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### **REVISION DESCRIPTION:**

Since all the KAI pages regarding W&B and the Installed Equipment list are similar, only a general description of the two types of changes made to various sections is provided below. These changes resulted from relocating the Weight and Balance Worksheet and the Installed Equipment List.

a. The Installed Equipment List was moved to the Maintenance Manual from the POH.

b. The Weight and Balance Worksheet and W&B-2 (the blank page that followed) were moved to the Maintenance Manual (Rev 9) from the Production Acceptance Procedure. The "WEIGHT AND BALANCE RECORD" page was page W&B-2 of the RV-12 Production Acceptance Procedures.

Example: Following is an example of how this change affected Section 44A Skyview Autopilot Servos.

"Step 6: In the RV-12 Maintenance Manual (MM) "INSTALLED EQUIPMENT LIST" table, mark the "DYNON AUTOPILOT SERVO" as installed in the "INSTALLED" column.

Enter 4.6 lb for "Weight", 101.5 in for "Location/Arm" and 467 in-lb "Moment" onto the same line as "DYNON AUTOPILOT SERVO".

# NOTE: The remaining steps on this page are only applicable to a flying aircraft.

Step 7: In the RV-12 Pilot Operating Handbook (POH) "YOUR AIRPLANE" table, enter the new total values for the arm, weight, and moment of the installed equipment.

Step 8: In the RV-12 POH "YOUR AIRPLANE" table, recalculate and enter new values for the Empty Weight, Empty Moment, and Empty Arm.

Step 9: Make an entry, as calculated in the previous step, on the WEIGHT AND BALANCE RECORD page of the RV-12 Maintenance Manual as follows:

As of this date: \_\_\_/\_\_\_/\_\_\_"

was

"Step 6: On Page 4-2 SkyView and 4-4 of the RV-12 Pilot Operating Handbook: Enter the text "AUTOPILOT" onto a blank line under the "ITEM" column in both tables.

Enter 4.6 lb for "Weight", 101.5 in for "Location/Arm" and 467 in-lb "Moment" onto the same line as "AUTOPILOT" in both tables.

Recalculate and enter new values for the Empty Weight, Empty Moment and Empty Arm on Page 4-4 of the POH.

Step 7: Make an entry on page W&B-2 of the RV-12 Production Acceptance Procedures as follows:

As of this date: \_\_\_/\_\_/\_\_\_"



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The changes described above were applied to the following pages. The updated Rev level is listed: 40-15 (Rev 2) 43-11 (Rev 2) 43B-08 (Rev 2) 43C-07 (Rev 1) 44A-05 (Rev 1) 44B-10 (Rev 1) 53-12 (Rev 3) 53B-06 (Rev 1) 53-06 (Rev 1) 61-08 (Rev 1)

Additional changes were also made and are described below in the usual manner.

Page 44A-04 REV 3: Add "(WITH FLAPS UP AND WITH FLAPS DOWN)" to the WARNING.

**Page: 44B-03 REV 1**: Add: "Step 4: Insert the bolt that will attach the Pitch Servo Pushrod Assembly to the arm of the Garmin GSA 28 Autopilot Servo. See Figure 2." Repaginate remaining steps.

Page 44B-06 REV 1: Add "(WITH FLAPS UP AND WITH FLAPS DOWN)" to the WARNING.

**Page 44B-07 REV 2**: Show additional cut lines for GMC 307 in Figure 2. Add "**(GMC 305)**" after hardware callouts in Figure 2.

**Page: 53-10 REV 2**: Deleted fuse amperage values shown in Figure 2, except for GPS ADSB, "2" AMP.

**Page: 53B-05 REV 1**: Deleted AMP values from fuses in Figure 2, except for GPS ADSB, "2" AMP.



NOTE: The following instructions cover installing the Dual EFIS, POH Tray and Tunnel Pocket in aircraft pre-construction and post-construction. Instructions unique to an aircraft under construction are preceded with the step number and "(PRECONST)". Instructions unique to assembled aircraft are preceded with the step number and "(POSTCONST)".

PRECONST NOTE: This section supersedes earlier portions of the manual which called for the installation of the following items:

Section 29: MAP BOX Section 29: F-1202U Instrument Panel Right Mapbox Section 42: AV FC-403-12 Panel Mount Stereo Intercom Section 42: 453-0023 Self Powered Cockpit Remote Switch

Step 1 (PRECONST): Proceed to the next page.

Step 1 (POSTCONST): Remove the F-1240 Assembly. See Section 29 for reference.

Step 2: Remove the 453-0023 Self Powered Cockpit Remote Switch. See Section 42 for reference.

Step 3: Remove the Panel Mount Stereo Intercom. See Section 42 for reference.

Step 4: Remove the Map Box. See Section 29 for reference.

Step 5: Remove the F-1202U Instrument Panel Right Mapbox. See Section 29 for reference.

Step 6: Remove the F-12123 Fuse Holder Assembly from the Map Box door and set it aside for now. See Section 29 for reference.



PRECONST NOTE: This page is an addendum to Section 29. The F-12175 POH Tray will be installed here while installing the F-1202B Panel Base.

Step 1: Cut through the three bridges in the F-12175 POH Tray as called out in Figure 1. Deburr the edges of both parts. Hereafter refer to these parts as F-12175A Tray and F-12175B Angle.



Step 2 : Inspect the F-1202B Panel Base for an existing hole pattern which matches that of the F-12175A Tray. If present proceed to Step 6.

Step 3: Cleco the F-12175A Tray to the underside of the F-1202B Panel Base at the one location shown in Figure 2.

Align the tray so that it is parallel with the aft edge of the panel base and clamp it in place.

Match-Drill #30 the Panel Base using the holes in the tray flanges as guides inserting clecos as you go.

Remove the tray and deburr the panel base.



## FIGURE 1: SEPARATING THE POH TRAY PARTS



Step 4: Cleco the F-12175B Angle to the underside of the F-1202B Panel Base through the holes shown in Figure 3.

Step 5: Match-Drill #30 the F-1202B Panel Base per the call-out in Figure 3 using the F-12175B Angle as a guide. Remove the angle and deburr.

Step 6: Position the F-12175B Angle on the F-1202B Panel Base as shown in Figure 4 and install one cleco.

Step 7: Rivet the F-12175B Angle to the F-1202B Panel Base using the rivets called out in Figure 4.

Rivet the F-12175A Tray to the panel base using the rivets called out in Figure 4.

Step 8 (PRECONST): Proceed with the assembly instructions in Section 29.

Step 8 (POSTCONST): Proceed to the next page.



FIGURE 2: MATCH DRILL PANEL BASE



FIGURE 3: MATCH DRILL ANGLE TO PANEL BASE



Step 1 (PRECONST): Attach the F-1214 Step Floor Cover using at least 2 screws, 1 per side. Attach the F-1230 Tunnel Cover omitting the 12 aft-most screws.

Step 1 (POSTCONST): Remove the 12 aft-most screws attaching the F-1230 Tunnel Cover to the sub-structure. See Figure 1.

Step 2: Attach the F-12177 Pocket Base to the lower flange of the F-1230 Tunnel Cover using two screws as shown in Figure 1.

Step 3: Match-Drill #19 the F-1214 Step Floor Cover using the F-12177 Pocket Base as a guide.

Step 4: Attach the F-12176 Tunnel Pocket to the structure using at least four screws, one at each corner.

Step 5: Match-Drill #19 the F-1214 Step Floor Cover using the F-12176 Tunnel Pocket as a guide. Remove the tunnel pocket, the F-12177 Pocket Base and the step floor cover.

F-12176 F-12177 F-1230 F-1214  $\star$ AN526C832R8 MATCH-DRILL #19 TYP. 3 PL. FIGURE 1:

MATCH-DRILLING STEP FLOOR COVER

Step 6: Match-Drill #40 the nutplate attach holes in the F-1214 Step Floor Cover using the nutplates called out in Figure 2 as guides. Deburr all the match-drilled holes.

Step 7: Dimple the nutplate attach holes flush on the top side of the F-1214 Step Floor Cover for 3/32 flush rivets. Dimple the nutplates for 3/32 flush rivets.

Step 8: Rivet the nutplates to the underside of the F-1214 Step Floor Cover using the rivets called out in Figure 2.



FIGURE 2: INSTALLING STEP FLOOR COVER NUTPLATES

the screw holes.

called out in Figure 3.

Step 12 (PRECONST): Return to Section 33 and continue assembly.



NOTE: Check that the avionics master switch is in the off position. Opening the 37 PIN D180 D-SUB backshell is not required if a multimeter is available. When cutting wires to length leave enough to allow the EFIS to be removed from the panel. After a WH-RV12-DYNON harness wire is cut its halves will be referred to as "left" (for WH-RV12-DYNON AV Control Board 12, 37 Pin d-sub) side or "right" (for WH-RV12-DYNON EFIS 25 pin d-sub) side.

<u>Step 1 (POSTCONST)</u>: Remove the AV GARMIN SL-40 COM Radio(not shown) from its tray to aid in routing wires.

Step 1 (PRECONST): Proceed to Step 2.

<u>Step 2:</u> Install the WH-RV12-DUALDISPLAY harness through the snap bushings in F-1202K-L & -R Inst Stack Supports. Strip the ends of the harness and position them at the splice location depicted in Figure 1.

<u>Step 3:</u> Unplug the WH-RV12-DYNON harness EFIS 25 PIN D-SUB connector from the back of the IF DYNON DEK 180-12 Dynon EFIS/EMS.

<u>Step 4:</u> Locate the RED 20 gauge wire in the WH-RV12-DYNON harness, cut it in the region of the splice and strip each end.

Step 5: Crimp the end of the left half of the RED 20 gauge wire in the WH-RV12-DYNON harness to the butt splice called out in Figure 2. Insert the corresponding color wire from the WH-RV12-DUALDISPLAY harness into the other end of the butt splice along with the end of the right half of the RED 20 gauge wire and crimp them together.

Step 6: Repeat Steps 4 and 5 for the BLK and BLU wires.

Step 7: Locate the two GRN wires in the WH-RV12-DYNON harness.

<u>Step 8:</u> Identify the correct GRN wire by checking for continuity using a multimeter (or equivalent) between the corresponding pin at the WH-RV12-DYNON harness EFIS 25 PIN D-SUB connector and a needle inserted through the insulation of one of the GRN wires at the intended splice location. See pin 4 in Figure 2. Once identified cut the GRN(pin 4) wire and strip each end.

Step 9: Repeat Step 5 for the GRN wire.

Step 10: Tie wrap the WH-RV12-DUALDISPLAY harness to the WH-RV12-DYNON harness.

<u>Step 11:</u> Attach an ES 25 PIN BACKSHELL to the WH-RV12-DUALDISPLAY harness. See Section 5 for Backshell installation.

<u>Step 12:</u> Attach an ES 9 PIN BACKSHELL to the SERIAL I/O 9 PIN PIGTAIL. See Section 5 for Backshell installation.



Step 1: Center the DYNON 100422-000 D-100 Series Mounting Tray behind the large cutout in the F-1202UD100 Instrument Panel Right EFIS as shown in Figure 1 and clamp it in place. Match-Drill #40 the holes in the instrument panel into the mounting tray. Cleco each hole after it is drilled.

Step 2: Remove and deburr the DYNON 100422-000 D-100 Series Mounting Tray. Machine countersink the #40 holes surrounding the D-100 cutout in the F-1202UD100 Instrument Panel Right EFIS for the head of the rivets that will attach the tray. See call-outs in Figure 1.

#### NOTE: See the call-out in Figure 1 for an optional blind rivet which may be used if it is not possible to squeeze the rivets in the locations shown.

Step 3: Rivet the DYNON 100422-000 D-100 Series Mounting Tray to the F-1202UD100 Instrument Panel Right EFIS per the call-outs in Figure 1.

#### NOTE: Now is the time to paint the instrument panel if so desired.

NOTE: Do not install the labels supplied with the elt. A new label is supplied in this kit.

Step 4 (PRECONST): Strip the end of the 453-0023 Ground Wire (BLK). See Figure 2.

Step 4 (POSTCONST): Proceed to Step 7.

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Step 5: Crimp the ring terminal called out in Figure 2 onto the end of the 453-0023 Ground Wire (BLK).

F-1202UD100

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Step 6: Refer to the instructions supplied with the ELT for the installation of a battery in the 453-0023 Self Powered Cockpit Remote Switch. Continue to the next step upon completion.

Step 7: Attach the 453-0023 Self Powered Cockpit Remote Switch to the back of the F-1202UD100 Inst. Panel Right EFIS using the instructions supplied with the ELT. See Figure 2.



FIGURE 2: INSTALLING THE ELT SELF POWERED COCKPIT REMOTE SWITCH







<u>Step 1:</u> Remove the nut and screw from the aft right corner of the right ES CPU FAN as shown in Figure 1. Place the ring terminal which is on the end of the 453-0023 Ground Wire (BLK) and the ground ring terminal for the fan over the shank of the screw. Replace the screw and tighten the nut.

<u>Step 2:</u> Install the IF DYNON-D100 EFIS into the DYNON 100422-000 D-100 Series Mounting Tray using the instructions and allen wrench supplied by Dynon.

Step 3: Install the WH-RV12-DUALDISPLAY harness to the EFIS 25 PIN D-SUB Male Connector on the back of the IF DYNON-D100 EFIS.

<u>Step 4:</u> Attach the ES RS 279-374 Phone Cable to the back of the 453-0023 Self Powered Cockpit Remote Switch. Tie-wrap the 453-0023 Ground Wire (BLK) to the phone cable in two places for strain relief as shown in Figure 1.

<u>Step 5:</u> Attach the WH-RV12-FLTCOM403 Intercom Wiring Harness to the back of the AV FC-403-12 Panel Mount Stereo Intercom.

<u>Step 6 (PRECONST)</u>: Route the free end of the WH-RV12-FLTCOM403 Intercom Wiring Harness forward of the AV GARMIN GTX 3XX(not shown) and through the snap bushing in the F-1202K-R Inst Stack Support or the F-12328-R Bracket(not shown), whichever is applicable and through the cushioned clamp aft of the left CPU Fan. Attach the harness to the back of the AV CONTROL BOARD 12.

Step 6 (POSTCONST): Proceed to the next page.







F-12123B Double Sided Velcro Tape as shown in Figure 3.



of the F-1202B Panel Base as shown in Figure 4.







MAKING THE PITOT & STATIC LINES

Step 2: Insert the FLF-00001 Brass Tee into the end of the F-12179 Static Line as shown in Figure 2.

Step 3: Cut the existing Static Line at the location shown in Figure 2.

Step 4: Insert the FLF-00001 Brass Tee into the ends of the existing Static Line.

<u>Step 5:</u> Route the free end of the F-12179 Static Line forward of the AV GARMIN GTX 3XX(not shown) and through the snap bushing in the F-1202K-R Inst Stack Support or the F-12328-R Bracket(not shown), whichever is applicable as shown in Figure 2.

Step 6: Remove the plastic plug from the static port of the IF DYNON-D100 EFIS.

<u>Step 7:</u> Remove the male nylon fitting from the F N4MC-2 Nylon 1/4 Straight assembly.

<u>Step 8:</u> Install (hand tight) the male nylon fitting from the F N4MC-2 Nylon 1/4 Straight into the back of the IF DYNON-D100 EFIS as shown in Figure 2.

<u>Step 9:</u> Install the nut, metal keeper, nylon collar and O-ring seal from the F N4MC-2 Nylon 1/4 Straight onto the male nylon fitting in the back of the IF DYNON-D100 EFIS so that three threads of the male fitting are visible.

<u>Step 10:</u> Install the F-12179 Static Line into the F N4MC-2 Nylon 1/4 Straight by cutting the tube(static line) squarely and remove any burrs.

Mark the end of the tube 5/8" from the end.

Moisten the end of the tube with water.

Push tube straight into fitting until it bottoms on the fitting's shoulder.

Tighten nut by hand. Additional tightening should not be necessary, but 1/4 additional turn may be added if desired. DO NOT OVER TIGHTEN nut or threads will strip and the fitting will not function properly. A proper assembly will not show the insertion mark extending beyond the nut. If the insertion mark is visible, then repeat this step.

Step 11: Repeat Steps 2-10 for the F-12178 Pitot Line after completing Section 45.

Step 12: Tie-wrap F-12178 Pitot Line, F-12179 Static Line and WH-RV12-DUALDISPLAY harness together as shown in Figure 2. Tie-wrap the SERIAL I/O 9 PIN PIGTAIL to the Pitot/Static Lines at a point just forward of the ES 9 PIN BACKSHELL.



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Step 1: Turn the master switch to the on position and power up the D100 to check that it is receiving power.		
Step 2: Refer to the D180 and D100 installation instructions for further assistance.		
Step 3: Proceed with the assembly instructions in Section 44 or 45, whichever is applicable.		
NOTE: Any weight and balance information recorded for the aircraft must be updated. Depending on the state of your kit some steps may not be applicable.		
Step 4: In the RV-12 Maintenance Manual (MM) "INSTALLED EQUIPMENT LIST" table, add "D-180 DUAL DISPLAY" to the "ITEM" column. On the same line add a checkmark to the "INSTALLED" column.		
Enter 2.8 lb for "Weight", 57.5 in for "Location/Arm" and 161 in-lb "Moment" onto the same line as "D-180 DUAL DISPLAY".		
NOTE: Steps 5-7 on this page are only applicable if a final weight and balance as specified in the PAP has been completed.		
Step 5: In the RV-12 Pilot Operating Handbook (POH) "YOUR AIRPLANE" table, enter the new total values for the arm, weight, and moment of the installed equipment.		
Step 6: In the RV-12 POH "YOUR AIRPLANE" table, recalculate and enter new values for the Empty Weight, Empty Moment, and Empty Arm.		
<u>Step 7:</u> Make an entry, as calculated in the previous step, on the WEIGHT AND BALANCE RECORD page of the RV-12 Maintenance Manual as follows:		
As of this date:// the following values represent current Weight and Balance calculations resulting from the installation of the D-180 Dual Display Optional Kit.		
Revised Empty Weight: lbs Revised Empty Moment: in-lbs Revised Empty Arm: in Signed:	<u>PART NO.</u> DYNON 100422-000	DESCRIPTION DYNON TRAY
NOTE: The remaining steps on this page are only applicable for aircraft which have passed a final airworthiness inspection.	F-1202U F-1202UD100 F-12175 F-12176	MAP BOX PANEL D100 INSTRUMENT P. POH TRAY
Step 8: Make an appropriate entry in the airframe logbook. See example below:	F-12170	POCKET BASE
Installed the D-180 DUAL DISPLAY option in accordance with Van's Aircraft KAI Section 43 and confirmed proper operation.	MAP BOX MISC PARTS & HDW	MAP BOX ASSEMBLY
Signature Certificate #	SUM	
Step 9: Section complete.	DE	ELTA WEIGHT = 2.8 LBS

	WEIGHT(LBS)	ARM(IN.)	MOMENT(IN-LBS)
PANEL	0.4046 -0.6783 0.6104 0.0748 0.2132 0.0112 2.6500 -0.7549	56.8913 58.5801 58.6432 55.6050 59.1903 60.8010 56.6557 54.0437	23.0178 -39.7343 35.7939 4.1593 12.6194 0.6810 150.1376 -40.8002
	0.2826 2.81 LBS	55.0000	15.5409 161 IN-LBS

DELTA MOMENT = 161 IN-LBS

# TABLE 1: WEIGHT AND BALANCE ADJUSTMENT FOR D-180 DUAL DISPLAY OPTION

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