



Pro-Drag4R

160/250mJ S3 V2

ELECTRICAL WIRING & OPERATING INSTRUCTIONS

Applicable
S/No's 430567 +

**FAILURE TO FOLLOW INSTRUCTIONS
WILL VOID WARRANTY**

CONTENTS:

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INSTALLATION NOTES

(Pro-Drag4R 250mJ Series 3 V2.0)

MOUNTING

Mount the unit in a dry location away from intense heat and ensure bottom condensation slots are unobstructed and oriented to permit gravity drain. Ensure a source of cooling air is available.

Failure to use supplied rubber mounts will void warranty!

IGNITION LEADS

Use inductively suppressed spiral wound metal conductor ignition leads. The use of unsuppressed metal leads may cause electrical interference with ecu and/or ignition system.

Do not use carbon core leads!

SPARK PLUGS

Non resistor spark plugs will greatly enhance ignition performance however some installations will require the use of resistor spark plugs for correct ECU operation.

When using resistor spark plugs measure internal resistance as part of regular maintenance!

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) for boosted motors!

INSULATION PRECAUTIONS

Regularly degrease sparkplug insulators, sparkplug boots, ignition coil boots and installation tooling.

Use dielectric grease on sparkplug insulators and inside sparkplug and ignition coil boots.

POWER SUPPLY

Do not use voltage boosters, if the vehicle contains a PDM use it only to control CDI switch wire.

Connect ignition supply wires directly to battery!

When using a total loss electrical system install a 16V battery to ensure adequate running voltage. Isolate battery when charging.

Reverse polarity connection without recommended fuse installed will damage unit!

WIRING

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

Use twisted shielded wire similar to aerospace/mil-spec M27500 series for all power, coil and trigger wires.

Common coil negative wires must be joined at or in the cdi connector.

Keep coil primary wires well separated from HT leads, coil HV outlet, coil body and any ECU wiring!

TRIGGERING

For correct operation trigger voltage relative to CDI ground must rise above 3.2V and fall below 1.6V. Ignition channels may be triggered in any sequence.

This unit defaults to falling (negative) edge trigger. To select rising edge (positive) trigger ground 'Trigger Edge' pin by connecting to pin 10.

If uncertain of correct edge - lock Ecu timing and monitor engine with timing light while changing RPM. Timing should appear stationary.

TUNING

CDI performance is independent of dwell time!

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

Always set ECU ignition delay to zero and re-tune both fuel and timing curves after installation!

LED INDICATOR

After applying power to input switch wire the LED will illuminate for approximately 1 second then extinguish. It will then flash briefly with each consecutive trigger event received.

A repeated double flash of the LED may indicate 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 trigger inputs which will cause the LED to flash and corresponding ignition coil to spark.

**Do not conduct this test without grounded spark plugs installed!
Failure to heed this may result in damage to the cdi and/or coils!**

POWER LEVEL SWITCH

To reduce ignition energy under low load conditions some M&W 250mJ S3 units include an (active low) power level switch.

Do not manually activate this feature.

Install an adjustable 'Hobbs' style manifold pressure switch or use a programmable output from the ECU to ground the input when engine comes under load.

TACHO OUTPUT

Tacho output provides a 50% duty cycle square wave signal approximately 1V below supply voltage. This will work with most aftermarket digital tacho's however some earlier types and those designed for coil negative triggering may not read accurately and require an adaptor.

COIL SELECTION

Use of inductive ignition coils with cdi ignition will limit output energy, for ultimate performance use coils specifically designed for CDI use such as the M&W #COI006. Wire inductive coils reverse polarity when used with M&W CDI's.

The use of COP/Pencil coils of any brand or type will void warranty!

Do not use ferrite coils from Mercury or MSD!

Do not use Profex brand coils under any circumstances!

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	>= 8V
Maximum supply current	18A
Power off current	< 700uA
Maximum ignition frequency	15,000 RPM
Coil primary voltage:	
Lo power	460V
Hi power	540V
Spark energy:	
Lo power	160mJ
Hi 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	112L * 110W * 40H
Weight	570gm (per box)

1 +12V (Battery)	7 Ground (Battery)	13 Power (P)
2 +12V (Battery)	8 Ground (Battery)	14 Trigger B
3	9 Trigger edge	15 Trigger A
4 Tacho (T)	10 Signal ground	16 Ignition switch
5	11	17 Coil A -
6 Coil A +	12 Coil B +	18 Coil B -

Title			PRO-DRAG4R 160/250 S3 V2		
Size	Number	(C) M&W Ignitions		Revision	31.03.25.1
A4					
Date:	31-Mar-2025	Sheet	1 of	1	
File:	D:\M&W\...\Pro-Drag4R 250 S3 V2 1.sch	Drawn By:	M&W		

Wire Specifications

POWER SUPPLY:

Use 14ga wire from battery bifurcated into 20ga wire <= 100mm from connector.
Junction is best achieved using a Solistrand or similar butt splice / barrel crimp.
Maximum recommended wire length is 2M

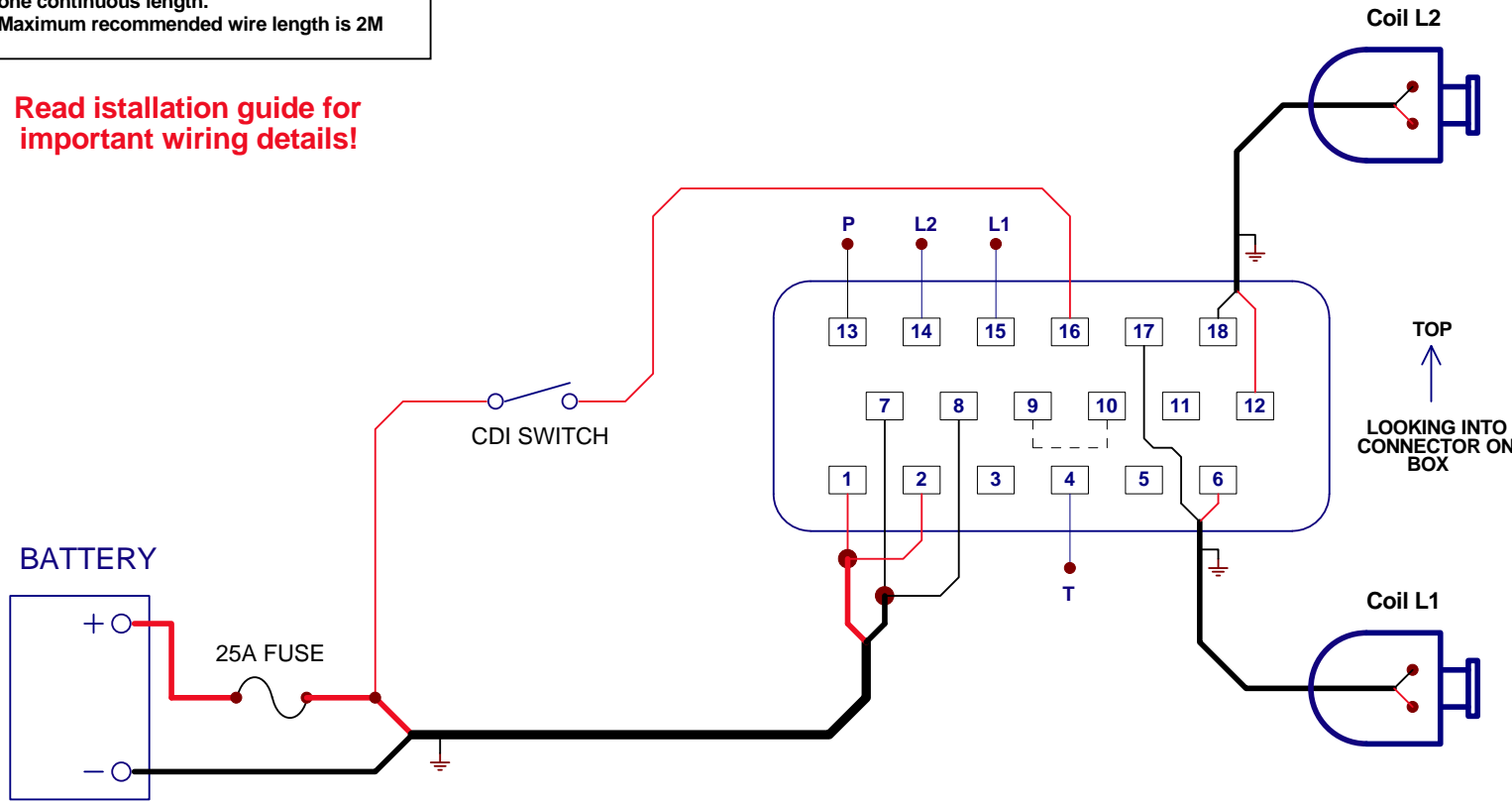
IGNITION COILS:

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

Read installation guide for important wiring details!



DISCONNECT POWER BEFORE WORKING ON UNIT



Reverse polarity connection without fuse installed will damage unit!

TOP
↑
LOOKING INTO CONNECTOR ON BOX

Title			PRO-DRAG4R 250 S3 LEADING V2
Size	Number	Revision	
A4	(C) M&W Ignitions	31.03.25.1	
Date:	31-Mar-2025	Sheet	1 of 1
File:	D:\M&W\...\Pro-Drage4R 250 S3 V2 2.sch	Drawn By:	WAG

Wire Specifications

POWER SUPPLY:

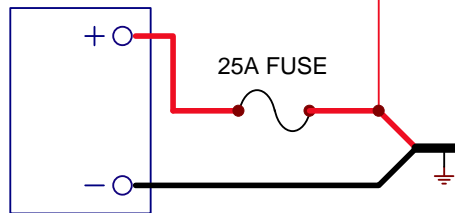
Use 14ga wire from battery bifurcated into 20ga wire <= 100mm from connector.
Junction is best achieved using a Solistrand or similar butt splice / barrel crimp.
Maximum recommended wire length is 2M

IGNITION COILS:

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

Read installation guide for important wiring details!

BATTERY



Reverse polarity connection without fuse installed will damage unit!

M & W IGNITIONS

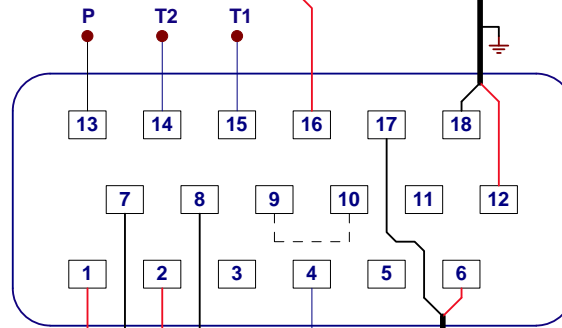
Performance & Quality

**CAUTION!
HIGH VOLTAGE**

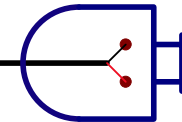


**DISCONNECT POWER BEFORE
WORKING ON UNIT**

CDI SWITCH



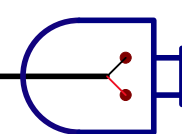
Coil T2



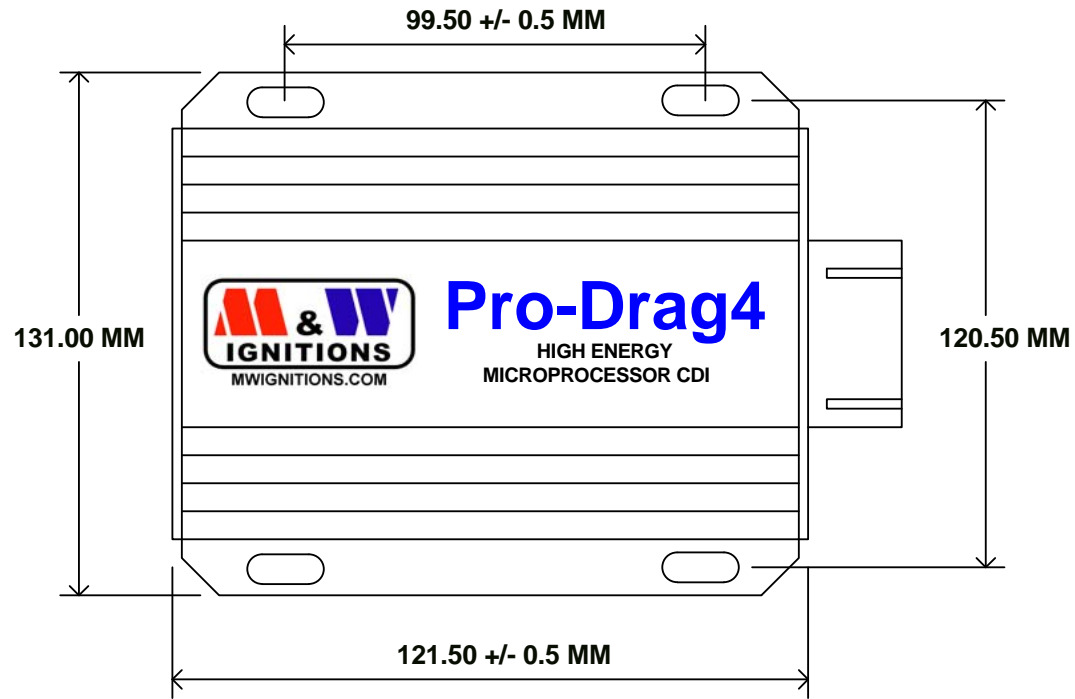
TOP

LOOKING INTO
CONNECTOR ON
BOX

Coil T1



Title			PRO-DRAG4R 250 S3 TRAILING V2
Size	Number	Revision	
A4	(C) M&W Ignitions	31.03.25.1	
Date:	31-Mar-2025	Sheet 1 of 1	
File:	D:\M&W\...\Pro-Drage4R 250 S3 V2 3.sch	Drawn By:	WAG



Pro-Drag4
HIGH ENERGY
MICROPROCESSOR CDI

Slot dimensions - 5mm * 10mm

Title				MOUNTING DIMENSIONS	
Size	Number	(C) M&W Ignitions		Revision	
A4				23.11.22.1	
Date:	23-Nov-2022	Sheet 1 of 1			
File:	D:\M&W\...\Mounting Dimensions.sch	Drawn By:		M&W	