



www.emtronaustralia.com.au

Emtron4

4 CHANNEL CAPACITOR DISCHARGE IGNITION

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INSTALLATION NOTES

MOUNTING

Do not mount the unit where it will be exposed to water or other liquids, ensure the bottom condensation slots are unobstructed and oriented to permit gravity drain. Select a location away from intense heat and if required provide a source of cooling air to remove internally generated heat.

Do not mount using Velcro, failure to use supplied rubber mounts will void warranty!

IGNITION LEADS

Do not use plain metal wire or carbon core ignition leads.

Use spiral wound inductively suppressed metal core ignition leads such as those available from Magnecor www.magnecor.com.

SPARK PLUGS

The use of non resistor spark plugs (where possible) will greatly enhance ignition performance.

In some installations the use of resistor spark plugs may be unavoidable. During regular maintenance measure internal resistance to ensure damage has not occurred. Open circuit or high resistance may cause failure of spark plug wires, ignition coils and damage to CDI.

Surface discharge and semi surface discharge spark plugs should only be used with CDI ignition in naturally aspirated or low boost applications.

Do not set a spark gap greater than 0.025" (0.65mm) in high power/boost installations.

INSULATION PRECAUTIONS

Degrease spark plug insulators and coil/plug boots after handling to prevent spark tracking or insulation breakdown.

Use (supplied) dielectric grease on spark plug insulators and coil/plug boots to increase insulation properties and ease installation/removal. Use of dielectric grease in main connector may reduce water ingress.

WIRING & POWER SUPPLY

Emtron CDI systems are designed to blow the external fuse under conditions of over voltage or reverse polarity. Faults such as loose battery terminals, poor wiring or defective alternator/regulator may also cause for this to occur. Fitting a higher current fuse won't disable this feature, will void warranty and may cause irreparable damage to unit. **Fit the recommended size fuse!**

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

Connect ignition system directly to battery. If required 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. If connected to a high impedance supply shared with ECU or its sensors erratic operation may be experienced.

Do not use voltage boosters as they are unable to provide the instantaneous current required for correct CDI operation.

When using a total loss electrical system install either 16V or 18V battery to ensure adequate supply voltage and isolate during charging to prevent excessive voltage damaging CDI or ECU.

Use twisted pair wire for all power supply and coil connections. For improved noise suppression and compliance with Australian EMC standards use twisted shielded pair wire for coils. Keep coil wires one continuous length from CDI and do not fit intermediate connectors into harness. All coil negative wires must be joined at or in the cdi connector. Keep coil primary (CDI) wires away from HT leads, coil HV outlet and coil body to prevent flashovers.

TRIGGERING

Trigger input & coil output numbers (letters) indicate CDI ignition sequence not cylinder number.

Emtron CDI systems default to falling edge ignition. To select rising edge ignition ground the Trigger Edge pin.

If CDI trigger edge and ECU ignition edge do not match timing will be erratic!

TUNING

CDI systems are 'edge triggered' and not effected by dwell settings.

Emtron CDI systems may reduce combustion delay requiring a reduction in ignition timing. Resulting changes in combustion characteristics may also require alterations to fuel flow.

Always re tune fuel and timing curves after installing CDI ignition!

TACHO OUTPUT

Tacho output provides a 50% duty cycle square wave signal at battery supply voltage. This will work with most aftermarket digital tacho's however early designs and those previously connected to the coil negative side may require a tach adaptor to read correctly.

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

The CDI may be tested by momentarily grounding the trigger inputs causing the LED to flash and corresponding ignition coil to spark. **Do not conduct this test without grounded spark plugs installed!**

IT IS IMPORTANT TO FULLY READ AND UNDERSTAND THESE INSTRUCTIONS AND HAVE A GOOD KNOWLEDGE OF AUTOMOTIVE ELECTRICAL SYSTEMS BEFORE COMMENCING INSTALLATION!

IGNITION COILS

COIL SELECTION

Most inductive ignition coils will work reasonably well with CDI systems however for ultimate ignition energy and efficiency use a coil specifically designed for CDI use such as the M&W #CO1006.

COP COILS

COP (coil on plug) coils with inbuilt drivers are not suitable for use with CDI ignition. COP coils designed for inductive ignition may contain a blocking diode in the secondary winding which must be considered during wiring (see coil polarity note below). **Use resistive spark plugs with all COP coils. Keep plug gap < 0.025" (0.6mm) to prevent coil damage. DO NOT use AEM pencil coils under any circumstances!**

FERRITE CDI COILS

Ferrite core cdi coils provide a lightweight solution for direct fire applications and give 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 with the ECU or CDI. **Do not use ferrite coils in parallel wired pairs!**

COIL POLARITY

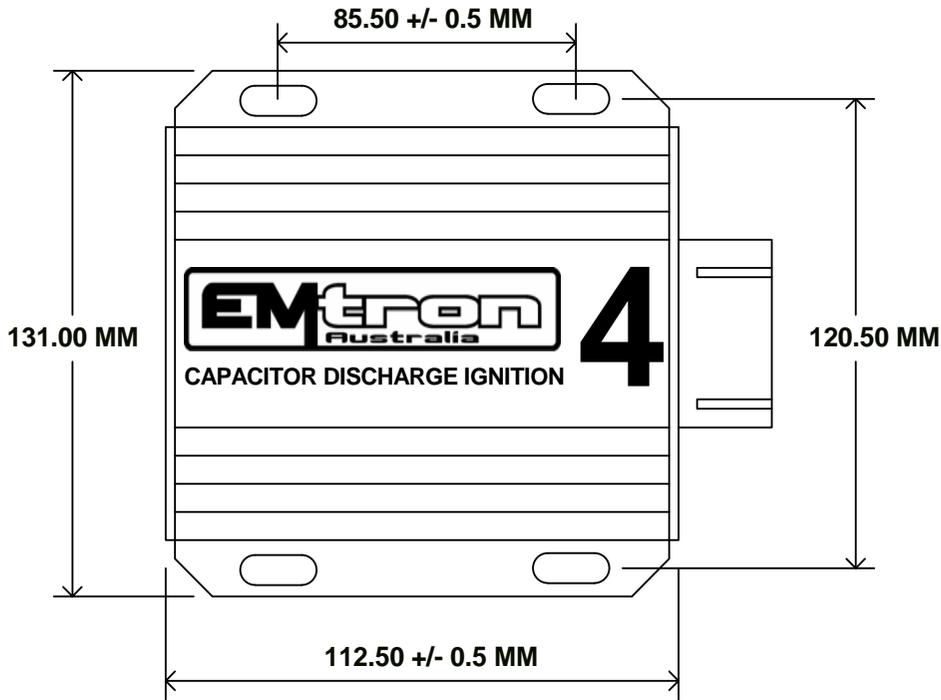
All diagrams are shown for cdi style coils. For correct operation with inductive ignition coils wire the primary connections in reverse to maintain correct spark plug polarity.

CAUTION!

**IGNITION COIL DAMAGE MAY OCCUR IF
OPERATED WITH AN EXCESSIVE SPARK GAP**



DISCONNECT POWER BEFORE WORKING ON UNIT



Slot dimensions - 5mm * 10mm

Title				MOUNTING DIMENSIONS	
Size	Number	Revision			
A4	(C) M&W Ignitions	26.11.14.1			
Date:	26-Nov-2014	Sheet	1	of 1	
File:	D:\M&W\Emtron4 Mounting dimensions		Drawn By:	M&W	



DISCONNECT POWER BEFORE WORKING ON UNIT

VIEWED FROM BACK OF CONNECTOR



KEEP ALL INPUTS WELL SEPARATED FROM COIL OUTPUTS

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

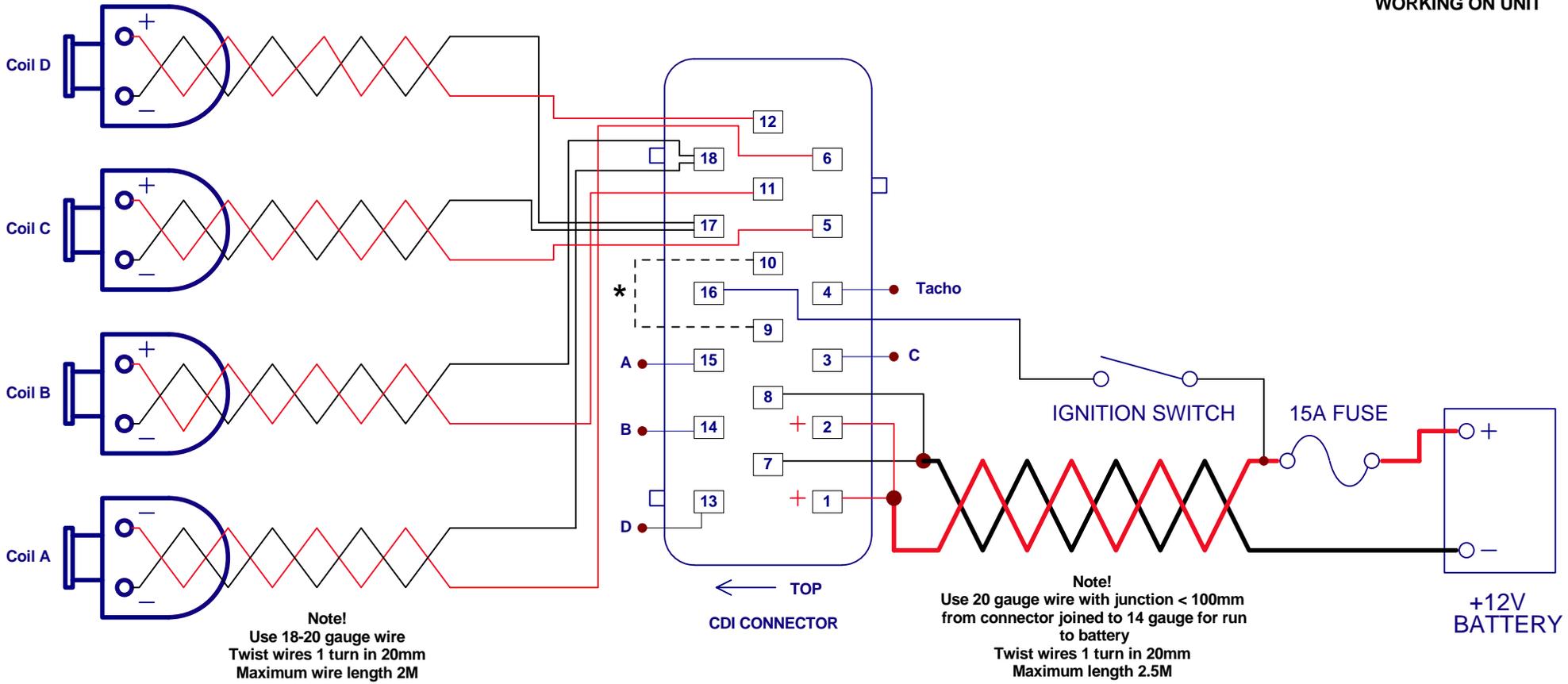
SPECIFICATIONS

Supply voltage = 13V - 18V DC negative ground
 Startup voltage = 6V
 Maximum supply current = 7.0A
 Power off current < 700uA
 Maximum ignition frequency = 1,200Hz
 Maximum energy limit = 700/550 Hz
 Coil primary voltage = 460V/540V (paired triggers)
 Spark energy = 115/150 (paired triggers) millijoules
 Trigger = 10mA adjustable edge
 Tacho = 12V, 100mA square wave
 Maximum allowable case temperature = 105°C
 Dimensions = 112L * 110W * 40H
 Weight = 570gm

Title			FOUR CHANNEL CDI IGNITION		
Size	Number			Revision	
A4		(C) M&W Ignitions		26.11.14.1	
Date:	26-Nov-2014	Sheet	1	of	1
File:	D:\M&W\...\Emtron4_1.sch	Drawn By:	M&W		



DISCONNECT POWER BEFORE WORKING ON UNIT

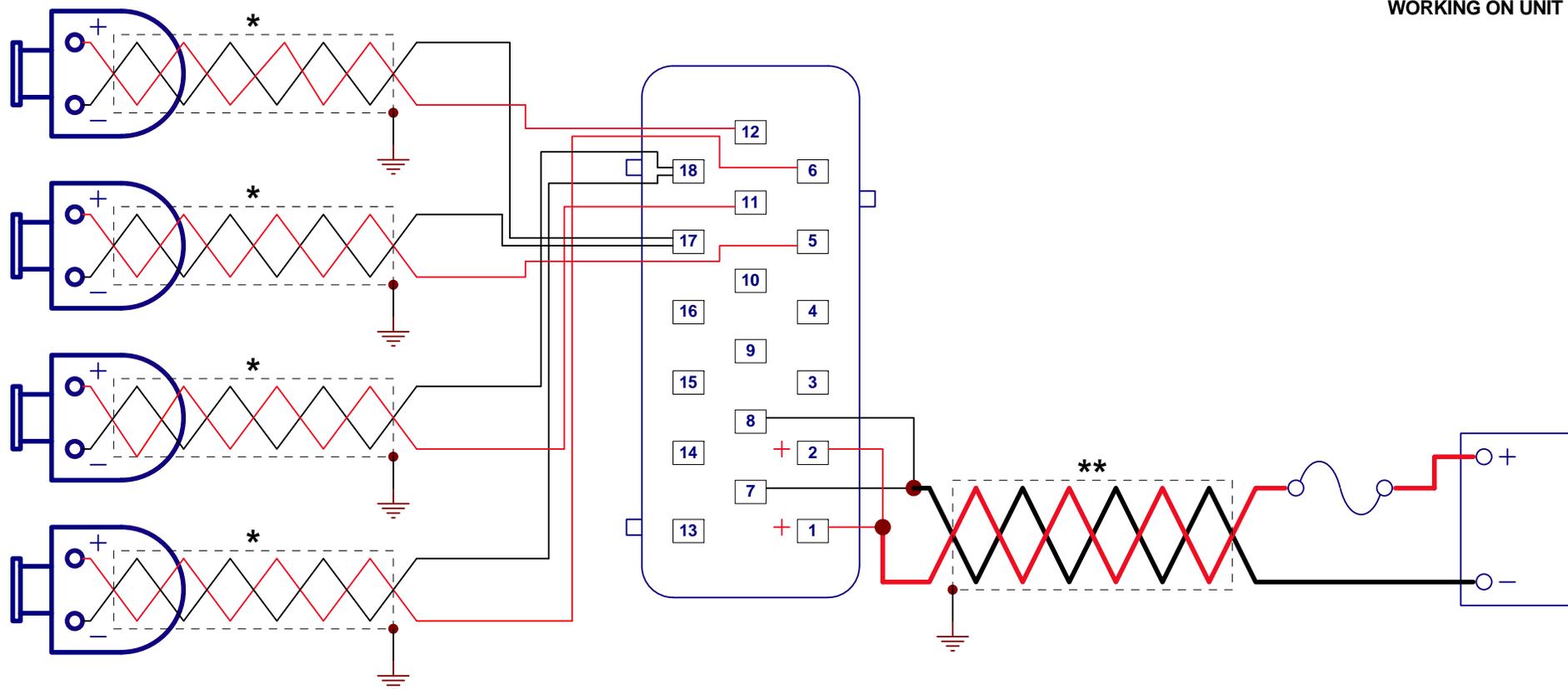


* See installation notes for use of trigger edge selection link

Title			FOUR COIL SEQUENTIAL IGNITION		
Size	Number		Revision		
A4	(C) M&W Ignitions		26.11.14.1		
Date:	26-Nov-2014		Sheet 1 of 1		
File:	D:\M&W\...\Emtron4_2.sch		Drawn By: M&W		



DISCONNECT POWER BEFORE WORKING ON UNIT



- * Use twisted shielded cable grounded at one end only
- ** Shielded power cables required for Australian EMC compliance

Title			SHIELDING & EMC COMPLIANCE		
Size	Number	(C) M&W Ignitions		Revision	
A4				26.11.14.1	
Date:	26-Nov-2014	Sheet 1 of	1		
File:	D:\M&W\Diagrams\Emtron4\Files\EMC.scd	Drawn By:	M&W		