



# **Pro-Drag6**

## **6 CHANNEL CAPACITOR DISCHARGE IGNITION**

PLEASE REPORT ANY OMISSIONS OR  
ERRORS TO SALES@MWIGNITIONS.COM

### **CONTENTS:**

1. Installation notes
2. Ignition coil information
3. Mounting dimensions
4. Connections and specifications
5. 6 channel direct fire ignition
6. Mazda triple rotor ignition
7. Australian EMC compliance

# **CAUTION**

**THIS WIRING DIAGRAM IS  
APPLICABLE ONLY TO IGNITION  
SYSTEMS WITH THE SERIAL  
NUMBER PREFIX STARTING**

**39xxxx**

**USE OF INCORRECT DIAGRAM  
WILL VOID WARRANTY AND  
MAY DAMAGE UNIT**

# INSTALLATION NOTES

## MOUNTING

Do not mount the unit where it will be exposed to water or other liquids and ensure the bottom drain slots are unobstructed. Select a location away from excessive heat and provide a cooling air supply if required. Use soft rubber (40 duro) mounts on all four corners to isolate from strong vibration.

## IGNITION LEADS & SPARKPLUGS

Straight metal wire ignition leads radiate electrical interference which may cause erratic operation of nearby electronic devices including the CDI. Carbon suppressed ignition leads are not capable of conducting the CDI energy without becoming damaged.

For best performance use spiral wound inductively suppressed metal core ignition leads such as those produced by Magnecor<sup>®</sup>. Where possible use non resistor spark plugs to reduce energy loss.

## WIRING & POWER SUPPLY

**FAILURE TO INSTALL THE RECOMMENDED SIZE FUSE WILL VOID WARRANTY**

Trigger input & coil output numbers indicate ignition sequence not cylinder number.

250mJ and larger Pro-Drag CDI systems must not be operated below 13V.

Voltage boosters may limit CDI operation and ignition performance will not increase when operated above 13.8V

Connect the CDI directly to the battery with the recommended gauge wire. All coil negative wires must be joined at or in the connector.

Use twisted pair wire for all power and coil connections. To comply with Australian EMC 'C Tick' standards and for ultimate noise suppression use shielded twisted pair wire.

## TRIGGERING

(NOT APPLICABLE TO RELUCTOR TRIGGER IGNITIONS)

All M&W CDI systems are edge triggered and default to falling edge ignition, to select rising edge ignition connect the 'Trigger Edge' pin to the 'Signal Ground' pin. Dwell or duty cycle settings do not effect the CDI operation or performance.

Where the ecu contains an in built igniter or there is an igniter between the ECU and CDI it may be necessary to select rising edge ignition.

For Autronic® multiplex ignitions set the ecu for –VE Edge (Pulse).

THE TRIGGER EDGE ON THE CDI MUST BE SET THE SAME AS THAT IN THE ECU.

## LED INDICATOR

After initially applying power to the CDI the LED will illuminate for 1 second to indicate normal operation then extinguish. The LED will then flash briefly with each consecutive trigger event received.

A repeated double flash of the LED indicates a possible faulty ignition coil, faulty wiring, low supply voltage or damage to the CDI.

## TESTING

The CDI may be tested by momentarily grounding the inputs (with the exception of Reluctor trigger cdi's where the input must go below ground to trigger the unit), this will cause the corresponding ignition coil to spark. Do not conduct this test without a grounded sparkplug installed.

## CAUTION

TO PREVENT IGNITION COIL DAMAGE DO NOT FIRE THE CDI WITHOUT A GROUNDED SPARK PLUG AND DO NOT MAKE THE SPARK JUMP AN EXCESSIVE GAP

CHECK IGNITION TIMING AFTER COMPLETION

# IGNITION COILS

## COP COILS

COP (coil on plug) coils with built in drivers are not suitable for use with CDI ignitions. Small COP ignition coils may overheat when used in direct fire cdi applications. Inductive COP coils must be wired reverse polarity.

## COIL SELECTION

Most inductive ignition coils will work with CDI systems. For best performance they should have very low primary resistance and inductance and a turns ration between 75 and 100 to 1.

For ultimate CDI ignition power use a CDI specific ignition coil such as our CDI COP pencil coils or Ferrite CDI coils.

## FERRITE CDI COILS

Be aware when buying ferrite CDI coils from other suppliers who do not have the knowledge or experience to correctly prepare them for automotive use. Due to their fragile nature and poor quality control during manufacture it is easy to experience premature ignition coil failure and engine misfiring unless correctly assembled. All coils prepared by M&W are individually tested before sale.

**Note!** Ferrite CDI coils are for direct fire ignition only. For high performance distributor applications use either the Crane<sup>®</sup> PS92 or MSD<sup>®</sup> HVC2 coils.

## COIL POLARITY

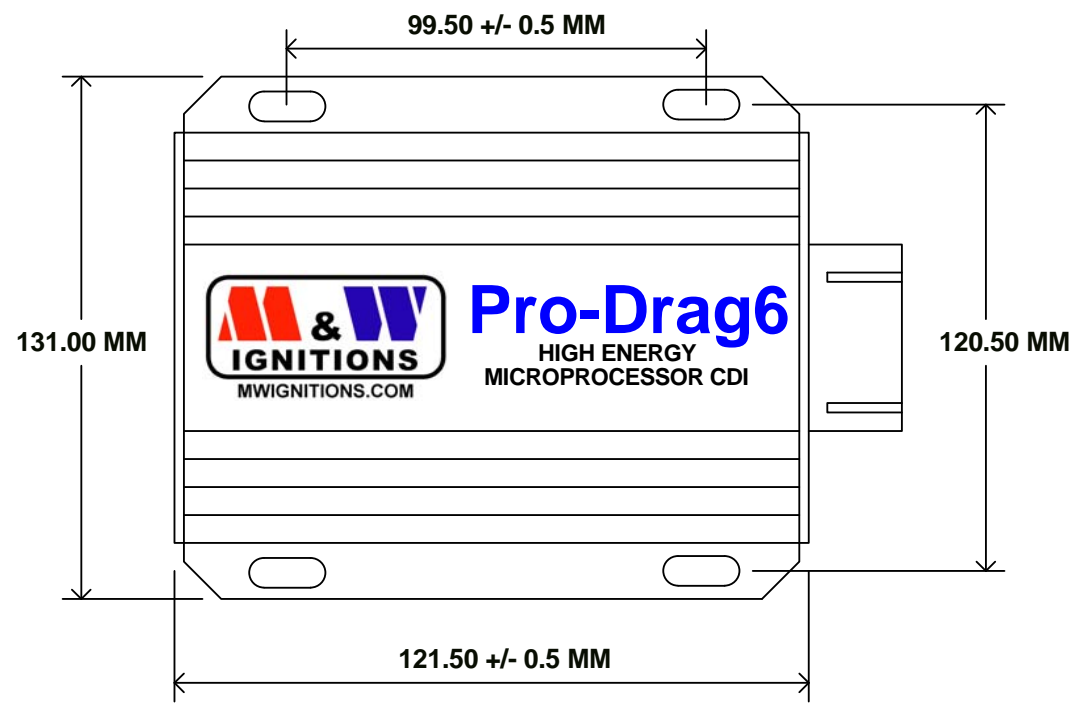
For correct operation inductive ignition coils should be wired with their primary polarity reversed.

**CAUTION!**

**DAMAGE TO IGNITION COILS MAY OCCUR IF OPERATED WITH AN EXCESSIVE SPARK GAP.**



**DISCONNECT POWER BEFORE WORKING ON UNIT**



**Slot dimensions - 5mm \* 10mm**

|       |                         |                            |     |
|-------|-------------------------|----------------------------|-----|
| Title |                         | <b>MOUNTING DIMENSIONS</b> |     |
| Size  | Number                  | Revision                   |     |
| A4    | <b>Pro-Drag6 250mJ</b>  | <b>1.2</b>                 |     |
| Date: | 16-Mar-2009             | Sheet 1 of                 | 1   |
| File: | E:\M&W\...\Mounting.sch | Drawn By:                  | M&W |

**NOT FOR STREET USE!**



**DISCONNECT POWER BEFORE WORKING ON UNIT**

**VIEWED FROM BACK OF CONNECTOR**



**KEEP ALL INPUTS WELL SEPARATED FROM COIL OUTPUTS**

|                  |                    |                      |
|------------------|--------------------|----------------------|
| 1 +12V (Battery) | 7 Ground (Battery) | 13                   |
| 2 +12V (Battery) | 8 Ground (Battery) | 14 Triggers C & D    |
| 3 Triggers E & F | 9 Trigger edge     | 15 Triggers A & B    |
| 4 Tacho          | 10 Signal ground   | 16 Ignition switch   |
| 5 Coils E & F +  | 11 Coils C & D +   | 17 Coils C & D -     |
| 6 Coils A & B +  | 12                 | 18 Coils A/C & B/D - |

**TRIGGER EDGE SELECTION**

Falling edge ignition - leave pin #9 disconnected.  
Rising edge ignition - connect pin #9 to pin #10.

**SPECIFICATIONS**

Operating voltage = 13.8V DC negative ground  
Starting voltage = +10V (not for operation)  
Maximum supply current = 20A (per unit)  
Power off current < 700uA  
Maximum ignition frequency = 800 Hz  
Coil primary voltage = 500V  
Spark energy = 250millijoules  
Trigger = 10mA adjustable edge  
Tacho = 12V, 25mA square wave  
Maximum allowable case temperature = 105°C  
Dimensions = 112L \* 110W \* 40H  
Weight = ???gm (each)

|       |                                |                        |     |
|-------|--------------------------------|------------------------|-----|
| Title |                                | <b>PRO-DRAG6 250MJ</b> |     |
| Size  | Number                         | Revision               |     |
| A4    | <b>SERIES 3</b>                | 1.5                    |     |
| Date: | 11-Sep-2009                    | Sheet 1 of 1           |     |
| File: | E:\M&W\...\Pro-Drage6_S3_1.sch | Drawn By:              | M&W |

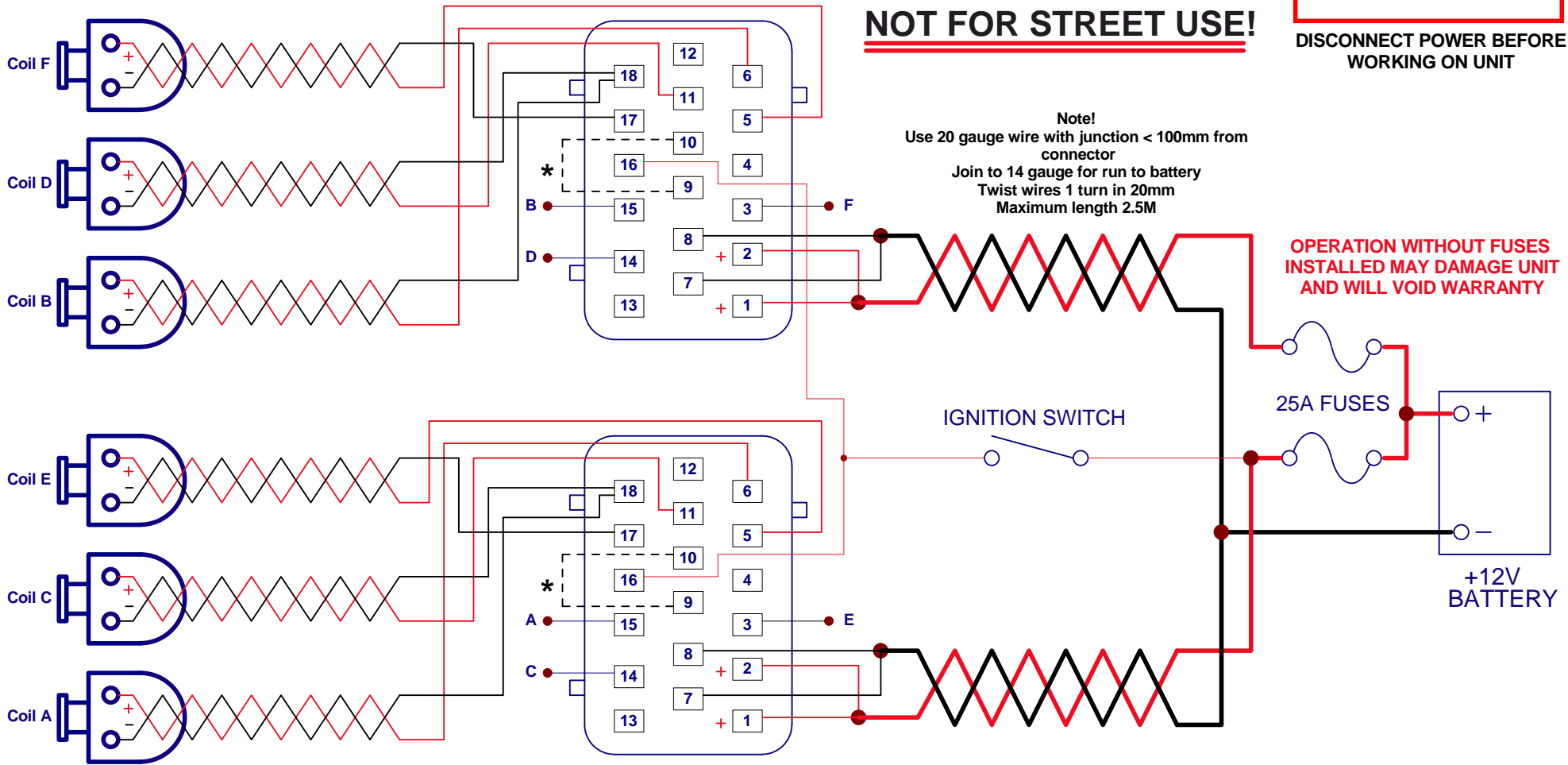
# FIRING ORDER MUST ALTERNATE BETWEEN BOXES

\* See instructions for use of trigger edge selection link



DISCONNECT POWER BEFORE WORKING ON UNIT

**NOT FOR STREET USE!**



Note!  
Use 20 gauge wire with junction < 100mm from connector  
Join to 14 gauge for run to battery  
Twist wires 1 turn in 20mm  
Maximum length 2.5M

OPERATION WITHOUT FUSES INSTALLED MAY DAMAGE UNIT AND WILL VOID WARRANTY

Note!  
Use 18-20 gauge wire  
Twist wires 1 turn in 20mm  
Maximum wire length 2M

← TOP  
CDI CONNECTOR (LOOKING AT END OF EXTRUSION)

|       |                           |            |                               |  |  |
|-------|---------------------------|------------|-------------------------------|--|--|
| Title |                           |            | 6 CHANNEL SEQUENTIAL IGNITION |  |  |
| Size  | Number                    | Revision   |                               |  |  |
| A4    | Pro-Drag6 250mJ           | 1.5        |                               |  |  |
| Date: | 11-Sep-2009               | Sheet 1 of | 1                             |  |  |
| File: | E:\M&W\Pro-Drag6_S3_2.sch | Drawn By:  | M&W                           |  |  |

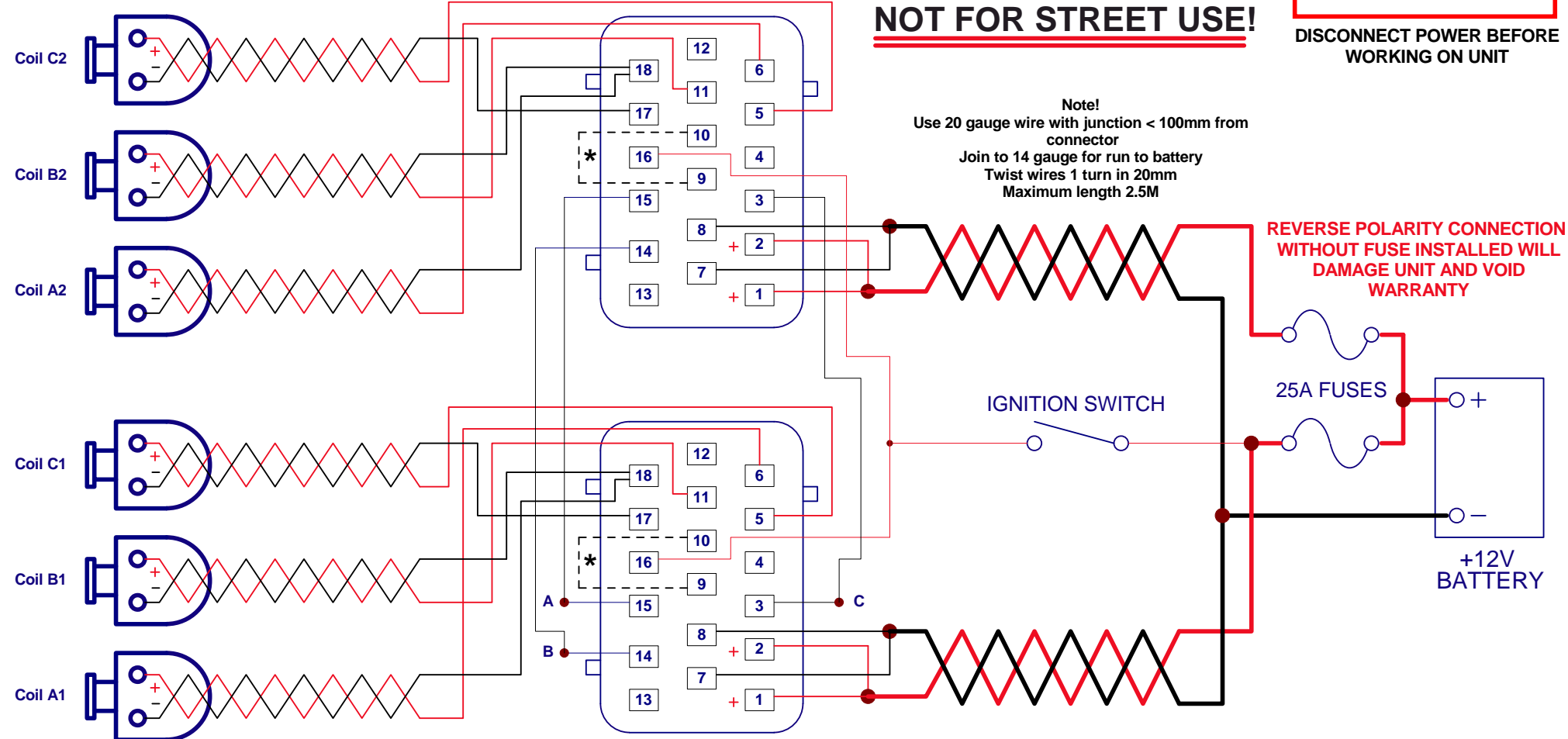
# FIRING ORDER MUST ALTERNATE BETWEEN BOXES

\* See instructions for use of trigger edge selection link



**NOT FOR STREET USE!**

DISCONNECT POWER BEFORE WORKING ON UNIT



Note!  
Use 20 gauge wire with junction < 100mm from connector  
Join to 14 gauge for run to battery  
Twist wires 1 turn in 20mm  
Maximum length 2.5M

REVERSE POLARITY CONNECTION WITHOUT FUSE INSTALLED WILL DAMAGE UNIT AND VOID WARRANTY

Note!  
Use 18-20 gauge wire  
Twist wires 1 turn in 20mm  
Maximum wire length 2M

← TOP  
CDI CONNECTOR (LOOKING AT END OF EXTRUSION)

|   |                                    |                        |     |
|---|------------------------------------|------------------------|-----|
| Title<br><b>6 CHANNEL WASTED SPARK IGNITION</b> |                                    |                        |     |
| Size<br>A4                                      | Number<br><b>PRO-Drage6 250 mJ</b> | Revision<br><b>1.4</b> |     |
| Date:   | 11-Sep-2009                        | Sheet 1 of             | 1   |
| File:   | E:\M&W\...\Pro-Drage6_S3_3.sch     | Drawn By:              | M&W |

# M & W IGNITIONS

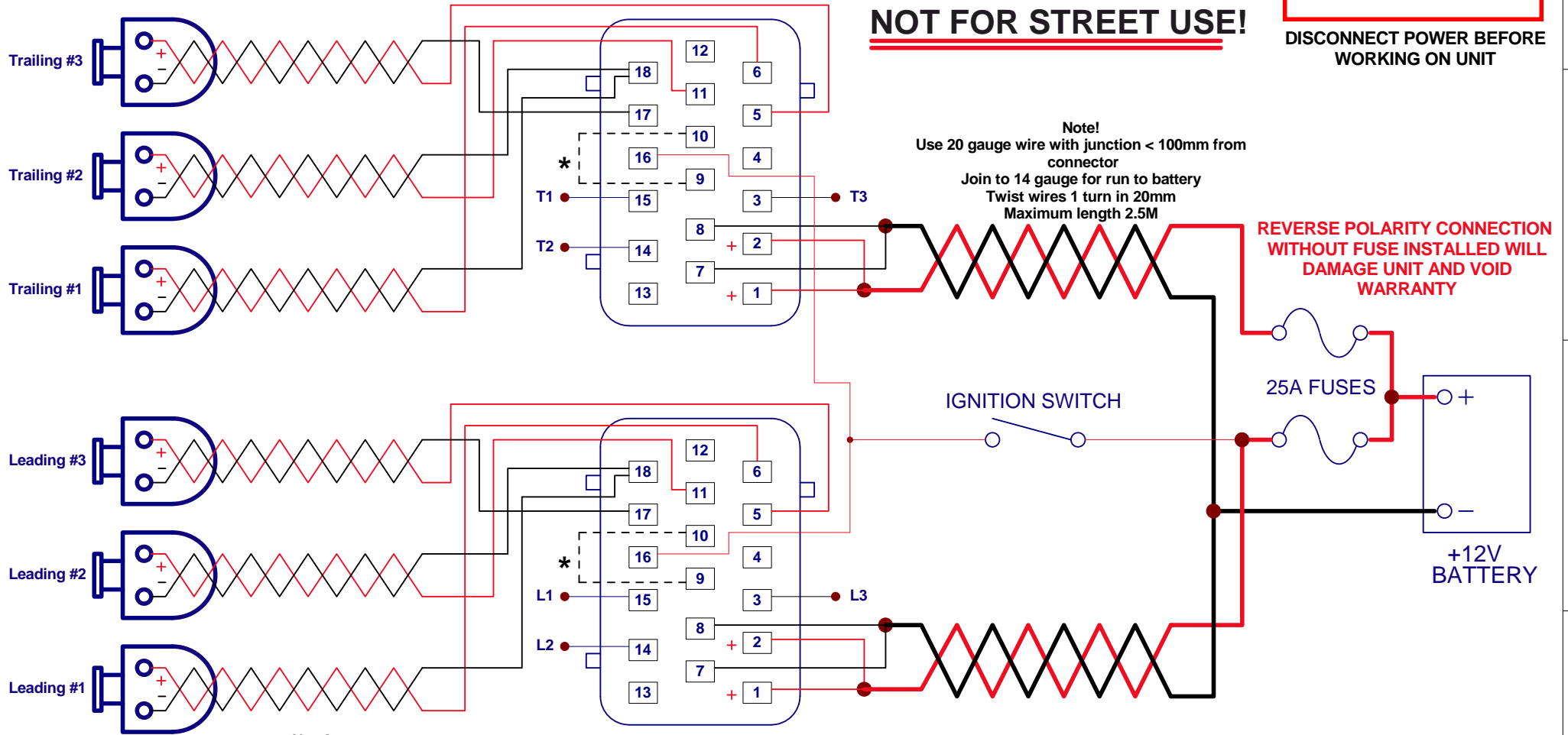
Performance & Quality since 1996

CAUTION!  
HIGH VOLTAGE

\* See instructions for use of trigger edge selection link

**NOT FOR STREET USE!**

DISCONNECT POWER BEFORE  
WORKING ON UNIT



← TOP

CDI CONNECTOR  
(LOOKING AT END  
OF EXTRUSION)

|       |                           |                 |                            |     |  |
|-------|---------------------------|-----------------|----------------------------|-----|--|
| Title |                           |                 | MAZDA TRIPE ROTOR IGNITION |     |  |
| Size  | Number                    |                 | Revision                   |     |  |
| A4    |                           | Pro-Drag6 250mJ |                            | 1.2 |  |
| Date: | 11-Sep-2009               | Sheet 1 of      | 1                          |     |  |
| File: | E:\M&W\Pro-Drag6_S3_4.sch | Drawn By:       | M&W                        |     |  |

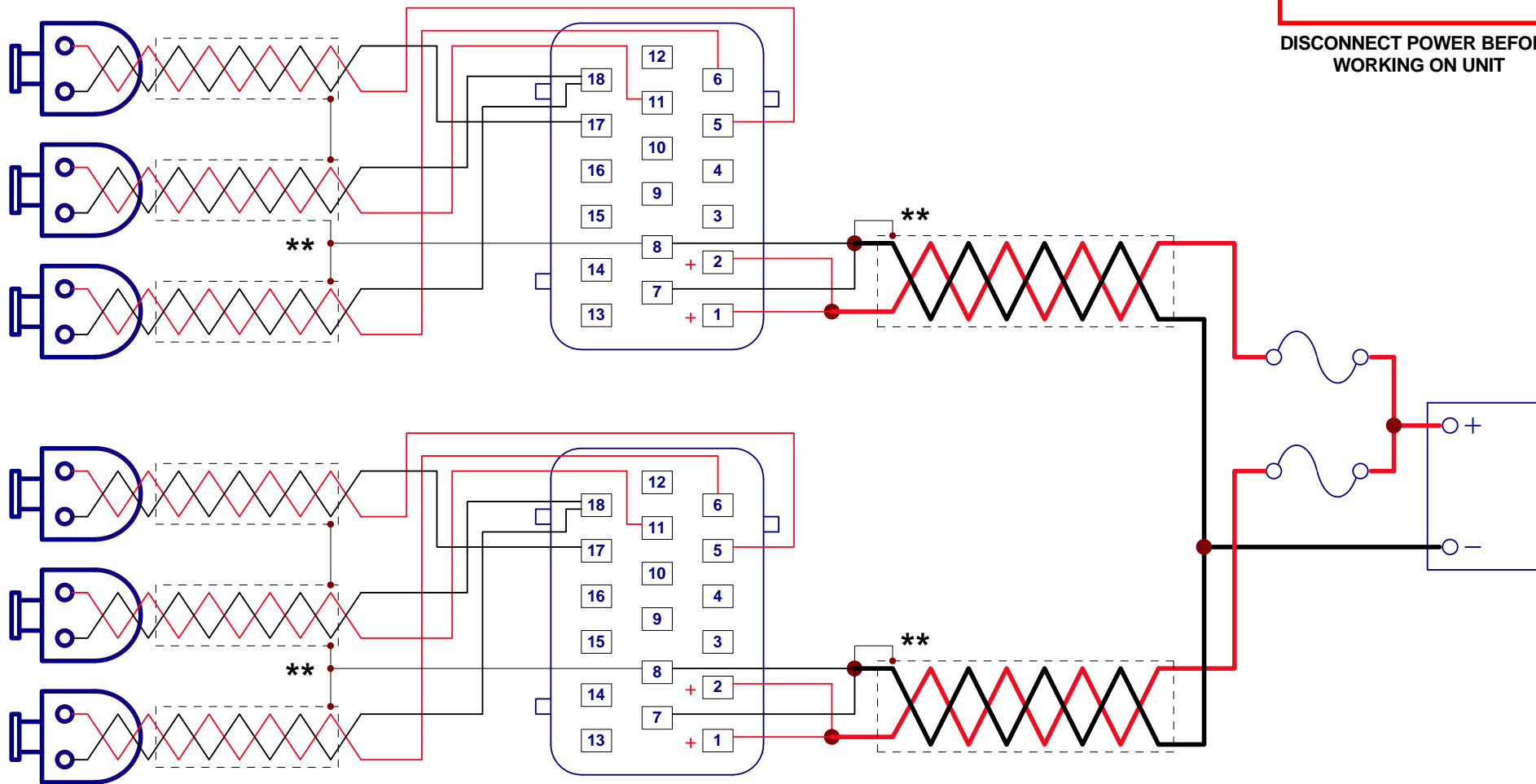
# M & W IGNITIONS

Performance & Quality since 1996

**CAUTION!**  
**HIGH VOLTAGE**



**DISCONNECT POWER BEFORE  
WORKING ON UNIT**



**\*\* Shielded cables required for Australian EMC compliance**

|                           |                |            |     |
|---------------------------|----------------|------------|-----|
| Title                     |                |            |     |
| AUSTRALIAN EMC COMPLIANCE |                |            |     |
| Size                      | Number         | Revision   |     |
| A4                        | Pro-Drag6 S3   | 1.0        |     |
| Date:                     | 16-Mar-2009    | Sheet 1 of | 1   |
| File:                     | E:\M&W\EMC.sch | Drawn By:  | M&W |