



Pro-Drag6

160/250mJ S3

ELECTRICAL WIRING & OPERATING INSTRUCTIONS

Applicable
S/No's 39xxxx

**FAILURE TO FOLLOW INSTRUCTIONS
WILL VOID WARRANTY**

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6. Connections and specifications
7. Mazda Rotary – Leading
8. Mazda Rotary – Trailing
9. 6 cylinder reciprocating
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Scan for up to date instructions

INSTALLATION NOTES

(Pro-Drag 250mJ Series 3 systems)

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 $\leq 0.025"$ (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 when charging.

WIRING

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.

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.

Single box: Ignition channels may be triggered in any sequence.

Two box: Firing sequence must alternate between boxes.

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

When provided with a trigger edge selection input the unit will 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 some M&W 250mJ S3 units include a power level switch.

For drag only use the input may be permanently grounded.

For street/drag use install an adjustable 'Hobbs' style manifold pressure switch or use a programmable output from the ECU to ground the input when increased ignition energy is required.

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.

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 otherwise damage to the cdi and coil 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



SPECIFICATIONS

Operating voltage	13V --> 18V DC
Polarity	Negative ground
Startup voltage	>= 6V
Maximum supply current	15A (per box)
Power off current	< 700uA
Maximum ignition frequency	2,000Hz (combined)
Energy limit	1,400Hz (combined)
Coil primary voltage	400/500V
Spark energy	160/250mJ
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	122L * 110W * 40H
Weight	800gm (Per box)

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

Title			PRO-DRAG6 250mJ		
Size	Number	(C) M&W Ignitions		Revision	
A4				17.07.21.1	
Date:	17-Jul-2021	Sheet	1	of	1
File:	D:\M&W\...\Pro-Drag6 250 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!

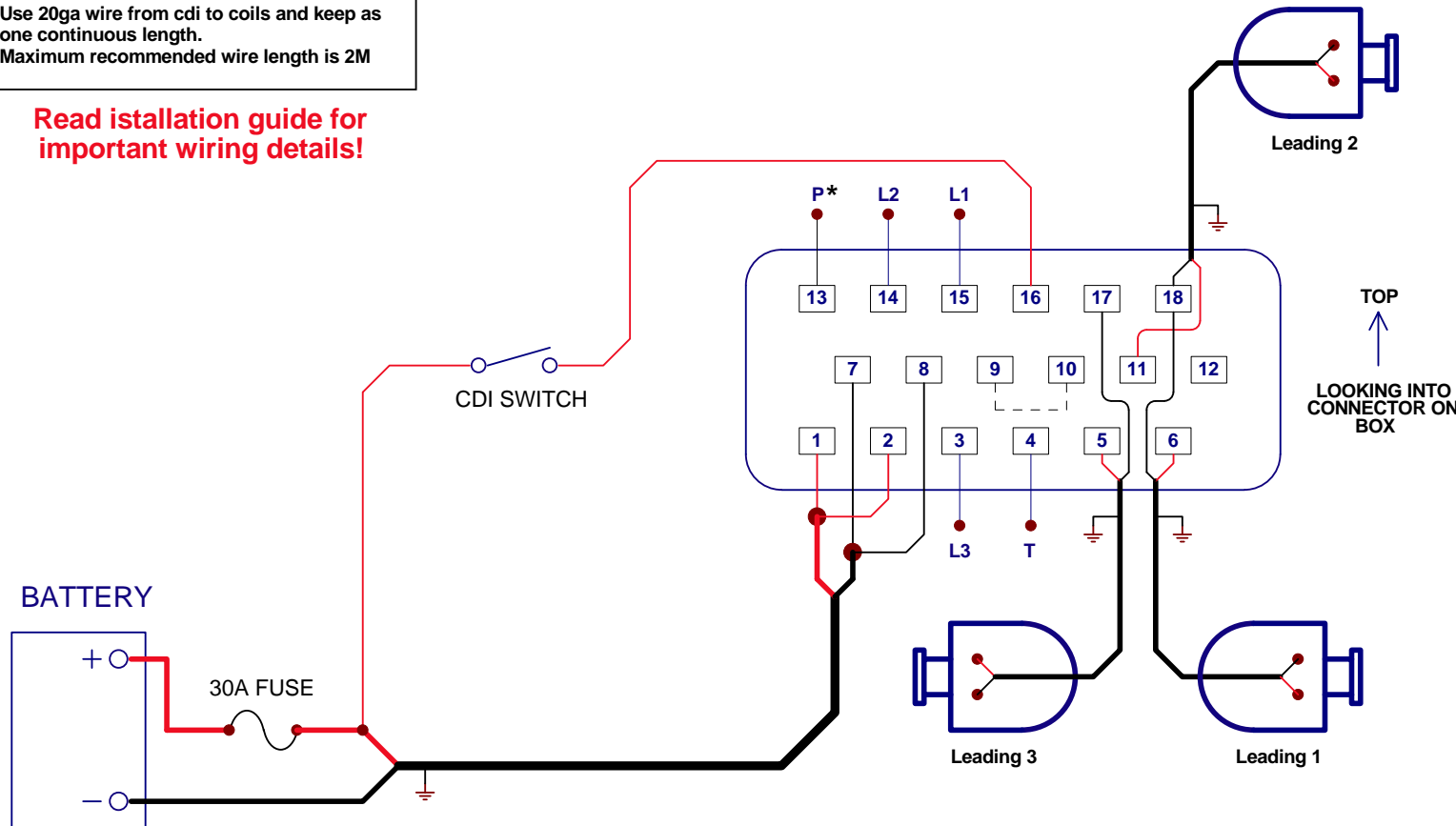
M & W IGNITIONS

Performance & Quality

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DISCONNECT POWER BEFORE WORKING ON UNIT



↑ TOP
LOOKING INTO CONNECTOR ON BOX

* Note!

Power level function added starting with Serial Number 390625
For serial numbers below this the pin has no function except in some custom builds

Title			MAZDA ROTARY - LEADING		
Size	Number	Revision			
A4	(C) M&W Ignitions	16.06.23.1			
Date:	16-Jun-2023	Sheet	1	of 1	
File:	D:\M&W\...\Pro-Drag6 250 S3 2A.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

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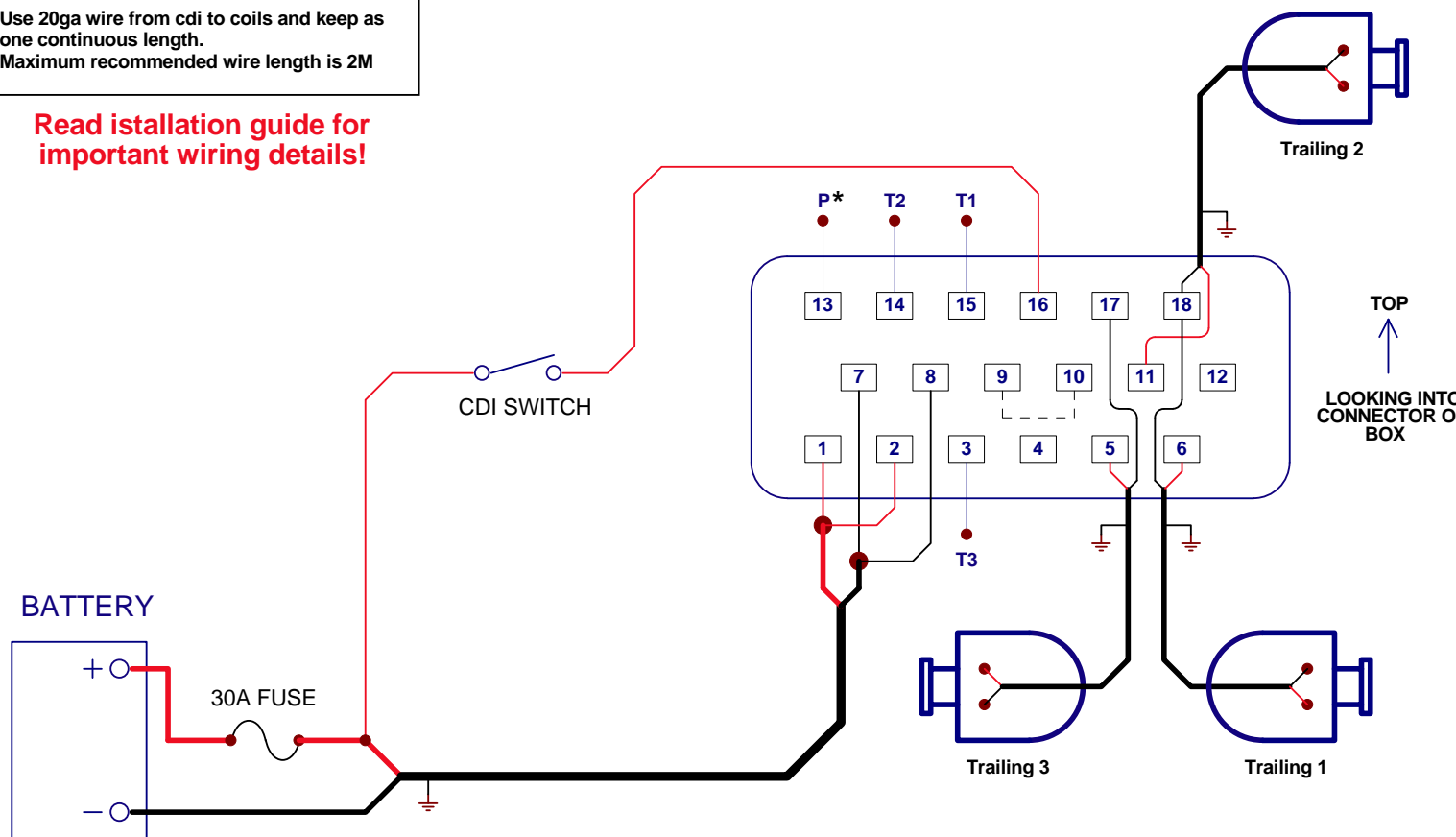
M & W IGNITIONS

Performance & Quality

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**DISCONNECT POWER BEFORE
WORKING ON UNIT**



↑ TOP
LOOKING INTO
CONNECTOR ON
BOX

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Power level function added starting with Serial Number 390625

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Title			MAZDA ROTARY - TRAILING
Size	Number	Revision	
A4	(C) M&W Ignitions	16.06.23.1	
Date:	16-Jun-2023	Sheet 1 of	1
File:	D:\M&W\...\Pro-Drag6 250 S3 2B.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!

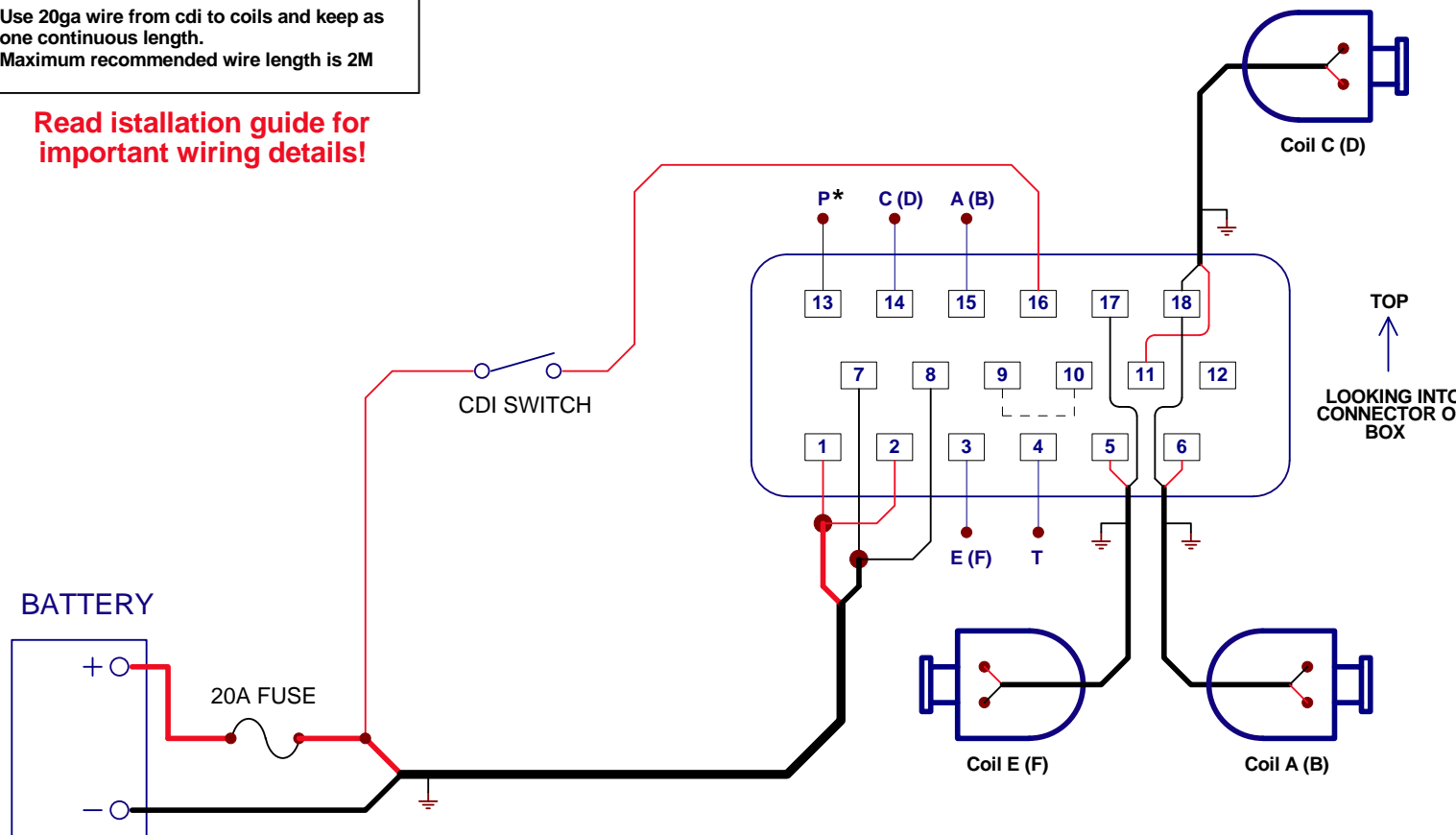
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LOOKING INTO
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*** FIRING ORDER MUST ALTERNATE BETWEEN BOXES ***

Title			SEQUENTIAL 6 CYLINDER		
Size	Number	Revision			
A4	(C) M&W Ignitions	17.07.21.1			
Date:	17-Jul-2021	Sheet 1 of	1		
File:	D:\M&W\...\Pro-Drag6 250 S3 3.sch	Drawn By:	WAG		

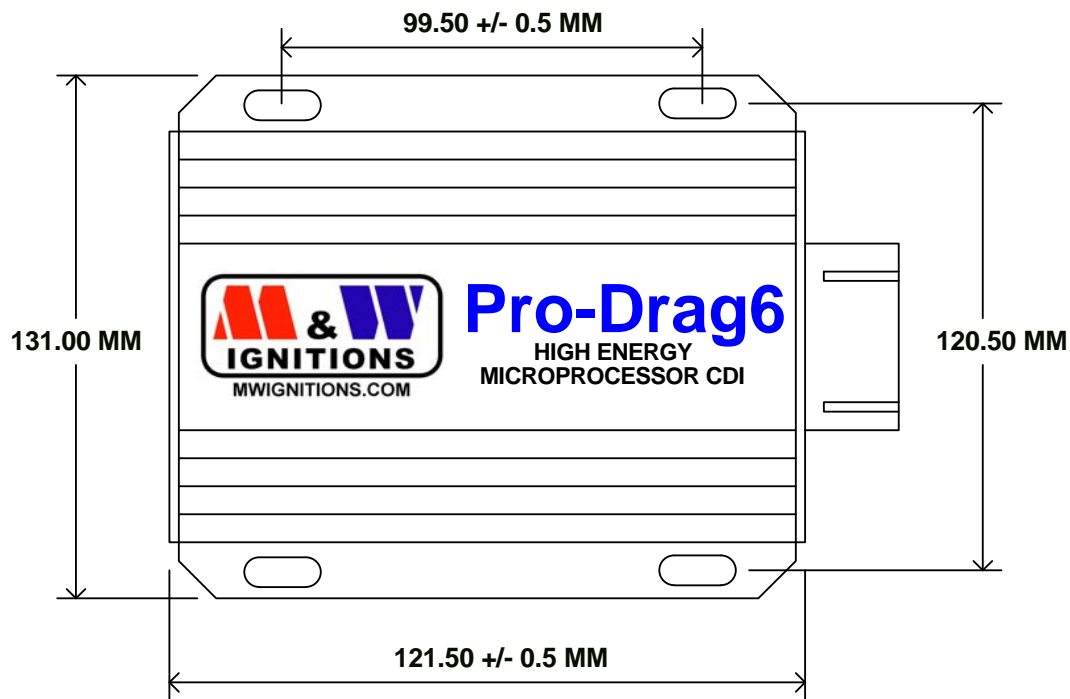
M & W IGNITIONS

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WORKING ON UNIT**



Slot dimensions - 5mm * 10mm

Title		MOUNTING DIMENSIONS	
Size	Number	Revision	
A4	(C) M&W Ignitions	25.07.17.1	
Date:	25-Jul-2017	Sheet 1 of 1	
File:	D:\M&W\...\Pro-Drag6 250 S3 mounting dimensions.dwg		