ALTRONIC, INC.
712 TRUMBULL AVE.
GIRARD, OHIO 44420

ALTRONIC II IGNITION SYSTEM
2400 SERIES

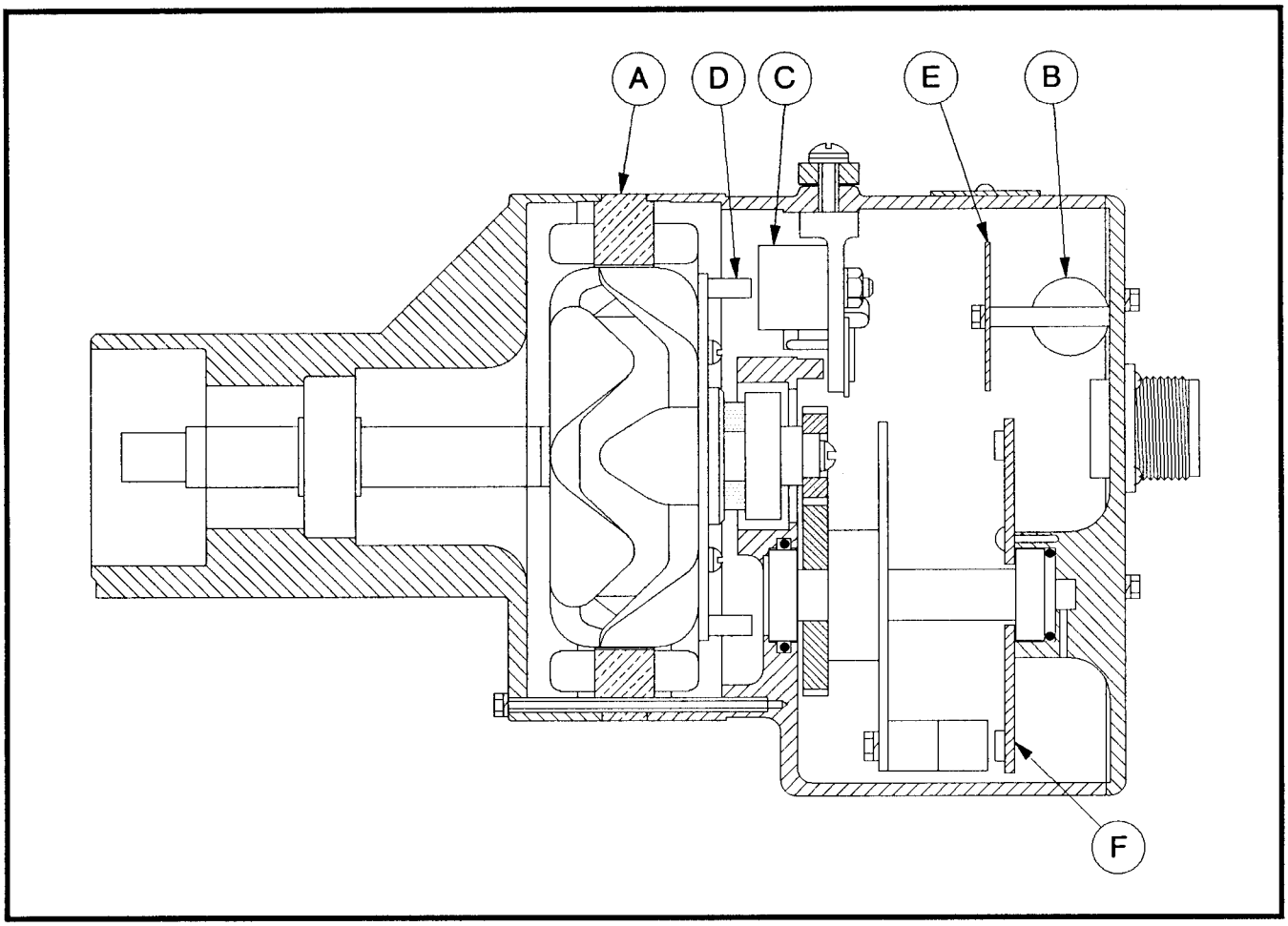
IMPORTANT SAFETY NOTICE

PROPER INSTALLATION, MAINTENANCE, REPAIR AND OPERATION OF THIS EQUIPMENT IS ESSENTIAL. THE RECOMMENDED PRACTICES CONTAINED HEREIN SHOULD BE FOLLOWED WITHOUT DEVIATION. AN IMPROPERLY INSTALLED OR OPERATING IGNITION SYSTEM COULD CAUSE PERSONAL INJURY TO OPERATORS OR OTHER NEARBY PERSONNEL.

1.0 ALTRONIC II IGNITION SYSTEM - DESCRIPTION

Altronic II is an alternator powered, electronic ignition system. All electronic parts are mounted to the back cover which disconnects as a module from the alternator section.

The alternator (A) provides the power to charge energy storage capacitor (B). A voltage is induced in the pick-up coil (C) by the passage of a trigger pin (D) mounted to the alternator's magnet rotor. The pick-up coil voltage activates the trigger circuitry on the back cover circuit board (E) which produces an output signal suitable for triggering the power SCR's. The trigger signal is directed to a particular SCR through its associated magnetically operated solid state switch on the back cover distributor board (F). The solid state switches are sequenced by the rotating distributor magnet. When triggered on, the power SCR discharges the storage capacitor through the primary of the ignition coil which steps up the voltage to fire the spark plug.



CROSS SECTIONAL VIEW - ALTRONIC II UNIT

A - Alternator
B - Energy storage capacitor
C - Pick-up coil
D - Trigger pin
E - Circuit board assembly
F - Distributor board assembly

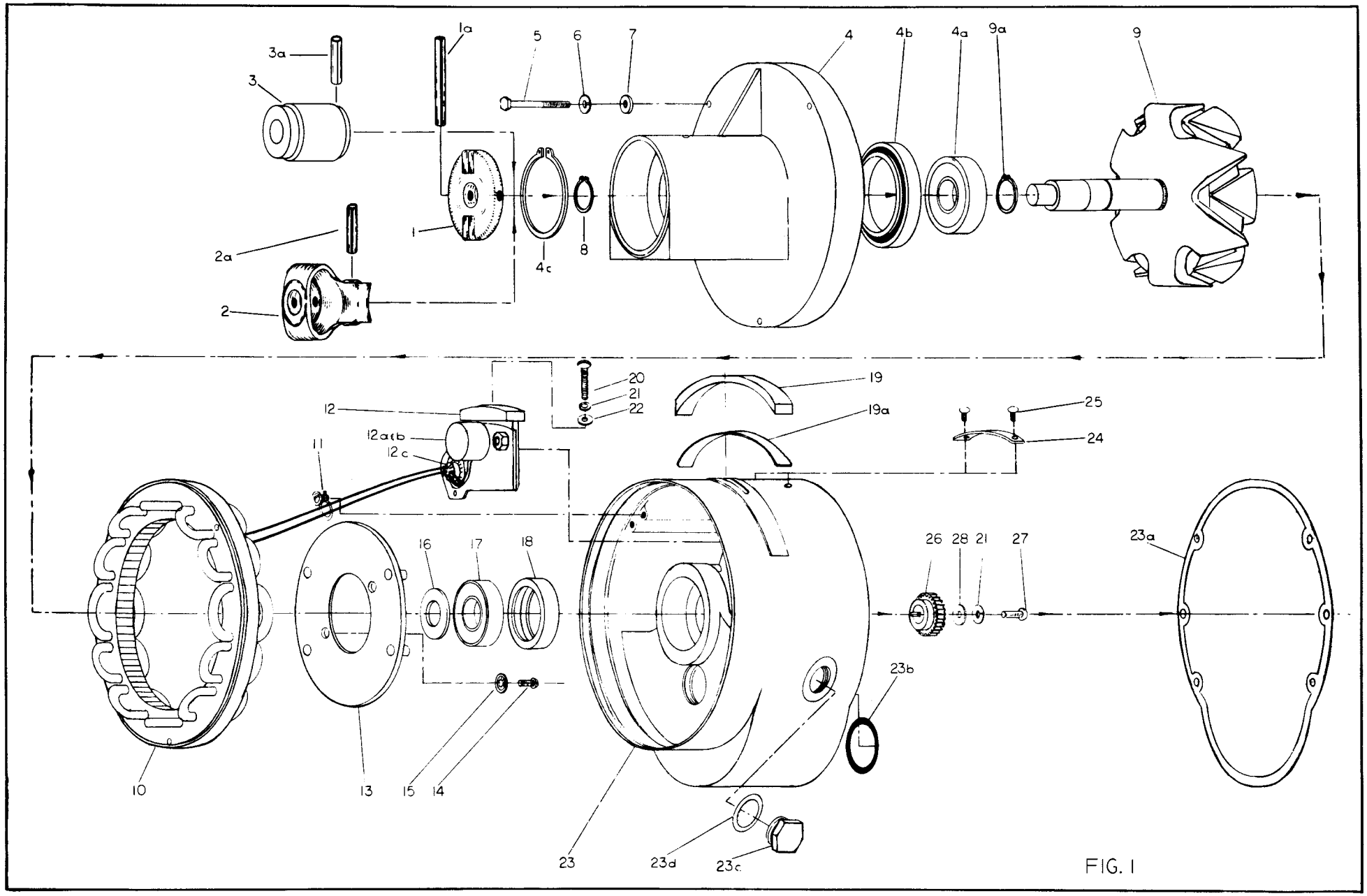

1a
3a
3
5
6
7
4
4b
4a
9a
9
2a
1
4c
8
2
20
21
22
19
19a
12
12a&b
12c
11
25
24
16
17
18
26
28
21
27
23a
23b
10
13
15
14
23
23d
23c

FIG. 1

2.0 PARTS IDENTIFICATION AND SPECIFICATION

2.1 PARTS LIST - ALTRONIC II ALTERNATOR

FIGURE & REF. NO.	PART NO.	DESCRIPTION
1-1	510 454-P	Coupling w/pin
-1a	902 478	Spring pin 2-1/8" lg.
-2	560 002	Flex coupling w/pin
-2a	902 475	Spring pin 1-1/8" lg.
-3	560 009	Gear coupling w/pin
-3a	902 475	Spring pin 1-1/8" lg.
-4	260 002	Front housing - base
	260 008	Front housing - flange, variable timing
	260 009	Front housing - base, variable timing
	260 010	Front housing - flange
-4a	210 282	Bearing
-4b	210 454	Bearing, variable timing housing
-4c	210 456	Snap ring, variable timing housing
-5	902 457	Screw 10-24
-6	901 004	Lockwasher #10
-7	504 073	Washer - fibre
-8	902 485	Snap ring
-9	V.W.A.	Shaft-rotor ass'y.
-9a	902 485	Snap ring
-10	V.W.A.	Stator
-11	264 001	Wire guide ass'y.
-12	V.W.A.	Pick-up arm ass'y.
-12a	201 121	Pick-up coil
-12b	902 521	Washer - shim
-12c	204 601	Connector socket
-13	V.W.A.	Trigger disc
-14	902 439	Screw 10-32
-15	900 427	Lockwasher #10
-16	210 495	Spacer
-17	510 452	Bearing
-18	510 459	Bearing cover
-19	260 003	Slide bar w/gasket
-19a	210 266	Gasket - slide bar
-20	902 453	Screw - 1/4"-20
-21	901 008	Lockwasher 1/4"
-22	901 344	Washer
-23	260 005-1	Intermediate housing - 16 deg. slot
	260 005-2	Intermediate housing - 6 deg. slot
	260 005-3	Intermediate housing - 0 deg. slot
-23a	210 265	Gasket
-23b	210 284	O-ring
-23c	210 274	Plug
-23d	210 275	Seal
-24	202 003	Nameplate
-25	902 456	Drive pin
-26	210 148	Drive gear 2:1
	210 171	Drive gear 1:1
	210 173	Drive gear 2.5:1
	210 175	Drive gear 3:1
-27	902 440	Screw 1/4"-20
-28	901 332	Washer

V.W.A. - Varies With Application - see sections 2.3, 2.4. When ordering, give description, unit part no. and serial no.

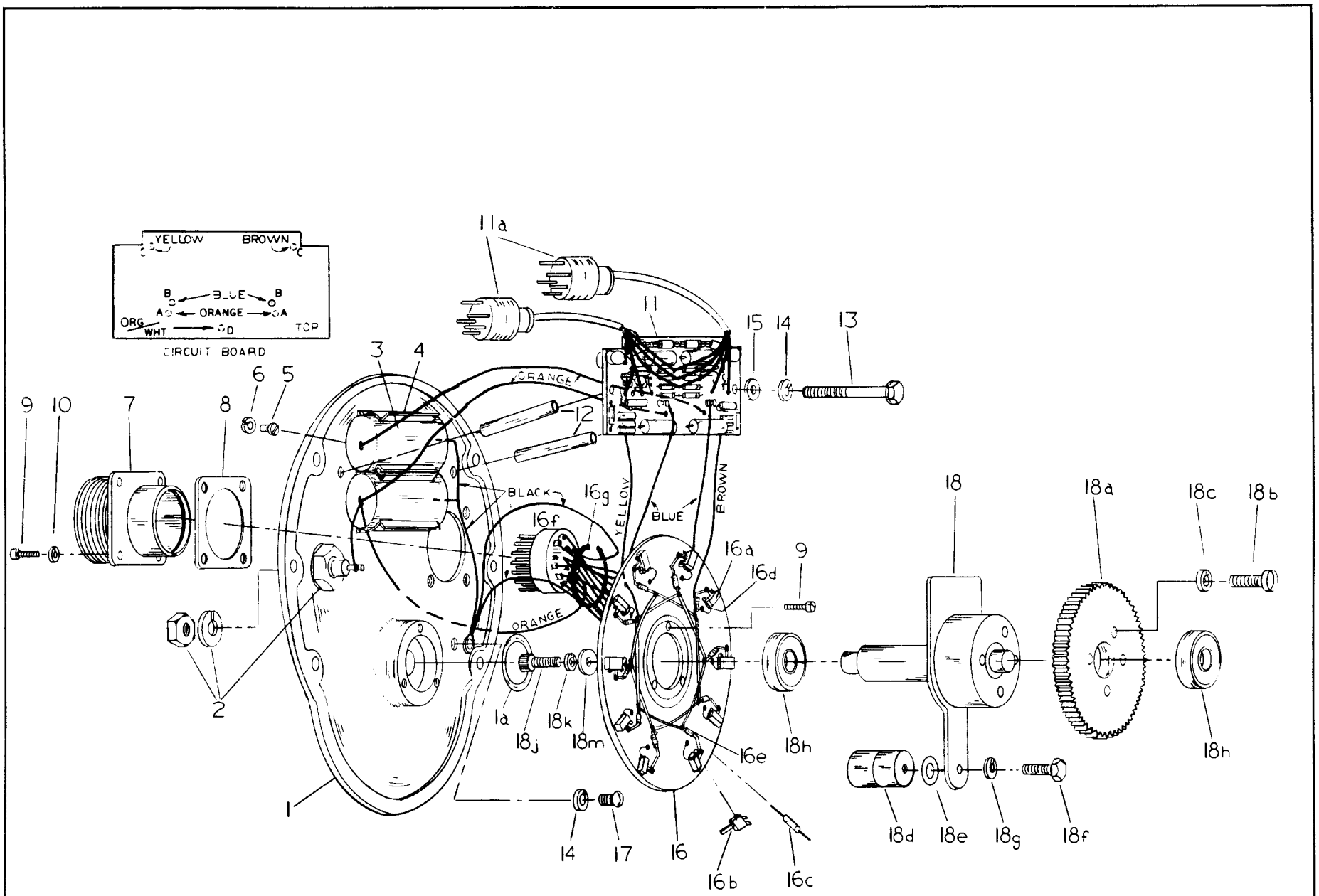

YELLOW
BROWN
B
BLUE
B
A
ORANGE
A
ORG
WHT
D
TOP
CIRCUIT BOARD
11a
11
15
14
13
3
4
6
5
ORANGE
12
9
10
7
8
BLACK
16g
16f
YELLOW
BLUE
BROWN
18
18a
18c
18b
16a
16d
9
ORANGE
2
1a
18j
18k
18m
18h
16e
18h
1
14
17
16
16b
16c
18d
18e
18g
18f

FIG. 2

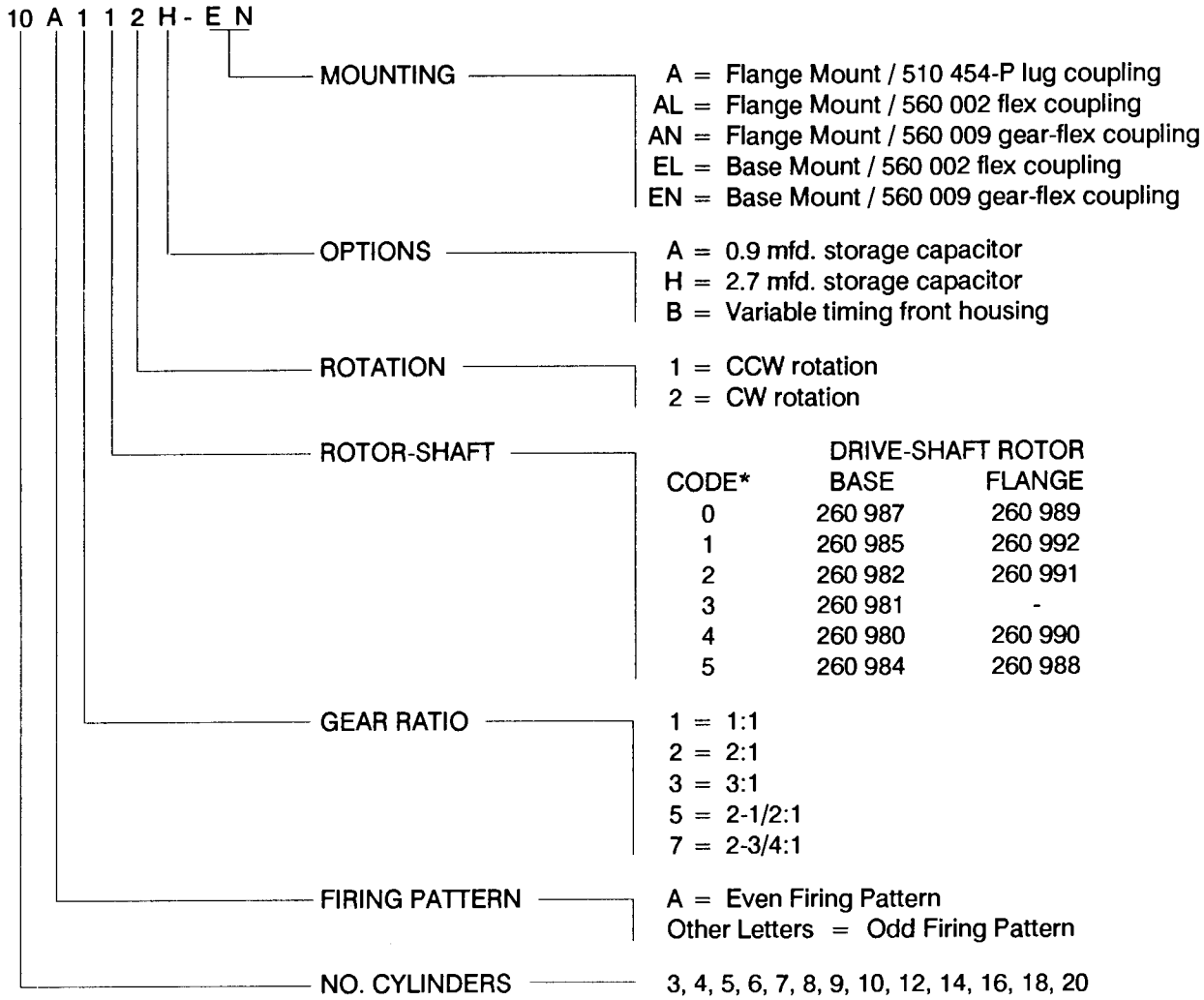
2.2 PARTS LIST - BACK COVER: 281 3xx-x, 281 4xx-x

FIGURE & REF. NO.	PART NO.	DESCRIPTION
2-1	210 613	Cover casting
-1a	210 612	O-ring
-2	201 602	Zener diode - 50W.
-3	201 231	Capacitor - 1.9 mfd.
	201 605	Capacitor - 2.7 mfd.
	501 292	Capacitor - 0.9 mfd.
-4	510 591	Bracket - capacitor
-5	902 058	Screw 6-32
-6	901 000	Lockwasher #6
-7	504 133-2	Connector shell
-8	501 222	Gasket - connector
-9	902 525	Screw 4-40
-10	900 996	Lockwasher #4
-11	272 703	Circuit board assembly - single circuit
	272 704	Circuit board assembly - dual circuit
-11a	204 038	Plug lead assembly
-12	210 168	Spacer
-13	902 460	Screw 8-32
-14	900 944	Lockwasher #8
-15	902 562	Washer
-16	V.W.A.*	Distributor board assembly
-16a	201 604	Solid state switch
-16b	261 601	Power SCR assembly
-16c	201 133	Capacitor - .0022 mfd.
-16d	501 309	Resistor - 150 ohm
-16e	501 320	Resistor - 91 ohm
-16f	504 133	Connector (3-12 cyl. unit)
	504 134	Connector (14-18 cyl. unit)
-16g	902 489	Ring - retaining
-17	902 438	Screw 8-32
-18	280 601-1	Distributor shaft assembly - 1:1 gear
	280 601-2	Distributor shaft assembly - 2:1 gear
	280 601-3	Distributor shaft assembly - 1:1 gear
	280 601-5	Distributor shaft assembly - 2:1 gear
-18a	510 477	Driven gear 1:1
	510 358	Driven gear 2:1
	510 446	Driven gear 2.5:1
	510 360	Driven gear 3:1
-18b	902 500	Screw 6-32
-18c	901 000	Lockwasher #6
-18d	260 602	Magnet assembly
-18e	902 521	Washer-shim
-18f	902 472	Screw 10-24
-18g	901 004	Lockwasher #10
-18h	210 283	Bearing
-18j	902 465	Screw 8-32
-18k	900 944	Lockwasher #8
-18m	902 591	Washer #8

* For distributor board assembly part no., see section 2.5 B.

NOTE: Reference numbers with a letter suffix are part of the assembly of the same number without the suffix. Example: (1a) is part of (1).

2.3 PART NO. DESIGNATION



* NOTE: To choose the proper flex coupling, units with rotor-shaft codes 0, 1, 5 should use the gear-flex coupling 560 009 (-AN, -EN designation); with codes 2, 3, 4, use the black flex coupling 560 002 (-AL, -EL designation).

2.4 UNIT SPECIFICATIONS

A. DISCONTINUED PART NUMBERS - Follow specification for replacement unit.

DISCONTINUED	REPLACEMENT
4A111	4A151
4F112	4F152
4S211	4S251
5A111	5A151
5A112	5A152
6A111	6A151
6A112	6A152
6E212	6E252
6F112	6F152
7A111	7A151
7A112	7A152
7A211	7A251
8A111	8A151
8A112	8A152
8B211	8B251
8B212	8B252
8C111	8C151
8C112	8C152

DISCONTINUED	REPLACEMENT
8E212	8E252
8F112	8F152
8H212	8H252
8K212	8K252
8W111	8W111A
10A211	10A251
10F111	10F151
10F112	10F152
12C102	12C102H
12C112	12C152
12C151	12C151A
12W111	12W111A
16A122	16A122A
16A151	16A151A
16A212	16A252
16W111	16W111A
22P742	22P742A

B. SPECIFICATIONS - See section 2.3 to determine gear ratio, drive shaft-rotor, test RPM and rotation from the unit part number.

NOTE: ALWAYS USE THE PART LISTED - DO NOT SUBSTITUTE.

NOTE: The Test Stand Degrees "A to B" is the angle obtained on a degree wheel with the indicator running at the alternator speed. On dual circuit units, adjust pick-up coils closer or further apart to obtain the correct angle.

UNIT NO.	COVER NO.	(1-10) STATOR	(1-12) PICK-UP ASSEMBLY	(1-13) TRIGGER DISC	FIRING ORDER	A TO B DEGREES
3A101	281 303-1	271 110-2	261 401	270 012	A-B-C	120°
3A341	281 303-1	271 110-2	261 401	270 023	A-B-C	360°
4A151	281 304-1	271 110-2	261 401	270 005	A-B-C-D	90°
4A152	281 304-1	271 110-2	261 402	270 005	A-D-C-B	90°
4A221	281 304-1	271 110-2	261 401	270 003	A-B-C-D	180°
4A222	281 304-1	271 110-2	261 402	270 003	A-D-C-B	180°
4B221	281 304-2	271 110-2	261 401	270 034	A-B-C-D	120°
4B341	281 304-2	271 110-2	261 401	270 003	A-B-C-D	180°
4F152	281 304-2	271 110-2	261 402	270 031	D-C-B-A	63°
4F242	281 304-2	271 110-2	261 402	270 019	D-C-B-A	126°
4S151	281 304-19	271 603-2	261 401	270 015	A-B-C-D	90°
4S251	281 304-19	271 110-2	261 401	270 005	A-B-C-D	180°
5A111H	281 305-1H	271 603-2	261 401	270 009	A-B-C-D-E	72°
5A112H	281 305-1H	271 603-2	261 402	270 009	A-E-D-C-B	72°
5A151	281 305-1	271 110-2	261 401	270 009	A-B-C-D-E	72°
5A152	281 305-1	271 110-2	261 402	270 009	A-E-D-C-B	72°
5A541	281 305-1	271 110-2	261 401	270 003	A-B-C-D-E	180°
5A541H	281 305-1H	271 117-2	261 401	270 003	A-B-C-D-E	180°
5A542	281 305-1	271 110-2	261 402	270 003	A-E-D-C-B	180°
5A542H	281 305-1H	271 117-2	261 402	270 003	A-E-D-C-B	180°

UNIT NO.	COVER NO.	(1-10) STATOR	(1-12) PICK-UP ASSEMBLY	(1-13) TRIGGER DISC	FIRING ORDER	A TO B DEGREES
6A102	281 306-1	271 110-2	261 402	270 010	A-F-E-D-C-B	60°
6A111H	281 306-1H	271 603-2	261 401	270 010	A-B-C-D-E-F	60°
6A112H	281 306-1H	271 603-2	261 402	270 010	A-F-E-D-C-B	60°
6A151	281 306-1	271 110-2	261 401	270 010	A-B-C-D-E-F	60°
6A152	281 306-1	271 110-2	261 402	270 010	A-F-E-D-C-B	60°
6A232	281 306-1	271 110-2	261 402	270 012	A-F-E-D-C-B	120°
6A322	281 306-1	271 110-2	261 402	270 003	A-F-E-D-C-B	180°
6A341	281 306-1	271 110-2	261 401	270 003	A-B-C-D-E-F	180°
6A341H	281 306-1H	271 117-2	261 401	270 003	A-B-C-D-E-F	180°
6A342	281 306-1	271 110-2	261 402	270 003	A-F-E-D-C-B	180°
6A342H	281 306-1H	271 117-2	261 402	270 003	A-F-E-D-C-B	180°
6B101	281 306-2	271 110-2	261 401	270 055	B-C-D-E-F-A	30°
6B332	281 306-2	271 110-2	261 402	270 005	A-F-E-D-C-B	90°
6C102	281 306-3	271 110-2	261 402	270 035	A-F-E-D-C-B	37.5°
6C322	281 306-3	271 110-2	261 402	270 020	A-F-E-D-C-B	112.5°
6D111	281 306-3	271 603-2	261 401	270 013	A-B-C-D-E-F	36°
6D221H	281 406-3H	271 603-2	261 446	270 012	A-B-C-D-E-F	72°
6D331	281 306-3	271 110-2	261 401	270 022	A-B-C-D-E-F	108°
6E252	281 306-5	271 110-2	261 402	270 011	A-F-E-D-C-B	180°
6F152	281 306-1	271 110-2	261 402	270 030	A-F-E-D-C-B	57°
6F342	281 306-1	271 110-2	261 402	270 021	A-F-E-D-C-B	171°
6P332	281 306-2	271 110-2	261 402	270 036	A-F-E-D-C-B	82.5°
6W111	281 406-23	271 603-2	261 434	270 010	A-D-B-E-C-F	3°*
7A111H	281 307-1H	271 603-2	261 401	270 014	A-B-C-D-E-F-G	51.4°
7A112H	281 307-1H	271 603-2	261 402	270 014	A-G-F-E-D-C-B	51.4°
7A151	281 307-1	271 603-2	261 401	270 014	A-B-C-D-E-F-G	51.4°
7A152	281 307-1	271 603-2	261 402	270 014	A-G-F-E-D-C-B	51.4°
7A251	281 307-1	271 110-2	261 401	270 014	A-B-C-D-E-F-G	102.9°
8A102	281 308-1	271 110-2	261 402	270 015	A-H-G-F-E-D-C-B	45°
8A111H	281 308-1H	271 603-2	261 401	270 015	A-B-C-D-E-F-G-H	45°
8A112H	281 308-1H	271 603-2	261 402	270 015	A-H-G-F-E-D-C-B	45°
8A151	281 308-1	271 603-2	261 401	270 015	A-B-C-D-E-F-G-H	45°
8A152	281 308-1	271 603-2	261 402	270 015	A-H-G-F-E-D-C-B	45°
8A201	281 308-1	271 110-2	261 401	270 005	A-B-C-D-E-F-G-H	90°
8A251	281 308-1	271 110-2	261 401	270 005	A-B-C-D-E-F-G-H	90°
8A222	281 308-1	271 110-2	261 402	270 005	A-H-G-F-E-D-C-B	90°
8A301H	281 308-1H	271 603-2	261 401	270 015	A-B-C-D-E-F-G-H	135°
8B251	281 308-4	271 110-2	261 401	270 029	A-B-C-D-E-F-G-H	60°
8B252	281 308-2	271 110-2	261 402	270 011	A-H-G-F-E-D-C-B	120°
8C111H	281 408-3H	271 603-2	261 441	270 005	A-B-C-D-E-F-G-H	67.5°
8C112H	281 408-3H	271 603-2	261 420	270 005	H-G-F-E-D-C-B-A	67.5°
8C151	281 408-3	271 603-2	261 441	270 005	A-B-C-D-E-F-G-H	67.5°
8C152	281 408-3	271 603-2	261 420	270 005	H-G-F-E-D-C-B-A	67.5°
8C221	281 408-3	271 110-2	261 414	270 003	A-B-C-D-E-F-G-H	135°
8C221H	281 408-3H	271 603-2	261 414	270 003	A-B-C-D-E-F-G-H	135°
8C222	281 408-3	271 110-2	261 413	270 003	H-G-F-E-D-C-B-A	135°
8C222H	281 408-3H	271 603-2	261 413	270 003	H-G-F-E-D-C-B-A	135°
8D111	281 308-4	271 603-2	261 401	270 033	A-B-C-D-E-F-G-H	36°
8D221	281 308-4	271 117-2	261 401	270 008	A-B-C-D-E-F-G-H	72°
8D221H	281 408-4H	271 603-2	261 446	270 003	A-B-C-D-E-F-G-H	72°
8E102	281 408-5	271 110-2	261 416	270 015	A-H-G-F-E-D-C-B	22.5°
8E102H	281 408-5H	271 603-2	261 416	270 015	A-H-G-F-E-D-C-B	22.5°
8E252	281 408-5	271 110-2	261 413	270 005	A-H-G-F-E-D-C-B	45°

UNIT NO.	COVER NO.	(1-10) STATOR	(1-12) PICK-UP ASSEMBLY	(1-13) TRIGGER DISC	FIRING ORDER	A TO B DEGREES
8F152	281 408-3	271 603-2	261 432	270 005	H-G-F-E-D-C-B-A	63°
8F232	281 408-3	271 117-2	261 422	270 003	H-G-F-E-D-C-B-A	126°
8G222	281 408-7	271 110-2	261 415	270 005	A-H-G-F-E-D-C-B	120°
8H241	281 408-3	271 603-2	261 424	270 003	H-A-B-C-D-E-F-G	135°
8H252	281 408-3	271 110-2	261 423	270 003	A-H-G-F-E-D-C-B	135°
8K102	281 408-10	271 110-2	261 437	270 015	A-H-G-F-E-D-C-B	22.5°
8K252	281 408-10	271 110-2	261 423	270 005	A-H-G-F-E-D-C-B	45°
8K322	281 408-10	271 110-2	261 426	270 015	A-H-G-F-E-D-C-B	67.5°
8N111	281 408-14	271 603-2	261 427	270 045	A-B-C-D-E-F-G-H	0°
8N111H	281 408-14H	271 606-2	261 427	270 045	A-B-C-D-E-F-G-H	0°
8N112	281 408-14	271 603-2	261 443	270 046	H-G-F-E-D-C-B-A	0°
8N221	281 408-14	271 117-2	261 449	270 045	A-B-C-D-E-F-G-H	0°
8P222	281 408-7	271 110-2	261 418	270 005	A-H-G-F-E-D-C-B	115°
8R111	281 408-18	271 603-2	261 421	270 049	A-B-C-D-E-F-G-H	0°
8R151H	281 408-18H	271 606-2	261 421	270 049	A-B-C-D-E-F-G-H	0°
8T111	281 308-2	271 603-2	261 401	270 039	A-B-C-D-E-F-G-H	60°
8T111H	281 408-2H	271 603-2	261 427	270 005	A-B-C-D-E-F-G-H	60°
8T112	281 308-2	271 603-2	261 402	270 056	H-G-F-E-D-C-B-A	60°
8T152H	281 408-2H	271 603-2	261 443	270 005	H-G-F-E-D-C-B-A	60°
8T221	281 308-2	271 117-2	261 401	270 011	A-B-C-D-E-F-G-H	120°
8T222	281 308-2	271 117-2	261 402	270 029	H-G-F-E-D-C-B-A	120°
8W111A	281 408-23A	271 603-2	261 436	270 038	A-E-B-F-C-G-D-H	3°*
8Y111	281 408-3	271 603-2	261 410	270 005	H-A-B-C-D-E-F-G	66.5°
9A111	281 309-1	271 603-2	261 401	270 016	A-B-C-D-E-F-G-H-J	40°
9A112	281 309-1	271 603-2	261 402	270 016	A-J-H-G-F-E-D-C-B	40°
10A111	281 310-1	271 603-2	261 401	270 017	A-B-C-D-E-F-G-H-J-K	36°
10A111H	281 410-1H	271 606-2	261 447	270 009	A-B-C-D-E-F-G-H-J-K	36°
10A112	281 310-1	271 603-2	261 402	270 017	A-K-J-H-G-F-E-D-C-B	36°
10A112H	281 410-1H	271 606-2	261 419	270 009	A-K-J-H-G-F-E-D-C-B	36°
10A152H	281 410-1H	271 606-2	261 419	270 009	A-K-J-H-G-F-E-D-C-B	36°
10A251	281 310-1	271 110-2	261 401	270 009	A-B-C-D-E-F-G-H-J-K	72°
10A531	281 310-1	271 117-2	261 401	270 005	A-B-C-D-E-F-G-H-J-K	90°
10A531H	281 410-1H	271 606-2	261 421	270 003	A-B-C-D-E-F-G-H-J-K	90°
10A532	281 310-1	271 117-2	261 402	270 005	A-K-J-H-G-F-E-D-C-B	90°
10A532H	281 410-1H	271 606-2	261 450	270 003	A-K-J-H-G-F-E-D-C-B	90°
10A541D	281 410-1	271 117-2	261 421	270 003	A-B-C-D-E-F-G-H-J-K	90°
10B111	281 410-2	271 603-2	261 427	270 009	A-B-C-D-E-F-G-H-J-K	60°
10B111H	281 410-2H	271 606-2	261 427	270 009	A-B-C-D-E-F-G-H-J-K	60°
10B112	281 410-2	271 603-2	261 443	270 009	A-K-J-H-G-F-E-D-C-B	60°
10B112H	281 410-2H	271 606-2	261 443	270 009	A-K-J-H-G-F-E-D-C-B	60°
10B531	281 410-2	271 117-2	261 411	270 003	A-B-C-D-E-F-G-H-J-K	150°
10B532	281 410-2	271 117-2	261 415	270 003	K-J-H-G-F-E-D-C-B-A	150°
10D522	281 410-2	271 110-2	261 404	270 037	K-J-H-G-F-E-D-C-B-A	165°
10E102	281 410-2	271 603-2	261 439	270 009	K-J-H-G-F-E-D-C-B-A	58.5°
10E102H	281 410-2H	271 603-2	261 439	270 009	K-J-H-G-F-E-D-C-B-A	58.5°
10E212H	281 410-2H	271 603-2	261 432	270 009	K-J-H-G-F-E-D-C-B-A	117°
10E522	281 410-2	271 110-2	261 412	270 009	K-J-H-G-F-E-D-C-B-A	146.3°
10F151	281 410-2	271 603-2	261 452	270 009	A-B-C-D-E-F-G-H-J-K	63°
10F152	281 410-2	271 603-2	261 448	270 009	K-J-H-G-F-E-D-C-B-A	63°
10F542	281 410-2	271 117-2	261 420	270 003	K-J-H-G-F-E-D-C-B-A	157.5°
10L111	281 410-1	271 603-2	261 414	270 058	A-B-C-D-E-F-G-H-J-K	30°
10L521	281 410-1	271 110-2	261 460	270 003	A-B-C-D-E-F-G-H-J-K	75°
10L522	281 410-2	271 110-2	261 461	270 003	A-K-J-H-G-F-E-D-C-B	105°

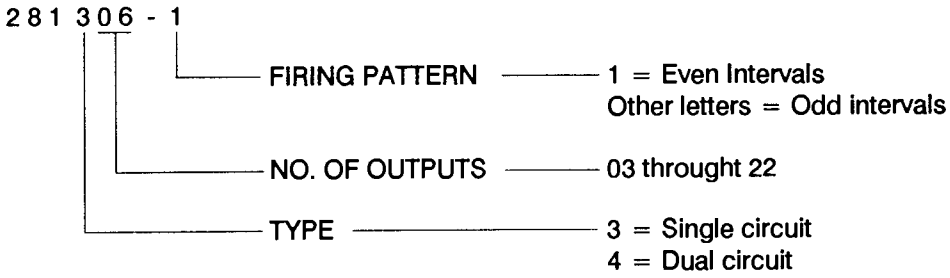
UNIT NO.	COVER NO.	(1-10) STATOR	(1-12) PICK-UP ASSEMBLY	(1-13) TRIGGER DISC	FIRING ORDER	A TO B DEGREES
10P522	281 410-2	271 110-2	261 403	270 037	K-J-H-G-F-E-D-C-B-A	171.3°
10Q112	281 410-1	271 603-2	261 415	270 009	A-K-J-H-G-F-E-D-C-B	31°
10T112	281 410-20	271 603-2	261 442	270 009	K-J-H-G-F-E-D-C-B-A	50°
10T112H	281 410-20H	271 606-2	261 442	270 009	K-J-H-G-F-E-D-C-B-A	50°
10T542	281 410-20	271 117-2	261 422	270 003	K-J-H-G-F-E-D-C-B-A	125°
10W111	281 410-23	271 606-2	261 445	270 042	A-B-C-D-E-F-G-H-J-K	36°
10W221H	281 410-24H	271 606-2	261 446	270 053	A-B-C-D-E-F-G-H-J-K	72°
12A111	281 312-1	271 603-2	261 401	270 018	A-B-C-D-E-F-G-H-J-K-L-M	30°
12A111H	281 412-1H	271 606-2	261 411	270 010	A-B-C-D-E-F-G-H-J-K-L-M	30°
12A112	281 312-1	271 603-2	261 402	270 018	A-M-L-K-J-H-G-F-E-D-C-B	30°
12A322	281 312-1	271 110-2	261 402	270 005	A-M-L-K-J-H-G-F-E-D-C-B	90°
12A331	281 312-1	271 117-2	261 401	270 005	A-B-C-D-E-F-G-H-J-K-L-M	90°
12A332	281 312-1	271 117-2	261 402	270 005	A-M-L-K-J-H-G-F-E-D-C-B	90°
12C102H	281 412-3H	271 603-2	261 420	270 010	M-L-K-J-H-G-F-E-D-C-B-A	37.5°
12C151A	281 412-3A	271 603-2	261 441	270 010	A-B-C-D-E-F-G-H-J-K-L-M	37.5°
12C152	281 412-3	271 603-2	261 420	270 010	M-L-K-J-H-G-F-E-D-C-B-A	37.5°
12C322	281 412-3	271 110-2	261 416	270 003	M-L-K-J-H-G-F-E-D-C-B-A	112.5°
12D111	281 412-3	271 603-2	261 441	270 010	A-B-C-D-E-F-G-H-J-K-L-M	36°
12D111H	281 412-3H	271 606-2	261 441	270 010	A-B-C-D-E-F-G-H-J-K-L-M	36°
12D112	281 412-3	271 603-2	261 420	270 010	M-L-K-J-H-G-F-E-D-C-B-A	36°
12D112H	281 412-3H	271 606-2	261 420	270 010	M-L-K-J-H-G-F-E-D-C-B-A	36°
12D221H	281 412-3H	271 606-2	261 446	270 012	A-B-C-D-E-F-G-H-J-K-L-M	72°
12H102	281 412-3	271 603-2	261 410	270 010	A-M-L-K-J-H-G-F-E-D-C-B	37.5°
12H102H	281 412-3H	271 603-2	261 410	270 010	A-M-L-K-J-H-G-F-E-D-C-B	37.5°
12H212H	281 412-3H	271 603-2	261 423	270 012	A-M-L-K-J-H-G-F-E-D-C-B	75°
12H322	281 412-3	271 110-2	261 426	270 003	A-M-L-K-J-H-G-F-E-D-C-B	112.5°
12L101	281 412-3	271 603-2	261 433	270 010	M-A-B-C-D-E-F-G-H-J-K-L	42°
12L102	281 412-3	271 603-2	261 433	270 010	A-M-L-K-J-H-G-F-E-D-C-B	42°
12Q112	281 412-20	271 603-2	261 458	270 030	B-A-M-L-K-J-H-G-F-E-D-C	8°
12R111	281 412-20	271 603-2	261 427	270 045	A-B-C-D-E-F-G-H-J-K-L-M	0°
12R111H	281 412-20H	271 606-2	261 427	270 045	A-B-C-D-E-F-G-H-J-K-L-M	0°
12R112	281 412-20	271 603-2	261 443	270 046	B-A-M-L-K-J-H-G-F-E-D-C	0°
12R152H	281 412-20H	271 606-2	261 443	270 046	B-A-M-L-K-J-H-G-F-E-D-C	0°
12S101	281 412-20	271 603-2	261 431	270 010	A-B-C-D-E-F-G-H-J-K-L-M	2°
12S111	281 412-20	271 603-2	261 434	270 046	A-B-C-D-E-F-G-H-J-K-L-M	2°
12S102	281 412-20	271 603-2	261 431	270 010	B-A-M-L-K-J-H-G-F-E-D-C	2°
12S112	281 412-20	271 603-2	261 431	270 045	B-A-M-L-K-J-H-G-F-E-D-C	2°
12T112	281 412-20	271 603-2	261 430	270 046	A-M-L-K-J-H-G-F-E-D-C-B	10°
12T112H	281 412-20H	271 606-2	261 430	270 046	A-M-L-K-J-H-G-F-E-D-C-B	10°
12T342	281 412-20	271 606-2	261 415	270 003	A-M-L-K-J-H-G-F-E-D-C-B	30°
12U111	281 412-21	271 606-2	261 445	270 043	A-B-C-D-E-F-G-H-J-K-L-M	9°
12V111	281 412-3	271 603-2	261 453	270 050	A-B-C-D-E-F-G-H-J-K-L-M	36°
12W111A	281 412-23A	271 603-2	261 434	270 040	A-G-B-H-C-J-D-K-E-L-F-M	3°*
12X152	281 412-20	271 603-2	261 440	270 030	B-A-M-L-K-J-H-G-F-E-D-C	0°
12Y111	281 412-3	271 603-2	261 410	270 046	M-A-B-C-D-E-F-G-H-J-K-L	36.5°
14D112	281 414-4	271 606-2	261 419	270 014	A-S-R-M-L-K-J-H-G-F-E-D-C-B	36°
14D112H	281 414-4H	271 606-2	261 419	270 014	A-S-R-M-L-K-J-H-G-F-E-D-C-B	36°

UNIT NO.	COVER NO.	(1-10) STATOR	(1-12) PICK-UP ASSEMBLY	(1-13) TRIGGER DISC	FIRING ORDER	A TO B DEGREES
16A102	281 416-1	271 603-2	261 426	270 015	A-U-T-S-R-M-L-K-J-H-G-F-E-D-C-B	22.5°
16A102H	281 416-1H	271 603-2	261 426	270 015	A-U-T-S-R-M-L-K-J-H-G-F-E-D-C-B	22.5°
16A112	281 416-1	271 606-2	261 426	270 015	A-U-T-S-R-M-L-K-J-H-G-F-E-D-C-B	22.5°
16A151A	281 416-1A	271 603-2	261 455	270 015	A-B-C-D-E-F-G-H-J-K-L-M-R-S-T-U	22.5°
16A212H	281 416-1H	271 603-2	261 423	270 005	A-U-T-S-R-M-L-K-J-H-G-F-E-D-C-B	45°
16A252	281 416-1	271 603-2	261 423	270 005	A-U-T-S-R-M-L-K-J-H-G-F-E-D-C-B	45°
16A322	281 416-1	271 110-2	261 426	270 015	A-U-T-S-R-M-L-K-J-H-G-F-E-D-C-B	67.5°
16D112	281 416-20	271 606-2	261 419	270 015	A-U-T-S-R-M-L-K-J-H-G-F-E-D-C-B	9°
16E111	281 416-8	271 606-2	261 438	270 033	A-B-C-D-E-F-G-H-J-K-L-M-R-S-T-U	18°
16E221H	281 416-8H	271 606-2	261 447	270 008	A-B-C-D-E-F-G-H-J-K-L-M-R-S-T-U	36°
16H112	281 416-8	271 606-2	261 410	270 026	A-U-T-S-R-M-L-K-J-H-G-F-E-D-C-B	17.5°
16H222	281 416-8	271 606-2	261 423	270 054	A-U-T-S-R-M-L-K-J-H-G-F-E-D-C-B	35°
16H222H	281 416-8H	271 606-2	261 423	270 054	A-U-T-S-R-M-L-K-J-H-G-F-E-D-C-B	35°
16L101	281 416-1	271 603-2	261 434	270 015	U-A-B-C-D-E-F-G-H-J-K-L-M-R-S-T	27°
16L102	281 416-1	271 603-2	261 434	270 015	A-U-T-S-R-M-L-K-J-H-G-F-E-D-C-B	27°
16N112	281 416-14	271 606-2	261 450	270 044	B-A-U-T-S-R-M-L-K-J-H-G-F-E-D-C	0°
16N222H	281 416-14H	271 606-2	261 454	270 051	B-A-U-T-S-R-M-L-K-J-H-G-F-E-D-C	0°
16S101	281 416-20	271 603-2	261 423	270 015	A-B-C-D-E-F-G-H-J-K-L-M-R-S-T-U	2°
16S111	281 416-20	271 603-2	261 414	270 048	A-B-C-D-E-F-G-H-J-K-L-M-R-S-T-U	2°
16S102	281 416-20	271 603-2	261 423	270 015	B-A-U-T-S-R-M-L-K-J-H-G-F-E-D-C	2°
16S112	281 416-20	271 603-2	261 413	270 047	B-A-U-T-S-R-M-L-K-J-H-G-F-E-D-C	2°
16W111A	281 416-23A	271 606-2	261 436	270 041	A-J-B-K-C-L-D-M-E-R-F-S-G-T-H-U	3°*
16Y111	281 416-1	271 606-2	261 410	270 015	U-A-B-C-D-E-F-G-H-J-K-L-M-R-S-T	21.5°
16Z112	281 416-8	271 606-2	261 438	270 026	B-A-U-T-S-R-M-L-K-J-H-G-F-E-D-C	20°
20H222	281 420-8	271 606-2	261 456	270 009	A-X-W-V-U-T-S-R-Q-M-L-K-J-H-G-F-E-D-C-B	44°
22P742	281 422-16A	271 117-2	261 430	270 005	B-A-Z-Y-X-W-V-U-T-S-R-Q-M-L-K-J-H-G-F-E-D-C	20°

* 3 degrees between "A" and next output to fire.

2.5 BACK COVER / DISTRIBUTOR BOARD / CIRCUIT BOARD PART NUMBERS

A. Back Cover Part No. Designation:



B. Distributor Board Part No. Designation:
For the distributor board part number, substitute prefix 272 for 281 in the back cover part number.

C. Circuit Board Part No. Designation:
272 703 - Single circuit board
272 704 - Dual circuit board

2.6 CONNECTOR SPECIFICATIONS

A. Wiring Color Code - Connector (2-3)

3 - 12 Cylinder:

A - red	H - violet
B - blue	J - black
C - brown	K - orange/white
D - green	L - black/white
E - yellow	M - red/white
F - gray	N - orange
G - white	P - black

14 - 18 Cylinder:

A - red	K - orange/white
B - blue	L - black/white
C - brown	M - red/white
D - green	N - orange
E - yellow	P - black
F - gray	R - brown/white
G - white	S - green/white
H - violet	T - yellow/white
J - black	U - blue/white

2.7 BEARING FIT TOLERANCES

A. Housing Bearing Bores:

Front Housing (1-4)	2.0463" / 2.0467"
Intermediate Housing (1-23)	
- Large Bearing	1.865" / 1.867"
- Small Bearing	1.1812" / 1.1816"
Back Cover (2-1)	1.1812" / 1.1816"

B. Shaft Bearing Diameters:

Drive Shaft/Rotor (1-9)	
-Coupling End	.7874"/.7878"
-Gear End	.6693"/.6696"
Distributor Shaft (2-18)	.3937"/.3941"

2.8 AIR GAP SPECIFICATIONS

A. Pick-up Coil Core (1-12a) to Trigger Pins (1-13): 0.010" / 0.020"

B. Distributor Magnet (2-18d) to Solid State Switches (2-16a): 0.050" / 0.090"

3.0 PERFORMANCE SPECIFICATIONS

Install Altronic II unit on a test stand equipped with a suitable number of 291 001 coils and spark gags. Test stand wiring should conform to that shown in the Installation Instructions form AII II.

3.1 VOLTAGE TEST

A. With wiring harness unplugged, measure the negative voltage at the connector "N: pin:

UNIT SPEED	VOLTAGE OUTPUT
200 RPM	310-360 VDC (positive ground)

3.2 OPERATING TEST

A. Check the unit part no. and the chart below for the indicated test speeds.
Part No.: 10A531-EL

CODE NO.	MIN. TEST SPEED	TEST RPM
0	20-30	200
1	33-45	330
2	65-75	660
3	90-100	900
4	100-120	1200
5	50-60	500

1. At the MIN. TEST SPEED, a 7mm gap should fire consistently on all outputs.
2. At the TEST RPM, a 15mm gap should fire consistently on all outputs.

3.3 TIMING SPECIFICATIONS

A. Establish the TEST RPM given above and correct rotation as indicated in section 2.3.

B. The Altronic II units are listed in section 2.4. Check the timing as indicated (between output "A" and "B" or as indicated). The basic tolerance is +/– 0.5 degree. On dual-circuit units, any error can be adjusted by moving one of the pick-up coils to either decrease or increase the angle between the two pick-up coils.
NOTE: If testing a back cover on the Altronic II Test Unit, skip the above test 3.3B. The timing specification is determined in the alternator section of the Altronic II unit, not on the back cover.

3.4 TESTING BACK COVER ONLY

A. If only the back cover assembly is available for testing or if the back cover is a type that cannot be tested on the Altronic II Test Unit, proceed as follows:
   1. Spark gap setting should be 15mm.
   2. Plug in the test stand harness to the back cover to be tested.
   3. Plug in test cable(s) between the Test Unit and the back cover. On dual-circuit covers, two cables must be used with the cable from the RIGHT alternator socket (carrying the stator output) connected to the LEFT circuit board plug (see below).
   4. Attach ground lead clips to the alternator and cover housings.

B. Turn the Test Unit alternator at 500 RPM.
   1. The "N" lead voltage should be 310-360 VDC (positive ground).
   2. Insert the 280 601 distributor shaft assembly fully into the back cover bearing bore; hold the driven gear and position the magnet over solid state switch "A". "A" coil should fire on the spark rack. Position magnet over the remaining solid state switches in sequence and observe the corresponding spark gap on the test stand; all outputs should fire the 15mm test gap.

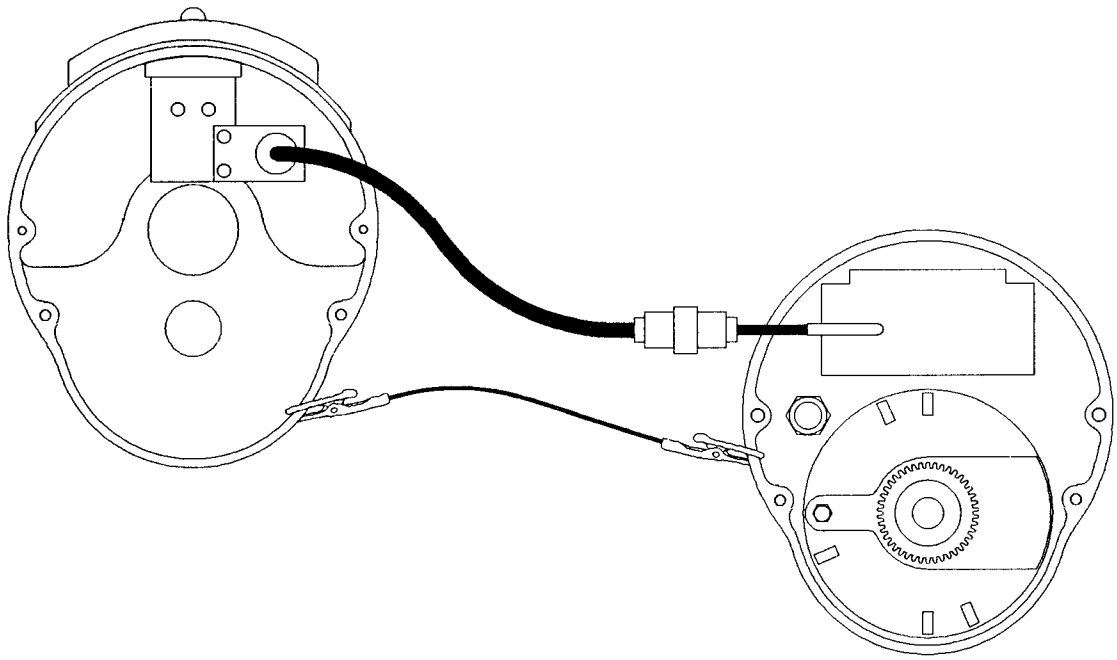


FIG. 3

4.0 TROUBLESHOOTING

4.1 CIRCUIT DIAGRAM

A. The Altronic II ignition circuit consists of three main sections as shown below.
   1. In the Power Section, an AC voltage is generated by the alternator, converted to DC by a full wave rectifier (FWR) and stored in energy storage capacitor (C1). The DC voltage level is controlled by the zener diode (Z1).
   2. In the Trigger Control Section, part of the DC voltage is stored in a smaller capacitor (C2). A rotating magnet pin passing the pick-up coil (P) turns on the trigger SCR (SCR1) discharging the small capacitor (C2). This turns on the power SCR (SCR2), discharging the energy storgage capacitor (C1) into the primary of the ignition coil which steps up the voltage to fire the spark plug. The power SCR is turned off by the the reverse voltage produced by the zener/RC network (Z-RC).
   3. The Distribution Section (only 1-output shown) uses one solid state switch (Q1) and one power SCR (SCR2) for each output. The rotating distributor magnet sequences the solid state switches thus connecting the power SCR's, one by one, to the trigger circuit. Capacitors C3 and C4 act as filters to prevent crossfiring between outputs.

B. Components:

C1	Capacitor, energy storage
C2	Capacitor, trigger circuit
C3	Capacitor, filter
C4	Capacitor, filter
D1	Diode
FWR	Full wave rectifier
Q1	Solid state switch
R1	Resistor, trigger circuit
R2	Resistor, trigger circuit

R3	Resistor, solid state switch
R4	Resistor, solid state switch
SCR1	Trigger SCR
SCR2	Power SCR assembly
Z-RC	Zener-RC network
Z1	Zener diode
Z2	Zener diode, trigger cap.
Z3	Zener diode, trigger output

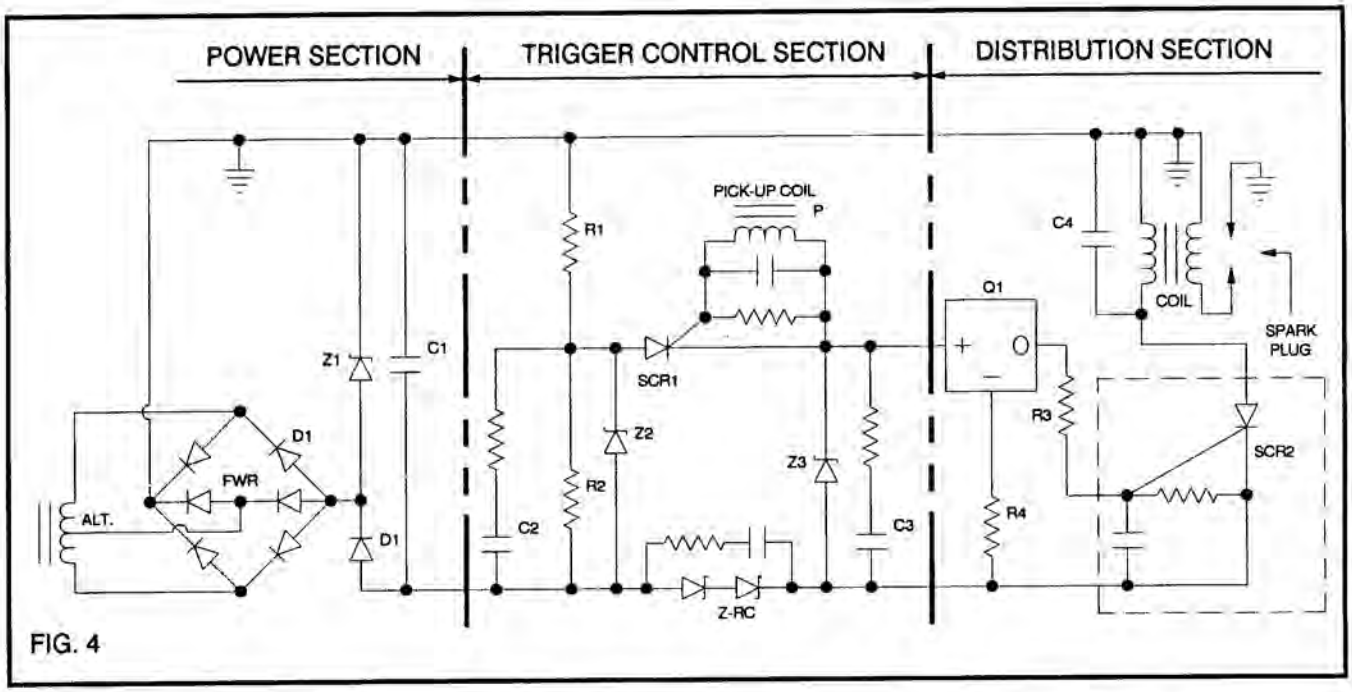


FIG. 4

4.2 TROUBLESHOOTING

A. See Section 3.0 - 3.4 for proper performance.

B. The tests below should be made with a Simpson model 260 volt-ohmmeter or equivalent.

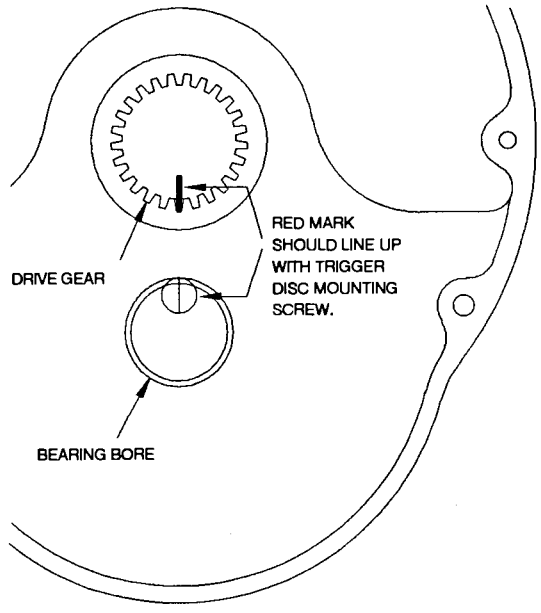
TROUBLESHOOTING CHART

PROBLEM	CHECK	REMEDY
1. One or more outputs misfiring:	DRIVE GEAR - red mark should line up with trigger disc mounting screw - see figure A.	Replace drive gear.
	SCR - resistance between gate (+ lead) and cathode (- lead) should be 10-40 ohms.	Replace SCR.
	SOLID STATE SWITCH - make resistance checks shown in figure B.	Replace solid state switch.
2. Dual Circuit Unit Only - One bank (circuit) only has spark:	PICK-UP COILS - resistance between pins 3 and 4 on 5-pin sockets should be 1,300-1,700 ohms - see figure C.	Replace pick-up coil.
	CIRCUIT BOARD	If above check is OK, replace circuit board.
3. One output firing multiple spark:	DRIVE GEAR - red marks should line up with trigger disc mounting screw - see figure A.	Replace drive gear.
	SCR of output with multiple spark breaking down.	Replace SCR.
	SOLID STATE SWITCH - make resistance checks shown in figure B.	Replace solid state switch.
4. No spark output; "N" lead voltage approx. 330V.	PICK-UP COIL - resistance between pins 3 and 4 on 5-pin socket should be 1,300-1,700 ohms - see figure C.	Replace pick-up coil.
	GEARS - red marks on drive and driven gears should line-up.	Line-up gears.
	DRIVE GEAR - red mark should line up with trigger disc mounting screw - see figure A.	Replace drive gear.
	CONNECTIONS - check all wiring to circuit board for good connections.	Replace faulty wiring or connection.
	CIRCUIT BOARD	If all above checks are OK, replace circuit board.

TROUBLESHOOTING CHART (continued)

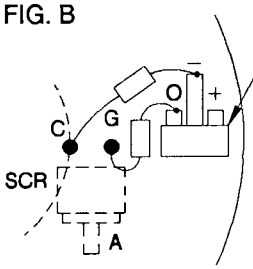
PROBLEM	CHECK	REMEDY
5. No spark or weak output; "N" lead voltage is less than 120V:	STATOR WINDING - resistance between pins 1 and 2 of 5-pin socket should be 7,000-46,000 ohms; resistance between pins 1,2 and ground should be infinite - see figure C.	Replace stator.
	ZENER DIODE - loosen hex nut and push diode away from cover case. With positive lead on stud and negative lead on other lead, resistance shouls be infinite.	Replace zener diode.
	SCR - resistance on RX10,000 scale between anode (+ lead) and cathode (– lead) should be infinite - see figure B.	Replace SCR.
	STORAGE CAPACITOR - disconnect one side only from circuit; ohmmeter reading across capacitor leads should flicker but return to infinite reading.	Replace storage capacitor.
	CIRCUIT BOARD - resistance between white and green lead tie-in points (from 5-pin plug) should read 600,000 - 1,500,000 ohms.	Replace circuit board.

FIG. A



1:1 RATIO DRIVE GEAR
RED MARK IS 1/2 TOOTH
TO THE RIGHT OF TOOTH
IN LINE WITH SCREW

FIG. B



OHMMETER

POS.	NEG.	READING	REMEDY FOR FAULTY READING
A	C	INFINITE	CHANGE SCR
G	C	10-40 OHMS	CHANGE SCR
O	G	170 OHMS MAX.	CHANGE 150 OHM RESISTOR
O	–	150-360 OHMS	CHANGE SOLID STATE SWITCH

FIG. C

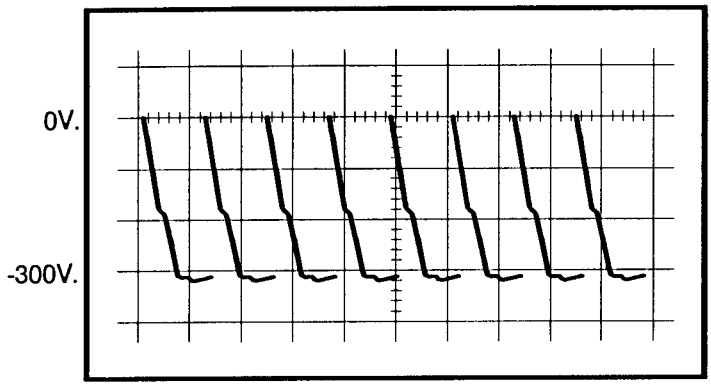
(DUAL CIRCUIT ONLY) (STATOR LEAD SIDE)

STATOR	RESISTANCE	PINS
271 110-2	19,400 - 24,200 OHMS	1,2
271 117-2	7,600 - 9,400 OHMS	1,2
271 603-2	38,000 - 51,000 OHMS	1,2
271 606-2	17,600 - 24,200 OHMS	1,2

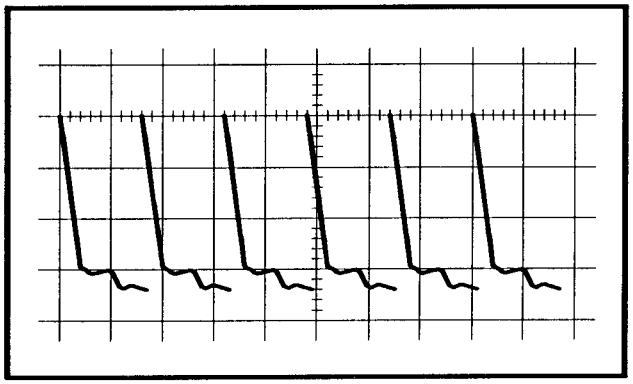
4.3 OSCILLOSCOPE TESTING

A. STORAGE CAPACITOR PATTERN: NORMAL - Connect the oscilloscope probe to the "N" lead of the output connector. The normal patterns for both single and dual storage capacitor units are shown below.

NORMAL PATTERN: SINGLE CIRCUIT UNIT
(EVEN FIRING PATTERN SHOWN)

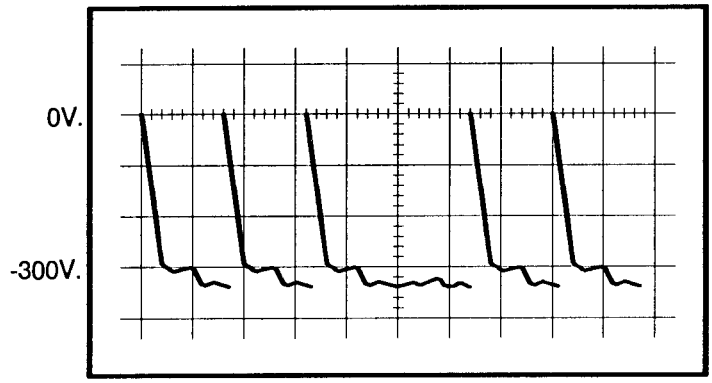


NORMAL PATTERN: DUAL CIRCUIT UNIT

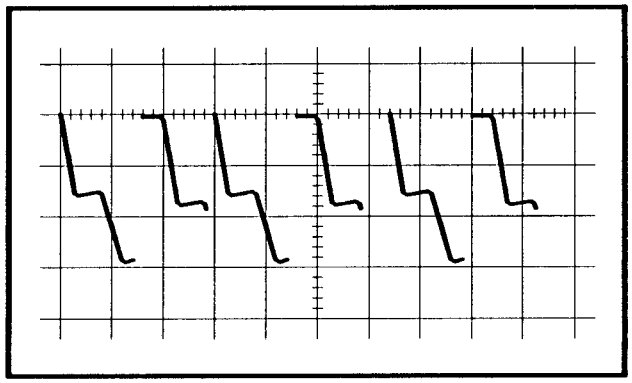


B. STORAGE CAPACITOR PATTERNS: ABNORMAL - Shown below are two abnormal patterns with the cause of problem indicated.

NOT FIRING ON ONE OUTPUT:
SEE SECTION 4.2, NO. 1



STEPPED CAPACITOR CHARGING PATTERN;
FAULTY STATOR OR CIRCUIT BOARD.



5.0 SERVICE - BACK COVER ASSEMBLY

A. The Altronic II unit breaks down into three parts: the Alternator section; the Distributor Rotor assembly; and the Back Cover assembly. Remove the four back cover attaching screws (2-18f). Carefully pull the back cover away from the alternator section; when the cover is sufficiently free, tilt upwards and pull out the five-prong plug(s) inside the unit.

B. Removing the back cover will expose one bearing (1-18h) that was secured in either the back cover or the intermediate housing wall. Pull the exposed end free to separate the distributor shaft assembly (1-18).

5.1 CIRCUIT BOARD ASSEMBLY (2-11) - Refer to figure 2.

A. To replace the circuit board assembly (2-11), follow the steps below. When unsoldering leads from circuit board terminal posts, take care not to apply excessive heat which would damage the insulation on the wires.
   1. Unsolder the yellow and brown (dual circuit only) wires from the circuit board terminal post(s) "C".
   2. Unsolder the blue wire(s) from the circuit board terminal post(s) "B".
   3. Remove the two screws (2-13) holding the circuit board to the back cover.
   4. Unsolder the orange wire(s) from the circuit board terminal post(s) "A".
   5. Unsolder the white/orange wire (if present) from the center circuit board terminal post "D" to the zener diode.

B. When installing a replacement circuit board assembly (2-11), refer to figure 5. The current style circuit boards have an extra terminal post ("D") for connection to the zener diode. Older style boards do not have the "D" terminal; in this case the zener diode connects directly to the lower storage capacitor. Refer to the figure below for the type board being reinstalled; fig. 5a for circuit boards with the "D" terminal post, fig. 5b for older boards without the "D" terminal. When soldering leads to the circuit board terminal posts, take care not to apply excessive heat which could damage the insulation on the wires.
   1. On boards with the "D" terminal post, solder the white/orange wire between terminal post "D" and the zener diode.
   2. Solder the orange wire(s) from the storage capacitors to terminal post(s) "A".
   3. Install two screws (2-13), lockwashers (2-14) and washers (2-15) through the circuit board mounting holes and spacers (2-12); thread into the back cover tapped holes and tighten screws securely.
   4. Solder the blue wire(s) from the distributor board assembly to terminal post(s) "B".
   5. Solder the yellow and brown (dual circuit only) wires from the distributor board assembly to terminal post(s) "C".

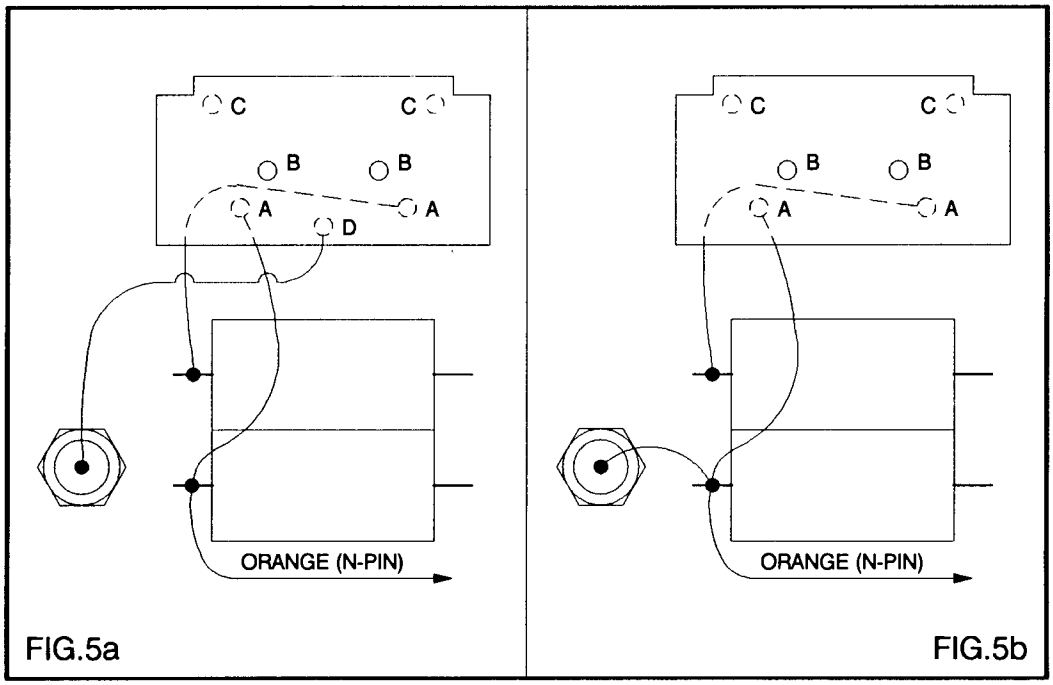


FIG.5a FIG.5b

5.2 DISTRIBUTOR BOARD ASSEMBLY

A. To remove the entire distributor board assembly, follow the steps below:
   1. Unsolder the blue, yellow and brown (dual circuit only) wires from the circuit board assembly terminal posts - see section 5.1 A.
   2. Unsolder the orange and black connector wires from the storage capacitors.
   3. Remove screw (2-17) from the cover casting.
   4. Remove the connector retaining ring (2-16g).
   5. Remove three screws (2-9).

B. To reinstall the distributor board assembly, follow the steps below:
   1. Connector shell (2-7) and gasket (2-8) should be mounted to the outside of the cover casting (2-1). Screws (2-9) and lockwashers (2-10) secure the connector shell.
   2. Slide the connector insert (2-16f) into place in the connector shell with the notch lined up with the key in the shell. Install retaining ring (2-16g) in position between the connector insert and the lip in the shell to secure the insert.
   3. Secure the distributor board assembly (2-16) to the cover casting with three screws (2-9). A bearing (2-18h) must be placed in thecover bore to center the distributor board before final tightening of the three mounting screws.
   4. Solder the orange and black connector wires to storage capacitors - see figure 2.
   5. Solder the blue, yellow and brown (dual circuit only) wires to the circuit board assembly - see section 5.2 B.
   6. Be sure the yellow and brown (dual circuit only) wires from the distributor board to the circuit board assembly lie flat against the distributor board so as not to interfere with rotating magnet (2-18d).

C. To replace only an SCR assembly (2-16b) or solid state switch (2-16a), proceed as follows:
   1. Cut or unsolder the leads to the component being changed. Then pry the component loose from the board.
   2. Scrape all adhesive from the board surface with a knife.
   3. Use G.E. Silicone Rubber (Altronic part no. 503 151) to glue the replacement part to the distributor board. Apply adhesive to the entire mounting surface of the component and allow at least four (4) hours to set.
   4. After adhesive has set, carefully resolder leads to the new component.
   5. Spray the distributor board in the area of the changed component with a clear plastic spray coating such as Krylon #1302.
   6. If the distributor board mounting screws (2-9) have been loosened during a repair operation, a bearing (2-18h) should be positioned in the cover casting bore to properly center the distributor board assembly before re-tightening the three mounting screws.

5.3 ZENER DIODE (2-2)

A. To change the zener diode, unsolder the wire from the diode and remove the zener nut and lockwasher from the outside of the cover casting.

B. When reinstalling, carefully resolder the wire and tighten the nut to a torque of 16 in.-lbs.

5.4 STORAGE CAPACITOR (2-3)

A. To change a storage capacitor, unsolder the leads to the capacitor and remove the capacitor from the bracket (2-4).

B. Insert new capacitor in bracket (centered lengthwise); resolder connections taking care not to apply excessive heat.

5.5 O-RING (2-1a)

A. Replace O-ring (2-1a) at each overhaul.

6.0 SERVICE - DISTRIBUTOR SHAFT ASSEMBLY

A. Inspect the driven shaft for needed repairs. The steel magnet arm and gear hub should be tight on the shaft.

B. The magnet assembly (2-18d) should be inspected; replace if the magnet is cracked or loose.

C. The two bearings (2-18h) should be replaced at each overhaul. The bearings can be removed with a small bearing puller.

D. Check driven gear (2-18a) for wear or other damage. To replace the driven gear, first remove bearing; then remove the four screws (2-18b) that hold the gear to the aluminum hub. Pull the gear off the shaft.

E. Install new driven gear (2-18a) in same orientation as the removed gear. The black mark on the outside face should be on the tooth that is 90° from the magnet (see figure 6). Repaint the red mark if faded (refer to Altronic II Specification Book for proper position of red mark).

F. Press a new bearing (2-18h) on each end of the shaft until it bottoms against the shoulder on the shaft.

G. On shafts having the tapped hole in the cover-end of the shaft, install washer (2-18m), lockwasher (2-18k) and screw (2-18j). Tighten the screw securely.

H. Insert the cover-end bearing into the back cover until the bearing seats against O-ring (2-1a). The gap between the magnet (2-18d) and the solid state switches on the distributor board must be .050" to .090". This is adjusted by adding or removing .010" thick spacer washers (2-18e). The fastening screw (2-18f) and lockwasher (2-18g) should be tightened securely. NOTE: REMOVE ANY METAL FILINGS FROM THE MAGNET (2-18d).

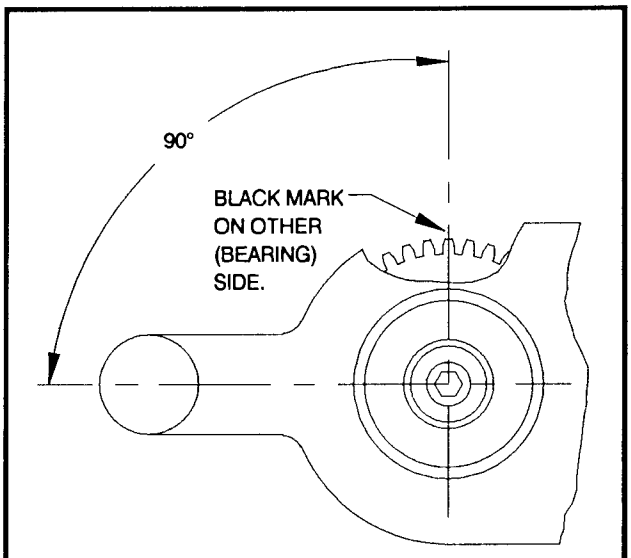


FIG.6

7.0 SERVICE - ALTERNATOR SECTION

A. Replace all worn or defective parts.

B. The procedures of this section require the use of an arbor press.

7.1 DISASSEMBLY - COUPLING (1-1), (1-2), (1-3)

A. Drive spring pin (1-1a), (1-2a) or (1-3a) out of coupling and shaft (1-9) and remove coupling from shaft. With base mount units, access to the spring pin is provided through the hole in the front housing.

7.2 DISASSEMBLY - ALTERNATOR SECTION

A. Remove the drive gear from shaft (1-9) for inspection. Replace if worn or otherwise damaged.

B. Loosen and remove the three attaching screws (1-5), lockwashers (1-6) and washers (1-7). Using a knife or screwdriver blade, separate the intermediate housing (1-23) from stator (1-10) and front housing (1-4). Keeping the stator and front housing together, work the intermediate housing (1-23) loose from the rear bearing (1-17).

C. Remove screw (1-20) holding the pick-up arm assembly (1-12).

D. Remove screw and wire guide (1-11) from housing (1-23).

E. Slip the intermediate housing (1-23) away from the stator and pick-up arm assembly.

F. Remove two screws (1-14) and pull the trigger disc (1-13) from the alternator rotor.

G. Carefully remove the stator (1-10) taking care not to damage the windings.
NOTE: If either the stator or entire pick-up arm assembly is to be replaced, the leads from the stator to the 5-pin socket must be unsoldered.

7.3 DISASSEMBLY - FRONT HOUSING ASSEMBLY

A. Units above S/N 3400, remove the drive end snap ring (1-8) from shaft (1-9).

B. Referring to fig. 7, support the stator end of the front housing (1-4) and press on the coupling end of the shaft (1-9) until the shaft is pressed out of the front housing (1-4) and bearing (1-4a).

C. Press bearing (1-4a) out of housing (1-4) using an arbor press.

D. Remove bearing cover (1-18) from bearing (1-17). To remove the bearing from the shaft (1-9), use a bearing puller with a screw (1-27) installed in the shaft to protect the end of the shaft from damage from the bearing puller pivot point.

E. Inspect snap ring (1-9a) for damage or wear. Replace if necessary.

7.4 PARTS REPLACEMENT

A. Replace gasket (1-23a) with a new gasket.

B. Replace coupling (1-1), (1-2) or (1-3) with a new coupling.

C. Replace bearings (1-4a), (1-17) and (2-18h) and bearing cover (1-18) with new parts.

D. Replace O-rings (1-23b) and (2-1a) with new parts.

E. Any removed hardware should be replaced with new parts.

F. Aluminum housings should be cleaned in carbon tetrachloride or similar cleaning solution.

G. Any metal filings should be cleaned from magnet-rotor (1-9) before reassembly.

7.5 PICK-UP COIL ASSEMBLY (1-12) / SLIDE BAR (1-19)

A. If a pick-up coil (1-12a) is to be changed, unsolder the red and black leads from the 5-pin socket taking note as to which terminal each lead was connected. The replacement pick-up coil MUST be connected the same as the removed coil. All units with S/N 1400 or higher have the red wire connected to #4 terminal, black wire to #3 terminal.
   NOTE: It is recommended that pick-up coil assemblies in units below S/N 1400 be replaced with the current type - see section 2.4.

B. Carefully solder the red and black leads to the correct terminals making sure that the ground braid in the gray cable does not touch any connections. Dress the cable so that it does not extend beyond the sensing face of the pick-up.

C. Examine slide bar (1-19); replace gasket (1-19a) if necessary.

7.6 REASSEMBLY - FRONT HOUSING ASSEMBLY

A. The procedures of this section require the use of a small arbor press.

B. Press a new coupling end bearing (1-4a) into housing (1-4) until it bottoms. Referring to fig. 8, housing (1-4) should be supported on the coupling end using tool 506 106B for base mount, 506 106C for flange mount; push on the outer race of the bearing with tool no. 506 106A.

C. Snap ring (1-9a) should be inserted in place in shaft (1-9).

D. Clean all metal filings from the magnet rotor.

E. Referring to fig. 9a, push shaft (1-9) through the front housing bearing (1-4a) until snap ring (1-9a) bottoms against the bearing. Use tool no. 506 104G to support the inner race of the bearing; push shaft through the bearing with tool no. 506 104F.

F. Install bearing spacer (1-16) on shaft (1-9).

G. Support the coupling end of shaft (1-9), and press a new gear-end bearing (1-17) on shaft until it bottoms against the bearing spacer (1-16). Referring to fig. 9b, leave tool no. 506 104G (step 7.6E) in place to support the coupling end of the shaft. Press on the inner race of the bearing for this operation using tool no. 506 104D. NOTE: Avoid damaging the drive gear dowel pin during this operation.

H. Install a new bearing cover (1-18) on bearing (1-17).

I. Install coupling-end snap ring (1-8) on shaft (1-9) - units S/N 3400 and up or where a new drive shaft assembly has been installed.

FIG.7

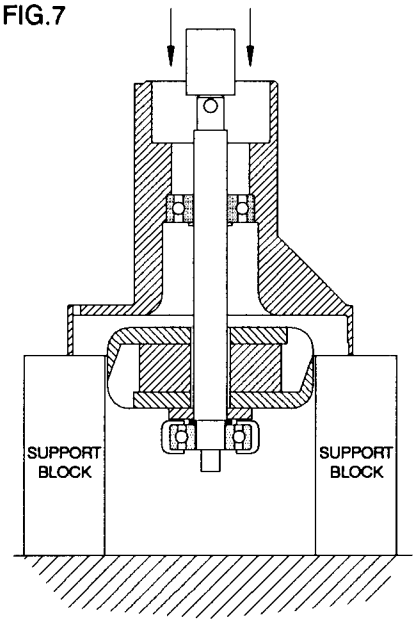
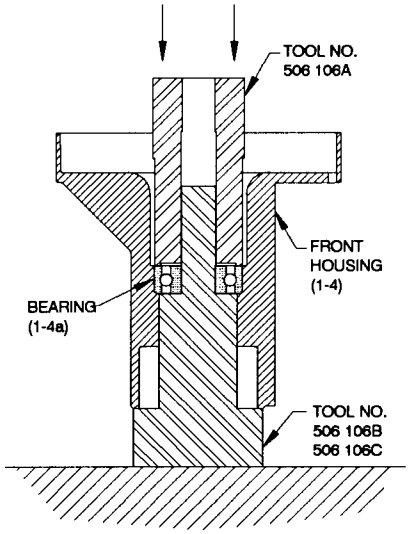
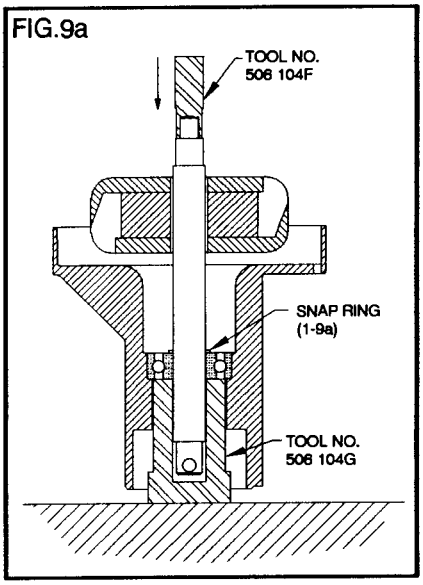
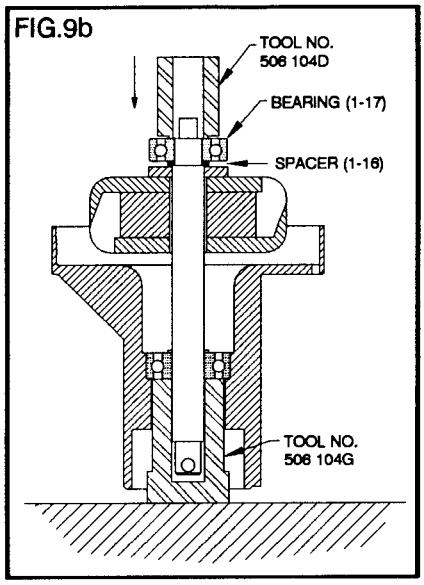
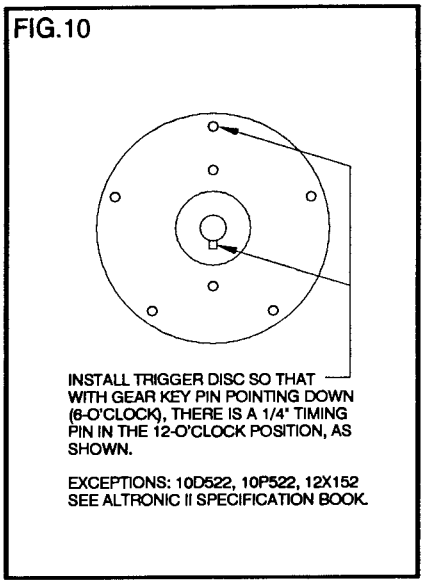


FIG.8









7.7 REASSEMBLY - ALTERNATOR SECTION

A. Position the front housing assembly over the stator guide tool no. 506 107A. The housing assembly should be placed so that the hole for locking the rotor shaft is facing away from the assembler.

B. Position the stator (1-10) so that the leads face the assembler at the upper right hole position. Slide the stator down the fixture into position against front housing (1-4). Remove fixture 506 107A.

C. Install the timing trigger disc (1-13) to the magnet rotor using screws (1-14) and lockwashers (1-15). NOTE: See fig. 10 for alignment of trigger disc pins to the gear dowel pin.

D. Lubricate the bore in the intermediate housing (1-23) with a film of lubricant or Vasoline. THIS IS ESSENTIAL FOR PROPER ASSEMBLY.

E. Pick-up coil assembly (1-12) should be in place in housing (1-23). Screw (1-20) should be tightened so that lockwasher (1-21) is just engaged but so that assembly (1-12) and slide bar (1-19) can be moved back and forth in the housing slot.

F. Install the plastic wire guide (1-11) but do not tighten the screw fully.

G. Place the intermediate housing (1-23) next to the front housing assembly so that the plastic wire guide (1-11) is adjacent to the stator leads. Insert the stator leads through the wire guide and solder leads to the 5-pin socket nearest the wire guide. User terminals 1 and 2 for black, 2-lead stators; use terminals 1,2,5 for reddish-brown, 3-lead stators. Tighten the wire guide screw.

H. Insert three screws (1-5), lockwashers (1-6) and washers (1-7) through the front housing (1-4) and stator (1-10) to keep the stator from rotating in the housing. NOTE: USE NEW HARDWARE; DO NOT REUSE THE OLD PIECES.

I. Install the intermediate housing (1-23) on the front housing assembly. Work the housing onto bearing cover (1-18); make sure the stator leads are not caught between the housing (1-23) and the stator.

J. Tighten the three screws (1-5) securely. Be sure the stator wires are not touching adjacent screw (1-5) as it is tightened.

K. Position the stator leads behind the stator coils so that there is no interference with the rotating rotor. Slide the pick-up assembly (1-12) and slide bar (1-19) over the entire slot travel to check for this.

L. At this point, the drive shaft (1-9) should turn freely. If not, correct this condition before proceeding.

M. Check the air gap between the rotating trigger pins and the pick-up coil cores; this should be .010" to .020". Adjust with shim washers (1-12b) between the pick-up coil and its mounting bracket to achieve the required gap.

N. Inspect drive gear (1-26). Re-paint the red mark if it is faded. The red mark always lines up with the slot in the gear bushing. Install drive gear, washer (1-28), lockwasher (1-21) and screw (1-27). Tighten screw (1-27) securely.

7.8 REASSEMBLY - COUPLING

A. Slide coupling (1-1), (1-2) or (1-3) over shaft (1-9) and line up with the hole in the shaft. Insert corresponding spring pin (1-1a), (1-2a) or (1-3a) through the hole in the housing (base mount units) and drive through the coupling and shaft until flush with the coupling. Use tool no. 506 108A for this purpose.

7.9 REASSEMBLY - BACK COVER TO ALTERNATOR

A. Be sure new O-rings (1-23b) and (2-1a) have been installed in the back cover and intermediate housing.

B. Insert distributor shaft assembly (2-18) so that the red marks on the two gears line-up together. Be sure bearing (2-18h) seats all the way into the bore in the intermediate housing (1-23).

C. Position the back cover into the alternator section tilted up at the bottom so that the 5-pin plug(s) can be plugged-in. Be sure to fully plug-in the back cover 5-pin plug(s). Then carefully push the back cover into place over the dowel pins. Secure cover with the four attaching screws (2-18f) and lockwashers (2-18g).

8.0 SERVICE - ASSEMBLY TOOLS

A. The following assembly tools are referred to in sections 7.6 through 7.8:

506 106A Press bearing into front housing
506 106B Support front housing - base
506 106C Support front housing - flange
506 104F Press rotor-shaft into bearing
506 104G Support front housing bearing
506 104D Press gear-end bearing on rotor-shaft
506 107A Stator assembly guide
506 108A Drive coupling pin off/on

These tools are available from Altronic or, alternatively, may be fabricated from drawings provided by Altronic; request form AAT.

9.0 OPERATIONAL TEST

A. Perform the tests following the guidelines of sections 3.0 through 3.3.

B. Run the Operating Test of section 3.2A.2. for one hour.

C. After the one hour Operating Test, check timing per section 3.3.