ignition system to retard in a linear function. If detonation cannot be cured a signal will be send for load reduction and finally an engine STOP signal. CAN Bus interface included.

3 Complete visualization of MIC3+, MIC4 and MIC5 operating data, inclusive error diagnostic via optionally available PowerView3 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).
## Output Harnesses – Unshielded

- **Output harness for ALT III ignition magneto**
  - For unshielded applications up to 8 cylinders
  - MIL connector, 14 pole, socket, 180°
  - 180 in length
  - **Equivalent to:**
    - P/N 06.31.030-1
      - WAUKESHA® P/N 69703, 178622
      - ALTRONIC® P/N 393018-1

- **Output harness for ALT III ignition magneto**
  - For unshielded applications up to 12 cylinders
  - MIL connector, 14 pole, socket, 180°
  - 180 in length
  - **Equivalent to:**
    - P/N 06.31.030-2
      - WAUKESHA® P/N 269717B
      - ALTRONIC® P/N 393018-2

- **Output harness for ALT III/III-CPU/V ignition magneto, CPU95-EVS (ignition unit to J-Box or DC-DC power supply)**
  - For unshielded applications up to 6 cylinders
  - MIL connector, 7 pole, socket, 180°
  - 180 in length
  - **Equivalent to:**
    - P/N 06.31.032-2
      - WAUKESHA® P/N 69692B
      - ALTRONIC® P/N 393023-2

- **Output harness for ALT V ignition magneto**
  - For unshielded applications up to 6 cylinders
  - MIL connector, 5 pole, socket, 180°
  - 72 in length
  - **Equivalent to:**
    - P/N 06.77.006-72
      - WAUKESHA® P/N 209728
      - ALTRONIC® P/N 593041-1
Output Harnesses – Shielded

- **Output harness for ALT III/III-CPU ignition magneto**
  - For shielded applications up to 6 cylinders
  - MIL connector, 7 pole, socket, 90°
  - 48 in conduit length, 72 in conductor length
  - **Equivalent to:**
    - P/N 95.30.007-1
    - WAUKESHA® P/N 178788, 208502E
    - ALTRONIC® P/N 393013-1, 393013-3, 393013-7

- **Output harness for ALT III/III-CPU ignition magneto, CPU95-EVS (DC-DC power supply)**
  - For shielded applications up to 6 cylinders
  - MIL connector, 7 pole, socket, 90°
  - 20 in conduit length, 60 in conductor length
  - **Equivalent to:**
    - P/N 95.30.007-4
    - WAUKESHA® P/N 178788A
    - ALTRONIC® P/N 393013-4

- **Output harness for ALT III/III-CPU ignition magneto**
  - For shielded applications up to 8 cylinders
  - MIL connector, 14 pole, socket, 90°
  - 20 in conduit length, 42 in conductor length
  - **Equivalent to:**
    - P/N 95.30.008-3
    - WAUKESHA® P/N 178803
    - ALTRONIC® P/N 393014-3

- **Output harness for ALT III/III-CPU ignition magneto**
  - For shielded applications up to 12 cylinders
  - MIL connector, 14 pole, socket, 90°
  - 48 in conduit length, 72 in conductor length
  - **Equivalent to:**
    - P/N 95.30.008-4
    - WAUKESHA® P/N 208502C
    - ALTRONIC® P/N 393014-4
Ignition Controllers & Harnesses

Output Harnesses – Shielded

- Output harness for ALT III/III-CPU ignition magneto
- For shielded applications up to 12 cylinders
- MIL connector, 14 pole, socket, 90°
- 36 in conduit length, 60 in conductor length

P/N 95.30.008-8

Equivalent to:
- WAUKESHA® P/N 178804
- ALTRONIC® P/N 393014-8

Harnesses for WAUKESHA® VHP Series Gas Engines with ESM

- Harness for crankshaft pickup
  - 45 in length

P/N A740749-MOT

Equivalent to:
- WAUKESHA® P/N A740749

- Harness for camshaft pickup
  - 43 in length

P/N A740750-MOT

Equivalent to:
- WAUKESHA® P/N A740750

- Harness, electric start
  - 46 in length

P/N 740744-MOT

Equivalent to:
- WAUKESHA® P/N 740744

- Harness, ground, left bank to right bank
  - 94 in length

P/N 740753-MOT

Equivalent to:
- WAUKESHA® P/N 740753
Ignition Coils

- **ALTRONIC® Style ignition coil**
- (-) ground
- For unshielded applications
- For use with CEC ignition controllers

Equivalent to:

<table>
<thead>
<tr>
<th>P/N</th>
<th>WAUKEŠA® P/N</th>
<th>ALTRONIC® P/N</th>
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<tbody>
<tr>
<td>06.50.054</td>
<td>69694B</td>
<td>591010</td>
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- **ALTRONIC® Style ignition coil**
- (-) ground
- For unshielded applications
- For use with CEC ignition controllers

Equivalent to:

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<tbody>
<tr>
<td>06.50.055</td>
<td>6964</td>
<td>501061</td>
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</table>

- **Flange ignition coil**
- MIL connector, 3 pole, pin
- (-) ground
- For unshielded and shielded applications
- For use with CEC ignition controllers or ESM system

Equivalent to:

<table>
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<tr>
<th>P/N</th>
<th>WAUKEŠA® P/N</th>
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<td>06.50.034</td>
<td>69694F</td>
<td>591012</td>
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Ignition Coils

- Flange ignition coil
- MIL connector, 3 pole, pin
- (-) ground
- For unshielded and shielded applications
- For use with CEC ignition controllers or ESM system

Equivalent to:

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<th>ALTRONIC® P/N</th>
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<td>06.50.035</td>
<td>69694G, A69694G</td>
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Optional to P/N 06.50.034 & 06.50.035:

- 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 69694F and 591012 or P/N 06.50.035, 69694G, A69694G and 591018

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<th>P/N</th>
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<tr>
<td>95.09.154</td>
<td>06.50.034</td>
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<td>95.09.155</td>
<td>06.50.035</td>
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Additional BNC connector for high voltage measurement
Ignition Coils

- Flange ignition coil with integrated primary lead
- Combination of single flange ignition coil and primary lead
- DEUTSCH® connector, 3 pole, socket
- 30 in primary lead length
- (-) ground
- For unshielded and shielded applications
- For use with ESM system

P/N 06.50.035-30-A
Ignition Coils

- Flange ignition coil with integrated primary lead
- MIL connector, 3 pole, pin
- 36 in primary lead length
- (-) ground
- For unshielded and shielded applications
- For use with ESM system

Equivalent to:

P/N 06.50.035-36-E WAUKESHA® P/N 69957, 69957A

Optional to P/N 06.50.035-30-A & 06.50.035-36-E:

- Flange ignition coils with diagnostic interface and integrated primary lead
- 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 06.50.035-30-A and P/N 06.50.035-36-E, 69957 and 69957A
- (-) ground
- For unshielded and shielded applications
- For use with ESM system

Equivalent to:

P/N 95.09.155-30-A MOTORTech P/N 06.50.035-30-A
P/N 95.09.155-36-E MOTORTech P/N 06.50.035-36-E
Ignition Coils

- Externally mounted ignition coil
- MIL connector, 3 pole, pin
- 3/4-20 UNEF high voltage termination
- (-) ground
- For shielded applications
- For use with CEC ignition controllers

**P/N 95.09.054**
Equivalent to:
- WAUKE莎® P/N 69694C
- ALTRONIC® P/N 591010-S

**Optional to P/N 95.09.054 & 95.09.055:**
- Externally mounted ignition coils 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 95.09.054,
    P/N 69694C and 591010-S or P/N 95.09.055, 69694A and 501061-S
  - (-) ground
  - For unshielded and shielded applications
  - For use with CEC ignition controllers

**P/N 95.09.055**
Equivalent to:
- WAUKE莎® P/N 69694A
- ALTRONIC® P/N 0501061-S

**P/N 95.09.074**
MOTORTECH P/N 95.09.054

**P/N 95.09.075**
MOTORTECH P/N 95.09.055
Ignition Coils

Accessories

- **Ignition coil boot**
- For primary side, 180° outlet
- Made of silicone
- Fits ALTRONIC® ignition coil P/N 69694B, 591010, 69694, 501061

**P/N 06.80.036**

- **Ignition coil boot**
- For primary side, 180° outlet
- Made of silicone
- Fits MOTORTECH ignition coil P/N 06.50.054, 06.50.055

**P/N 06.80.005**

- **Ignition coil boot**
- For primary side, 90° outlet
- Made of silicone
- Fits ALTRONIC®/MOTORTECH ignition coil P/N 69694B, 591010, 69694, 501061, 06.50.054, 06.50.055

**P/N 06.80.037**
Tools & Test Equipment

- SparkView high voltage indicator incl. SparkScan1 high voltage clamp or BNC Cable
- For use with spark plug leads (requires SparkScan1 high voltage clamp)
- For use with flange ignition coils with diagnostic interface (requires 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 06.90.099-100 For use with spark plug leads
(incl. SparkScan1 high voltage clamp)
P/N 06.90.099-105 For use with flange ignition coils with
diagnostic interface (incl. BNC cable)
Spark Plug Carrier and Flange Adaptor for VHP-GL Engines

■ Adaptor for flange ignition coil/spark plug carrier

Equivalent to:

P/N 211749-MOT  WAUKESHA® P/N  211749

NOTE: Screws and washers for fastening of flange ignition coil not included. Hex head screws (3 pcs 5/16-18x3/4 in – WED P/N 21309) and washers (3 pcs 5/16 in – WED P/N 21051) have to be supplied by customer.

■ Spark plug carrier

Equivalent to:

P/N 209567R  WAUKESHA® P/N  209567R

NOTE: Screws and washers for fastening of flange adaptor not included. Hex head screws (4 pcs 1/4-28x1/2 in – WED P/N 21296) and lock washers (4 pcs 1/4 in – WED P/N 21050) have to be supplied by customer.

■ Installation tool for spark plug carrier

P/N 44.01.015

■ Spare feather key for installation tool

P/N 44.01.017
**Ignition Coils**

- **Integral ignition coil - Slim Design**
  - 12 in length
  - MIL connector, 3 pole, pin
  - 13/16-20 UNEF inner thread
  - (-) ground
  - For shielded applications
  - For use with CEC ignition controllers

  **Equivalent to:**
  - P/N 95.09.222-12
    - WAUKESHA® P/N 69694D
    - ALTRONIC® P/N 591011B, 591011C

  **Optional:**
  - **Integral ignition coil – Fat Design**
    - Offers more energy than Slim Design integral ignition coils
    - Interchangeable with P/N 95.09.222-12
    - 11 in length
    - MIL connector, 3 pole, pin
    - 13/16-20 UNEF inner thread
    - (-) ground
    - For shielded applications
    - For use with CEC ignition controllers

    **Equivalent to:**
    - P/N 95.09.122-11
      - MOTORTECH P/N 95.09.222-12

  - **Integral ignition coil - Slim Design**
    - 6 in length
    - MIL connector, 3 pole, pin
    - 1-20 UNEF outer thread, 13/16-20 UNEF inner thread
    - (-) ground
    - For shielded applications
    - For use with CEC ignition controllers

    **Equivalent to:**
    - P/N 95.09.223-6
      - WAUKESHA® P/N 60615F
      - ALTRONIC® P/N 591007
Ignition Coils

Accessories for Integral Ignition Coils

- **Integral ignition coil grommet**
- Made of Teflon®
- Protects the spark plug well from dirt and liquids
- For use with Fat Design integral ignition coils

P/N 06.84.069

Tools & Test Equipment

- **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 commonly used ignition coils on WAUKESHA VHP series gas engines

P/N 06.98.054
## Pickups & Trigger Drives

### Pickups

<table>
<thead>
<tr>
<th>Magnetic pickup</th>
<th>Thread size 5/8-18 UNF</th>
<th>2.50 in length</th>
<th>For unshielded and shielded applications</th>
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<tbody>
<tr>
<td><strong>P/N 95.70.001-250</strong></td>
<td><strong>Equivalent to:</strong></td>
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<tr>
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<th>For unshielded and shielded applications</th>
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</table>

<table>
<thead>
<tr>
<th>Hall effect pickup - Active Low</th>
<th>Thread size 5/8-18 UNF</th>
<th>2.50 in length</th>
<th>For unshielded and shielded applications</th>
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<tr>
<td><strong>P/N 95.70.002-250</strong></td>
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<td>791050-2</td>
<td></td>
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</table>
# Pickups & Trigger Drives

## Pickups

- **Hall effect pickup - Active Low**
- Thread size 5/8-18 UNF
- 4.50 in length
- For unshielded and shielded applications

### Equivalent to:

<table>
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<th>P/N</th>
<th>WAUKESHA® P/N</th>
<th>ALTRONIC® P/N</th>
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<tbody>
<tr>
<td>95.70.002-450</td>
<td>295844B</td>
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## Pickup Harnesses for WAUKESHA® VHP Series Gas Engines with ESM

- **Harness for crankshaft pickup**
- 45 in length

### Equivalent to:

<table>
<thead>
<tr>
<th>P/N</th>
<th>WAUKESHA® P/N</th>
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</thead>
<tbody>
<tr>
<td>A740749-MOT</td>
<td>A740749</td>
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</table>

- **Harness for camshaft pickup**
- 43 in length

### Equivalent to:

<table>
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<tr>
<th>P/N</th>
<th>WAUKESHA® P/N</th>
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</thead>
<tbody>
<tr>
<td>A740750-MOT</td>
<td>A740750</td>
</tr>
</tbody>
</table>
# Pickups & Trigger Drives

## Trigger Discs with Magnets - Compatible with CEC Ignition System

- **Trigger disc with magnets**
  - Diameter 7.45 in
  - 6+1 events
  - For use with 6 cylinder gas engines

  **Equivalent to:**
  - P/N 06.20.069-6
  - WAUKESHA® P/N 305805R

- **Trigger disc with magnets**
  - Diameter 7.45 in
  - 12+1 events
  - For use with 12 cylinder gas engines

  **Equivalent to:**
  - P/N 06.20.069-12
  - WAUKESHA® P/N 305805P

- **Hub for trigger discs**
  - For use with trigger discs P/N 06.20.069-6 and 06.20.069-12

  **Equivalent to:**
  - P/N 06.20.070
  - WAUKESHA® P/N A168368E

- **Trigger disc with magnets**
  - Diameter 7.45 in
  - 6+1 events
  - Comes with lock nut
  - For use with 6 cylinder gas engines

  **Equivalent to:**
  - P/N 06.20.025
  - WAUKESHA® P/N 305805F

- **Trigger disc with magnets**
  - Diameter 7.45 in
  - 12+1 events
  - Comes with lock nut
  - For use with 12 cylinder gas engines

  **Equivalent to:**
  - P/N 06.20.026
  - WAUKESHA® P/N 305805G
Pickups & Trigger Drives

Trigger Discs with Magnets - Compatible with CEC Ignition System

- Trigger disc with magnets
- Diameter 5.35 in
- 8+1 events
- For use with 16 cylinder gas engines

Equivalent to:
P/N 06.20.252  WAUKEsha® P/N 305805N
Primary Leads

Primary Leads for shielded Applications

- Available as Conventional Style and New Flex Style (Optional)
- Ignition coil connector 3 pole, socket, 90° or 180°
- 2 wire conductor
- 1/2-14 NPT outlet box adaptor

<table>
<thead>
<tr>
<th>P/N 95.01.010-18</th>
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<tr>
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Optional:

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<table>
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Optional:

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# Primary Leads

## Primary Leads for shielded Applications

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Optional:

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|                  | ALTRONIC® P/N 593022-15                            |                                               |

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|                  | ALTRONIC® P/N 593022-18                            |                                               |

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| P/N              | WAUKESHA® P/N 208503G                               | New Flex Style                                |
|                  | ALTRONIC® P/N 593022-30                            |                                               |

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| P/N              | WAUKESHA® P/N 208503K                               | New Flex Style                                |
|                  | ALTRONIC® P/N 593027-30                            |                                               |

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## Primary Leads

### Primary Leads for shielded Applications

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Conventional Style

New Flex Style
Primary Leads

Primary Leads for WAUKESHA® ESM Gas Engines

- Available as standard with corrugated tube or New Flex Style (Optional)

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Spark Plug Leads for WAUKESHA® VHP Series Gas Engines

The spark plug leads installed by engine manufacturers are not always the best choice when it comes to longevity and trouble-free operation of the engine. Especially for use on WAUKESHA® VHP series gas engines, MOTORTECH offers suitable spark plug leads for easy replacement of original parts and as an upgrade for every engine. These spark plug leads offer several advantages when being compared to the OEM or aftermarket competition and solve the problems faced by plant operators on regular basis.

General Features

- Rigid design
- Insulators made of high quality Teflon®
- Reliable ignition coil and spark plug terminals
- Critical high voltage areas are protected with seals
- Designed to match the engine model, the spark plug type and application
- Long life product

Spark Plug Lead for WAUKESHA® VHP Series – Comparison

1. The ignition coil connector features four contact springs which lead to a more reliable connection. The resistant silicone boot improves the protection against flashovers as well as the stability of the connection with the ignition coil.
2. Much longer and thicker insulator is made of high quality Teflon® for highest dielectric strength.
3. Silicone boot with excellent temperature and aging characteristics for wire output and spark plug well sealing. Height-adjustable to compensate length differences of spark plug insulators.
4. Ceramic insert with 5 kΩ resistor for EMI suppression and reliable terminal for best spark plug connection.
5. Integrated silicone seal ring for best flashover protection will not stick on the spark plug insulator when pulling off the Teflon® insulator.
Spark Plug Leads & Extensions

Spark Plug Leads

- PolyMot™ spark plug lead
- Spark plug insulator made of Teflon®
- Ceramic insert with 5 kΩ resistor for EMI suppression
- Fits spark plug P/N 60999F, B8124, GT3-1, RM77N e.g.
- Fits ignition coil P/N 69694B, 69694, 591010, 501061, 06.50.054, 06.50.055 e.g.
- Fits ignition coil P/N 69694C, 69694A, 501061-S, 591010-S, 95.09.054, 95.09.055 e.g.
- For VHP GL series

P/N 06.85.423-16

- PolyMot™ spark plug lead
- Spark plug insulator made of Teflon®
- Ceramic insert with 5 kΩ resistor for EMI suppression
- Fits spark plug P/N 60999F, B8124, GT3-1, RM77N e.g.
- Fits ignition coil P/N 69694B, 69694, 591010, 501061, 06.50.054, 06.50.055 e.g.
- Fits ignition coil P/N 69694C, 69694A, 501061-S, 591010-S, 95.09.054, 95.09.055 e.g.
- For VHP GL series

P/N 06.85.649-16

- PolyMot™ spark plug lead
- Spark plug insulator made of Teflon®
- Ceramic insert with 5 kΩ resistor for EMI suppression
- Fits spark plug P/N 60999F, B8124, GT3-1, RM77N e.g.
- Fits ignition coil P/N 69694B, 69694, 591010, 501061, 06.50.054, 06.50.055 e.g.
- Fits ignition coil P/N 69694C, 69694A, 501061-S, 591010-S, 95.09.054, 95.09.055 e.g.
- For VHP GL series

P/N 06.85.739-16

- PolyMot™ spark plug lead
- Spark plug insulator made of Teflon®
- Ceramic insert with 5 kΩ resistor for EMI suppression
- Fits spark plug P/N 60999F, B8124, GT3-1, RM77N e.g.
- Fits ignition coil P/N 69694B, 69694, 591010, 501061, 06.50.054, 06.50.055 e.g.
- Fits ignition coil P/N 69694B, 69694, 591010, 501061, 06.50.054, 06.50.055 e.g.
- For VHP GU series

P/N 06.85.993-24
Spark Plug Leads & Extensions

Spark Plug Leads

- PolyMot™ spark plug lead
- Spark plug insulator made of Teflon®
- Ceramic insert with 5 kΩ resistor for EMI suppression
- Fits spark plug P/N 60999Z, B8324, B8124, GT3-1, RM77N e.g.
- Fits ignition coil P/N 69694B, 69694, 591010, 501061, 06.50.054, 06.50.055 e.g.
- For VHP GU/GSI series

P/N 06.85.688-16

- PolyMot™ spark plug lead
- Spark plug insulator made of Teflon®
- Ceramic insert with 5 kΩ resistor for EMI suppression
- Fits spark plug P/N 60999Z, B8324, B8124, GT3-1, RM77N e.g.
- Fits ignition coil P/N 69694B, 69694, 591010, 501061, 06.50.054, 06.50.055 e.g.
- Fits ignition coil P/N 69694A, 69694, 591010, 501061, 06.50.054, 06.50.055 e.g.
- For VHP G/GU/GSI series

P/N 06.85.422-16

- PolyMot™ spark plug lead
- Spark plug insulator made of Teflon®
- Ceramic insert with 5 kΩ resistor for EMI suppression
- Fits spark plug P/N 60999Z, B8324, B8124, GT3-1, RM77N e.g.
- Fits ignition coil P/N 69694C, 69694A, 501061-S, 591010-S, 95.09.054, 95.09.055 e.g.
- For VHP G/GU/GSI series

P/N 06.85.672H-22

- PolyMot™ spark plug lead
- Spark plug insulator made of Teflon®
- Ceramic insert with 5 kΩ resistor for EMI suppression
- Fits spark plug P/N 60999Z, B8324, B8124, GT3-1, RM77N e.g.
- Fits ignition coil P/N 69694B, 69694, 591010, 501061, 06.50.054, 06.50.055 e.g.
- For VHP GU/GSI series

P/N 06.85.705-16

Equivalent to:

P/N 06.85.422-16 WAUKESHA® P/N 211357H

P/N 06.85.672H-22
Spark Plug Leads & Extensions

Spark Plug Leads

- **PolyMot™ spark plug lead**
- Spark plug insulator made of Teflon®
- Ceramic insert with 5 kΩ resistor for EMI suppression
- Fits spark plug P/N M82N e.g.
- Fits ignition coil P/N 69694B, 69694, 591010, 501061, 06.50.054, 06.50.055 e.g.
- Fits VHP GU/GSI series

P/N 06.85.699-16

- **PolyMot™ spark plug lead**
- Spark plug insulator made of Teflon®
- Ceramic insert with 5 kΩ resistor for EMI suppression
- Fits spark plug P/N 60999Z, B8324, GI3-3 e.g.
- Fits ignition coil P/N 69694B, 69694, 591010, 501061, 06.50.054, 06.50.055 e.g.
- Fits VHP Series Four

P/N 06.85.848-16

- **PolyMot™ spark plug lead**
- Spark plug insulator made of Teflon®
- Ceramic insert with 5 kΩ resistor for EMI suppression
- Fits spark plug P/N 60999Z, B8324, GI3-3 e.g.
- Fits ignition coil P/N 69694B, 69694, 591010, 501061, 06.50.054, 06.50.055 e.g.
- Fits VHP series conversions from flange ignition coil to externally mounted ignition coil

P/N 06.85.714-24
■ **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

  P/N 06.51.248

■ **Installation tool for spark plug lead grommets**
  - With this tool, the grommets installed on PolyMot™ spark plug leads can be pushed into correct position in order to close the spark plug well and provide optimal sealing.

  P/N 07.99.019

■ **Silicone seal rings**
  - For PolyMot™ spark plug leads
  - Pack of 100 pcs

  Fits Spark Plug Lead:

  P/N 06.84.040-100  MOTORTECH P/N 06.85.422-16, 06.85.423-16, 06.85.649-16, 06.85.672H-22, 06.85.688-16, 06.85.699-16, 06.85.705-16, 06.85.714-24, 06.85.739-16, 06.85.848-16

  P/N 06.84.077-100  MOTORTECH P/N 06.85.993-24

■ **Brush Kit to clean termination wells**
  - For use with ignition coils, spark plug leads and extensions or extended barrel spark plugs
  - Easy to use tool cleans away dirt and corrosion safely
  - Helps to increase component service life
  - Bristles are of nylon impregnated with silicone to clean without scratching or removing any Teflon®

  P/N 07.98.075
Shielded Spark Plug Leads

- MOT-Blues shielded spark plug lead
- For use with MOTORTECH XT spark plug P/N S2B832BEX10
- 3/4-20 UNEF spark plug termination (180°)
- 1-20 UNEF ignition coil termination (180°)
- 24 in shielded cable length
- Fits ignition coil P/N 95.09.054 and 95.09.055 e.g.

P/N 95.90.030-24
## 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 60999Z, B8324, GI3-3 e.g.
- For VHP GL series

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### 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 60999Z, B8324, GI3-3 e.g.
- For VHP Series Four

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### Spark Plug Leads & Extensions
Spark Plug Leads & Extensions

Accessories for Spark Plug Extensions

- **Spark plug extension removal tool**
  - Fits extension top thread to ensure easy removal
  
  Equivalent to:
  
  P/N 44.99.912  
  WAUKESHA® P/N 474053

- **Silicone seal rings**
  - For PolyMot™ spark plug extensions
  - For sealing of spark plug insulator
  - Pack of 100 pcs
  
  Equivalent to:
  
  P/N 06.84.040-100  
  WAUKESHA® P/N 740011A
  
  Fits Spark Plug Extension
  
  MOTORTECH P/N 06.80.321-T, 06.80.340-T

- **Silicone seal rings**
  - For PolyMot™ spark plug extensions
  - For sealing of ignition coil secondary terminal
  - Pack of 100 pcs
  
  Equivalent to:
  
  P/N 06.81.138-100  
  WAUKESHA® P/N 296178A
  
  Fits Spark Plug Extension
  
  MOTORTECH P/N 06.80.321-T, 06.80.340-T
Spark Plug Leads & Extensions

Extensions for Integral Ignition Coils to Shielded Spark Plugs

- Integral ignition coil extension
- 3/4-20 UNEF spark plug connection, 1 in termination well depth
- 1-20 UNEF ignition coil connection, 2 in terminaten well depth

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Fits Spark Plug Extension

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Ignition Control Upgrade for WAUKESHA® VHP Series Gas Engines

MOTORTECH offers complete ignition system upgrades for WAUKESHA® VHP 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 disc
5. Output harness*
6. Ignition coil*
7. 1 Primary lead/PolyMot™ spark plug lead per ignition coil*

### Accessories
1. Junction box
2. AlphaRail ignition wiring rail

### System Enhancement
1. PowerView3 – HMI module
2. DetCon20 – Detonation controller

### Description
1. Camshaft
2. Crankshaft
3. Engine
4. Cylinder
5. Harness to connect the ignition wiring rails and the junction box

* Shielded and unshielded versions available.

### 1-Pickup Arrangement for 4-Stroke Engines
1) Camshaft (N+1/N-1)
   - Hall effect pickup
   - (disc with magnets)
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 caloric 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

Hall Effect Pickup

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

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

7 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.

7 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.

8 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
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!

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 52 for further information.
**Ignition Wiring Rails & Hardware**

**Upgrade Kits for Waukesha® VHP GU/GSI 12 Cylinder Gas Engines**

- **Shielded Ignition Control Upgrade Kit** for Waukesha® VHP GU/GSI 12 Cylinder Engines

  *Contains*:
  - MIC4 series ignition controller
  - 1 pickup arrangement (Hall effect) incl. shielded pickup leads, trigger disc and hub
  - Output wiring and junction box with fittings to connect ignition controller and wiring rails
  - AlphaRail wiring rails with hardware kit
  - High energy integral ignition coils
  - New Flex Style primary leads for connection of wiring rails and integral ignition coils

  **P/N 95.75.120-12**

- **Unshielded Ignition Control Upgrade Kit** for Waukesha® VHP GU/GSI 12 Cylinder Engines

  *Contains*:
  - MIC4 series ignition controller
  - 1 pickup arrangement (Hall effect) incl. pickup leads, trigger disc and hub
  - Output wiring and junction box with fittings to connect ignition controller and wiring rails
  - AlphaRail wiring rails with hardware kit
  - High energy integral ignition coils
  - Primary lead and mounting kits for connection of wiring rails and ignition coils
  - PolyMot™ spark plug leads

  **P/N 77.75.120-12**
Ignition Wiring Rails & Hardware

Upgrade Kits for WAUKESHA® VHP G/GU/GSI 12 Cylinder Gas Engines

- Shielded ignition control upgrade kit
  for WAUKESHA® VHP G/GU/GSI 12 cylinder engines
- For use with existing WAUKESHA® CEC ignition controller

  Contains:
  - Output wiring and junction box with fittings to connect CEC ignition controller and wiring rails
  - AlphaRail wiring rails with hardware kit
  - Integral ignition coils to work with CEC Spark Reference System
  - New Flex Style primary leads for connection of wiring rails and integral ignition coils

P/N 95.75.121-12

- Unshielded ignition control upgrade kit
  for WAUKESHA® VHP G/GU/GSI 12 cylinder engines

  Contains:
  - MIC4 series ignition controller
  - 1 pickup arrangement (Hall effect) incl. pickup leads, trigger disc and hub
  - Output wiring and junction box with fittings to connect ignition controller and wiring rails
  - AlphaRail wiring rails with hardware kit
  - High energy integral ignition coils
  - Primary lead and mounting kits for connection of wiring rails and ignition coils
  - PolyMot™ spark plug leads

P/N 77.75.120-12

- Ignition wiring rail kit for 12 Cylinder WAUKESHA® VHP ESM Series Gas Engines

  Contains:
  - AlphaRail wiring rails and mounting brackets
  - Connecting harness assembly, ESM to wiring rails
  - New Flex Style shielded primary leads for AlphaRail

P/N 95.75.048-B  WAUKESHA® P/N  740283
Ignition Tools & Test Equipment

- **SparkView high voltage indicator incl. SparkScan1 high voltage clamp or BNC cable**
  - For use spark plug leads (requires SparkScan1 high voltage clamp)
  - For use with flange ignition coils with diagnostic interface (requires 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 **06.90.099-100**  For use with spark plug leads (incl. SparkScan1 high voltage clamp)
  P/N **06.90.099-105**  For use with flange ignition coils with diagnostic interface (incl. BNC cable)

- **SparkScan1 high voltage clamp**
  - Attached to a conventional ignition cable (7 mm) and connected to a Scope Meter, the operator can analyse the ignition trace
  - Allows preventive maintenance of the equipment by measuring high voltage peak (kV) and spark duration (μsec) of all cylinders of an engine in a routine manner
  - 2.0 m/7.0 ft length

  P/N **06.90.099-100**

- **Digital Scope Meter**
  - Compact 20 MHz or 40 MHz two channel scope
  - Ideal for troubleshooting of industrial machinery, instrumentation, control and power systems

  P/N **06.98.005-110**  Digital scope meter, 110 V
  P/N **06.98.005-220**  Digital scope meter, 220 V

- **BNC Cable**
  - For use with SparkView or Digital Scope Meter
  - 2.0 m/7.0 ft length

  P/N **06.90.105**
Ignition Tools & Test Equipment

- **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 commonly used ignition coils on WAUKESHA VHP series gas engines

  P/N 06.98.054

- **ScopeLite timing light**
  - Timing light is self-powered and designed to work with fully shielded ignition systems
  - The special clamp picks up the small trigger signal through the braid of shielded spark plug leads
  - Can be attached directly to the BNC connector of MOTORTECH ignition coils with diagnostic interface
  - Even on applications with integral or standard flange ignition coils, the clamp can be attached to a shielded primary lead

  P/N 06.98.100-200  ScopeLite timing light with LEDs, incl. clamp, 200 in standard connecting lead and carrying case

- **Brush Kit to clean Termination Wells**
  - For use with ignition coils, spark plug leads and extensions or extended barrel spark plugs
  - Easy to use tool cleans away dirt and corrosion safely
  - Helps to increase component service life
  - Bristles are of nylon impregnated with silicone to clean without scratching or removing any Teflon®

  P/N 07.98.075
Spark Plugs & Accessories

Spark Plugs (M18x1.5 Thread Size · 0.500 in Thread Reach)

■ CHAMPION® spark plug
  ■ N-type electrode (Cu-Ni/Ni)
  ■ HEX 7/8 in (22.2 mm)
  ■ Recommended for natural gas
  ■ For VHP series (0.500 in reach heads)

Equivalent to:

<table>
<thead>
<tr>
<th>P/N</th>
<th>WAUKESHA® P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM77N</td>
<td>60999F</td>
</tr>
</tbody>
</table>

■ CHAMPION® spark plug
  ■ J-type electrode (Pt/Pt)
  ■ HEX 7/8 in (22.2 mm)
  ■ Recommended for natural gas

P/N RM77PP

Optional to P/N RM77N & RM77PP

■ MOTORTECH MHP spark plug
  ■ J-type electrode (Ir/Ir)
  ■ HEX 13/16 in (20.8 mm)
  ■ Recommended for natural/special gas

P/N B8124

Optional to P/N RM77N & RM77PP

■ DENSO® spark plug
  ■ J-type electrode (Ir/Pt)
  ■ HEX 7/8 in (22.2 mm)
  ■ Recommended for natural/special gas

P/N GT3-1
Spark Plugs & Accessories

Spark Plugs (M18x1.5 Thread Size - 0.500 in Thread Reach)

- **CHAMPION® spark plug** - for use with integral ignition coils
  - N-type electrode (Cu-Ni/Ni)
  - HEX 1 in (25.4 mm)
  - 13/16-20 UNEF thread for integral ignition coil
  - Recommended for natural gas
  - For VHP series (0.500 in reach heads)

  **Equivalent to:**
  
P/N RTM77N  
  WAUKESHA® P/N  60999G

- **CHAMPION® spark plug** - for use with integral ignition coils
  - J-type electrode (Pt/Pt)
  - HEX 7/8 in (22.2 mm)
  - 13/16-20 UNEF thread for integral ignition coil
  - Recommended for natural gas

  **Optional to P/N RTM77N & RTM77PP**

  **MOTORTECH ICP spark plug** - for use with integral ignition coils
  - J-type electrode (Ir/Ir)
  - HEX 15/16 in (23.8 mm)
  - 13/16-20 UNEF thread for integral ignition coil
  - Recommended for natural/special gas

  **P/N ICPB812**
## Spark Plugs & Accessories

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

<table>
<thead>
<tr>
<th>Spark Plugs</th>
<th>Equivalent to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ CHAMPION® spark plug</td>
<td>WAUKEISHA® P/N 60999Z</td>
</tr>
<tr>
<td>■ J-Type electrode (Ir/Pt)</td>
<td>CHAMPION® P/N RB77WPCC, KB77WPCC</td>
</tr>
<tr>
<td>■ HEX 7/8 in (22.2 mm)</td>
<td></td>
</tr>
<tr>
<td>■ Recommended for natural gas</td>
<td></td>
</tr>
<tr>
<td>■ For VHP series (0.750 reach heads)</td>
<td></td>
</tr>
<tr>
<td>P/N FB77WPCC</td>
<td></td>
</tr>
</tbody>
</table>

| DENSO® spark plug | |
| J-type electrode (Ir/Pt) | |
| HEX 7/8 in (22.2 mm) | |
| Recommended for natural gas | |
| P/N GI3-4 | |

Optional to FB77WPCC & GI3-4

| MOTORTECH MHP spark plug | |
| J-type electrode (Ir/Ir) | |
| HEX 13/16 in (20.8 mm) | |
| Recommended for natural/special gas | |
| P/N B8324 | |

Optional to P/N FB77WPCC

| DENSO® spark plug | |
| J-type electrode (Ir/Pt) | |
| HEX 7/8 in (22.2 mm) | |
| Recommended for natural | |
| P/N GI3-3 | |

Optional to P/N FB77WPCC

| DENSO® spark plug | |
| J-type electrode (Ir/Ir) | |
| HEX 7/8 in (22.2 mm) | |
| Recommended for natural/special gas | |
| P/N GI3-5 | |
Spark Plugs & Accessories

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

- **CHAMPION® spark plug - for use with integral ignition coils**
  - J-type electrode (Ir/Pt)
  - HEX 7/8 in (22.2 mm)
  - 13/16-20 UNEF thread for integral ignition coil
  - Recommended for natural gas
  - For VHP series (0.750 reach heads)

P/N RTB77WPCC

Optional to RTB77WPCC

- **MOTORTECH ICP spark plug – for use with integral ignition coils**
  - J-type electrode (Ir/Ir)
  - HEX 15/16 in (23.8 mm)
  - 13/16-20 UNEF thread for integral ignition coil
  - Recommended for natural/special gas

P/N ICPB832

- **MOTORTECH XT spark plug - for use with shielded spark plug leads**
  - J-type electrode (Ir/Ir)
  - HEX 7/8 in (22.2 mm)
  - 3/4-20 UNEF thread for shielded spark plug lead (MOT-Blues/Conventional)
  - 10 in barrel length
  - Recommended for natural/special gas

P/N S2B832BEX10

Optional to P/N S2B832BEX10

- **MOTORTECH XTL spark plug with integrated spark plug lead**
  - CSA approved for Class I, Division 2, Group D
  - J-type electrode (Ir/Ir)
  - HEX 29 mm
  - 10 in barrel length
  - 24 in shielded cable length
  - Ignition coil connector to fit P/N 95.09.054 and 95.09.055
  - Recommended for natural/special gas

P/N IB832BEX10-B245A
Spark Plugs & Accessories

Tools

- Spark plug gap setting tool
  - For easy setting of spark plug gaps
  - Basic kit includes M14x1.25 or M18x1.5 thread adaptor
  - Required accessory kit needs to be ordered separately

Fits Spark Plugs with Thread Size

P/N 07.98.120-18
M18x1.5

- Accessory kit for J-type spark plugs
  - Including base insert and feeler gauge

P/N 07.98.122-A

- Accessory kit for N-type spark plugs
  - Including base insert, expanding pin, compressing pins
    (0.012 in/0.30 mm, 0.015 in/0.38 mm and 0.020 in/0.51 mm)

P/N 07.98.122-A

- Feeler gauge clamp
- Feeler gauge, gap 0.008 in./0.20 mm
- Feeler gauge, gap 0.010 in./0.25 mm
- Feeler gauge, gap 0.012 in./0.30 mm
- Feeler gauge, gap 0.014 in./0.35 mm

P/N 07.98.037
P/N 07.98.059
P/N 07.98.034
P/N 07.98.035
P/N 07.98.036

- 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
  - Only for use with spark plugs without pre-chamber

P/N 44.01.023
Spark Plugs & Accessories

Tools

- **Extended barrel magnetic spark plug sockets**
  - 1/2 in drive
  
  **P/N 07.99.022-4-18**
  HEX 13/16 in (20.8 mm)
  Fits Spark Plug B8124, B8324,

  **P/N 07.99.022-3-18**
  HEX 7/8 in (22.2 mm)
  Fits Spark Plug RM77N, 60999F, GT3-1, RTM77PP, FB77WPCC, 60999Z, RB77WPCC, KB77WPCC, GI3-3, GI3-4 GI3-5, RTB77WPCC, S2B832BEX10

  **P/N 07.99.022-2-18**
  HEX 15/16 in (23.8 mm)
  Fits Spark Plug ICPB812, ICPB832

  **P/N 07.99.022-1-18**
  HEX 1 in (25.4 mm)
  Fits Spark Plug RTM77N, 60999G

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

  **P/N 07.98.065**

- **Seat & thread reconditioner**
  - Cleans cylinder head threads and seal seats in one operation
  - M18x1.5 thread size
  - 12 in barrel length
  - 1/2 in drive

  **P/N 07.98.118-12-BEX12**
  1/2 in

  **P/N 07.98.118-34-BEX12**
  3/4 in
**Spark Plugs & Accessories**

**Tools**

- **Extended Barrel Thread Plug Gauge – Go/No-Go**
  - Inspection tool to check whether the actual dimension of the thread is within the tolerance or whether it needs to be reworked
  - 15 in barrel length

  P/N 07.98.070-18
  - Thread reach
    - M18x1.5

- **Extended Barrel Thread Cutting Taps**
  - For recutting of worn threads
  - 12 in barrel length
  - 1/2 in drive

  P/N 07.98.067-BEX12
  - Thread size
    - M18x1.5

- **SparkView high voltage indicator incl. SparkScan1 high voltage clamp or BNC cable**
  - For use spark plug leads (requires SparkScan1 high voltage clamp)
  - For use with flange ignition coils with diagnostic interface (requires 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 06.90.099-100
  - For use with spark plug leads
    (incl. SparkScan1 high voltage clamp)

  P/N 06.90.099-105
  - For use with flange ignition coils with diagnostic interface (incl. BNC cable)
Spark Plugs & Accessories

Accessories

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

  P/N 02.85.016-100

- **Gaskets for integral ignition coil spark plugs**
  - Copper
  - Pack of 100 pcs

  P/N 75.90.295-100

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

  P/N 07.98.718
Detonation Control Upgrade for WAUKESHA® VHP 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.

2 Detonation Sensor

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

3 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 downtime 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

4 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!
Upgrade Kits for WAUKESHA® VHP G/GU/GSI/GL 12 Cylinder Gas Engines

- Detonation control upgrade kit for WAUKESHA® VHP G/GU/GSI/GL 12 cylinder engines
- For use in hazardous and non-hazardous environments

Contains:
- DetCon20 detonation controller with 20 inputs
- Harnesses to connect detonation controller and wiring rails
- AlphaRail wiring rails with hardware kit
- Leads for connection of wiring rails and detonation sensors
- Detonation sensors to monitor each cylinder individually

P/N 43.00.421-12

- Cylinder head screw WAUKESHA® P/N 169994B
- Prepared, incl. mounting screw for detonation sensor

P/N 169994B-DS
Throttle Bodies

- **Throttle bodies for WAUKESHA® VHP G/ GSI/ LT 6 and 12 cylinder engines**
  - Same design and shape for easy replacement of original part
  - Reinforced shaft and butterfly valve made of stainless steel for high durability
  - Use of ball bearings instead of plain bearings
  - Including end stop and idle speed adjustment
  - Lever for connection to the external actuator or integrated stepper motor
  - Maintenance free product

- **Throttle body for WAUKESHA® VHP 6 cylinder in-line engines**
  - For F2895G/GSI, F3521G/GSI

**P/N 30.41.151-106-VHP-6**

**Equivalent to:**
WAUKESHA® P/N E204072

Optional to P/N 30.41.151-106-VHP-6

- **ITB throttle body conversion kit for WAUKESHA® VHP 6 cylinder in-line engines**
  - For F2895G/GSI, F3521G/GSI

  **Contains:**
  - ITB throttle body P/N 30.43.151-106-VHP-6 (1 pc)
  - Stepper motor harness P/N 31.01.942 (1 pc)
  - VariStep3 stepper motor driver P/N 31.01.960 (1 pc)

**P/N 75.30.148-6**

Optional to P/N 30.41.151-106-VHP-6

- **ITB throttle body conversion kit for WAUKESHA® VHP 6 cylinder in-line engines**
  - For F2895G/GSI, F3521G/GSI

  **Contains:**
  - ITB throttle body P/N 30.43.151-106-VHP-6 (1 pc)
  - Stepper motor harness P/N 31.01.942 (1 pc)
  - VariStep3 stepper motor driver P/N 31.01.960 (1 pc) built into stainless steel enclosure

**P/N 75.30.149-6**
Throttle Bodies

- **Throttle body for WAUKESHA® VHP 12 cylinder V-engines**
  - For L5108G/GSI, L5790G/GSI, L5774LT, L5794GSI, L7042G/GSI, L7044GSI
  - Fits left and right bank

**P/N 30.41.151-106-VHP-12**

Equivalent to:

- WAUKESHA® P/N E204072, A204072, E204072A, A204072A

Optional to P/N 30.41.151-106-VHP-12

- **ITB throttle body conversion kit for WAUKESHA® VHP 12 cylinder V-engines**
  - For L5108G/GSI, L5790G/GSI, L5774LT, L5794GSI, L7042G/GSI, L7044GSI
  - **Contains:**
    - ITB throttle body P/N 30.43.151-106-VHP-12, fits left and right bank (2 pcs)
    - Stepper motor harness P/N 31.01.942 (2 pcs)
    - VariStep3 stepper motor driver P/N 31.01.960 (2 pcs)
    - Isolation amplifier P/N 63.02.017 (1 pc)

**P/N 75.30.148-12**

Optional to P/N 30.41.151-106-VHP-12

- **ITB throttle body conversion kit for WAUKESHA® VHP 12 cylinder V-engines**
  - For L5108G/GSI, L5790G/GSI, L5774LT, L5794GSI, L7042G/GSI, L7044GSI
  - **Contains:**
    - ITB throttle body P/N 30.43.151-106-VHP-12, fits left and right bank (2 pcs)
    - Stepper motor harness P/N 31.01.942 (2 pcs)
    - VariStep3 stepper motor driver P/N 31.01.960 (2 pcs)
    - Isolation amplifier P/N 63.02.017 (1 pc)
    - Stepper motor drivers and isolation amplifier pre wired and built into stainless steel enclosure

**P/N 75.30.149-12**
Actuator Replacement Kit

- MOTORTECH actuator replacement kit for WAUKESHA® VHP Series Four® with ESM and Extender® series engines
- Drop in replacement
- Eliminates HEINZMANN® actuator
- For L5774LT, L5794GSI/LT and L7044GSI

P/N 63.04.176  
Equivalent to:  
WAUKESHA® P/N  214046
Sensor Systems

Thermocouple Rails

- Thermocouple rails for WAUKESHA® 12 cylinder VHP engines
- Direct replacement for WAUKESHA® Thermocouple Conduit Assembly
- Available in different versions
- Prefabricated system guarantees easy exchange and installation
- Serviceable stainless steel wiring rail, no foam inside
- 14 thermocouples, Type K (NiCrNi), 90°
- Harness with flex conduit and J-Box or a large connector to fit the ESM
- Rail mounting brackets included in each kit
- 3 versions available

Thermocouple wiring rail Kit with 8 ft harness to junction xox

Contains:
- 14 thermocouples, Type K (NiCrNi), 90°, equivalent to WAUKESHA® P/N 211288S
- 8.5 ft harness with flex conduit and fitting
- Rail mounting bracket (2 sets)
- Junction box P/N 06.05.076 with 44 terminals

Equivalent to:
P/N D211359G-MOT WAUKESHA® P/N D211359G

Thermocouple wiring rail Kit with 50 ft harness for direct wiring

Contains:
- 14 thermocouples, Type K (NiCrNi), 90°, equivalent to WAUKESHA® P/N 211288S, but 50 ft cable length
- 50 ft harness with flex conduit and fitting
- Rail mounting bracket (2 sets)

P/N 77.75.068-50

Thermocouple wiring rail Kit with 8 ft harness and connector to ESM wiring system

Contains:
- 14 thermocouples, Type K (NiCrNi), 90°, equivalent to WAUKESHA® P/N 211288S
- 8 ft harness with flex conduit and 33 pole connector, socket
- Rail mounting bracket (2 sets)

Equivalent to:
P/N 77.75.066 WAUKESHA® P/N 214036D
Optional Parts/Spare Parts for Thermocouple Rails

- **Fitting, 1/4 in**
  - 1/4 in NPT outer thread
  - 14 pcs per rail kit required

  Equivalent to:
  
  P/N 64.40.038  WAUKESHA® P/N 194929

- **Thermocouple, Type K (NiCrNi), 90°**
  - 23 ft lead length
  - For use with D211359G-MOT, 77.75.066

  Equivalent to:
  
  P/N 56.01.094-23  WAUKESHA® P/N 211288S

- **Thermocouple, Type K (NiCrNi), 90°**
  - 59 ft lead length
  - For use with 77.75.068-50

  P/N 56.01.094-59
Sensor Systems

Oxygen Sensors & Accessories

- Oxygen sensor for WAUKESHA® VHP G/GSI/LT series gas engines
  - 2 pole, pin, 180° connector
  - 17 in length
  - Equivalent to:
    - P/N A740106E-MOT WAUKESHA® P/N A740106E, A740106D, A740106C

- 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
  - The heat shield can be screwed on top
  - P/N 19.60.023

- Oxygen sensor harness
  - 9 pole, pin, 180° connector
  - The heat shield can be screwed on top
  - Equivalent to:
    - P/N 06.30.110 WAUKESHA® P/N A740735
Gas Engine Accessories

Coolant Filtration

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

Coolant filter with 30 in stand
- 50 micron element
- 9 in length
- Flow indicator
- For temperatures up to 200 °F/95 °C

Equivalent to:

P/N 25.00.009-50-30  WAUKESHA® P/N 489501

Coolant filter with 49 in stand
- 50 micron element
- 18 in length
- Flow indicator
- For temperatures up to 200 °F/95 °C

Equivalent to:

P/N 25.00.018-50-49  WAUKESHA® P/N 489625
Gas Engine Accessories

Accessories for Coolant Filter

- **Single coolant filter element**
  - 50 micron element
  - 9 in length
  - Fits P/N 25.00.009-50-30, 489501

  **Equivalent to:**
  
  P/N 25.00.109-50  
  WAUKESHA® P/N  489508

- **Single coolant filter element**
  - 50 micron element
  - 18 in length
  - Fits P/N 25.00.018-50-49, 489625

  **Equivalent to:**
  
  P/N 25.00.118-50  
  WAUKESHA® P/N  489626

- **Shipping cases for filter elements**
  - Available for different element lengths

<table>
<thead>
<tr>
<th>P/N</th>
<th>For Element Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.00.209</td>
<td>9 in</td>
</tr>
<tr>
<td>25.00.218</td>
<td>18 in</td>
</tr>
</tbody>
</table>
Lube Oil Filtration

- Re-cleanable stainless steel filters for oil filtration are the environmentally friendly alternative to commonly used disposable filters
- Payback starts immediately after installation Due to re-using of elements
- 100% stainless steel construction
- Longer fluid life
- Extended maintenance intervals
- Improves filtration performance

Lube filter element kits

- Including 4, 7 or 14 reusable stainless steel filter elements and shipping case
- 25 micron element
- Element length 15 in, OD 3 in

Equivalent to:

P/N 25.00.310-4-WA  WAUKESHA® P/N 167602B (4 Elements)
P/N 25.00.310-7-WA  WAUKESHA® P/N 167602B (7 Elements)
P/N 25.00.310-14-WA WAUKESHA® P/N 167602B (14 Elements)

Lube filter element kits

- Including 4 or 7 reusable stainless steel filter elements and shipping case
- 25 micron element
- Element length 30 in, OD 3 in

Equivalent to:

P/N 25.00.311-4-WA  WAUKESHA® P/N 168660B, 489493 (4 Elements)
P/N 25.00.311-7-WA  WAUKESHA® P/N 168660B, 489493 (7 Elements)

Lube filter element kit

- Including 1 reusable stainless steel filter element and shipping case
- 75 micron element
- Element length 7 in, OD 5 in

Equivalent to:

P/N 25.00.312-1-WA  WAUKESHA® P/N 208472B, 489488 (1 Element)

1) All steel lube filter element kits are supplied with a shipping case
Lube Oil Filtration

- **Lube filter element kit**
  - Including 1 reusable stainless steel filter element and shipping case
  - 75 micron element
  - Element length 10 in, OD 5 in
  
  **Equivalent to:**
  
  P/N 25.00.313-1-WA \[\text{WAUKESHA}® \text{P/N } 208472C, 489489 \] (1 Element)

- **Lube filter element kit**
  - Including 10 reusable stainless steel filter elements and shipping case
  - 25 micron element
  - Element length 30 in, OD 3 in
  
  **Equivalent to:**
  
  P/N 25.00.314-10-WA \[\text{WAUKESHA}® \text{P/N } 168660H \] (10 Elements)

- **Single lube filter element**
  - 25 micron element
  - Element length 15 in, OD 3 in
  - Included in P/N 25.00.310-4-/7-/14-WA
  
  **Equivalent to:**
  
  P/N 25.00.310-WA \[\text{WAUKESHA}® \text{P/N } 167602B \]

- **Single lube filter element**
  - 25 micron element
  - Element length 30 in, OD 3 in
  - Included in P/N 25.00.311-4-/7-WA
  
  **Equivalent to:**
  
  P/N 25.00.311-WA \[\text{WAUKESHA}® \text{P/N } 168660B, 489493 \]
Lube Oil Filtration

- Single lube filter element
- 75 micron element
- Element length 7 in, OD 5 in
- Included in P/N 25.00.312-1-WA

P/N 25.00.312-WA  
Equivalent to: WAUKESA® P/N 208472B, 489488

- Single lube filter element
- 75 micron element
- Element length 10 in, OD 5 in
- Included in P/N 25.00.313-1-WA

P/N 25.00.313-WA  
Equivalent to: WAUKESA® P/N 208472C, 489489

- Single lube filter element
- 25 micron element
- Element length 30 in, OD 3 in
- Included in P/N 25.00.314-10-WA

P/N 25.00.314-WA  
Equivalent to: WAUKESA® P/N 168660H

- Single lube filter element
- 25 micron element
- Element length 17 in, OD 5 in

P/N 25.00.315-WA  
Equivalent to: WAUKESA® P/N 489491, 305351E

- Single lube filter element
- 25 micron element
- Element length 8 in, OD 4 in

P/N 25.00.316-WA  
Equivalent to: WAUKESA® P/N 489495, 304126
Gas Engine Accessories

Lube Oil Filtration

- Single lube filter element
- 25 micron element
- Element length 12 in, OD 5 in

P/N 25.00.317-WA Equivalent to: WAUKEsha® P/N 489490, 305315C

- Single lube filter element
- 25 micron element
- Element length 16 in, OD 4 in

P/N 25.00.317-WA Equivalent to: WAUKEsha® P/N 172607, 489522
Gas Engine Accessories

Ultrasonic Cleaning Equipment

- **Ultrasonic cleaning station**
- 2,000 Watts of ultrasonic cleaning power
- All new, versatile size to meet a variety of parts cleaning needs
- Environmentally safe aqueous cleaning
- Easy-to-operate controls for time, temperature and cleaning cycle automation
- Stainless steel tank construction
- Dual filter system
- Optional on-board task light
- Heavy-duty locking casters
- High velocity ultrasonics, metallurgically attached transducers
- Ultrasonic frequency sweep to enhance cleaning performance

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Repair & Overhaul

Repair and Overhaul Service – With One Year Warranty

Based on years of technical experience MOTORTECH offers a comprehensive repair and overhaul service for almost all popular ignition controllers.

Our economically remanufacturing process covers intensive inspections, parts replacement, extensive reconditioning and full operational test procedures. Within an average of four weeks (depends on customer location) we return a fully functional product that looks as good as new.

Flatrate Overhaul of:
- Waukesha® CEC ignition controller
- Waukesha® IPM-Diagnostic
- All MOTORTECH ignition controllers

Pre-Cleaning
Pre-cleaning of highly contaminated units.

Test Bench Check (Prior to Repair)
Intensive function test and determination of malfunctions.

Repair
Replacement of all known plus individual analyzed defects.

Exchange of Components
Exchange of all defective parts and ageing components.

Test Bench Check (After Repair)
Intensive function test with renewed components.

Burn in Test
48 hours stress test with maximum parameters in a furnace at 50 °C (122 °F).

Assembling
Assembling of the controller. Replacing of the gaskets and protective caps.

Final Test (End of Line Test)
Final operational test to control all functions.

Return to Customer
Creation of a repair and customer report. Units are safely packed for return to customer.
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P/N 01.00.014-EN | Rev.02/2018 | Application Guide for WAUKESHA® VHP Series

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