



Pro-10RL

ELECTRICAL WIRING & OPERATING INSTRUCTIONS

Applicable
S/No's 44xxxx

**FAILURE TO FOLLOW INSTRUCTIONS
WILL VOID WARRANTY**

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2. Installation notes
7. Connections and specifications
8. Reluctor triggered ignition
9. Bosch 6 pin cdi connection
10. Bosch 8 pin cdi connection
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**ADDITIONAL RESOURCES & UP TO DATE
INSTRUCTIONS AVAILABLE FROM WEBSITE**

INSTALLATION & OPERATION

(Reluctor trigger Pro series street systems only)

MOUNTING

Do not mount the unit where it will be exposed to liquids, ensure 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.

Failure to use supplied rubber mounts will void warranty!

IGNITION LEADS

Do not use unsuppressed metal or carbon core ignition leads!

Use inductively suppressed spiral wound metal conductor ignition leads such as those made by Magnecor www.magnecor.com.

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 plugs measure their resistance as part of regular maintenance. Open circuit or high resistance may cause damage to spark plug wires, ignition coils and CDI.

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

INSULATION PRECAUTIONS

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

Use of dielectric grease on spark plug ceramic and inside ignition coil and spark plug boots will significantly increase insulation properties and ease installation/removal.

POWER SUPPLY

Do not use voltage boosters or connect through a PDM.

If wired to a power source shared with the ECU or its sensors erratic operation may be experienced!

When running a total loss electrical system install either a 16V or 18V battery to ensure adequate supply voltage.

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 and/or to comply with EMC requirements use twisted shielded wire similar to M27500 series.

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 this to occur.

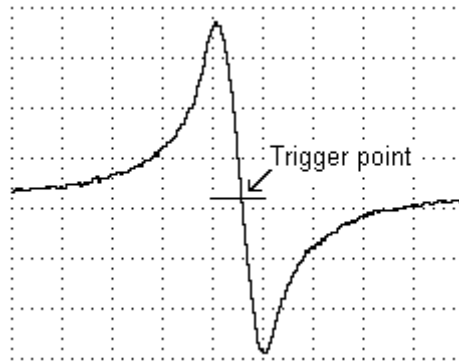
Main connector pins are designed to be roll crimped. Squeeze crimping or soldering will cause distortion possibly resulting in misfiring or incorrect CDI operation. Use of dielectric grease in main connector may reduce water ingress.

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

M&W Reluctor trigger CDI systems fire on the negative direction zero crossing point of the signal to provide stable timing.



RELUCTOR SIGNAL

Other brands of ignition systems may trigger off different waveform locations which may require a change in distributor rotor phasing to prevent cross firing inside the distributor cap.

To check polarity a simple test may be conducted using a strobe light. Observe timing position while engine running then stop and reverse reluctor connections. Correct polarity will show most advanced timing and stable reading.

For MSD reluctor distributors use Violet wire as R+ and Orange wire as R- (Note! This is opposite to MSD documentation).

For best results use twisted shielded cable for reluctor wiring.

Do not route reluctor wires near high voltage or high current conductors!

POWER LEVEL SWITCH

Do not manually activate this feature or operate continuously as this will significantly increase spark plug wear and system current draw.

Activate by grounding input via a 'Hobbs' style manifold pressure switch when elevated energy levels are required.

Use Hi power mode with caution, the increased electrical noise may introduce reluctor triggering issues!

TUNING

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

Always re tune fuel curves after installing CDI ignition!

TACHO OUTPUT

The tacho output provides a 50% duty cycle square wave signal at 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 the LED will illuminate for 1 second and extinguish. The LED will then flash briefly with each consecutive trigger event received (it may be necessary to view the LED directly on axis).

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

Reluctor CDI's may not trigger by grounding inputs, in this case you will need to provide an AC signal such as that generated by a reluctor distributor.

Do not conduct this test without grounded spark plugs installed!

INSTALLATION PRECAUTIONS

The main cause of ignition damage is a high voltage flashover to ignition system wiring!

The fast rise time of CDI ignition output voltage increases the propensity for insulation breakdown in high voltage components therefore greater care must be taken with regards to cleanliness and wiring detail to prevent this occurring.

IGNITION COIL SELECTION

Do not use AEM pencil coils or Prufex brand ferrite coils under any circumstances!

For ultimate ignition energy use coils specifically designed for CDI use such as the M&W #COI006. Ignition coils primarily designed for inductive ignition will significantly limit CDI output.

COP COILS

Many COP coils are unsuitable for CDI use and will break down damaging the ignition system. Some COP (coil on plug) coils designed for inductive ignition may also contain a HV blocking diode in the secondary winding, see coil polarity notes below.

Use resistive spark plugs with all COP coils. Keep plug gap < 0.020" (0.5mm) to prevent coil & ignition damage.

FERRITE CDI COILS

Ferrite core cdi coils are compact and provide high secondary current however they may not be suitable for all applications due to their extremely short arc duration. The high level of EMI emitted by these coils may also require additional shielding to prevent electrical interference

Do not use ferrite coils wired in parallel pairs!

COIL POLARITY

All diagrams are shown for cdi style coils. For correct operation with inductive ignition coils wire the primary connections in reverse to maintain correct spark plug polarity and overcome any blocking diode.

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	7.0A
Power off current	< 700uA
Maximum ignition frequency	1,200Hz
Energy limit:	
Std power	700Hz
Hi power	550Hz
Coil primary voltage:	
Standard power	480V
Hi power	550V
Spark energy:	
Standard power	115mJ
Hi power	150mJ
Trigger:	
Voltage (min)	250mV AC
Voltage (max)	200V AC
Location	Negative crossing
Tacho output:	
Voltage	Supply - 1.2V
Output current	100mA
Shape	Square wave
Operating temperature	<= 105°C
Dimensions	112L * 110W * 40H
Weight	560gm

1 +12V (Battery)	7 Ground (Battery)	13 Power level (P)
2 +12V (Battery)	8 Ground (Battery)	14 Reluctor -
3	9	15 Reluctor +
4 Tacho	10	16 Ignition switch
5	11	17
6 Coil +	12	18 Coil -

Title			PRO-10RL CDI		
Size	Number		Revision		
A4	(C) M&W Ignitions		11.12.17.1		
Date:	11-Dec-2017	Sheet	1 of	1	
File:	D:\M&W\.\Pro10RL S3 1.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!

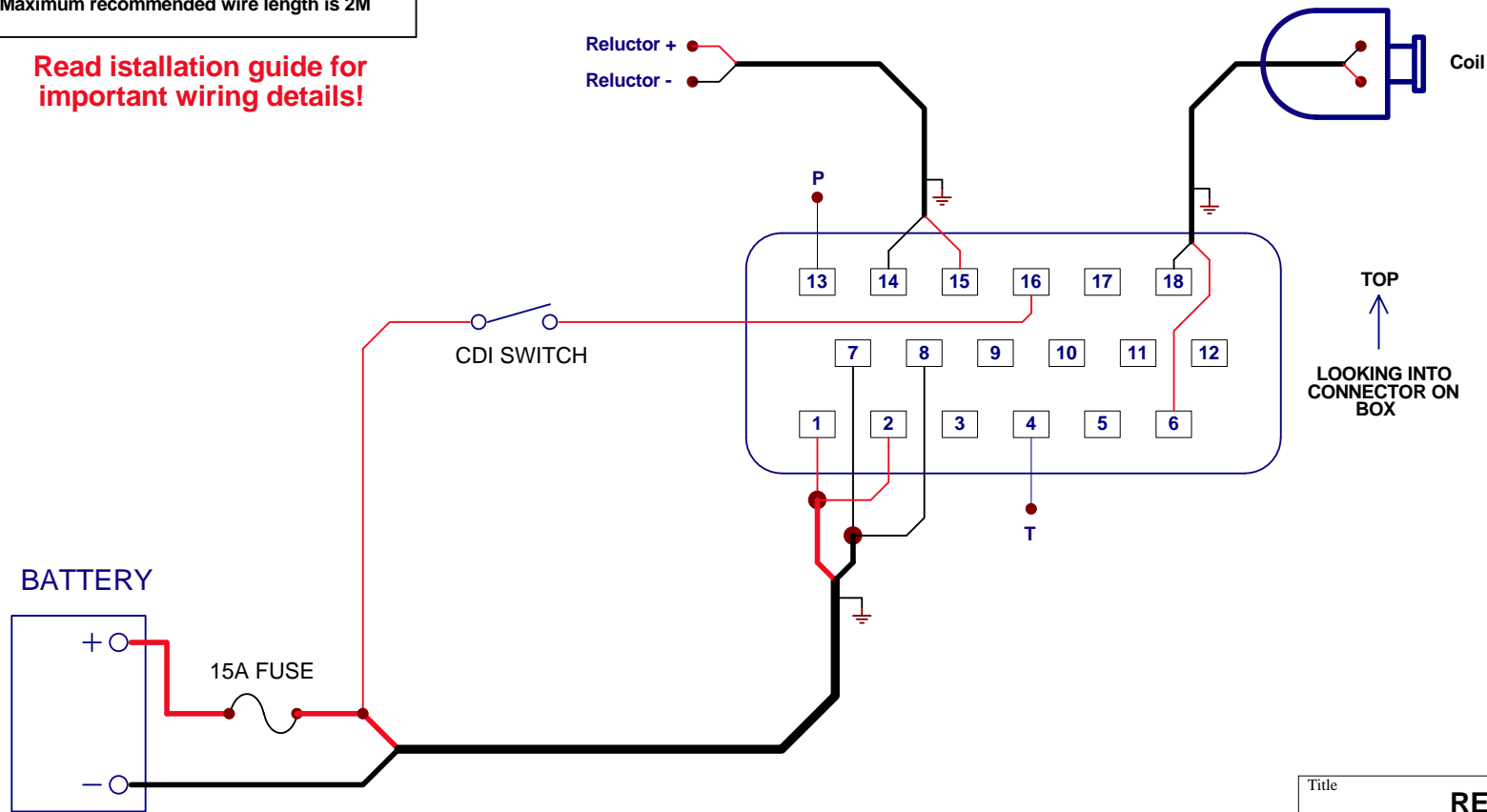
M & W IGNITIONS

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HIGH VOLTAGE**



DISCONNECT POWER BEFORE WORKING ON UNIT



Title			RELUCTOR TRIGGER CDI
Size	Number	Revision	
A4	(C) M&W Ignitions	25.07.17.1	
Date:	26-Jul-2017	Sheet	1 of 1
File:	D:\M&W\...\Pro10R S3 2.sch	Drawn By:	WAG

CAUTION!
HIGH VOLTAGE



DISCONNECT POWER BEFORE WORKING ON UNIT



IMPORTANT INSTALLATION NOTES!

MOUNTING:
For best reliability it is suggested the unit be mounted inside the cabin where it will not be exposed to water or extremes of temperature.

WIRING:
If factory terminals/wiring are corroded or damaged crimp splice extension wiring onto the existing harness. An adaptor harness may be constructed using a 6 pin TE (AMP) Faston 250 series connector.

This diagram is only for customers wishing to retain the factory wiring harness. For performance installations or if the vehicle is being re-wired please refer to the Reluctor diagram and use all connections as shown therein.

IGNITION LEADS:
If misfiring is detected after cdi installation it may be necessary to replaced the ignition wires with a set of premium quality spiral wound metal conductor ignition leads. Magnecor have black leads available if appearance is important!

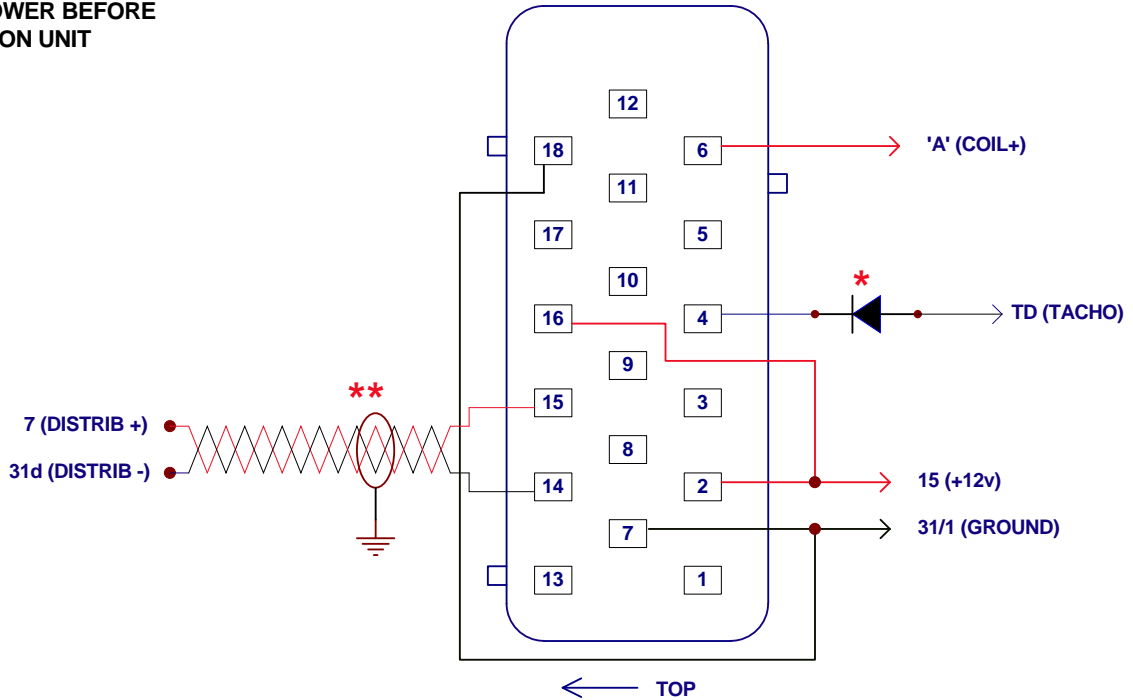
IGNITION COIL:
For best performance use a true cdi coil such as our COI-006 alternatively to retain stock appearance use an MSD 8222 blaster bottle coil.

SPARK PLUGS:
Start with factory recommended spark plug gap, this may be increased by experimentation however be aware an excessive gap may cause arcing or crossfiring inside the distributor cap. If misfiring is detected after installation it may be necessary to use a resistor spark plug.

TACHO:
An external diode is required to match factory installation.

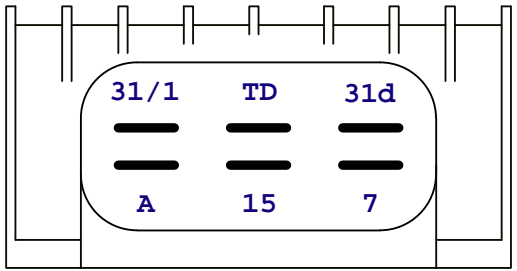
TIMING:
Always check and reset timing after installtion!

REFER TO MAIN INSTALLATION INSTRUCTIONS AT FRONT OF DOCUMENT FOR FURTHER INFORMATION.



← TOP
LOOKING AT BACK OF CONNECTOR

FACTORY CONNECTIONS



* 1N4148 or similar. (500mW 100V fast switching)
** Shielded cable recommended from distributor to cdi.

Title 6 PIN BOSCH CDI CONNECTION		
Size A4	Number (C) M&W Ignitions	Revision 15.05.16.1
Date: 15-May-2016	Sheet 1 of 1	Drawn By: WAG
File: D:\M&W\...\Pro10R_S3_B6.sch		

CAUTION!
HIGH VOLTAGE



DISCONNECT POWER BEFORE WORKING ON UNIT

M & W IGNITIONS

Performance & Quality since 1996

IMPORTANT INSTALLATION NOTES!

MOUNTING:
For best reliability it is suggested the unit be mounted inside the cabin where it will not be exposed to water or extremes of temperature.

WIRING:
If factory terminals/wiring are corroded or damaged crimp splice extension wiring onto the existing harness. An adaptor harness may be constructed using a 8 pin TE (AMP) Faston 250 series connector.

This diagram is only for customers wishing to retain the factory wiring harness. For performance installations or if the vehicle is being re-wired please refer to the Reluctor diagram and use all connections as shown therein.

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If misfiring is detected after cdi installation it may be necessary to replaced the ignition wires with a set of premium quality spiral wound metal conductor ignition leads. Magnecor have black leads available if appearance is important!

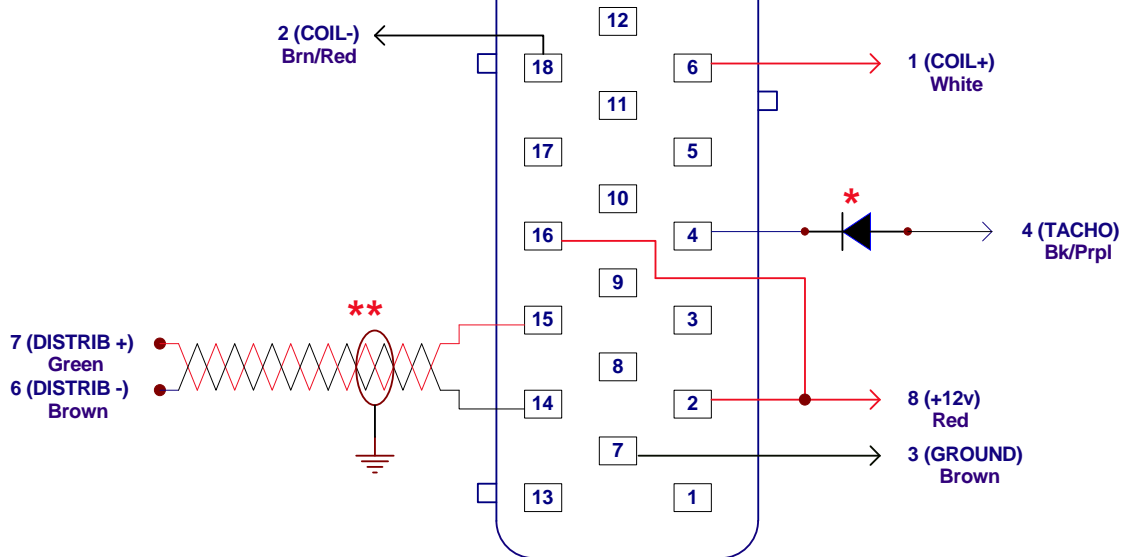
IGNITION COIL:
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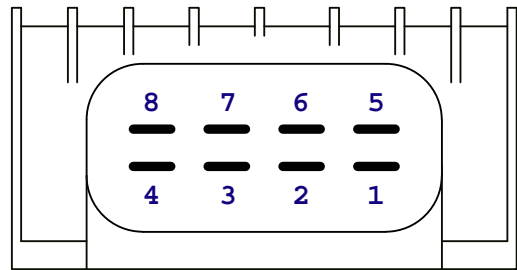
TACHO:
An external diode imay be required to match factory installation.

TIMING:
Always check and reset timing after installtion!

REFER TO MAIN INSTALLATION INSTRUCTIONS AT FRONT OF DOCUMENT FOR FURTHER INFORMATION.



FACTORY CONNECTIONS



← TOP
LOOKING AT BACK OF CONNECTOR (OR END OF BOX)

- * 1N4148 or similar. (500mW 100V fast switching)
- ** Shielded cable recommended from distributor to cdi.

Title			8 PIN BOSCH CDI CONNECTION		
Size	Number	(C) M&W Ignitions		Revision	15.05.16.1
A4					
Date:	15-May-2016	Sheet 1 of 1			
File:	D:\M&W\...\Pro10R_S3_B8.sch	Drawn By: WAG			

M & W IGNITIONS

Performance & Quality

CYL SWITCH	# ENGINE CYLINDERS
0	
1	
2	
3	
4	4
5	
6	6
7	
8	8
9	
A	10
B	
C	12
D	
E	
F	



OPERATION

Limiting range - 2,000 to 19,900 in 100 rpm increments
 To disable rpm limiting select 'zero' for all 'RPM' switches
 CDI power switch must be cycled after making changes to 'CYL' switch
 Engine RPM switches may be changed at any time

WARNING!

**Engines respond differently to RPM limiting
 Set conservative limit at first then increase to desired
 maximum rpm after observing engine response**

Title			REV LIMITER		
Size	Number	Revision			
A4	(C) M&W Ignitions	16.09.18.1			
Date:	16-Sep-2018	Sheet	1	of 1	
File:	D:\M&W\...\Pro10R S3 limiter.sch	Drawn By:	WAG		

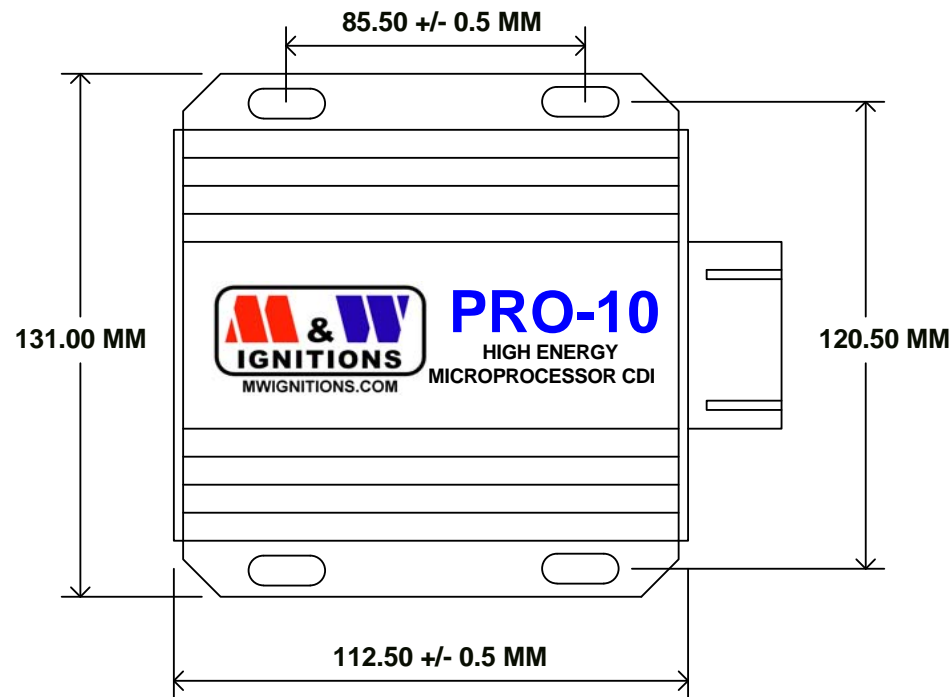
M & W IGNITIONS

Performance & Quality

CAUTION!
HIGH VOLTAGE



**DISCONNECT POWER BEFORE
WORKING ON UNIT**



Slot dimensions - 5mm * 10mm

Title			PRO-10RL MOUNTING DIMENSIONS		
Size	Number		Revision		
A4	(C) M&W Ignitions		11.12.17.1		
Date:	11-Dec-2017		Sheet 1 of 1		
File:	D:\M&W\Pro-10RL dimensions.sch		Drawn By: WAG		