

United States of America
Department of Transportation — Federal Aviation Administration
Supplemental Type Certificate

Number SA8031SW

This certificate, issued to Tovya Group, Inc. dba Zeftronics
1622 E. Whaley St.
Longview, TX 75601-6830

*certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part * of the **

Regulations.

Original Product — Type Certificate Number: * *See
Make: * attached FAA Approved Model List
Model: * No. SA8031SW for list of approved aircraft and certification data.

Description of Type Design Change:

Installation of Zeftronics Alternator Controller Unit P/N R15100 (Product Configuration File Z0CPCF), or R15V00 (Product Configuration File Z0DPCF), in accordance with Zeftronics Drawing Z00IDC, dated 1/31/91 (R15100), or Z00IDD, dated 1/31/91 (R15V00), or later FAA approved revision.

Limitations and Conditions:

Compatibility of this modification with previously installed equipment must be determined by the installer.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: January 31, 1991

Date issued:

Date of issuance: May 28, 1991

Date suspended: 01/06/92, 11/17/92, 1/6/94
Rev. 3



By direction of the Administrator

Mark R. Schilling
Mark R. Schilling, Manager
Special Certification Office

(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

AMMENDMENT DATE: 1-6-94

Page 1 of 1.

Yank R. Schully
Manager, Special Certification Office

**U.S. Department
of Transportation
Federal Aviation
Administration**

Richard Ritz
Aerospace Engineer,
Special Certification Office



ZEFTRONICS

Electrical Charging Systems Solutions

1622 East Whaley Street

Longview, Texas 75601 U.S.A.

www.zeftronics.com

Tech@zeftronics.com or Sales@zeftronics.com

Ph: 903-758-6661 Fax: 903-236-9766

PN: R15V00 Rev A

SN: P14030

ZEFTRONICS

PRE-INSTALLATION CHECKS

- **For all products: Read and follow the installation instruction and notes.**
- Check for and replace open, frayed, or broken wires. Clean thoroughly or replace corroded, dirty, or oxidized connections, terminals, contacts, or poorly soldered wire junctions.
- Check for Open or Ground-shorted alternator field. Most 12V alternators will have 3-6Ω resistance, the 24V ones will be 10-18Ω. Shorted Alternator field will damage most Voltage Regulators / ACU. **If the alternator or generator has a field to ground short, do not connect the unit to it.** Check for Open or Ground-short generator field.
- With the engine off: Check voltage drops across the field and Alt or Gen circuit breakers, and OV relay. High voltage-drop means excessive junction resistance and will lead to many problems. Most fluctuation ammeters and panel lights are due to high resistance in Alt field, OV relay, field circuit breakers, and connections.
- **If you experience problems with this unit's installation or operation, call us immediately at 903-758-6661**

Alternator System Tests

FLD Res at ALT	Ω
FLD Res at ACU	Ω
FLD SW Resistance	Ω
FLD C/BKR Res	Ω
ALT C/BKR Res	Ω
BUS Volt Engine Off	V
BUS Volt Engine On	V

CHECKING THE RESIDUAL VOLTAGE AND POLARITY OF THE GENERATOR

Connect a voltmeter between the generator's armature and ground. At 1000 RPM, the generator output voltage should be positive (greater than +1V). A negative voltage reading indicates a generator that has a reverse polarity. **Do not connect the GCU to generator with reversed polarity. TURN OFF THE ENGINE, Polarize the generator by flashing the field.**

HOW TO FLASH THE GENERATOR'S FIELD:

1. With the engine off, disconnect the Generator Controller (GCU) /Regulator
2. Ground the Field and turn on the GEN FLD switch
3. At the GCU (with wires off): Touch the battery wire to the generator's armature wire 5 times

CAUTION! CAUTION!

Grounding the field to see if the generator produces current is not a good indication that it is working properly. Doing so can lead to excessive system voltage, which may damage batteries and radios and GCU. This practice will not always identify a defective voltage regulator is because it can and does often hide field or armature defects that can damage a regulator/GCU like a low or high field resistance. An armature with a high resistance will not allow the generator to come on-line early, and may limit the generator output.

Generator, GEN Fld switch, GEN circuit breaker, and wiring tests

At the Gen*/Bus Check	Value 12V	Value 24V	SW open	SW close	Notes
Gen Breaker Resistance	0 - 0.05Ω	0 - 0.05Ω			If higher, it will cause poor system operation (including flickering lights)
Gen Fld-Gnd Resistance	7-10Ω	14-18Ω			Field resistance should not cause a current of greater than 3A
Gen Arm-Gnd Resistance	0 - 0.05Ω	0 - 0.05Ω			Higher resistance will cause Gen to come on line at higher RPM
Gen Fld-Arm Resistance	7-10Ω	14-18Ω			Normal Field current is 1.5-1.8 Amps. $I_{fd} = V_{bat} / R_{fd}$
Bus-GCU BAT Resistance	0 - 0.05Ω	0 - 0.05Ω			If higher will cause poor system operation (may include flickering lights)

* For both tests, the values measured should be the same. If the values are different, you may have a problem in switches, circuit breakers, connections or wiring.

See reverse side for complete warranty policy.

---✂--- Cut along this line --- Keep Top Portion for your record --- For warranty registration Return bottom Portion ---✂---

WARRANTY REGISTRATION. RETURN WITHIN 10 DAYS OF UNIT'S INSTALLATION

Before installing this unit, Read the warranty policy & trouble-shoot the system

PN: R15V00 Rev A

SN: P14030

ZEFTRONICS

Part Installation Record. Take/Record required measurements before & after installing this unit.

FLD Res at ALT	Ω	FLD Res at ACU	Ω	Field SW	Ω	BUS Voltage	V	BUS Voltage	V
At Gen Resistance		ARM-GND		FLD-GND		FLD-ARM		At GCU wires	
Make of Aircraft Installed on				Model		N			
Name of Installer /Date				A&P No.		Tach Time ON		OFF	
COMPANY						Contact			
ADDRESS						D.O.M			
				State		Zip			
Phone No.				Fax No.		BUYER			
						Email			

HOW CAN WE BETTER SERVE YOUR NEEDS? PLEASE TELL US.

1. Are you satisfied with our Service? ☐ Very Satisfied ☐ Satisfied ☐ Uncertain ☐ Somewhat Satisfied ☐ Not Satisfied
2. Why did you buy this product? ☐ I liked previous one ☐ Product's reputation ☐ I received Tech Help ☐ Price ☐ Recommended ☐ Other
3. Are you aware of Hazotronics Repair Station? ☐ Yes ☐ No. Hazotronics overhauls, exchanges: VOLTAGE REGULATORS, GCU, ACU
4. What other product/service needs do you have? _____
5. Comments or Suggestions? _____

Return bottom portion to: ZEFTRONICS, 1622 E. Whaley St, Longview, TX 75601

WARRANTY REGISTRATION IS REQUIRED UPON INSTALLATION.

For Continued Airworthiness
Maintenance instruction: Refer to the
installation instructions and product
information that came with this unit

Before installing unit perform pre-installation checks & trouble-shooting
IF YOU EXPERIENCE ANY PROBLEMS CALL US IMMEDIATELY: 903-758-6661.

ZEFTRONICS, herein called seller, warrants that each unit delivered shall at the time of delivery thereof to buyer or buyer's customers, be free from defects in workmanship and materials when used in a manner that is generally recognized by the industry as good aviation practice.

The warranty and the obligations and the liabilities of seller hereunder are exclusive and in substitution for and buyer hereby waives all other warranties, expressed or implied, arising by law or otherwise (including, without limitation, the implied warranty or merchantability, and implied warranty arising from course of performance, course of dealing or usage of trade, any implied warranty of fitness, and any obligation of seller with respect to incidental or consequential damages), and shall not be extended, altered or varied except by a written instrument signed by seller and buyer.

EXTENT: ZEFTRONICS' SOLE LIABILITY UNDER THIS LIMITED WARRANTY SHALL BE AT ZEFTRONICS' OPTION, TO REPAIR OR REPLACE ANY DEFECTIVE UNIT. This limited warranty excludes all other remedies against ZEFTRONICS for consequential or other damages arising out of sale, use, or operation of the unit. Any replacement unit provided pursuant to this limited warranty policy will only have warranty for the remainder of the warranty period applicable to the replaced unit.

LIMITATIONS. WARRANTY WILL BE DENIED for units that were only functionally tested or tested for time re-certification; units that are found to fully functional at the receiving inspection tests; units opened by the customer; units found defective due to improper storage, handling, packaging, installation, operation, alteration, repair, misuse, or abuse. Abuse can include, but may not be limited to: Damage due to faulty alternator / generator field or wiring, corrosion, deformity of unit's case/base/cover/connector.

DURATION: 12 months or 600 hours from installation as verified by the required returned warranty registration card.

EXTRA CHARGES: We will charge extra for replacing of damaged connectors /base/ case/ cover, performing on aircraft work, researching peculiar problems, and other non-standard requirements by the customer.

TO CLAIM WARRANTY. Return Warranty registration within 10 days of installing the product. Call us immediately at **903-758-6661**, if you are experiencing problems. When claiming warranty, send unit (FREIGHT PREPAID) with a written description of the problems your system is experiencing. Call **903-758-6661**.

SHIPPING: All shipping charges, custom tariffs, taxes, or other related charges are the sole responsibility of the customer. To avoid damage to unit, and a denial of warranty claim, package the unit properly.

RETURN POLICY: With our prior approval, you may return a unit (unused and not mounted) that you have determined you do not need. If upon receiving tests, we find the unit damaged, we will charge you for normal repair. Send the unit freight prepaid with all its tags and papers within 5 days of receipt. **We charge restocking/test fees on all returned units.**

SHELF LIFE: Return units that are on the shelf for more than 36 months for testing and rectification. Test charge applies.

EXCHANGE UNIT: If want an exchange unit before sending yours in for warranty evaluation, you can charge either a new or exchange unit to your Master Card, Visa, or Discover card, UPS or FEDEX COD. We will expedite ship the exchange unit to you, usually on the same day. After receiving the replacement unit, you may send in the warranty claim. We will test the unit and inform you of our findings and recommendations. Pursuant to the afore-stated warranty terms, you will have a choice of having the unit repaired and returned to you or having your account credited less any applicable shipping or repair charges.

---✂--- Cut along this line-----**KEEP TOP PORTION FOR YOUR RECORDS**-----Return bottom Portion-----✂---

Please fill out other side and return this portion within 10 days of unit's installation.
*To validated your Warranty claim and for continuous airworthiness monitoring, return this portion to Zeftronics.
Not returning this portion of the card will void your warranty claim.*

You may fax this warranty registration to Zeftronics at (903) 236-9766
You may fill out the warranty card at www.Zeftronics.com

Mail To:

Zeftronics
Product Warranty Dept
1622 East Whaley Street
Longview, TX 75601. USA

SYSTEM WIRING: R15V00, R15V00 Rev A

HOW THE SYSTEM WORKS: R15V00, R15V00 Rev A

- If the present aircraft system has no separate OV sensor, use the R15V00 or R15V00 Rev A to replace the present Voltage Regulator. The OV sensor protects the system from damage to radios, battery, etc due to excessive voltage out put from the alternator.

DESCRIPTION

The R15100, R15100 revision A, R15V00, and R151V00 revision A are solid state Alternator Controllers (Voltage Regulators) designed for use with 12Vdc aircraft alternators. These units have some or all of the following features:

- **Voltage Regulation.**
- **OverVoltage (OV) Protection.** (R15V00 & R15V00 Rev A)
- **Field to Ground Short Protection.** (R15V00 & R15V00 Rev A)
- **Field FAULT/FUNCTION Indicator (on unit).**
- **Low/Over Voltage warning light pin.**

VOLTAGE REGULATION

The Voltage Regulator keeps the bus voltage constant by controlling the alternator's field current. The field current is increased or decreased depending on the current demand of the system.

OV PROTECTION. - * R15V00, R15V00 rev A ONLY.

The OverVoltage (OV) protector deactivates (turns off) the Voltage Regulator if the bus voltage exceeds 16V, thus protecting sensitive avionics equipment.

FIELD TO GROUND SHORT PROTECTION*

Should the alternator's field be shorted to ground (the reason most Voltage Regulators fail), the field to ground short protector will deactivate the Voltage Regulator, and switch ON the unit's RED field-to-ground short indicator light, as well as the Low/Over Voltage warning light inside the cockpit. See more on the Fault and Function Indicator on the center of the page.

LOW/HIGH VOLTAGE WARNING LIGHT PIN.

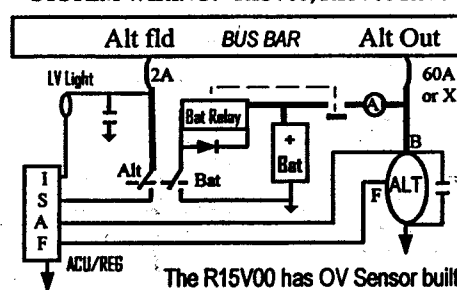
A light connected between Bus and pin I will illuminate (turn ON) if the power to pin S is removed (in all units) or if Over Voltage situation occurs in a system with the R15V00, R15V00 Rev A. This light is OFF during normal voltage regulation.

Special Note

If the present aircraft system has no separate OV sensor, use the R15V00 or R15V00 Rev A to replace the present Voltage Regulator, or use ZEFTRONICS OV sensor P/N V11100 with the present Voltage Regulator.

The normal Alt field resistance, with the controller removed, is 3-5Ω, whether measured at the field or from pin F at the airframe's controller connector.

SYSTEM WIRING: R15V00, R15V00 Rev A



FAULT and FUNCTION INDICATOR (FFI) ON UNIT.

- R15100 rev A & R15V00 rev A.

The unit's Fault and Function Indicator (FFI) is designed to alert the user to conditions of the field circuit breaker, alternator switch, Voltage Regulator, and alternator's field.

PRE-VOLTAGE REGULATOR CONDITION: If either the alternator switch, the field circuit breaker, or the wiring from the Alt Bat to pin A on the controller is open, the FFI will be off.

VOLTAGE REGULATOR CONDITION:

If the battery switch is on and the Alt switch off, a Red FFI light on the unit means that the alternator is off-line.

When both Alt and Batt switches are on, a Green FFI on the unit means that the Regulator is passing current to the field.

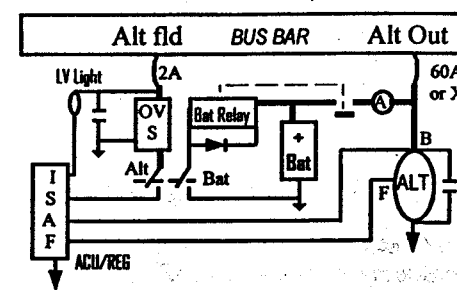
ALTERNATOR FIELD CONDITION

With the engine running and both Alt and Batt switches on, if the FFI is Red the alternator's field is grounded internally or externally.

If the FFI is Green with alternator output at or close to 12V, the wire from the Voltage Regulator to the field or the alternator field is Open.

FEATURES On ALTERNATOR CONTROLLERS. * Features on Rev A of units only	R15100 R15100 Rev A*	R15V00 R15V00 Rev A*
Voltage Regulation, Max Field current 5Adc	14.2V	14.2V
Field to ground short protection	Yes*	Yes*
Fault and Function Indicator (FFI) on unit	Yes*	Yes*
Over-Voltage Protection built-in		Yes, 16V
Low Voltage or Alt Off-Line indicator pin	Yes	Yes
The R15100 & R15100 Rev A replace CESSNA P/N C611001-0201, -0101, -0102; BEECH P/N 33-380010, ELECTRODELTA P/N VR 600; PFT P/N DGR 6; FORD P/N: D4FF-10316-BA, CA.		

SYSTEM WIRING: R15100, R15100 Rev A



HOW THE SYSTEM WORKS

Closing the Bat switch applies the battery voltage to pin A of the alternator controller (voltage regulator). With voltage at pin A (Alt switch off), the LV light comes on, indicating that the alternator is off-line.

Closing the Alt switch applies battery voltage to pin S through the Over Voltage Sensor. The OVS' output controls a relay inside the alternator controller. That relay's normally open (NO) contacts connects pin A and pin I when power is applied to pin S.

With power on pin S, current flows from the alternator's Bat terminal through the controller's voltage regulator to the alternator's field. The regulator keeps the bus voltage constant (around 14V) by controlling the alternator's field current. The field current is increased or decreased depending on the current demand of the system.

Since the whole field current (max about 3.5 Amps) flows from the alternator's Bat terminal to pin A of the controller, abnormal increases in wire, connection, or junction resistances will cause poor voltage regulation and or fluctuating charge meter, panel lights, and bus voltage.

In the R15100 Rev A and R15V00 Rev A, if the field of the alternator shorts to ground, the controller will turn itself off as described under the section field to ground short protection.

OVS. If the bus voltage exceeds about 16V, the Over Voltage Sensor (OVS) will open and thus remove power from pin S. Removing power from pin S will turn off the controller and take the alternator off line.

Refer to the R15V00 wiring (installation) diagram.

The voltage regulation action is the same as described for the R15100.

The R15V00 and R15V00 have a built-in the OV Sensor/Protection. The description of the OVS function is under OV Protection.

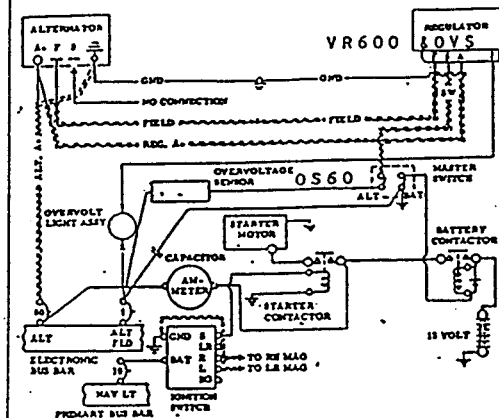
Contact Us

1622 E. Whaley St, Longview, TX 75601 USA

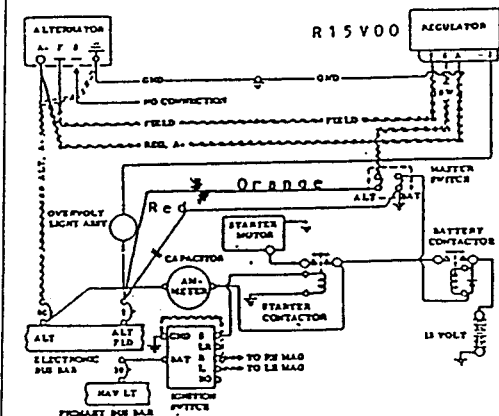
Ph: 903-758-6661. Sales: 903-758-1604. Fax: 903-236-9766

Email: Tech@zeftronics.com Web site: www.zeftronics.com

EXISTING SYSTEM WIRING DIAGRAM



SYSTEM WIRING WITH R15V00



* REMOVE EXISTING OVER VOLTAGE SENSOR, BUTT SPlice ORANGE WIRE TO RED WIRE. TERMINATE & INSULATE THE BLACK (GROUND) WIRE.



ZEFTRONICS
LONGVIEW, TX 75602, USA

THIS DRAWING IS PROPRIETARY AND CONFIDENTIAL WITH ALL RIGHTS RESERVED BY THIS COMPANY. PERMISSION TO USE IT MUST BE GRANTED IN WRITING.

TITLE: INSTALLATION DRAWING

MODEL#	R15V00	REV	A
DWG#	Z00IDD	REV	
DRAWN BY	Douglas Lynn	DATE	4-2-93
APPRD BY	<i>[Signature]</i>	DATE	4-2-93
ORG DRN	Femi Ibitayo	DATE	-89-

REV A	
CHANGE CLASS: MINOR[]	MAJOR []
REV B	
CHANGE CLASS: MINOR[]	MAJOR []
REV C	
CHANGE CLASS: MINOR[]	MAJOR []
REV D	
CHANGE CLASS: MINOR[]	MAJOR []
REV E	
CHANGE CLASS: MINOR[]	MAJOR []

ECN#		DATE	--
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NOTES: Before installing this unit, read the Warranty Policy and the enclosed documents. By installing this unit, you indicated your agreement to abide by the stated warranty terms. SAVE \$\$ CALL US FOR FREE TECH HELP

R15V00

Z00IDD

Rev. A

PRE-INSTALLATION INSTRUCTION:

Remove the present voltage regulator. With an ohmmeter, measure the resistance of the alternator's field.

- A reading of about 4 ohms means field is okay.

- A reading of 0 ohms means field is shorted to ground internally or field wire is shorting to ground externally. Repair short in wiring or alternator.

INSTALLATION INSTRUCTION:

1. Remove Over-Voltage Sensor (OVS) unit (P/N: OS60-0101, C593001-0101, EM235, 0337) by cutting three color code wires: Black, Red, and Orange.
2. Using the supplied butt splice P/N: CTBIF, splice RED wire to the ORANGE wire. Terminate BLACK wire with supplied wire termination P/N: CTIMF.
3. Remove existing Voltage Regulator and install R15V00 ACU in same position using the existing hardware.
4. Secure all wiring and assure their clearance from all moving parts and controls.
5. Complete FAA Form 337.
6. Weight and balance change: None.

PARTS LIST	REFERENCE	DESCRIPTION	QUANTITY
CTBIF		BUTT SPLICE	1
CTIMF		WIRE TERMINATION	1
ACU		ZEFTRONICS' P/N: R15V00	1

POST-INSTALLATION CHECKS WITH A DC VOLTMETER:

With Master (Batt & Alt) switch ON, measure voltage on Pins S, A, and I. It should be about 12 V (battery voltage) and Pin F should be 1-2V less than voltage on Pin A.

If the voltages measured are not as specified, check wiring for breaks, grounding, or oxidation/corrosion.

If voltages measured are as specified, run the engine and measure a Bus voltage of about 14V.

FIELD FAULT/FUNCTION indicator on unit:

COLOR	FAULT/FUNCTION
RED	- Alt switch OFF (pin S=0 V), grounded Field, OV problem.
GREEN	- With engine running, Master switch ON, and battery charging, this means NORMAL field current condition. With engine running, Master switch ON, and battery NOT charging, this means OPEN field or wiring condition.
NO LIGHT	- Pin A to Alt open, BATT relay or switch open.



ZEFTRONICS

ELECTRICAL CHARGING SYSTEMS SOLUTIONS

PRODUCT ELIGIBILITY CATALOG

1622 E. Whaley St., Longview, TX 75601. USA.
Tech Help: 903-758-6661. Fax: 903-236-9766
Tech@zeftronics.com

Dwg No: Z00PEC Rev F1. Date: 07/99. By: FGI

VOLTAGE REGULATORS, ALTERNATOR & GENERATOR CONTROLLERS, ALTERNATOR SYSTEM MONITORS, PARALLELING & OVER-VOLTAGE RELAYS, TEMPERATURE CONTROLLERS, TIMERS, CURRENT & VOLTAGE SENSORS.

ZEFTRONICS Part Number	System Voltage	PART NUMBERS REFERENCE Aircraft & Other Manufacturers	FAA PMA	AIRCRAFT ELIGIBILITY
R15100 R15100 Rev A	VR: 14V	Cessna: C611001-0101, -0102, -0201. Beech: 33-380010. Electrodelta: VR600. FORD: D4FF-10316-BA, D4FF-10316-CA	YES	CESSNA: 150,A,B,C,D,E,F,G,H,I,J,K,L,M; A150,K,L,M; F150F,G,H,J; FA150,K,L,M. 172,B,D,E,F,G,H,I,K,L,M,N,P,Q; F172,D,E,F,G,H,I,K,L,M,N; FR172,E; R172E, P172, R172K. 177,A,B,R,G,F172RG. 180,F,G,H,J,K. 185,C,D,E; A185E, F. 182,E,G,H,I,K,L, 182M,N,P,Q; F182P,Q; T182. 188,A188,T188. 205A. 206; U206,A,B,C,D,E,F,G; P206,A,B,C,D,E; T206; TP206A,B,C,D,E; TU206,A,B,C,D,E,F,G. 207,A; T207,A. 210,B,C,D,E,F,G,H,I,J,K,L; 210,F,G,H,J,K. Gulfstream (Grumman): AA-5,A,B. Beech: 35A33, 35B33, 35C33, E33, E33B, F33, H35, K35, M35, N35, P35.
R15V00 R15V00 Rev A	VR: 14V OV: 16V	R15V00 = R15100 with OV Protection R15V00 Rev A is self protected R15100 Rev A is self protected		APPLICABLE FOR ALL CESSNA AIRCRAFT MODELS LISTED FOR R15100.
V11100	OV: 16V	Cessna: C593001-0101. Other No: 0800002. OS60. 0337. EM235	YES	
R1510N	VR: 14V	Prestolite: VSF7201,2,3,4, VSF7202S,3A,3S. Electrodelta: VSF7203A TCM: 649684-1 Piper: 550-383.	YES	Citabria: 7GCAA,7ECA,7GCBC,7KCAB,8GCBC. Lake: LA-4,A,P. Grumman: AA-1,A. Commander: 112,B,TC,TCA. Varga: 2150A. Beech: 19A,B19,M19A,23,23A,A23A,A23-19, A23-24,B23,C23, 24, 24R,B24R,C24R. Piper: 23,-160,235,250; PA24-260, PA30,39; Cessna: 175,185,188. Maule: M-5-180C,235C; M-6-180,235; M-7-235; MX-7-180,235. Schweizer: 269C. Bellanca: 14-19,-19-2,19-3,19-3A; 17-30,31,31TC; 17-30A,31A,31ATC.
R15V0N	14V/16V	R15V0N = R1510N + OV Relay + L/OV Pin		
V1510A	OV: 16V	Piper: 450-397, 484-183, 550-380, 450-393 Beech: 138-1. Wico: X-17621. Lamar: B00289-2, B00339-1. Electrodelta: OS75-14. Delco-Remy: 1115831. Prestolite: FOC-4002B.	YES	Citabria: 7GCAA,7ECA,7GCBC,7KCAB,8GCBC,8KCAB. Beech: 19A,B19,M19A,23,23A,A23A,A23-19, A23-24,B23, 23,A24, 24R,B24R,C24R, S35,V35,V35TC. Lake: LA-4,A,P. Grumman: AA-1,A. Piper: 23,-160,235,250; PA24-260, 400; PA30,39. Cessna: 175,185,188. Maule: M-5-180C,235C; M-6-180,235; M-7-235; MX-7-180, 235. Varga: 2150A. Bellanca: 14-19,-19-2,19-3,19-3A; 17-30, 31,31TC; 17-30A,31A,31ATC. Schweizer: 269C. Piper: PA28-140,150,151,160,161,180,235,236,201T. PA28R-180,200,201,201T. PA28S-160,180. PA28RT-201,201T. PA32-260,300. PA32S-300. PA32RT-300,300T. PA32R-301,301T. PA32-301,310T. PA34-200. PA38-112. Commander: 112,B,TC,TCA.
R1510L	VR: 14V	Piper: 450-392, 484-121, 66804-03, 756-055 Beech: 169-380063 Other mfr P/N: X16300B, X17990. 9000590. B00267-1,2, B00331-1,2. 1816110. VR200, A. FVR4004,4224; RBM: 87-87102-21	YES	Bellanca: 7GCAA,7ECA,7GCBC,7KCAB,8KCAB. Commander: 112,B,TC,TCA. Beech: 19, 19A,B19,M19A,23,23A,A23A,A23-19, A23-24,B23,C23,A24,A24R, B24R, C24R, S35,V35,V35TC. Piper: PA24-260,400. PA28-140,150,151,160,161,180,235,236,201T. PA28R-180,200,201,201T. PA28S-160,180. PA28RT-201,201T. PA32-260,300. PA32S-300. PA32RT-300,300T. PA32R-301,301T. PA32-301,310T. PA38-112. Grumman: AA-1B, AA-1C.
R15V0L	VR: 14V OV: 16V	Piper: 557-337. Lamar: B00371-1,-8,-14 Electrodelta: VR371	YES	Bellanca: 8GCBC,8KCAB. Maule: M-5-180C,235C; M-6-180,235; M-7-235; MT-7-235; MT-8-235; MX-7-160, 180,235; MXT-7-160,180. Piper: PA24-260,400; PA28-140,150,151,160,161, 180,235, 236, 201T. PA28R-180,200,201,201T; PA28S-160,180. PA28RT-201,201T. PA32-260,300. PA32S-300. PA32RT-300,300T. PA32R-301,301T. PA32-301,310T. PA38-112.
R25101 R25101 Rev A	VR: 27.7 VR: 27.7	Cessna: C611004-0101,C611002-0102,-0105 Ford: C8FF/C6FF-10316-A, TCM: 636147 Electrodelta: VR500-0101.	YES	Cessna: 152,A152,F152,FA152. 172,H,N; F172; FR172K; R172,K; 177,A,B,R,G; 180,K; 182,P,Q. F182,P,Q; R182, FR182; T182,TR182. 185,A185F. 188, A188,A,B; T188,C; 206, P206,TU206A, U206,G; 207,A; T207,A; 210,K,L,M,N; P210N; P210R; T210,K,L,M,N; 337,A,B,C,D,E,F,G,H, F337,B,C,D,E,F,G,H, P337H; T337B,C,D,E,F,G,H,H-SP; FT337B,F,GP,HP. M337B.
R25102 Rev A R25102	VR: 28.8 VR: 28.8	Cessna: C611004-0102 Electrodelta: VR500-0102.		Applicable for all CESSNA models listed for R25101 except 337A (USAF 02B), M337B (USAF 02A).
R25S01 R25S02	VR: 27.7 OV: 32V	C611004-0101 & OV Sensor C611004-0102 & OV Sensor	YES YES	Cessna: 210 Cessna: 210
R15200 R25200	14V/16V 28V/32V	Aerofab: 2-7750-49. VR417-2 Aerofab: 3-7780-51.	YES YES	Lake: LA-4, LA-4-200; Model 250 S/N: 1-35 Lake: Model 250 S/N: 36 & UP
EQ1500	EQ: 12V	Delco-Remy 1116887; PAC: 450-386	YES	Piper: PA23-150,-160,-238,250; PA30; PA39
EQ2500	EQ: 24V	DELCO-REMY 1116902	YES	Cessna: 310,A,B,C,D,E,F,G,H,I,J,I-K; E310H,I,J. 320,A,B,C,D,E,320-1. Beech: 95,B95,B95A,D95A,E95;95-55,-A55,-B55,-B55A,58,A. Twin Commander: 500,-A,B.
R25400	VR: 28V OV: 32V	Cessna: C611005-0103,-0101,-0102 Electrodelta: VR515F,G. Pft: DGR3	YES	Cessna: 152,A152,F152,FA152; 172,N,P,R,G; FR172K; R172,K; F172N,P; 180,K; 182,Q,R; R182, FR182,TR182, F182R,T182R; 185,A185F; 206,U206; 207,T207; 210,N,R; P210N,R; T210N,R.
V25101	OV: 32V	Cessna: C593003-0101,-0102 Other P/N: OS100-0101. EM233	YES	Cessna: 152,A152,F152,FA152; 172,N; F172; R172K; 177,A,B,R,G; 180,K; 182,Q; R182; FR182; 185,A185F; 188,A188B,T188C; 206,U206; 207,T207; 210,K,L,M,N; P210,N; T210,K,L,M,N.
R2510N R25V0N V2510A	VR: 28V 28V/32V 32V	Prestolite: VSF7403A,4,3S. PAC: 550-381 R2510N with OV Protection & LV/OV warning PAC: 484182. Others: FOC4003A. OS75-28	YES	Piper: PA31,31-300,31-310,31-325,31-350. PA36-285,-300,-375. PA60-600,601,601P,602P,700P Cessna: 310,310P,3100, 320. 401A,4016,402A,4020,414,421,421A,421B. Schweitzer: 269C. Twin Commander: 500S. Beech: B55, 58, F33A, F33C, A36, A36TC.
R251DR	27.7V	Delco-Remy, Beech, Piper: 9000591	YES	Cessna: 310N, 310L, 320D, 320E; Beech: B95A, D95A,95-B55,-C55; Piper: PA-31,-300,-310,-325
R15300	VR: 14V OV: 16V	Mooney: 800270-505, 880016-503 Electrodelta: VR415F. Pft: DGR1-1	YES	Mooney: M20C, M20D, M20E, M20F, M20G, M20J, M20K
R1530B	VR: 14V OV: 16V	Mooney: 880016-501 Other P/N: 20082. VR414 Beech: 35-380093-1,2,3. Other P/N: 20053, 20065, 20137, 20437 B00403-1. EM2073-1,2.	YES	Mooney: M20C,M20D,M20E,M20F Beech: H35, J35, K35, M35, N35, P35, S35, V35. V35TC,V35A,V35A-TC,V35B, 36, A36 Beech: 33, A33, B33, C33, E33, C33A, E33A, E33C, F33A, F33C.