

Altronic III-NG Installation Instructions

AIII-NG II 6-24

NOTICE: The Altronic III-NG ignition system is suitable for use in Class I, Division 2, Group D hazardous locations when installed in accordance with these instructions.

WARNING: DEVIATION FROM THESE INSTALLATION INSTRUCTIONS MAY LEAD TO IMPROPER OPERATION OF THE ENGINE WHICH COULD CAUSE PERSONAL INJURY TO OPERATORS OR OTHER NEARBY PERSONNEL.

APPLICATION NOTE:

In some cases, the Altronic III-NG system uses two (2) storage capacitors where the legacy Altronic III system used one (1). In these cases, any tachometer or overspeed device operating from the ignition system shutdown lead for speed reference must be reset for proper operation. See section 6 for details.

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1. Description
 2. Mounting / Timing
 3. Ignition Coils
 4. Primary Wiring
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 6. Recalibration of Speed Sensing Devices
- Figures Section

1.0 DESCRIPTION

1.1 GENERAL - The Altronic III-NG ignition system consists of these basic components:

- Altronic III-NG Unit – see Fig. 1 for dimensions.
- Harness
- Ignition Coils – one per spark plug. Use only the following Altronic coils:
 - Unshielded: 501061, 591010, 591040
 - Shielded: 501061-S, 591010-S
 - Integral: 591007, 591011A, 591011B
 - Flange: 591012, 591018
- Engine drive member for base mount units: 560001

2.0 MOUNTING AND TIMING TO ENGINE

2.1 INITIAL SET-UP - The ignition unit must be properly timed to the engine.

1. Set the engine so that no. 1 cylinder is at the desired ignition timing point.
2. Determine the rotation of the Altronic III-NG unit, looking at the drive coupling end. Even firing units can be used for either rotation.

2.2 FLANGE-MOUNT UNIT

1. Locate the timing mark on the housing and rotate the unit shaft until the red mark on the shaft lines up with the red mark on the housing – see Fig. 2.
2. Mount the unit to the engine drive keeping the two red marks lined up as close as possible. Install and tighten finger-tight the two 3/8"-16 mounting bolts.
3. Once the unit is mounted, if the two red lines cannot be made to meet by rotating the entire unit, remove the four screws that fasten the back cover assembly to the alternator section. Slowly tilt the top of the back cover away from unit making sure the internal plug remains connected. Rotate the distributor gear until the two red marks line up. Then reinstall the back cover to the alternator section, engaging the gears, and keeping the red marks aligned. Tighten the four back cover mounting screws.
4. Final timing should be set using a timing light with the engine at operating speed. The entire unit is rotated to adjust the timing.
5. Tighten the two 3/8"-16 mounting bolts.

2.3 BASE-MOUNT UNIT

1. Attach engine drive member 560001 to the end of the unit's flex coupling with the two spring pins provided.
2. Locate the timing mark on the housing and rotate the unit shaft until the red mark on the shaft lines up with the red mark on the housing – see the lower part of Fig. 2.
3. Maintaining the red marks alignment, install the unit to the engine bracket. Slip the drive member 560001 over the hub on the engine shaft; insert and tighten the locking screw and nut. Secure the Altronic III-NG unit to the engine bracket with four 3/8"-16 screws maintaining proper alignment. The flex coupling should not be elongated or compressed.

- Final timing should be set using a timing light with the engine at operating speed. Loosen the hex screw at the top of the coupling end of the unit and rotate the entire unit to adjust the timing. Once the timing is set, re-tighten the hex screw.

3.0 IGNITION COILS

- Use only the Altronic coils listed in section 1.
- Mount the coils as close to the spark plugs as possible keeping the high-tension lead length to a minimum but also keeping the temperature below 200° F. (95° C.) during operation.

4.0 PRIMARY WIRING

4.1 STANDARD WIRING ORDER – In most cases, the number of Altronic III-NG outputs equals the no. of engine cylinders. In the chart below, find the correct no. of engine cylinders and rotation for the Altronic III-NG unit. Starting with lead “A” to no. 1 cylinder, write in the cylinder numbers in accordance with the engine firing order. Connect the appropriate harness lead to the positive (+ or A) terminal of each coil – see wiring diagrams Fig. 3 and Fig. 4.

3-CYLS.	ALT. III-NG ENGINE	CCW	A	B	C													
3-CYLS.	ALT. III-NG ENGINE	CW	A	C	B													
4-CYLS.	ALT. III-NG ENGINE	CCW	A	B	C	D												
4-CYLS.	ALT. III-NG ENGINE	CW	A	D	C	B												
6-CYLS.	ALT. III-NG ENGINE	CCW	A	B	C	D	E	F										
6-CYLS.	ALT. III-NG ENGINE	CW	A	F	E	D	C	B										
8-CYLS.	ALT. III-NG ENGINE	CCW	A	B	C	D	E	F	H	I								
8-CYLS.	ALT. III-NG ENGINE	CW	A	I	H	F	E	D	C	B								
12-CYLS.	ALT. III-NG ENGINE	CCW	A	B	C	D	E	F	H	I	J	K	L	M				
12-CYLS.	ALT. III-NG ENGINE	CW	A	M	L	K	J	I	H	F	E	D	C	B				
16-CYLS.	ALT. III-NG ENGINE	CCW	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T
16-CYLS.	ALT. III-NG ENGINE	CW	A	T	S	R	P	N	M	L	K	J	H	F	E	D	C	B

4.2 NON-STANDARD WIRING APPLICATIONS – Listed below are applications that have wiring order different from the standard shown in the chart above. “X” indicates a lead not connected; these should be individually insulated from each other and from ground. Connect the specified harness lead to the positive (+ or A) terminal of each coil – see wiring diagrams Fig. 3 and Fig. 4.

ENGINE	III-NG UNIT BACK COVER	RTN.	A	B	C	D	E	F	H	I	J	K	L	M
Ajax 2-cyl.	4A29 381815-20	CW	1	X	2	X								
Caterpillar G379	12A25 381815-60	CCW	1	8	X	5	4	X	7	2	X	3	6	X
Ingersoll Rand JVG/PVG/XVG-4	12A25 381815-60	CW	1	X	4	X	X	3	X	X	X	2	X	X
Ingersoll Rand JVG/PJVG/SVG-6	12A35 381815-61	CW	1	5	X	X	3	4	X	X	2	6	X	X
Ingersoll Rand PVG/XVG-6	12A25 381815-60	CW	1	X	X	2	X	4	3	X	5	X	X	6
Ingersoll Rand JVG/PVG/XVG-8	12A25 381815-60	CW	1	X	7	2	X	5	4	X	6	3	X	8
Waukesha H1077	12A23 381815-60	CW	1R	X	2L	2R	X	4L	4R	X	3L	3R	X	1L
Waukesha H2475/H2476	12A25 381815-60	CW	R1	X	L3	R2	X	L1	R4	X	L2	R3	X	L4

4.3 COMMON GROUND – A common ground lead connecting the negative (-) terminals of the coils must be run and connected as shown in the wiring diagrams Fig. 3 and Fig. 4.

4.4 CONNECTIONS – All connections are to be made using ring type terminals specified for no. 16 gauge wire and #10 stud size. Terminals should be soldered to the wire or attached with an appropriate staking tool. All primary wiring must be protected from physical damage, vibration and temperatures in excess of 200° F. (95° C.) during operation.

4.5 TWO COILS PER CYLINDER – If two ignition coils per cylinder are used, use parallel wiring as shown in wiring diagrams Fig. 3 and Fig. 4.

4.6 SHIELDED SYSTEM – For component layout and wiring for a shielded system, refer to wiring diagram Fig. 4. See Fig. 5 for instructions to alter the length of a shielded primary harness.

4.7 SHUTDOWN WIRING

1. The “G” harness lead is the wire used for shutdown purposes. It must be grounded to shut-off the ignition.
2. For proper operation of Murphy tattletale switches or fuel valve, use panel adapter 501213 as shown in Fig. 6.

CAUTION: Altronic III-NG units have an operating primary voltage of 200-225 Vdc. It is advisable to check the voltage rating of all instruments connected to the ignition system shutdown lead (harness lead “G”). In particular, the Altronic barrier 690107 requires hook-up to terminal 3 (175-350V.) and annunciator power supply 690101-1 must be replaced by type 690101-3.

5.0 SECONDARY WIRING

1. Spark plug leads should be fabricated from 7mm, silicone insulated, tinned copper conductor with suitable terminals and a silicone spark plug boot. Altronic offers a number of suitable secondary leads for various engine requirements – see form FLASHGUARD 2.
2. Keep spark plug leads as short as possible – not longer than 20 inches (500mm).
3. Spark plug leads must be kept at least 2 inches (50mm) away from any grounded engine part. In deep well spark plug wells, use rigid insulated extenders projecting out of the well.
4. The use of a clear, silicone grease (such as Dow Corning DC-4, GE G-623 or GC Electronics 25) is recommended for all high-tension connections and boots. This material helps seal out moisture and prevent corrosion from atmospheric sources.

6.0 RE-CALIBRATION OF SPEED SENSING DEVICES

CAUTION: Re-calibration of tachometers or overspeed devices using the ignition system shutdown lead for the speed signal will be required when replacing the standard Altronic III units listed below. In the applications listed, speed sensing devices will see one-half (1/2) the number of pulses per engine revolution with the III-NG system compared with the standard Altronic III system. For the applications shown, the pulses seen per engine revolution (PPR) is:
4-CYCLE - 1/4 the number of ENGINE cylinders; 2-CYCLE - 1/2 the number of ENGINE cylinders.

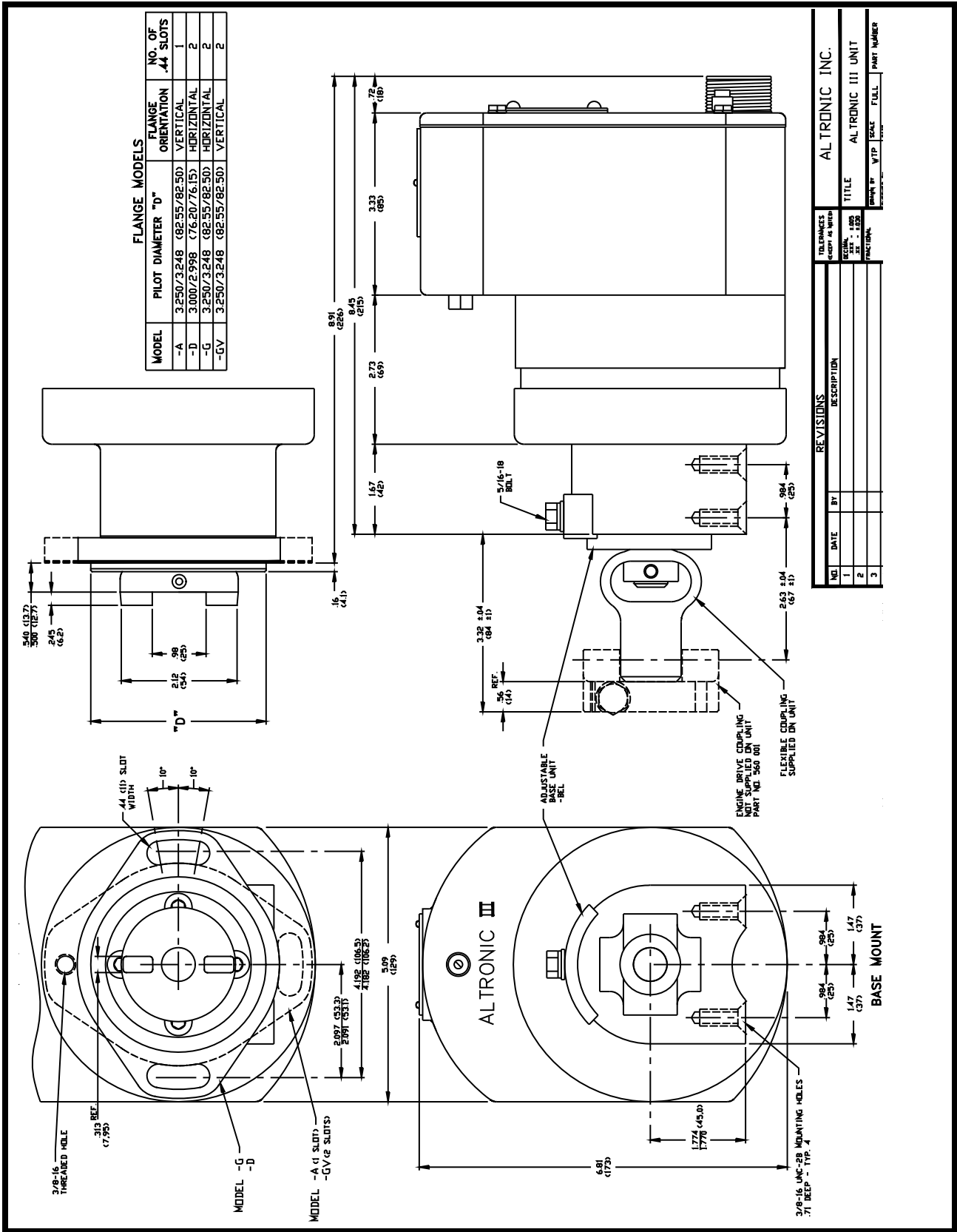
STANDARD ALTRONIC III UNIT*	REPLACEMENT ALTRONIC III-NG UNIT	REPLACEMENT III-NG BACK COVER
4G29	12A25	381815-60
6B39	12A35	381815-61
8A12	8A11	381815-40
8A27	8A23	381815-41
8A29	8A25	381815-41
8A37	8A33	381815-42
8A39	8A35	381815-42
8B29	12A25	381815-60

* Assumes the use of 373XXX series circuit board in the std. Altronic III unit.

FIGURES SECTION:

- FIG. 1 Mounting Dimensions, Altronic III-NG Unit
- FIG. 2 Altronic III-NG Timing Line-up
- FIG. 3 Wiring Diagram – Unshielded System
- FIG. 4 Wiring Diagram – Shielded System
- FIG. 5 Shielded Harness, Conduit Length Adjustment
- Fig. 6 Hook-up for 501213 Adapter

FIG. 1 – MOUNTING DIMENSIONS, ALTRONIC III-NG UNIT



REVISIONS		TOLERANCES		ALTRONIC INC.	
NO.	DATE	BY	DESCRIPTION	EXCEPT AS NOTED	EXCEPT AS NOTED
1				DECIMAL	DECIMAL
2				FRACTIONAL	FRACTIONAL
3					

REVISIONS		TOLERANCES		ALTRONIC INC.	
NO.	DATE	BY	DESCRIPTION	EXCEPT AS NOTED	EXCEPT AS NOTED
1				DECIMAL	DECIMAL
2				FRACTIONAL	FRACTIONAL
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REVISIONS		TOLERANCES		ALTRONIC INC.	
NO.	DATE	BY	DESCRIPTION	EXCEPT AS NOTED	EXCEPT AS NOTED
1				DECIMAL	DECIMAL
2				FRACTIONAL	FRACTIONAL
3					

FIG. 2 – ALTRONIC III-NG TIMING LINE-UP

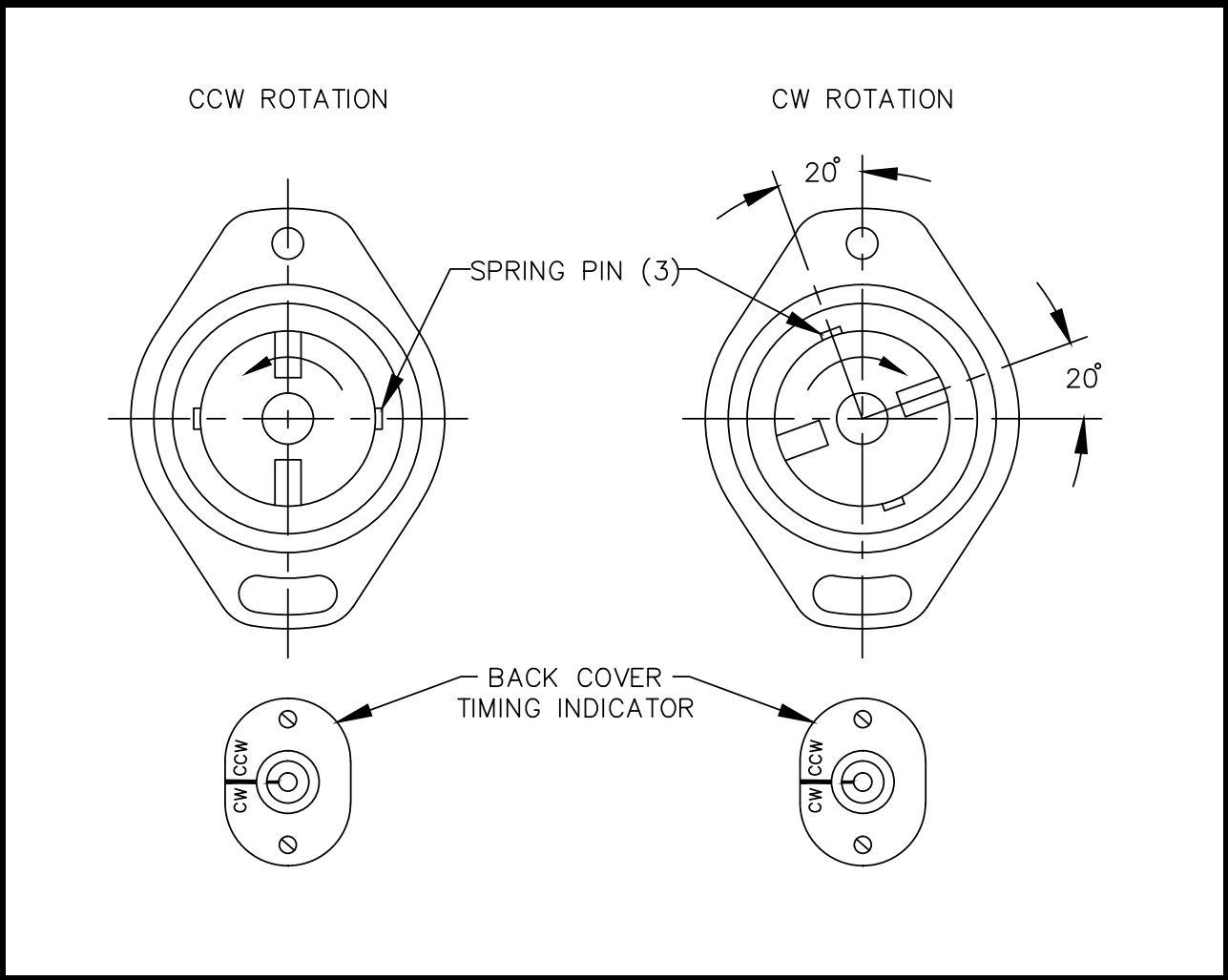


FIG. 3 – WIRING DIAGRAM, UNSHIELDED SYSTEM

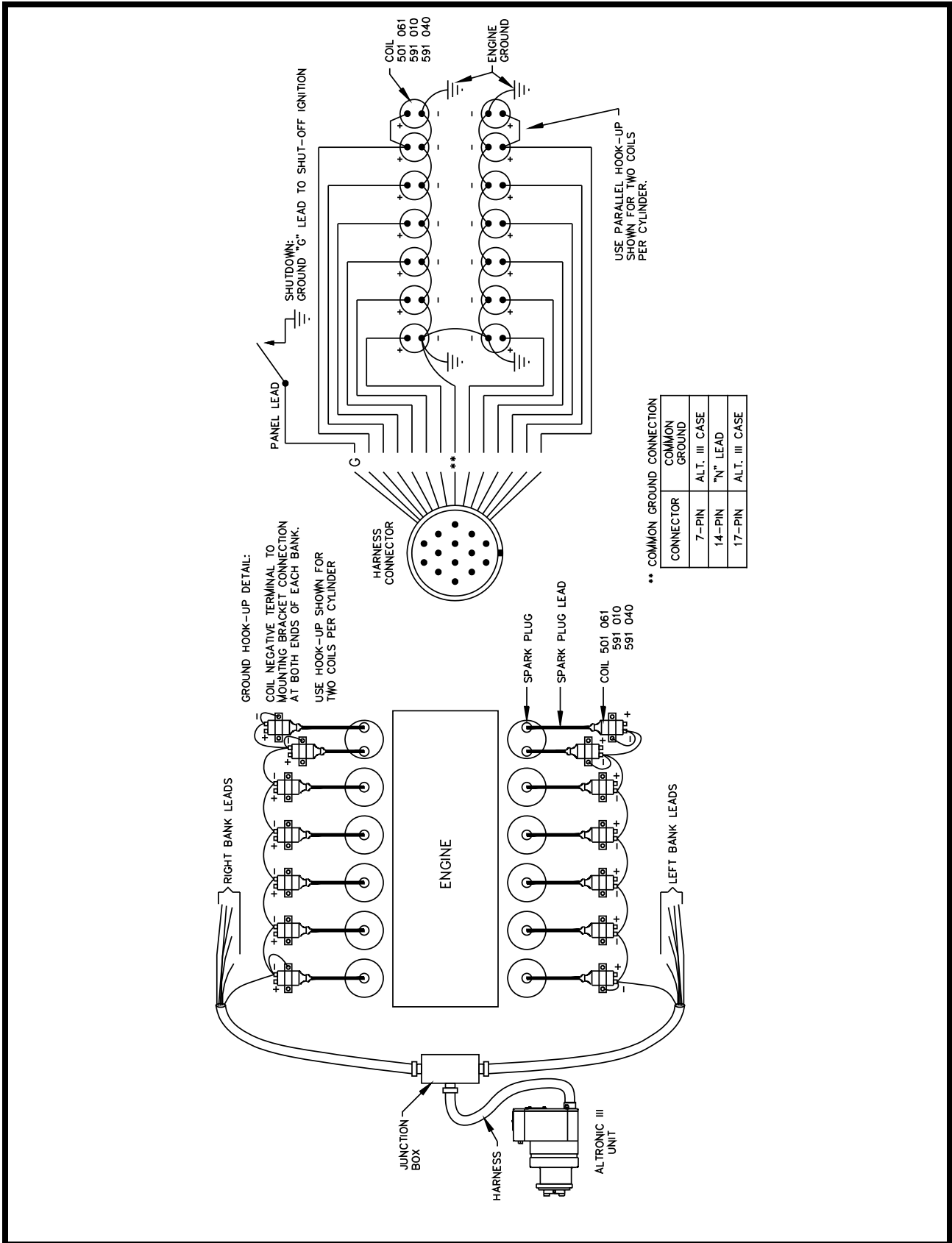
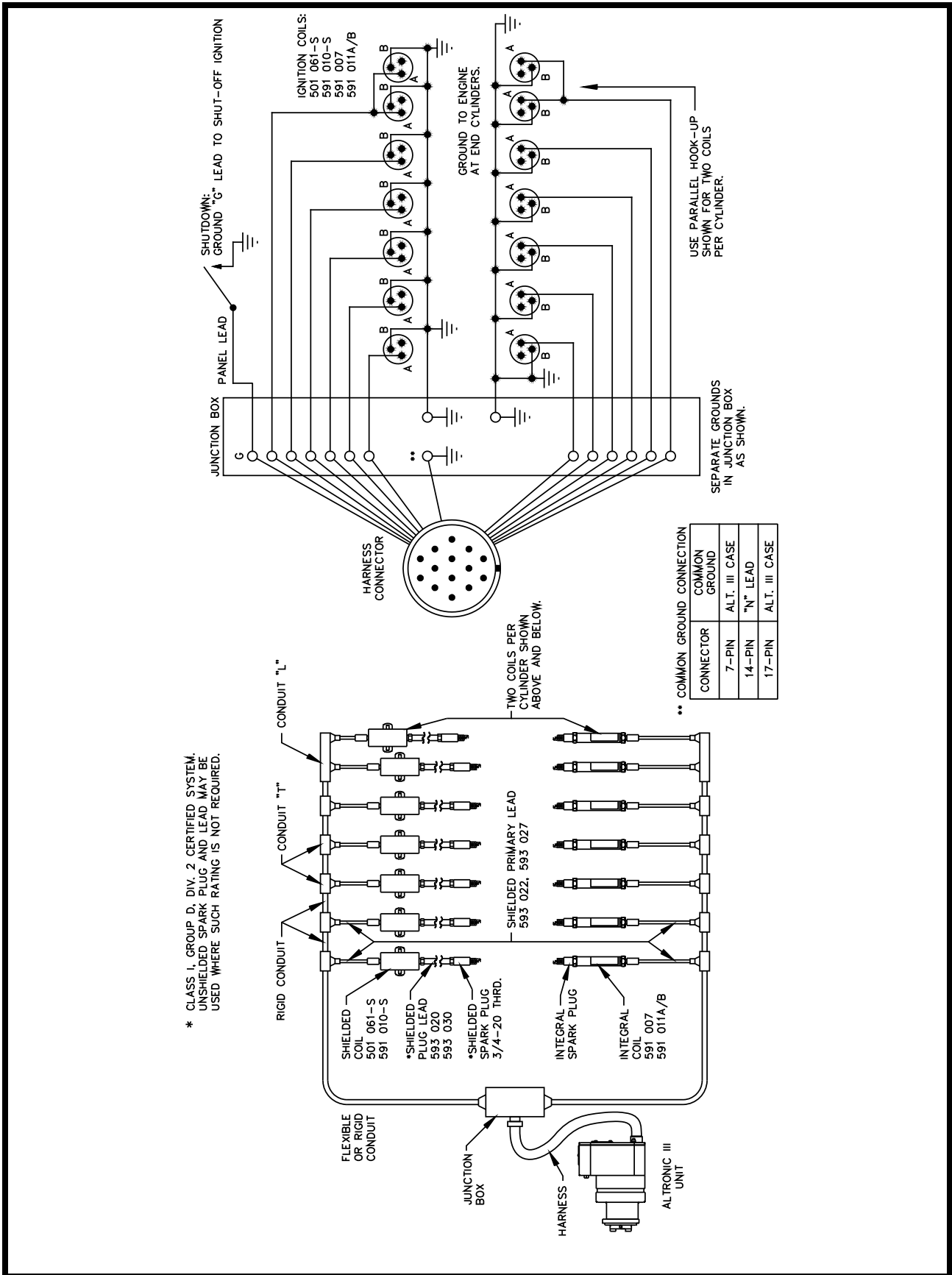


FIG. 4 – WIRING DIAGRAM, SHIELDED SYSTEM



**** COMMON GROUND CONNECTION**

CONNECTOR	COMMON GROUND
7-PIN	ALT. III CASE
14-PIN	"N" LEAD
17-PIN	ALT. III CASE

USE PARALLEL HOOK-UP SHOWN FOR TWO COILS PER CYLINDER.

TWO COILS PER CYLINDER SHOWN ABOVE AND BELOW.

* CLASS I, GROUP D, DIV. 2 CERTIFIED SYSTEM. UNSHIELDED SPARK PLUG AND LEAD MAY BE USED WHERE SUCH RATING IS NOT REQUIRED.

FIG. 5 – SHIELDED HARNESS, CONDUIT LENGTH ADJUSTMENT

TO SHORTEN HARNESS

1. LOOSEN AND DISENGAGE NUT (2) AND REMOVE CONDUIT (1) COMPLETELY FROM CONNECTOR AND HARNESS ASSEMBLY (3).
2. REMOVE ITEMS (5), (4), AND (2) IN THAT ORDER FROM CONDUIT (1). NOTE THREADS ON (5).
3. CUT CONDUIT TO LENGTH WITH HACKSAW AND DRESS WITH FILE TO INSURE A CLEAN, SQUARE END. REMOVE FILINGS FROM INSIDE CONDUIT.
4. REINSTALL ITEMS (2), (4), AND (5) IN THAT ORDER.
5. INSTALL REASSEMBLED CONDUIT INTO (3) AND TIGHTEN (2).

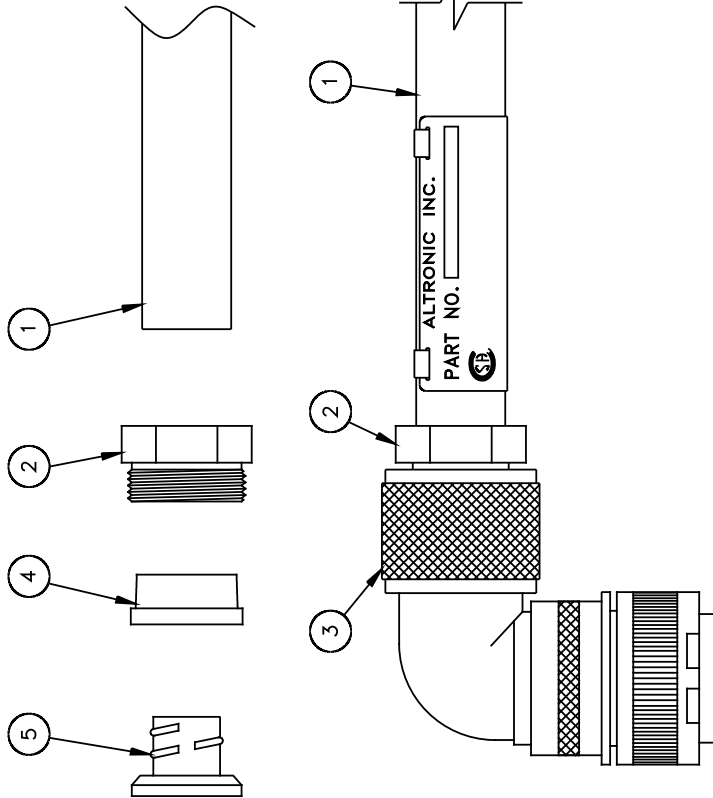


FIG. 6 – HOOK-UP DIAGRAM, 501213 PANEL ADAPTER

