



# Pro-Drag6d

250mJ S4

## ELECTRICAL WIRING & OPERATING INSTRUCTIONS

Applicable  
S/No's 27xxxx

**FAILURE TO FOLLOW INSTRUCTIONS  
WILL VOID WARRANTY**

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**ADDITIONAL RESOURCES & UP TO DATE  
INSTRUCTIONS AVAILABLE FROM WEBSITE**

# INSTALLATION NOTES

(MoTec® IEX compatible Pro-Drag 250mJ Series 4)

## MOUNTING

**Failure to use supplied rubber mounts will void warranty!**

Mount the unit in a dry location ensuring the bottom condensation slots are unobstructed and oriented to permit gravity drain. Select a location away from intense heat and if necessary provide a source of cooling air.

## IGNITION LEADS

**Do not use unsuppressed metal or carbon core ignition leads!**

Use inductively suppressed spiral wound metal core ignition leads such as those available from Magnecor [www.magnecor.com](http://www.magnecor.com).

## SPARK PLUGS

**When using resistor spark plugs it is imperative to check the internal resistance as part of regular maintenance!**

Open circuit or high resistance may cause failure of spark plug wires, ignition coils and CDI system.

The use of non resistor spark plugs will greatly enhance ignition energy however some installations will require the use of resistor spark plugs to eliminate electrical interference.

The use surface discharge or semi surface discharge spark plugs are limited to naturally aspirated engines.

**Keep spark plug gap  $\leq$  0.025" (0.6mm) to prevent coil and CDI damage!**

## INSULATION PRECAUTIONS

**Ensure spark plug boots are a tight fit on the ceramic insulators!**

Degrease spark plug ceramic, coil/plug boots and installation tooling to prevent insulation breakdown.

Use supplied dielectric grease on spark plug ceramic and inside coil/plug boots to significantly improve insulation properties and ease installation/removal.

## POWER SUPPLY

**REVERSE POLARITY WILL CAUSE IRREPARABLE DAMAGE!  
ALWAYS INSTALL EXTERNAL FUSE!**

Do not use voltage boosters or connect through a PDM.

When using a total loss electrical system install either a 16V or 18V battery to ensure adequate supply voltage and isolate when charging.

## WIRING

**Wire ignition system directly to battery!**

If required wire length exceeds recommendations use paired battery cable (power/ground) to make up distance. Do not rely on vehicle chassis to provide ground path.

Use twisted shielded wire (similar to M27500) for all power and coil connections.

M&W CDI systems will open circuit the external fuse under conditions of over voltage or reverse polarity. Faults such as loose battery terminals/wiring or defective alternator/regulator may also cause for this to occur.

Main connector pins are designed to be roll crimped. Squeeze crimping or soldering will cause distortion possibly resulting in misfiring or incorrect CDI operation.

Keep coil primary wires one continuous length and well separated from HT leads, coil HV towers and input wiring.

## TRIGGERING

IEX trigger ignition systems are designed to replicate the function of a MoTec® ignition expander unit. Due to the complex nature of ECU configuration it is best to consult your Motec distributor for assistance with this setup.

Any level shift (or noise) between ECU ground and CDI ground may cause miss triggering

## MODE SELECTION

When using M&W IEX cdi's with older Motec M4/M48 ecu's join the Mode and Mode Ground terminals in the main connector.

## POWER LEVEL SWITCH

Drag Race only use only – install a permanent link between inputs 31 & 17 for constant high power level.

Street & Drag use – activate by grounding input through either a 'Hobbs' style manifold pressure switch or a programmable output from the ECU when increased ignition energy is required.

## TUNING

Always retune both fuel and timing curves after installing CDI!

M&W CDI systems may reduce combustion delay requiring a reduction in ignition timing. The resulting changes in cylinder burn may also require alterations to fuel flow curves.

## TACHO OUTPUT

The tacho output provides a 50% duty cycle square wave signal 1.2V below battery supply voltage. This will work with most aftermarket digital tacho's however earlier types and those designed for coil negative triggering may not read accurately.

## LED INDICATOR

After applying power to switch wire both the red and green LED's will illuminate for approximately 1 second.

The green led will then extinguish and flash briefly with each trigger event received

The red led will stay on to indicate high power mode or extinguish for low power mode.

A repeated double flash of the green led may indicate a faulty ignition coil, faulty wiring, low supply voltage or damage to the CDI.

## TESTING

**Do not conduct this test without grounded spark plugs installed!**

It is not possible to manually trigger MoTeC® IEX compatible CDI systems therefore a self test mode has been built into firmware. By grounding this input before powering unit it will sequentially fire all outputs and flash the LED in sync. To exit test mode disconnect power from unit and remove test ground connection.

## COIL SELECTION

**Do not use 'Prufex' brand outboard motor coils or AEM pencil coils under any circumstances!**

For ultimate performance use only high quality known brand ignition coils specifically designed for CDI use such as the M&W #COI006.

COP (coil on plug) coils were not designed for the energy levels developed by M&W Pro-Drag systems.

Use COP coils at your own risk as coil failure/breakdown may damage CDI system.

**Use of resistor spark plugs with COP coils is mandatory and plug gap must be kept below 0.020" (0.5mm) to prevent coil and CDI damage!**

Ferrite core cdi coils are not recommended due to their short arc duration and high levels of EMI.

# M & W IGNITIONS

Performance & Quality

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



**DISCONNECT POWER BEFORE  
WORKING ON UNIT**

**VIEWED FROM BACK OF CONNECTOR**



## SPECIFICATIONS

Operating voltage	12.5V --> 18V DC
Polarity	Negative ground
Startup voltage	>= 6V
Maximum supply current	19A
Power off current	< 700uA
Maximum ignition frequency	1,000 Hz
Energy limit:	
Single spark	700 Hz
Coil primary voltage:	
Low power	400V
High power	500V
Spark energy (per plug):	
Low power	160mJ
High power	250mJ
Trigger:	
Current	Motec IEX
Tacho output:	
Voltage	Supply - 1.2V
Output current	100mA
Shape	Square wave
Operating temperature	<= 105°C
Dimensions	173L * 137W * 50H
Weight	1,030gm (per box)

1 +12V (Battery)	13 Ground (Battery)	25
2 +12V (Battery)	14 Ground (Battery)	26 Ignition switch
3 +12V (Battery)	15 Ground (Battery)	27
4	16	28
5 Mode	17 Mode Gnd	29 Self Test
6 Tacho (T)	18	30 IEX Signal
7	19	31 Power (P)
8	20	32
9	21	33
10 Coil 5 +	22 Coil 5 & 6 -	34 Coil 6 +
11 Coil 3 +	23 Coil 2 & 4 -	35 Coil D +
12 Coil 1 +	24 Coil 1 & 2 -	36 Coil 2 +

Title			<b>PRO-DRAG6d 250mJ SERIES 4</b>
Size	Number	Revision	
A4	<b>(C) M&amp;W Ignitions</b>	<b>15.10.18.1</b>	
Date:	15-Oct-2018	Sheet 1 of 1	
File:	D:\M&W\...\Pro-Drage6d 250 S4 1.sch	Drawn By:	WAG

### Wire Specifications

#### POWER SUPPLY:

Use 12ga shielded wire from battery trifurcated into 18ga wire <= 100mm from connector. Junction is best achieved using a butt splice or barrel crimp. Maximum recommended wire length is 2M

#### IGNITION COILS:

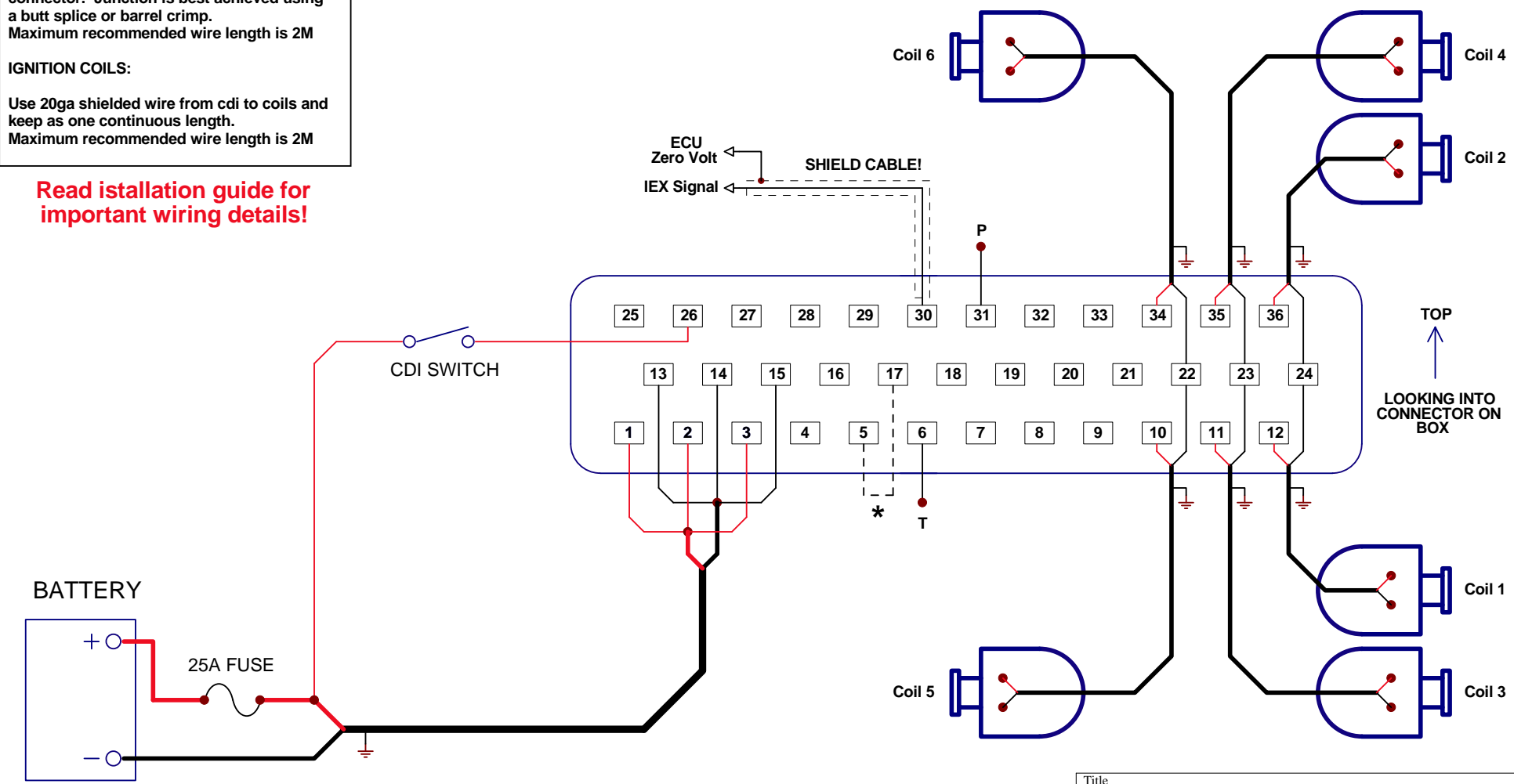
Use 20ga shielded wire from cdi to coils and keep as one continuous length. Maximum recommended wire length is 2M

**Read installation guide for important wiring details!**

# M & W IGNITIONS

Performance & Quality

**CAUTION!  
HIGH VOLTAGE**



TOP  
↑  
LOOKING INTO CONNECTOR ON BOX

**Reverse polarity connection without fuse installed will damage unit!**

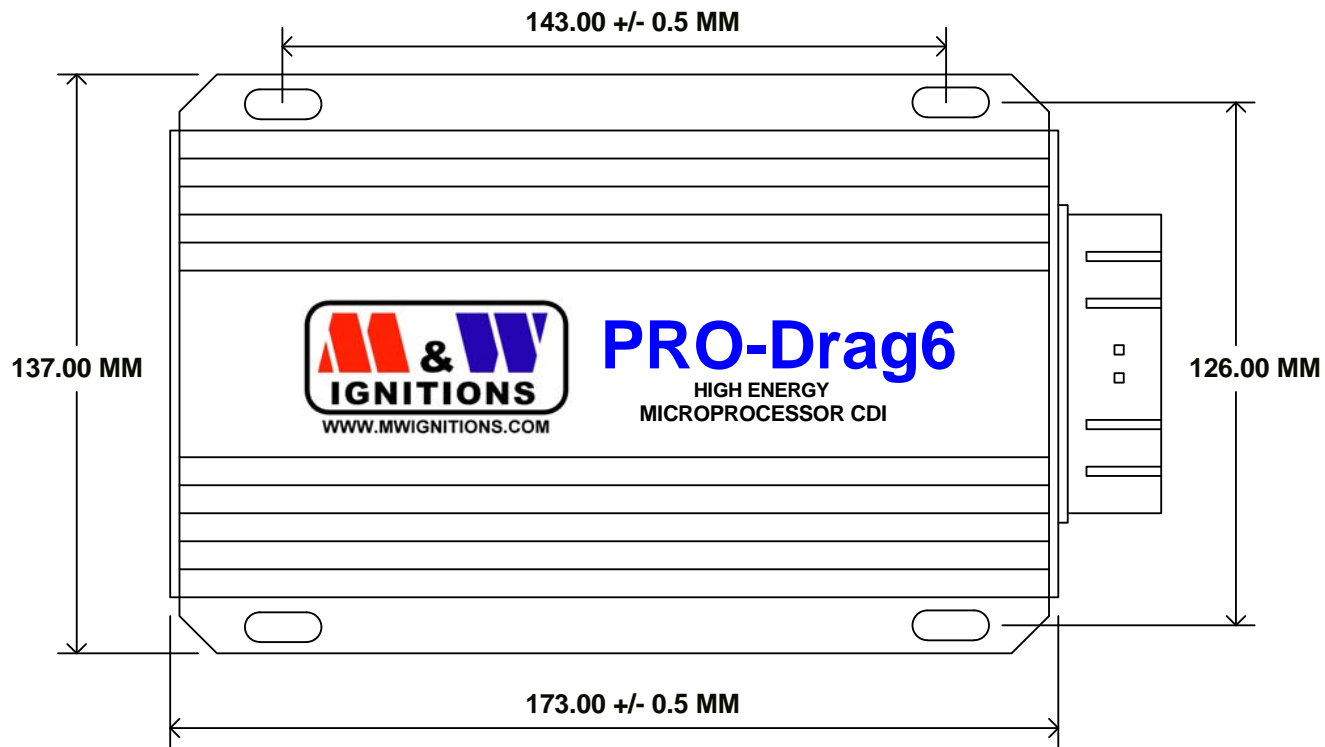
\* See installation instructions

Title			6 CYLINDER MOTEC IEX TRIGGER		
Size	Number	(C) M&W Ignitions		Revision	
A4				15.10.18.1	
Date:	15-Oct-2018	Sheet 1 of 1			
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**CAUTION!**  
**HIGH VOLTAGE**



**DISCONNECT POWER BEFORE  
WORKING ON UNIT**



**PRO-Drag6**  
HIGH ENERGY  
MICROPROCESSOR CDI

Slot dimensions - 5mm \* 10mm

Title			PRO-DRAG6d 250mJ SERIES 4		
Size	Number	(C) M&W Ignitions		Revision	
A4				15.10.18.1	
Date:	15-Oct-2018	Sheet 1 of	1		
File:	D:\M&W\...\Pro-Drag6d S4 dimensions.sch		Drawn By:	WAG	