



# Pro-Drag4R

2 Rotor 250mJ S4

## ELECTRICAL WIRING & OPERATING INSTRUCTIONS

Applicable  
S/No's 89xxxx

**FAILURE TO FOLLOW INSTRUCTIONS  
WILL VOID WARRANTY**

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2. Installation notes
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**ADDITIONAL RESOURCES & UP TO DATE  
INSTRUCTIONS AVAILABLE FROM WEBSITE**

# INSTALLATION NOTES

(Pro-Drag4 Rotary Series 4 systems)

**It is essential to fully read and understand these instructions and have a comprehensive knowledge of automotive electrical systems before commencing installation of this system!**

## 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 for correct ECU operation.

Fixed gap surface discharge and semi surface discharge spark plugs are only suitable for naturally aspirated applications.

**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, ignition coil boots, spark plug boots and installation tooling to prevent insulation contamination and breakdown.

Use supplied dielectric grease on spark plug ceramic and inside ignition coil and spark 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 power/ground 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 a 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 resulting in misfiring or incorrect CDI operation. Use of dielectric grease in main connector may reduce water ingress.

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

## TRIGGERING

**If CDI trigger edge and ECU ignition edge do not match timing will be erratic and vary with RPM!**

For correct operation trigger voltage relative to CDI ground must rise above 3.2V and fall below 1.6V.

Pro-Drag4 rotary systems default to falling edge ignition. Rising edge ignition may be selected by installing a jumper wire between 'Trigger edge' and 'Edge ground' input pins however for reliable triggering we recommend using falling edge where possible.

Correct ignition channel use – L1 = Leading rotor #1, L2 = Leading rotor #2, T1 = Trailing rotor #1, T2 = Trailing rotor #2.

## POWER LEVEL SWITCH

**Do not manually or permanently activate this feature!**

M&W Pro-Drag4 Rotary S4 ignition systems include a power level switch to reduce ignition energy under low engine load conditions.

Activate high power by grounding input through either a 'Hobbs' style manifold pressure switch or programmable output from the ECU when increased ignition energy is required.

## TUNING

**Always retune both fuel and timing curves after installing CDI!**

CDI systems are edge triggered and not affected by changes in dwell settings. If uncertain set ECU dwell to 0.5mS.

M&W Pro-Drag4 Rotary S4 ignition may significantly reduce combustion delay requiring a reduction in ignition timing. The resulting changes in cylinder burn may also require alterations to fuel flow curves.

Set ECU ignition delay to zero and tune engine as required.

## 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 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!**

The CDI may be tested by momentarily grounding trigger inputs. This will cause the Green LED to momentarily flash and corresponding ignition coil to spark.

## 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.

The use of multi purpose coils and those designed for inductive ignition will significantly reduce ignition performance.

C.O.P coils and coils with inbuilt igniters are not recommended for this ignition and may fail damaging the system.

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	25A
Power off current	< 700uA
Maximum ignition frequency	18,000 RPM
Energy limit:	
Single spark	15,000 RPM
Coil primary voltage:	
Low power	400V
High power	500V
Spark energy (per plug):	
Low power	160mJ
High power	250mJ
Trigger:	
Current	10mA
Edge	Adjustable
Voltage rising	≥ 3.2V
Voltage falling	≤ 1.6V
Tacho output:	
Voltage	Supply - 1.2V
Output current	100mA
Shape	Square wave
Operating temperature	≤ 105°C
Dimensions	173L * 137W * 50H
Weight	1,030gm

1 +12V (Battery)	13 Ground (Battery)	25 Trigger L1
2 +12V (Battery)	14 Ground (Battery)	26 Ignition switch
3 +12V (Battery)	15 Ground (Battery)	27 Trigger L2
4 +12V (Battery)	16 Ground (Battery)	28 Trigger T1
5 Trigger edge	17 Edge ground	29 Trigger T2
6 Tacho (T)	18	30
7	19	31 Power (P)
8	20	32
9	21 Coil T2 -	33
10 Coil T1+	22 Coil T1 -	34 Coil T2 +
11	23 Coil L1 -	35
12 Coil L1 +	24 Coil L2 -	36 Coil L2 +

Title			<b>PRO-DRAG4 ROTARY</b>		
Size	Number			Revision	
A4		<b>(C) M&amp;W Ignitions</b>		<b>22.10.16.1</b>	
Date:	22-Oct-2016	Sheet 1 of 1			
File:	D:\M&W\...\Pro-Drag4 Rotary S4 1.sch	Drawn By: WAG			

### Wire Specifications

#### POWER SUPPLY:

Use 12ga shielded wire from battery quadfurcated into 18ga wire <= 100mm from connector. Junction is best achieved using a Solistrand or similar butt splice / 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!**

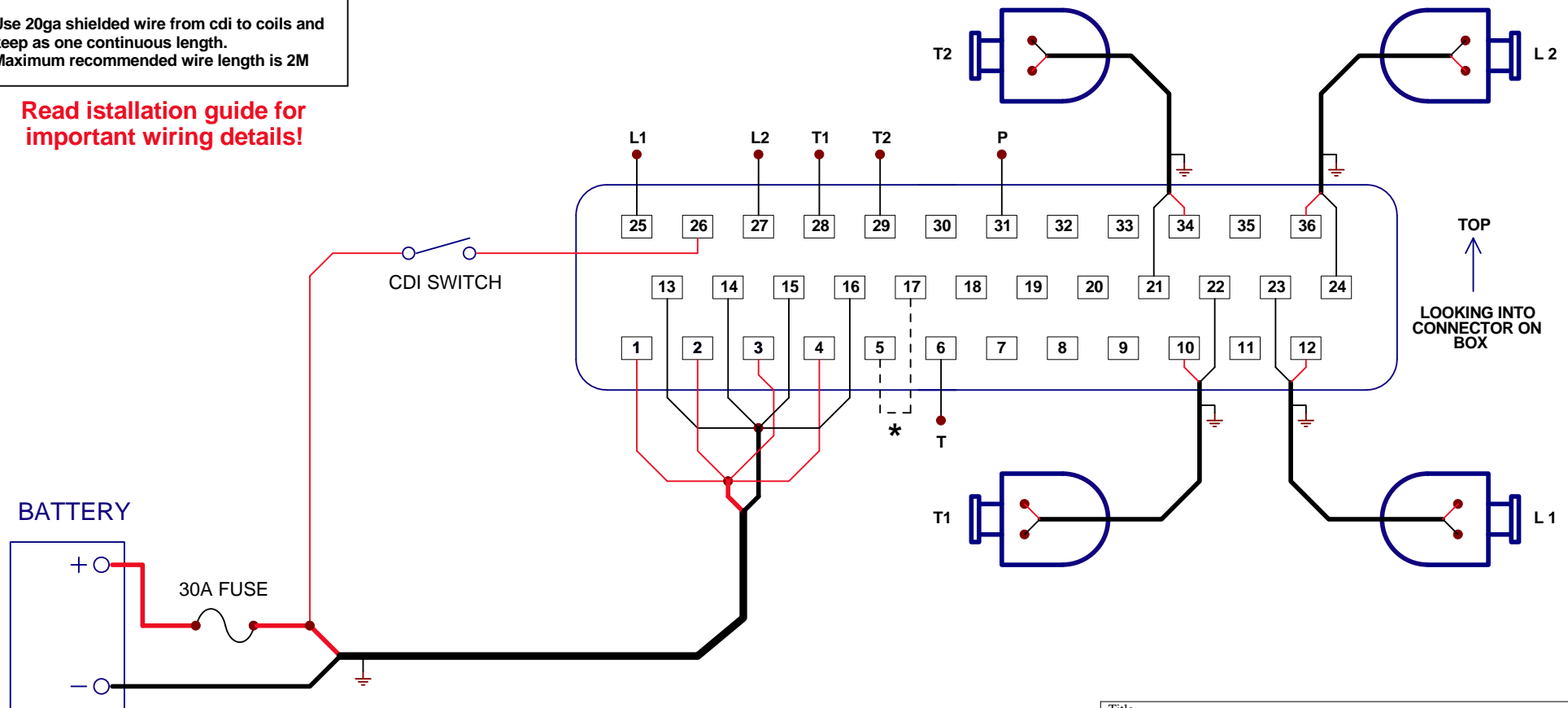
# M & W IGNITIONS

Performance & Quality

**CAUTION!  
HIGH VOLTAGE**



**DISCONNECT POWER BEFORE WORKING ON UNIT**



TOP  
↑  
LOOKING INTO CONNECTOR ON BOX

\* See installation instructions

Title			PRO-DRAG4 ROTARY DIRECT FIRE
Size	Number	(C) M&W Ignitions	
A4		Revision	21.10.16.1
Date:	21-Nov-2016	Sheet1 of 1	
File:	D:\M&W\...\Pro-Drag4 Rotary S4 2.sch	Drawn By:	WAG

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



**DISCONNECT POWER BEFORE  
WORKING ON UNIT**



**PRO-Drag4**  
HIGH ENERGY  
MICROPROCESSOR CDI

Slot dimensions - 5mm \* 10mm

Title				<b>PRO-DRAG4 ROTARY</b>			
Size	Number			Revision			
A4	<b>(C) M&amp;W Ignitions</b>			<b>22.10.16.1</b>			
Date:	22-Oct-2016			Sheet 1 of 1			
File:	D:\M&W\...\Pro-Drag4 Rotary S4 dimensions.dwg			Drawn By:		WAG	