

Procedure
 for
 Installation
 of the
 P/N 2040-1-2
 &
 P/N 2040-1-3
 Voice Alert Systems

Procedure IP-1
 Rev. 1
 Date 04-16-03

Approved By _____

Aircraft Components inc.
 1040 Harbor Lake Dr.
 Safety Harbor FL 34695

I. Introduction

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I. Introduction

Most general aviation aircraft were designed during a time when few pilots wore headsets. On these aircraft, the stall and gear warning annunciators were placed in the cockpit, where they would be heard by the pilot. Today most pilots wear headsets, including the new active noise reduction headsets, designed to cut out the cockpit sounds. These innovations make it more difficult for the pilot to hear the warning horns.

The Voice Alert system is an electronic device which detects the activation of the existing aircraft stall and/or gear warning annunciators, and responds by placing an instantly recognizable voice warning directly in the pilots headset, and through a built in speaker. The voice warnings provide the pilot with instant recognition of the unsafe conditions. Separate voice messages are used for the stall warning, and the gear warning, to promote instant recognition. The Voice Alert is a stand alone system. The Voice Alert does not affect the operation of the existing aircraft warning systems in any way. The Voice Alert is available for installation in both fixed and retractable gear aircraft.

II. Installation Information

Read the material in this manual to become familiar with the installation and the work involved before starting. This work must meet the requirements of the applicable sections of AC 43.13-1B

The following table defines the applicable sections of this manual that apply to the installation in various aircraft makes and models. Refer to the AML list referenced by the STC for a listing of the current approved make and model aircraft.

Manual Gear

Aircraft Make and Model	Manual Section
Raytheon Aircraft Co. 19A, B19, M19A, 23, A23, A23A, A23-19, A23-24, B23, C23, A24,	III A
The Cessna Aircraft Co. 172, 172A, 172B, 172C, 172D, 172E, 172F, 172G, 172H, 172I, 172K, 172L, 172M, 172N, 172P, 172Q, 172R See Note 2 182, 182A, 182B, 182C, 182D, 182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M, 182N, 182P, 182Q, 182R, 182S, 175, 175A, 175B, 175C, P172D, 185, 185A, 185B, 185C, 185D, 185E, A185E, A185F 180A, 180B, 180C, 180D, 180E, 180F, 180G, 180H, 180J, 180K 177, 177A, 177B 207, 207A, T207, T207A 208, 208A, 208B 206, P206, P206A, P206B, P206C, P206D, P206E, TP206A, TP206B, TP206C, TP206D, TP206E, U206, U206A, U206B, U206C, U206D, U206E, U206F, U206G, TU206A, TU206B, TU206C, TU206D, TU206E, TU206F, TU206G, 206H	III A
Tiger Aircraft LLC AA-5, AA-5A, AA-5B, AG-5B 111 AA-1, AA-1A, AA-1B, AA-1C	III A
Maul Aerospace BEE DEE, M-4, M-4C, M-4S, M-4T, M-4-180C, M-4-180S, M-4-180T, M-4-210, M-4-210C, M-4-210S, M-4-210T, M-4-220, M-4-220C, M-4-220S, M-4-220T, M-5-180C, M-5-200, M-5-210C, M-5-210TC, M-5-220C, M-5-235C, M-6-180, M-6-235, M-7-235, MX-7-235, MX-7-180, MX-7-420, MXT-7-180, MT-7-235, M-8-235, MX-7-160, MXT-7-160, MX-7-180A, MXT-7-180A, MX-7-180B, MXT-7-420, M-7-235B, M-7-235A, M-7-235C, MX-7-180C	III A
The New Piper Aircraft PA-28-140, PA-28-150, PA-28-160, PA-28-180, PA-28-235, PA-28-151 PA-28-161, PA-28-181 PA-28S-160, PA-28S-180, PA-28-201T, PA-28-236	III A

Retractable Gear Aircraft

Raytheon Aircraft Co. 50, B50, C50, D50, D50A, D50B, D50C, D50E, D50E-5990 E50, F50, G50, H50, J50	III C
Raytheon Aircraft Co. A24R, B24R, C24R	III B
Raytheon Aircraft Co. 58P, 58PA, 58TC, 58TCA	See Note 1
Raytheon Aircraft Co. 35-33, 35-A33, 35-B33, 35-C33, 35-C33A, E33, E33A, E33C, F33, F33A, F33C, G33, H35, J35, K35, M35, N35, P35, S35, V35, V35A, V35B, 36, A36, A36TC, B36TC	See Note 1
Raytheon Aircraft Co. B95A, D95A, E95, 95-55, 95-A55, 95-B55, 95-B55A, 95-B55B, 95-B55A, 95-B55B, 95-C55, 95-C55A, D55, D55A, E55, E55A, 56TC, A56TC, 58, 58A, 95, B95	See Note 1

Raytheon Aircraft Co. 35, A35, B35, C35, D35, E35, F35, G35, 35R	See Note 1
Raytheon Aircraft Co. 65, A65, A65-8200, 65-80, 65-A80, 65-B80, 65-88, 65-90, 65-A90, 70, B90, C90, C90A, E90, H90, 100, A100, A100A, A100C, B100, 200, 200C, 200CT, A200, A200C, B200, B200C, B200CT, B200T, 200T, A200CT, 99, 99A, A99, A99A, B99, C99	See Note 1
Bellanca inc. 14-19, 14-19-2, 14-19-3, 14-19-3A, 17-30, 17-31, 17-31TC	See Note 1
The Cessna Aircraft Co. R182, TR182 Retractable III D	
The Cessna Aircraft Co. 210, 210A, 210B, 210C, 210D, 210E, 210F, T210F, 210G, 210H, T210H, 210J, T210J, 210K, T210K, 210L, T210L, 210M, T210M, 210N, P210N, T210N, 210R, P210R, T210R, 210-5, 210-5A	III D
The Cessna Aircraft Co. 177RG	III D
The Cessna Aircraft Co. 310, 310A, 310B, 310C, 310D, 310E, 310F, 310G, 310H, 310I, 310J, 310K, 310L, 310N, 310P, T310P, 310Q, T310Q, 310R, T310R	See Note 1
The Cessna Aircraft Co. 320, 320-1, 320A, 320B, 320C, 320D, 320E, 320F, 335, 340, 340A	III B
The Cessna Aircraft Co. 337, 337A, 337B, T337B, 337C, T337C, 337D, T337D, 337E, T337E, 337F, T337F, 337G, T337G, 337H, P337H, T337H	III D
The Cessna Aircraft Co. 401, 401A, 401B, 402, 402A, 402B, 402C, 411, 411A, 414, 414A, 421, 421A, 421B, 421C, 425	III C
Commander Aircraft 112, 114, 112TC, 112B, 112TCA, 114A, 114B, 114TC Corp	See Note 1
Mooney Aircraft Corp M-20, M-20A, M-20B, M-20C, M-20D, M-20E, M-20F, M-20G, M-20J, M-20K, M-20L, M-20M, M-20R, M-20S	III B
The New Piper Aircraft PA-24, PA-24-250, PA-24-260, PA-24-400	III B
The New Piper Aircraft PA-28R-180, PA-28R-200, PA-28-201T, PA-28RT-201T, PA-28RT-201	III B
The New Piper Aircraft PA-44-180, PA-44-180T	III B
The New Piper Aircraft PA-30, PA-39, PA-40	III C
The New Piper Aircraft PA-31, PA-31-300, PA-31-325, PA-31-350	III B
The New Piper Aircraft PA-32-260, PA-32-300, PA-32S-300, PA-32R-300, PA-32RT-300, PA-32RT-300T, PA-32R-301, PA-32R-301T, PA-32-301, PA-32-301T	III B
The New Piper Aircraft PA-34-200, PA-34-200t, PA-34-220T	III B
The New Piper Aircraft PA-23, PA-23-160, PA-23-235, PA-23-250	III C
The New Piper Aircraft PA-31P, PA-31T, PA-31T1, PA-31T2, PA-31T3, PA-31P-350	III B
Aerostar Aircraft Co. PA-60-600, PA-60-601, PA-60-601P, PA-60-602P, PA-60-700P	III B
Twin Commander 560-F, 680, 680-E, 680-F, 720, 680FL, 680T, 680V, Aircraft 680-W, 681, 690, 685, 690A, 690B, 690C, 690D, 695, 695A, 695B	See Note 1
Twin Commander 500, 500A, 500-B, 500-U, 520, 560, 560-A, 560-E, 500-S Aircraft	See Note 1

Note 1: These aircraft used various wiring configurations for activating the landing gear warning horn. It will be necessary to review the wiring schematic for the actual aircraft the installation is being performed on, and then perform the tests in section B and C to determine if installation Dwg. FIG B, C, or D applies.

Note 2: Certain models of these aircraft use a pneumatic powered stall warning system instead of an electrically powered stall warning system. The installation of the P/N 2040 system applies to those aircraft which have an electrically powered stall warning system only.

III. Installation Instructions

The following sections provide specific detailed installation instructions for each aircraft make and model listed in the previous section.

Section A, Installation in most fixed gear aircraft

This section provides the instructions for installing the system in the approved fixed gear aircraft. This installation must use the P/N 2040-1-2 Voice Alert assembly. Note: Before starting the installation, activate the stall warning horn and mentally note the level of the horn volume. This will permit making a comparison of the horn volume after the installation to insure that it has not been effected by the installation of the Voice Alert system.

1. Select a location to firmly mount the Electronic Module to the aircraft. It can be mounted to the firewall, side panel, or other secondary aircraft structure. Do not alter, modify or drill any aircraft structural members when making this installation. Check to verify that the installation does not interfere with the aircraft controls or with other equipment. Do not mount the electronic module within 6 inches of other high current drawing electronic equipment. Any additional wire required for the installation should be #22 gauge or larger, and must meet the type defined in AC43.13-1B chapter 11 section 7. Wiring should not be bundled with high current carrying conductors, coaxial antenna cables, or conductors carrying pulsed signals. Bundle and secure wiring. Refer to AC43.13-1B sections 11-115 through 11-118 for information on bundling and securing wiring.. Drill 4 mounting holes as shown on Fig 1. Mount the Electronic Module as shown on FIG 2, using the hardware provided.

2. Wire the system as shown on installation drawing FIG A. using the cable assembly provided
 - a) Attach the RED wire to the 12v or 24v power buss through a 1 circuit breaker using a ring connector provided. Note: The circuit breaker must be the resetable type and must be mounted within the pilot's reach to allow turning the system off in flight if required. Normal current draw is 150 ma.

- b) Attach the BLACK wire to a good aircraft ground point using a ring connector provided. The ground wire should be bolted to the aircraft structure using a machine screw and nut. Refer to AC43.13-1B section 11-186 for details on grounding electronic equipment.

3. Attach the WHITE wire to the aircraft audio system. The WHITE wire is a 600 ohm low level audio signal. This signal must be hooked to the aircraft audio system in a way, which prevents the pilot from accidentally turning it off. If the aircraft has an audio panel with an un-switched audio input, the white wire should be attached directly to this un-switched input so that the voice message will be heard directly through the cabin speaker and the headsets. If the aircraft does not have an un-switched input, then the WHITE wire can be hooked directly into the pilot's headset jack.

4. Locate the stall horn in the aircraft. Using a meter, measure the voltage at the terminals on both sides of the stall horn when the horn is both sounding and silent. The voltage on one of the connections at the stall horn will change between aircraft voltage and ground as the horn activates. This is the terminal where the Voice Alert BLUE wire will connect. Connections can be made to the stall horn by using a ring connector if the horn has terminals, or by soldering or splicing into the existing wiring harness. Refer to AC43.13-1B sections 11-167, 11-174, and 11-178 for information on splicing and terminal installation. Refer to Installation drawing FIG B. The actual aircraft stall system may be wired in either configuration as shown on the drawing.

5. Cut the unused wires (GREEN, ORANGE, & BROWN) and secure against shorts. The unstripped cut ends can be doubled over and covered with a piece of the heat shrink tubing provided and secured in the wire bundle. Attach the cable to the electronic box. This completes the installation. Proceed to section IV for test of the system.

Section B. Installation in Retractable Gear Aircraft that have the Landing Gear Warning horn grounded. Retarding the throttle then supplies power to cause the horn to sound.

The following section provides specific detailed installation instructions for the retractable gear aircraft that reference Section III B. These aircraft have one side of the landing gear warning horn grounded. Retarding the throttle with the gear up applies power to the horn causing it to sound. Perform the following test to verify that Section III B is correct for your installation.

Locate the landing gear warning horn in the aircraft. Many installations will have a single electrical connection and a ground wire at the horn. With the landing gear retracted, and the horn silent, measure the voltage at both of the gear horn connections. With this wiring configuration, both sides of the warning horn will read 0 volts when the horn is silent. Activate the horn, and re-measure the voltage. One of the horn connections will now measure aircraft voltage, the other will measure ground. These voltage readings confirm that the installation will be made using installation Dwg. FIG B. The ORANGE wire in the cable assembly will attach to the horn connection that reads aircraft voltage when the horn is sounding. Refer to installation Dwg. FIG B. Note: Before starting the installation, activate the stall warning horn and the gear warning horn and mentally note the level of the horn volume. This test will allow a comparison of the horn volume after the Voice Alert installation to insure that the sound level has not been affected by the installation.

This installation requires a P/N 2040-1 -2 Voice Alert System.

1. Select a location to firmly mount the Electronic Module to the aircraft. It can be mounted to the

firewall, side panel, or other secondary aircraft structure. Do not alter, modify or drill any aircraft structural members when making this installation. Check to verify that the installation does not interfere with the aircraft controls or other equipment in the aircraft. Do not mount the electronic module within 6 inches of any high current drawing electronic equipment. Any additional wire required for the installation should be #22 gauge or greater, and meet the wire type defined in AC43.13-1B Chapter 11, Section 7. Wiring should not be bundled with high current carrying conductors, coaxial antenna cables, or conductors carrying pulsed signals. Bundle and secure wiring. Refer to AC43.13-1B sections 11-115 through 11-118 for information on bundling and securing wiring. Drill 4 mounting holes as shown on Fig 1. Mount the Electronic Module as shown on FIG 2, using the hardware provided.

2. Wire the system as shown on installation drawing FIG B. using the cable assembly provided

- a) Attach the RED wire to the 12v or 24v power buss through a 1 circuit breaker, using a ring connector provided. Note: The circuit breaker must be the resettable type and must be mounted within the pilot's reach to allow turning the system off in flight if required. Normal current draw is 150 ma.
- b) Attach the BLACK wire to a good aircraft ground point using a ring connector provided. The ground wire should be bolted to the aircraft structure using a machine screw and nut. Refer to AC43.13-1B section 11-186 for details on grounding electronic equipment

3. Attach the WHITE wire to the aircraft audio system. The WHITE wire is a 600 ohm low level audio signal. This signal must be hooked to the aircraft audio system in a way which prevents the pilot from accidentally turning it off. If the aircraft has an audio panel with an un-switched audio input, the white wire should be attached directly to this un-switched input so that the voice will be heard directly through the cabin speaker and the headsets. If the aircraft does not have an un-switched input, then the WHITE wire can be hooked directly into the pilot's headset jack.

4. Locate the stall horn in the aircraft. Using a meter, measure the voltage at the terminals on both sides of the stall horn when the horn is both sounding and silent. The voltage on one of the connections at the stall horn will change between aircraft voltage and ground as the horn activates. This is the terminal where the Voice Alert BLUE wire will connect. Connections can be made to the stall horn by using a ring connector if the horn has terminals, or by soldering or splicing into the existing wiring harness. Refer to AC43.13-1B sections 11-167, 11-174, and 11-178 for information on splicing and terminal installation. Refer to Installation drawing FIG B. The actual aircraft stall system may be wired in either configuration as shown on the drawing

5. Attach the ORANGE wire to the correct side of the gear warning horn, as outlined above. Connections can be made to the gear horn using a ring connector if the horn has terminals, or by soldering or splicing into the existing wiring harness. Refer to AC43.13-1B sections 11-167, 11-174, and 11-178 for information on splicing and terminal installation.

6. Cut the unused wires (GREEN, & BROWN) and secure against shorts. The unstripped cut ends can be doubled over and covered with a piece of the heat shrink tubing provided, and secured in the wire bundle. Attach the cable to the electronic box. This completes the installation. Proceed to section IV for test of the system.

Section C. Installation in Retractable Gear Aircraft which have the landing gear warning system wired with power. Closing the throttle switch applies a ground, causing the horn to sound.

The following section provides specific detailed installation instructions for the retractable gear aircraft listed in the previous section that referenced Section III C. These aircraft have a landing gear warning system wired with power supplied to the warning horn. Retarding the throttle supplies a ground causing the horn to sound. Perform the following test to verify that Section III C is correct for your installation.

Locate the gear warning horn in the aircraft. With the gear retracted, measure the voltage at both of the horn terminals when the horn is silent. Both connections will measure aircraft voltage. Activate the horn and re-measure the voltages. One of the horn connections will now read 0 volts when the horn sounds. These voltage readings confirm that Section III C is correct for your installation. The GREEN wire will attach to the gear horn connection that reads 0 volts when the horn is sounding. Refer to installation drawing FIG C. Note: Before starting the installation, activate the stall warning horn and the gear warning horn and mentally note the level of the horn volume. This test will permit a comparison of the horn volume after the installation to insure that it has not been affected by the installation.

This installation requires a P/N 2040-1 -2 Voice Alert Assembly

1. Select a location to firmly mount the Electronic Module to the aircraft. It can be mounted to the firewall, side panel, or other secondary aircraft structure. Do not alter, modify or drill any aircraft structural members when making this installation. Check to verify that the installation does not interfere with the aircraft controls or other equipment. Do not mount it within 6 inches of any high current electronic equipment. Additional wire required should be #22 gauge or larger, and must meet the wire type defined in AC43.13-1B Chapter 11, Section 7. Wiring should not be bundled with high current carrying conductors, coaxial antenna cables, or conductors carrying pulsed signals. Bundle and secure wiring. Refer to AC43.13-1B sections 11-115 through 11-118 for additional information. Drill 4 mounting holes as shown on Fig 1. Mount the Electronic Module as shown on FIG 2, using the hardware provided.

2. Wire the system as shown on installation drawing FIG C. using the cable assembly provided

1. Attach the RED wire to the 12v or 24v power buss through a 1 circuit breaker using a ring connector

provided. Note: The circuit breaker must be the resetable type and must be mounted within the pilot's reach to allow turning the system off in flight if required. Normal current draw is 150 ma.

b) Attach the BLACK wire to a good aircraft ground point using a ring connector provided. The ground wire should be bolted to the aircraft structure using a machine screw and nut. Refer to AC43.13-1B, Section 11-186 for details on grounding electronic equipment

3. Attach the WHITE wire to the aircraft audio system. The WHITE wire is a 600 ohm low level audio signal. This signal must be hooked to the aircraft audio system in such that it prevents the pilot from accidentally turning it off. If the aircraft has an audio panel with an un-switched audio input, the white wire should be attached directly to this un-switched input, so that the voice will be heard directly through the cabin speaker and headsets. If the aircraft does not have an un-switched input, then the WHITE wire can be hooked directly into the pilots headset jack.

4. Locate the stall horn in the aircraft. Using a meter, measure the voltage on both sides of the stall horn when the horn is both sounding and silent. The voltage at one of the connections on the stall horn will change between aircraft voltage and ground as the horn activates. This is the point where the Voice Alert BLUE wire will connect. Connections can be made to the stall horn using a ring connector if the horn has terminals, or by soldering or splicing into the existing wiring harness. Refer to AC43.13-1B, Sections 11-167, 11-174, and 11-178 for information on splicing and terminal installation. Refer to Installation Drawing FIG C. The actual aircraft stall system may be wired in either configuration, as shown on the drawing

5. Attach the GREEN wire to the gear horn connection that reads 0 volts when the horn is sounding, as defined above. Connections can be made to the gear horn using a ring connector, if the horn has terminals, or by soldering or splicing into the existing wiring harness. Refer to AC43.13-1B, Sections 11-167, 11-174, and 11-178 for information on splicing and terminal installation.

6. Cut the unused wires (ORANGE & BROWN) and secure against shorts. The unstripped cut ends can be doubled over and covered with a piece of the heat shrink tubing provided, and secured in the wire bundle. Attach the cable to the electronic box. This completes the installation. Proceed to Section IV for test of the system

Section D. Installation in Retractable Gear Aircraft that use a single electronic dual warning unit for activating both the gear and stall warnings.

The following section provides specific installation instructions for the retractable gear aircraft listed in the previous section that referenced Section III D. These aircraft use a single electronic dual warning unit for activating both the gear and stall warnings. Note: Before starting the installation, activate the stall warning horn and the gear warning horn and mentally note the level of the horn volume. This will allow a comparison of the horn volume after the installation to insure that it has not been effected by the installation.

This installation requires a P/N 2040-1-3 Voice Alert Assembly.

1. Select a location to firmly mount the Electronic Module to the aircraft. It can be mounted to the firewall, side panel, or other secondary aircraft structure. Do not alter, modify or drill any aircraft structural members when making this installation. Page 10 of 21 Check to verify that the installation does not interfere with the aircraft controls or other installed equipment. Do not mount the electronic module within 6 inches of any high current drawing electronic equipment. Any additional wire required should be #22 gauge or larger, and must meet the wire type defined in AC43.13-1B, Chapter 11, Section 7. Wiring should not be bundled with high current carrying conductors, coaxial antenna cables, or conductors carrying pulsed signals. Bundle and secure wiring. Refer to AC43.13-1B, Sections 11-115 through 11-118 for additional information. Drill 4 mounting holes as shown on Fig 1. Mount the Electronic Module as shown on FIG 2, using the hardware provided.

2. Wire the system as shown on installation drawing FIG D, using the cable assembly provided.

a) Attach the RED wire to the 12v or 24v power buss through a 1 circuit breaker using a ring connector provided. Note: The circuit breaker must be the resetable type and within the pilots reach to allow turning the system off in flight if required. Normal current draw is 150 ma.

b) Attach the BLACK wire to a good aircraft ground point using a ring connector provided. The ground wire should be bolted to the aircraft structure using a machine screw and nut. Refer to AC43.13-1B, Section 11-186 for details on grounding electronic equipment

3. Attach the WHITE wire to the aircraft audio system. The WHITE wire is a 600 ohm low level audio signal. This signal must be hooked to the aircraft audio system in a way, which prevents the pilot from accidentally turning it off. If the aircraft has an audio panel with an un-switched audio input, the white wire should be attached directly to this un-switched input so that the voice will be heard directly through the cabin speaker and headsets. If the aircraft does not have an un-switched input, then the WHITE wire can be hooked directly into the pilot's headset jack.

4. Locate the dual warning module in the aircraft, and attach the Voice Alert wires to the terminals on the dual warning unit as follows:

a) Hook the BROWN wire to the terminal on the dual warning unit marked STALL SWITCH, as shown on the wiring schematic FIG D.

- b) Hook the GREEN wire to the terminal on the dual warning unit marked GEAR, as shown on wiring schematic FIG D.
- c) Hook the ORANGE wire to the terminal on the dual warning unit marked THROTTLE SWITCH, as shown on wiring schematic FIG D.
- Connections can be made to the dual warning unit using a ring connector if the unit has terminals, or by soldering or splicing into the existing wiring harness. Refer to AC43.13-1B, Sections 11-167, 11-174, and 11-178 for information on splicing and terminal installation.

5. Cut the unused wire (BLUE) and secure against shorts. The unstripped cut ends can be doubled over and covered with a piece of the heat shrink tubing provided, and secured in the wire bundle. Attach the cable to the electronic box. This completes the installation. Proceed to section IV for test of the system.

IV. System Test

A. Ground Test

This test is to be performed on the ground both with and without the engine running prior to flight:

1. Activate the aircraft existing stall and or gear warning horns. Note the volume level of the horn sound, and compare that sound level to the sound level experienced in the test of the system performed prior to the start of the installation. There must be no noticeable decrease in sound level. The headset volume can be adjusted by turning the volume adjust screw accessible on the electronic module.
2. With electrical power applied to the Voice Alert unit, individually turn on the various electrical devices in the aircraft. Use the table attached to this procedure as a guide for performing this test. The acceptance criteria given below must be met, as each electrical device is activated and then turned off.
3. Verify that the aircraft devices operate normally and are not affected by the Voice Alert. The acceptance criteria given below must be met.
4. Taxi the aircraft. The acceptance criteria given below must be met.

B. Ground Test Acceptance Criteria

The following criteria must be met for each part of the ground test.

- a) False triggering of the Voice Alert at any time constitutes failure of the test.
- b) If the Voice Alert, and/or the Stall or Gear Warning, activates when it should not, that constitutes failure of the test.
- c) If any electronic device in the aircraft does not operate correctly, turn off the Voice Alert and determine if it is the cause. If the Voice Alert effects the operation of any electronic device, that constitutes failure and must be corrected.
- d) There must be no noticeable decrease in the warning horn sound level after the system installation.

C. Flight Test Procedure

This test is to be performed with the aircraft in flight. Flight tests should be conducted at an altitude and in a flight area suitable for this activity. The acceptance criteria given below must be met during this test.

1. Perform a normal takeoff.
2. Fly the aircraft at different speeds from normal cruise speed to approach speed. The acceptance criteria given below must be met during this test.
 3. Perform a stall. The Voice Alert must activate with the proper voice message whenever the aircraft stall warning sounds, and the voice must stop when the stall horn stops. The volume level must be adequate to hear and recognize the message above other sounds. Verify that the presence of a stall warning can be recognized along with simultaneous radio reception. Failure to fully meet this criteria constitutes failure of this test. (stalls should be performed at different power levels to insure the voice can be heard over the background sounds).
4. With the landing gear retracted, pull the throttle to idle. The Voice Alert must sound with the proper message at the time that the gear warning horn sounds, and it must stop when the gear horn stops. The volume level must be adequate to hear and recognize the message above other sounds. Verify that the voice message can be recognized along with simultaneous radio reception. Failure to fully meet this criteria constitutes failure of this test.
5. With the gear retracted and the throttle retarded, activate the gear warning horn and the voice message. Decrease the airspeed until the aircraft approaches a stall and the stall horn sounds. The voice message must instantly change to the stall warning message as the stall horn sounds. The voice message must change back to the gear warning message within 1 voice cycle after the stall warning stops, and the gear warning horn continues. Failure to fully meet this criteria constitutes failure of this test.
6. Individually turn on the various electrical devices in the aircraft. Use the attached table as a guide. As each device is activated, verify that its operation is not affected by the Voice Alert, and that the Voice Alert does not false trigger as the various electrical devices are turned on.

D. Flight Test Acceptance Criteria

The following criteria must be met during the flight test. This is in addition to other criteria that may be defined in the individual test sections.

- a) False trigger of the Voice Alert at any time constitutes failure of this test.
- b) If the Voice Alert, and/or either the stall or gear warning, activates when it should not, that constitutes failure of the test.
- c) There must be no noticeable decrease in the stall or gear warning sound levels from that heard in the test performed prior to the start of the installation.

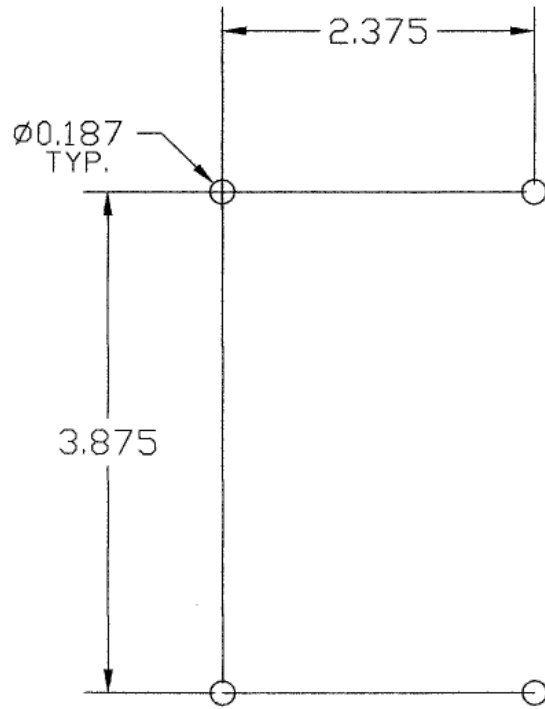
V. Documentation

1. The installer is responsible for making log book entries, revised weight & balance, and other documentation as necessary.

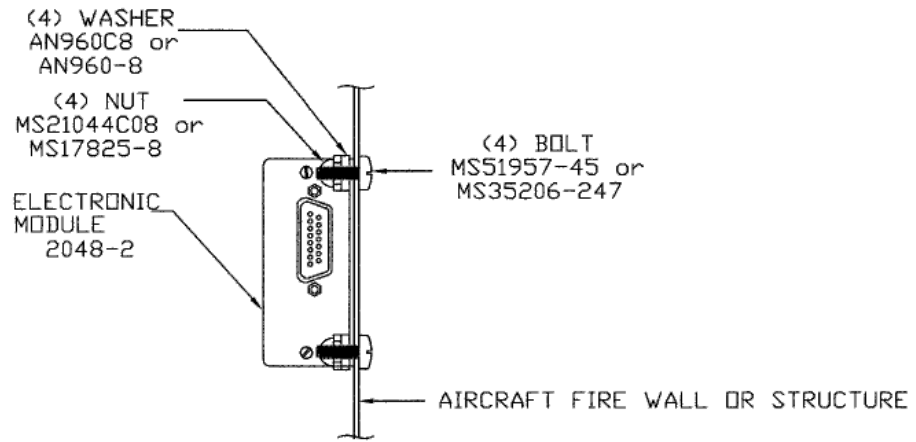
VI. Equipment

The following is a listing of the parts and materials included with this kit.

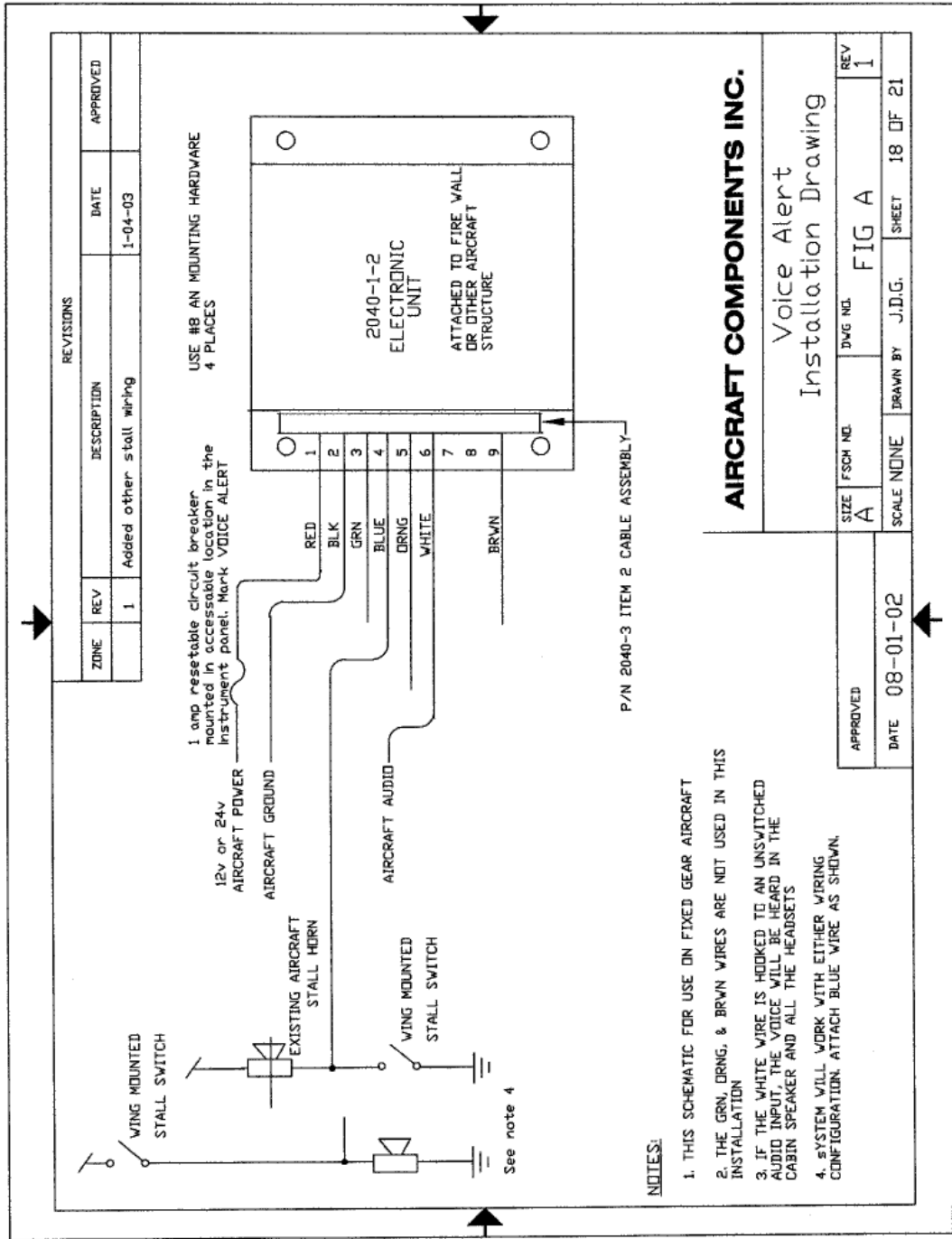
1. (1) P/N 2040-1-2 or P/N 2040-1-3 Electronic Module
2. (1) P/N 2040-3-1 Cable Assembly
3. (4) Machine Screws, #8 X 32 X 1/2 RH P SS
4. (4) Hex Nuts, #8 X 32 self locking SS
5. (4) Flat Washers, #8 SS
6. (4) Insulated Ring Connectors, #8, 18-22 wire
7. (20) Nylon Ty-wraps
8. (1) Length 1/8 dia heat shrink
9. (1) Length 3/8 dia heat shrink



ELECTRONIC MODULE TEMPLATE
FIG 1



ELECTRONIC MODULE INSTALLATION
FIG 2

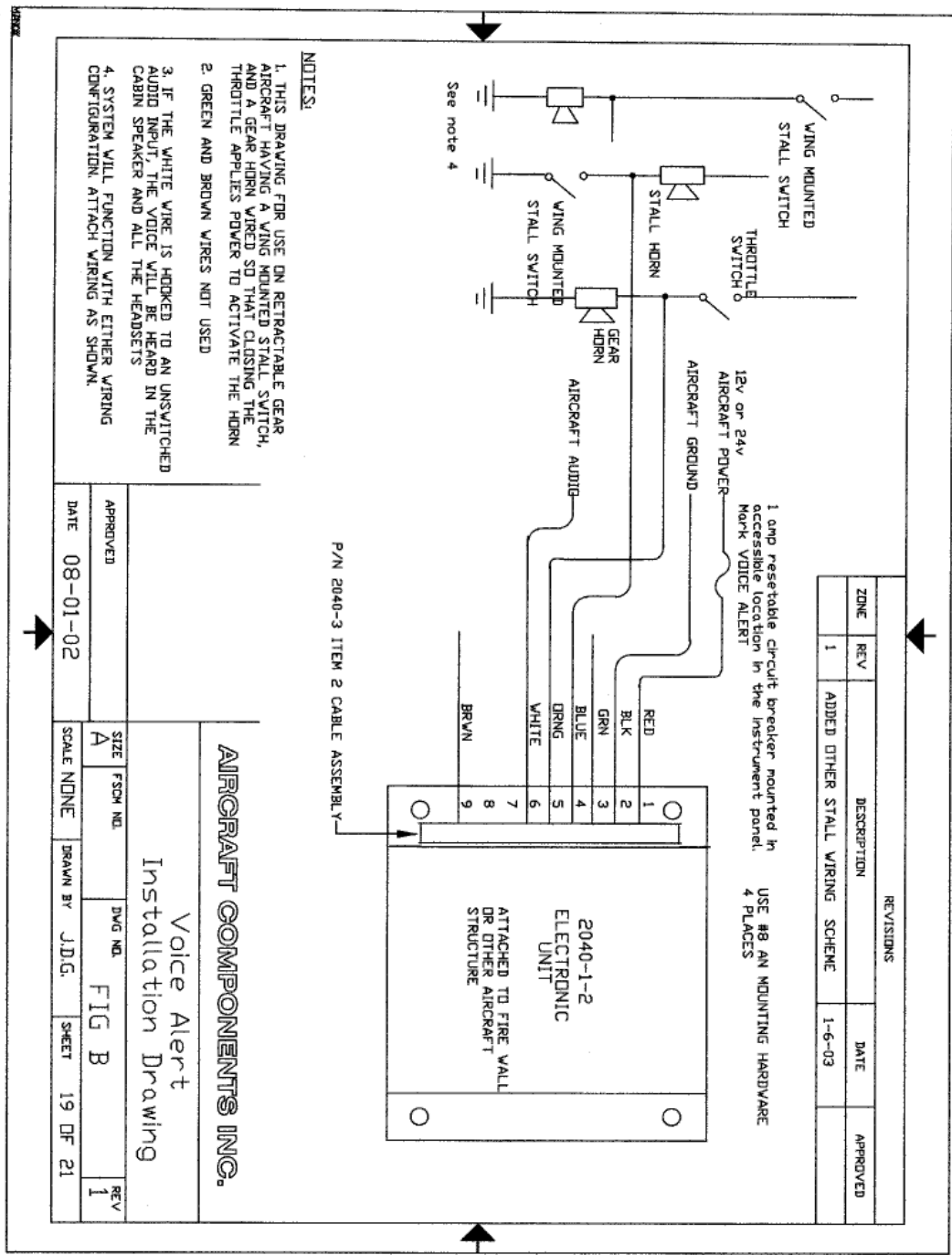


- NOTES:**
1. THIS SCHEMATIC FOR USE ON FIXED GEAR AIRCRAFT
 2. THE GRN, DRNG, & BRVN WIRES ARE NOT USED IN THIS INSTALLATION
 3. IF THE WHITE WIRE IS HOOKED TO AN UNSWITCHED AUDIO INPUT, THE VOICE WILL BE HEARD IN THE CABIN SPEAKER AND ALL THE HEADSETS
 4. SYSTEM WILL WORK WITH EITHER WIRING CONFIGURATION. ATTACH BLUE WIRE AS SHOWN.

AIRCRAFT COMPONENTS INC.

Voice Alert
Installation Drawing

APPROVED	SIZE	F SCH NO.	DWG NO.	REV
DATE 08-01-02	A		FIG A	1
	SCALE NONE	DRAWN BY J.D.G.	SHEET 18	DF 21



REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
1	1	ADDED OTHER STALL WIRING SCHEME	1-6-03	

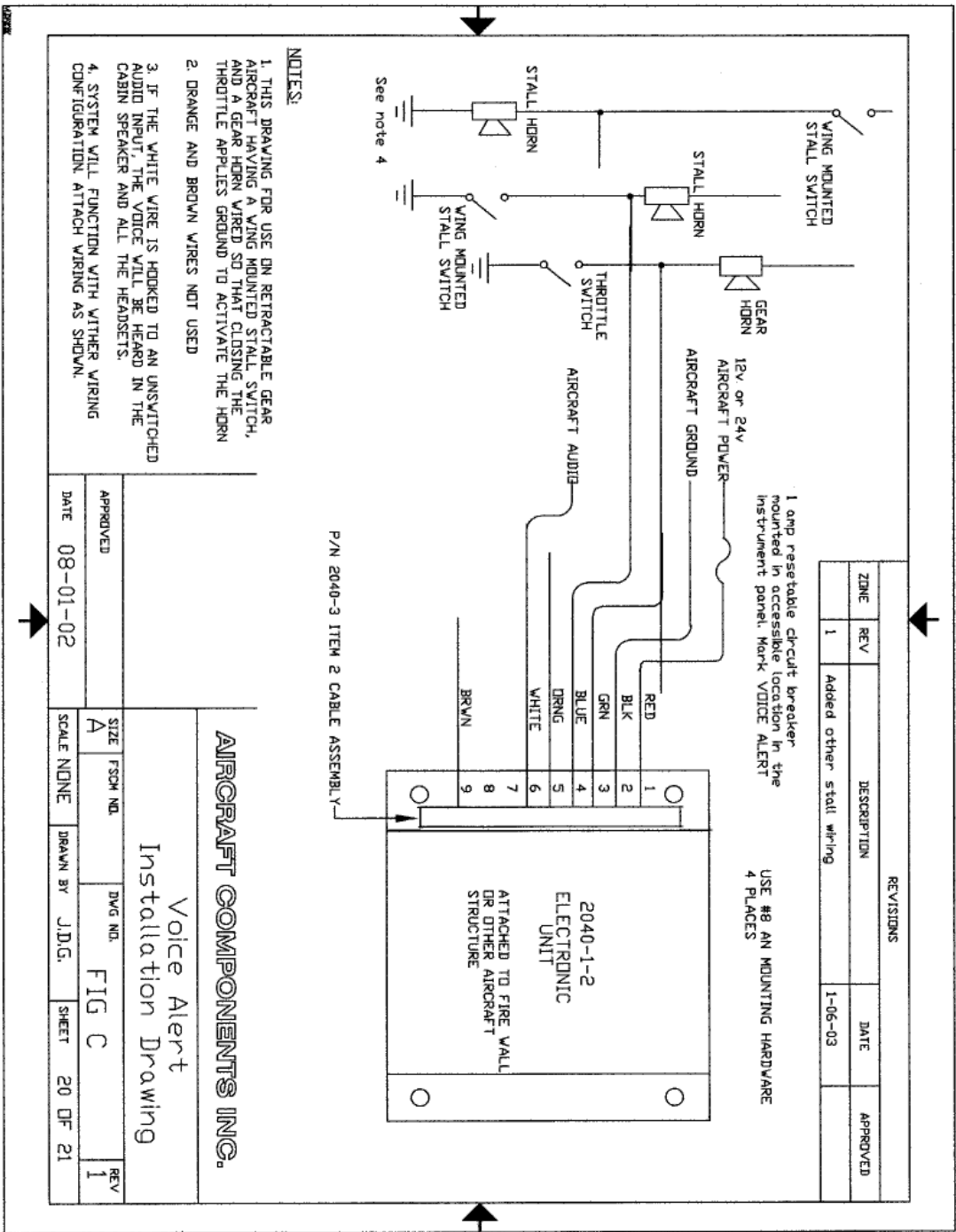
NOTES:

1. THIS DRAWING FOR USE ON RETRACTABLE GEAR AIRCRAFT HAVING A WING MOUNTED STALL SWITCH, AND A GEAR HORN WIRED SO THAT CLOSING THE THROTTLE APPLIES POWER TO ACTIVATE THE HORN
2. GREEN AND BROWN WIRES NOT USED
3. IF THE WHITE WIRE IS HOOKED TO AN UNSWITCHED AUDIO INPUT, THE VOICE WILL BE HEARD IN THE CABIN SPEAKER AND ALL THE HEADSETS
4. SYSTEM WILL FUNCTION WITH EITHER WIRING CONFIGURATION. ATTACH WIRING AS SHOWN.

APPROVED		DATE 08-01-02	
SIZE FSCM NDL A		DVG NDL FIG B	
SCALE NONE		DRAWN BY J.D.G.	
		SHEET 19 OF 21	
		REV 1	

AIRCRAFT COMPONENTS INC.

Voice Alert
Installation Drawing



- NOTES:**
1. THIS DRAWING FOR USE ON RETRACTABLE GEAR AIRCRAFT HAVING A WING MOUNTED STALL SWITCH, AND A GEAR HORN WIRED SO THAT CLOSING THE THROTTLE APPLIES GROUND TO ACTIVATE THE HORN
 2. ORANGE AND BROWN WIRES NOT USED
 3. IF THE WHITE WIRE IS HOOKED TO AN UNSWITCHED AUDIO INPUT, THE VOICE WILL BE HEARD IN THE CABIN SPEAKER AND ALL THE HEADSETS.
 4. SYSTEM WILL FUNCTION WITH WITHER WIRING CONFIGURATION. ATTACH WIRING AS SHOWN.

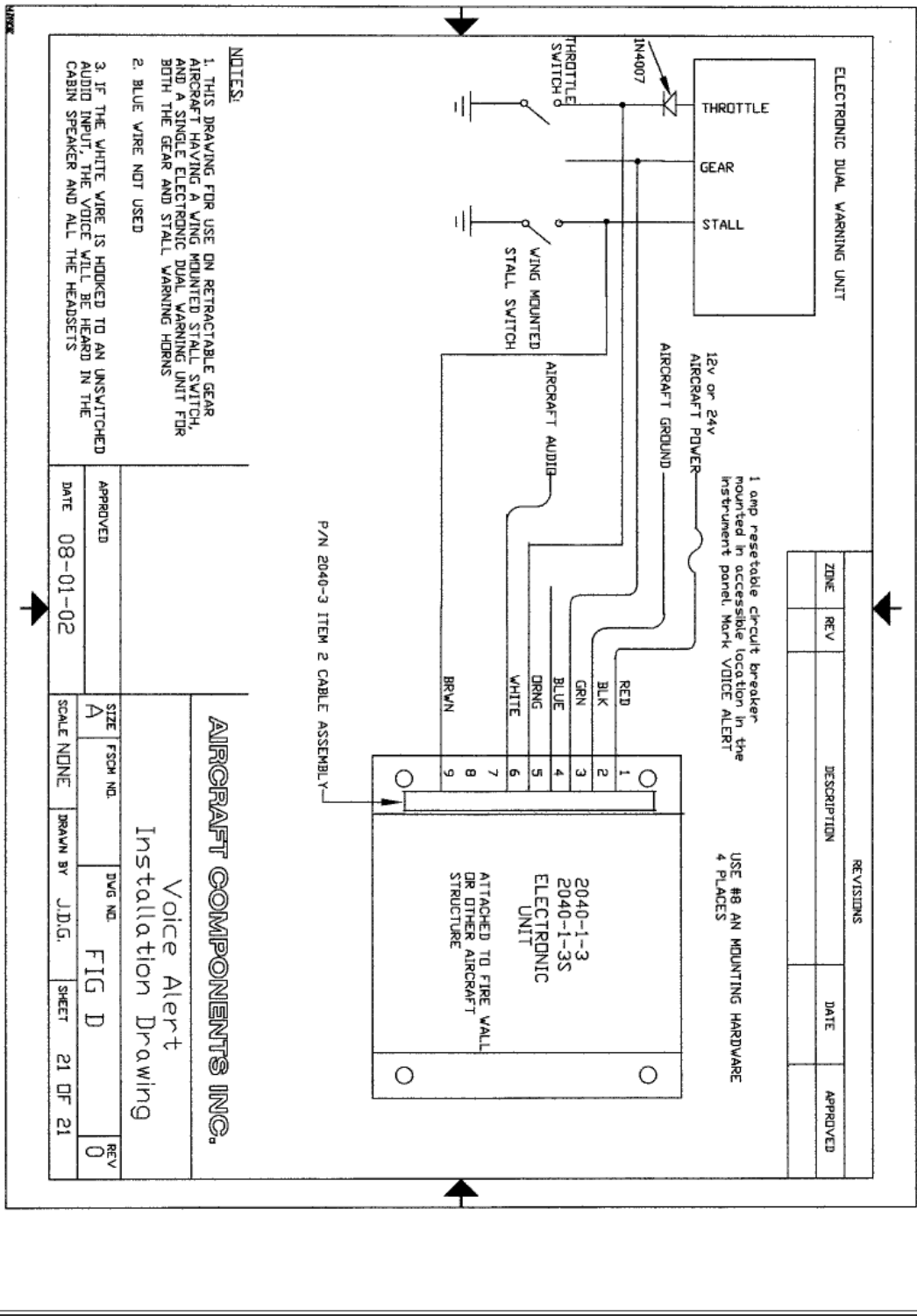
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	Added other stall wiring	1-06-03	

APPROVED	DATE	08-01-02
SIZE	FSCM NO.	A
DWG NO.	FIG C	
DRAWN BY	J.D.G.	
SHEET	20 OF 21	
REV	1	

AIRCRAFT COMPONENTS INC.

Voice Alert
Installation Drawing

P/N 2040-3 ITEM 2 CABLE ASSEMBLY



REVISIONS		DESCRIPTION	DATE	APPROVED
ZONE	REV			

1 amp resettable circuit breaker mounted in accessible location in the instrument panel Mark VOICE ALERT

USE #8 AN MOUNTING HARDWARE 4 PLACES

2040-1-3
2040-1-3S
ELECTRONIC
UNIT
ATTACHED TO FIRE WALL
OR OTHER AIRCRAFT
STRUCTURE

P/N 2040-3 ITEM 2 CABLE ASSEMBLY

NOTES:

1. THIS DRAWING FOR USE ON RETRACTABLE GEAR AIRCRAFT HAVING A WING MOUNTED STALL SWITCH AND A SINGLE ELECTRONIC DUAL WARNING UNIT FOR BOTH THE GEAR AND STALL WARNING HORNS
2. BLUE WIRE NOT USED
3. IF THE WHITE WIRE IS HOOKED TO AN UNSWITCHED AUDIO INPUT, THE VOICE WILL BE HEARD IN THE CABIN SPEAKER AND ALL THE HEADSETS

AIRCRAFT COMPONENTS INC.

Voice Alert
Installation Drawing

APPROVED	DATE	08-01-02
SCALE	SIZE	FSCM NO.
NDNE	A	
DRAWN BY	DWG NO.	FIG D
J.D.G.		
SHEET		21 OF 21
REV		0