AMERICA'S IGNITION SPECIALISTS

Mallory IGNITION ®

FOR OVER SIXTY YEARS

SUPER-MAG® VI ELECTRONIC MAGNETO IGNITION SYSTEM

Fuel and Alcohol Racing are probably the most exciting displays of unlimited horsepower and performance anyone could witness in all of the motorsports. The ignition system is a critical component for an engine of this type. Mallory was already 39 years old when the first Mallory SUPER-MAG® Series of Magneto Ignition Systems were built back in 1962. These and other magneto ignition systems replaced conventional ignition systems for blown nitro and alcohol engines since the early '60s. Mallory made variations of the SUPER-MAG® Magneto, the Indy Magneto, which made its way to Indianapolis winning the famous 500 mile race 15 consecutive years from 1969 to 1983. Also, from 1976 to 1979, many Indy car teams ran (breakerless) Electronic Indy Magneto when engines exceeded 10,000 RPM. For many years, the magneto was the preferred ignition for the high RPM Cosworth and Offenhouser engines used by Indy car teams. Only the advent of computerized engine management systems forced the changeover to conventional ignitions.

In 1974, an all new SUPER-MAG® II Magneto was born. Since then, the SUPER-MAG® Series of Magneto Ignition Systems has dominated Drag Racing.

In 1981, an all new SPRINTMAG® Series of Magneto Ignition Systems would evolve from many components and design of the Indy Magneto and SUPER-MAG® II Magneto. The SPRINTMAG® Magneto is designed to run continuously up to 10,000 RPM on normally aspirated racing engines.

The SUPER-MAG® II Magneto was upgraded and replaced in 1985 with the SUPER-MAG® III Magneto. Looking at the SUPER-MAG® Series of Magneto Ignition Systems from a distance, it is hard to distinguish the difference between each magneto ignition system. Furthermore, since 1987, all SUPER-MAG® Series of Magneto Ignition Systems use the Pro Cap system. The Pro Cap is the largest contact terminal diameter distributor cap in the performance industry and has extensive ribbing to prevent cross firing. A specially designed, counterbalanced rotor with ribbing and adapter shield interlock to prevent cross firing. Remember, it was the SUPER-MAG III Magneto that was on the first four second pass down the quarter mile in 1988.

Get closer and look inside. In 1990, new SUPER-MAG® V Magnetos were introduced. In 1991, new SUPER-MAG® IV Magnetos were introduced. These magnetos use Neodymium-Iron-Boron (rare-earth elements) magnets that do not need constant recharging.

In 1993, Mallory paved the way again for eliminating breaker points with new SUPER-MAG® V and X Electronic Magnetos. The rotor/shutter wheel and infrared photo-optic trigger have no moving parts or pickup to adjust or wear out. Accordingly, the generator does not use its power to energize the electronic control and the infrared photo-optic trigger inside the generator. However, some SUPER-MAG® V and X Electronic Magnetos have been converted to breaker points for those teams that insist on using breaker points and understand the maintenance involved with running magnetos of this magnitude.

At the end of 1995, Mallory introduced the new SUPER-MAG® VI Electronic Magneto. This magneto made significant improvements in spark plug current and timing stability at 10,000 RPM and higher for Alcohol Dragster, Alcohol Funny Car and Pro Modified Classes. The SUPER-MAG® VI Electronic Magneto was found to have more secondary current, spark duration and energy than the MSD Pro Mag™ 12 alcohol magneto. During recent dynamometer testing a blown alcohol engine, a single SUPER-MAG® VI Electronic Magneto found an average of 40-horsepower more than the MSD Pro Mag™ 12 alcohol magneto.

The SUPER-MAG® VI Electronic Generator's output has increased higher than the SUPER-MAG® III and IV Magnetos. This generator uses Neodymium-Iron-Boron magnets that do not need constant recharging. Also, like the SUPER-MAG® V and X Electronic Magnetos, this generator does not use breaker points. The combination of rotor/shutter wheel and infrared photo-optic trigger is the same one used in SUPER-MAG® V and X Electronic Magneto Ignition Systems on nitro-burning engines for the past several years.

The SUPER-MAG® VI Electronic Control for Alcohol Dragster and Funny Cars has an integral rechargeable 12-volt battery. The battery energizes the electronic control and the infrared photo-optic trigger inside the generator. Accordingly, the generator does not use its power to energize the electronic control and the infrared photo-optic trigger inside the generator. Also, the battery operates the optional Staging Control Part No. 639-4,

tachometers, RPM activated switches and shift lights. A battery condition indicator light tells you when the battery needs charging.

The SUPER-MAG® VI Electronic Control for Pro Modified classes uses the vehicle battery to energize the electronic control and the infrared photo-optic trigger inside the generator. Accordingly, the generator does not use its power to energize the electronic control and the infrared photo-optic trigger inside the generator.

The SUPER-MAG® VI Electronic Control has a built-in proportional engine protection RPM limiter adjustable from 3,000 to 10,800 RPM set with a DIP switch for easy RPM programming in 200 RPM increments. This protects the engine from dangerous over revving. Special resistors (chips) are not necessary. The engine protection RPM limiter may be shut-off if you do not want a RPM limiter.

The SUPER-MAG® VI Electronic Control has a socket on the housing for an optional Mallory Staging Control Part No. 639-4 to plug into. This is used when you want a RPM limiter to control the engine RPM while on the starting line. This Staging Control is adjustable from 2,000 to 9,000 RPM in 200 RPM increments.

The SUPER-MAG® VI Electronic Control has a tachometer output terminal that will operate standard ignition tachometers. Also, the tachometer output terminal will operate RPM triggered devices such as the Mallory RPM Activated Switches.

Ignition timing is easier with the electronic control having an integral static timing buzzer. Also, a (timing) light comes ON when the buzzer sounds. If the area you are working is noisy, the light becomes handy when you cannot hear the buzzer.

The electronic control is supplied with specially designed rubber shock mounts to absorb vibration and guard against internal damage.

The kill switch wiring is moved to the wire harness between the generator and the electronic control. This significantly reduces the kill switch contact block wear. Also, the kill switch can be used to start the engine.

The SUPER-MAG® Transformer Part No. 28900A features oil impregnated windings. The oil cools down the winding and inhibits arcing. Also, the oil filled external mounted transformer makes for a more efficient transformer and more powerful magneto. The winding is inside a rugged, glass-filled polyester case. The transformer comes with brass contact terminals including a spark plug type coil wire terminal for more positive coil wire retention and a shock resistant bracket.

Is 55,000-volts (55KV) from the transformer a good spark? Not necessarily. A transformer's (or ignition coil's) secondary break-over voltage must be capable of jumping (arc) across the spark plug gap. The amount of voltage needed to jump the spark plug gap is dictated by the distance of the spark plug gap and cylinder pressure. Example: If the break-over voltage is 15,000-volts to jump the spark plug gap, the detected output of the transformer is 15,000-volts. You are not going to detect another volt. Typical break-over voltages on a blown alcohol engine range from 30,000 to 35,000-volts that is very different from alluring voltage claims of 55,000-volts. On the other hand, distributor caps, rotors and spark plug wires can handle up to 35,000-volts when they are in perfect condition. After the spark jumps the spark plug gap, the sustaining secondary gap voltage can range from 500 to 2,000-volts.

Spark energy does the work of igniting the charge (air/fuel mixture). Spark energy is not referring to the output voltage of an ignition coil. In common everyday terms we recognize power and energy as the proper measure of work capability. Voltage by itself does not light the light or power the electric motor. Energy does. Spark energy is measured in millijoules (mJ) of energy. Spark energy, defined in millijoules of energy, is the best yardstick for comparing ignition systems. *(Caution: Multiple spark CD ignition system companies advertise millijoules of energy per sequence at 1,000 RPM. It is from 5 to 12 times the actual amount of energy found per spark. Above 3,000 RPM, only one spark is generated.)* A Joule (J) is a unit of electrical energy equal to one watt of power lasting one second. A millijoule is 1/1000 (.001) of a Joule. One exception is racing magnetos also test for milliamps of spark current for comparing magneto ignition systems.

When it comes time to compare magnetos, it is fair to test similar magnetos. Comparing dissimilar magnetos would be like comparing the sophisticated distributorless ignition system to the single point ignition system. Each ignition system was made for a certain purpose. Mallory would not compare or suggest the SPRINTMAG® Series of Magneto Ignition Systems for blown nitro and alcohol engines. Mallory's relentless pursuit to continue to enhance and improve the SUPER-MAG® Series of Magneto Ignition Systems has brought increased speeds and lower elapsed times. Without this leadership in magneto technology, pioneered by Mallory, the awesome performance established in Fuel and Alcohol Racing would not be where it is today.

SPECIFICATIONS

Generator Size and Weight

Diameter: Outside diameter of generator housing, 4-1/8 inches; Outside diameter of the Pro Cap, 5 inches.
Height: 6-7/8 inches from the band clamp to the top of the Pro Cap wire retainer; 3/4 inches higher than SUPER-MAG® III, IV or V Magneto.
Weight: 6.3 pounds with Pro Cap, rotor and drive flange.

Electronic Control Size and Weight

Length: 10 inches with clearance space for switch and harnesses.
Width: 4-1/2 inches.
Height: 3-1/2 inches with shock mounts.
Weight: 3.3 pounds with battery; 2.6 pounds without battery.

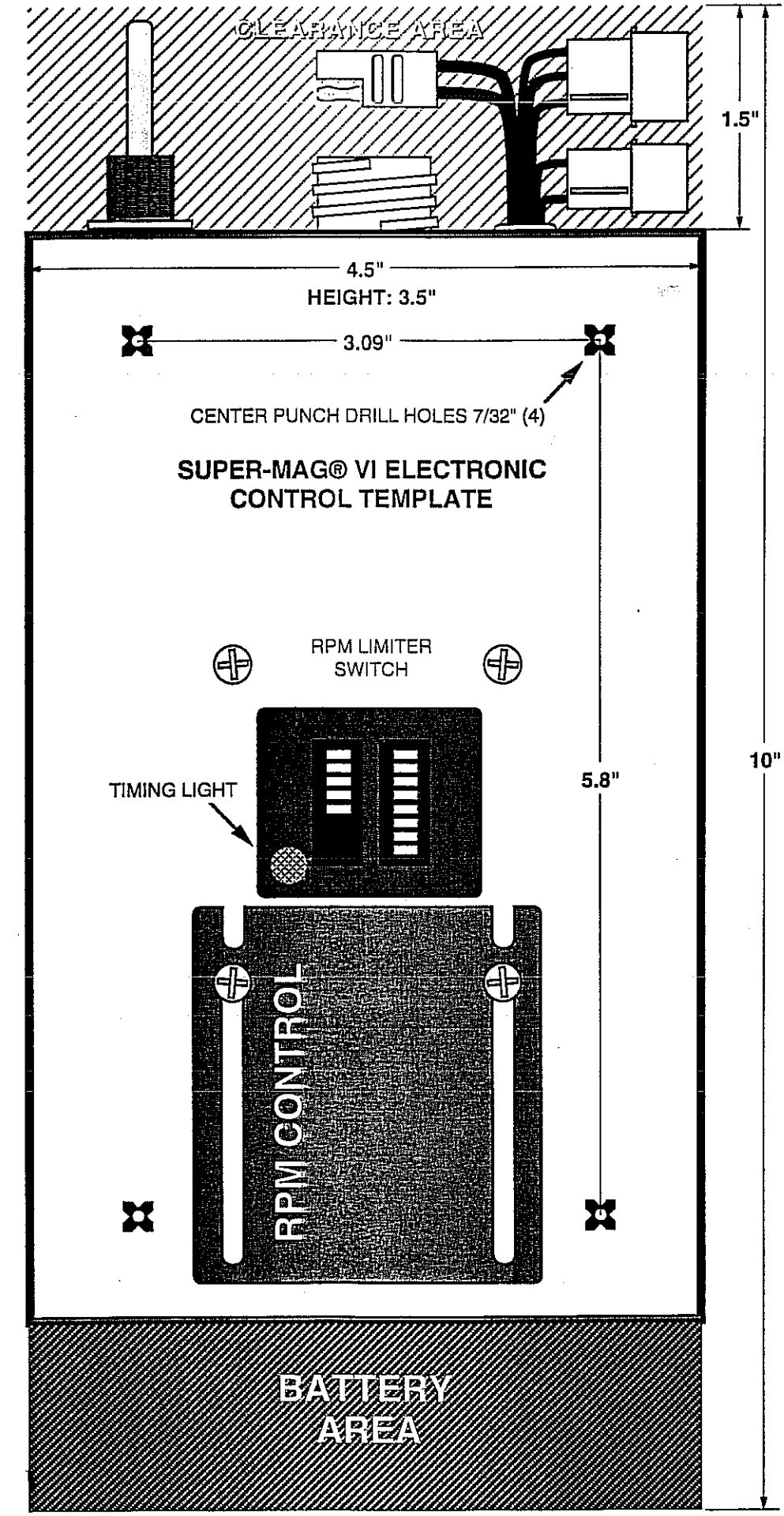
BLOWN ALCOHOL MAGNETO COMPARISON

Manufacture's recommended ignition system for Alcohol Dragster, Alcohol Funny Car and Pro Modified Classes

PARAMETER	MALLORY SUPER-MAG® VI ELECTRONIC MAGNETO	MSD PRO MAG™ 12 (ELECTRONIC) MAGNETO
Transformer used in testing	Part No. 28900A	Part No. 8105 (integral)
Transformer Pirmary Inductanc	15.0 Millihenries	3.5 Millihenries
3,000 RPM TEST		
Pirmary Current (at firing point)	7 Amps	11 Amps
Pirmary Current (average)	5 Amps	(not tested)
Pirmary Energy	368 Millijoules	211 Millijoules
Secondary Current (SAE)	**150 Milliamps**	100 Milliamps
Secondary Current (average)	**58 Milliamps**	44 Milliamps
Secondary Gap Voltage	900 Volts	900 Volts
Secondary Burn Time	2.8 Milliseconds (50.4° crankshaft rotation)	1.4 Milliseconds (25.2° crankshaft rotation)
Secondary Energy (SAE)	**189 Millijoules**	63 Millijoules
6,000 RPM TEST		
Pirmary Current (at firing point)	7 Amps	10 Amps
Pirmary Current (average)	5 Amps	(not tested)
Pirmary Energy	368 Millijoules	175 Millijoules
Secondary Current (SAE)	**200 Milliamps**	100 Milliamps
Secondary Current (average)	**64 Milliamps**	54 Milliamps
Secondary Gap Voltage	900 Volts	900 Volts
Secondary Burn Time	1.50 Milliseconds (54° crankshaft rotation)	.75 Milliseconds (27° crankshaft rotation)
Secondary Energy (SAE)	**135 Millijoules**	34 Millijoules
Generator Weight	6.3 Pounds	10.2 Pounds
Electronic Control Weight	3.3 Pounds (with battery)	4 Pounds
Transformer Weight	3.2 Pounds	(inside Electronic Control)
Total Weight	12.8	14.2

(NOTE: SAE refers to SAE J973a standard)

Performance Advantage


CLEARANCE AREA
1.5"
4.5"
HEIGHT: 3.5"
3.09"
CENTER PUNCH DRILL HOLES 7/32" (4)
SUPER-MAG® VI ELECTRONIC
CONTROL TEMPLATE
RPM LIMITER
SWITCH
TIMING LIGHT
5.8"
10"
RPM CONTROL
BATTERY
AREA