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Pro-Drag4R

250mJ S4

ELECTRICAL WIRING
&
OPERATING INSTRUCTIONS

Applicable
S/No's 89xxxx

FAILURE TO FOLLOW INSTRUCTIONS
WILL VOID WARRANTY

CONTENTS:

Scan to download
current instructions

INSTALLATION NOTES

(Pro-Drag4R 250mJ Series 4)

OPERATION

This high power system has been designed for Drag Race use only!

Use on a street/circuit vehicle exceeds design specifications and will cause the system to shutdown preventing damage.

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 test 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 <= 0.025” (0.6mm) for boosted motors!

INSULATION PRECAUTIONS

Degrease sparkplug insulators, sparkplug boots, ignition coil boots and installation tooling.

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

POWER SUPPLY

REVERSE POLARITY WILL CAUSE DAMAGE TO UNIT!
ALWAYS INSTALL EXTERNAL FUSE!

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 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 and ground) to make up distance. Do not rely on vehicle chassis to provide ground path.

Use twisted pair wire for all power and coil connections. For improved noise suppression use twisted shielded wire similar to aerospace/mil-spec M27500 series.

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.

Trigger input & coil output letters (or numbers) indicate CDI firing sequence not cylinder number unless otherwise stated.

M&W CDI systems default to falling (negative) edge trigger. To select rising edge (positive) trigger ground 'Trigger Edge' pin.

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

POWER LEVEL SWITCH

To reduce ignition energy under low engine load conditions a power level switch is included.

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.

Do not manually or permanently activate this feature!

TUNING

CDI performance is not affected by changes in dwell settings!

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!

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.

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 illuminate continuously when high power mode is selected.

A repeating double flash of the red LED may indicate a faulty ignition coil, faulty wiring, low supply voltage or damage to the CDI.

Continuous flashing of the red LED indicates unit has entered protective shutdown mode.

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 otherwise damage to the cdi and coils will occur!

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!

FERRITE CDI COILS

Ferrite core cdi coils such as those from Mercury and MSD emit high levels of EMI requiring additional shielding practices. In addition these coils exhibit extremely short arc duration which may compel a narrow tuning window also making them unsuitable for alcohol based fuels.

Do not use ferrite coils wired in parallel pairs!

Do not use Prufex brand coils under any circumstances!

M&W IGNITIONS

Performance & Quality

CAUTION!
HIGH VOLTAGE

DISCONNECT POWER BEFORE WORKING ON UNIT

VIEWED FROM BACK OF CONNECTOR

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

SPECIFICATIONS

Operating voltage	12.5V --> 18V DC
Polarity	Negative ground
Startup voltage	>= 7V
Maximum supply current	25A
Power off current	< 700uA
Maximum run time (Ignition events)	
Low power	90,000
Hi Power	45,000
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

Title	PRO-DRAG4 ROTARY 250mJ S4	
Size: A4	Number: (C) M&W Ignitions	Revision: 26.03.24.1
Date: 26-Mar-2024		Sheet 1 of 1
File: D:\M&W\..\Pro-Drag4 Rotary S4 1.sch		Drawn By: WAG

M&W IGNITIONS

Performance & Quality

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:

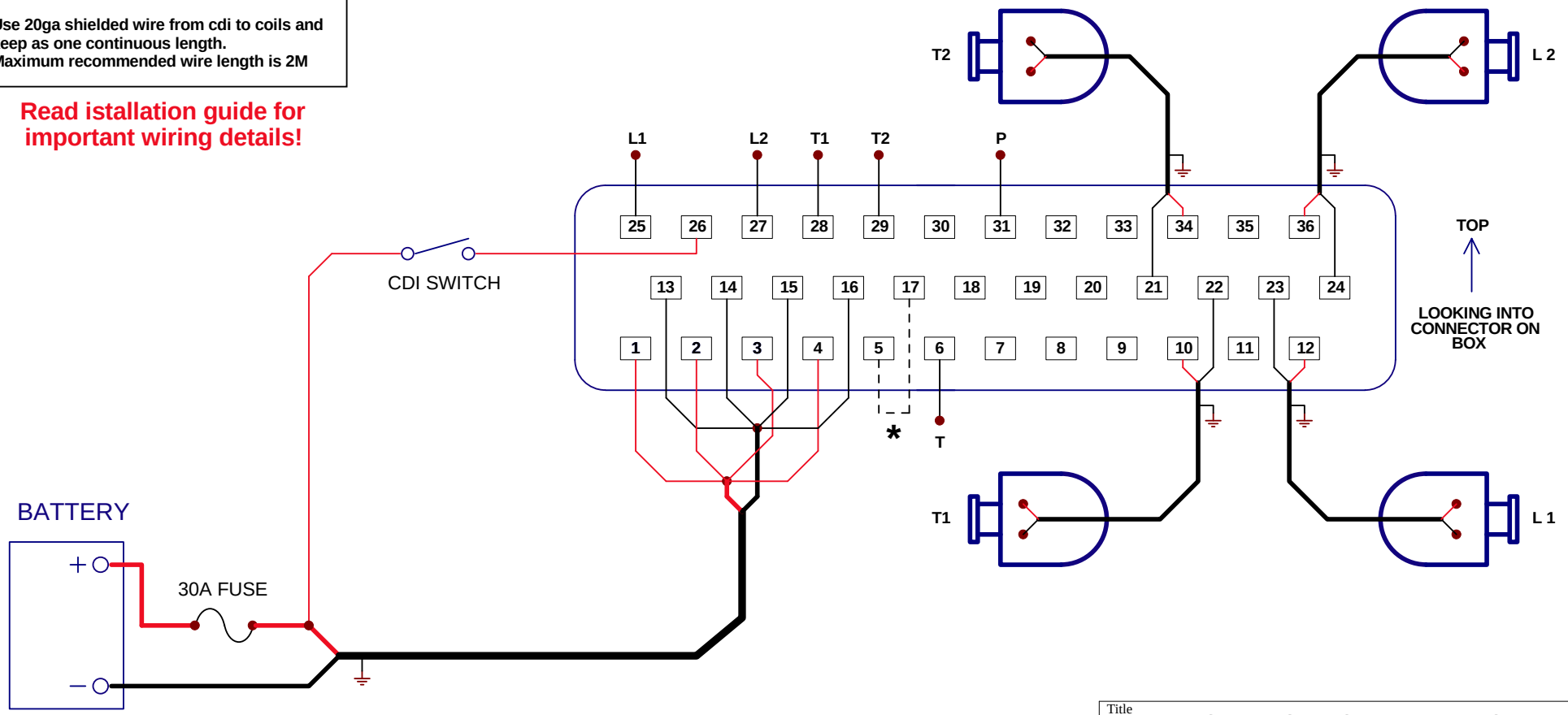
Use 20ga shielded wire from cdi to coils and keep as one continuous length.
Maximum recommended wire length is 2M

Read istallation guide for important wiring details!

DRAG RACE ONLY
NOT FOR STREET USE!

CAUTION!
HIGH VOLTAGE

DISCONNECT POWER BEFORE WORKING ON UNIT



Reverse polarity connection without fuse installed will damage unit!

* See installation instructions

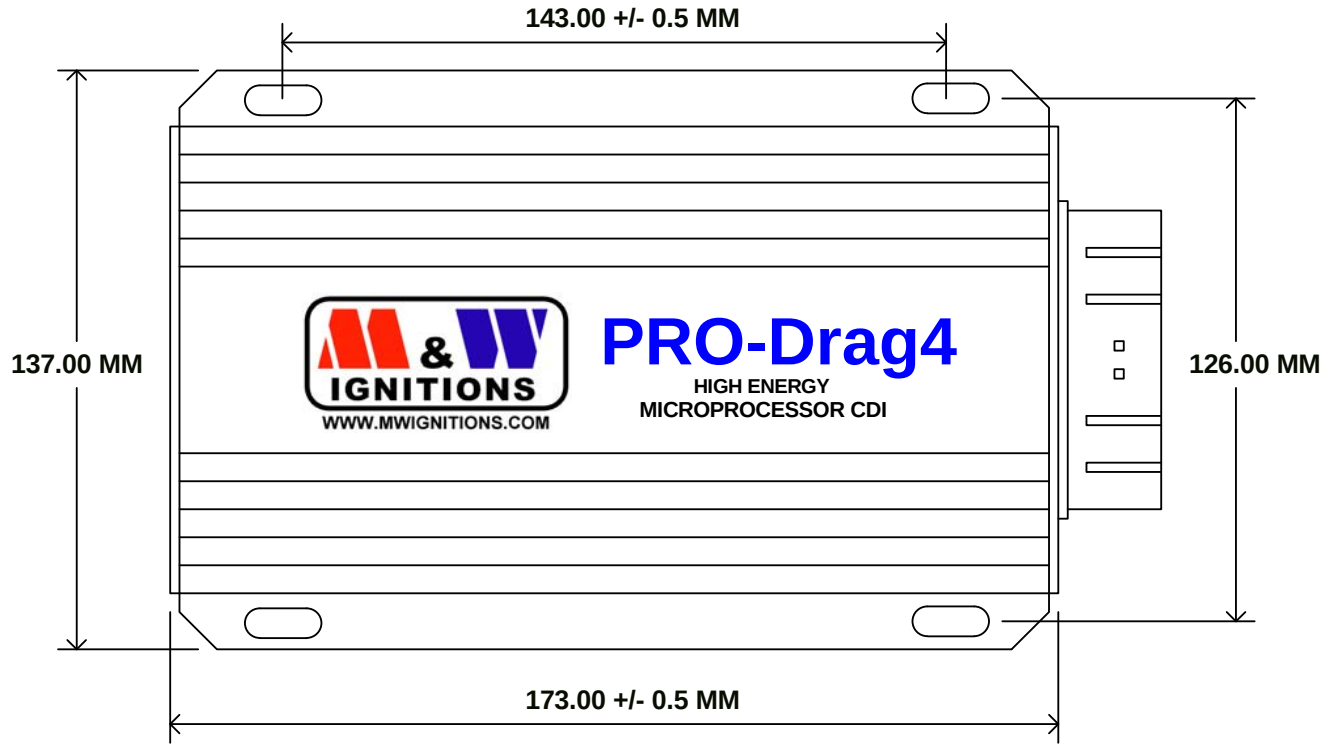
Title: PRO-DRAG4 ROTARY DIRECT FIRE		
Size: A4	Number: (C) M&W Ignitions	Revision: 21.10.16.1
Date: 18-Dec-2022		Sheet 1 of 1
File: D:\M&W\..\Pro-Drag4 Rotary S4 2.sch		Drawn By: WAG

CAUTION!
HIGH VOLTAGE

DISCONNECT POWER BEFORE WORKING ON UNIT

M&W IGNITIONS

Performance & Quality



Slot dimensions - 5mm * 10mm

Title	PRO-DRAG4 ROTARY 250mJ S4	
Size: A4	Number: (C) M&W Ignitions	Revision: 22.10.16.1
Date: 2-Jul-2019	Sheet 1 of 1	
File: D:\M&W\..\Pro-Drag4 Rotary S4 dimensions.sch	Drawn By: WAG	