



4000

Top Fuel Harley

ELECTRICAL WIRING & OPERATING INSTRUCTIONS

Applicable
S/No's 980xxx

**FAILURE TO FOLLOW INSTRUCTIONS
WILL VOID WARRANTY**

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Introduction

The new M&W 4000 TFH capacitor discharge ignition system is a revolutionary design based upon the latest high voltage technology producing in excess of 4,000mJ of ignition energy per cylinder for twin plug Top Fuel Harley drag bike motors.

WARNING

This is an Extreme ignition system and designed for short duration use on drag race only nitromethane Top Fuel Harley bikes.

Installation

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!

Unit must be secured with no preload on rubber mounts in any axis and incapable of contacting any rigid part of the vehicle during mount deflection.

IGNITION LEADS

Use only inductively suppressed spiral wound metal conductor ignition leads. For best performance select leads with approximately 1,000 ohms per metre (300 ohm per ft) resistance similar to those produced by Magnecor.

Do not use carbon core or unsuppressed metal leads!

SPARK PLUGS

When using resistor spark plugs measure internal resistance as part of regular maintenance, replace immediately if out of tolerance.

If used on a blown motor do not use semi or full surface discharge spark plugs and keep spark plug gap $\leq 0.025"$ (0.6mm)!

INSULATION PRECAUTIONS

Regularly degrease sparkplug insulators, coil HV towers, sparkplug boots, ignition coil boots and installation tooling to prevent high voltage arcing.

Use only clean dry gloves to handle high voltage components!

Use dielectric grease on sparkplug insulators, coil tower, inside sparkplug boots and ignition coil boots to improve insulation properties.

POWER SUPPLY

Reverse polarity will damage unit!

Always install external fuse or equivalent rated circuit breaker!

Use a dedicated high quality managed 16V lithium ion battery capable of minimum 50A continuous discharge current similar to those made by Full Spectrum Power.

Disconnect battery during charging!

Start-up voltage	>13.0V
Normal supply voltage	16.0V-18V

Connect power supply +/- inputs directly to battery, do not wire through PDM or other electrical management system!

WIRING

Use twisted shielded Tefzel M27500 for all wires and keep short as possible. See install diagram for correct gauge.

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

Battery voltage sense line must be connected to main supply wire at point of quadfurcated prior to entering the cdi connector.

OPERATION

SAFE OPERATION

It is important to correctly sequence activation and deactivation of the ignition system, failure to follow these guidelines may precipitate an uncommanded ignition event

- CDI must be connected directly to battery and turned on/off via CDI switch input
- Do not connect or disconnect cdi main power supply to battery with power applied to cdi switch input

ECU:

- ECU must be fully initialised with ignition output lines in a stable state prior to cdi being turned on
- CDI must be turned off via cdi switch input at least 500mS prior to ECU shutdown
- Do not inject fuel unless status output high or status byte of CAN data = 1 (Status output = supply -1V)

HALL:

- Do not attempt to start or introduce fuel unless green light is on steady. Note! An LED indicator may be wired in parallel with Hall supply if green LED not visible on bike.
- Turn fuel off before turning cdi switch off

TRIGGERING

The 2000 TFH ignition system may be triggered by either an ECU (variable timing) or crank trigger wheel and pair of Hall Effect switches (fixed timing). To simplify installation power for the hall switches is provided by the ignition system.

Triggering occurs on a falling (negative) edge trigger signal

CDI SWITCH

CDI switch input is used to power system up/down without disconnection from battery. Once switch input is enabled unit will conduct self test and boot sequence in preparation for operation. This input is not suitable for rapid interruption of ignition function.

THERMAL MANAGEMENT

A cooling airflow will assist temperature recovery however it does not extend operation time!

Active temperature monitoring is used to assist in preventing damage through operation outside design parameters. If internal temperature exceeds 100C unit will not start to ensure sufficient running overhead for a full pass.

Current and peak temperature may be monitored via can data stream.

LED INDICATOR

Failure to start:

Both LED's flash simultaneously – Unit is over temperature

Both LED's flash alternately – Battery below 13.0V

Both LED's triple flash – failure to boot (possible damage)

Boot:

Both Led's illuminated for approx 1 second

Operating:

Green LED on solid – Normal operation

Green LED extinguishes – Low battery voltage
(reduced performance)

Red led flashes briefly with each trigger input

CAN BUS DATA

Protocol: 1Mbps - 11 bit ID
CAN ID: 0x103 (custom available)
Data rate: 10Hz
Termination: External terminating resistor required.
Firmware: V 0.1

Byte No.	Description	Unit	Multiplier
0	Internal temperature	°C	1
1	Peak internal temperature	°C	1
2	Battery voltage	V	0.1
3	Coil voltage	V	2.36
4	Status		
5	Firmware version		
6	Serial number high byte		
7	Serial number low byte		

TUNING

CDI performance is not affected by changes in dwell settings!

CDI ignition will significantly alter combustion characteristics and ignition delay requiring a change in ignition timing and fuel flow maps. Start with timing mildly retarded and fuel rich.

Do not attempt to re-use exiting timing curves, set ECU ignition delay to zero and re-tune both fuel and timing after installation!

COIL SELECTION

Use only M&W COI006-18.

FIRING COIL WITH EXCESSIVE SPARK PLUG GAP OR WITHOUT SPARK PLUG LEAD AND GROUNDED SPARKPLUG INSTALLED WILL DAMAGE COIL AND MAY DAMAGE IGNITION SYSTEM!

TESTING

When fault finding new installations or timing engine the CDI may be manually fired by momentarily grounding each trigger input. If installed correctly this will cause the red LED to briefly flash and corresponding ignition coils to spark.

Do not conduct this test without grounded spark plugs installed!

SAFETY

This cdi system is capable of generating extreme voltages at very high current!

We strongly advise the provision of spark plug lead grounding points on all vehicles using this ignition.

These may simply be old spark plugs or sparkplug shaped metal studs welded & grounded to vehicle chassis.

When vehicle is not in use or immediately prior to any maintenance or ecu programming remove spark plug leads from spark plugs and attach to grounding points.

This will help prevent coil/lead/cdi damage and possible injury to personnel.

M & W IGNITIONS

Unsurpassed Performance & Quality

CAUTION!
HIGH VOLTAGE



**DISCONNECT POWER BEFORE
WORKING ON UNIT**



1 +12V (Battery)	13 Ground (Battery)	25
2 +12V (Battery)	14 Ground (Battery)	26 CDI switch
3 +12V (Battery)	15 Ground (Battery)	27 Trigger2 (*Hall2)
4 +12V (Battery)	16 Ground (Battery)	28
5	17 (*Hall -)	29 Trigger1 (*Hall1)
6 Status(*Hall +)	18	30
7	19 CAN High	31
8	20	32 CAN Low
9	21 Coil 1B -	33 BV sense
10 Coil 2B +	22 Coil 2B -	34 Coil 1B +
11	23 Coil 1A -	35
12 Coil 1A +	24 Coil 2A -	36 Coil 2A +

*** HALL EFFECT TRIGGERING**

SPECIFICATIONS

Operating voltage 16.0V --> 18V DC
 Startup voltage >= 13V
 Average supply current 33A Max
 Instantaneous peak current >80A
 Power off current < 200uA
 Power limit @ 16V >5,500 RPM
 Spark energy 4,000mJ
 Coil current >170A
 Trigger:
 Current 10mA sinking
 Edge Falling
 Hall supply:
 Voltage Supply -1V
 Current 100mA
 Operating temperature <= 105°C (case)
 Dimensions 159L * 137W * 50H
 Weight 1,500gm

Title		
4000 Top Fuel Harley		
Size	Number	Revision
A4	(C) M&W Ignitions	12.10.26.1
Date:	12-Oct-2026	Sheet 1 of 1
File:	D:\M&W\4000 TFH specs.sch	Drawn By: WAG

Wire Specifications

POWER SUPPLY:

Use 12ga shielded wire from battery quadfurcated into 18ga wire $\leq 100\text{mm}$ from connector. Maximum recommended length 2M. Junction best achieved using Solistrand or similar butt splice / barrel crimp.

Sense wire - 20 or 22ga.

IGNITION COILS:

Use 18ga shielded wire from cdi to coils and keep as one continuous length. Keep wires short as possible to reduce interference, maximum recommended length 2M

Read installation guide for important wiring details!

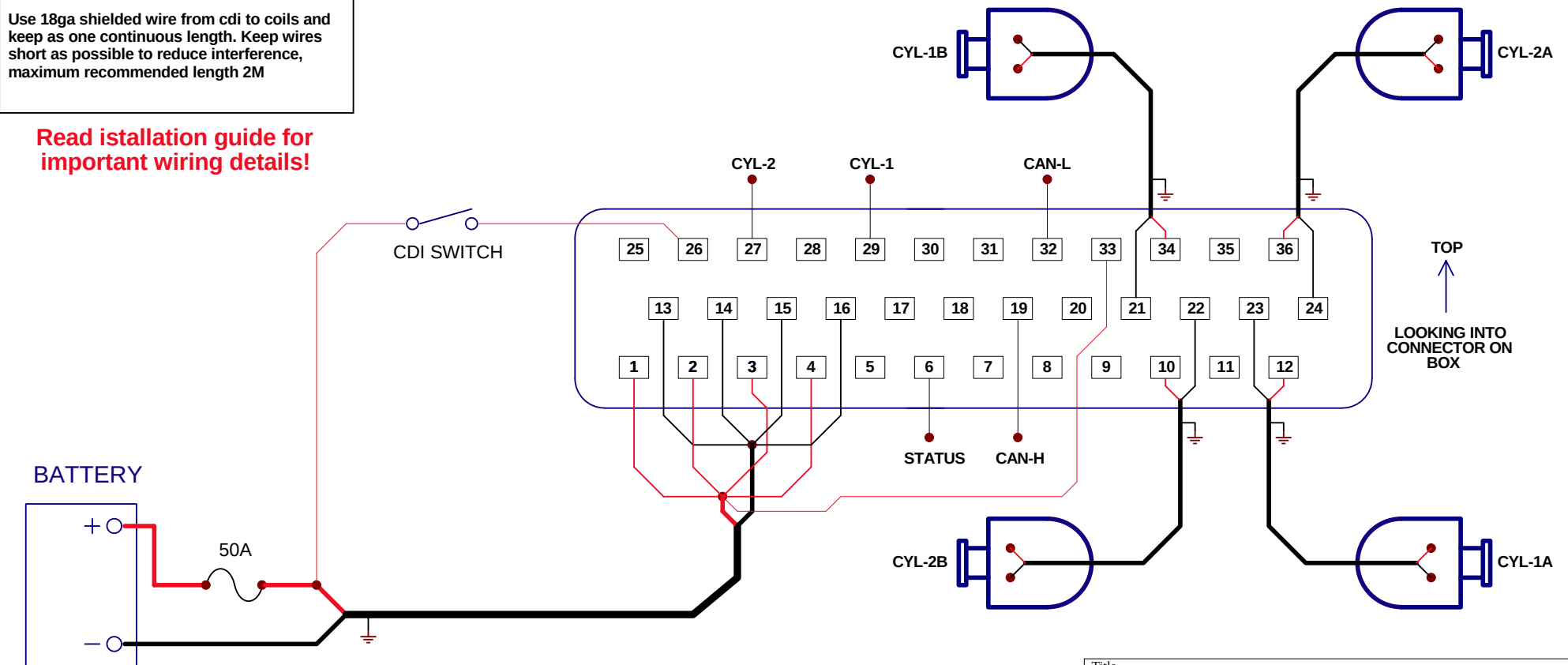
M & W IGNITIONS

Unsurpassed Performance & Quality

**CAUTION!
HIGH VOLTAGE**



**DISCONNECT POWER BEFORE
WORKING ON UNIT**



**Reverse polarity connection without
fuse installed will damage unit!**

Title 4000 TFH ECU INSTALL		
Size A4	Number (C) M&W Ignitions	Revision 12.10.26.1
Date: 11-Oct-2026	Sheet 1 of 1	
File: D:\M&W\...2000 TFH V2 ecu wiring.sch	Drawn By: WAG	

POWER SUPPLY:

Use 12ga shielded wire from battery quadfurcated into 18ga wire $\leq 100\text{mm}$ from connector. Maximum recommended length 2M. Junction best achieved using Solistrand or similar butt splice / barrel crimp.

Sense wire - 20 or 22ga.

IGNITION COILS:

Use 18ga shielded wire from cdi to coils and keep as one continuous length. Keep wires short as possible to reduce interference, maximum recommended length 2M

Use 12ga shielded wire from battery quadfurcated into 18ga wire <= 100mm from connector. Maximum recommended length 2M. Junction best achieved using Solistrand or similar butt splice / barrel crimp.

IGNITION COILS:

Use 18ga shielded wire from cdi to coils and keep as one continuous length. Keep wires short as possible to reduce interference, maximum recommended length 2M

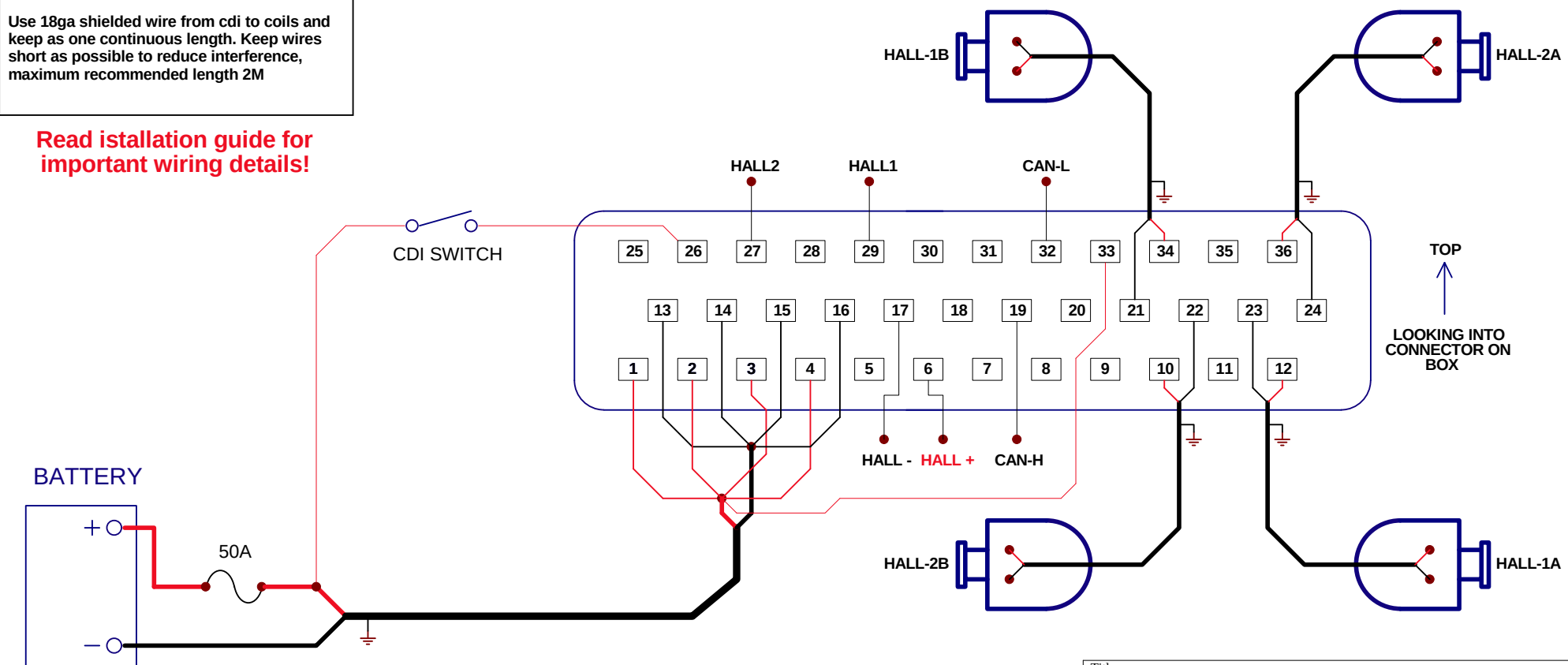
Read installation guide for important wiring details!



CAUTION!
HIGH VOLTAGE



**DISCONNECT POWER BEFORE
WORKING ON UNIT**

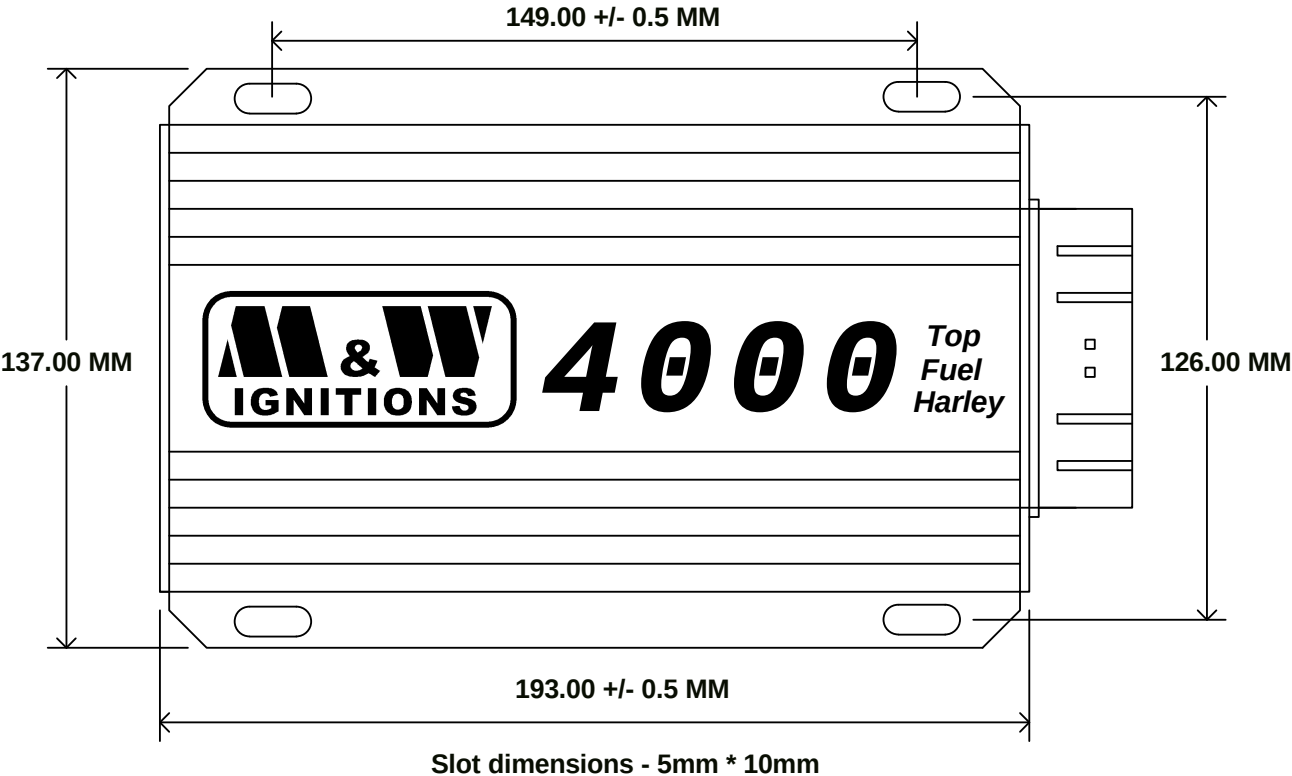


Reverse polarity connection without fuse installed will damage unit!

Title				4000 TFH HALL INSTALL			
Size A4		Number (C) M&W Ignitions			Revision 12.10.26.1		
Date: 11-Oct-2026		Sheet 1 of 1			Drawn By: WAG		
File: D:\M&W\...4000 TFH hall wiring.sch							



DISCONNECT POWER BEFORE
WORKING ON UNIT



Title		4000 Top Fuel Harley	
Size	Number	Revision	
A4	(C) M&W Ignitions	12.10.26.1	
Date:	11-Oct-2026	Sheet 1 of 1	
File:	D:\M&W\4000 TFH Dimensions.sch	Drawn By:	WAG