

MSD[®] IGNITION INSTALLATION INSTRUCTIONS

Programmable Digital-7 with Boost Retard PN 7535

Parts Included:

1 - Ignition Control, PN 7535	1 - 9-Pin Computer Harness
1 - TI Pressure Gauge Harness	1 - Mag Pickup Harness, PN 8860
1 - MSD Pro-Data+ Disk	1 - 12-Pin Harness
4 - Vibration Mounts & Screws	1 - Coil Harness
1 - Shielded Cam Sync Harness	1 - Power Lead Harness

Accessories

MAP Sensor, see page 7	LED Shift Light, PN 7552
Hand Held Monitor, PN 7550	Manual Launch Control w/Shift Light, PN 8736
Inductive Cam Sync Pickup Kit, PN 7555	Single Pole/Single Throw Relay, PN 8961
Non-Magnetic Cam Sync Pickup Kit, PN 2346	Double Pole/Double Throw Relay, PN 8960
Manual Launch RPM Control, PN 7551	

WARNING: During installation, disconnect the battery cables. When disconnecting, always remove the Negative cable first and install it last.

Note: Solid core spark plug wires cannot be used with an MSD Ignition Control.

WIRING

Heavy Red	Ignition supply wire. Connects to battery positive (+) terminal or battery junction. Note: Do not connect to the alternator.
Heavy Black	Ignition supply Ground wire. Connect to battery negative (-) terminal or engine block.
Red	On/Off switch wiring. Connects to a switched 12 volt source.

Primary Coil Leads

Orange	Connects to the coil positive (+) terminal. This is the only wire that makes contact to the coil positive terminal.
Black	Connects to the coil negative (-) terminal. This is the only wire that makes contact to the coil negative terminal.

WARNING: High voltage is present at the coil primary terminals. Do not touch the coil or connect test equipment to the terminals while the engine is running or cranking.

Trigger Wires

Violet/ Green 2-Pin	Magnetic pickup, 2-pin connector. Plugs into an MSD Distributor or Crank Trigger pickup. Violet is positive, Green is negative. Note: When this connector is used, the White wire is not connected.
White	Trigger input for electronic ignition amplifiers, an ECU's trigger or points. Note: When this wire is used, the magnetic pickup wire is not connected.

Accessories	
Dark Blue	This wire activates the Launch Rev Limit and is the main reset wire for several features of the Ignition. When 12 volts are applied to this wire it will activate the Launch Rev Limit. It also resets the shift light and gear indicator to first gear. It also will select the Launch Retard value and Gear 1 curve.
Light Blue	Burnout Rev Limit. When 12 volts are applied the Burnout Rev Limit is active. This overrides other rev limits. It is recommended to have this wire switched from an outside source, such as the crew chief before the burnout and while staging the car.
Spool-Up	When the Dark Blue and Light Blue wires are applied to 12 volts at the same time, a fourth rev limit is activated. This limit is to spool up a turbo during the burnout. When the line-lock or clutch switch is deactivated, 12 volts is removed from the Dark Blue wire and the Burnout Rev Limit is active.
Retard Stage Wires or Gear Select	
These three wires can be used as Retard Stage Activation and/or as a gear select wire.	
Pink	Step1 retard enabled with +12 volt input and above Step1 Rpm value and Gear 2 Select.
Violet	Step2 retard enabled with +12 volt input and above Step2 Rpm value and Gear 3 Select.
Tan	Step3 retard enabled with +12 volt input and above Step3 Rpm value and Gear 4 Select.
Note:	When activated at the same time, these retard stages are added together. They are also added with any Gear Retard Curve or Boost Retard values as well. Maximum retard is 30°.
Yellow	Shift Light output wire. It can handle up to 3 amps continuous to ground when enabled.
Brown/White	RPM/Time/Pressure switch output wire. It can switch up to 3 amps continuous to ground when enabled.
Yellow/Yellow	Output for data acquisition or fuel controls. Note, only two wires are used.
3-Pin Connector, MAP Sensor	
Connector Connects to an external MAP or gage pressure sensor.	
Brown/Violet	+5 volt supply
Brown/Yellow	Ground
Dark Brown	Map Signal
Cam Synchronization	
Fiber Optic	This input requires the PN 7555 Inductive Sync Pickup. When this input is used, the 2-pin connector is not. Note: If this input is not used, the plug or a cover should be installed.
2-Pin Connector	
Lt Blue/ Lt Green	This 2-pin plug connects to Cam Sync Sensor, PN 2346, to indicate when cylinder number one is firing. Note: When used, the fiber optic connector is not used and must be covered.
Gray	Tach output. This wire will provide the same 12 volt square wave tach signal as the tach terminal on the side of the unit.

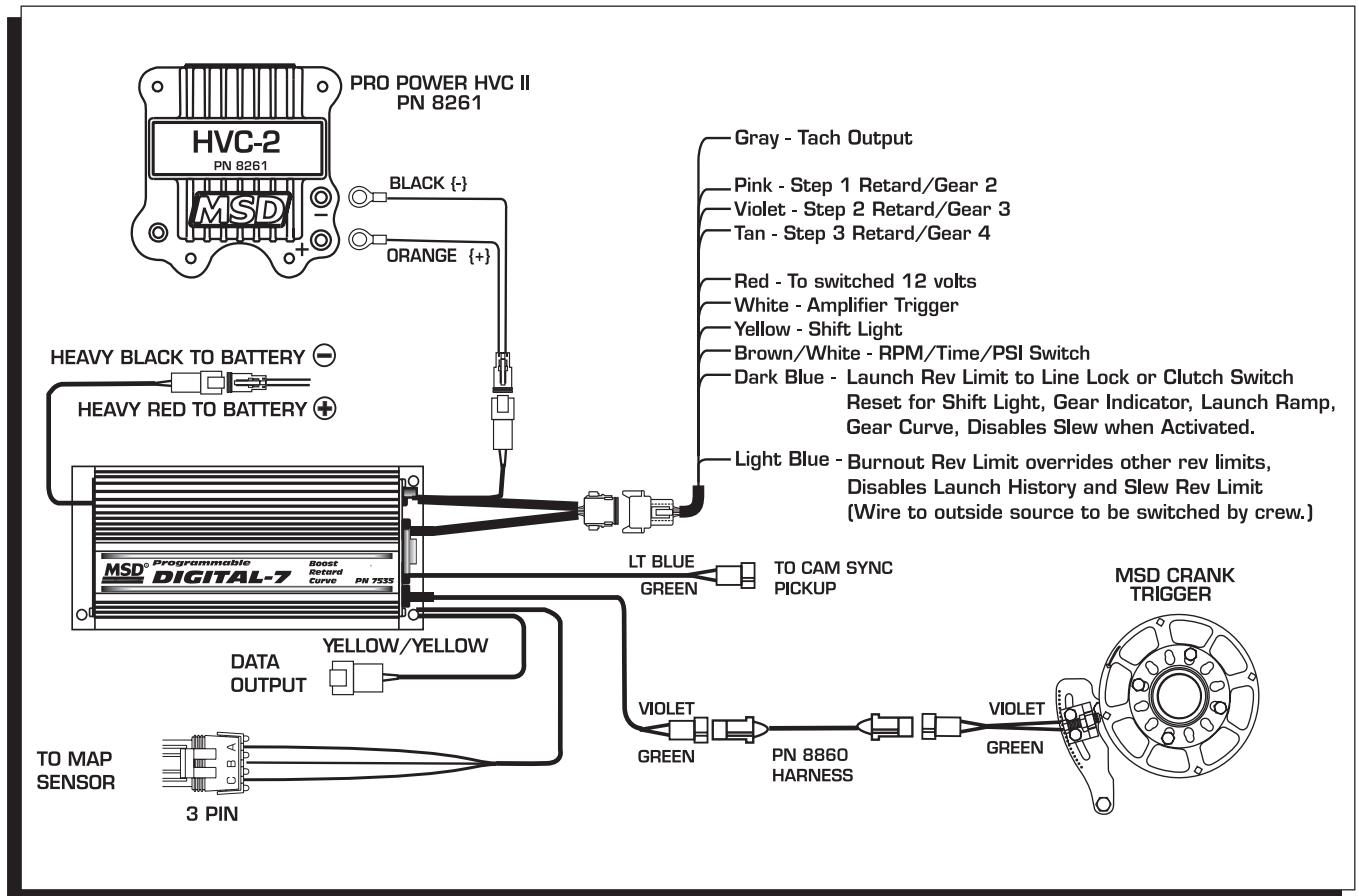


Figure 1 Wiring the Programmable Digital-7 Plus Ignition.

PRO-DATA+

INSTALLATION OF THE PRO-DATA+ SOFTWARE

1. Insert the installation disk into your floppy disk drive.
2. In Windows, click on Start then select Run.
3. In the box type, "A:Setup" and press Enter.
4. The screen will walk you through several steps.
5. Once loaded, your monitor will have an MSD Graph View logo. Click on it to open the software.
6. A program will open. Go to the upper left corner of the screen and click on File, then Open.
7. This will open a menu of part numbers. Select "7535".
8. This will open another menu of versions. Highlight and open the "7535vxx.IGN" (xx determines the versions, such as 02). This will open the Pro-Data+ software for the Programmable Digital-7 Plus Ignition.

SAVES AND TRANSFERS

Whenever a change is made to a program, it either must be saved to a file in your PC or it needs to be transferred to the ignition. You will notice that whenever you make a change to a program, the bullet next to the modified value will turn red. It will remain red until you save it to a file or to the MSD. There are two ways to save your files.

Save to MSD: This step will save any changes directly into the ignition. If you are only making one or just a couple modifications this works well.

Save to PC: This will save your changes to only show on the PC screen (indicated by a red bullet point next to any altered values). These modifications will not be active or saved until you save the file or transfer the information to the MSD.

You can create numerous files on your PC and download them for testing purposes or by saving programs you used at different races or events.

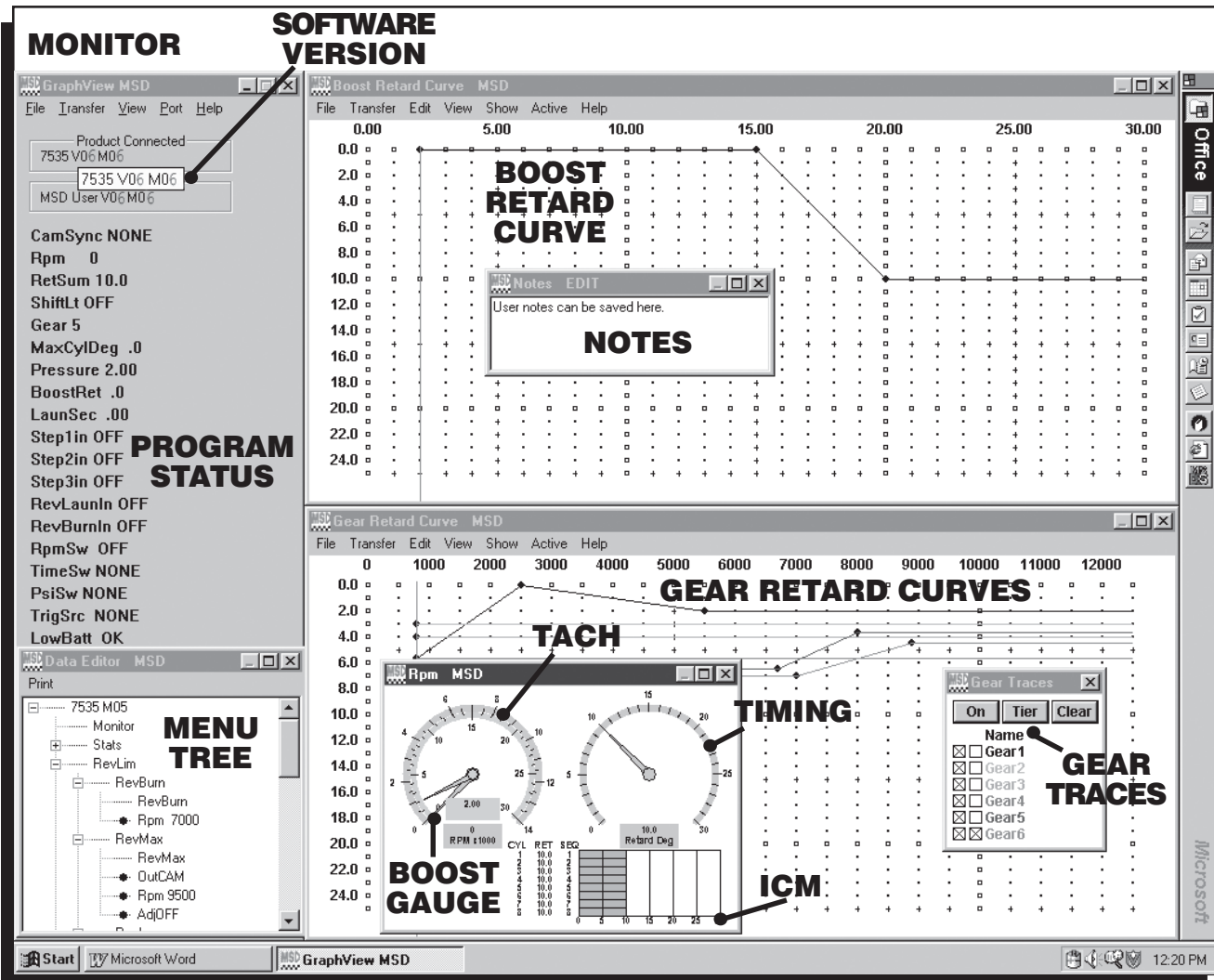


Figure 2 Pro-Data+ Screen and Program Windows.

PROGRAMMABLE FEATURES

The following explains the programmable features of the PN 7535 Ignition. The features are listed in the same order that they show on the Data Editor list in the software. Note that all of the retard amounts are cumulative and the maximum amount of retard is 30°.

STATS

Stat 1: This is only used with the Hand Held Monitors, PN 7550, PN 7553.

REV LIMITS

Up to four different rev limits can be programmed in 100 rpm increments.

RevBurn: Burnout Rev Limit. This limit is activated when 12 volts are applied to the Light Blue wire. It is adjustable from 2,000 to 12,500 rpm. Note that the Slew Rev Limiter is disabled by the Burnout Limit.

RevLaunch: Launch Rev Limit. This limit is activated when 12 volts are applied to the Dark Blue wire. It is adjustable from 2,000 to 12,500 rpm.

RevMax: Max Speed Rev Limit. This is the overrev limit and is active whenever the Launch and Holeshoot limits are off.

OutCam: Select either a Cam Sync output or a Rev Limiting output that can be used with MSD components that use rpm modules for the rev limit.

AdjOff: This program enables an automatic compensating rev limiter that will correct trigger input offsets and variables. It can be turned On or Off.

RPM: Adjustable in 100 rpm increments from 2,000 – 12,500.

Spool-Up: This program gives turbo cars a fourth rev limit to help the engine spool boost pressure prior to the burnout. It is active when both the Light and Dark Blue wires are applied to 12 volts at the same time. It is adjustable in 100 rpm increments from 2,000-12,500. Default is 3,000 rpm.

START RETARD

Program an amount of retard that will occur while the engine is cranking. This helps reduce the load on the starter for easier cranking. It is adjustable from 0° - 25° in 1° increments. This is an automatic feature and will enable below 500 rpm and will deactivate when the engine reaches above 800 rpm. Default is 10°.

LAUNCH RETARD

This is the time based retard ramp. It can be programmed from 0°-15° in 0.1° increments and from 0-2.5 seconds. When the Dark Blue Launch/Reset wire is connected to 12 volts, the retard value is activated and is added to the retard sum. When 12 volts are removed from the Dark Blue wire, the retard value begins to ramp up to 0° over the programmed time. Once the time is over, the retard will not be activated again.

STEP RETARDS

There are three step retards that are controlled through three corresponding activation wires or through rpm. They can also have an rpm point that the engine must reach before the retard becomes active. (A minimum rpm can also be programmed that must be reached before a step becomes active.) A time based ramp can be programmed to gradually bring the retard to its full On amount, or to ramp the retard amount out (back to no retard) from its setting.

Step 1 – Pink

Step 2 – Dark Brown

Step 3 – Tan

Note: These wires can also be used as Gear Select Indicators. See page 7.

Activation through Wiring: Each step is activated when 12 volts are applied to its corresponding wire. When the steps are enabled at the same time the retard amounts are added together. The maximum retard allowed by the Ignition is a total of 30° (including other retard amounts from a launch, boost or gear retard).

Activation through RPM: Each step retard can also be activated through rpm. In order to achieve this, 12 volts must still be applied to the corresponding step retard, and an rpm value must be selected from the Step RPM menu. When 12 volts are applied, the retard will not activate until the rpm value is reached. Note that the retard will remain active above this rpm, even when other stages are activated. It will deactivate when the rpm drops below the set amount.

Note: If you prefer to activate the step retards through the activation wires and not rpm, then the rpm value in each of the desired step menus must be set to 800 rpm.

Step Retard Off Delay: This feature will set a time based delay to deactivate the step retards. This is designed to keep the timing retarded to clear the engine of any nitrous oxide prior to deactivating the retard. It is adjustable from 0 – 2.5 seconds and the default is 0.5 second.

Step Retard Ramp: Each retard step can be ramped to and from its full retard amount over a time based program (Figure 3). It is adjustable from 0-2.5 seconds in 0.01 second increments. Default is 0°.

RPM: The minimum engine rpm that must be reached before a step retard is activated.

On: The amount of time it takes for the step retard to reach its Retard Degree. Allows a gradual ramp On time to reach the Retard Degree. User adjustable from 0.00 to 2.50 sec. (0.01 sec increments)

Off: The amount of time it takes for the step to retard to reach NO retard. Allows a gradual ramp Off time to reach NO Retard. User adjustable from 0.00 to 2.50 sec. (0.01 sec increments)

Deg: The amount of retard.

MOMENTARY KILL

This program will provide a way to momentarily shut off the ignition output. This can be useful in some applications to stop the ignition output during a shift. When the Kill circuit is selected On, the Tan third stage retard activation wire will be used to kill the ignition output when it is connected to 12 volts. Once selected as the Kill program, the Tan wire cannot be used as a retard step.

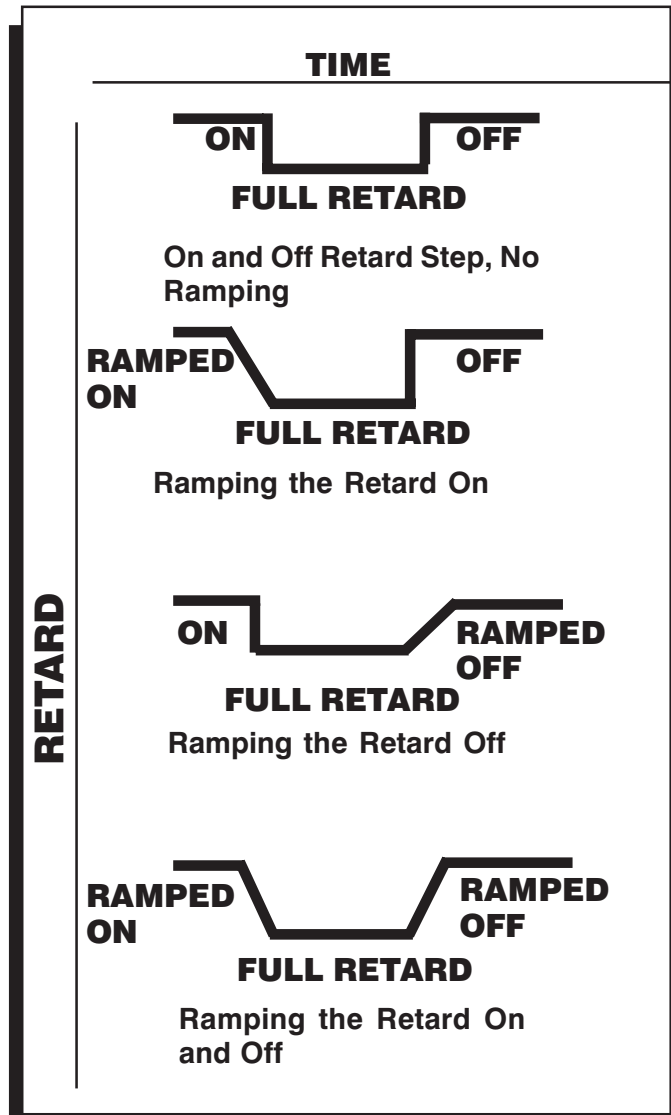


Figure 3 Different Retard Activation Options.

GEAR SELECT

The Three Step Retard wires, Pink (1), Violet (2) and Tan (3) can also be wired to indicate the first three gear changes to the ignition control. When selected from the Step Wire menu, the ignition will know that the car is in second gear when 12 volts are applied to the Pink wire, third for the Violet and fourth when the Tan wire is applied to 12 volts. By using this feature, if you lift off the throttle and get back on it, the ignition will not count it as a gear change.

Note: When selected, this feature overrides the RPM Drop Gear Select values.

This is a sequenced series meaning Tan (3) will not become active until it sees 12 volts on Pink (1), and Violet (2). This way, 12 volts do not need to be removed from each wire before the following gear is selected.

Note: Five and six speed transmissions will have to use the RPM Drop functions.

GEAR RETARDS

This program provides the ability to create a run curve for each gear. Up to six different curves can be programmed from 800 – 12,500 rpm in 0.1° increments for every 100 rpm. You can program up to 32 different points on each Gear Map. Also, all of these points are interpolated every millisecond to create a smooth (no steps) curve.

The number of gears is adjustable under the SHIFT menu, as well as the amount of rpm drop the ignition needs to see before knowing that a different gear has been selected. Up to six gears can be programmed. You can also use the Step Retard wires as Gear Select Indicators for the first four gears.

These retards are mapped out on the Gear Retard chart of the Graph View. In the chart, go to the View pull down menu and select Trace Box. That will give you a small window to show the different color gear traces so creating a different curve for each gear is easier.

If you want the same retard curve for all gears, compose the curve, select the Edit pull down menu and copy the curve, then select Paste All.

BOOST RETARD CURVE

This timing curve can be programmed in relation to boost/vacuum pressure within the intake manifold. The curve can be programmed from 2psia - 45psia in 0.25psia from 0°- 25° in 0.1° increments. Up to 32 different points on can be input on the Boost Chart. Also, all of these points are interpolated every millisecond to create a smooth (no steps) curve. This curve can easily be edited using the Boost Curve chart in the Pro-Data+ software. An MSD MAP sensor is required to use this feature and three are offered:

1-Bar, for n/a engines, PN 23111

2-Bar, for 2-30psia, PN 23121

3-Bar, for 2-45psia, PN 23131

Note: The Boost Retard Curve default is 0° retard.

Rev Average: This allows you to program the number of engine revolutions that occur to produce an average boost value. It is adjustable in 2, 4, 6 or 8 crankshaft revolutions. This function is designed to help average the boost pressure to provide an accurate reading. The default is 4 revolutions which should be ideal for the majority of applications.

PSI Sensor: This allows you to input the specification of the MAP sensor. Select a 15psia, 30psia or 45psia sensor. Default is 15psia.

ADVANCE

This is a Gear Shift Advance feature that is designed to advance the timing (or remove any retards) during a shift to keep the combustion chamber temperatures consistent.

Gear: Select the number of gears.

DRpm: Program the rpm drop that indicates a gear change from 200-1,500 rpm.

Deg: The amount of timing that is advanced. This is determined by how much retard is active. You cannot program more advance than the current amount of retard.

Sec: The amount of time that the advance is active. Adjustable in .01 second increments from 0-1.5 seconds.

Note: The Step Wire Gear Select program overrides the RPM Drop value for shifts.

CYLINDER COUNT

CylCnt: This is the number of cylinders of the engine. Programmable for 4, 6, 8 and Odd fire 6-cylinders (90°/150° only). Once a change has been made, turn the ignition Off and On to reset.

Tach Trigger: There are two choices for the output of the tach terminal on the end panel of the ignition. The output is a 30° duration 12 volt signal that is compatible with most tachs and data acquisition systems. The default is **Trigger** which provides the most accurate signal for rpm sensing components. The **Timing** program should only be used when spark timing data is required by an acquisition control or to fire another ignition.

INDIVIDUAL CYLINDER TIMING

Each cylinder can be retarded up to 10° in 0.1° increments. Adjustments are made through the CylDeg menu. Default for each cylinder is 0°. A Cam Sync signal for cylinder number one must be incorporated. The MSD Fiber Optic Pickup, PN 7555, is the easiest or a pickup kit could be fabricated on the cam gear (MSD Kit PN 2346).

The spark sequence, or firing order needs to be considered when selecting the ICT. You can go through the Cylinder Numbers and place them with the corresponding position, or go to the Sequence window and select from the pre-programmed firing orders.

Spark Sequence Degree Program the firing order of your engine.
Program the amount of retard of each cylinder. These retard rates are added to any other retards that are active. Max retard is 30°.

Sequence	Program	Order	Application
	1843	18436572	Most GM, Chrysler and AMC V8
	1542	15426378	Most Ford V8
	1372	13726548	Ford 341/400
	1425	142536	Ford V6
	1536	153624	Ford, Camaro, Chrysler, AMC V6
	1654	165432	Most GM V6
	1436	143625	Odd-fire 6-cylinder

RPM/TIME/PRESSURE ACTIVATION SWITCH

This program lets you activate a circuit by supplying 12 volts on the Brown/White wire (up to 3 Amps continuous). This can be activated in one of several ways: RPM, Time or Pressure

RPM Window: Program an rpm value to activate and deactivate a circuit from 800 – 12,500 rpm in 100 rpm increments.

RPM On: Rpm that the circuit is activated

RPM Off: Rpm that the circuit is deactivated

RPM/Pressure Hysteresis: Built in Hysteresis allows the deactivation point to be set lower than the activation value.

Pressure Activation: Program a manifold pressure activation point from 2 – 45 psia in 0.25 psi increments. This also can be programmed where the deactivation point is less than the activation point.

PSI Switch On: The pressure at which a circuit can be activated through the Brown/White wire. Adjustable from 0-45psi.

PSI Switch Off: The pressure at which the circuit is deactivated. Adjustable from 0-45psi. This can be set lower than the activation pressure.

PSI Delay: Delay the activation or deactivation of the pressure switch.

OffDly: The amount of time that the switch delays turning off after the given pressure is reached. Adjusted from 0-25 seconds.

OnDly: The amount of time that the switch delays turning on after the given pressure is reached. Adjusted from 0-25 seconds.

Time Based: Program an activation point in 0.1 second increments after the launch. Up to 25 seconds of total time.

OnDelay: The amount of time after launch (12 volts removed from the Dark Blue wire).

Off Delay: The amount of time that the switch stays activated. This can be programmed from 0-25 seconds. It will always deactivate after 25 seconds.

SHIFT LIGHT

This program lets you select the number of gears (Last Gear), program the shift light to come on when the holeshot rpm is reached, set an rpm point for each gear and the rpm drop for the ignition to recognize as a gear shift between each gear. When the correct rpm is reached the Yellow wire is switched to ground to turn the shift light on.

Launch Light: This programs an rpm window that will illuminate the shift light when the correct rpm is reached for the holeshot. When the rpm is in this window the light will be on solid. If the rpm goes high, the light will flash. If the rpm goes low, the light turns off.

RpmHi: The high rpm for the launch light program.

RpmLo: The low rpm for the launch light program.

ShiftLight: Program the rpm point for each gear change.

(1)Rpm First gear rpm point to shift.

(2)Rpm Second gear rpm point to shift.

(3-5 gears)

ShiftGear: Program the rpm drop between each gear that the ignition must see to recognize a shift. Programmable from 200-1500 rpm.

(1)DropRpm Rpm drop between first and second.

(2)DropRpm Rpm drop between second and third.

(3-5 gears)

Last Gear: The program lets you select the number of gears to use with the shift light from 2-6 gears. Default is five gears.

ALERTS

This is only used with the Hand Held Monitor, PN 7550. You can program an alert to interrupt the screen on the monitor. You can select which alerts to show and how often. The alerts are No Cam Sync and Low Battery.

Fault: Program the number of counts that occur for a Low Voltage alert.

BrownOut 0: This is the count of low voltage resets. This should always be set at 0.

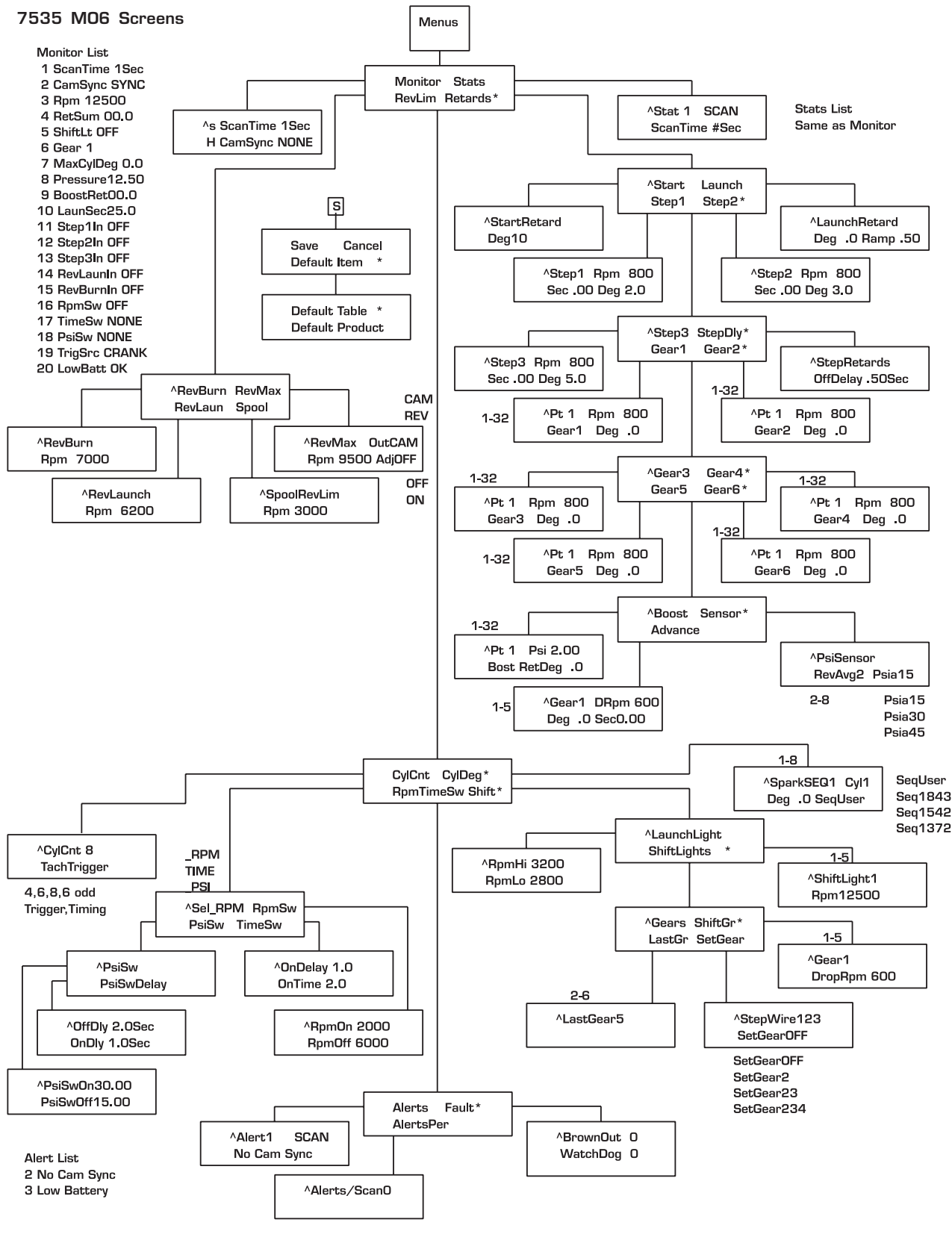
WatchDog: The count of Watch Dog resets. This should always be set at 0.

7535 M06 Screens

Monitor List

- 1 ScanTime 1Sec
- 2 CamSync SYNC
- 3 Rpm 12500
- 4 RetSum 00.0
- 5 ShiftLt OFF
- 6 Gear 1
- 7 MaxCylDeg 0.0
- 8 Pressure12.50
- 9 BoostRet00.0
- 10 LaunSec25.0
- 11 Step1In OFF
- 12 Step2In OFF
- 13 Step3In OFF
- 14 RevLaunIn OFF
- 15 RevBurnIn OFF
- 16 RpmSw OFF
- 17 TimeSw NONE
- 18 PsiSw NONE
- 19 TrigSrc CRANK
- 20 LowBatt OK

Stats List
Same as Monitor



DEFAULT MENU

Notes: 7535V06. Uses menu 7535MO6
MSD Digital Race Ignition.
Factory default data and menu.

<p>7535 MO6 Monitor Stats Stat 1 SCAN</p> <p>RevLim RevBurn *Rpm 7000</p> <p> RevMax RevMax *OutCAM *Rpm 9500 *AdjOFF</p> <p> RevLaun RevLaunch *Rpm 6200</p> <p> RevLim Pt 1 Time .00 RevLim Rpm 12500</p> <p> Spool SpoolRevLim *Rpm 3000</p> <p>Retards Start StartRetard * Deg10</p> <p> Launch LaunchRetard * Deg .0 * Ramp .50</p> <p> Step1 Step1 * Rpm 800 * Sec .00 * Deg 2.0</p> <p> Step2 Step2 * Rpm 800 * Sec .00 * Deg 3.0</p> <p> Step 3 Step3 * Rpm 800 * Sec .00 * Deg 5.0</p> <p> StepDly Step Retards * OffDelay .50Sec</p> <p> Gear 1 Pt 1 Rpm 800 Gear1 Deg .0</p> <p> Gear2 Pt 1 Rpm 800 Gear2 Deg .0</p> <p> Gear3 Pt 1 Rpm 800 Gear3 Deg .0</p>	<p>Gear4 Pt 1 Rpm 800 Gear 4 Deg .0</p> <p>Gear5 Pt 1 Rpm 800 Gear5 Deg .0</p> <p>Gear6 Pt 1 Rpm 800 Gear6 Deg .0</p> <p>Boost Pt 1 Psi 2.0 Boost RetDeg .0</p> <p>Sensor PsiSensor * RevAvg2 *Psi15</p> <p>Advance Gear1 * (1) dRpm 600 * (2) dRpm 600 * (3) dRpm 600 * (4) dRpm 600 * (5) dRpm 600 * (1) Deg .0 * (2) Deg .0 * (3) Deg .0 * (4) Deg .0 * (5) Deg .0 * (1) Sec .00 * (2) Sec .00 * (3) Sec .00 * (4) Sec .00 * (5) Sec .00</p> <p>CylCnt *CylCnt 8 *TachTrigger</p> <p>DylDeg SparkSEQ1 * (1) Cyl1 * (2) Cyl2 * (3) Cyl3 * (4) Cyl4 * (5) Cyl5 * (6) Cyl6 * (7) Cyl7 * (8) Cyl8 * (1) Deg .0 * (2) Deg .0 * (3) Deg .0 * (4) Deg .0 * (5) Deg .0 * (6) Deg .0 * (7) Deg .0 * (8) Deg .0</p> <p>* SeqUser</p>	<p>RpmTimeSw * SwSel RPM RpmSw *RpmOn 2000 *RpmOff 6000</p> <p>PsiSw PsiSw *PsiSwOn 30.00 *PsiSwOff15.00</p> <p> PsiSwDelay * OffDly 2.0Sec *OnDly 1.0Sec</p> <p> TimeSw *OnDelay 1.0 *OnTime 2.0</p> <p>Shift LaunchLight *RpmHi 3200 *RpmLo 2800</p> <p> ShiftLights ShiftLight1 * (1) Rpm12500 * (2) Rpm12300 * (3) Rpm 12100 * (4) Rpm11900 * (5) Rpm11700</p> <p> Gears ShiftGr Gear1 * (1) DropRpm 600 * (2) DropRpm 600 * (3) DropRpm 600 * (4) DropRpm 600 * (5) DropRpm 600</p> <p> LastGr *LastGear5</p> <p> SetGear StepWire 123 *SetGearOFF</p> <p>Alerts Alert 1 (1) SCAN (2) SCAN</p> <p> Fault *BrownOut 0 *WatchDog 0</p> <p> AlertsPer *Alerts/Scan 0</p>
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REV LIMIT WIRING

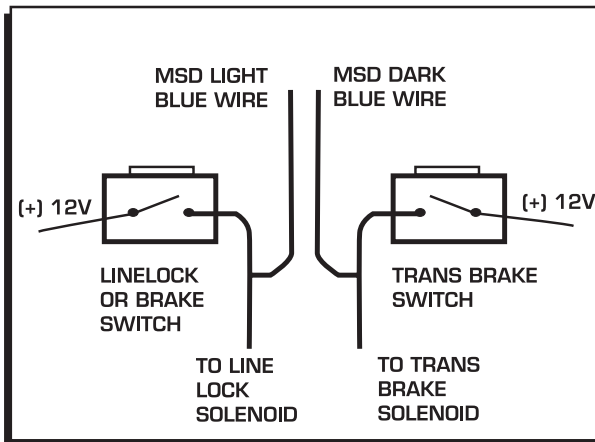


Figure 4 Typical Wiring of Rev Limits.

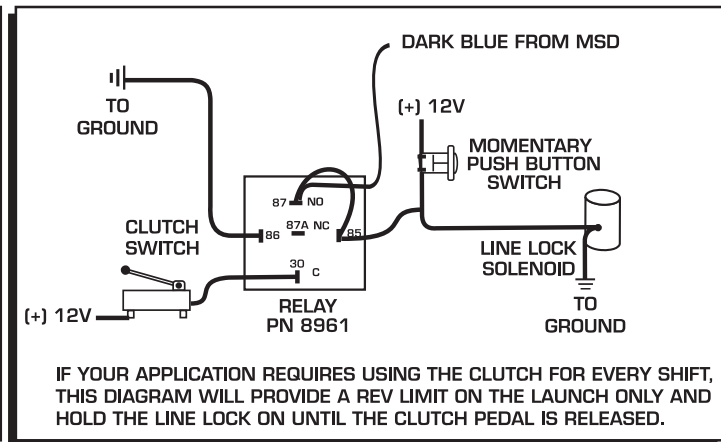


Figure 5 Launch Wiring for Clutch Cars.

Spool Rev Limit

Many turbo cars use the Burnout limit when prestaged to build up boost pressure prior to going into the staged beam where the Launch Rev Limit is activated. MSD added a fourth rev limit, the Spool Limit, that can be used to help the car spool up boost prior to doing a burnout. This limit is activated when both the Light Blue and Dark Blue wires are both connected to 12 volts.

Before the burnout - Supply 12 volts to the Dark Blue and Light Blue wires to activate the Spool Rev Limit.

Pre-Staged - Apply 12 volts to the Light Blue wire to activate a lower limit to begin spooling the turbo. This can be activated through a switch on the brake pedal.

Staged - The Dark Blue must be applied to 12 volts to activate the Launch Rev Limit. This can be accomplished by connecting the Dark Blue wire to the transbrake circuit and removing your foot from the brake to deactivate the Light Blue wire.

TROUBLESHOOTING

Every MSD Ignition undergoes numerous quality control checks including a four hour burn-in test. If you experience a problem with your MSD, our research has shown that the majority of problems are due to improper installation or poor connections.

The Troubleshooting section has several checks and tests you can perform to ensure proper installation and operation of the MSD. If you have any questions concerning your MSD, call our Customer Support Department at (915) 855-7123, 8 - 6 Mountain Time.

LED

The LED on the side of the MSD monitors several operating conditions of the MSD. If the LED indicates that there is a problem with the ignition system, follow the steps through the Troubleshooting section. The LED will appear to be on steady at above idle speeds when everything is functioning properly.

- A Code 11 will flash if there is a problem with the Cam Sync Signal.
- A Code 22 will flash if the supply voltage drops below 12 volts.
- The LED will flash for every trigger signal from the distributor or crank trigger. You can take advantage of this when statically setting the timing when using the White wire to trigger.

MISSES AND INTERMITTENT PROBLEMS

Experience at the races has shown that if your engine is experiencing a miss or hesitation at higher rpm, it is usually not directly ignition. Most probable causes include faulty wiring, a coil or plug wire failure, arcing from the cap or boot plug to ground or spark ionization inside the cap. Several items to inspect are:

- Always inspect the plug wires at the cap and at the plug for a tight connection and visually inspect for cuts, abrasions or burns.
- Inspect the Primary Coil Wire connections. Because the MSD is a Capacitive Discharge ignition and it receives a direct 12 volt source from the battery, there will not be any voltage at the Coil Positive (+) terminal even with the key turned On. During cranking or while the engine is running, very high voltage will be present and no test equipment should be connected.

WARNING: Do not touch the coil terminals during cranking or while the engine is running.

- Make sure that the battery is fully charged and the connections are clean and tight. If you are not running an alternator this is an imperative check. If the battery voltage falls below 11 volts during a race, the MSD current draw will increase.
- Is the engine running lean? Inspect the spark plugs and complete fuel system.
- Inspect all wiring connections for corrosion or damage. Remember to always use proper connections followed by soldering and seal the connections completely.

If everything checks positive, use the following procedure to test the ignition for spark. MSD also offers an Ignition Tester, PN 8998. This tool allows you to check your complete ignition system while it is in the car as well as the operation of rpm limits, activated switches and shift lights and the Cam Sync Signal.

CHECKING FOR SPARK

If triggering the ignition with the White wire:

1. Make sure the ignition switch is in the "Off" position.
2. Remove the coil wire from the distributor cap and set the terminal approximately 1/2" from ground.
3. Disconnect the MSD White wire from the distributor's points or ignition amplifier.

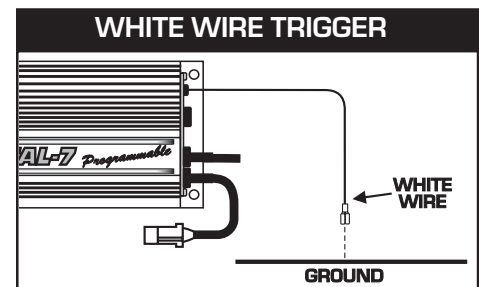


Figure 6 Checking for Spark with the White Wire.

4. Turn the ignition to the On position. Do not crank the engine.
5. Tap the White wire to ground quickly several times (Figure 6). Each time you pull the wire from ground, a spark should jump from the coil wire to ground. If spark is present, the ignition is working properly. If there is no spark skip to step 6 on page 14:

If triggering with the Magnetic Pickup:

1. Make sure the ignition switch is in the "Off" position.
2. Remove the coil wire from the distributor cap and set the terminal approximately 1/2" from ground.
3. Disconnect the MSD magnetic pickup wires from the distributor.
4. Turn the ignition to the On position. Do not crank the engine.

