



**R1224 REGULATOR  
INSTALLATION  
INSTRUCTIONS  
P/N 12-1001**

## RECORD OF REVISIONS

Revision	Date	Page	Description
G	09/08/14	1	First release of Drawing No. 12-1001 into Hartzell Engine Technologies Design Data.
H	09/08/14	1	Updated Master Drawing No. 12-1001 Title Block from Plane-Power, LTD to Harzell Engine Technologies, LLC
J	11/18/14	4	Changed Instruction for Continued Airworthiness to Maintenance Instructions.
K	02/01/17	2	Added website reference to Master Drawing No. 12-1001
L	04/30/18	All	Revised all pages to conform to iSpec 2200 Standards.
		i	Added HET standard Cover Page.
		ii	Added Record of Revisions
		iii	Added Table of Contents
		2-1 thru 2-7	Removed redundant (Table 1) information from Installation Guides A thru M.



## TABLE OF CONTENTS

Record of Revisions .....	ii
Table 1 - Supplement Information Reference .....	1-1
Figure 1 - Drawing No. 12-1001 Rev. K.....	1-4
Section 1 - Installation Instructions .....	1-5
Single Engine .....	1-5
Multi-Engine.....	1-6
Maintenance Instructions .....	1-6
Section 2 - Installation Guides .....	2-1
Guide A .....	2-1
Guide B .....	2-1
Guide C .....	2-2
Guide D .....	2-2
Guide E .....	2-3
Guide F.....	2-3
Guide G.....	2-4
Guide H.....	2-4
Guide I.....	2-5
Guide J.....	2-5
Guide K.....	2-6
Guide L.....	2-6
Guide M.....	2-7

# R1224 Regulator Installation Instructions



Some aircraft models were manufactured with different regulators and different wiring arrangements, plugs, etc. Some installations can be accomplished using the basic R1224 Installation Instructions in (12-1001 pages 2, & 3). Supplemental information for individual regulators is provided where necessary. To account for model differences follow the steps below to ensure proper replacement:

1. Find your aircraft model and OEM P/N in the Installation Guide.
2. Follow basic Installation Instructions (12-1001) and the supplemental information when listed.

**TABLE 1 - SUPPLEMENT INFORMATION REFERENCE**

Note: All twin engines must replace both regulators	OEM Part Number	PP Part#	Supplement Information
<b>Aircraft Parts and Development Corp</b>			
A	InterAV 625-61623	R1224	Guide M
<b>Alexandria Aircraft, LLC</b>			
14-19	InteraV 625-61623	R1224	Guide M
<b>American Champion</b>			
7ECA, 7GCAA, 7GCBC, 7KCAB, 8GCBC, 8KCAB	FVR-4224, Lamar B-00371-14, VR371	R1224	Guide B
<b>Augustair, Inc</b>			
2150A	InterAv 625-61623	R1224	Guide M
<b>Beechcraft</b>			
V35B, V35B-TC, 36, A36, A36TC, B36TC	Beechcraft P/N 60-389017-3, 36-380056-5, 36-380096-1 **	R1224B	Guide E
23, H35, J35, K35, M35, N35, P35, 35-33, 35-A33, 35-B33, 35-C33, 35, A35, B35, C35, D35, E35, F35, G35, 35R	InterAv 625-61623	R1224	Guide M
<b>Camair Aircraft Corporation – Fred Garcia</b>			
480	InterAv 625-61623	R1224	Guide M
<b>Cessna Aircraft Company</b>			
182, 182A, 182B, 182C, 182D, 182E, 182F, 182G, 210, 210A, 210B, 210-5 (205), 185, 185A, 185B, 185C, 180, 180A, 180B, 180C, 180D, 180E, 180F, 180G, 206, P206	InterAv 625-61623	R1224	Guide M
152, A152, 172I, 172K, 172L, 172M, 172N, 172P, R172, 172RG, R172K, FR172, 177, 177A, 177B, 177RG, 180H, 180J, 180K, 182G, 182H, 182J, 182K, 182L, 182M, 182N, 182P, 182Q, 182R, R182, T182, TR182, 185D, 185E, 188, 188A, 188B, A188, A188A, A188B, T188C, P206A, P206B, P206C, P206D, P206E, TP206A, TP206B, TP206C, TP206D, TP206E, U206, U206A, U206B, U206C, U206D, U206E, U206F, U206G, P206A, P206B, P206C, P206D, P206E, TU206A, TU206B, TU206C, TU206D, TU206E, TU206F, TU206G, 207, T207, 210B, 210C, 210D, 210E, 210F, 210G, 210H, 210K, 210L, 210M, 210N, P210N, T210F, T210G, T210H, T210J, T210K, T210L, T210M, 182Q, 182R, T182, R182, TR182, 188, 188A, 188B, A188, A188A, A188B	Cessna 0750216-1, 611001-0101, C611001-0102, C611001-0201,	R1224	Basic
	(Two Wire) Cessna C611004, 611005-0101, C611005-0102, C611005-0103	R1224	Guide B
	(Four Wire) Cessna C611501-0102, 611504-0103 **	R1224	Guide C
	C611002-0102, 611002-0105, 611004-0101, C611004-0102,	R1224	Guide L

\*\* Requires purchase of adapter plate P/N: 12-1021



# R1224 Regulator Installation Instructions

**Table 1 - Supplement Information Reference (cont'd)**

Note: All twin engines must replace both regulators	OEM Part Number	PP Part#	Supplement Information
<b>Cessna Aircraft Company (cont'd)</b>			
337F, 337G, 337H, FT337P, T337F, T337G, T337H, F337H, F337G, P337H	C611002-0102, C611002-0105	R1224	Guide B
310R, T310R, 335, 340, 340A, 402C, 404, 414, 421, 421A, 421B, 421C	9910126-2, 9910126-3	R1224B	Guide H
<b>Commander</b>			
114, 114A, 114B, 114TC	Rockwell B-00331-1	R1224	Guide A
114B, 114TC	(4 Wire Regulators) Electrodelta VR515G **	R1224	Guide C
<b>Helio Aircraft LLC</b>			
H-250, 500	InterAv 625-61623	R1224	Guide M
<b>KAWAD Company</b>			
Super-V	Interav 625-61623	R1224	Guide M
<b>Lockheed Aircraft</b>			
402-2	InterAv 625-61623	R1224	Guide M
<b>Lake</b>			
LA4-200, Serial 500 and on, Lake Model 250	Electrodelta VSF-7202, VSF-7204	R1224	Guide G
LA-4, Colonial C1 & C2	InterAv 625-61623	R1224	Guide M
<b>LAVIA</b>			
PA-25, PA-25-235, PA25-260, PA-25, PA-25-235, PA-28-260	InterAv 625-61623	R1224	Guide M
<b>Mooney</b>			
M20, M20A, M20B, M20C, M20D, M20E, M20F, M20G	InterAv 625-61623	R1224	Guide M
<b>Piper</b>			
PA-16, PA-16S, PA-18, PA-18S, PA-18 "105" (Special), PA-18S-105 Special, PA-18A, PA-18 "125" (Army L-21A), PA-18S "125", PA-18AS "125", PA-18-135, PA-18A"135", PA-18S-135, PA-18AS "135", PA-18-150, PA-18A-150, PA-18S-150, PA-18AS "150", PA-19, PA-19S, PA-20, PA-20S, PA-20 "115", PA-20 "135", PA-22, PA-22-108, PA-22-135, PA-22S-135, PA-22-150, PA-22S-150, PA-22-60, PA-22S-160, PA-28-140, PA-28-150, PA-28-160, PA-28-180, PA-28-235, PA-28S-160, PA-28S-180, PA-28R-180, PA-28R-200, PA-12, PA-12S, PA-18A (Restricted), PA-8A-135Restricted, PA-18A "150" Restricted PA-30	InterAv 625-61623	R1224	Guide M
PA-28-140 (Cherokee Cruiser), PA-28-150, PA-28-160, A28-180, PA-28R-180, PA-28R-200, PA-28-151, PA-28-161, PA-28-181, PA-28-201T, PA-28-R201, PA-8R-201T, PA-28-236, PA32-300, PA-32-R300, PA-32 RT-300, PA32-301, PA-32-301T	Piper 765-055, 68804-03 (-04 & -05)	R1224	Guide A
PA-34-200	Piper 584 340, VR710 **	R1224	Guide F

**\*\* Requires purchase of adapter plate P/N: 12-1021**

# R1224 Regulator Installation Instructions



**Table 1 - Supplement Information Reference (cont'd)**

Note: All twin engines must replace both regulators	OEM Part Number	PP Part#	Supplement Information
<b>Piper (cont'd)</b>			
PA-31, PA-31-300, PA-31-325, PA-31-350, PA-23, PA-23, PA-23-160, PA-23-235, PA-23-250, PA-E23-250, PA-34-200, PA34-200T, PA-34-220T, PA-44-180, PA44-180T	Piper 550 390, 550 393, 84199-006, 84199-007	R1224B	Guide H
PA-28-140 (Cherokee Cruiser), PA-28-150, PA-28-160, PA28-180, PA-28-235	756-055	R1224	Basic
PA-32-300, PA-32RT-300, PA-32-301, PA-38-301T, PA-34-200	Piper 765-055, 68804-03 (-04 & -05)	R1224	Guide A
PA-23, PA-23-160, PA-23-235, PA23-250, PA-E23-250, PA-30	InterAv 625-61623	R1224	Guide M
<b>Interceptor</b>			
200, 200A, 200B, 200C, 200D	InterAv 625-61623	R1224	Guide M
<b>Revo, Incorporated</b>			
Colonial C1, Colonial C2, Lake LA-4	InterAv 625-61623	R1224	Guide M
<b>NAVION</b>			
Navion D, Navion E, Navion F, Navion G	InterAv 625-61623	R1224	Guide M
<b>SOCATA Group Aerospatiale</b>			
GA-7	Lamar Paralleling Regulators (Twin Engine) B-00288	R1224B	Guide H
<b>True Flight Holdings, LLC</b>			
AA-5, AA-5A, AA-5B	C6FF-10316BA, D4FF-10316-BA	R1224	Guide D
AA-1B	Prestolite FVR-4004, LW- 11357, Wico X17990, X16300B	R1224	Guide A
AA-1C	Wico X17990	R1224	Guide A
AG-5B		R1224	Guide J
<b>Vulcanair, S.p.A</b>			
P68C, P68C-TC, P68 "Observer" P68TC "Observer", P68 "Observer 2"	Vulcanair NOR7.375-3	R1224B	Guide H

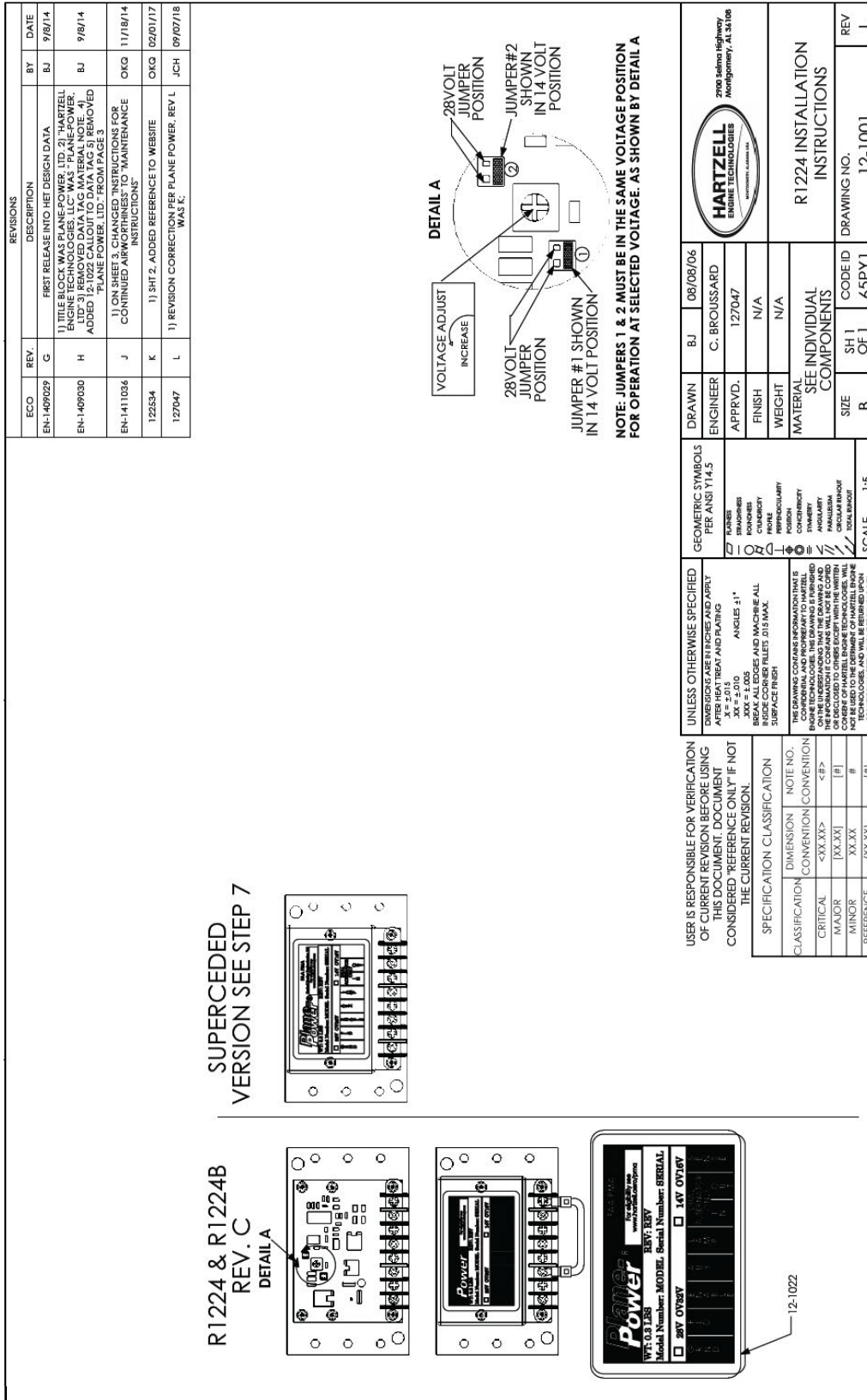


Figure 1 - Drawing No. 12-1001 Rev. L

# R1224 Regulator Installation Instructions



## SECTION 1 - INSTALLATION INSTRUCTIONS

**WARNING:** TO PREVENT DAMAGE TO AIRCRAFT OR UNIT, READ AND UNDERSTAND ALL INSTRUCTIONS PRIOR TO APPLYING POWER TO UNIT.

Current applications and specific regulator conversion/installation guides are available online at [www.planepower.aero](http://www.planepower.aero) or [www.hartzell.aero](http://www.hartzell.aero)

**NOTE:** Use appropriately sized M7928/5 splices, M7981/1, ring lugs, and MIL-W-22759/16 wire.

### Single Engine

1. Remove existing regulator and solid-state over-voltage module (if installed).
2. Install R1224/R1224B Regulator in same location as regulator being replaced. If mounting holes do not align add mounting holes as required using acceptable methods, techniques and practices.
3. Connect GRND terminal to aircraft ground. It is critical that the regulator ground is connected to airframe ground. Without this ground, the regulator and its internal overvoltage protection cannot function.
4. Connect the FLD terminal to the FIELD (brush) terminal of the alternator.
5. Connect the ENABLE terminal to the regulator/field power source (the wire from the cockpit ALTERNATOR FIELD switch which is fed from a 7.5 max amp breaker). Note: In order for the over voltage protection circuit to operate the enable terminal must be connected to an operational circuit breaker. (In the event of an over-voltage condition the over-voltage protection circuit will cause the circuit breaker to trip removing all power from the regulating circuit.) Do not install R1224/R1224B in any aircraft that has an automatic resetting circuit breaker in the enable line.
6. If the regulator being replaced has a connection to the AUX terminal on the alternator, connect this wire to the AUX terminal. If not, install a jumper wire between AUX and ENABLE. Note: No connection to AUX terminal is necessary if an alternator out lamp is not installed.

**NOTE:** For superceded versions of the R1224/R1224B (Rev B & previous) indicated by silver label, step 7 does not apply and no sense terminal exists. Wiring of a 'Sense' terminal on these regulators will result in damage to the regulator.

7. If an ALTERNATOR out lamp is installed in the aircraft and is to be actuated by the R1224/R1224B regulator Connect the negative wire of the lamp to the LAMP terminal of the R1224/R1224B regulator.
8. Remove the regulator cover and ensure that the internal jumper #1 and jumper #2 are set to the proper voltage for the aircraft system. Refer to Figure 1.
9. With the engine running and the alternator switch turned on, using a small screwdriver, set the regulator's voltage adjustment so that the buss voltage, as measured at the ENABLE terminal is the desired value. Refer to aircraft maintenance manual or battery manufacturer's data for proper voltage setting.
10. Reinstall the R1224/R1224B cover.



### Multi-Engine

1. For both regulators, perform steps A thru J of the Single Engine procedure above.
2. Choose one regulator as the Master. It can be either. Connect the OUT terminal of the Master Regulator to the IN terminal of the other Regulator.

### Maintenance Instructions

1. Every 100 hours time-in-service or at the annual aircraft inspection, whichever occurs first, check voltage level output. If the voltage level does not meet the Aircraft Manufacturer's requirement, adjust the voltage as per section 1-1 step I.

Inspect Regulator and wiring for secure electrical connectinos and physical connection to the air frame.

To maintain inherent protection from HIRF and lightning, as well as over voltage protection of the aircraft electrical system, ensure the cround connection between terminal 1 (GRND) and air frame ground is less than 0.1 OHM.

# R1224 Regulator Installation Instructions



## SECTION 2 - INSTALLATION GUIDES

### Guide A

These regulators were connected via 3 color-coded wires. Cut the wires near the regulator and crimp appropriate ring lugs onto the wires.

1. Remove old regulator.
2. Ensure that the R1224 jumpers are set properly for the aircraft voltage. **Verify aircraft electrical system voltage.** See Plane-Power R1224 Installation Drawing 12-1001.
3. Install R1224 Regulator.
4. Connect the Black wire to R1224 #1 (GND).
5. Connect the Yellow (Field) wire to R1224 #2 (Field).
6. Connect the Red (Power) wire to R1224 #3(Enable).
7. Jumper R1224 #3 (Enable) to #4 (Aux).
8. For R1224 Rev C and later (see drawing): Remove jumper between #8 (Sense) and #3 (Enable). Connect the A (Sense) wire to R1224 #8 (Sense).

If the aircraft was equipped with an overvoltage relay, it may be removed, as the R1224 has internal overvoltage protection. Splice together the power input and output wires that went to the overvoltage regulator.

Adjust voltage as necessary with engine running and alternator enabled.

### Guide B

These regulators were connected via 3 color-coded wires. Cut the wires near the regulator and crimp appropriate ring lugs onto the wires.

1. Remove old regulator.
2. Ensure that the R1224 jumpers are set properly for the aircraft voltage. **Verify aircraft electrical system voltage.** See Plane-Power R1224 Installation Drawing 12-1001.
3. Install R1224 Regulator.
4. Connect the Black wire to R1224 #1 (GND).
5. Connect the Blue (Field) wire to R1224 #2 (Field).
6. Connect the Red (Power) wire to R1224 #3 (Enable).
7. Jumper R1224 #3 (Enable) to #4 (Aux).
8. For R1224 Rev C and later: Remove jumper between #8 (Sense) and #3 (Enable). Connect the A (Sense) wire to R1224 #8 (Sense).

If the aircraft was equipped with an overvoltage relay, it may be removed, as the R1224 has internal overvoltage protection. Splice together the power input and output wires that went to the overvoltage regulator.

Adjust voltage as necessary with engine running and alternator enabled.

### Guide C

Use R1224 and 12-1021 Adaptor Plate.

These regulators were connected via 5 color-coded wires. Cut the wires near the regulator and crimp the provided ring lugs onto the wires.

1. Remove old regulator.
2. Ensure that the R1224 jumpers are set properly for the aircraft voltage. **Verify aircraft electrical system voltage.** See Plane-Power R1224 Installation Drawing 12-1001.
3. Install R1224 using 12-1021 Adaptor Plate.
4. Connect the Black wire to R1224 #1 (GND).
5. Connect the Blue (Field) wire to R1224 #2 (FIELD).
6. Connect the Red (Power) wire to R1224 #3 (ENABLE).
7. Connect the Yellow (Lamp) wire to R1224 #5 (LAMP).
8. Jumper R1224 #3 (ENABLE) to #4 (AUX).
9. For R1224 Rev B and earlier: Insulate the end of the Orange (Sense) wire and stow it safely.  
For R1224 Rev C and later: Remove jumper between #8 (SENSE) and #3 (ENABLE). Connect the Orange (Sense) wire to R1224 #8 (SENSE)
10. Insulate the end of the White (OV Lamp) wire and stow it safely. (The R1224 indicates Over Voltage and Low Voltage on a common lamp connected to R1224 #5.)
11. Adjust voltage as necessary with engine running and alternator enabled.

### Guide D

The Ford regulators were connected via a flat plastic plug. Label the wires and cut the plug off. **Marking the wires is important for reconnection.** Crimp the appropriate ring lugs onto the wires.

1. Remove old regulator.
2. Ensure that the R1224 jumpers are set properly for the aircraft voltage. Grumman AA-5, AA-5A and AA-5B are 14V. Single-engine Cessna aircraft were 14V or 28V – **Verify aircraft electrical system voltage.** See Plane-Power R1224 Installation Drawing 12-1001
3. Install R1224. The large holes in the base match the mounting holes used to mount the Ford regulator. Some mounting locations may have protrusions under the regulator, as the Ford units had a hollow area underneath. If this is the case, mount the R1224 on standoffs or use the 12-1021 Adaptor Plate. The 12-1021 can be purchased from Plane-Power
4. Connect the G (Ground) wire to R1224 #1 (GRND).
5. Connect the Blue (Field) wire to R1224 #2 (Field).
6. Connect the S (Supply) wire to R1224 #3 (ENABLE).
7. Jumper R1224 #3 (Enable) to #4 (AUX).
8. For R1224 Rev B and earlier: Insulate the end of the A (Sense) wire and stow it safely.  
For R1224 Rev C and later: Remove jumper between #8 (SENSE) and #3 (ENABLE). Connect the Orange (Sense) wire to R1224 #8 (SENSE)
9. Adjust voltage as necessary with engine running and alternator enabled.

# R1224 Regulator Installation Instructions

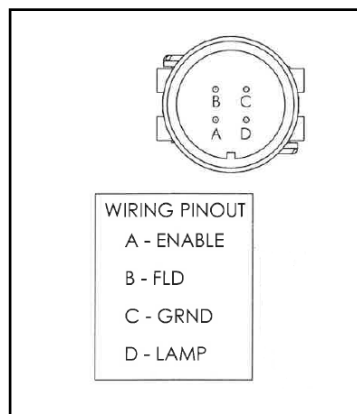


## Guide E

There is a round connector on these Beechcraft regulators. A round plug on a cable is plugged into the connector on the regulator.

Use R1224B with the Plane-Power 12-1016 Installation Aid (round connector on a short cable. Purchase the 12-1016 connector from Plane-Power).

1. Remove old regulator.
2. Ensure that the R1224B jumpers are set properly for the aircraft voltage. **Verify aircraft electrical system voltage.** See Plane-Power R1224 Installation Drawing 12-1001.
3. Jumper R1224B #3 (Enable) to #4 (Aux).
4. For R1224B Rev. C and later: Ensure that there is a jumper between #8 (SENSE) and #3 (ENABLE).
5. Unplug the cable from the regulator. Remove old regulator
6. Install R1224 in the location from which the Beechcraft regulator was removed.
7. Connect the cable to the round connector on the 12-1016 Installation Aid.
8. Adjust voltage as necessary with engine running and alternator enabled.



## Guide F

Use two R1224 regulators set for 14V. Use the 12-1021 adaptor plate for mounting (which can be purchased from Plane-Power). **Both regulators must be replaced.**

1. Ensure that the R1224 jumpers are set properly for the aircraft voltage. **Verify aircraft electrical system voltage.** See Plane-Power R1224 Installation Drawing 12-1001.
2. Cut the wires close to the regulator case of the Electrodelta or Wico regulators and crimp one appropriate ring lug with the R1224 on each Red and Blue (or Yellow) wire. Remove remaining wires or insulate the ends.
3. Remove the old regulators and the associated Over Voltage Relays (The R1224 has internal over voltage control so the original units are not needed). Connect the Blue (Field) wire to R1224 #2 (Field).
4. Install R1224 regulators with 12-1021 adaptor plates in the location from which the original regulators were removed. Ground is obtained from the mounting so be sure that the regulators are mounted securely. It is advisable to connect a wire from #1 (Ground) of each R1224 to aircraft ground.
5. Connect each Blue (or Yellow) wire to #2 (Field) of the corresponding R1224.
6. Connect each Red wire to #3 (Enable) of the corresponding R1224.
7. Ensure that there is a jumper between #3 (Enable) and #4 (Aux) of each R1224B. For R1224B Rev C and later: Ensure there is a jumper between #3 (Enable) and #8 (Sense) of each R1224B.
8. Connect a wire from the right alternator's R1224 #6 (In) to the left alternator's R1224 #7 (Out). This designates the right R1224 as Slave and the left R1224 as Master for load-sharing operation.

### Lamp Modification

The PA-34-200 is equipped with a press-to-test over voltage Lamp for each alternator/regulator.

### Guide G

These regulators were connected via screw terminals. Label the wires and remove from regulator terminals. Labeling the wires is important for reconnection. Cut the ring lugs off of the wires crimp the provided (smaller) ring lugs onto the wires.

1. Remove old regulator.
2. Ensure that the R1224 jumpers are set for 14V. See Plane-Power R1224 Installation Drawing 12-1001.
3. Install R1224 by drilling new mount holes in aircraft or into 12-1021 Adaptor Plate to match the original regulator mount holes in the aircraft.
4. Connect the wire marked **I** to R1224 #3 (ENABLE).
5. Connect the wire marked **E** to R1224 #2 (Field).
6. Jumper R1224 #3 (Enable) to #4 (Aux).
7. Ensure that there is a jumper between R1224 #8 (Sense) and #3 (Enable).
8. It is advisable to connect a wire between the aircraft ground (one of the regulator mounting bolts is a good point) and R1224 #1 (GRND).

Adjust voltage as necessary with engine running and alternator enabled.

### Guide H

Use 2 R1224B as the mounting holes match the Lamar regulators. **Both regulators must be replaced.**

1. Ensure that the R1224B internal jumpers are set properly for the aircraft voltage. See Plane-Power R1224 Installation Drawing 12-1001.
2. Mark the wires on the Lamar regulators and disconnect them. **Wire Identification is important for reconnection.**
3. Remove the old regulators. If the aircraft as equipped with Lamar Over voltage Relays you can remove them if you desire. (The R1224B has internal over voltage control so the Lamar units are not needed).
4. Install R1224B regulators in the location from which the Lamar regulators were removed.
5. If the ring lugs on the wires are too large, cut them off and crimp on the provided lugs.
6. Connect each **G** wire to #1 (Ground) of the corresponding R1224B.
7. Connect each **F** wire to #2 (Field) of the corresponding R1224B.
8. Connect each **S** or **B** wire to #3 (Enable) of the corresponding R1224B.
9. Ensure that there is a jumper between #3 (Enable) and #4 (Aux) of each R1224B. For R1224B Rev C and later: Ensure there is a jumper between #3 (Enable) and #8 (Sense) of each R1224B.
10. Connect the paralleling wire of the right alternator regulator to #6 (IN), there by designating this regulator as the SLAVE for load-sharing operation.
11. Connect the paralleling wire of the left alternator regulator to #7 (OUT), thereby designating this regulator as the MASTER for load-sharing operation.

#### Voltage Adjustment:

Remove the regulator covers. With the engines running, enable only the left (MASTER) alternator and regulator. Make sure that the right regulator & alternator are disabled. Adjust the MASTER R1224B for the desired voltage.

Disable the left (MASTER) alternator and regulator and enable the right (SLAVE) R1224B. Make sure that the left regulator & alternator are isabled. Adjust the SLAVE R1224B for the desired voltage.

Replace the regulator covers.

# R1224 Regulator Installation Instructions



## Guide I

### Prepare the replacement regulator:

1. Use the R1224 regulator and a 12-1021 mounting plate (which can be purchased from Plane-Power). Ensure regulator jumpers are set to match aircraft battery voltage (12V or 24V).
2. Ensure that the factory installed jumper between SENSE and ENABLE is in place.

### Prepare the installation:

1. Cut the wires at the regulator body and new ring lugs provided with the R1224 regulator.
2. Unplug the wire connector from the aircraft plug.
3. Connect the ring lugs to the R1224 regulator as shown below:
  - Red to ENABLE
  - Blue to Field
  - White to AUX
  - Yellow to LAMP
4. Mount the R1224 regulator on the 12-1021 plate using appropriate AN or MS hardware.

### Replace the regulator:

1. Remove the original regulator from the aircraft.
2. Install the R1224 regulator on the 10-1021 plate in the same location using existing hardware.
3. Plug the harness from the R1224 the aircraft plug.
4. Remove the alternator lamp lead from the ALTERNATOR switch on the aircraft and connect it to the aircraft positive BUS via a 1A in-line fuse & holder.

The installation is complete after testing.

## Guide J

The AG-5B regulators were connected via a 4-pin plastic plug and a ground wire with a large ring-lug. Cut the wires near the regulator and crimp the provided ring lugs into the wires. Remove old regulator.

1. Ensure that the R1224 jumpers are set for 28V. See Plane-Power R1224 Installation Drawing 12-1001.
2. Install R1224 using the 12-1021 adaptor plate. Put the large ring lug on the black wire under one of the mounting bolts.
3. Connect the Black (Ground) wire to R1224 #1 (GND).
4. Connect the Blue (Field) wire to R1224 #2 (Field).
5. Connect the Red (Enable) wire to R1224 #3 (Enable).
6. Connect the Yellow (Lamp) wire to R1224 #5 (Lamp)
7. Jumper R1224 #3 (Enable) to R1224 #4 (Aux).
8. For R1224 Rev C and later: Ensure that there is a jumper between R1224 #3 (Enable) and #6 (Sense).

### Lamp Modification:

1. Remove wire EL36A20 from the output side of the Alternator Control circuit breaker and connect it to the input side of the circuit breaker through a 1A fuse.
2. Adjust voltage as necessary with engine running and alternator enabled.

The installation is complete after testing.

### Guide K

#### Prepare the replacement regulators:

1. Use two R1224B regulators. Ensure regulator jumpers are set to match aircraft battery voltage (12V or 24V).
2. Ensure that the factory jumper between SENSE and ENABLE is in place on both R1224B regulators.
3. Add a jumper between SENSE and AUX on both R1224B regulators.

#### Prepare the installation:

1. Tag the wires to both LAMAR regulators: BUS, FIELD, GND, PAR.
2. Cut the terminals off the end of these wires and install new ring lugs provided with the R1224B regulators.

#### Replace the regulators:

1. Remove the Lamar regulators from the aircraft.
2. Install the R1224B regulators in the same location using existing hardware.
3. Connect the wires removed from the LAMAR regulators to the corresponding replacement R1224B:
  - GND to GRND
  - BUS to ENABLE
  - FIELD to FLD
4. Choose one R1224B as "MASTER" and connect the PAR wire that was removed from one LAMAR regulator to the OUT terminal.
5. Connect the other PAR terminal to IN on the remaining R1224B regulator.

**The installation is complete after testing.**

### Guide L

#### Prepare the replacement regulator:

1. Use the R1224 regulators. Ensure regulator jumpers are set to match aircraft battery voltage (12V or 24V).
2. Remove the factory jumper between SENSE and ENABLE.
3. Remove the old regulators. If the aircraft as equipped with Lamar Over voltage Relays you can remove them if you desire. (The R1224B has internal over voltage control so the Lamar units are not needed).
4. Add a jumper between ENABLE and AUX.

#### Prepare the installation:

1. Cut the terminals off the end of these wires and install new ring lugs provided with the R1224 regulator.

#### Replace the regulator:

1. Remove the FORD-type regulator from the aircraft.
2. Install the R1224 regulators in the same location using existing hardware.
3. Connect the wires removed from the FORD type regulator to the corresponding replacement R1224:
  - **A** to SENSE
  - **S** to ENABLE
  - **F** to FLD

**The installation is complete after testing.**

# R1224 Regulator Installation Instructions



## Guide M

**INTERAV** These are installed on aircraft, which have been converted to an alternator from a generator by STC SA334SW.

Use R1224.

**Labeling the wires is important for reconnection.** If the ring lugs are damaged, crimp the provided ring lugs onto the wires.

1. Remove Interav regulator and over voltage relay. The R1224 has internal over voltage protection, so the Interav over voltage relay is no longer needed.
2. Ensure that the R1224 jumpers are set for 14V. See Plane-Power R1224 Installation Drawing 12-1001. Add a jumper between SENSE and AUX on both R1224B regulators.
3. Install R1224 in the location from which the InterAv regulator was removed.
4. Remove the wires on both terminals of the ALTERNATOR switch (on the aircraft panel). Connect one terminal of the switch to the 5A breaker where the wire to "Red-Pos" of the Interav OV Relay was connected. Connect the other terminal of the switch to R1224 #3 (Enable).
5. Connect the GND (Ground) wire to R1224 #1 (GRND).
6. Connect the Field terminal of the alternator to R1224 #2 (FLD).
7. Jumper R1224 #3 (Enable) to #4 (AUX). For R1224 Rev C and later: Ensure that there is a jumper between R1224 #8 (SENSE) and #3 (ENABLE).
8. Remove all disconnected and unused wires.
9. If a warning lamp is incorporated, connect one terminal of the lamp to R1224 #5 (Lamp) and the other terminal of the lamp to the aircraft bus through a 1A fuse or breaker. Be sure the lamp is a 100-milliamp bulb or it will not work properly.
10. Adjust voltage as necessary with engine running and alternator enabled.

**The installation is complete after testing.**