



# GNC 355

## Part 23 AML STC

### Installation Manual



© 2019

Garmin International, Inc., or its subsidiaries  
All Rights Reserved

Except as expressly provided herein, no part of this manual may be reproduced, copied, transmitted, disseminated, downloaded or stored in any storage medium, for any purpose without the express prior written consent of Garmin. Garmin hereby grants permission to download a single copy of this manual and of any revision to this manual onto a hard drive or other electronic storage medium to be viewed and to print one copy of this manual or of any revision hereto, provided that such electronic or printed copy of this manual or revision must contain the complete text of this copyright notice and provided further that any unauthorized commercial distribution of this manual or any revision hereto is strictly prohibited.

Bendix/King<sup>®</sup> and Honeywell<sup>®</sup> are registered trademarks of Honeywell International, Inc.

Garmin<sup>®</sup>, FliteCharts<sup>®</sup>, and SafeTaxi<sup>®</sup> are registered trademarks of Garmin International or its subsidiaries. Connex<sup>™</sup>, GDU<sup>™</sup>, and GTN<sup>™</sup> are trademarks of Garmin International or its subsidiaries. These trademarks may not be used without the express permission of Garmin.

The Bluetooth<sup>®</sup> word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Garmin is under license. Other trademarks and trade names are those of their respective owners.

Windows<sup>®</sup> is a registered trademark of Microsoft Corporation in the United States and other countries.

© 2019 SD<sup>®</sup> is a registered trademark of SD-3C, LLC. All rights reserved.

The term Wi-Fi<sup>®</sup> is a registered trademark of the Wi-Fi Alliance<sup>®</sup>.

All other product or company names mentioned in this manual are trade names, trademarks, or registered trademarks of their respective owners.

For aviation product support, visit [www.flyGarmin.com](http://www.flyGarmin.com).

For information regarding the [Aviation Limited Warranty](#), refer to Garmin's website.

### Revision Record

REV	REVISION DATE	CHANGE DESCRIPTION
1	07/24/2019	Initial release.

### Manual Layout

The manual provides concise instructions in a layout designed to follow the logical order of a typical GNC 355 installation.

## ***INFORMATION SUBJECT TO EXPORT CONTROL LAWS***

This document may contain information which is subject to the Export Administration Regulations (EAR) issued by the United States Department of Commerce (15 CFR, chapter VII, subchapter C) and which may not be exported, released, or disclosed to foreign nationals inside or outside of the United States without first obtaining an export license.

This information in this document is subject to change without notice. For updates and supplemental information regarding the operation of Garmin products visit [www.flyGarmin.com](http://www.flyGarmin.com).

### ***Software License Notification***

#### **AES Encryption**

The product may include AES file encryption software, © 2002 DR. Brian Gladman, subject to the following license:

The free distribution and use of this software in both source and binary form is allowed (with or without changes) provided:

- Distributions of this source code include the above copyright notice, this list of conditions, and the following disclaimer.
- Distribution in binary form include the above copyright notice, this list of conditions, and the following disclaimer in the documentation and/or other associated materials.
- The copyright holder's name is not used to endorse products built using this software without specific written permission.

Alternatively, provided this notice is retained in full, this product may be distributed under the terms of the GNU General Public License (GPL) in which case the provisions of the GPL apply instead of those given above.

#### **Disclaimer**

The AES file encryption software is provided "as is" with no explicit or implied warranties in respect of its properties, including, but not limited to, correctness and/or fitness for purpose.

***SOFTWARE LICENSE AGREEMENT FOR GARMIN AVIATION PRODUCTS***

BY USING THE DEVICE, COMPONENT OR SYSTEM MANUFACTURED OR SOLD BY GARMIN (“THE GARMIN PRODUCT”), YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THE FOLLOWING SOFTWARE LICENSE AGREEMENT.

PLEASE READ THIS AGREEMENT CAREFULLY. Garmin Ltd. and its subsidiaries (“Garmin”) grants you a limited license to use the software embedded in the Garmin Product (the “Software”) in binary executable form in the normal operation of the Garmin Product. Title, ownership rights, and intellectual property rights in and to the Software remain with Garmin and/or its third-party providers. You acknowledge that the Software is the property of Garmin and/or its

third-party providers and is protected under the United States of America copyright laws and international copyright treaties. You further acknowledge that the structure, organization, and code of the Software are valuable trade secrets of Garmin and/or its third-party providers and that the Software in source code form remains a valuable trade secret of

Garmin and/or its third-party providers. You agree not to reproduce, decompile, disassemble, modify, reverse assemble, reverse engineer, or reduce to human readable form the Software or any part thereof or create any derivative works based on the Software. You agree not to export or re-export the Software to any country in violation of the export control laws of the United States of America.

## DEFINITIONS



### **WARNING**

A *Warning* means injury or death is possible.



### **CAUTION**

A *Caution* means that damage to the equipment is possible.



### **NOTE**

A *Note* provides additional information.



### **WARNING**

This product, its packaging, and its components contain chemicals known to the State of California to cause cancer, birth defects, or reproductive harm. This notice is being provided in accordance with California's Proposition 65. For questions or additional information, refer to [www.garmin.com/prop65](http://www.garmin.com/prop65).



### **WARNING**

Perchlorate Material – special handling may apply.  
Refer to [www.dtsc.ca.gov/hazardouswaste/perchlorate](http://www.dtsc.ca.gov/hazardouswaste/perchlorate).



### **CAUTION**

To avoid damage to the GNC 355, take precautions to prevent Electrostatic Discharge (ESD) when handling the unit, connectors, and associated wiring. ESD damage can be prevented by touching an object of the same electrical potential as the unit before handling the unit itself.



### **CAUTION**

The GNC 355 has a special anti-reflective coated display that is sensitive to skin oils, waxes, and abrasive cleaners. Cleaners containing ammonia will harm the anti-reflective coating. Clean the display with a clean, lint-free cloth and a cleaner that is safe for anti-reflective coatings.

## Acronyms

<b>A</b>	
ADC	Air Data Computer
ADI	Attitude and Director Indicator
ADS-B	Automatic Dependent Surveillance - Broadcast
ADS-R	Automatic Dependent Surveillance - Rebroadcast
AFCS	Automatic Flight Control System
AFM	Aircraft Flight Manual
AGL	Above Ground Level
AHRS	Attitude Heading Reference System
ALT	Altitude
AP	Autopilot
<b>C</b>	
CDI	Course Deviation Indicator
CFR	Code of Federal Regulation
<b>D</b>	
DC	Direct Current
<b>E</b>	
EAR	Export Administration Regulations
EFIS	Electronic Flight Instrument System
EIS	Engine Indication System
<b>F</b>	
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FD	Flight Director
FIS-B	Flight Information Services-Broadcast
FOV	Field of View
<b>G</b>	
GA	Go Around
GAD	Garmin Adapter
GDC	Garmin Air Data Computer
GDL	Garmin Data Link
GDU	Garmin Display Unit
GMA	Garmin Marker/Audio
GMU	Garmin Magnetometer Unit
GNS	Garmin Navigation System
GNSS	Global Navigation Satellite System

GNX	Garmin Navigator Transponder
GPS	Global Positioning System
GS	Glide Slope
GSR	Garmin Satellite Receiver
GSU	Garmin Sensing Unit
GTN	Garmin Touchscreen Navigator
GTP	Garmin Temperature Probe
GTX	Garmin Transponder
<b>H</b>	
HSDB	High Speed Data Bus
HSI	Horizontal Situation Indicator
<b>I</b>	
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
ILS	Instrument Landing System
<b>L</b>	
LOC	Localizer
LRU	Line Replaceable Unit
<b>M</b>	
MFD	Multi-Function Display
<b>O</b>	
OAT	Outside Air Temperature
OEM	Original Equipment Manufacturer
<b>P</b>	
PFD	Primary Flight Display
P/N	Part Number
<b>S</b>	
SAE	Society of Automotive Engineers
SBAS	Satellite-Based Augmentation System
SD	Secure Digital (Card)
<b>T</b>	
TA	Traffic Advisory
TAS	Traffic Advisory System
TAWS	Terrain Awareness and Warning System
TC	Type Certificate
TCAS	Traffic Alert and Collision Avoidance System
TIS-B	Traffic Information Service - Broadcast



TSO	Technical Standard Order
<b>V</b>	
VFR	Visual Flight Rules
VLOC	VOR/Localizer
VOR	Very High Frequency Omni-directional Range
<b>W</b>	
WAAS	Wide Area Augmentation System

## TABLE OF CONTENTS

<b>1</b>	<b>GNC 355 DESCRIPTION .....</b>	<b>1</b>
1.1	STC Applicability .....	1
1.2	System Overview .....	2
1.2.1	GNC 355( ) .....	2
1.3	Equipment .....	3
1.3.1	GNC 355( ) .....	3
1.3.2	Flight Stream 510 .....	3
<b>2</b>	<b>LIMITATIONS .....</b>	<b>4</b>
2.1	Installation Limitations .....	4
2.1.1	Equipment Interfaced to the GNC 355( ) .....	4
2.1.2	Antennas .....	4
2.2	Operational Limitations .....	5
<b>3</b>	<b>PREPARATION.....</b>	<b>6</b>
3.1	Pre-Installation Checklist.....	6
3.2	Materials and Parts.....	7
3.2.1	Garmin.....	7
3.2.2	Commercial .....	8
3.3	GNC 355( ) Installation Requirements.....	9
3.3.1	Minimum VFR Installation Requirements .....	9
3.3.2	Minimum IFR Installation Requirements.....	9
3.3.3	Placards and Labels .....	9
3.3.4	Power Distribution.....	10
3.3.5	Audio Interference.....	10
3.3.6	Compatible GPS Antennas .....	10
3.3.7	Compatible COM Antenna.....	11
3.4	Interfaces to Other Equipment .....	12
3.4.1	Displays .....	12
3.4.2	Navigation Indicators .....	12
3.4.3	Optional Interface to Retained External Navigation Source .....	12
3.4.4	ADS-B Receivers .....	12
3.4.5	Transponders .....	12
3.4.6	Display Lighting Control .....	12
3.5	Electrical Load Analysis .....	13
3.5.1	Measurement of Electrical Loads .....	14
3.5.2	Battery Capacity Analysis .....	21
<b>4</b>	<b>INSTALLATION .....</b>	<b>23</b>
4.1	Wire Routing and Installation .....	23
4.1.1	Shielded Cable Preparation.....	24
4.1.2	Backshell Assembly for D-Sub Connectors.....	27
4.1.3	Instructions to Crimp Pins to Wires .....	30
4.1.4	Configuration Module Installation.....	31
4.1.5	GPS/SBAS Antenna Cable Installation.....	32
4.1.6	COM Antenna Cable Installation .....	32
4.2	Electrical Bonding.....	33

4.2.1	Vibration Mounts.....	33
4.2.2	Aluminum Surface Preparation.....	34
4.3	Field-of-View.....	35
4.3.1	Acceptable Field-of-View for GNC 355( ).....	35
4.3.2	Source Selection Annunciation .....	37
4.4	GNC 355( ) Installation .....	38
4.4.1	GNC 355( ) Mounting Rack Installation (Stand-alone) .....	38
4.4.2	GNC 355( ) Mounting Rack Installation (Existing Instrument Panel Radio Stack).....	41
4.4.3	GNC 355( ) Backplate Installation .....	43
4.5	Optional Equipment.....	44
4.5.1	Flight Stream 510 .....	44
4.5.2	Switches.....	44
4.5.3	Annunciators .....	44
4.6	Antenna Installation Guidance.....	45
4.6.1	GPS/SBAS Antenna Installation Guidance .....	45
4.6.2	GPS Antenna Ground Plane .....	47
4.6.3	COM Antenna Ground Plane.....	47
4.7	Weight and Balance .....	48
<b>5</b>	<b>SYSTEM CONFIGURATION.....</b>	<b>50</b>
5.1	System Configuration Preparation .....	50
5.1.1	Entering Configuration Mode .....	50
5.2	Updates .....	51
5.2.1	Software Loader Card Instructions.....	51
5.2.2	Software Update Instructions .....	51
5.3	System Information.....	53
5.4	Setup .....	54
5.4.1	Interfaces .....	54
5.4.2	Lighting Configuration.....	58
5.4.3	Main System.....	61
5.4.4	Main Indicator (Analog).....	63
5.4.5	GPS Antenna Offset .....	63
5.4.6	AHRS .....	64
5.4.7	COM.....	65
5.5	Diagnostics.....	67
5.6	SD Save.....	67
5.7	SD Load .....	68
5.8	Flight Stream 510.....	69
5.9	Bluetooth.....	71
<b>6</b>	<b>SYSTEM CHECKOUT.....</b>	<b>73</b>
6.1	Checkout Log.....	73
6.2	Placards and Switch Labeling Check.....	75
6.3	Ground Check – Configuration Mode.....	76
6.3.1	Main Indicator (Analog).....	76
6.3.2	Composite Indicator .....	77
6.3.3	Discretes .....	77
6.3.4	HSDB .....	78

6.3.5	Interface Checks .....	78
6.4	Ground Check – Normal Mode.....	79
6.4.1	Instrument Check.....	79
6.4.2	Database Check .....	79
6.4.3	Signal Acquisition .....	80
6.4.4	VHF COM Interference Check .....	81
6.4.5	VHF COM Discrete Input Check .....	82
6.4.6	VHF COM .....	82
6.4.7	Interface Checks .....	82
6.5	EMC Check.....	84
6.6	Flight Checks .....	86
6.6.1	GPS Flight Check.....	86
6.6.2	Autopilot Flight Check.....	86
6.6.3	COM Flight Check .....	86
6.7	Documentation Checks .....	87
6.7.1	Airplane Flight Manual Supplement.....	87
6.7.2	Instructions for Continued Airworthiness .....	87
<b>APPENDIX A CONNECTORS AND PIN FUNCTION.....</b>		<b>88</b>
A.1	GNC 355( ) .....	88
A.1.1	Power.....	91
A.1.2	Lighting .....	91
A.1.3	Configuration Module .....	92
A.1.4	COM Audio .....	92
A.1.5	Discrete Inputs.....	93
A.1.6	Discrete Outputs .....	94
<b>APPENDIX B INTERCONNECT DIAGRAMS .....</b>		<b>95</b>
<b>APPENDIX C EQUIPMENT COMPATABILITY.....</b>		<b>139</b>
C.1	Autopilots.....	139
C.2	Bluetooth.....	139
C.3	Navigation Indicators.....	140
C.4	EFIS Displays .....	141
C.5	EHSI Displays.....	142
C.6	Garmin Data Links.....	142
C.7	Heading Reference Sources .....	143
C.8	Multifunction Displays .....	144
C.9	Transponders.....	144
<b>APPENDIX D AIRCRAFT MODEL-SPECIFIC INFORMATION .....</b>		<b>145</b>

# 1 GNC 355 DESCRIPTION

This installation manual is intended for use by those authorized to perform maintenance and/or avionics installations on certified aircraft. It includes installation data and checkout procedures for the GNC 355( ) and refers to standards described in Title 14 CFR Part 43. Installation personnel must be familiar with the contents of this manual prior to performing modifications to the aircraft. Terms frequently used in this manual include:

**Metal aircraft:** Aircraft with an aluminum (metallic) airframe, including exterior skin.

**Non-metal aircraft:** Aircraft with an airframe constructed from wood or composite, including exterior skin, or aircraft with metal tubular truss airframe and fabric or composite exterior skin.

**Use of ( ):** Denotes variations of LRUs. For example: GDL 69( ) refers to either the GDL 69 or the GDL 69A.

## 1.1 STC Applicability

This manual defines aircraft modifications required to install the GNC 355( ) under the GPS 175/ GNX 375/GNC 355 Part 23 AML STC and is applicable only to aircraft models listed in the Approved Model List. Aircraft modifications per this STC involve installation of components specified in the Equipment List. Installation of components not included in the Equipment List require a separate airworthiness approval.

Aircraft makes and models listed on the AML are eligible for the GNC 355( ) to be installed under this STC. Based on the data contained in the manual, STC applicability to a particular aircraft must be verified before the aircraft is modified. Some aircraft may have been modified or equipped with systems to which the GNC 355( ) interface is not defined nor approved. The installer must make the final determination if this STC is applicable to a given aircraft.

The installation of the GNC 355( ) in accordance with this STC is a major alteration to the aircraft. Following a major alteration, the aircraft must be returned to service in a means acceptable to the cognizant aviation authority. An example would be compliance with 14 CFR 43.9, 14 CFR 91.417 and submission of an FAA Form 337 “Major Repair and Alteration Airframe, Powerplant, Propeller, or Appliance” completed in accordance with AC 43.9-1F *Instructions for Completion of FAA Form 337*.

Consistent with FAA Order 8110.4B and AC 21-40, a permission letter to use this STC data is available for download from the Garmin [Dealer Resource Center](#).

## 1.2 System Overview

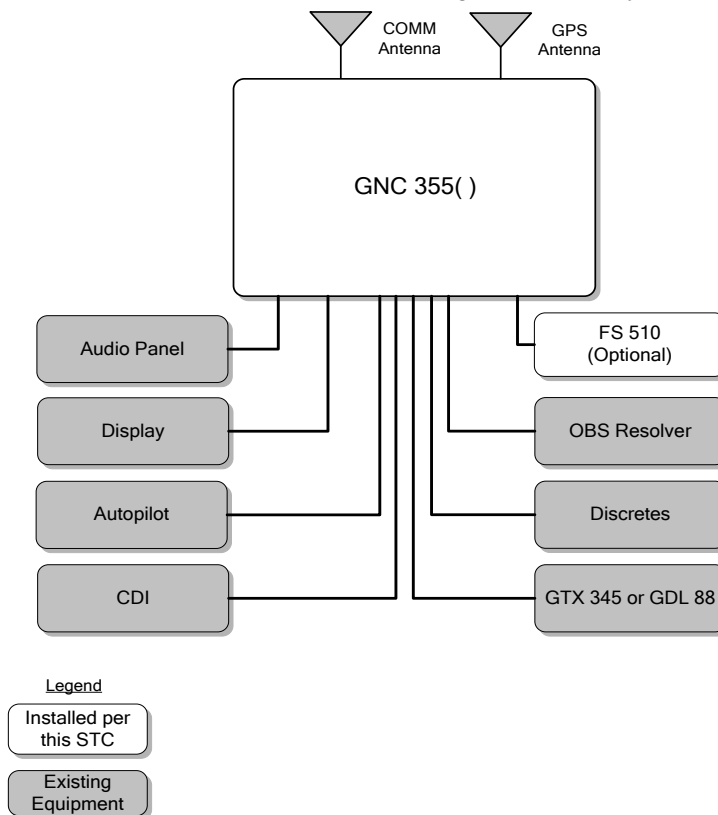
The GNC 355( ) GPS/COM IFR navigator is a touchscreen unit approved for installation in Class I & II CAR 3 and Part 23 certified aircraft. Refer to Section 2.2 for definition of Class I & II aircraft. Table 1-1 lists Garmin installation information useful for installing and maintaining the GNC 355( ).

**Table 1-1 Garmin Installation Manuals and References for GNC 355( )**

Document Title	Garmin Part Number
GPS 175/GNX 375/GNC 355 Part 23 AML STC Master Drawing List	005-01206-A1
GPS 175/GNX 375/GNC 355 Part 23 AML STC Maintenance Manual with Instructions for Continued Airworthiness	190-02207-A2
GNC 355/355A TSO Installation Manual	190-02488-00

### 1.2.1 GNC 355( )

The GNC 355( ) GPS/COMM IFR navigator can provide TSO-C146e compliant GPS/WAAS navigation capability for en route, terminal, non-precision and precision approach capabilities (LPV) when interfaced with a CDI. The GNC 355( ) is also a certified ADS-B Out position source. The GNC 355 has a TSO-C169a compliant 25kHz channel spacing VHF communication transceiver. The GNC 355A has a TSO-C169a and ETSO-2C169a compliant 8.33kHz channel spacing VHF communication transceiver. An optional Flight Stream 510 can be installed for Database Concierge functionality.



**Figure 1-1 Example of GNC 355( ) Interfaces**

The GNC 355( ) can be interfaced with other existing aircraft systems. Refer to APPENDIX C for equipment compatible with the GNC 355( ). Refer to configuration in Section 5 and the checkout procedure in Section 6 for additional details.

### 1.3 Equipment

This section includes the equipment that can be installed in accordance with this STC. Refer to Table 3-2 for part numbers.

#### 1.3.1 GNC 355( )

The GNC 355( ) has a bezel that is 2 x 6.25 inches. The unit is 10.1 inches deep behind the bezel. The display head has a cooling fan that draws air in through the side of the bezel and exhausts the air at the bottom of the chassis near the display head. No other forced air cooling is provided or needed. Air intake and exhaust must not be restricted when the display is mounted.



Figure 1-2 GNC 355( )

#### 1.3.2 Flight Stream 510

The Flight Stream 510 is a multimedia card that is inserted into the front of the GNC 355( ). The card provides wireless connection to a portable electronic device to support database concierge via Wi-Fi.



Figure 1-3 Flight Stream 510

## 2 LIMITATIONS

### 2.1 Installation Limitations

The GNC 355( ) unit must be installed within reach of the pilot and the display must be also within the pilot's field-of-view as defined in Section 4.3. Installation of the GNC 355( ) may require rearrangement of existing aircraft instruments to make room for the unit. This STC defines the requirements for locating the GNC 355( ) but does not include data for installation of instruments that are retained and need to be relocated. Data used for the installation of those instruments must be based on the equipment or aircraft manufacturer data.

Relocated instruments must use the existing approved lighting system. Instrument panels that use lighting overlay must use manufacturer data to modify the overlay, if required, or replace it with a lighting system approved under the aircraft type design data (TC), applicable STC, or other acceptable means.

The GPS 175/GNX 375/GNC 355 Part 23 AML STC is not a basis for airworthiness approval of installations that result in increased weight of the equipment installed in the aircraft instrument panel, unless the weight is within the limits specified by the aircraft manufacturer.



#### CAUTION

*The total weight of the new equipment planned for installation in aircraft instrument panel may not exceed the total weight of the equipment that will be removed from the panel unless the total weight is within the weight limit established for the panel by the aircraft manufacturer.*

APPENDIX D lists model specific limitations.

#### 2.1.1 Equipment Interfaced to the GNC 355( )

Only equipment, aircraft systems, and interface(s) approved by this STC can be connected to GNC 355( ). Installation of equipment that is not on the STC Equipment List requires separate airworthiness approval. Interfacing of equipment that is not listed in APPENDIX C of this installation manual also requires separate airworthiness approval.

- The GNC 355( ) is not approved to interface to another navigator under this STC
- The GNC 355( ) is not approved to display TAS/TCAS traffic under this STC
- The GNC 355( ) must not be configured for an ADS-B In display if correlated traffic is desired on a PFD/MFD
- The GNC 355( ) is not approved for displaying correlated traffic and must not be connected to a GDL 88 or GTX 345 interfacing to a TCAS
- The Flight Stream 510 interface and data provided to a PED is not approved to replace any required or installed aircraft display equipment, including navigation or traffic/weather display equipment

#### 2.1.2 Antennas

The GNC 355( ) can only use SBAS/GPS and COMM antennas that comply with the requirements as specified in Section 3.3.6 and this section. Installation of antennas is not provided in this STC and separate approval is necessary.

- Antennas, cables, and wiring interfaced to the GNC 355( ) must not be installed in fuel bays
- For multiple GPS installations in nonmetallic IFR aircraft, the GPS antennas must not be mounted in a straight line from the front to the rear of the fuselage to prevent a single lightning strike causing damage to all GPS systems
- GPS Antenna must meet TSO-C144( ).
- COM Antenna must meet TSO-C37( ) and C38( ) or TSO-C169( ). 50  $\Omega$ , vertically polarized with coaxial cable.



## 2.2 Operational Limitations

Refer to the AFMS for operational limitations. It is available at the Garmin [Dealer Resource Center](#). All functions of the GNC 355( ) meet the applicable design assurance qualifications for airplane Class I & II in accordance with AC 23.1309-1E, Figure 2.

### 3 PREPARATION

#### 3.1 Pre-Installation Checklist

Before installing the GNC 355( ), it is important to make sure the aircraft meets the prerequisites for the installation of the system under this STC. The following checklist is provided to help the installer to determine the necessary requirements that must be met before beginning installation of the GNC 355( ) in a specific aircraft. Make sure each of the items outlined is completed as necessary before beginning the modification.

**Table 3-1 Pre-Installation Checklist**

Reference	Item	Completed
AML attached to STC Certificate	Aircraft is on Approved Model List (AML).	<input type="checkbox"/>
Section 4.3 Section 4.4	Acceptable mounting provisions have been identified for GNC 355( )	<input type="checkbox"/>
Section 3.3.6	Acceptable GPS/SBAS antenna installed. Refer to STC SA02018SE-D for installation approval.	<input type="checkbox"/>
Section 3.3.7	Acceptable COMM antenna installed.	<input type="checkbox"/>
Section 3.4.3	External annunciators if retaining an existing navigation source.	<input type="checkbox"/>
APPENDIX C	Planned equipment interfaces are approved under the STC or have other FAA approval with the following exceptions. If interfaced with G500/G600 system, AML STC SA13292SE-A must have been used. If interfaced with G5, AML STC SA01818WI must have been used.	<input type="checkbox"/>
Section 2	Installation/operational limitations reviewed to make sure that the limitations will not adversely impact the installation.	<input type="checkbox"/>
Section 3.5	Aircraft electrical system is sufficient for GNC 355( ) installation.	<input type="checkbox"/>
Section 3.3.1 Section 3.3.2	External Navigation Indicator for IFR installations or RNAV.	<input type="checkbox"/>
APPENDIX D	The applicable lightning protection or modification needed for the proposed aircraft model has been determined.	<input type="checkbox"/>

## 3.2 Materials and Parts

This section provides a description of equipment and installation kits available from Garmin and commercially available parts and their requirements.

### 3.2.1 Garmin

GNC 355( ) components and applicable installation kits are supplied by Garmin. Refer to the Aviation Price Catalog on the Garmin [Dealer Resource Center](#) for details once the selection for a particular aircraft installation is determined.

**Table 3-2 Equipment**

Unit	Part Number		
	Catalog P/N	Standard Kit P/N	Unit P/N
GNC 355	010-02232-00	010-02232-01 [1]	011-04956-00
GNC 355A	010-02232-30	010-02232-31 [1]	011-04956-30
Flight Stream 510	010-01322-00	010-01322-01	011-03595-00

**Notes:**

[1] Includes unit, connector kit, installation rack, back plate, and configuration module.

**Table 3-3 Installation Materials Included in Standard Kits**

Unit	Description	Part Number	Quantity
GNC 355( )	Install Rack	115-03127-00	1
	Back Plate Assy	011-04994-00	1
	Connector Kit	011-04779-01	1
	Configuration Module	011-00979-03	1

**Table 3-4 GNC 355( ) Connector Kit – P/N 011-04779-01**

Description	Part Number	Quantity
Subassembly, backshell w/ hardware, 25/44 pin	011-00950-02	1
Subassembly, backshell w/ hardware, 37/62 pin	011-00950-03	1
Subassembly, ground adapter, shell 1-3	011-01169-00	2
Subassembly, ground adapter, shell 4&5	011-01169-01	1
Screw, 4-40 x.250, FLHP 100°, SS/P, nylon	211-63234-08	4
Connector Male, HD D-sub, 44 ckt	330-00185-44	1
Connector Male, HD D-sub, 62 ckt	330-00185-62	1
Connector, pin, mil crimp, size 22D	336-00021-00	104

**Table 3-5 Configuration Module P/N 011-00979-03**

Description	Part Number	Quantity
Configuration module, sub-assy, potted	011-02178-00	1
Harness, 4 cond	325-00122-00	1
Contacts, pin, mil crimp, size 22D	336-00021-00	5

**Table 3-6 Database Cards**

Card Description	Part Number
SD Card, Spare Database (for Download of Terr/Obstacle/Arpts/SfTx)*	010-01431-01

\*Used to save downloaded databases from flyGarmin.com.

### 3.2.2 Commercial

The GNC 355( ) is designed to be installed using standard parts and accessories. Items noted below are not approved under this STC for installation and require separate installation approval. The following may be required:

- Mid-Continent Remote Relay Unit MD41-244 14V TSO'd or Mid-Continent Remote Relay Unit MD41-248 28V TSO'd. This item is not installed under this STC
- Staco Switch Indicator P/N 992561-1241762200 (14V Systems) or P/N 992561-1241862200 (28V systems) . This item is not installed under this STC
- Applied Avionics 28VDC Vivisun Indicator P/N 95-40-17-B6-E1YGN. Can be converted to 14 VDC operation by replacing four 28 VDC lamps with 14 VDC lamps P/N 14-113. This item is not installed under this STC
- Carling Switch P/N 112-A-63 and 62012481-0-0. These items are not installed under this STC.
- Grayhill Switch P/N 30-3. This item is not installed under this STC.
- Amber Indicator: MS25041-4, Lamp: MS25237-327 or MS25237-330
- Green Indicator: MS25041-3, Lamp: MS25237-327 or MS25237-330
- MS26574 or MS22073 push-pull manually resettable circuit breakers or other trip-free, push-pull circuit breaker type as specified in the aircraft parts catalog
- MIL-W-22759/16 or MIL-W-22759/18 electrical wire



#### NOTE

*MIL-W-22759/18 wire is recommended due to the insulation diameter being more compatible with high-density connectors.*

- MIL-C-27500 shielded cable with M22759/16 (TE) or M22759/18 wire (TG) and ETFE jacket (14)
- MS25036 or MS20659 ring terminals
- M83519/2-X shield terminators
- A-A-59163 (MIL-I-46852C) silicone fusion tape
- Wire bundle routing, securing, and management supplies, as required
- 2024-T3 aluminum per AMS-QQ-A-250/5
- Ethernet cable, aircraft grade category 5 (required only for HSDB interfaces). Only Ethernet cables listed in Table 3-7 can be used

**Table 3-7 HSDB Cables**

Manufacturer	Cable Part Number	Gauge
PIC WIRE AND CABLE	E10422	24 AWG
	E10424	24 AWG
	E12424	24 AWG
EMTEQ	D100-0824-100	24 AWG
THERMAX	MX100Q-24	24 AWG
CARLISLE IT	392404	24 AWG

### 3.3 GNC 355( ) Installation Requirements

This section provides installation requirements for the installation of the GNC 355( ).

#### 3.3.1 Minimum VFR Installation Requirements

For a VFR installation of a GNC 355( ), the following equipment is required:

- GNC 355( ) unit installed in the aircraft manufacturer approved location for 6.25 x 2-inch tall avionics equipment
- GPS/SBAS antenna required for GPS navigation functions
- COM antenna required for VHF communication functions
- An external CDI is required for installations using the RNAV navigation and glideslope information. Refer to APPENDIX C for a list of approved CDIs
- If the GNC 355( ) does not meet the field-of-view requirements as outlined in Section 4.3, then remote LOI and APPR annunciators must be installed

VFR installations must be placarded “GPS LIMITED TO VFR USE ONLY” in clear view of the pilot. The placard must be located immediately adjacent to the GNC 355( ). Refer to Section 3.3.3 for additional placard requirements. GNC 355( ) VFR GPS installations must use *Airplane Flight Manual Supplement or Supplemental Airplane Flight Manual for the Garmin GPS 175/GNX 375/GNC 355 GPS/XPDR/COMM Navigation System* (P/N 190-02207-A3).

#### 3.3.2 Minimum IFR Installation Requirements

For an IFR installation of a GNC 355( ), the criteria in Section 3.3.1 must be met in addition to the following:

- If the GNC 355( ) is installed for GPS primary navigation, then it must be interfaced to a navigation indicator installed in the pilot’s primary field-of-view (or in the aircraft manufacturer approved mounting location). Refer to field-of-view requirements in Section 4.3.
- The navigation indicator must have a vertical deviation indicator (GS) in order to perform approaches with vertical guidance. EFIS, EHSI, and NAV indicators that are approved to interface to the GNC 355( ) under this STC are listed in APPENDIX C.
- A second GPS navigator, VHF navigation radio, or VHF COM radio must be installed with separate circuit breaker(s) and connection(s) to ground from the GNC 355( ).

GNC 355( ) IFR GPS installations must use *Airplane Flight Manual Supplement or Supplemental Airplane Flight Manual for the Garmin GPS 175/GNX 375/GNC 355 GPS/XPDR/COMM Navigation System* (P/N 190-02207-A3).

#### 3.3.3 Placards and Labels

Placards and labels added as part of the GNC 355( ) installation must be displayed in a conspicuous place and must not be easily erased, disfigured, or obscured. They must be readable in all cockpit lighting conditions. Ambient flood lighting is acceptable. Text height must be a minimum of 0.10 inches, and the text must contrast with the placard surroundings such that it is easily readable.

The text must be solid-color font of at least 300 DPI (dots per inch). New circuit breakers and switches installed for the GNC 355( ) unit must be labeled as shown in the applicable interconnect drawing in APPENDIX B.

### 3.3.4 Power Distribution

An Electrical Load Analysis must be performed as stated in Section 3.5 when installing the GNC 355( ). The GNC 355( ) must not share circuit breakers or ground returns with other equipment. The GNC 355( ) should be connected to the avionics bus, if the aircraft has an avionics bus. Circuit protection devices for the GNC 355( ) must be push-pull manually resettable circuit breakers (MS26574, MS22073, or other trip-free, push-pull circuit breaker type as specified by the aircraft manufacturer). Refer to Figure B-2 for circuit breaker ratings. The circuit breaker must be readily accessible to the pilot.

### 3.3.5 Audio Interference

Take care to keep effects from coupled interference and ground loops to a minimum. Coupled interference can be caused in audio system cables when they are put near large AC electric fields, AC voltage sources, and pulse equipment (e.g., strobes, spark plugs, magnetos, EL displays, CRTs, etc.). Interference can also get into audio system cables by magnetic induction when they are put near large AC current conductors or switched DC equipment (e.g., heaters, solenoids, fans, autopilot servos, etc.).

Ground loops are caused when there is more than one path in which return currents flow or when signal returns have the same path as large currents from other equipment. These large currents make differences in ground potential between the different equipment operating in the aircraft. These differences in potential can produce an additive effect on audio panel input signals. The audio panel can receive the input signal plus an unwanted component injected by ground differentials, a common cause of alternator-related interference. Terminating audio shields at one end eliminates a potential ground loop injection point. The interconnect diagrams and accompanying notes in APPENDIX B should be followed closely to minimize interference effects.

### 3.3.6 Compatible GPS Antennas

Antenna performance is critical to GPS/SBAS operation. Antennas that meet Garmin’s minimum performance specifications are listed in Table 3-8. The GNC 355( ) must be interfaced with one of these antennas to achieve acceptable performance. Antenna installation is not covered by this STC, but antenna installation guidance is provided in Section 4.6.1. Refer to STC SA02018SE-D for an antenna installation approval option.

**Table 3-8 GPS Antennas**

Model, Description	Connector Type	Manufacturer	P/N	Notes
GA 35, GPS/WAAS	TNC	Garmin	013-00235-( )	[1] [2]
GA 36, GPS/WAAS	TNC	Garmin	013-00244-( )	[2]
GA 37, GPS/WAAS/XM	TNC	Garmin	013-00245-( )	[2]
A33W, WAAS Antenna	TNC	Garmin	013-00261-( )	[3]
GPS/VHF Antenna	TNC/BNC	Comant	CI-2580-200	
GPS/VHF Antenna	TNC/BNC	Comant	CI-2728-200	
GPS/XM/VHF Antenna	TNC/BNC	Comant	CI-2580-410	
GPS/XM/VHF Antenna	TNC/TNC/BNC	Comant	CI-2728-410	
GPS Antenna	TNC	Comant	CI-428-200	
GPS/XM Antenna	TNC/TNC	Comant	CI-428-410	

**Notes:**

- [1] Same mounting hole pattern as GA 56, but GA 35 antenna has a physically larger footprint.
- [2] Installation of antenna may be accomplished using Garmin GPS/XM Antenna STC SA02018SE-D.
- [3] Same mounting hole pattern as A33.

### 3.3.7 Compatible COM Antenna

Any COM antenna may be used that meets TSO-C37( ) and C38( ) or TSO-C169( ) and is 50  $\Omega$ , vertically polarized.

### **3.4 Interfaces to Other Equipment**

Information in this section provides details for interfacing to equipment not installed by the GPS 175/GNX 375/GNC 355 Part 23 AML STC. The information provided must be reviewed when these interfaces are considered.

#### **3.4.1 Displays**

The GNC 355( ) is approved to interface to displays using HSDB, ARINC 429, or RS-232. Refer to APPENDIX C for a list of approved displays.

#### **3.4.2 Navigation Indicators**

The GNC 355( ) requires a CDI. The CDI can be part of an EFIS system, EHSI, or a standalone composite or analog CDI. A list of approved CDIs is in Appendix Sections C.3, C.4, and C.5. A built-in OBS resolver can receive OBS angle information from a CDI/HSI system.

#### **3.4.3 Optional Interface to Retained External Navigation Source**

Depending on the CDI, the GNC 355( ) must have an optional switch, relay, and annunciator installed if existing NAV radio functionality is desired to be retained. Remote source selection annunciators must be in the primary field-of-view to indicate whether an external NAV radio source or the GNC 355( ) GPS output is selected. Refer to Section 4.3 for field-of-view requirements and Section 4.5 for pre-requisite/co-requisite switch, relay, and annunciator requirements. Refer to Figure B-27 for recommended CDI source selection annunciators and Figure B-10 and Figure B-18 for the interconnects.

#### **3.4.4 ADS-B Receivers**

The GNC 355( ) is approved to receive ADS-B In data from a GDL 88 or GTX 345.

#### **3.4.5 Transponders**

The GNC 355( ) is approved to interface to the transponders listed in Appendix Section C.9 as an ADS-B Out position source.

#### **3.4.6 Display Lighting Control**

The GNC 355( ) display and key lighting can be controlled by a combination of either the lighting bus or the built-in photocell. The photocell can be used for lighting control for all installations.



### 3.5 Electrical Load Analysis

An Electrical Load Analysis (ELA) must be completed before the GNC 355( ) can be installed to verify that the aircraft electrical system is adequate. The purpose of the ELA is to demonstrate that the maximum electrical system demand does not exceed 80% of the DC power source continuous rating and the aircraft battery can provide electrical power to equipment essential for continued safe flight and landing in the event of a complete loss of the primary electrical system. Satisfactory completion of the ELA must be recorded on FAA Form 337.



#### NOTE

*Certain operating requirements (e.g., 14 CFR Part 135) may impose additional requirements in the event of electrical power loss. It is the installer's responsibility to ensure that the aircraft meets the additional requirements if used for these operations.*

Typical current draw of the GNC 355( ) is summarized in the table below.

**Table 3-9 GNC 355( ) Current Draw**

LRU	Current Draw			
	14V System		28V System	
	Typical	Maximum	Typical	Maximum
GNC 355( )				
Comm connector	1.8 A	6.0 A	0.9 A	2.8 A
Main connector	0.6 A	0.9 A	0.3 A	0.6 A

Net change to the electrical load with the GNC 355( ) installed must be determined. Net decrease in electrical load requires no further analysis if the electrical system is within limits. This is likely to occur when existing equipment is removed, or older systems are replaced with newer equipment that requires less power to operate. The amended electrical load calculation documenting load reduction should be filed with the aircraft permanent records. Refer to Figure 3-1 for a sample calculation.

Items removed from aircraft:	Electrical Load	Comment
GNC 250XL	1.35 A @ 14VDC	Use no load current draw.

Items added to aircraft:	Electrical Load	Comment
GNC 355( )	2.4 A @ 14VDC	Used typical current draw.

Net Change in Bus Load:	1.05 A
-------------------------	--------

**Figure 3-1 Sample Net Electrical Load Change Calculation**

A complete Electrical Load Analysis must be performed to show adequate capacity of the alternator/generator if the electrical load is increased with the GNC 355( ) installed. ASTM F 2490-05 *Standard Guide for Aircraft Electrical Load and Power Source Capacity Analysis* offers guidance on preparing an ELA. Alternatively, electrical loads under different operating conditions can be measured, as discussed in Section 3.5.1.

### 3.5.1 Measurement of Electrical Loads

It must be shown that the maximum electrical demand for each DC power source does not exceed 80% of the continuous power rating. Discussed in this section is the ELA for a single alternator/single battery electrical system determined by load measurement. It must be modified accordingly for aircraft with multiple batteries or alternators. During measurement, applied electrical system loads must account for combinations and durations for probable aircraft operations.



#### NOTE

*Circuits must be protected and LRU circuit breaker ratings must meet specifications in Section 3.2, additionally follow guidelines in AC 43.13-1B, Chapter 11, Section 4.*



#### CAUTION

*To avoid damage to equipment, verify the ammeter can handle the anticipated load.*

The current measurement is best accomplished with an in-circuit or clamp-on calibrated ammeter with 0.5A or better precision. Continuous rate as indicated on the alternator and the battery data plate/nameplate must be noted.

- The tabulated form provided in Figure 3-3 can be used to compile a list of electrical loads on the aircraft. Typically, the list is comprised of existing circuit breakers and circuit breaker switches as shown by the example in Figure 3-4. Continuous (e.g., GPS) or intermittent (e.g., stall warning horn, landing gear) loads must be identified
- Use the worst-case flight condition and identify which phase of flight each load is used in for normal flight operation. Certain loads are mutually exclusive and will not be turned on at the same time such as pitot heat and air conditioning, use only the worst-case load conditions for each phase of flight.



#### NOTE

*Normal operation is when the primary electrical power generating system is operating normally. Emergency operation is when the primary electrical power generating system is inoperative.*

- Use the worst-case flight condition and identify which phase of flight each load is used in for emergency flight operation. At a minimum, the list of installed equipment must include:
  1. COM radio
  2. GPS
  3. Audio panel [1]
  4. Stall warning system (if applicable)
  5. Pitot heat
  6. Landing light (switched on during landing only)
  7. Instrument panel lighting
  8. Landing gear indication light
  9. Navigation lights
  10. Strobe lights

#### Notes:

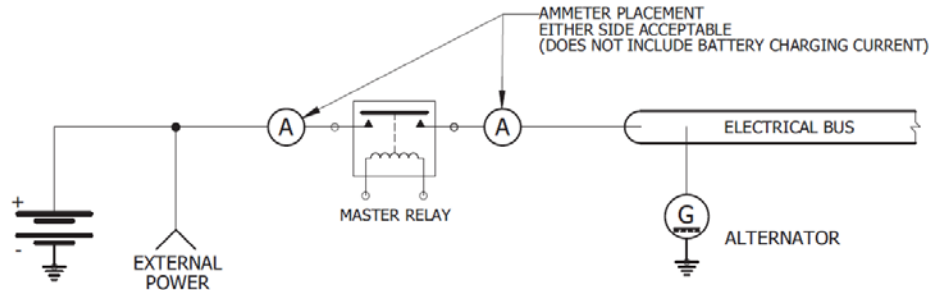
- [1] If the landing gear warning or stall warning audio requires the audio panel, then the audio panel must be included; otherwise, the audio panel is not essential for continued safe flight/landing and may be omitted.



**CAUTION**

The pitot heat must be switched on long enough to take the current measurement and then switched off. Since the pitot probe may get hot, ensure the probe cover is removed. Care must be taken to avoid burns or damage to the unit.

1. The ammeter must be connected in line between the external power source and the master relay circuit, as shown below. This will eliminate errors due to the charging current drawn by the battery.



**Figure 3-2 Ammeter Placement for Current Measurement**

2. With all circuit breakers closed, external power must be applied to the aircraft and voltage set to the nominal alternator voltage (usually 13.8 VDC or 27.5 VDC).
3. The battery master switch must be turned on. Do not measure intermittent electrical loads. It is assumed if any additional current is required beyond the alternator capability, this short-duration demand will be supplied by the battery.
4. The following lighting settings must be applied during the entire electrical load measurement:
  - All instrument panel and flood lights set to maximum brightness
  - The GNC 355( ) backlight set to 75% brightness
  - All other backlit displays set to 75% brightness
5. Switch on all continuous electrical loads that are used for the taxiing phase of flight and record the current that is measured by the ammeter (tabulated ELA form in column 1 of Figure 3-3). The autopilot circuit breaker must be closed but the autopilot must not be engaged during the measurement.
6. Switch on all continuous electrical loads that are used for the normal takeoff/landing phase of flight and record the current that is measured by the ammeter (tabulated ELA form in column 2 of Figure 3-3). Measurements must be taken with the landing lights ON and OFF. The autopilot circuit breaker must be closed, and the autopilot must be engaged.
7. Switch on all continuous electrical loads that are used for the normal cruise phase of flight and record the current that is measured by the ammeter (tabulated ELA form column 3 of Figure 3-3). The autopilot circuit breaker must be closed, and the autopilot must be engaged.
8. Switch on all continuous electrical loads that are used for the emergency cruise phase of flight and record the current that is measured by the ammeter (tabulated ELA form column 4 of Figure 3-3). Measurements must be taken with the landing lights ON and OFF.
9. Switch on all continuous electrical loads that are used for the emergency landing phase of flight and record the current that is measured by the ammeter (tabulated ELA form column 5 of Figure 3-3). Measurements must be taken with the landing lights ON and OFF.

The aircraft electrical system can support the GNC 355( ) if the maximum electrical system demand, as documented on the tabulated ELA form, does not exceed 80% of the DC power source continuous rating. It is permissible for the electrical load to exceed 80% of the alternator capacity when the pitot heat and landing light are both switched on during the takeoff/landing phase of flight. In this case, the electrical load must not exceed 95% of the DC source capacity. If the pitot heat is on and the landing light is off, the electrical load may not exceed 80% of the DC source capacity.



**NOTE**

*The Electrical Load Analysis for this installation is only valid for modifications performed under this STC. Subsequent changes to the aircraft electrical system will require a new load analysis.*

Date: \_\_\_\_\_ Tail Number: \_\_\_\_\_

Circuit/System	Circuit Breaker Number	Operating Time	Phase(s) of flight during which circuit/system is used				
			Normal Operation			Emergency Operation	
			Taxiing 10 min	TO/Land 10 min	Cruise 60 min	Cruise (Calculated)	Land 10 min
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 3-3 Tabulated Electrical Load Form  
Sheet 1 of 2

Date: \_\_\_\_\_ Tail Number: \_\_\_\_\_

Circuit/System	Circuit Breaker Number	Operating Time	Phase(s) of flight during which circuit/system is used				
			Normal Operation			Emergency Operation	
			Taxiling 10 min	TO/Land 10 min	Cruise 60 min	Cruise (Calculated)	Land 10 min
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total current used (amps):			(a) _____	$\overline{\text{Ldg Lt ON}}$ (b1)	(c) _____	(d) _____	(e) _____
÷ Alternator rating (amps): _____				$\overline{\text{Ldg Lt OFF}}$ (b2)			
x 100% = Percent of alternator capacity used:			_____ % (< 80%)	$\overline{\text{Ldg Lt ON}}$ (< 95%) %	_____ % (< 80%)	N/A	N/A
				$\overline{\text{Ldg Lt OFF}}$ (< 80%) %			

Pass/Fail: \_\_\_\_\_

Notes:

Figure 3-3 Tabulated Electrical Load Form  
Sheet 2 of 2

Date: 08/04/2017

Tail Number: N5272K

Circuit/System	Circuit Breaker Number	Operating Time	Phase(s) of flight during which circuit/system is used				
			Normal Operation			Emergency Operation	
			Taxiing 10 min	TO/Land 10 min	Cruise 60 min	Cruise (Calculated)	Land 10 min
Alternator Field	A1	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annunciator Panel	C1	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Vacuum Warning	C2	Intermittent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stall Warning	C3	Intermittent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gear Warning	C4	Intermittent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gear Actuator	C5	Intermittent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cluster Gauge	D1	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ignition	D2	intermittent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PFD	D3	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Turn Coordinator	D4	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gear Relay	D5	Intermittent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ADC	E1	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Panel Lights	E2	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Glareshield Lights	E3	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AHRS	E4	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Flap Actuator	E5	Intermittent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COM 1	F1	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
GPS/NAV 1	F2	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
COM 2	F3	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GPS/NAV 2	F4	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Autopilot [1]	F5	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Audio Panel	G1	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Radio Blower	G2	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ADF	G3	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transponder	G4	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
GDL 69	H1	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TCAD	H2	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
JPI Engine Monitor	H3	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bose Headsets	H5	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Altitude Encoder	J1	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Strobe Light	SW1	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Nav Lights	SW2	Continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pitot Heat	SW5	Continuous	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Elevator Trim	SW6	Intermittent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boost Pump	SW7	Intermittent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 3-4 Example of Completed Tabulated Electrical Load Form  
Sheet 1 of 2

Date: 08/04/2017 Tail Number: N5272K

Circuit/System	Circuit Breaker Number	Operating Time	Phase(s) of flight during which circuit/system is used				
			Normal Operation			Emergency Operation	
			Taxiling 10 min	TO/Land 10 min	Cruise 60 min	Cruise (Calculated)	Land 10 min
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total current used (amps):			45.7 (a)	60.0 Ldg Lt ON (b1)	43.5 (c)	34 (d)	48.1 (e)
				44.7 Ldg Lt OFF (b2)			
÷ Alternator rating (amps): <u>70</u>							
x 100% = Percent of alternator capacity used:			68 % ( <u>&lt; 80%</u> )	86 % Ldg Lt ON ( <u>&lt; 95%</u> )	62 % ( <u>&lt; 80%</u> )	N/A	N/A
				64 % Ldg Lt OFF ( <u>&lt; 80%</u> )			
Pass/Fail:			<u>PASS</u>	<u>PASS</u>	<u>PASS</u>		

**Notes:**

[1] During taxi phase, Autopilot circuit breaker is closed but autopilot is not engaged.

**Figure 3-4 Example of Completed Tabulated Electrical Load Form  
Sheet 2 of 2**



### 3.5.2 Battery Capacity Analysis

The capacity of the aircraft battery must be verified if the GNC 355( ) installation increases the electrical load on the system. The capacity of the existing battery is adequate if it supports loads essential to the continued safe flight and landing for a minimum of 30 minutes. For aircraft with a maximum service ceiling greater than 25,000 feet and certified with FAR 23.1353(h) at amendment 23.62, the battery must support 60 minutes of continued safe flight. Otherwise, the battery must be replaced with a battery that has sufficient capacity.

Refer to ASTM F 2490-05 *Standard Guide for Aircraft Electrical Load and Power Source Capacity Analysis* for more information.

Verification of the battery capacity can be accomplished following these steps:

- (1) **Battery Capacity** (de-rated). 75% of the battery capacity (as indicated on battery nameplate) is assumed available (this value has units of Amp Hrs). Ensure the value is converted to Amp Mins.
- (2) **Normal Operation Load**. Worst-case cruise condition (cruise at night) during normal operation is assumed with 5 minutes given to the pilot to shed non-essential loads. Any automatic load shedding can be considered immediate and does not need to be considered in the calculations. Multiply the normal operation load (Amps) by  $t_1$  (mins) [ $t_1 = 5$  min].
- (3) **Emergency Landing Load**. Electric load during the approach and landing with failed generator/alternator. This load is assumed to drain the battery for 10 minutes and needs to be determined. Multiply the emergency landing operation load (Amps) by  $t_2$  (mins) [ $t_2 = 10$  min].
- (4) **Emergency Cruise Load**. Minimum load necessary to maintain flight in cruise after the generator/alternator has failed needs to be determined.

The following equation determines the battery capacity for emergency cruise expressed as time ( $t_3$ ):

$$t_3 = \frac{\text{Battery Capacity} - \text{Normal Operation} - \text{Emergency Landing}}{\text{Emergency Cruise Load}} = \frac{(1) - (2) - (3)}{(4)}$$

The duration of the entire emergency flight on battery power is:

$$t = t_1 + t_2 + t_3$$

$$t = 5 \text{ min} + 10 \text{ min} + t_3$$

$$t = 15 \text{ min} + t_3$$

### Emergency Power Operation Calculation Example

Date: 08/04/2018		Registration No.: N5272K		
POWER SOURCE	QTY. INSTALLED	VOLTAGE	MANUFACTURER	MODEL
ALTERNATOR	1	13.75 VDC	PRESTOLITE	AL 12-P70
BATTERY	1	12.00 VDC	GILL	G-35
<p>Assumptions:</p> <ol style="list-style-type: none"> <li>1. Most severe operating condition is considered to be night IFR with the pitot heat operating.</li> <li>2. Load demands are shown for steady state operation and do not include inrush current draw.</li> <li>3. Load shedding is accomplished manually by the pilot within five minutes of warning annunciation.</li> <li>4. Loads measured using a calibrated Extech DC ammeter clamped on the cable between battery terminal and master relay.</li> </ol>				
<p>Analysis:</p> <p>(1) Battery Capacity  <math>0.75 \times 35 \text{ Amp hrs} = 26.25 \text{ Ah} \times 60 \text{ min} = \mathbf{1575 \text{ A-min}}</math></p> <p>(2) Normal Operation Load [<math>t_1 = 5</math> minutes duration]            Current drawn in normal cruise 43.5 A            Load <math>5 \text{ min} \times 43.5 \text{ A} = \mathbf{217.5 \text{ A-min}}</math></p> <p>(3) Emergency Landing Load [<math>t_2 = 10</math> minutes duration]            Current drawn in emergency landing 48.1 A            Load <math>10 \text{ min} \times 48.1 \text{ A} = \mathbf{481 \text{ A-min}}</math></p> <p>(4) Emergency Cruise Load.            Current drawn in emergency cruise <math>\mathbf{34.0 \text{ A}}</math></p> <p>(5) Battery capacity for emergency cruise</p> $t_3 = \frac{(1) - (2) - (3)}{(4)} = \frac{1575 - 217.5 - 481}{34} = \mathbf{25.8 \text{ minutes}}$ <p>(6) Total duration of flight on emergency (battery) power  <math>t = t_1 + t_2 + t_3</math>  <math>t = 5 \text{ min} + 10 \text{ min} + 25.8 \text{ min} = \mathbf{40.8 \text{ min}}</math></p>				
<p>Results:</p> <p>The total required flight duration on emergency power is 30 minutes. The existing battery capacity provides <b>40.8 minutes</b> for emergency flight duration. The battery is adequate.</p>				

## 4 INSTALLATION

### 4.1 Wire Routing and Installation

When fabricating and installing each wire harness:

- Reference the aircraft manufacturer (electrical) standard practices manual and equipment manufacturer documentation for guidance on wire type, gauge, routing, and wire identification. Methods, techniques, and practices defined in AC 43.13-1B Chapter 11, *Aircraft Electrical Systems*, are acceptable
- Provide adequate space for the LRU or sensor connector(s), include additional wire length to create a service loop for maintenance where appropriate
- Ensure the wiring does not contact sources of heat, is not routed near moving components of aircraft controls or other systems, and not routed near electrical power sources that could introduce EMI. Wire routing must preclude accidental impact or damage
- The GNC 355( ) must not share any circuit breakers or ground returns
- For non-metallic aircraft approved for IFR operations, all wiring connected to the GNC 355( ) must be within a metallic area of the aircraft. For tube-and-fabric aircraft, this means said wiring must be within or routed along the metallic tube structure. For composite aircraft, this means said wiring must be routed within or along the aircraft lightning ground plane (i.e., imbedded metallic foil, imbedded metallic mesh, or metallic substructure). Shielding requirements for electromagnetic compatibility (EMC):
  - Refer to the equipment manufacturer for any specific shield requirements or follow general practices and guidance in this manual if none exist
  - For all existing wiring that is overbraided, the overbraid must be maintained and include the new wire added between the GNC 355( ) and the existing system
  - Shield terminations must not to exceed 3.0 inches unless otherwise specified. Shields may be connected to the metal connector backshell if the backshell is grounded to the airframe unless otherwise specified. Alternately, the shield termination may be directly connected to the airframe ground
  - All shields must have continuity at intermediate connections (i.e., bulkhead connectors, terminal blocks, splices, etc.). If intermediate connectors are installed, unless otherwise specified, the shield must be terminated at both sides of the intermediate connector backshells (if metal connector) or to airframe ground on both sides of the intermediate connectors

GNC 355( ) connector definitions and pin functions are defined in APPENDIX A.



#### NOTE

*Interconnect diagrams in this manual only show end to end connections and do not show intermediate connections that may be present in an aircraft.*

### 4.1.1 Shielded Cable Preparation

Prepare all shielded cables as shown in Figure 4-1. When terminating shield drains, a maximum of two shields can be daisy-chained together. The daisy-chaining method may only be used if the six tapped holes in the shield block are insufficient to ground all shields.

1. At the end of the shielded cable (1), strip back a 2.5-inch maximum length of the jacket to expose the braid.
2. Remove this exposed braid.
3. Carefully score the jacket 1/4 to 5/16 inches from the end and remove the jacket to leave the braid exposed.



#### NOTE

*Solder sleeves with pre-installed shield drains may be used instead of separate shield terminators and individual wires.*

4. Connect a 20 or 22 AWG wire (2) to the exposed shield of the prepared cable assembly. Refer to AC 43.13 for termination techniques.



#### NOTE

***Solder Sleeves with pre-installed lead:** A preferred solder sleeve is the Raychem S03 Series with the thermochromic temperature indicator. These solder sleeves come with a pre-installed lead and effectively take the place of items (2) and (3). For detailed instructions on product use, refer to Raychem installation procedure.*

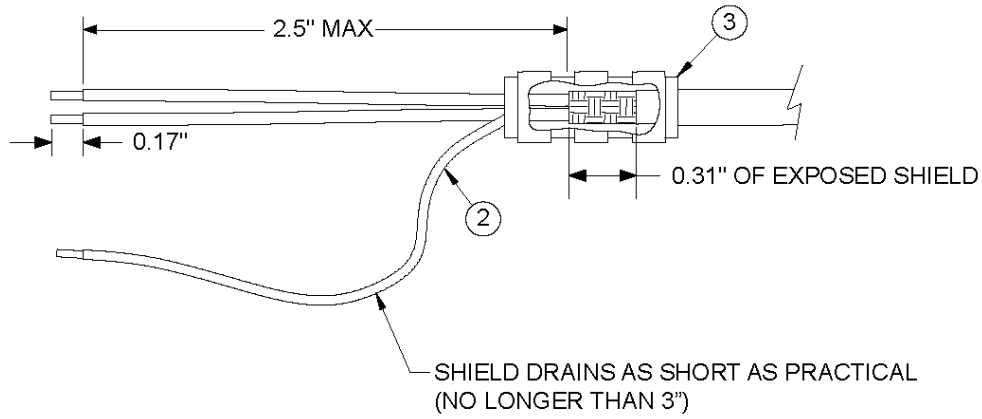
5. Slide a shield terminator (3) onto the prepared cable assembly (1).
6. Connect the shield wire (2) to the shield using a heat gun approved for use with solder sleeves. The chosen size of solder sleeve must accommodate both the number of conductors present in the cable and the shield wire (2) to be attached.
7. Crimp contacts (4) onto the cable wires.
8. Wrap the cable bundle with silicone fusion tape at the point where the backshell strain relief and cast housing will contact the cable bundle.
9. Repeat steps 1 through 8 as needed for the remaining shielded cables.
10. Install a ring terminal (5) onto the cable shield termination wires (2), grouping no more than three shield drains per ring terminal.

**Table 4-1 Shield Wire Assembly**

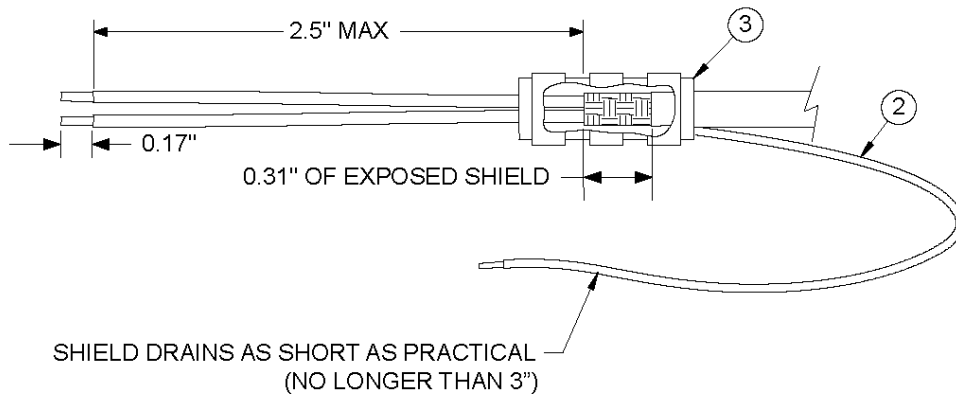
Refer to Figure 4-1	Description	Garmin P/N	Notes
1	Multiple conductor shielded cable (refer to APPENDIX B for interconnect diagrams)	As required	[1]
2	Wire, insulated (20-22 AWG), 3" max length	As required	[1] [2]
3	Shield terminator	As required	[1] [2]
4	Pin contacts, #22D	336-00021-00	[4]
5	Ring terminal, #8, insulated, 18-22 AWG, 14-16 AWG, 12-10 AWG	MS25036-149 MS25036-153 MS25036-156	[1] [3] [5]

**Notes:**

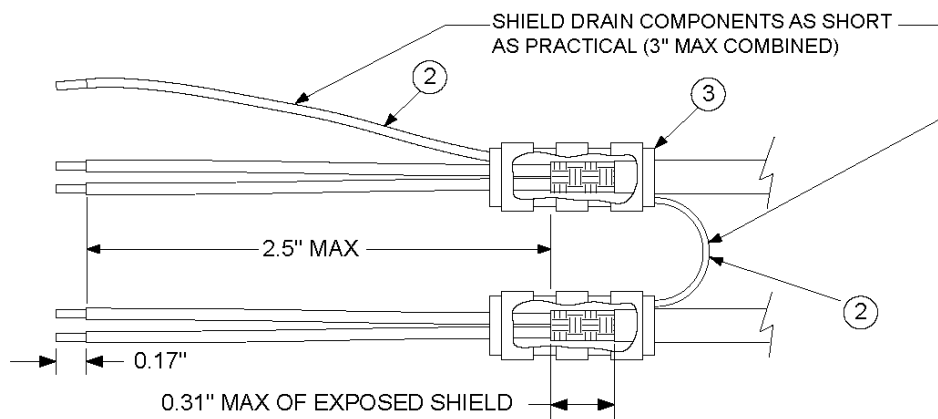
- [1] Item not supplied in connector kits and must be purchased separately.
- [2] Solder sleeve with pre-installed lead can be used instead of items 2 and 3.
- [3] Not a Garmin part number.
- [4] Supplied as part of connector kit for GNC 355( ).
- [5] Part not shown in Figure 4-1.



**PREFERRED METHOD**



**ALTERNATE METHOD**



**ALTERNATE METHOD 2 (DAISY CHAIN)**

**Figure 4-1 Shield Termination Methods**

### 4.1.2 Backshell Assembly for D-Sub Connectors

Connector kits are listed in Table 3-4, which includes Garmin backshell, connectors and contacts.

Each tapped hole on the backshell may accommodate up to two ring terminals. It is preferred that only two wires be terminated per ring terminal. This necessitates the use of a ring terminal, #8, insulated, 14-16 AWG (MS25036-153). If only a single wire is left, or if only a single wire is needed for this connector, a ring terminal, #8, insulated, 18-22 AWG (MS25036-149) can be used. If more wires exist for the connector than two per ring terminal, it is permissible to terminate three wires per ring terminal. For this procedure, refer to Figure 4-2 and Figure 4-3.

1. Insert flat head screws (3) through holes on the shield block (2).
2. Attach to the backshell (1).
3. Insert the crimped wire harness contacts (14) in the D-sub connector (10).
4. Install the configuration module or GAE 12 wires into the connector.
5. Wrap the cable bundle with silicone fusion tape (19) where the strain relief clamps the bundle.
6. Place the smooth side of the backshell strain relief clamp (7) across the cable bundle.



#### CAUTION

*Place the smooth side of the strain relief clamp across the cable bundle. Placing the concave side against the cable bundle will damage wires.*

7. Secure strain relief with three 4-40 x 0.375 panhead screws (6).
8. Attach configuration module.
9. Attach the cover (8) to the backshell using the supplied screws (9).
10. Install a ring terminal onto the cable shield drains, grouping wires as appropriate for the connector.
11. Place the following items on the 8-32 x 0.312 panhead shield terminal screw in the order they are presented:
  - a. Split washer (17)
  - b. Flat washer (18)
  - c. First ring terminal (15)
  - d. Second ring terminal (if necessary)
12. Insert the panhead shield terminal screw (16) into the tapped holes on the shield block (2).

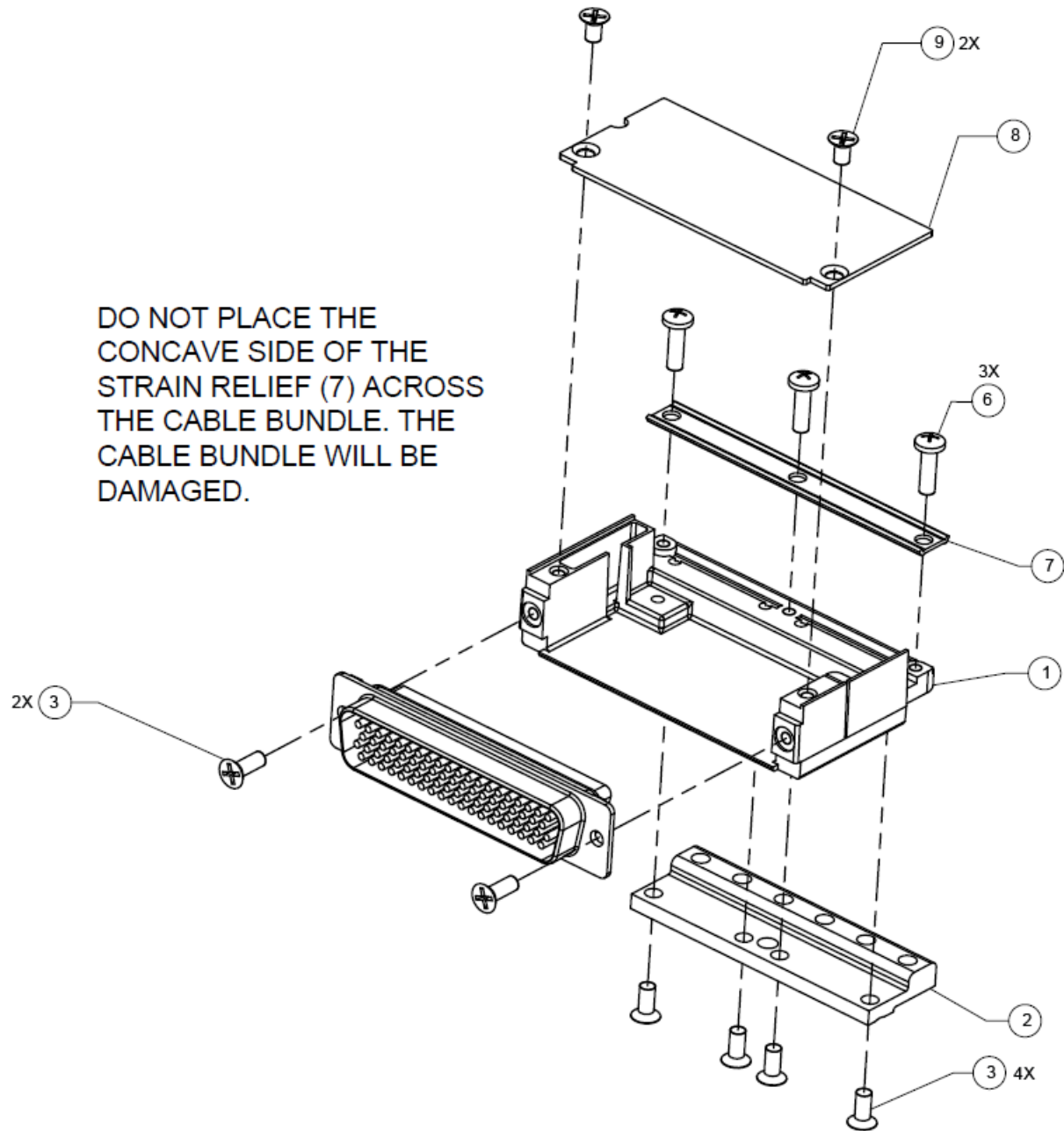
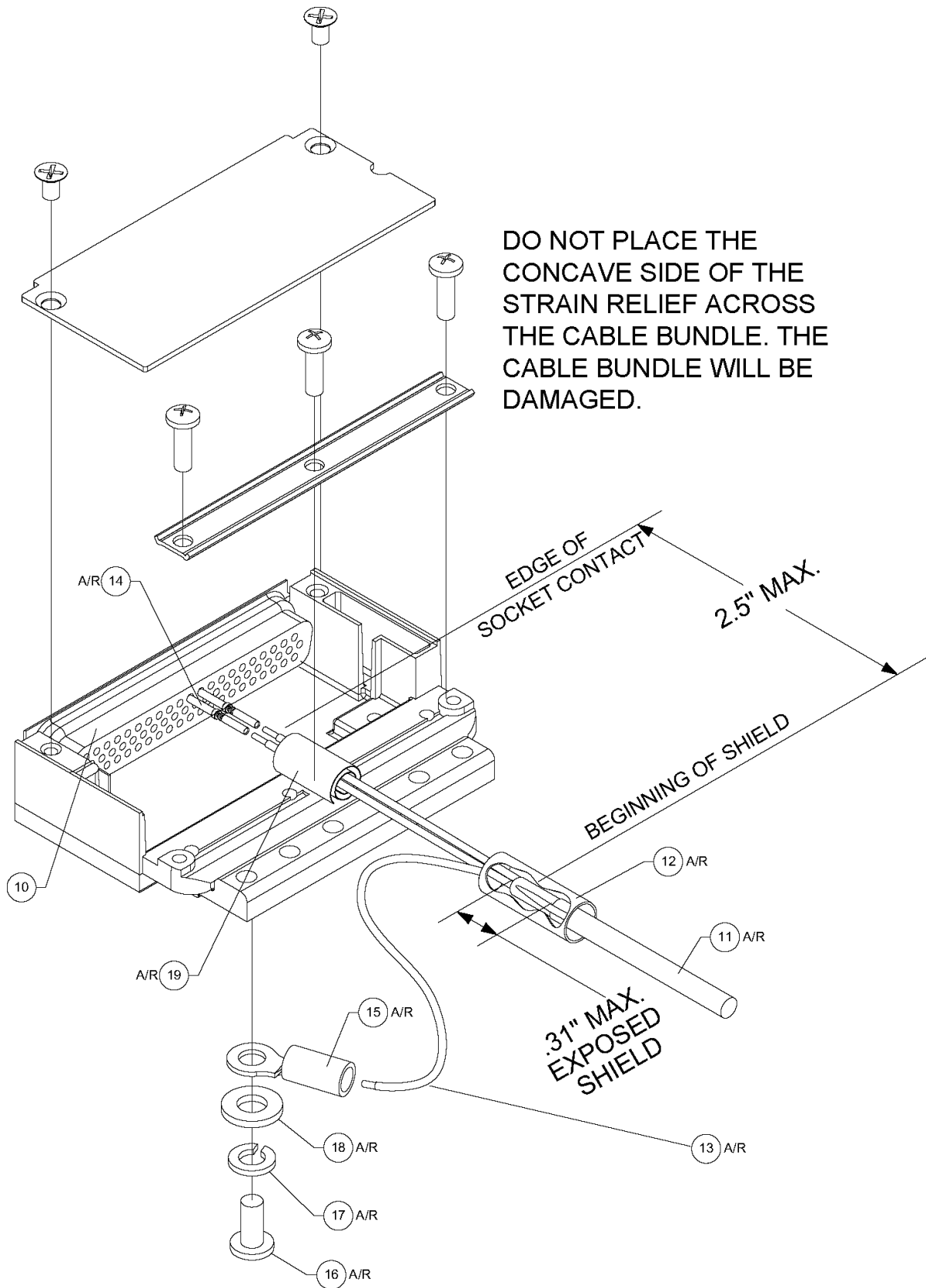


Figure 4-2 Backshell Assembly Example

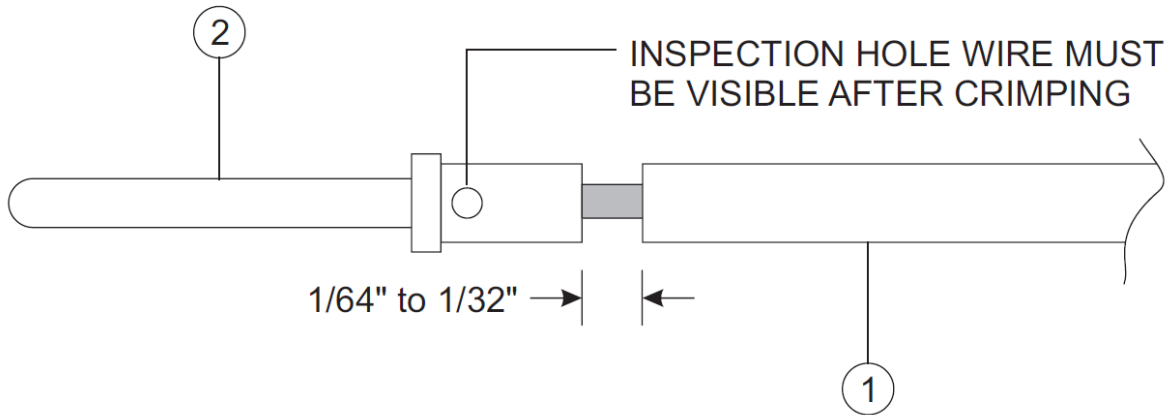




**Figure 4-3 Backshell Shield Termination**

### 4.1.3 Instructions to Crimp Pins to Wires

1. Strip back approximately 0.17 inches of insulation from each wire.
2. Insert the wire (1) into the pin/socket (2) and crimp with one of the recommended crimping tools.
3. Insert the pin into the connector housing location as specified by the interconnect drawings in APPENDIX B.
4. Verify the pin is properly engaged in the connector by tugging on the wire.



**Figure 4-4 Insulation to Pin/Socket Clearance**

#### 4.1.4 Configuration Module Installation

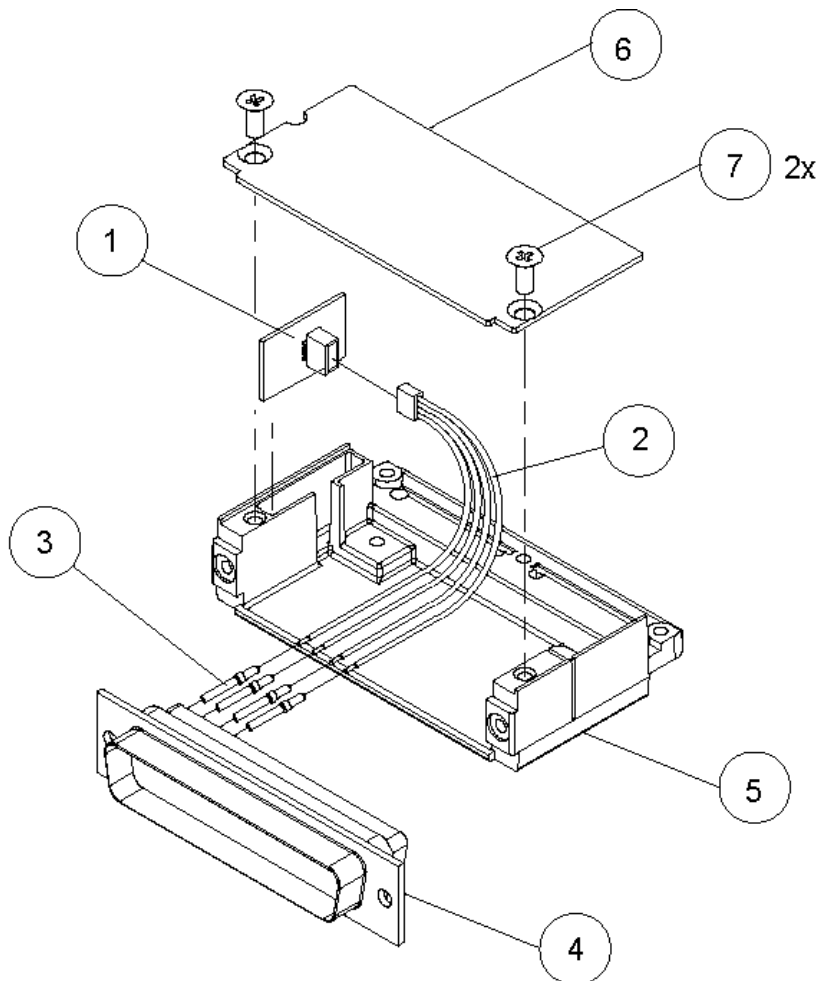


##### NOTE

*The socket contacts supplied with the configuration module are specifically made to accommodate 28 AWG wire. Ensure the crimp tool is set to the proper crimp tension when crimping these contacts to the configuration module harness.*

The backshell assembly houses the configuration module. To assemble, refer to Figure 4-5 for details and item numbers referenced in the following procedure.

1. Strip back approximately 0.17 inches of insulation from each wire of the wire harness (2).
2. Crimp the contacts (3) onto each wire of the four-conductor wire harness (2).
3. Insert the newly crimped contacts and wires (2, 3) into the applicable connector housing (4) location as specified by the interconnect drawings.
4. Plug the four-conductor wire harness (2) into the connector on the PCB (1).
5. Insert the PCB (1) into the backshell (5) recess.
6. Attach cover (6) to backshell (5) using screws (7).



**Figure 4-5 Configuration Module Assembly**

#### 4.1.5 GPS/SBAS Antenna Cable Installation

Installation approval for the GPS antenna is not supplied through this STC. Refer to Section 4.6.1 for GPS antenna installation guidance. This section provides information on the GPS antenna cable installation.



#### NOTE

*GPS/SBAS antenna cable loss must be between 1.5 dB and 6.5 dB in order to maintain proper rejection of interference signals. If RG-142B or RG-400 is used, it must be between 6.5 and 35 feet long to meet the cable loss requirement. For longer lengths, use low-loss double or triple-shielded, 50 Ω coaxial cable.*

It is permissible to temporarily locate the GPS antenna with a coaxial cable connected to the GNC 355( ) and check the GPS performance as described in Section 6.4.3. Once the antenna mounting position has been established, route the coaxial cable from the antenna to the GNC 355( ). Proper selection of coaxial cable and assembly of connectors is critical to GPS signal performance.

An acceptable connector used to connect the coaxial cable to the GPS/SBAS antenna is listed in Table 4-2.

**Table 4-2 GPS Antenna TNC Connector**

Item	Amphenol P/N
Connector, TNC, Male,	31-4452

Additional loss from coaxial connectors and adapters, such as TNC to BNC, should be considered when computing cable loss. A typical loss of 0.2 dB can be used for each connection. To maintain integrity of the SBAS signal, the GPS antenna coaxial cable must have a minimum of two shields (e.g., RG-400 or RG-142B).

For very short runs, where the loss is less than 1.5 dB, additional cable should be used to increase the loss to within 1.5 dB and 6.5 dB. This additional cable may be coiled, taking into account the minimum bend radius of the cable.

During the post-installation checkout, susceptibility to harmonics of VHF COM transmitters will be evaluated. If problems arise, then better isolation, or distance, may be required between the GPS and COM antennas, or a 1575.42 MHz notch filter (Garmin P/N 330-00067-00) may be installed in series with the antenna coax of the VHF COM transceiver to reduce or eliminate the harmonic interference.

#### 4.1.6 COM Antenna Cable Installation

The antenna coaxial cable must be made of RG-142B, RG-400 or a comparable quality 50 Ω coaxial.

Check for insertion loss and VSWR (voltage standing wave ratio). VSWR should be checked with an in-line type VSWR/wattmeter inserted in the coaxial transmission line between the transceiver and the antenna. The VSWR/wattmeter should be inserted as close to the transceiver as possible. When rack and harness buildup is performed in the shop, the coaxial termination may be provisioned by using a 6" inline BNC connection. Any problem with the antenna installation is most likely seen as high reflected power. A VSWR of 3:1 is acceptable; however, VSWR above 3:1 may result in reduced transmit power.

Avoid running wires and coaxial cables near the COM antenna cables. If there are two separate COM antennas, attempt to run the COM coaxial cables independently of each other and provide zonal separation as much as possible in the aircraft to avoid loss of both COMs in a single event.

## 4.2 Electrical Bonding

Electrical equipment chassis, shield/ground terminations, interfaced antennas, supporting brackets, and racks must be electrically bonded to the aircraft's main structure (metallic or tube-and-fabric aircraft) or instrument panel (composite aircraft). Reference the aircraft manufacturer (electrical) standard practices manual for procedures on electrical bond preparation or follow SAE ARP 1870 *Aerospace Systems Electrical Bonding and Grounding for Electromagnetic Compatibility and Safety*, Section 5, *Detail Requirements*. The resistance must be verified with a calibrated milliohm meter with  $\pm 0.1$  m $\Omega$  (or better) accuracy and all connector(s) disconnected from the LRU. The electrical bond must achieve direct current (DC) resistance less than or equal to:

- 2.5 m $\Omega$  to local structure in equipment mounting locations for metallic or tube-and-fabric aircraft
- 5.0 m $\Omega$  to the instrument panel for composite aircraft

All existing third-party remote equipment interfaced to the GNC 355( ) must be electrically bonded to the airframe ground. It is not acceptable to interface the GNC 355( ) to existing third-party equipment that relies only on power ground return wires as an electrical ground.

Electrical bonding can be achieved with mounting hardware (e.g., rivets, bolts, nuts, washers, etc.) or via bond straps. Bonding surfaces must be clean of any primer, grease, or dirt. If mounting hardware is used to create the electrical bond, the area under the head of the bolt or washer must be free of primer and a spot face prepared that is at least 0.125 inches wider than the head of the bolt or the washer. Any exposed area still visible after the bond is completed must be primed and finished with the original coating or other suitable film. Rivets used to mechanically attach brackets and shelves provide an inherent electrical bond through the rivets and require no additional bond preparation. The top or bottom side of the Garmin racks or equipment flanges do not need any special bond preparations.

The instrument panel must be metal construction allowing a ground path for instrument panel installations. For metal and tube-and-fabric aircraft, the ground path is inherently achieved through the metallic airframe structure. For composite aircraft, a ground plane (or reference) must be used to achieve a comparable ground.

When interfacing the GNC 355( ) to a navigation indicator (refer to Appendix Section C.3) with non-metallic housing that cannot be grounded to the instrument panel, unless otherwise specified by the navigation indicator installation requirements it is acceptable to use a grounding strap with a maximum length of 13 inches to connect navigation indicator shield grounds to aircraft ground.

### 4.2.1 Vibration Mounts

For instrument panels with vibration mounts, verify the mounts are grounded to the metallic airframe structure with a bonding jumper. Ensure the jumper meets the following specifications:

- The cross-sectional area of the strap is greater than 0.016 square inches (approximately 20,800 circular mils)
- The braid is a 7/16" or wider tubular braid (P/N QQB575R30T437, 24,120 circular mils) or a 3/4" or wider flat braid (P/N QQB575F36T781, 20,800 circular mils)
- The braid contains a terminal lug (mil-spec MS20659-130) at each end
- The strap length is as short as possible, not exceeding 6 inches

Ensure each terminal lug is secured to its respective mating surface with a #10 steel bolt and one flat washer (P/N AN970-3). Lugs and washers should be center-aligned and flush on all outside edges. These components should be in full contact with the mating surface.

#### 4.2.2 Aluminum Surface Preparation

To prepare the aluminum surface for proper bonding, the following general steps should be followed. For a detailed procedure, reference SAE ARP1870, Sections 5.1 and 5.5.

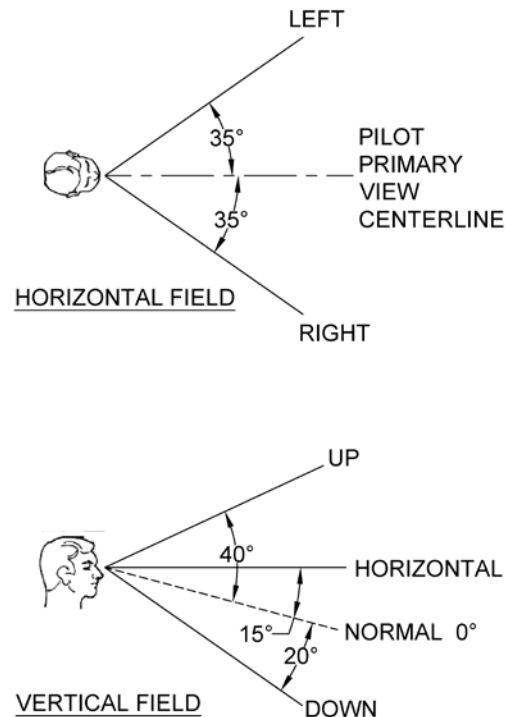
1. Clean grounding location with solvent.
2. Remove non-conductive films or coatings from the grounding location. When area is cleaned around fastener heads or washers, the area cleaned should be 0.125 inches wider than the footprint of the washer or the bolt head.
3. Apply a chemical conversion coat, such as Alodine 1200, to the bare metal.
4. Once the chemical conversion coat is dry, clean the area.
5. Install bonding aluminum tape or equipment to be bonded at grounding location.
6. After the bond is complete, if any films or coatings were removed from the surface, reapply a suitable film or coating to the surrounding area.

The correct material finish is important when mating untreated or bare dissimilar metals. They should be galvanically compatible.

### 4.3 Field-of-View

The GNC 355( ) unit must be mounted on the instrument panel or instrument panel avionics stack such that the unit is reachable by the pilot and the display is viewable with minimum pilot head movement when transitioning between looking outside the cockpit and viewing or operating the GNC 355( ).

The field-of-view that requires minimum head movement is defined in FAA AC 23.1311 as *primary maximum field-of-view*. The primary maximum field-of-view is shown in Figure 4-6.



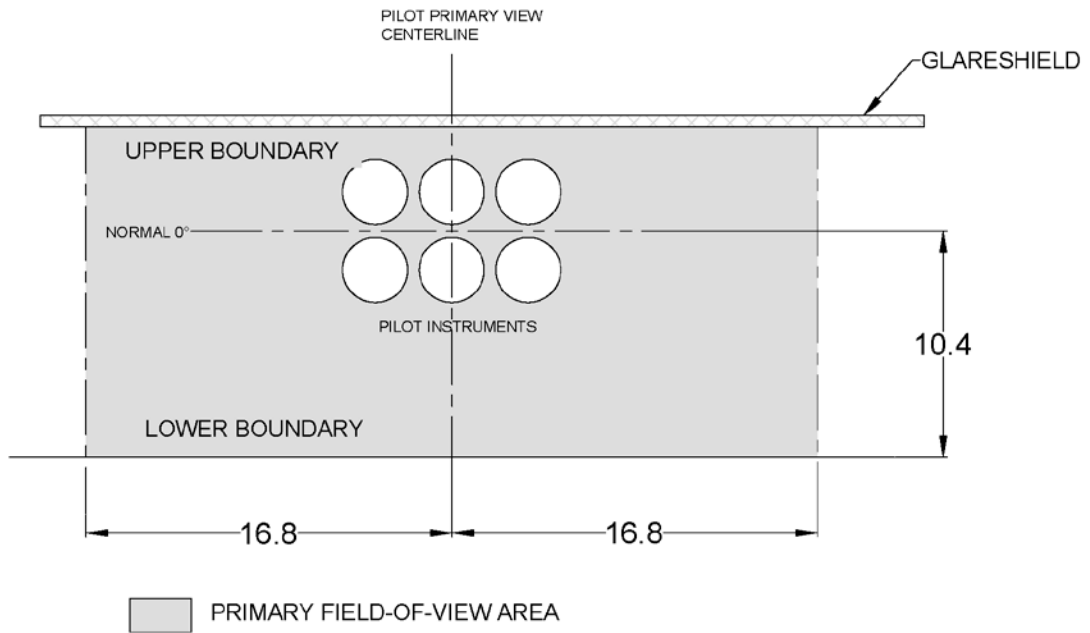
**Figure 4-6 Primary Maximum Field-of-View**

#### 4.3.1 Acceptable Field-of-View for GNC 355( )

The following example shows the steps to determine whether the GNC 355( ) installation is within the primary maximum field-of-view on the instrument panel. The instrument panel is assumed to be 24 inches from the pilot's face.

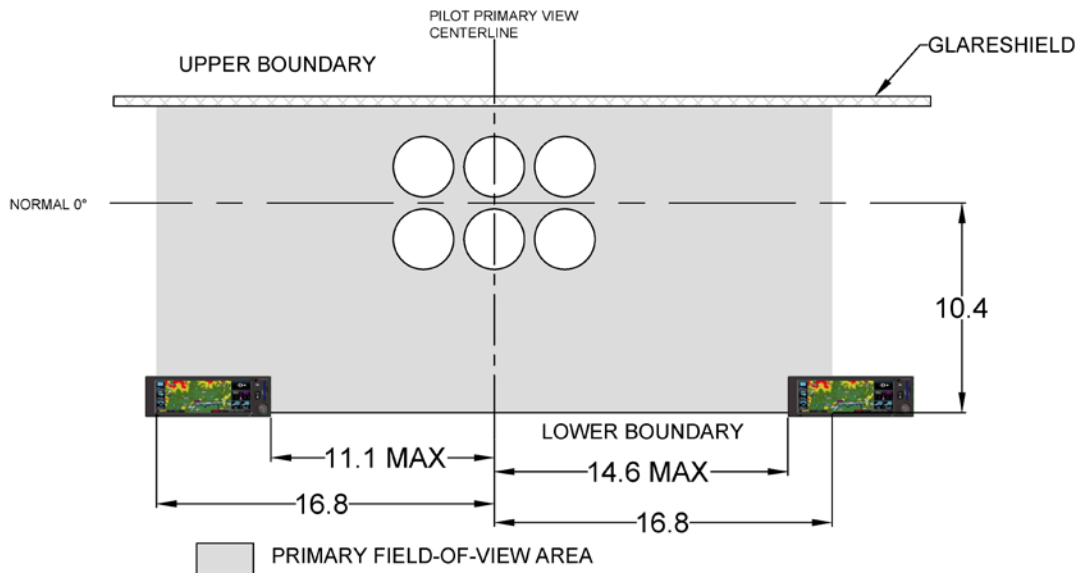
1. Locate the pilot primary view centerline as defined in Figure 4-6 on the instrument panel. Normally the centerline coincides with the center of control yoke or stick in neutral position. If the control yoke or stick is offset from the centerline, the centerline of the pilot's seat can be used to represent the centerline.
2. The acceptable primary field-of-view LH and RH boundaries on the instrument panel are determined by the calculation,  $LSIDE\ OFFSET = 24 \tan 35^\circ = 16.8$  inches. The upper boundary is

normally the glareshield. The lower boundary is determine by calculation,  $L \text{ LOWER OFFSET} = (24 \tan 35^\circ - 24 \tan 15^\circ) = 10.4$  inches. Figure 4-7 shows acceptable field-of-view area.



**Figure 4-7 Primary Field-of-View Area**

3. Figure 4-8 shows the acceptable location of GNC 355( ) in relation to the primary field-of-view.



**Figure 4-8 Acceptable Location of GNC 355( )**



4. If the location of the GNC 355( ) is not within the primary field-of-view area as defined in Figure 4-8, an external GPS navigator annunciator must be installed inside the primary field-of-view area. The external GPS navigator annunciator unit must contain, at minimum the following annunciations:
  - LOI
  - APPR

#### **4.3.2 Source Selection Annunciation**

If the CDI/HSI interfaces with both an existing RNAV/ILS and GNC 355( ) in both VFR-only and IFR installation, a separate source selection annunciation must be installed inside the primary field-of-view area defined in Figure 4-8. The source selection annunciator must also be installed near the CDI/HSI. A CDI/HSI with built-in annunciator may be used in lieu of a separate annunciator.

## 4.4 GNC 355( ) Installation

### 4.4.1 GNC 355( ) Mounting Rack Installation (Stand-alone)



**CAUTION**

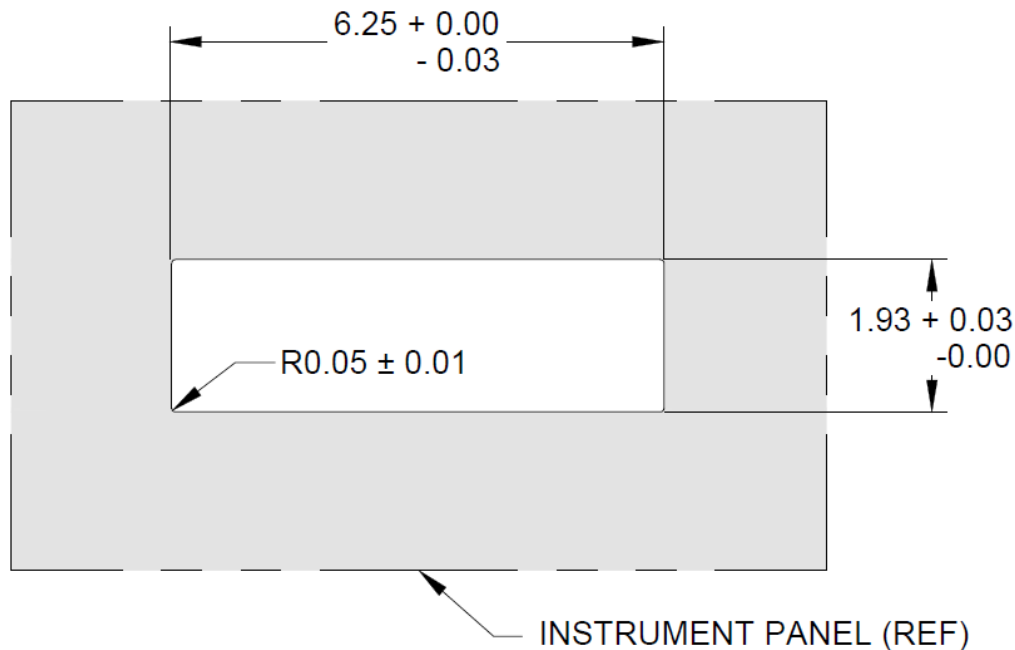
*Be careful when installing the rack in the instrument panel. Deformation of the rack will make it difficult to install and remove the GNC 355( ) unit.*



**CAUTION**

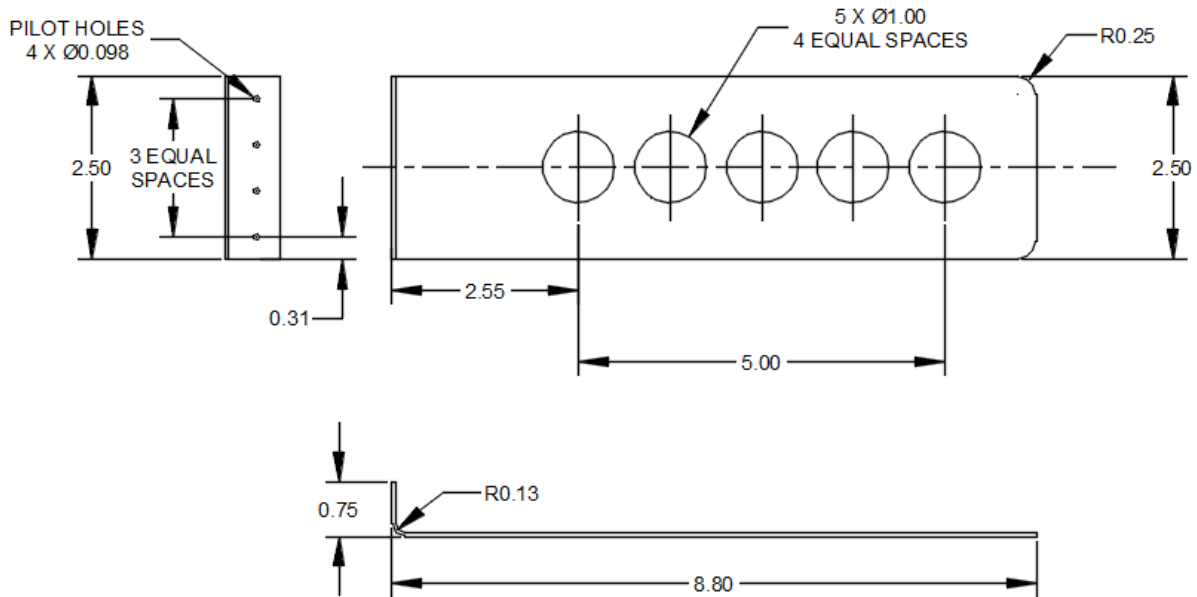
*When drilling fastener holes in the existing instrument panel, the added holes must maintain a minimum of 2D edge distance (D is fastener diameter) from any free edges or cutouts, and 3D edge distance from existing fastener holes.*

1. Locate a suitable location on the instrument panel for GNC 355( ). The location must meet the field-of-view requirements, as specified in Section 4.3. In addition, ensure the unit will not block by the glare shield, engine controls, or control yoke when installed. If the aircraft has a throw-over yoke, make sure it does not block or interfere with the GNC 355( ).
2. Ensure there is sufficient clearance behind the GNC 355( ) location for connectors and wire harness before cutting the panel.
3. After determined a suitable location for the GNC 355( ), trim the instrument panel using the cutout dimensions provided in Figure 4-9.



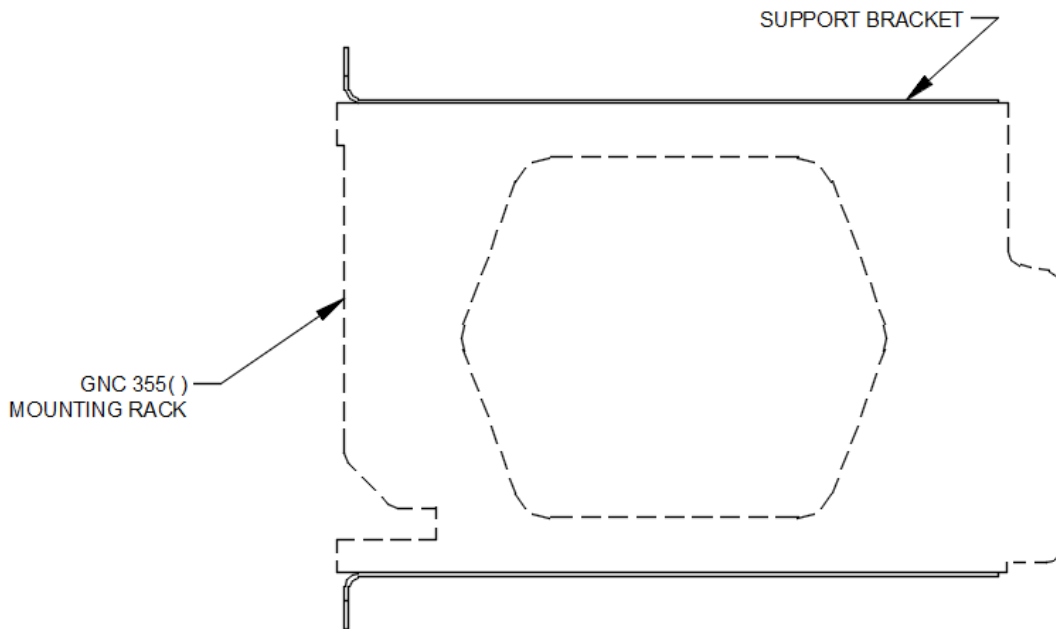
**Figure 4-9 GNC 355( ) Panel Cutout**

4. Fabricate two support brackets (LH and RH) for the GNC 355( ) mounting rack, as shown in Figure 4-10, from 2024-T3 per AMS QQ-A-250/5, minimum 0.040 inch thick. The maximum diameter of the lightening holes is Ø1.00 inch.



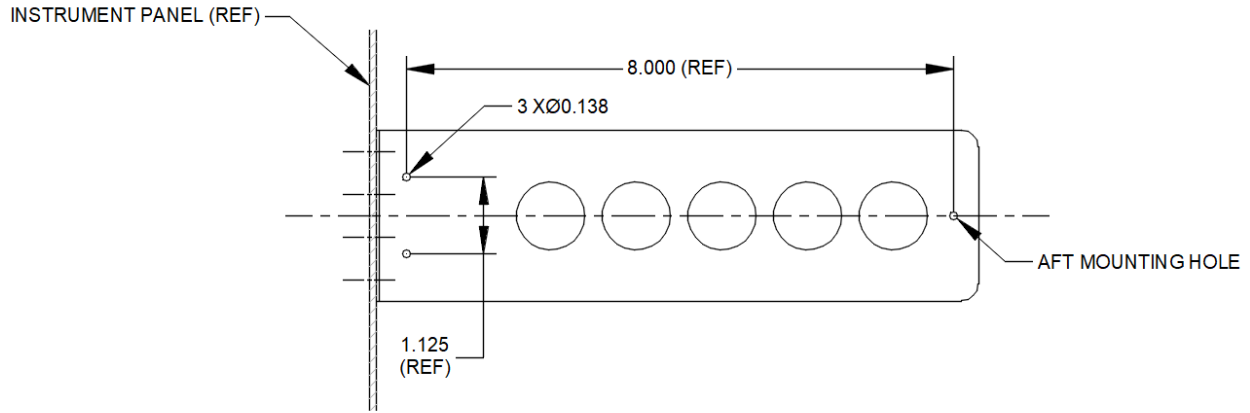
**Figure 4-10 GNC 355 Support Bracket (Example)**

5. Temporarily clamp the support brackets to the sides of the GNC 355 mounting rack, as shown in Figure 4-11. Ensure the GNC 355 ( ) rack “aft” mounting hole is aligned with the support structure horizontal centerline (refer to Figure 4-12). Align the GNC 355 ( ) mounting rack and the support brackets behind the instrument panel and over the GNC 355 ( ) cutout. Ensure the lower front lip of the rack is flush with or extend slightly beyond the front face of the instrument panel. If the front lip of the mounting rack is behind the surface of the instrument panel, the GNC 355 ( ) unit may not fully engage. Use the GNC 355 ( ) unit for alignment if required.



**Figure 4-11 Support Brackets/GNC 355 ( ) Mounting Rack**

- After ensuring the support brackets are positioned correctly on the GNC 355( ) mounting rack, mark the 0.138-inch mounting holes (total 6 places) on the support brackets. Remove the mounting rack together with the support structures from the instrument panel. Match drill Ø0.138-inch mounting holes (total 6 places) from the mounting rack onto the LH and RH support brackets as shown in Figure 4-12. Temporarily secure the support brackets to the GNC 355( ) mounting rack using Clecos. Remove previously installed clamps.



**Figure 4-12 Mounting Rack Holes on Support Bracket**

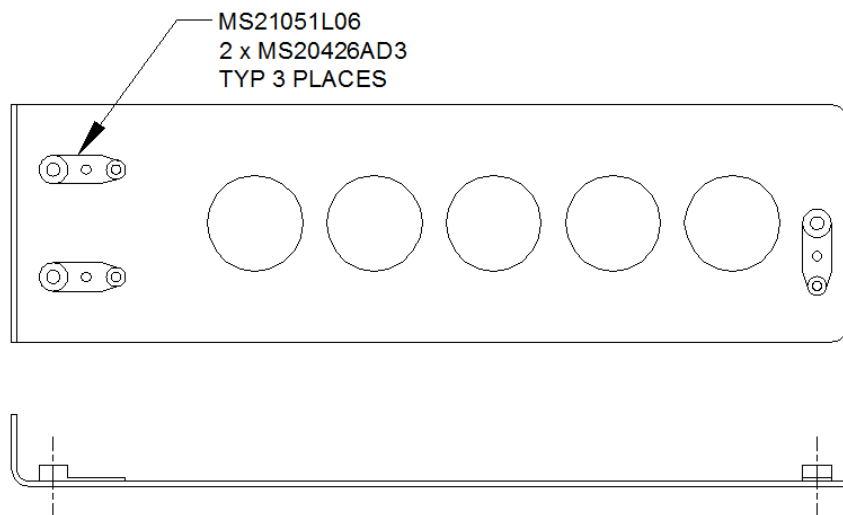
- Disassemble the GNC 355( ) mounting rack and the support brackets.
- Protect bare aluminum surfaces by applying chemical conversion coating MIL-DTL-5541 Type II Class 3, followed by epoxy primer MIL-PRF-23377 Type I Class N.



**CAUTION**

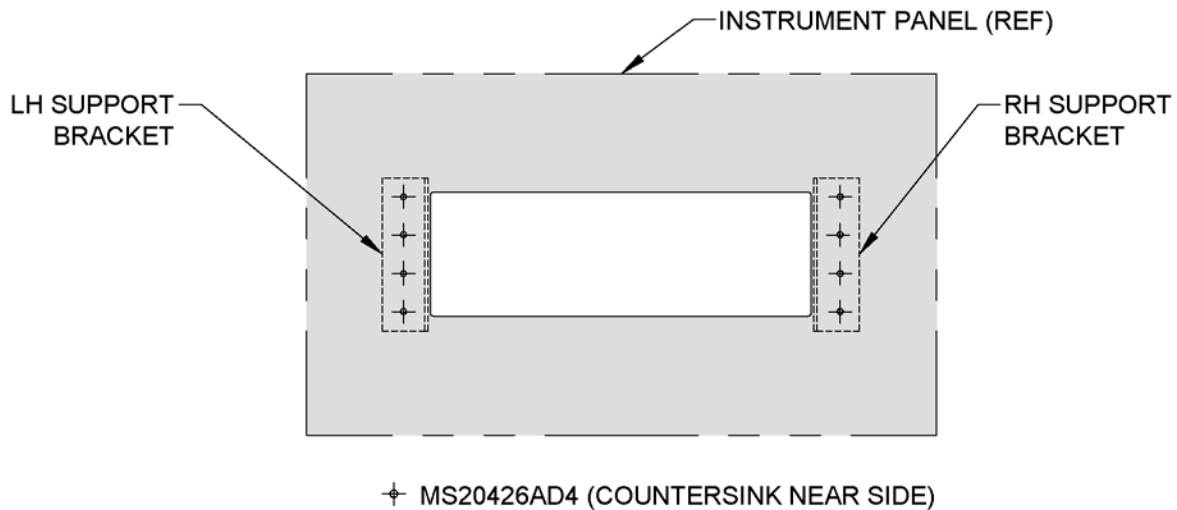
*Before assembling, ensure the surfaces of the instrument panel, GNC 355( ) mounting rack, and support brackets meet the electrical bond requirements per Section 4.2.2.*

- Install MS21051L06 (total 6 places) or any equivalent nutplates on the support brackets, as shown in Figure 4-13.



**Figure 4-13 Installation of MS21051L06 Nutplates on Support Bracket**

10. Attach the LH and RH support brackets to the GNC 355( ) mounting rack with MS24693S25 screws.
11. Reposition the GNC 355( ) mounting rack assembly over the GNC 355( ) cutout on the instrument panel. Using the pilot holes on the support brackets as template, match drill pilot holes (total eight places) from the support brackets to the instrument panel. Temporarily secure the support brackets with Clecos. Check the installation for fit.
12. Enlarge the pilot holes in preparation for MS20426AD4 rivets.
13. Referring to Figure 4-14, attached the GNC 355( ) mounting rack assembly to the instrument panel with MS 20426AD4 rivets (eight places).
14. Install the GNC 355( ) unit.



**Figure 4-14 Installation GNC 355( ) Support Brackets with MS20426AD4 Rivets**

#### 4.4.2 GNC 355( ) Mounting Rack Installation (In Existing Instrument Panel Radio Stack)



**CAUTION**

*Be careful when installing the rack. Deformation of the rack will make it difficult to install and remove the GNC 355( ) unit.*



**CAUTION**

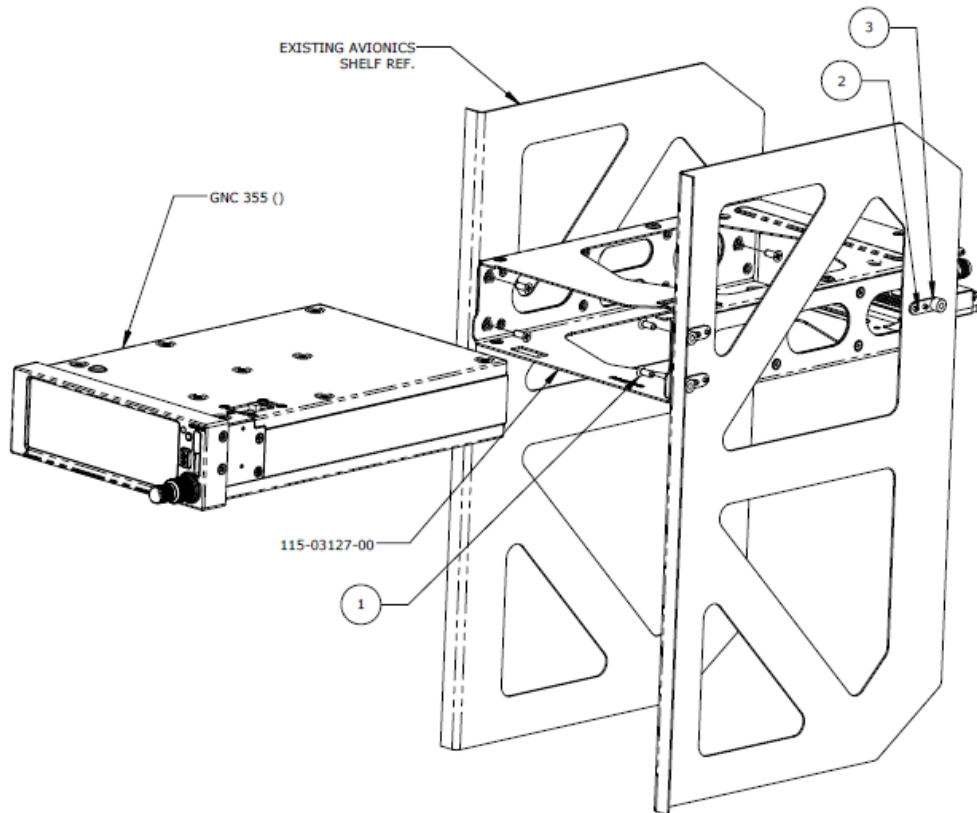
*When drilling fastener hole on the existing instrument panel radio stack, the added holes must maintain a minimum of 2D edge distance (D is fastener diameter) from any free edges or cutouts, and 3D edge distance from existing fastener holes.*



**CAUTION**

*Before assembling, ensure the surfaces of the instrument panel radio stack and GNC 355( ) mounting rack meet the electrical bond requirements per Section 4.2.2.*

1. Ensure the location of the existing instrument panel avionics rack meet the field-of-view requirement, as specified in Section 4.3.1. If the location of the radio rack does not meet the field-of-view requirement, an annunciator must be installed (refer to Section 4.3.2).
2. Before installing the GNC 355( ) mounting rack, ensure there are sufficient spaces and clearances in the radio stack for GNC 355( ) for connectors and wire harnesses. Additionally, ensure the radio stack has structures to support six GNC 355( ) mounting rack fasteners. If required, repositioning of existing equipment may be required on the radio stack to house the GNC 355( ) unit.
3. Install the GNC 355 mounting rack as shown in Figure 4-15. Ensure the mounting rack lower front lip is flush with or extend slightly beyond the front face of the instrument panel.
4. Install the GNC 355( ) unit.



12	3	MS20426AD3	RIVET, SOLID, COUNTERSUNK 100 DEG, PRECISION HEAD, 3/32 IN OD.
6	2	<sup>1</sup> MS21071-08	NUT, SELF-LOCKING, PLATE, ONE LUG, REDUCED RIVET SPACING, LOW HEIGHT, STEEL 0.138-32 UNC-3B
6	1	<sup>2</sup> MS24693-SXX	SCREW, MACHINE, FLAT, COUNTERSUNK HEAD 100 DEG, CROSS-RECESSED, 0.138-32 UNC-2A
<b>QTY</b>	<b>ITEM</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>

**NOTES**

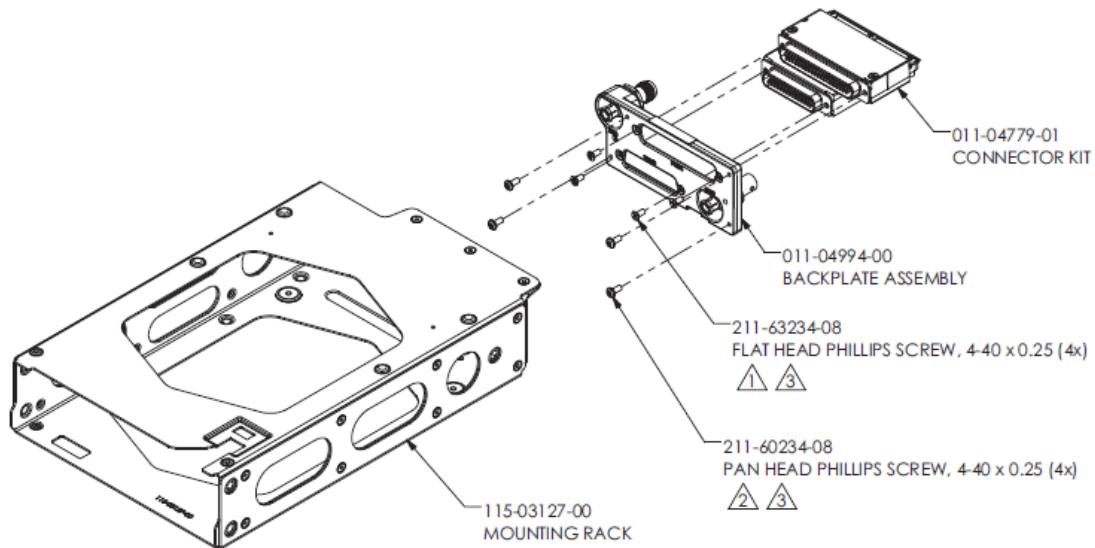
<sup>1</sup> MS21071-08 can be substituted by any suitable aerospace approved steel nutplates or self-locking nuts.

<sup>2</sup> Torque 0.138-32UNC-2A Screws 8.0 ± 1.0 in-lbf.

**Figure 4-15 Example Installation of GNC 355 Mounting Rack in Existing Radio Stack**

### 4.4.3 GNC 355( ) Backplate Installation

1. Visually inspect the connectors to ensure that there are no bent or damaged pins.
2. Repair any damage.
3. Refer to Figure 4-16 to connect the rear connectors to the backplate.
4. Align the backplate so that the backplate screw heads pass through the keyed holes in the back of the rack.
5. Slide the backplate to the right (viewing from cockpit) until it clicks into place.
6. Secure the backplate by tightening the four #4-40 screws.



#### NOTES

- ① PART OF CONNECTOR KIT, P/N 011-04779-01.
- ② PART OF BACKPLATE ASSEMBLY, P/N 011-04994-00.
- ③ TORQUE TO 8 +/-1 IN-BL.

**Figure 4-16 GNC 355( ) Mounting Rack Assembly**

## 4.5 Optional Equipment

### 4.5.1 Flight Stream 510

To install the Flight Stream 510, insert the Flight Stream 510 data card into the GNC 355( ) data card slot until it stops. The label should be facing to the left.

### 4.5.2 Switches

If optional switches are installed as part of the GNC 355( ) installation, each switch installed must meet the following requirements:

- The switch must be labeled as specified in the interconnect drawings in APPENDIX B
- The label must be adjacent to the switch
- The switch must be readily accessible to the pilot
- The label must be visible under all cockpit lighting conditions; refer to Section 3.3.3

### 4.5.3 Annunciators

Refer to Section 4.3 to determine whether or not external annunciators are required. Only LOI, TO/FROM, and APPR mode annunciations must be located within the pilot's primary field-of-view.

Refer to Figure B-27 for annunciator installation requirements to interface to a CDI with an existing NAV radio.



## 4.6 Antenna Installation Guidance

The following sections are provided for guidance only. GPS and COM antenna installations are not approved under this STC.

### 4.6.1 GPS/SBAS Antenna Installation Guidance

This STC does not install the GPS/SBAS antenna. The GPS/SBAS antenna is considered existing equipment.



#### NOTE

*When a combination antenna is attached, the recommended distance of 2 feet or more is not applicable to the distance between the antenna elements (e.g., GPS and COM, GPS and SiriusXM). This is provided that the combination antenna is TSO authorized and has been tested to meet Garmin's minimum performance standards.*

These installation guidelines meet the intent of AC 20-138D Chapter 12, Section 12-1. Meeting all of the installation guidelines is not possible on some aircraft. These guidelines are listed in order of importance to achieve optimum performance. The installer should use their best judgment to balance the installation guidelines.

#### **For the most optimum GPS antenna location installation:**

1. As close to level as possible. If the normal flight attitude is not known, substitute with the waterline, which is typically referenced as level while a weight and balance check is done.
2. Mount in a location to minimize the effects of airframe shadowing during typical maneuvers. Mounting farther away from the tail section decreases signal blockage.
3. Mounted no closer than 2 feet from any VHF COM antenna.
4. Mounted no closer than 2 feet from any antennas emitting more than 25 watts of power.
5. Mounted no closer than 9 inches (center-to-center) from other antennas.
6. Maintain a constant gain pattern and limit degradation by the windscreen. Avoid attaching the antenna closer than 3 inches from the windscreen.
7. For installations with more than one antenna, the antennas should not be attached in a straight line from the front to the rear of the fuselage. This is so a single lightning strike does not damage all antennas.

When possible, 12-inch center-to-center spacing between GPS antennas must be used. If 12-inch spacing is not possible, the maximum center-to-center spacing possible must be used but never less than 9-inch center-to-center spacing.

An aircraft EMC check can show if there is a degradation of GPS in the presence of interference signals. Refer to Section 6.5. If an EMC check reveals unsatisfactory interference, select a different GPS antenna location or insert a GPS notch filter in line with the VHF COM or the (re-radiating) ELT transmitter that is causing interference. Installing a GPS notch filter requires other installation approval.

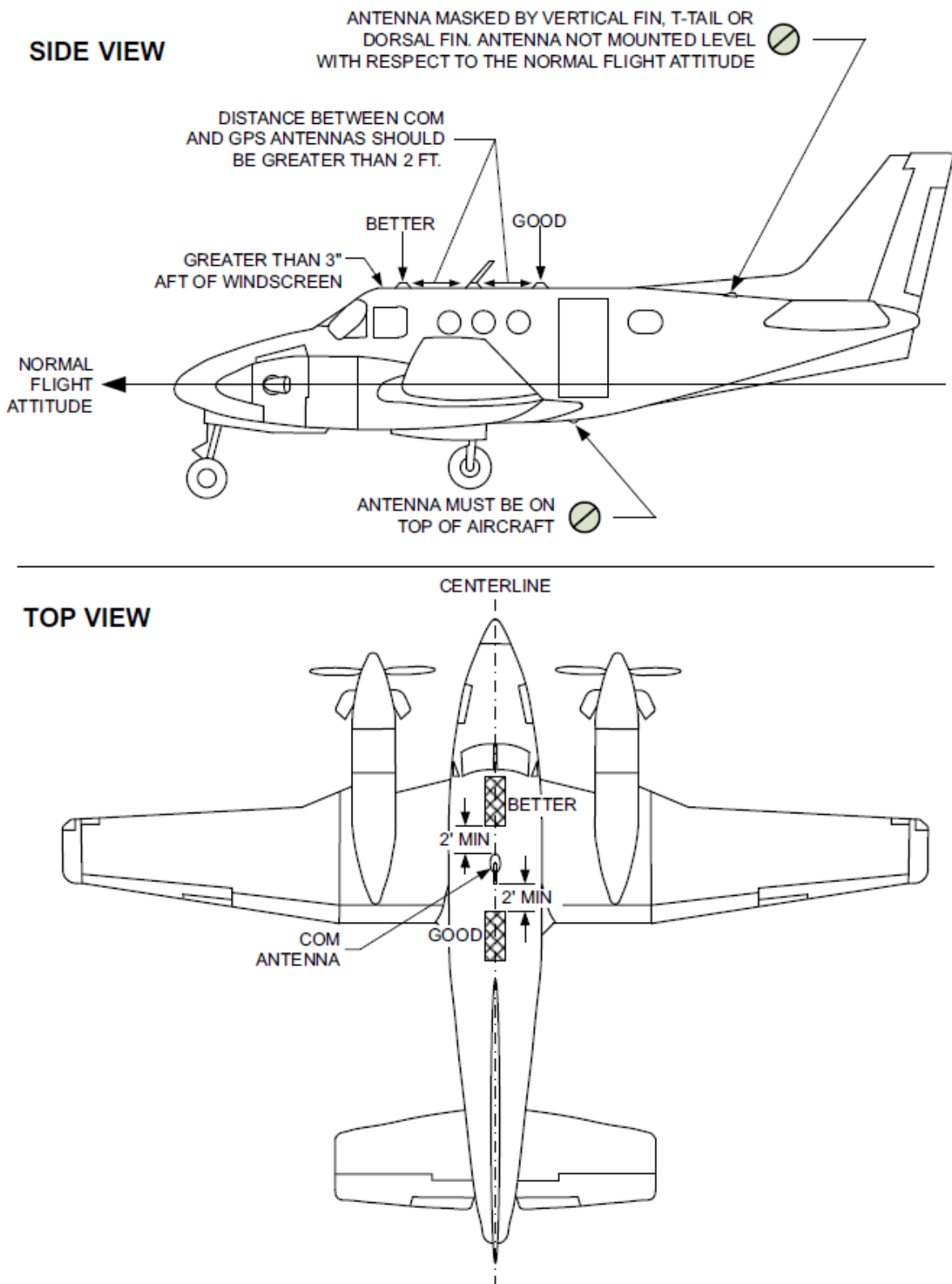


Figure 4-17 GPS Antenna Location

#### 4.6.2 GPS Antenna Ground Plane



##### NOTE

*For non-metallic aircraft, the ground plane can be composed of heavy-duty aluminum foil tape, such as 3M P/N 438, 3M P/N 436, or other adhesive backed dead soft foil with aluminum 7.2 mils or greater.*

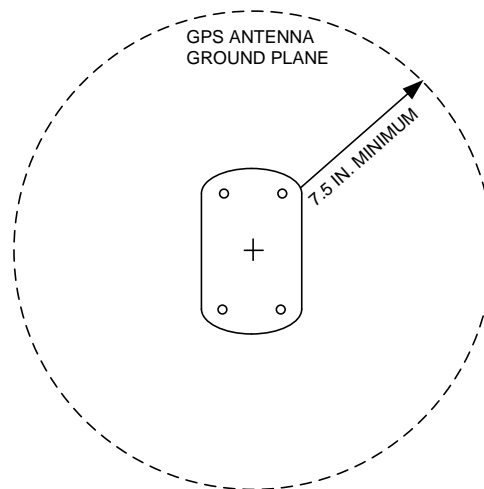


##### NOTE

*If the antenna is struck by lightning, the foil by itself may not be sufficient to dissipate lightning currents. Additional protection may be needed depending on the construction of the structure to which the antenna is attached. Refer to aircraft SRM for more information.*

Follow these precautions when planning installation of the antenna:

1. The ground plane should be 7.5 inches minimum radius around the perimeter of the antenna. Refer to Figure 4-18. For metallic aircraft, the surrounding metal skin on which the antenna is attached supplies the ground plane.
2. The antenna baseplate must be electrically bonded to the ground plane.
3. The antenna ground plane the antenna is electrically bonded to must also be electrically bonded to the aircraft's main structure (metal or tube-and-fabric aircraft) or lightning ground that is electrically bonded back to the instrument panel (composite aircraft).
4. The electrical bond must achieve direct current (DC) resistance less than or equal to 2.5 milliohms.
5. The paint on the outer skin of the aircraft, under the footprint of the antenna baseplate, should not be removed unless it is necessary to meet bonding requirements.



**Figure 4-18 GPS/SBAS Antenna Minimum Ground Plane Radius**

#### 4.6.3 COM Antenna Ground Plane

The antenna should be mounted on a metal surface or a ground plane with a minimum area of 18 inches by 18 inches.

## 4.7 Weight and Balance

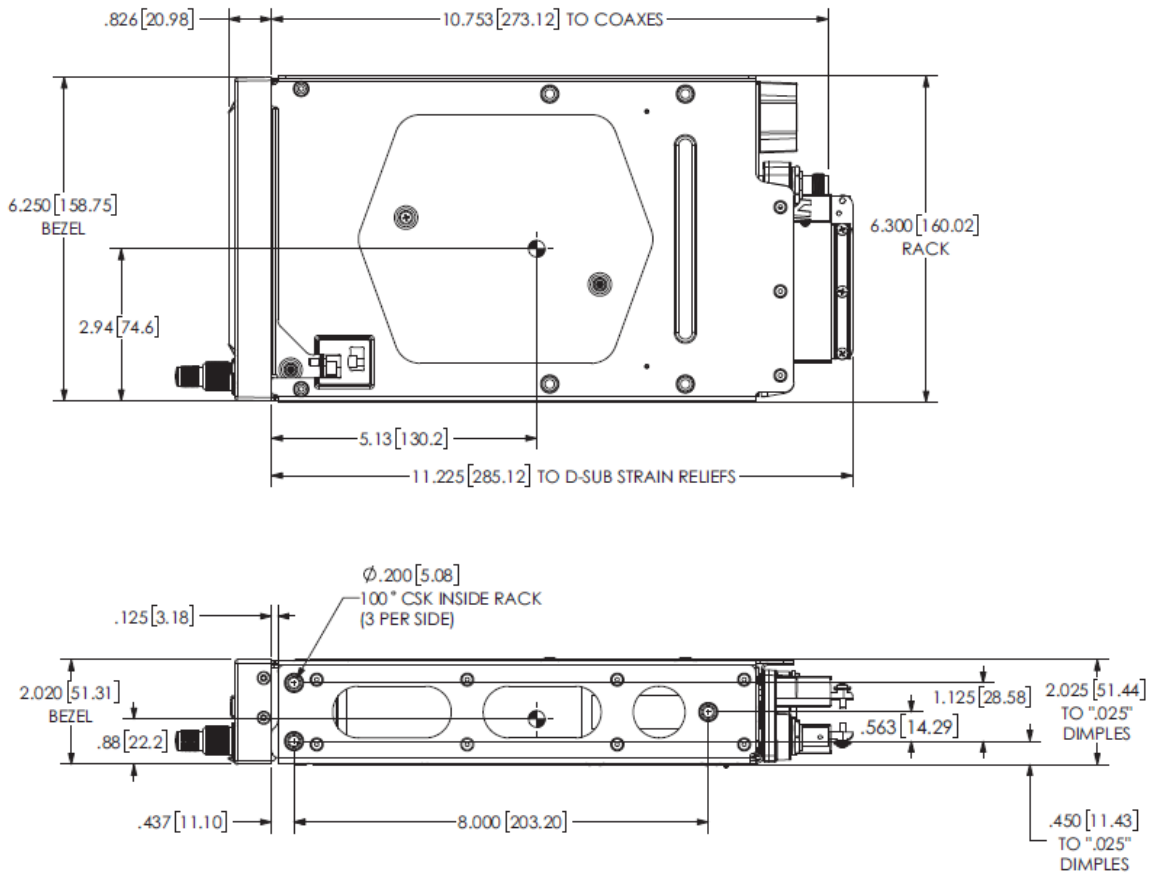
The aircraft weight and balance record must be updated after the GNC 355( ) is installed by following the procedures typically detailed in Chapter 8 of the aircraft maintenance manual. Practices defined in Chapter 10, Section 2, *Weighing Procedures*, of AC 43.13-1B *Aircraft Inspection and Repair* are acceptable.

The aircraft Equipment List must be updated to include items that are added, removed, or relocated. The updated list must be dated, include the name (and certificate number) of the person that updated the list, and be retained with aircraft records.

Refer to Figure 4-19 for GNC 355( ) for equipment dimensions, weight, and center of gravity (CG) dimensions. For example weight and balance data, refer to Table 4-3. Weights shown include the unit, mounting rack, backplate, and connector.

**Table 4-3 Example Weight & Balance Calculation**

<b>Aircraft Weight and Balance Calculated: 03/06/2017</b>	<b>Empty Weight [lb] 2306.70</b>	<b>CG [in] 138.83</b>	<b>Moment [lb-in] 320239</b>	<b>Useful Load [lb] 1093.30</b>
<b>ITEMS REMOVED</b>	<b>Weight [lb]</b>	<b>Arm [in]</b>	<b>Moment [lb-in]</b>	
KT 76C Unit/Rack	2.61	55.00	143.55	
Total removed	2.61		-143.55	
<b>ITEMS ADDED</b>	<b>Weight [lb]</b>	<b>Arm [in]</b>	<b>Moment [lb-in]</b>	
GNC 355( )	1.9	55.00	104.5	
Total added	1.9		104.5	
Change	-71		-39.05	
Updated Aircraft Weight and Balance Calculated: 03/12/2019	Empty Weight [lb] 2305.99	CG [in] 138.86	Moment [lb-in] 320199.95	Useful Load [lb] 1094.01



DIMENSIONS: INCHES [mm]

MODEL	WEIGHT	
	UNIT	UNIT & CONN KIT
GNC 355( )	1.3 lb [0.6 kg]	1.9 lb [0.84 kg]

**NOTES:**

1. DIMENSIONS: INCH [mm]
2. CG LOCATION INCLUDES UNIT WITH MOUNTING RACK AND BACK PLATE ASSEMBLY.

**Figure 4-19 GNC 355( ) Dimensions, Weight, and Center of Gravity**

## 5 SYSTEM CONFIGURATION

### 5.1 System Configuration Preparation

Instructions for configuring the GNC 355( ) are contained in this section.

Due to the different interface options for the GNC 355( ), not all information contained in this section may be applicable to every installation. A summary of the steps for system configuration and calibration follows:

1. Power up and enter Configuration mode, as outlined in Section 5.1.1.
2. Configure the GNC 355( ) for the installation. Follow the configuration flow shown in Figure 5-1, as specified in Sections 5.2 through 5.9. This includes:
  - a. Enabling optional features
  - b. Setting the airframe-specific parameters
  - c. Enabling interfaces to external systems
3. Perform necessary system calibrations, as specified in Section 5.4.
4. Load required and optional databases, as specified in Section 5.5.
5. Perform the ground checks applicable to the installation in Sections 6.3 through 6.5.
6. Verify that all placards have been located as specified in Section 6.2, Figure B-13, and Figure B-14.
7. Perform the flight checks specified in Section 6.6.
8. Update the aircraft documentation as specified in Section 6.7.



Figure 5-1 Configuration Flow

#### 5.1.1 Entering Configuration Mode

The Configuration mode of the GNC 355( ) can be accessed by holding down the inner knob located at the bottom-right of the unit and pressing the **Power/Home** button. When the Configuration mode home page (shown in Figure 5-2) displays, release the knob.

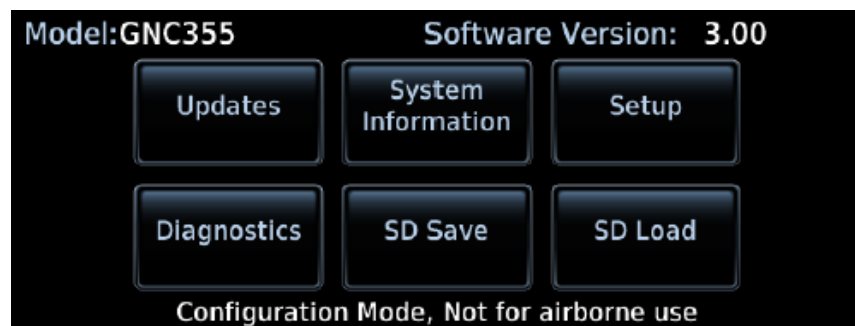


Figure 5-2 Configuration Mode Home Screen

## 5.2 Updates

Touch the **System Information** button to determine the current software loaded to the unit. Refer to the *GPS 175/GNX 375/GNC 355 Part 23 AML STC Equipment List* (P/N 005-01206-A2) for the current approved software for this STC. If the software needs to be updated, a software loader card will need to be created to update the software. An SD card, SD card reader, and a PC (running Windows 2000, XP, Vista, Windows 7, Windows 8, or Windows 10) are necessary. There is no Mac support currently.

### 5.2.1 Software Loader Card Instructions

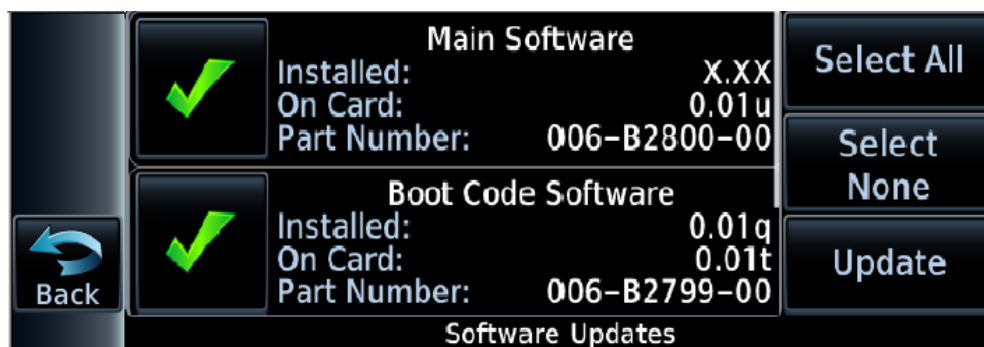
The following steps must be followed to create a software loader card:

1. Log into the [Dealer Resource Center](#).
2. Download the appropriate system software to a folder on a PC.
3. Connect an SD card reader to the PC.
4. Insert an SD card into the card reader.
5. Run the \*.exe file downloaded from the Dealer Resource Center.
6. Follow the on-screen prompts to create the loader card.
7. Tap **Finish**.
8. Eject the loader card.

### 5.2.2 Software Update Instructions

When selecting software, a green check mark indicates software to be loaded as part of that update.

1. Power off the unit.
2. Insert the software loader card into the slot.
3. Power on the unit. The unit automatically starts in Configuration mode.
4. Touch the **Updates** button.
5. Touch the button of the software or software packages to select.
6. Tap **Update**.



**Figure 5-3 Software Upload Page**

**Select All** – Updates all available software packages.

**Select None** – Clears selection.

**Update** – Begins software update.



**Figure 5-4 Software Upload in Progress**



**NOTE**

*Selecting **Cancel** during the update process stops remaining updates. This does not cancel the file currently updating.*



### 5.3 System Information

The *System Information* page displays general and board-specific information for the GNC 355( ).

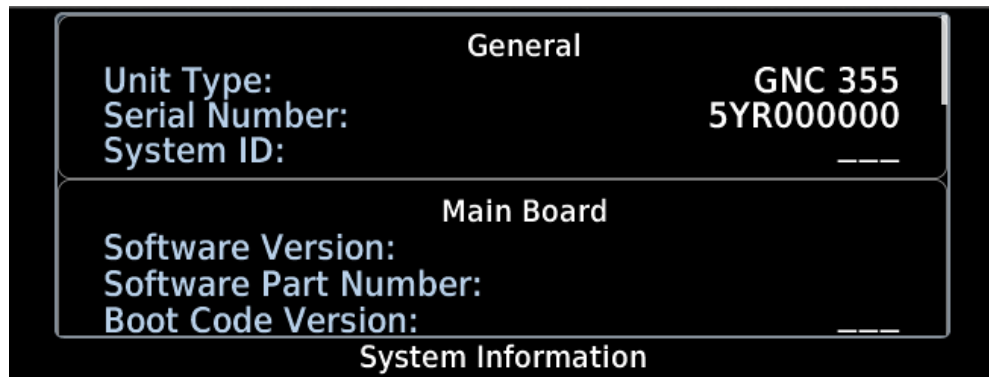


Figure 5-5 System Information Page

## 5.4 Setup

The *Setup* page provides access to the different pages required to configure the GNC 355( ) for a specific installation. Touch a button associated with a specific page to configure that setting.

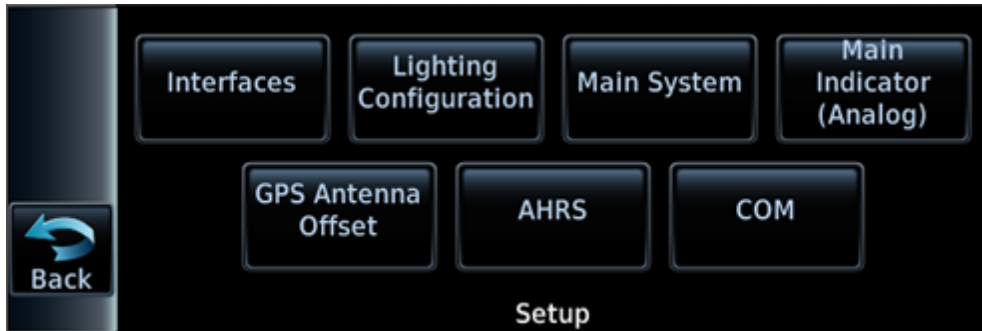


Figure 5-6 GNC 355( ) Setup Page

### 5.4.1 Interfaces

The *Interfaced Equipment* page configures available interfaces on ARINC 429 ports, RS-232 ports, ADS-B source, and GDU status.



Figure 5-7 GNC 355( ) Interfaced Equipment Page

#### 5.4.1.1 ARINC 429

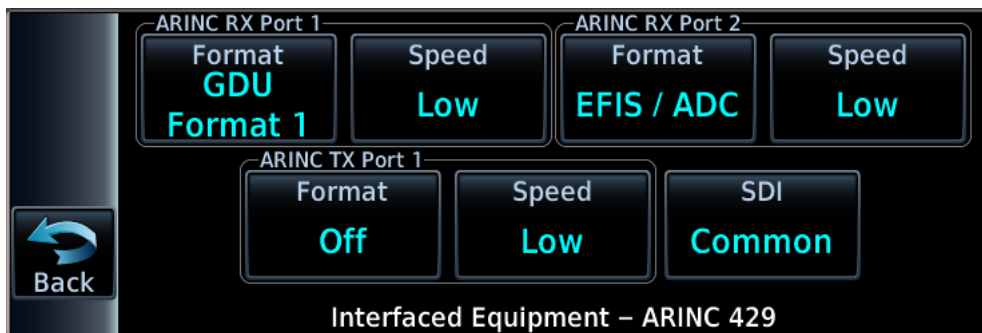


Figure 5-8 GNC 355( ) Interfaced Equipment - ARINC 429 Page

**Table 5-1 GNC 355( ) ARINC 429 RX Ports 1 and 2**

Selections	Options	Description
Format	Off	No units connected to this port.
	GDU Format 1	Receives altitude, airspeed, selected course, and heading information from a Garmin GDU.
	EFIS/ADC (Air Data)	Receives altitude, airspeed, altitude rate, and heading information from EFIS and ADC systems.
	Standby EFIS	Receives altitude, airspeed, selected course, and heading information from a standby EFIS system.
Speed	Low	Standard, nominally 12.5 Kb per second
	High	High-speed, nominally 100 Kb per second

**Table 5-2 GNC 355( ) ARINC 429 TX Port 1**

Selections	Options	Description
Format	Off	No units connected to this port.
	GAMA Format 1	<ul style="list-style-type: none"> <li>• GDU 620</li> <li>• GAD 29</li> <li>• GDU 37X/45X/46X</li> </ul>
	GAMA Format 3	<ul style="list-style-type: none"> <li>• Aspen</li> <li>• Sandel 3308, 3500, and 4500</li> </ul>
Speed	Low	Standard, nominally 12.5 Kb per second
	High	High-speed, nominally 100 Kb per second

**Table 5-3 GNC 355( ) SDI**

Selections	Description
Common	<ul style="list-style-type: none"> <li>• Accepts all 429 inputs</li> <li>• Generates all 429 outputs with SDI = 0</li> </ul>
LNAV1	<ul style="list-style-type: none"> <li>• Select for number 1 (pilot) navigator</li> <li>• Accepts all 429 inputs with SDI = 0 or 1</li> <li>• Generates all 429 outputs with SDI = 1</li> </ul>
LNAV2	<ul style="list-style-type: none"> <li>• Select for number 2 (copilot) navigator</li> <li>• Accepts all 429 inputs with SDI = 0 or 2</li> <li>• Generates all 429 outputs with SDI = 2</li> </ul>

### 5.4.1.2 RS-232

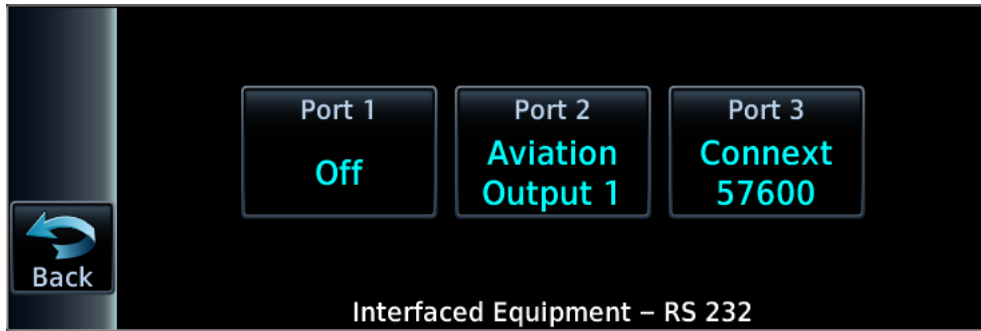


Figure 5-9 GNC 355( ) Interfaced Equipment – RS 232 Page

Table 5-4 GNC 355( ) RS-232 Settings

Selections	Options	Description
RS-232 Port 1, 2, 3	Off	No units connected to this port.
	MapMX (Format 1)	<ul style="list-style-type: none"> <li>• MX20 software v5.6 or later</li> <li>• GMX 200</li> <li>• GDU 620</li> <li>• G5</li> <li>• GMC 605</li> </ul>
	MapMX (Format 2)	COM tuning on G3X Touch systems. This format is not approved under this STC.
	Aviation Output 1	• Garmin MX20 (V5.6 or later), GMX 200, GTX 327 Transponder, GTR 225/GNC 255
	Aviation Output 2	• Garmin MX20 (V5.5 or earlier)
	ADS-B+ Format 1	Transmits necessary ADS-B GPS data at 9600 baud.
	ADS-B+ Format 2	Transmits necessary ADS-B GPS data at 38400 baud.
	Connnext 57600	G3X touch system

5.4.1.3 ADS-B SRC

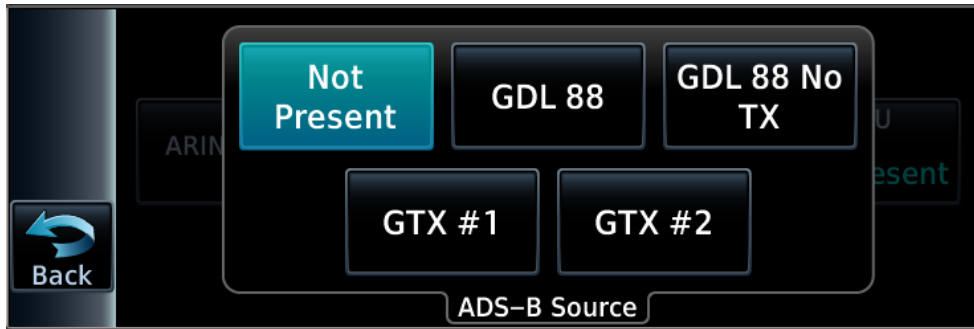


Figure 5-10 ADS-B Source Page

Table 5-5 ADS-B SRC Settings

Selections	Description
Not Present	No ADS-B source present.
GDL 88	The GDL 88 is the ADS-B and transmit is enabled.
GDL 88 No TX	The GDL 88 is the ADS-B and transmit is not enabled.
GTX #1	GTX #1 is the ADS-B source.
GTX #2	GTX #2 is the ADS-B source.

5.4.1.4 GDU

Touch the **GDU** button to toggle between *Present* and *Not Present*. Select *Present* if the unit is interfacing to a GDU.

### 5.4.2 Lighting Configuration

The display and bezel keys lighting control source can configure to track either the Photocell or Lighting Bus. The unit adjusts its intensity based on the lighting bus or photocell level.

Display **Source** sets source input for the display backlight. Keys **Source** sets source input for the keys backlight.

To specify a lighting input source, select Display **Source**. There are four possible lighting source configurations. Configure parameters affecting the display backlight and key lighting brightness on the *Lighting Configuration* page.

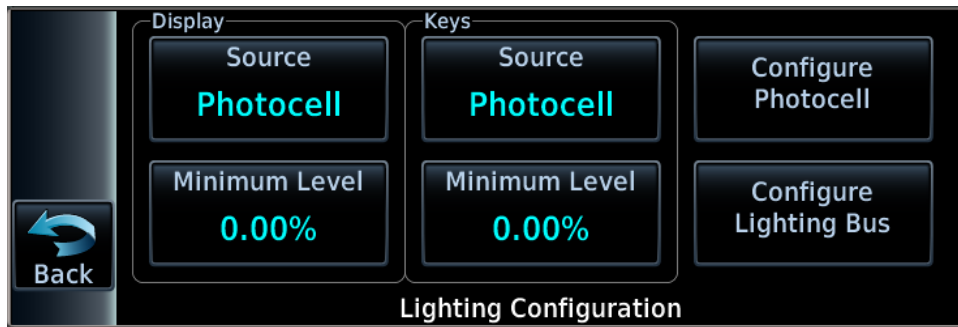


Figure 5-11 Lighting Configuration Page

Table 5-6 Lighting Configuration Settings

Selections	Description
Photocell	Sets the lighting input level for day and night curves according to the ambient light level, as measured by the unit photocell.
Lighting Bus	Sets the lighting input level according to the lighting bus dimmer levels.
Minimum Level	Sets the applicable minimum auto brightness of the keys or display.

### Photocell Configuration

The *Configure Photocell* page displays the set input/output levels for the source, display, and key, and provides keys to change and override parameters.

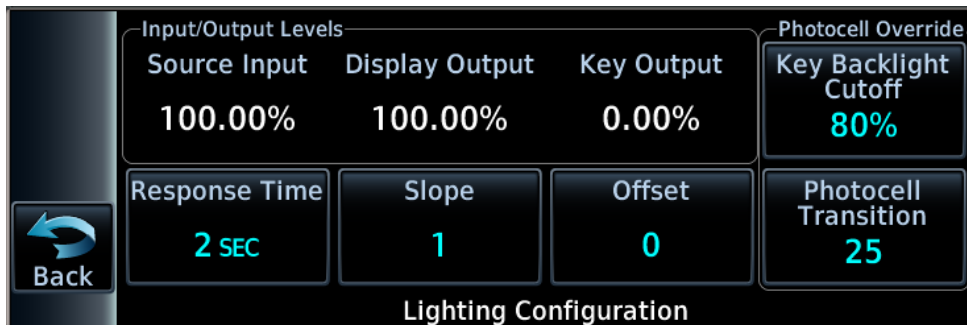


Figure 5-12 Configure Photocell Page

To configure for photocell:

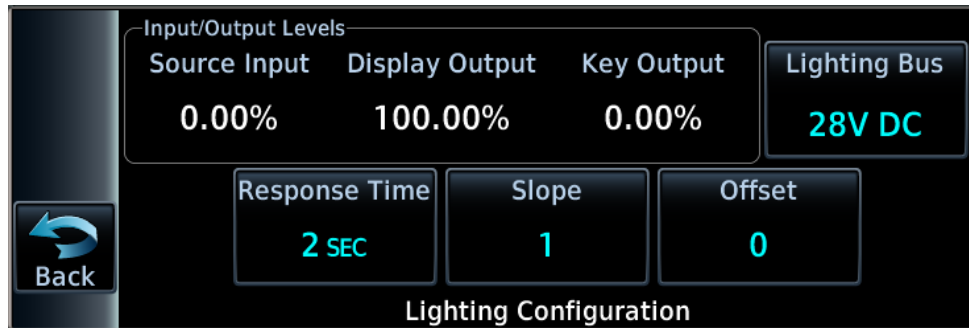
1. Select *Photocell* as the source for display and/or keys.
2. Touch **Configure Photocell**.
3. Touch **Key Backlight Cutoff** to set the key backlight cutoff percentage. Set to the desired value so that the key backlighting switches off in bright light. Type the preferred cutoff value (0.0 - 100.0) then touch **Enter**.
4. Touch **Response Time** to select the preferred response time (2 - 7). The lower the level, the faster the display adjusts.
5. Touch **Slope** and type the preferred slope value (0 - 100) then touch **Enter**.
6. Touch **Offset** and type the preferred offset value (0 - 100) then touch **Enter** to adjust the key brightness.
  - Too bright - lower minimum level and/or adjust lighting slope
  - Too dim - raise minimum level
7. Touch **Photocell Transition** and type the preferred transition value (5 - 50) then touch **Enter**.
8. Verify the display/keys produce maximum brightness on the backlight output level. Adjust the levels if needed.
  - If the display/keys are too bright or too dim, vary the Slope and/or Offset to achieve desired brightness at mid-range lighting input levels
  - If the key is too bright or too dim, vary the slope and/or Offset to achieve desired brightness at mid-range lighting input levels
  - Adjust the response time to smooth changes to brightness as required
9. Verify adjustments made in the preceding steps are appropriate and functional for all expected lighting conditions.

**Table 5-7 Configure Photocell Settings**

Setting	Description
Key Backlight Cutoff	Configures the point at which key backlights are switched off in bright light (e.g., a value of 70% means the backlights will be off at photocell source input levels above 70%).
Response Time	Sets the speed where the brightness responds to changes in the input level (ambient light or bus voltage). The lower the value, the faster the response. Selections range from 2 to 7 seconds. The default value for this setting is 2 seconds.
Slope	Sets the display brightness sensitivity according to input level changes.
Offset	Adjusts the lighting level up or down for a given input level.
Photocell Transition	Sets the lighting bus input level where the lighting bus input is ignored, and the photocell is used to control the display backlight. The photocell transition is a percentage of the maximum lighting bus input level. Selections are between 5 and 50.

### Lighting Bus Configuration

The *Configure Lighting Bus* page displays the set input/output levels for the source, display, and key, and provides keys to change and override parameters.



**Figure 5-13 Configure Lighting Bus Page**

To configure for lighting bus:

1. Select *Lighting Bus* as source for display and/or keys.
2. Touch **Configure Lighting Bus**.
3. Touch **Lighting Bus** to set lighting bus voltage. Select the aircraft lighting bus voltage then **Enter**.
4. Touch **Response Time** to select the preferred response time. The lower the level, the faster the display adjusts.
5. Touch **Slope** and type the preferred slope value (0 - 100) then touch **Enter**.
6. Touch **Offset** and type the preferred offset value (0 - 100) then **Enter** to adjust key brightness.
  - Too bright - lower minimum level and/or adjust the lighting slope
  - Too dim - raise minimum level
7. Verify the display/keys produce maximum brightness on the backlight output level. Adjust the levels if needed.
  - If the display/keys are too bright or too dim, vary the Slope and/or Offset to achieve the desired brightness at mid-range lighting input levels
  - Adjust the Response Time to smooth changes to brightness as required
8. Verify that adjustments made in the preceding steps are appropriate and functional for all expected lighting conditions.

**Table 5-8 Configure Lighting Bus Settings**

Setting	Description
Lighting Bus	Sets lighting bus source voltage. Selection is determined by the lighting bus voltage source: 14V DC, 28V DC, 5V DC, 5V AC.
Response Time	Sets the speed where the brightness responds to changes in the input level (ambient light or bus voltage). The lower the value, the faster the response. Selections range from 2 to 7 seconds. The default value for this setting is two seconds.
Slope	Sets the display brightness sensitivity according to input level changes.
Offset	Adjusts the lighting level up or down for a given input level.



### 5.4.3 Main System

The *Main System* page configures system items unrelated to LRUs.

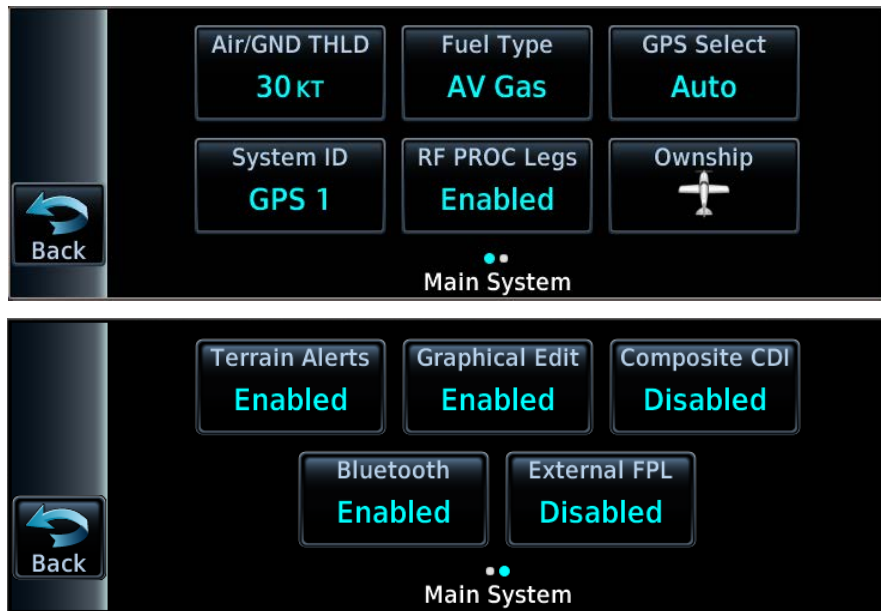


Figure 5-14 Main System Pages

**Table 5-9 Main System Selections**

Setting	Selection	Description
Air/GND THLD	Enter 1 kt to 99 kt	The ground speed in which the unit transitions from a ground state to an airborne state, and vice versa.
Fuel Type	Av Gas	Select aircraft fuel type.
	Jet A	
	Jet B	
GPS Select	Auto	GPS Select discrete is open whenever a GPS approach mode is active.
	Prompt	GPS Select discrete is open whenever a GPS approach mode is active and A/P APR Outputs are enabled. For Honeywell (Bendix/King) KFC 225 and KAP 140 autopilots.
System ID	GPS 1	Identifies the position of the GPS in multi-unit installations. If unit is the primary GPS in the aircraft, select <i>GPS 1</i> . If unit is secondary, select <i>GPS 2</i> .
	GPS 2	
RF Proc Legs	Disabled	Procedures with RF legs are not available to load.
	Enabled	Procedures with RF legs are available to load.
Ownship	Varies	Select icon to display on moving map.
Terrain Alerts	Disabled	Enables or disables terrain avoidance alerts.
	Enabled	
Graphical Edit	Disabled	Enables or disables the ability to tap anywhere on the map to add a waypoint to a flight plan.
	Enabled	
Composite CDI	Disabled	Composite CDI not interfaced to GPS.
	Enabled	Composite CDI interfaced to GPS.
Bluetooth	Disabled	Bluetooth is enabled on the GPS.
	Enabled	Bluetooth is not enabled on the GPS.
External FPL	Disabled	The unit will not accept active flight plan edits from the G3X touch system.
	Enabled	The unit will accept active flight plan edits from the G3X touch system. <b>The enablement of this setting is not approved under this STC.</b>

### 5.4.4 Main Indicator (Analog)

The *Main Indicator (Analog)* configuration page calibrates the OBS resolver, enables selected course, and displays the selected course for the GNC 355( ).

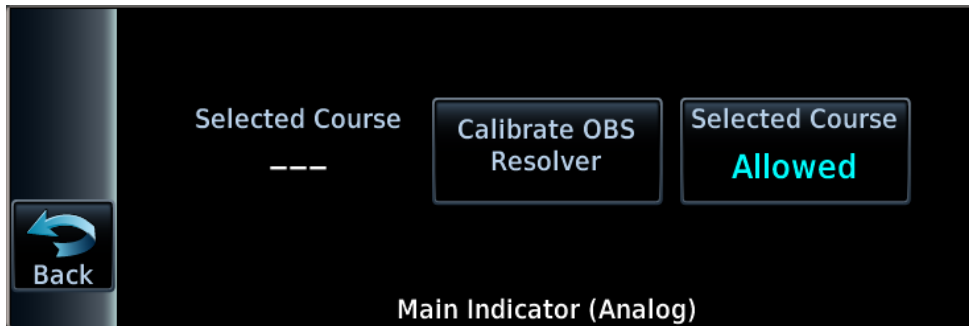


Figure 5-15 Main Indicator (Analog) Page

Table 5-10 Main Indicator (Analog) Configuration

Setting	Selection	Description
Display of selected course		Displays the selected course received by the unit.
Calibrate OBS Resolver	N/A	Tap Calibrate OBS Resolver and follow the prompts to calibrate the resolver. Verify OBS operation by checking that the displayed course is within 2° of the selected course.
Selected Course	Allowed	Allows selected course inputs for GPS operation in OBS mode.
	Ignored	Ignores selected course inputs for GPS operation.

### 5.4.5 GPS Antenna Offset

Configures GPS antenna height, lateral offset, and longitudinal offset. Before proceeding, measure:

- Antenna height above ground
- Lateral offset
- Longitudinal offset

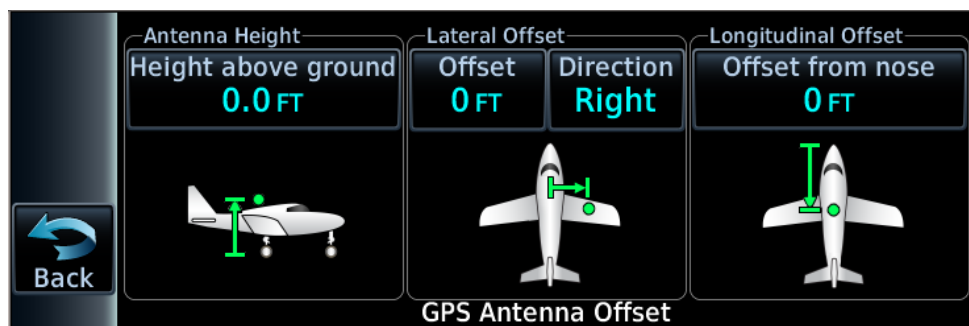


Figure 5-16 GPS Antenna Offset Page

#### Set the GPS Antenna Offset

1. Touch **Height above ground**.
2. Enter value to the nearest tenth of a foot.
3. Touch **Enter**.
4. Touch **Offset**.

5. Enter value to the nearest foot.
6. Touch **Enter**.
7. Touch **Direction** to toggle between left and right lateral offset.
8. Touch **Offset from nose**.
9. Enter value to the nearest foot.
10. Touch **Enter**.

#### 5.4.6 AHRS



**NOTE**

*The display orientation must be set, and aircraft must be level before calibrating the AHRS.*

Use this page to:

- Set the display orientation
- Set the Yaw Offset
- Calibrate the internal AHRS



Figure 5-17 AHRS Calibration Page

Table 5-11 AHRS Calibration

Setting	Selection	Description
Display Orientation	Unknown	N/A
	AFT	Select this orientation if the display faces aft.
	Up	Select this orientation if the display faces up.
Calibrate	N/A	Tap <b>Calibrate</b> to calibrate the internal AHRS to level (0° aircraft pitch and 0° aircraft roll).
Yaw Offset	-60° to 60°	Set the yaw angle of the unit relative to the centerline of the aircraft. When setting the yaw angle, a positive angle indicates the GNC 355( ) is rotated clockwise from the longitudinal axis of the airplane (line from nose to tail). A negative angle indicates the GNC 355( ) is rotated counterclockwise.

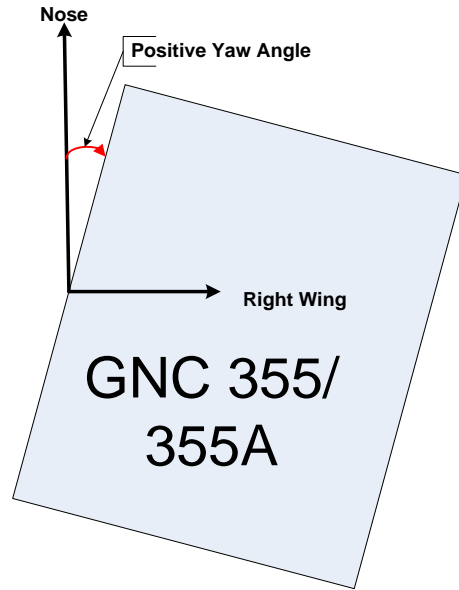


Figure 5-18 Setting the Yaw Angle

### 5.4.7 COM

Use this page to:

- Select and configure squelch mode
- Configure carrier squelch
- Configure MIC gain
- Select sidetone source
- Configure volume



Figure 5-19 GNC 355 COM Page

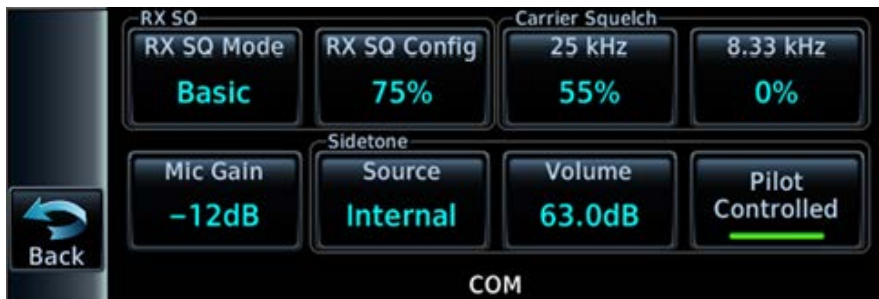


Figure 5-20 GNC 355A COM Page

**Table 5-12 COM Page Selections**

Setting	Selection	Description
RX SQ Mode	Basic	Applies a COM carrier squelch value to all frequencies.
	Advanced	Applies a COM carrier squelch value in 25 kHz spacing that can be adjusted for Low - 118.000 MHz, Mid - 127.000 MHz, and High - 136.975 MHz. <b>GNC 355A:</b> Applies a COM carrier squelch value in 8.33 kHz spacing that can be adjusted for Low - 118.000 MHz, Mid - 127.000 MHz, and High - 136.990 MHz.
RX SQ Config	0% thru 100%	Range of squelch settings for 8.33 kHz spacing.
	0% thru 100%	<b>GNC 355A:</b> Allows the selection of 25.0 kHz or 8.33 kHz spacing mode.
Carrier SQ	0% thru 100%	Decreasing the value allows the carrier squelch to be broken with low signal levels. Increasing the value requires higher signal levels to break carrier squelch.
Mic Gain	-12 dB thru 30 dB (in 6 dB increments)	Adjusts the gain of the microphone.
Sidetone Source	Internal (Default)	The COM sidetone audio that the pilot hears is the signal from the headset microphone before it is filtered for transmission.
	External	The COM sidetone audio that the pilot hears is the demodulated audio signal that goes to the antenna for transmission.
Sidetone Volume	0.0 dB thru 63.0 dB (in 0.5 dB increments)	Use the sidetone volume setting when the sidetone pilot controls are disabled. OR When the pilot controls are enabled and the sidetone volume is not linked to the COM volume.
Pilot Controlled	Enabled (Default)	Allows pilot to adjust the sidetone audio volume or link it to COM volume.
	Disabled	Sidetone audio volume is fixed and based on the sidetone volume setting.

## 5.5 Diagnostics

Diagnostics provide access to pages helpful for maintenance and troubleshooting the system. The diagnostics pages are used as part of the Ground Check in Section 6.3. Not all keys are enabled for every unit configuration.

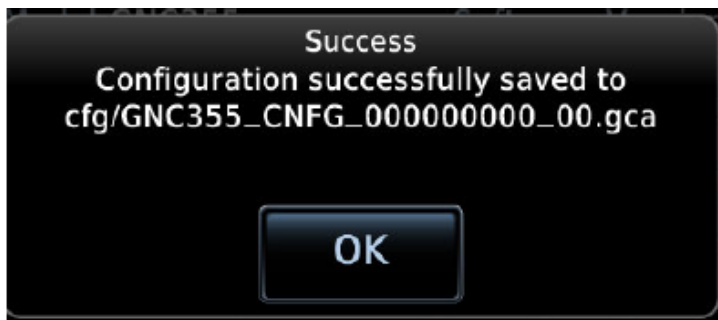
## 5.6 SD Save



### NOTE

*The unit supports up to a 32 GB FAT 32 SD card.*

Exporting a configuration to an SD card allows airframe specific configuration information to be loaded to a different unit. Tap **SD Save** on the unit to save configuration information.



**Figure 5-21 Successful Configuration Export**

1. Insert an SD card into the card slot.
2. Power on the unit in Configuration mode.
3. Tap **SD Save**.
4. Tap **OK**.



**Figure 5-22 Failed Configuration Export**

An error message displays if the configuration fails to export.

## 5.7 SD Load

This feature allows a previously saved configuration to load from an SD card.

### Loading from an SD Card

The software version must match the unit saved to the card.

1. Power on unit in Configuration mode.
2. Insert SD card into card slot.
3. Tap **SD Load**.
4. Tap a file to load.
5. Restart unit.
6. Verify settings on *Interface Settings* page are correct.



Figure 5-23 Import Configuration File Page



## 5.8 Flight Stream 510



### NOTE

*A compatible portable electronic device with the Garmin Pilot application is required. Visit Garmin's website for a list of compatible devices.*



### NOTE

*Flight Stream 510 Wi-Fi setup is performed during initial startup in Normal mode.*



### NOTE

*If having issues making a Wi-Fi connection, cycle power on the unit. Retry making a Wi-Fi connection.*



### NOTE

*Wi-Fi setup only needs to be performed when connecting to a device for the first time. Once a connection is established with a PED, the GNC 355( ) automatically connects to the device upon power-up.*

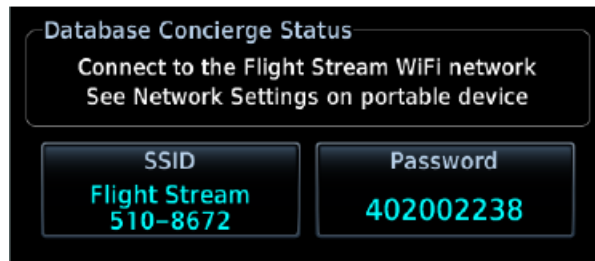
It is necessary to have the Garmin Pilot application on a PED if updating databases using a Flight Stream 510 wireless card. When the Flight Stream 510 is inserted and the unit is powered on in Normal mode, a prompt displays instructions on transferring databases. Download Garmin Pilot for Android or Garmin Pilot for iOS from [garmin.com](http://garmin.com) for additional information.

### Wi-Fi Setup

1. Power on the unit in Normal mode.
2. Touch the display to continue.
3. Wait for "Ready" to display under WiFi Info.



4. Touch **WiFi Info**.
5. Enable Wi-Fi connectivity on the PED. Once enabled, the Flight Stream 510 will be viewable in the list of available devices. The default Wi-Fi name is "510-" followed by the last four digits of the MAC address (e.g., 510-8672). To change the Wi-Fi name:
  - a. Touch **SSID**.
  - b. Type the desired Wi-Fi name and touch **Enter**.
6. Change the Flight Stream 510 password:
  - a. Touch **Password**.
  - b. Type the desired password and touch **Enter**.



**Figure 5-24 Flight Stream 510 Setup Page**

7. Select the Flight Stream 510 from the list of available Wi-Fi devices on the PED and enter the password.
8. On Garmin Pilot, touch **Connex**t.
9. Touch **GNC 355**( ) under the devices tab.
10. Verify the GNC 355( ) is connected.

## 5.9 Bluetooth



### NOTE

A compatible PED with the Garmin Pilot application is required. Visit Garmin's website for a list of compatible devices.



### NOTE

Bluetooth setup is performed in Normal mode.



### NOTE

If having issues making a Bluetooth connection, cycle power on the unit. Retry making a Bluetooth connection.

### Bluetooth Setup

1. Power on the unit in Normal mode.
2. Touch **System**.
3. Touch **Connex Setup**.
4. Verify Bluetooth is enabled on the GNC 355( ).
5. Enable Bluetooth connectivity on the PED. Once enabled, the GNC 355( ) will be viewable in the list of available devices. The default Bluetooth name is "GNC 355( )" followed by the last four digits of the MAC address (e.g., GNC 355( ) 4000). To change the Bluetooth name:
  - a. Touch **Device Name**.
  - b. Type the desired Bluetooth name and touch **Enter**.
6. Select the GNC 355( ) from the list of available Bluetooth devices on the PED. A pop-up window will appear on the unit's screen to confirm the new Bluetooth pairing.
7. Touch **Yes** to finish pairing the device.



### NOTE

Bluetooth setup only needs to be performed when pairing with a device for the first time. Once a connection is established with a Bluetooth device, the GNC 355( ) automatically connects to the Bluetooth device upon power-up.

8. On the GNC 355( ), verify the PED displays as a paired device.
9. On Garmin Pilot, touch **Connex**.
10. Touch **GNC 355( )** under the devices tab.
11. Verify the GNC 355( ) is connected.



Figure 5-25 Bluetooth Setup Page

**Managing Paired Devices**

The GNC 355( ) can connect to up to three Bluetooth devices simultaneously. The GNC 355( ) saves up to 13 Bluetooth device pairings.



**Figure 5-26 Bluetooth Paired Devices Page**

**Table 5-13 Bluetooth Paired Devices**

Selection	Description
Auto Reconnect	Enables automatic connection between the GNC 355( ) and paired device when the units are within range of each other.
Remove	<ul style="list-style-type: none"> <li>• Removes device from the list</li> <li>• Removes GNC 355( ) pairing</li> <li>• Requires confirmation</li> </ul>

Remove pairing on both devices before attempting to pair again.

## 6 SYSTEM CHECKOUT

### 6.1 Checkout Log

Refer to *GPS 175/GNX 375/GNC 355 ICA/MM* (P/N 190-02207-A2) for configuration, serial number, and LRU location documentation procedures. Complete all relevant checks as described in the following section. Use the checkout log as a guide.

#### **GNC 355( ) Checkout Log**

Date: \_\_\_\_\_ Completed by: \_\_\_\_\_

**Table 6-1 Checkout Log**

Check	N/A	Task	Section Reference
<b>Calibration Checkout</b>			
<input type="checkbox"/>	<input type="checkbox"/>	AHRS Calibration: Pitch / Roll offset	Section 5.4.6
<b>Labeling Check</b>			
<input type="checkbox"/>	<input type="checkbox"/>	Placards and Switch Labeling Check	Section 6.2
<b>Ground Checkout (Configuration Mode)</b>			
<input type="checkbox"/>	<input type="checkbox"/>	Main Indicator	Section 6.3.1
<input type="checkbox"/>	<input type="checkbox"/>	Composite Indicator	Section 6.3.2
<input type="checkbox"/>	<input type="checkbox"/>	Discretes: Inputs / Outputs	Section 6.3.3
<input type="checkbox"/>	<input type="checkbox"/>	External Annunciator	Section 6.3.3
<input type="checkbox"/>	<input type="checkbox"/>	HSDB connected devices	Section 6.3.4
<input type="checkbox"/>	<input type="checkbox"/>	OBS Resolver Interface	Section 6.3.5.1
<b>Ground Check (Normal Mode)</b>			
<input type="checkbox"/>	<input type="checkbox"/>	Instrument Test	Section 6.4.1
<input type="checkbox"/>	<input type="checkbox"/>	Database Check	Section 6.4.2
<input type="checkbox"/>	<input type="checkbox"/>	GPS Signal Acquisition	Section 6.4.3
<input type="checkbox"/>	<input type="checkbox"/>	Radio Interference Check	Section 6.4.4
<input type="checkbox"/>	<input type="checkbox"/>	EHSI Interface	Section 6.4.7.1
<input type="checkbox"/>	<input type="checkbox"/>	GMX 200/MX 20 Interface	Section 6.4.7.2
<input type="checkbox"/>	<input type="checkbox"/>	GNC 355( ) ADS-B In	Section 6.4.7.3
<b>EMC check</b>			
<input type="checkbox"/>	<input type="checkbox"/>	Complete checks for all equipment on Source/Victim Matrix	Section 6.5

<b>Flight Checkout</b>			
<input type="checkbox"/>	<input type="checkbox"/>	GPS Flight Check	Section 6.6.1
<input type="checkbox"/>	<input type="checkbox"/>	Autopilot Flight Check	Section 6.6.2
<b>Documentation</b>			
<input type="checkbox"/>	<input type="checkbox"/>	AFMS filled out	Section 6.7.1
<input type="checkbox"/>	<input type="checkbox"/>	ICA filled out	Section 6.7.2

## 6.2 Placards and Switch Labeling Check

If new switch or annunciator labels were added as a result of the GNC 355( ) installation, verify the following:

- The font size and label are legible from the pilot's seat
- The labels are legible in all ambient light conditions. In particular, the labels are legible with ambient flood lighting in darkness
- The labels must be legible and not obscured to the pilot by the glareshield, in all flight control positions, or by any other component including switch positions

If the GNC 355( ) installation is limited to VFR operation only, and the criteria in Section 3.3.1 determined a placard is required, verify the following:

- The text on the placard reads: "GPS LIMITED TO VFR USE ONLY"
- The font follows guidance in Section 3.3.3
- The placard is legible from the pilot's seat

If the GNC 355( ) installation is interfaced to a composite CDI, verify the following is installed by the composite CDI:

- The text on the placard reads: "TO/FROM FLAG WILL NOT FUNCTION CORRECTLY WHEN DISPLAYING GPS DEVIATION. USE TO/FROM INDICATION ON GPS"
- The font follows guidance in Section 3.3.3
- The placard is legible from the pilot's seat

### 6.3 Ground Check – Configuration Mode

The configuration ground check procedures are intended to verify each LRU and interface to the GNC 355( ) has been properly configured. Steps not applicable to an installation may be skipped.



**NOTE**

*Throughout the configuration ground check section, references are made to particular functions and screens. If a function or screen is not available, ensure that the system has been configured correctly.*

The configuration ground checks must be performed on every installed GNC 355( ). Before starting the configuration mode checkout, the following conditions must be met:

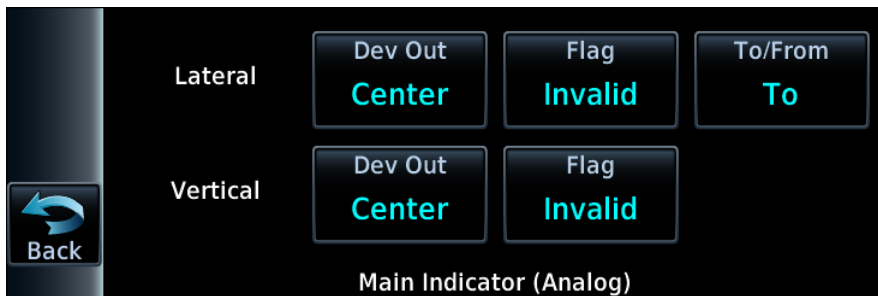
1. All GNC 355( ) displays in the system must be powered on and placed in Configuration mode.
2. All system LRUs must be powered on.
3. All installed LRUs must be configured per Section 5.

#### 6.3.1 Main Indicator (Analog)



**NOTE**

*This check is not required if the unit is interfaced to an electronic HSI and the main indicator analog output is not used.*



**Figure 6-1 Main Indicator (Analog) Page**

If the GNC 355( ) is interfaced to an analog indicator on the main CDI/OBS, perform the following steps:

1. Touch **Diagnostics > Main Indicator (Analog)**.
2. Verify correct operation of the lateral deviation, flag, and TO/FROM flag using the corresponding selections.
3. Verify correct operation of the vertical deviation and flag using the corresponding selections.

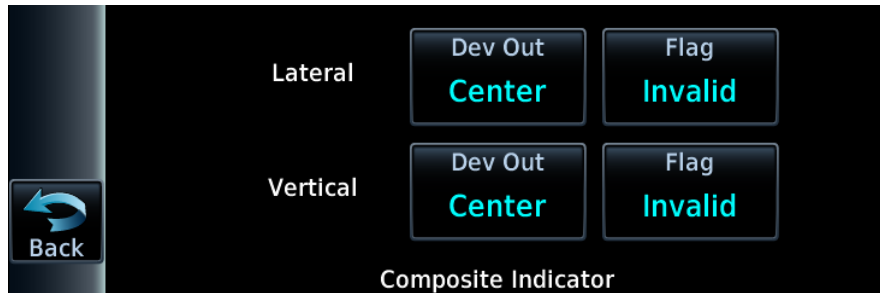


### 6.3.2 Composite Indicator



**NOTE**

*This check is not required if the unit is interfaced to an electronic HSI and the main indicator analog output is not used.*



**Figure 6-2 Composite Indicator Page**

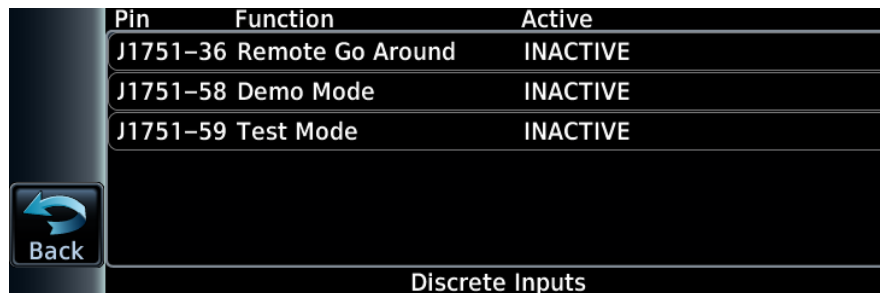
If the GNC 355( ) is interfaced to a composite indicator on the main CDI/OBS, perform the following steps:

1. Touch **Diagnostics > Composite Indicator**.
2. Verify correct operation of the lateral deviation and flag using the corresponding selections.
3. Verify correct operation of the vertical deviation and flag using the corresponding selections.

### 6.3.3 Discrettes

To check the configuration of external input switches, touch **Diagnostics > Discrete Inputs**. Perform the following steps for each external switch:

1. Set the switch to active.
2. Verify the GPS indication displays active.
3. Set the switch to inactive.
4. Verify the GPS indication displays inactive.



**Figure 6-3 Discrete Inputs Page**

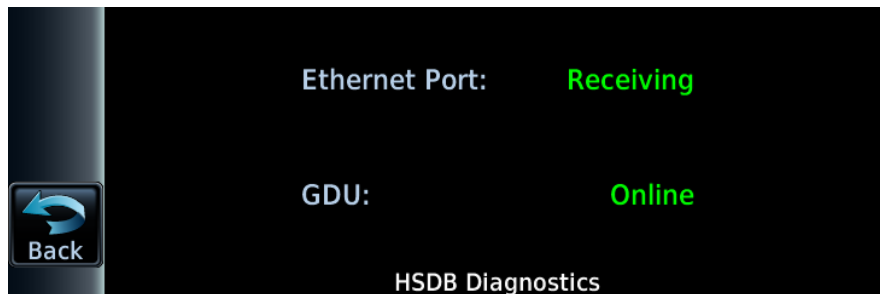
To check the configuration of outputs, touch **Diagnostics > Discrete Outputs**. Perform the following steps for each discrete output:

1. Tap the **Active** key corresponding to the discrete output. A green bar on the key indicates the signal as active.
2. Verify the appropriate external annunciator illuminates when the output is set to *ACTIVE* and extinguishes when the output is set to *INACTIVE*.



**Figure 6-4 Discrete Outputs Page**

### 6.3.4 HSDB



**Figure 6-5 HSDB Page**

To check HSDB configuration, touch **Diagnostics > HSDB Ethernet**.

1. Ensure any LRUs connected via HSDB are powered on and properly configured.
2. Ensure any GDUs connected via HSDB are powered on and properly configured.
3. Ensure that the status of the connected ports display “Receiving.”
4. If the previous step did not perform correctly, check the electrical connections and configuration setup.

### 6.3.5 Interface Checks

#### 6.3.5.1 OBS Resolver Interface Check

If the GNC 355( ) is interfaced to a CDI/HSI with an OBS resolver, the following checks must be completed:

1. Ensure that power is applied to the CDI/HSI.
2. On the GNC 355( ), navigate to the *Setup > Main Indicator (Analog)* page.
3. Verify that the current OBS setting from the CDI/HSI is listed in the Selected Course field on the left side of the page.

## 6.4 Ground Check – Normal Mode

### 6.4.1 Instrument Check

This is not a required check. However, this page may be useful for troubleshooting installation issues. During normal power-up, the splash screen appears, followed by the **Active Database** screen. Touch **Continue**. When the **Instrument Test** page appears, the electrical outputs are activated and set to values listed below.

**Table 6-2 Instrument Test Data**

Parameter	Instrument Test Value
LCDI	Half Left
LFLG	Out of View
VCDI	Half Up
VFLG	Out of View
TO/FROM	N/A
OBS	The GNC 355( ) displays the OBS value (149.5° if interfaced to an HSI with driven course pointer).
DTK	149.5° (Displayed as 150°)
<i>Items below do not display on the <b>INSTRUMENT TEST</b> page.</i>	
Distance to Go	10.0 nautical miles
Time to Go	4 minutes
Active Waypoint	GARMN
Groundspeed	150 knots
Present Position	N 39°04.05', W 94°53.86'
Waypoint Alert	Active
Phase of Flight	En Route
Message Alert	Active
Leg/OBS Mode	Leg Mode
GPS Integrity	Invalid
Roll Steering (if applicable)	Flight Director commands 0° bank (level flight) for 5 seconds, increasing right bank at 1°/second for 5 seconds, 5° right bank for 5 seconds, decreasing right bank at 1°/second for 5 seconds until 0° bank is reached. This cycle repeats continuously.

### 6.4.2 Database Check

Check the navigation database to make sure it is current. The database information is displayed during the unit display start-up sequence. To check the database:

1. Cycle power on the GNC 355( ). The GNC 355( ) will go through its normal startup sequence.
2. Wait for the **SW/Databases** page to be displayed.
3. Verify the expiration dates displayed have not passed for each database.
4. The database expiration date can also be viewed in the **System Status** page, which is accessed from the **System** page in Normal mode. If a database has expired, remove and replace the navigation database card and refer to Section 5.5.

Databases can be updated with a data card or the Flight Stream 510. Users update databases by purchasing subscription updates from Garmin or Jeppesen. Contact Garmin at [flyGarmin.com](http://flyGarmin.com). Contact Jeppesen at (800) 621-5377 or [www.jeppesen.com](http://www.jeppesen.com). For information on certification compliance of databases, refer to RTCA/DO-200A List of Applicable Avionics Systems at [flyGarmin.com](http://flyGarmin.com).

### Navigation

The navigation database supplies airport, NAVAIDs, and waypoint information.

### Basemap

- The Basemap database provides ground-based references, such as roads and bodies of water
- The Basemap database does not have a scheduled update cycle or expiration date and updates infrequently
- Basemap database updates, when issued, are available from [flyGarmin.com](http://flyGarmin.com)

### Safe Taxi

SafeTaxi diagrams provide detailed taxiway, runway, and ramp information.

### Terrain

The terrain database supports terrain awareness functionality.

### Obstacles

The obstacle databases provide identification of known obstacles greater than 200 feet AGL and are available with and without hazardous power lines.

**Table 6-3 Database SD Cards**

Data Cards	P/N
Database, GPS175/GNX 375	010-02090-00

### 6.4.3 Signal Acquisition



#### NOTE

*Turn off all other avionics before beginning this test.*



#### NOTE

*Initial position acquisition can take up to 20 minutes. Subsequent acquisitions will not take as long.*

To check GPS signal acquisition, perform the following steps:

1. Power on unit in Normal mode.
2. Touch **System**.
3. Touch **GPS Status**.
4. Verify 3-D Fix displays.
5. If unable to acquire satellites:
  - a. Move aircraft away from structures.
  - b. Check GPS antenna installation.

Once GPS position information is available, perform the following steps:

1. On the **GPS Status** page, verify that the aircraft position matches a known reference position.
2. While monitoring the **GPS Status** page, turn on other avionics one at a time and check the GPS signal reception to make sure it is not affected (no significant signal degradation).
3. Before proceeding with the VHF COM Interference Check (Section 6.4.4), ensure that any connected equipment is transmitting, receiving data from the GNC 355( ), and functioning properly.

#### 6.4.4 VHF COM Interference Check

If testing a transmitter from a non-aviation device, verify each frequency by transmitting at least 30 seconds on each channel. This check must be completed on all IFR installations.

1. On the **GPS Status** page, verify at least seven satellites have been acquired.
2. Verify that the GPS “LOI” flag is out of view.
3. Select 121.150 MHz on the COM transceiver to be tested.
4. Transmit for a period of 35 seconds.
5. Verify that the GPS “LOI” flag does not come into view.
6. Repeat steps 4 and 5 for the following frequencies:
  - 121.15 MHz            • 121.22 MHz            • 131.22 MHz            • 131.30 MHz
  - 121.17 MHz            • 121.25 MHz            • 131.25 MHz            • 131.32 MHz
  - 121.20 MHz            • 131.20 MHz            • 131.27 MHz            • 131.35 MHz
7. For VHF radios that include 8.33 kHz channel spacing, include the following frequencies.
  - 121.185 MHz            • 130.285 MHz            • 121.190 MHz            • 131.290 MHz
8. Repeat steps 3 through 7 for all remaining COM transceivers in the aircraft.
9. Turn on the TCAS system and make sure the GPS position remains valid if the aircraft is TCAS equipped.
10. Use the SATCOM system to make sure the GPS position remains valid if the aircraft is SATCOM equipped.

If the GPS “LOI” flag comes into view during this procedure, refer to the following:

Certain non-aviation radios, including marine transceivers, can interfere with civil aviation navigation and surveillance equipment. When installing the GNC 355( ), it is the responsibility of the installer to ensure that the installation is compatible with all previous aircraft modifications. Verify there is no interference in aircraft modified with non-aviation radios. If interference is detected, remove it by:

- Relocating antennas
- Rerouting cables
- Installing filters

If these techniques do not eliminate the interference, it may be necessary to remove or replace the interfering radio.

If a VHF COM transmitter causes problems with the GPS on the selected frequencies as listed in the post-installation checkout, the problem can be because of the ELT. To find out if the ELT is a problem, disconnect the ELT antenna coaxial at the ELT unit. If the ELT is found to cause the problem, contact the ELT manufacturer.

## 6.4.5 VHF COM Discrete Input Check

**Table 6-4 Discrete Input Pins**

Pin	Pin Name	Description
P3552-27	COM REMOTE TRANSFER*	Flip-flops the active and standby COM frequencies.
P3552-28	COM REMOTE TUNE UP*	Scrolls up through the preset COM frequencies in the standby frequency field.
P3552-29	COM REMOTE TUNE DOWN*	Scrolls down through the preset COM frequencies in the standby frequency field.

If a switch is connected to any pins listed in Table 6-4, perform the following procedure:

1. Exercise the switch source for each of the switches that are connected.
2. Verify that the function controlled by the switch operates as intended.
3. Verify the wiring between the unit and the switch if not operating as intended.

## 6.4.6 VHF COM

### **Antenna Check**

If desired, the antenna VSWR can be checked using an inline wattmeter in the antenna coaxial using frequencies near both ends of the band. The VSWR should be less than 2:1. A VSWR of 2:1 will cause a drop in output power of approximately 12%.

### **Receiver/Transmitter Check**

1. Tune the unit to a local VHF frequency.
2. Verify the receiver output produces a clear and understandable audio output.
3. Verify the transmitter functions properly by contacting another station and getting a report of reliable communications.

### **Database Check**

Check the frequency database to ensure it is current. The database information displays during the unit startup sequence. To check the database:

1. Cycle power on the unit in Normal mode.
2. Tap Garmin logo on display.
3. Verify the database effectivity (EFCTV) date has not lapsed.

## 6.4.7 Interface Checks

### 6.4.7.1 Sandel EHSI Interface

If a Sandel SN3500/4500/3308 EHSI has been connected to the GNC 355( ), the interface should be verified as described in this section.

1. Cycle power to the GNC 355( ) and acknowledge the prompts until it gets to the *Instrument Test* page.

2. Verify the SN3500/4500/3308 is receiving valid heading.



#### NOTE

*The Vertical Deviation Indication will not be displayed unless the SN 3500/4500/3308 is receiving valid heading.*

3. While the GNC 355( ) is displaying the **Instrument Test** page, verify the SN3500/4500/3308 is displaying data from the GPS source.
  - Course Deviation: Half-scale left deviation
  - Vertical Deviation: Half-scale up deviation
  - Active Waypoint: GARMN
4. On the GNC 355( ), verify an OBS value is displayed (and not reported as “N/A”).
5. Acknowledge the self-test on the GNC 355( ) by touching the **Continue** key.
6. Enter a Direct To waypoint on the GNC 355( ) and make sure the SN3500/4500 displays “GPS 1” or “GPS 2” (depending on what GPS source the GNC 355( ) is).
7. Verify the GPS 1 (or GPS 2) indication does not have a red line through it.

#### 6.4.7.2 EFIS/EHSI Deviation Scaling for HSI/CDI Driven by GNC 355 via ARINC 429

If a compatible EFIS/EHSI from Appendix Sections C.4 and C.5 has been connected to the GNC 355( ) via ARINC 429, the interface should be verified as described in this section.

1. Cycle power to the GNC 355( ) and acknowledge prompts until the **Instrument Test** page displays.
2. While the GNC 355( ) is displaying the **Instrument Test** page, verify the EFIS/EHSI is displaying data from the GPS source.
  - Course Deviation: Half-scale left deviation
  - Vertical Deviation: Half-scale up deviation

#### 6.4.7.3 GMX 200/MX 20 Interface Check

If a Garmin GMX 200 or MX20 has been connected to the GNC 355( ), the interface should be verified as described in this section.

1. Verify the GNC 355( ) has a 3-D position fix.
2. Create and activate a flight plan on the GNC 355( ) by touching the **Direct-To** key and entering a waypoint.
3. Verify the RTE and POS data flags are not displayed on the GMX 200/MX20.
4. Verify the flight plan is displayed on the GMX 200/MX20 using the flight plan (FPL) function.

#### 6.4.7.4 ADS-B In Transponder Interface Check

If the GNC 355( ) is interfaced to a GTX 3X5 or GDL 88, the following checks must be completed:

1. Power on the GNC 355( ) unit in Normal mode and ensure the transponder is powered on.
2. On the GNC 355( ), navigate to the **System > ADS-B Status** page.
3. In the top-left window of the page, verify that the software versions and serial number from the transponder are accurately displayed.

#### 6.4.7.5 GPS Position Source for GDL 82

If the GNC 355( ) is interfaced to a GDL 82 as the GPS position source, perform the external GPS source checkout as described in *GDL 82 Mooney M20( ) Series STC Installation Manual* (P/N 190-01810-10).

## 6.5 EMC Check

Wait for the current system start-up sequence to finish before applying power to the next system. An EMC check must be conducted once the GNC 355( ) and Flight Stream 510 are installed and all interfaces to external equipment are verified to be correctly working. The EMC check makes sure the equipment is not producing unacceptable interference in other avionics systems and other avionics systems are not producing unacceptable interference in the GNC 355( ).

An example EMC Source/Victim matrix is shown in Figure 6-6.

1. Enter equipment installed in the aircraft into the Source row and Victim column of the form.
2. Apply power to all avionics systems, except the equipment installed under this STC.
3. Verify all existing avionics systems are properly functioning.
4. Apply power to the GNC 355( ).
5. Remove power from all other avionics systems.
6. Apply power and/or operate the systems listed on the form, one system at a time.
7. Verify the GNC 355( ) properly functions and does not enunciate any active faults.
8. Verify that each system operates properly.

***For VHF COM radios:***

1. Monitor one local frequency, one remote (far field) frequency, and one unused frequency.
2. Verify no unintended squelch breaks or audio tones interfere with communications.

***For VHF NAV radios:***

1. Monitor one local frequency, one remote (far field) frequency, and one unused frequency.
  2. Verify there are no guidance errors.
  3. Verify no audio tones interfere with the station ID.
9. Repeat steps 6 through 8 until every system listed on the Victim/Source form has been checked.





## 6.6 Flight Checks

A flight check is required as final installation verification. Verify the system operates as described in the following sections.

The analog deviation (LEFT/RIGHT and UP/DOWN), TO/FROM, and FLAG (lateral and vertical) outputs to a CDI or HSI should be verified in flight with potential sources of electrical noise, such as autopilot, flaps, gear, heater blowers, etc., operating. Lateral deviation and flags must be checked with GPS and vertical deviation and flags must be checked with glideslope. Verify the flags are hidden at the correct times, and the flag is in view at the correct times. Verify that during flight any placards and labels added as part of the GNC 355( ) installation are readable in all anticipated cockpit lighting conditions.

### 6.6.1 GPS Flight Check

1. Verify GPS position is not lost during normal aircraft maneuvering (e.g., bank angles up to 30° and pitch angles associated with take-off, departures, approaches, landings, and missed approaches, as applicable).
  - a. If GPS position is lost, a “LOI” message will be displayed.
2. Enter and activate a flight plan on the GNC 355( ) by touching the **Direct-To** key and entering a waypoint.
3. Fly the flight plan and make sure the display of flight plan data is consistent with the CDI indication (e.g., deviation, TO/FROM, etc.) in the pilot’s primary field-of-view.
4. Verify GPS position on all displays using the GNC 355( ) as a position source.

### 6.6.2 Autopilot Flight Check

If the GNC 355( ) is interfaced to an autopilot, complete the following:

1. Enter and activate a flight plan on the GNC 355( ) and engage the autopilot in the GPSS mode, if available.
2. Verify the autopilot flies the course.
3. Disengage the autopilot and fly off course.
4. Re-engage the autopilot (in GPSS mode) and verify it correctly intercepts the course and continues to fly it.
5. Turn off the autopilot GPSS but leave the autopilot engaged in NAV mode.
6. Verify it maintains the current course.

### 6.6.3 COM Flight Check

To check the communications transceiver, maintain an appropriate altitude and contact a ground station facility at a range of at least 50 nautical miles.

1. Contact a ground station in close proximity.
2. Press the COM volume knob to select manual squelch.
3. Listen for any unusual electrical noise, which would increase the squelch threshold.
4. Ensure that airframe audible warnings (e.g., stall or landing gear) can be heard with the headsets in use. If the warnings are not audible, the GNC 355( ) volume will need to be adjusted.

If possible, verify the communications capability on both the high, low, and mid bands of the VHF COM band. It may be required by the governing regulatory agency to verify operation of the COM transmitter and receiver at the extents of a ground facility’s service volume (e.g., FAA AC 23-8C).

## 6.7 Documentation Checks

All checks contained in the previous sections must be completed prior to performing the following checks.

### 6.7.1 Airplane Flight Manual Supplement

Verify the Airplane Flight Manual Supplement (AFMS) is completed and inserted in the Airplane Flight Manual (AFM) or Pilot's Operating Handbook (POH).

1. Fill in the required airplane information in the AFMS.
2. Fill in the applicable check boxes in the System Capability section of the AFMS corresponding to the capabilities of the installed GNC 355( ) system. Refer to AFMS Section 1.2.
3. Fill in the applicable checkbox in the Limitations section of the AFMS. Refer to AFMS Section 2.1 for IFR/VFR. Refer to AFMS Section 2.12 regarding autopilot coupling for lateral GPS approaches only. Refer to AFMS Section 2.25 for placards.
4. Fill in the applicable check box in the Normal Procedures section of the AFMS. Refer to AFMS Section 4.4 for heading source interface. Refer to AFMS Section 4.5 for autopilot coupling during approaches and RF leg navigation coupling. Refer to AFMS Section 4.6 for composite NAV indicator interface.
5. Fill in the applicable check boxes in the System Descriptions section of the AFMS. Refer to AFMS Section 7.2 for baro leg sequencing. Refer to AFMS Section 7.4 for traffic system.
6. Insert the completed AFMS into the AFM or POH.

### 6.7.2 Instructions for Continued Airworthiness

Complete the appropriate information in Appendix A of the *GPS 175/GNX 375/GNC 355 Part 23 AML STC Maintenance Manual/ICA* (P/N 190-02207-A2). Ensure that this information is filled in completely and inserted into the aircraft permanent records. This will be record of aircraft make, model, registration number, serial number information, LRU locations, wire routing, and a copy of the GNC 355( ) configuration logs to be kept with the aircraft logbooks.

## APPENDIX A CONNECTORS AND PIN FUNCTION

This appendix contains connector information and a description of pin functions for LRUs installed as part of the GNC 355( ) STC. Refer to the LRU TSO installation manuals listed in Table 1-1 for more detailed signal information on each LRU.

All D-sub connectors follow a similar pin numbering scheme as that shown in Figure A-1 (view is from the front of the connector).

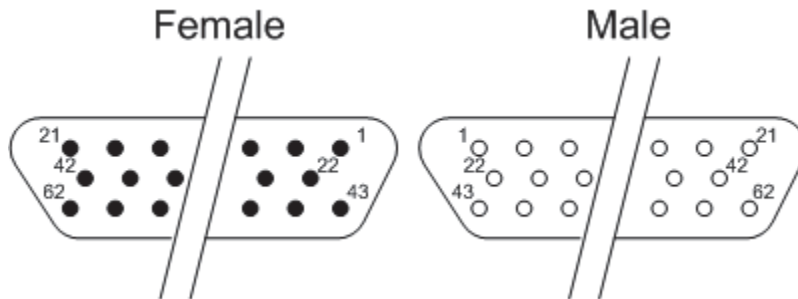


Figure A-1 D-Sub Numbering

### A.1 GNC 355( )

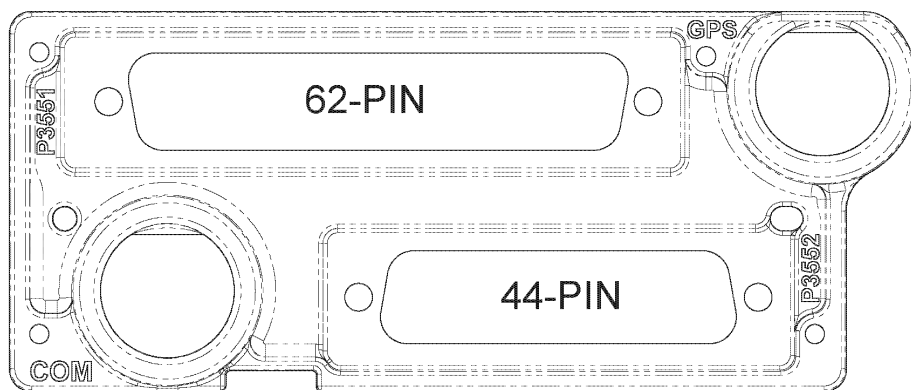
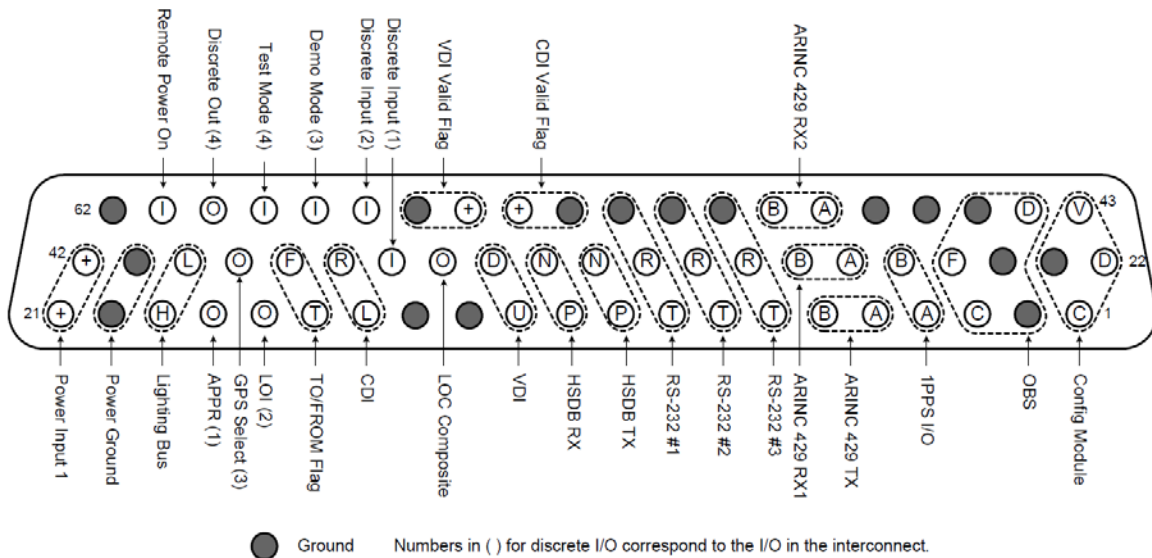


Figure A-2 GNC 355( ) Connector Layout

The GNC 355( ) has two built-in connectors plus the GPS and COM antenna coax connectors:

- J3551 – 62 pin female contact HD-D-sub (P/N 330-00185-62)
- J3552 – 44 pin female contact HD-D-sub (P/N 330-00185-44)
- GPS – TNC connector
- COM – BNC connector



**Figure A-3 J3551 Connector Layout**

**Table A-1 J3551 Connector Pins**

Pin	Pin Name	I/O	Pin	Pin Name	I/O
1	CONFIG MODULE CLOCK	OUT	32	ETHERNET OUT 1B	OUT
2	OBS ROTOR H (GND)	----	33	ETHERNET IN 1A	IN
3	OBS ROTOR C	OUT	34	VERTICAL +DOWN OUT	OUT
4	TIME MARK A	OUT	35	LOC COMPOSITE	OUT
5	ARINC 429 OUT 1A	OUT	36	REMOTE GO AROUND	IN
6	ARINC 429 OUT 1B	OUT	37	LATERAL +RIGHT OUT	OUT
7	RS-232 OUT 3	OUT	38	+FROM OUT	
8	RS-232 OUT 2	OUT	39	GPS SELECT	OUT
9	RS-232 OUT 1	OUT	40	LIGHTING BUS LO	OUT
10	ETHERNET OUT 1A	OUT	41	AIRCRAFT GND	----
11	ETHERNET IN 1A	IN	42	AIRCRAFT POWER	IN
12	VERTICAL +UP OUT	OUT	43	CONFIG MODULE POWER	OUT
13	GND	----	44	OBS STATOR D	IN
14	GND	----	45	OBS STATOR E (GND)	----
15	LATERAL +LEFT OUT	OUT	46	GND	----
16	+TO OUT		47	GND	----
17	LOI ANNUNCIATE	OUT	48	ARINC 429 IN 2A	IN
18	GPS APPROACH ANNUNCIATE	OUT	49	ARINC 429 IN 2B	IN
19	LIGHTING BUS HI	IN	50	RS-232 GND 3	----
20	AIRCRAFT GND	----	51	RS-232 GND 2	----
21	AIRCRAFT POWER	IN	52	RS-232 GND 1	----
22	CONFIG MODULE DATA	I/O	53	LATERAL -FLAG OUT	----
23	CONFIG MODULE GND	----	54	LATERAL +FLAG OUT	OUT
24	OBS STATOR G (GND)	----	55	VERTICAL +FLAG OUT	OUT
25	OBS STATOR F	IN	56	VERTICAL -FLAG GND	----
26	TIME MARK B	OUT	57	DISCRETE IN 2	IN
27	ARINC 429 IN 1A	IN	58	DEMO MODE	IN
28	ARINC 429 IN 1B	IN	59	RESERVED	IN
29	RS-232 IN 3	IN	60	DISCRETE OUT 4	OUT
30	RS-232 IN 2	IN	61	REMOTE POWER ON	IN
31	RS-232 IN 1	IN	62	GND	----



Figure A-4 J3552 Connector Layout

Table A-2 J3552 Connector Pins

Pin	Pin Name	I/O
1	RESERVED	----
2	RESERVED	----
3	RESERVED	----
4	RESERVED	----
5	MIC AUDIO IN HI	IN
6	RESERVED	----
7	500 OHM COM AUDIO HI	OUT
8	RESERVED	----
9	RESERVED	----
10	RESERVED	----
11	COM MIC KEY*	IN
12	RESERVED	----
13	RESERVED	----
14	RESERVED	----
15	RESERVED	----
16	RESERVED	----
17	RESERVED	----
18	500 OHM COM AUDIO LO	IN
19	RESERVED	----
20	MIC AUDIO IN LO	IN
21	RESERVED	----
22	RESERVED	----

Pin	Pin Name	I/O
23	RESERVED	----
24	RESERVED	----
25	RESERVED	----
26	RESERVED	----
27	COM REMOTE TRANSFER*	IN
28	COM REMOTE TUNE UP*	IN
29	COM REMOTE TUNE DOWN*	IN
30	AIRCRAFT POWER	IN
31	GND	----
32	RESERVED	----
33	RESERVED	----
34	RESERVED	----
35	RESERVED	----
36	RESERVED	----
37	AIRCRAFT GND	----
38	AIRCRAFT GND	----
39	RESERVED	----
40	AIRCRAFT GND	----
41	RESERVED	----
42	RESERVED	----
43	AIRCRAFT POWER	IN
44	AIRCRAFT POWER	IN

### A.1.1 Power

The following is a summary of the power operations for the GNC 355( ):

- Compatible with 14 VDC and 28 VDC aircraft electrical systems
- Accepts input power from 9 VDC to 33 VDC

**Table A-3 Power Pins**

Pin Name	Connector #	Pin	I/O
AIRCRAFT GND	J3551	20	----
AIRCRAFT POWER	J3551	21	IN
AIRCRAFT GND	J3551	41	----
AIRCRAFT POWER	J3551	42	IN
REMOTE POWER ON*	J3551	61	IN
AIRCRAFT GND	J3552	38	----
AIRCRAFT POWER	J3552	30	IN
AIRCRAFT GND	J3552	40	----
AIRCRAFT POWER	J3552	43	IN
AIRCRAFT GND	J3552	37	----
AIRCRAFT POWER	J3552	44	IN

\*Enables the power auto on feature - automatically powers the unit on when avionics master is turned on.

**Table A-4 Power Control Function**

POWER CONTROL	Description
Open	Auto on Disabled
Ground	Auto on Enabled

### A.1.2 Lighting

- Display and keys configure to track 28 VDC, 14 VDC, 5 VDC, or 5 VAC lighting buses
- Display and keys automatically adjust for ambient lighting conditions when configured for photocell
- Photocell is on the front of the unit
- Connect both LIGHTING BUS HI and LIGHTING BUS LO for a 5 VAC lighting bus
- Connect just LIGHTING BUS HI for a DC input, do not connect LIGHTING BUS LO

**Table A-5 GNC 355( ) Lighting Pins**

Pin Name	Connector	Pin	I/O
LIGHTING BUS HI	J3551	19	IN
LIGHTING BUS LO	J3551	40	IN

### A.1.3 Configuration Module

- Located in the J3551 connector backshell
- Stores installation-specific configuration information
- Eliminates the need to reconfigure aircraft specific items when replacing an LRU

**Table A-6 GNC 355( ) Config/GAE Module Pins**

Pin Name	Connector	Pin	I/O
CONFIG MODULE POWER	J3551	43	OUT
CONFIG MODULE GROUND	J3551	23	OUT
CONFIG MODULE CLOCK	J3551	1	OUT
CONFIG MODULE DATA	J3551	22	I/O

### A.1.4 COM Audio

#### *COM Audio Function*

Activation of COM MIC TRANSMIT enables MIC AUDIO IN HI and causes the transceiver to transmit. 500 ohm COM AUDIO is a 100 mW audio output that is intended to drive a headset or an audio panel.

#### *COM Audio Electrical Characteristics*

#### *COM MIC AUDIO*

The MIC is a standard carbon or dynamic MIC input with integrated preamps providing minimum 70 mVrms into a 1000 ohm load.

The MIC input is set in the factory so that 100 mVrms modulates the transmitter to 85% nominally at 1000 Hz. The microphone gain adjustment is made through Configuration mode.

**Table A-7 COM MIC Audio Pins**

Pin Name	Connector	Pin	I/O
MIC AUDIO IN LO	J3552	20	IN
MIC AUDIO IN HI	J3552	5	IN

#### *COM AUDIO*

COM AUDIO supplies 100 mW into a 500 ohm load. This is a balanced output and the LO output must be connected.

COM AUDIO is the summation of the COM receiver audio, and COM sidetone audio.

**Table A-8 COM Audio Pins**

Pin Name	Connector	Pin	I/O
500 OHM COM AUDIO HI	J3552	7	OUT
500 OHM COM AUDIO LO	J3552	18	OUT



### A.1.5 Discrete Inputs

Discrete input signals are Active-Low pins.

- Active (low) state: Input signal is < 3.5 VDC and/or resistance to ground < 375  $\Omega$
- Inactive (open/high) state: Input signal is between 6.5 VDC and 33 VDC and/or resistance to ground > 100 k $\Omega$

**Table A-9 GNC 355( ) Discrete Input Pins**

Pin Name	Connector	Pin	Description
COM MIC KEY*	J3552	11	When pulled low, allows the audio that is present on the COM MIC AUDIO IN HI to be transmitted over the radio.
COM REMOTE TRANSFER*	J3552	27	May be used to flip-flop between the active and standby COM frequencies. A momentary low on this pin will load the standby COM frequency into the active COM frequency field and place the active frequency into the standby COM frequency field.  May be used for emergency operation of the COM transmitter. If the switch is depressed for 2 seconds, the active COM frequency changes to 121.500 MHz. Once the emergency frequency is activated through COM Remote Transfer*, the unit transceiver ignores inputs from the front panel controls for COM selections only. The pilot may exit this independent mode, restoring COM selection control to the front panel knobs and keys, by again depressing the switch for 2 seconds.
COM REMOTE TUNE UP*	J3552	28	May be used to scroll through a list of preset COM frequencies. A momentary low on this pin will load the next preset frequency in the list into the standby COM frequency field.
COM REMOTE TUNE DOWN*	J3552	29	May be used to scroll through a list of preset COM frequencies. A momentary low on this pin will load the previous preset frequency in the list into the standby COM frequency field.
REMOTE GO AROUND	J3551	36	Active signal from momentary switch activates the missed approach procedure.

#### COM MIC Key\*

When pulled low, allows the audio that is present on the COM MIC AUDIO IN HI to be transmitted over the radio.

#### COM Remote Transfer\*

May be used to flip-flop between the active and standby COM frequencies. A momentary low on this pin will load the standby COM frequency into the active COM frequency field and place the active frequency into the standby COM frequency field.

May be used for emergency operation of the COM transmitter. If the switch is depressed for 2 seconds, the active COM frequency changes to 121.500 MHz. Once the emergency frequency is activated through COM Remote Transfer\*, the unit transceiver ignores inputs from the front panel controls for COM selections only. The pilot may exit this independent mode, restoring COM selection control to the front panel knobs and keys, by again depressing the switch for 2 seconds.

#### COM Remote Tune Up\*

May be used to scroll through a list of preset COM frequencies. A momentary low on this pin will load the next preset frequency in the list into the standby COM frequency field.

### COM Remote Tune Down\*

May be used to scroll through a list of preset COM frequencies. A momentary low on this pin will load the previous preset frequency in the list into the standby COM frequency field.

### Remote Go Around

Active signal from momentary switch activates the missed approach procedure.

## A.1.6 Discrete Outputs

**Table A-10 Discrete Outputs**

Pin Name	Connector	Pin	Description
GPS APPROACH ANNUNCIATE	J1752	18	Active when unit is in approach mode or CDI full scale deflection is set to 0.3 nm.
LOI ANNUNCIATE	J1752	17	Active when LOI of GPS signal occurs and "LOI" displays on the status bar.
GPS SELECT	J1752	39	Active when GPS Select configuration setting is set to auto and the system is in GPS approach mode, or when GPS Select configuration setting is set to prompt, the system is in GPS approach mode, and the pilot has acknowledged the prompt

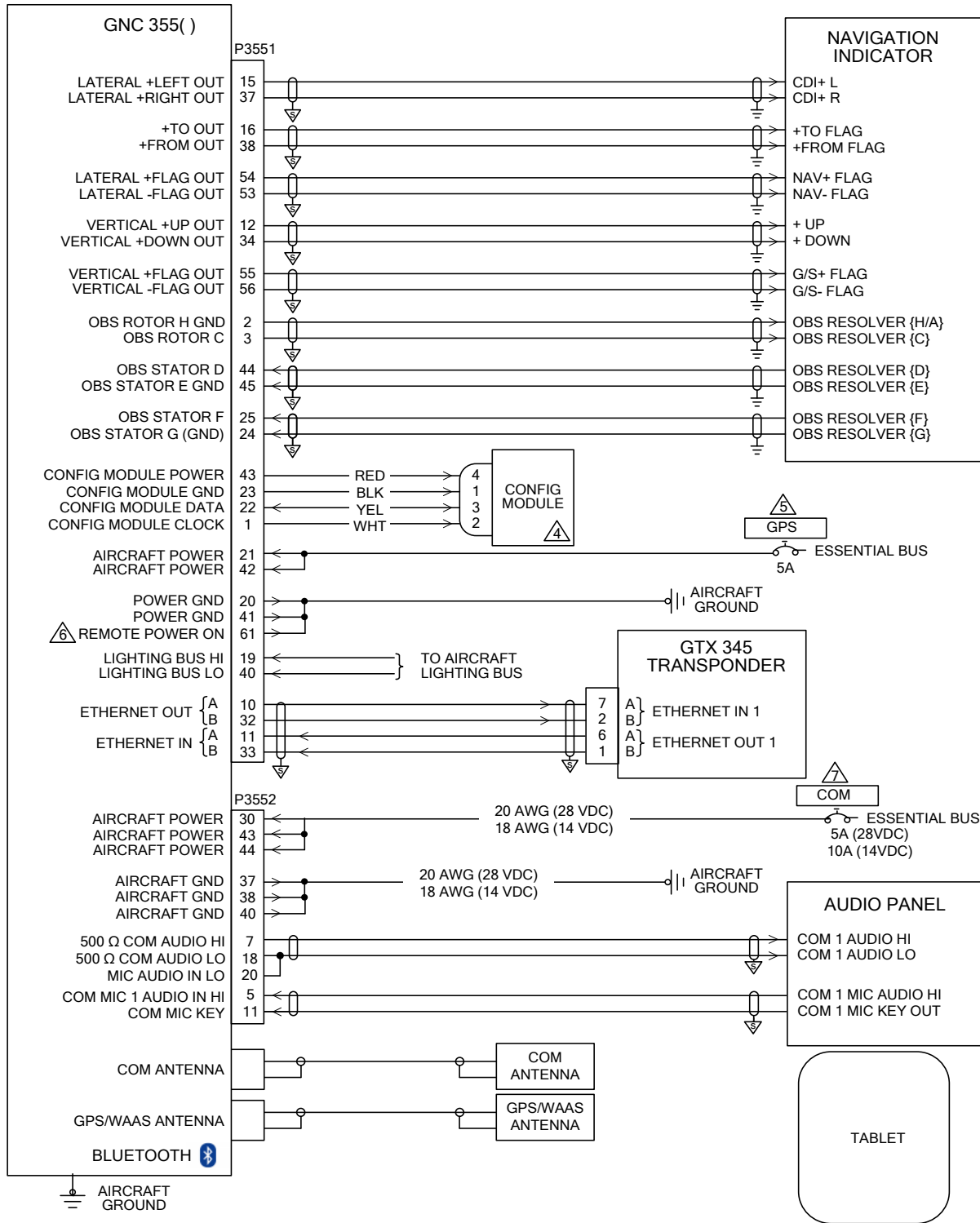


### NOTE

*Connect pin 39 to GPS SELECT input of King KAP 140 and KFC 225 autopilots.*

## APPENDIX B INTERCONNECT DIAGRAMS

Figure B-1	GNC 355( ) - Typical Installation Interconnect.....	96
Figure B-2	GNC 355( ) - Power Lighting Configuration Interconnect.....	98
Figure B-3	GDU 620 Interconnect.....	99
Figure B-4	GDU 700/1060 (G500/G600 TXi) Interconnect.....	100
Figure B-5	Aspen EFIS Interconnect.....	101
Figure B-6	G3X Interconnect.....	102
Figure B-7	MX20 / GMX200 Interconnect.....	103
Figure B-8	Analog CDI Interconnect.....	104
Figure B-9	Analog CDI (VFR) Interconnect.....	107
Figure B-10	Analog CDI with Existing Navigator Interconnect.....	108
Figure B-11	KI 208A Interconnect.....	110
Figure B-12	KI 209A Interconnect.....	111
Figure B-13	Composite CDI Interconnect.....	112
Figure B-14	Composite CDI (VFR) Interconnect.....	113
Figure B-15	G5 ADI Interconnect.....	114
Figure B-16	G5 HSI Interconnect.....	115
Figure B-17	Sandel SN 3308 EHSI Interconnect.....	116
Figure B-18	Sandel SN 3308 EHSI with Existing Navigator Interconnect.....	117
Figure B-19	Sandel SN 3500/4500 EHSI Interconnect.....	119
Figure B-20	GTR/GNC GPS Source Interconnect.....	120
Figure B-21	GFC 600/GMC 605 Interconnect.....	121
Figure B-22	S-TEC AP Interconnect.....	122
Figure B-23	Honeywell (Bendix/King) AP Interconnect.....	124
Figure B-24	Century AP Interconnect.....	126
Figure B-25	Cessna AP Interconnect.....	128
Figure B-26	Annunciator Interconnect.....	130
Figure B-27	External Navigation Source Selection Annunciator Interconnect.....	131
Figure B-28	Switches.....	132
Figure B-29	GNC 355( ) - GDL 82 Interconnect.....	133
Figure B-30	GNC 355( ) - GDL 88/88D Interconnect.....	134
Figure B-31	GNC 355( ) - GTX 3XX Interconnect.....	135
Figure B-32	GNC 355( ) - GTX 345 Interconnect.....	136
Figure B-33	Audio Panel Interconnect.....	137

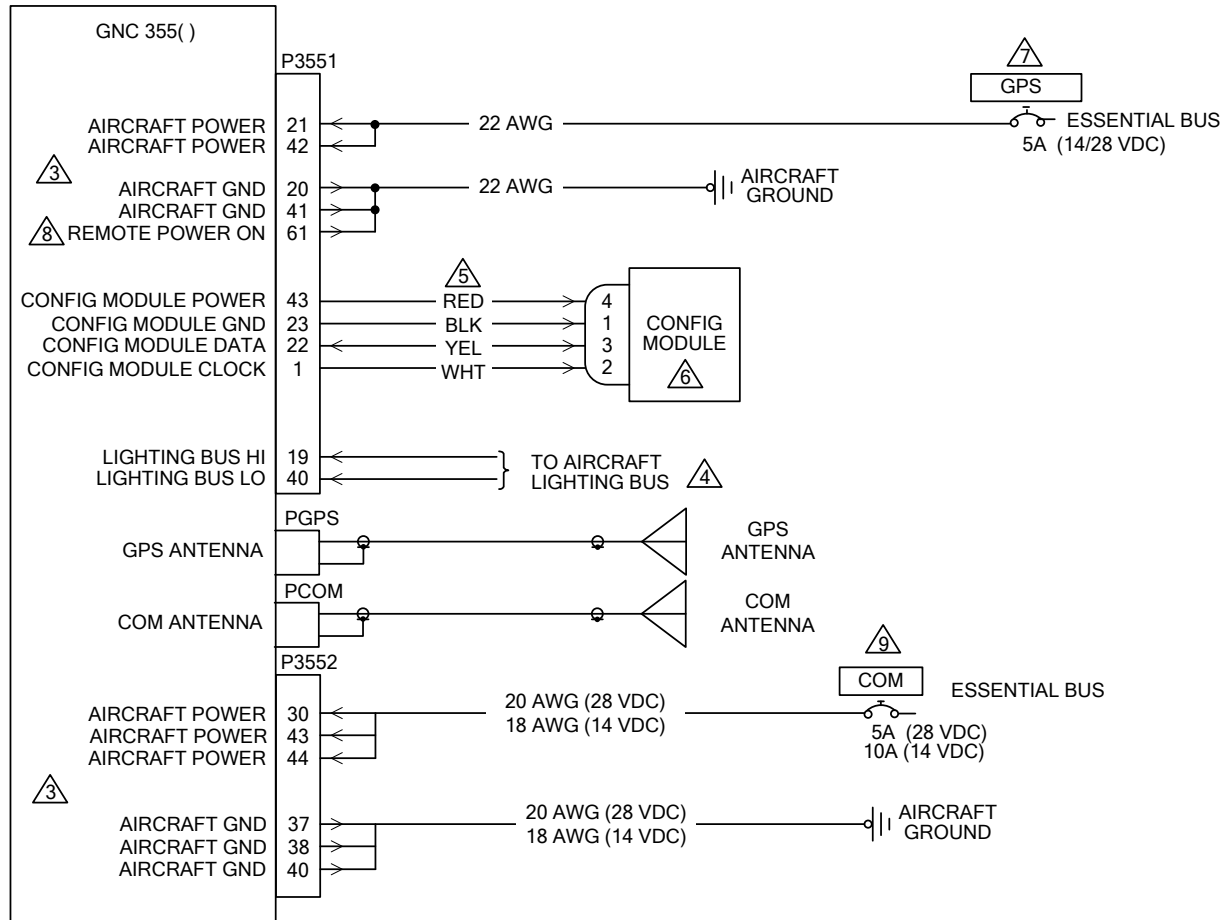


**Figure B-1 GNC 355() - Typical Installation Interconnect**  
**Sheet 1 of 2**

NOTES

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS:  $\nabla$  SHIELD BLOCK GROUND  $\cong$  AIRFRAME GROUND
  3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
- $\triangle$  CONFIG MODULE REQUIRES WIRE HARNESS P/N:325-00122-00. WIRE COLOR IN MODULE WIRE HARNESS DESIGNATES FUNCTION. CONNECT MODULE WIRE HARNESS TO GNC 355( ) ACCORDING TO WIRE COLOR.
- $\triangle$  CIRCUIT BREAKER SHOULD BE LABELED AS: “GPS” OR IF INSTALLED WITH ANOTHER NAVIGATOR, “GPS” IF PRIMARY or “GPS 2” IF SECONDARY.
- $\triangle$  THE REMOTE POWER ON DISCRETE IS USED AS THE POWER AUTO ON FEATURE WHEN THE AVIONIC’S MASTER IS TURNED ON.
- $\triangle$  CIRCUIT BREAKER SHOULD BE LABELED AS: “COM” OR IF INSTALLED WITH ANOTHER RADIO, “COM” IF PRIMARY or “COM 2” IF SECONDARY.

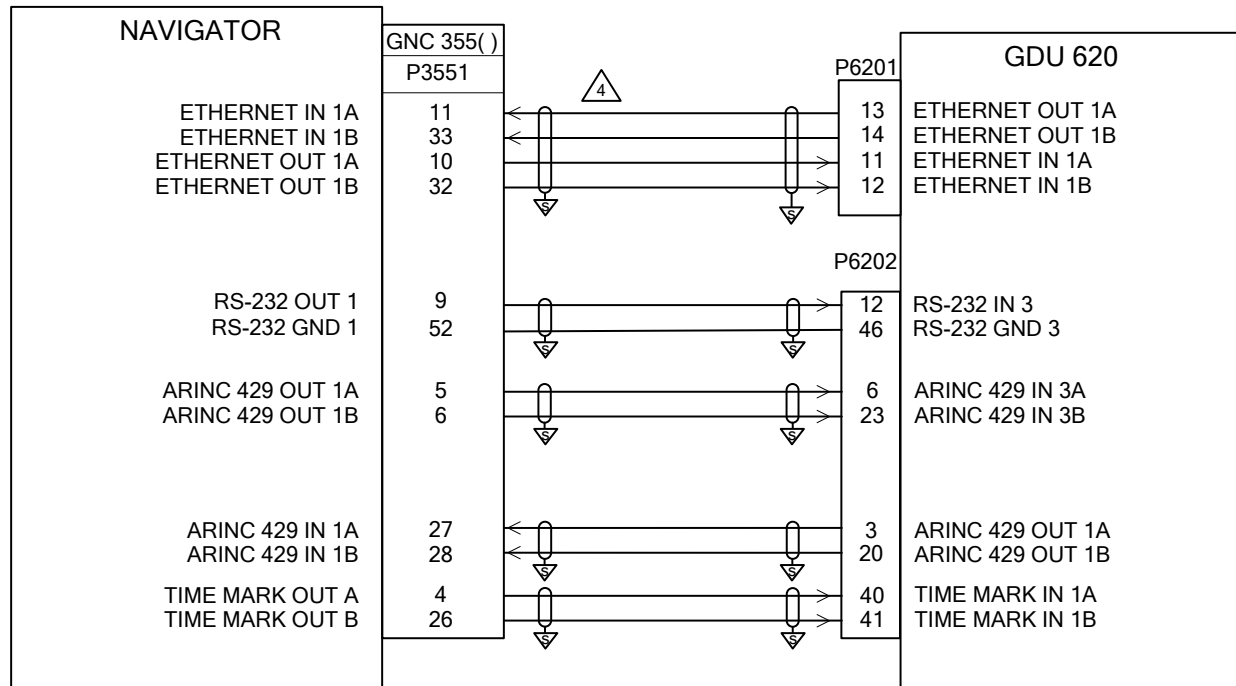
**Figure B-1 GNC 355( ) - Typical Installation Interconnect**  
**Sheet 2 of 2**



**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS:  $\nabla$  SHIELD BLOCK GROUND  $\cong$  AIRFRAME GROUND
- $\triangle 3$  ALL POWER LEADS AND GROUND LEADS ARE REQUIRED.
- $\triangle 4$  CONFIGURATION MODULE IS MOUNTED IN THE BACKSHELL OF THE P1001 CONNECTOR.
- $\triangle 5$  THE SUPPLIED CONFIGURATION MODULE HARNESS USES 28 AWG WIRES. USE THE CONTACTS SUPPLIED WITH CONFIGURATION MODULE.
- $\triangle 6$  OPTIONAL LIGHTING BUS CONNECTION (28 VDC, 14 VDC, 5VDC, or 5 VAC). REFER TO APPENDIX SECTION A.1.2
- $\triangle 7$  CIRCUIT BREAKER SHOULD BE LABELED AS: "GPS" OR IF INSTALLED WITH ANOTHER NAVIGATOR, "GPS" IF PRIMARY or "GPS 2" IF SECONDARY.
- $\triangle 8$  REFER TO POWER CONTROL INPUT IN APPENDIX SECTION A.1.1.
- $\triangle 9$  CIRCUIT BREAKER SHOULD BE LABELED AS: "COM" OR IF INSTALLED WITH ANOTHER RADIO, "COM" IF PRIMARY or "COM 2" IF SECONDARY.

**Figure B-2 GNC 355( ) - Power Lighting Configuration Interconnect**

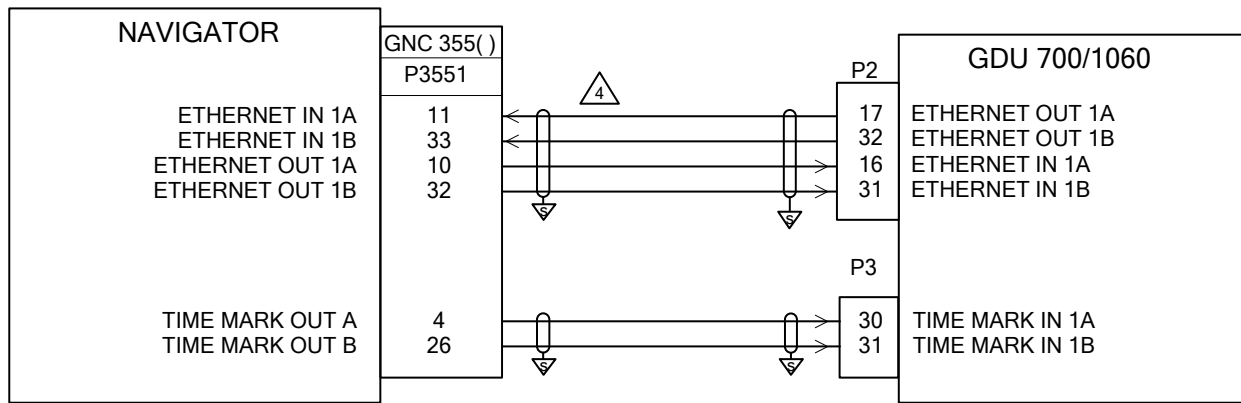


**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS:  $\nabla$  SHIELD BLOCK GROUND  $\cong$  AIRFRAME GROUND
3. AT GNC 355(), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

$\triangle$  USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.2.2 FOR PART NUMBERS.

**Figure B-3 GDU 620 Interconnect**



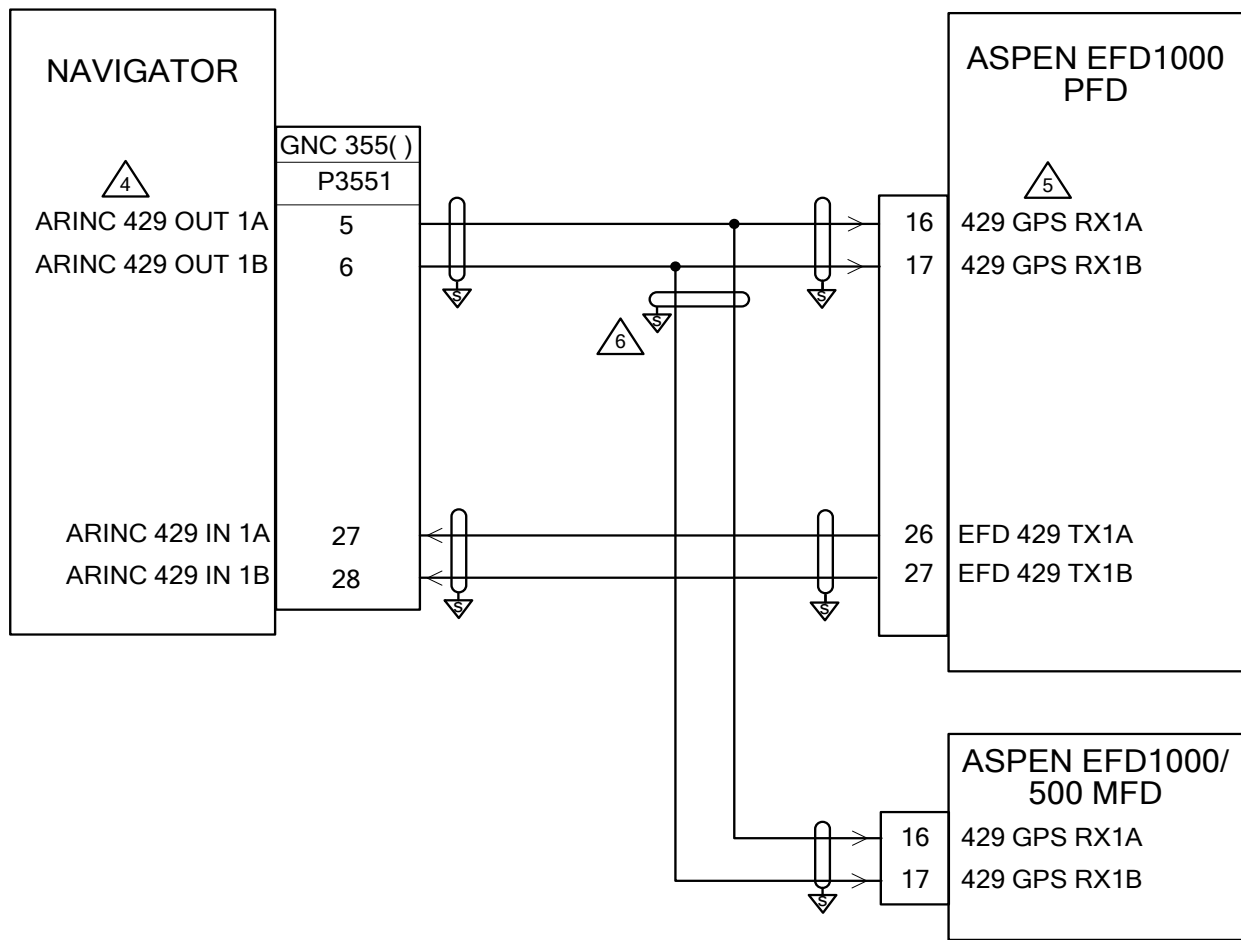
**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS:  $\nabla$  SHIELD BLOCK GROUND  $\cong$  AIRFRAME GROUND
3. AT GNC 355(), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

$\triangle$  USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.2.2 FOR PART NUMBERS.

**Figure B-4 GDU 700/1060 (G500/G600 TXi) Interconnect**





**NOTES**

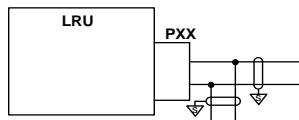
1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS: SHIELD BLOCK GROUND  $\cong$  AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

CONFIGURE GARMIN ARINC 429 PORT FOR GAMA 3 LOW SPEED.

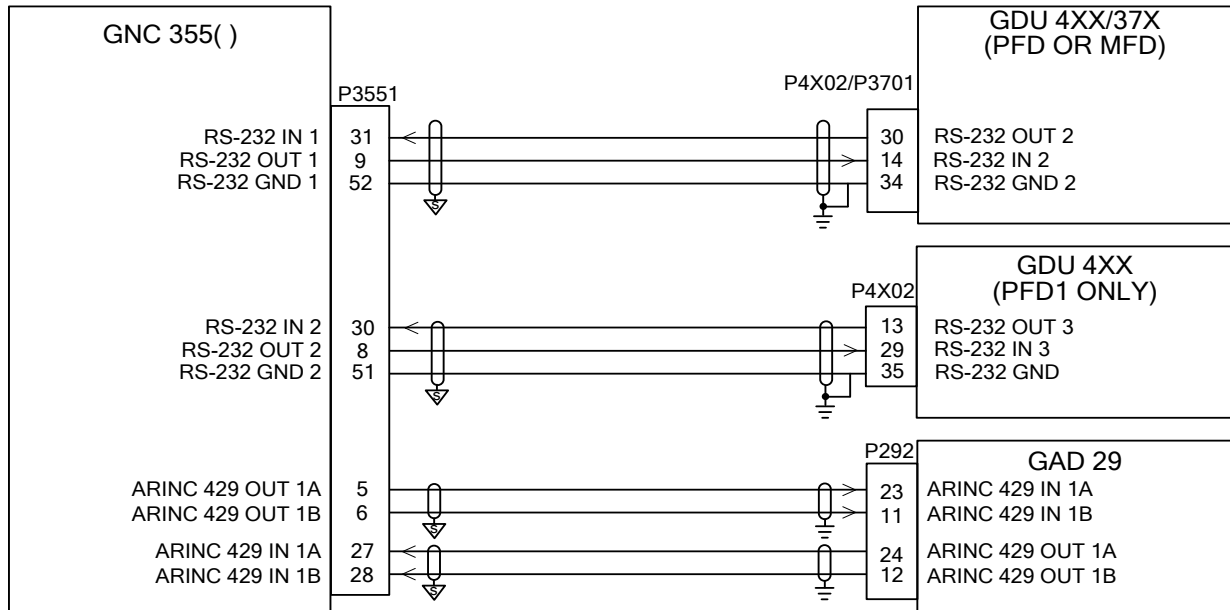
CONFIGURE ASPEN EFD 1000 INSTALLATION MENU – NAV SET UP

ID #1	ID #2	Description
C	NONE	GPS1, No GPS2

THE SPLICE MUST BE PERFORMED AT THE CONNECTOR END OF THE WIRE. SPLICE AS SHOWN:



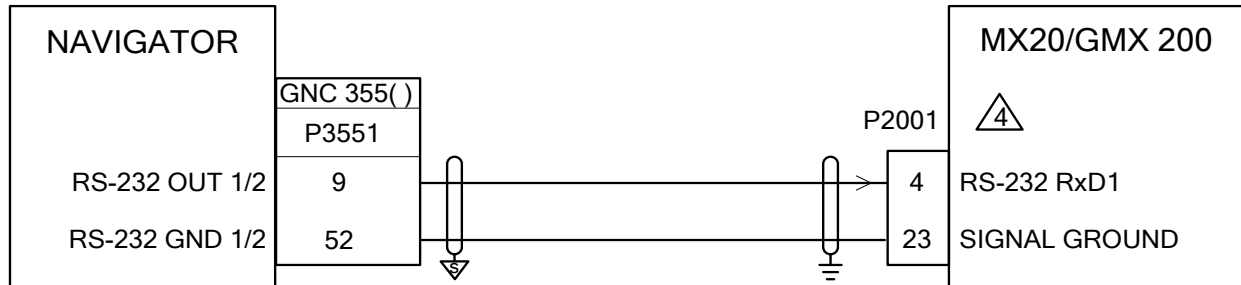
**Figure B-5 Aspen EFIS Interconnect**





**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS:  $\nabla$  SHIELD BLOCK GROUND  $\equiv$  AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

**Figure B-6 G3X Interconnect**



**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

 MAPMX IS THE PREFERRED COMMUNICATION PROTOCOL FOR THE MX20/GMX200. REFER TO APPENDIX SECTION C.8. OTHER INPUTS PORTS ON THE MX20/GMX200 MAY BE USED IN LIEU OF THE PORT SHOWN. REFER TO THE APPLICABLE INSTALLATION MAUAL FOR ADDITIONAL DETAILS.

**Figure B-7 MX20 / GMX200 Interconnect**

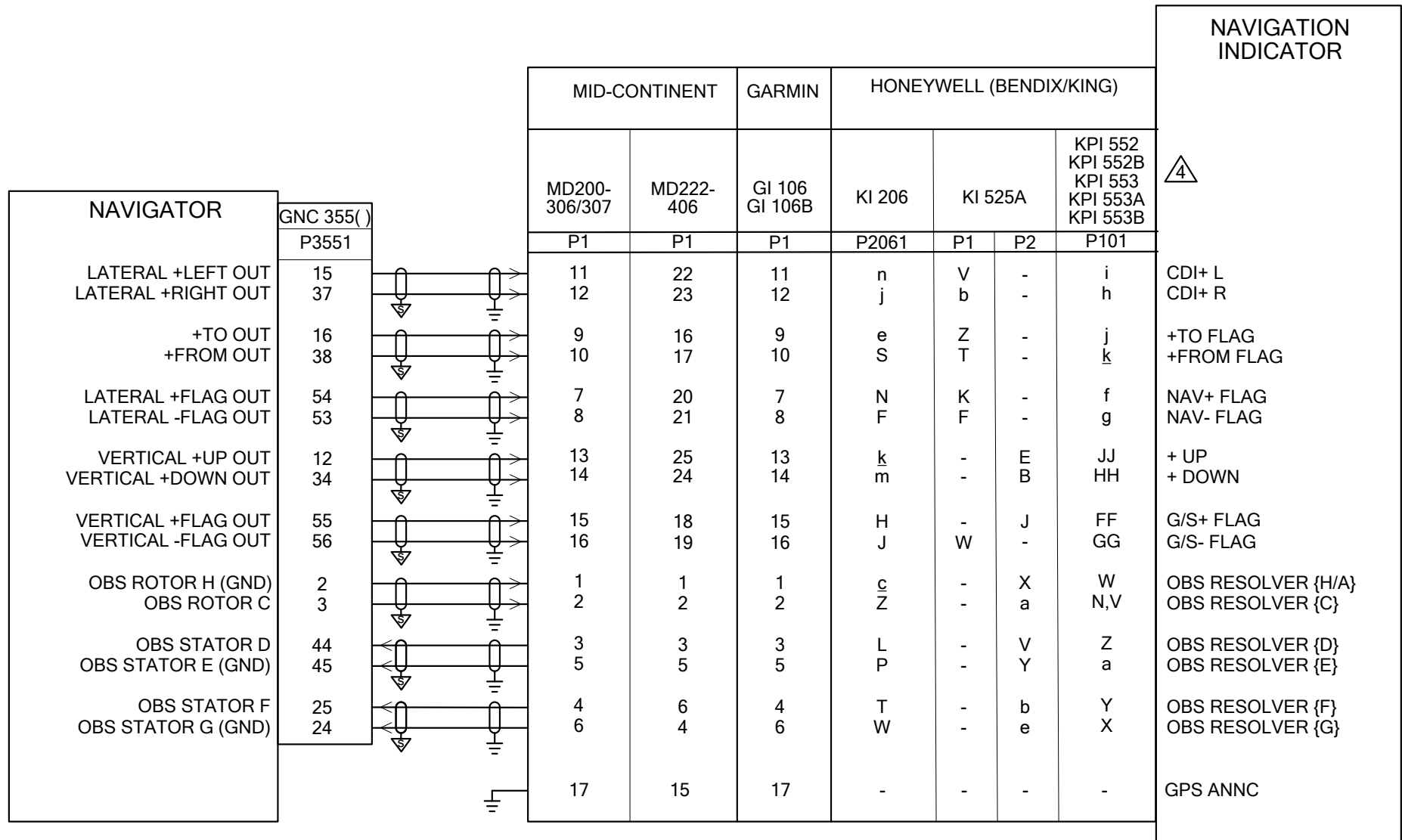


Figure B-8 Analog CDI Interconnect  
Sheet 1 of 3

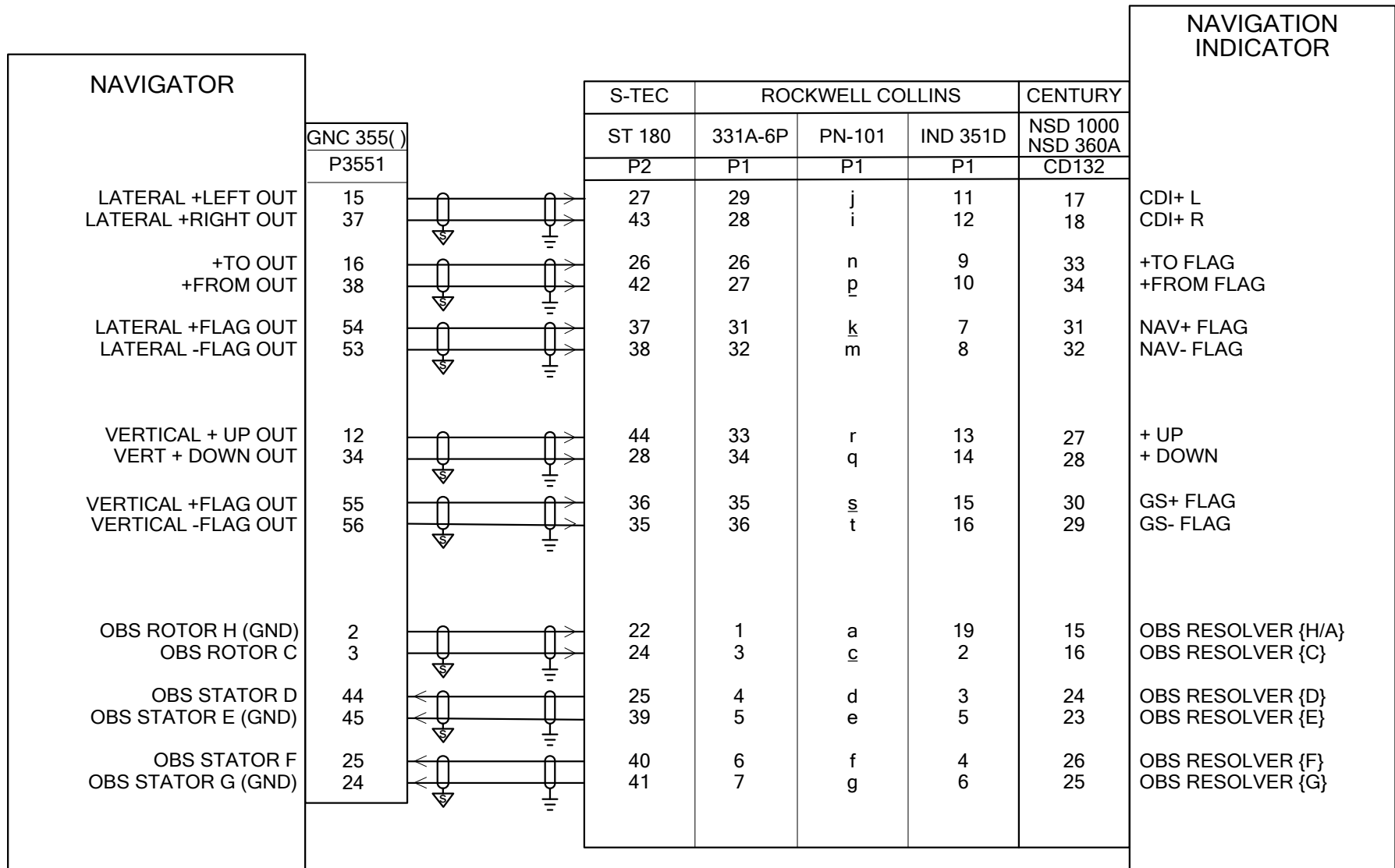




Figure B-8 Analog CDI Interconnect  
Sheet 2 of 3

## NOTES

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

 THE OBS INTERFACE TO THE GNC 355( ) WORKS ONLY FOR KPI 552/553/553A UNITS THAT HAVE A COURSE KNOB

**Figure B-8 Analog CDI Interconnect  
Sheet 3 of 3**

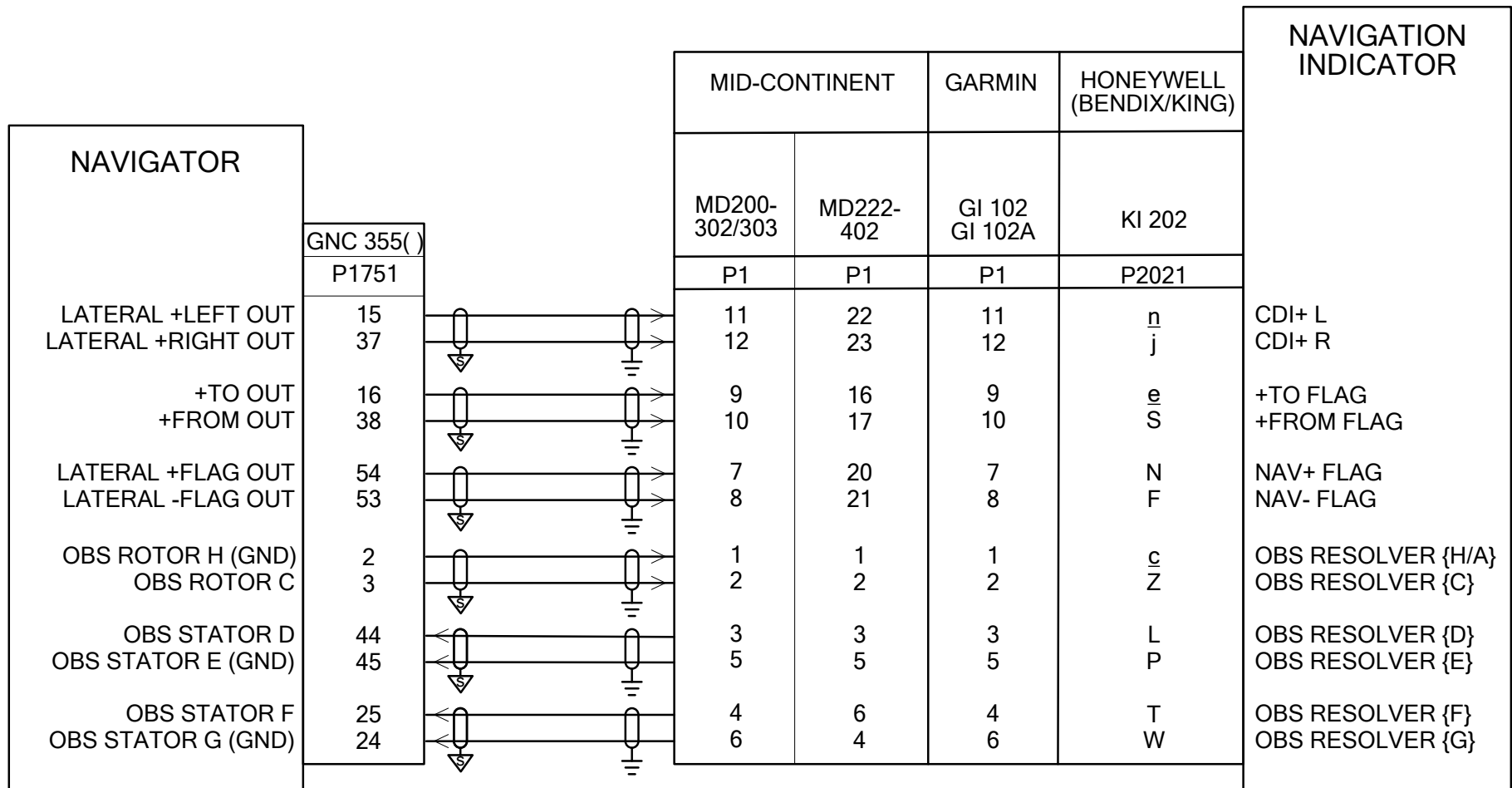


Figure B-9 Analog CDI (VFR) Interconnect

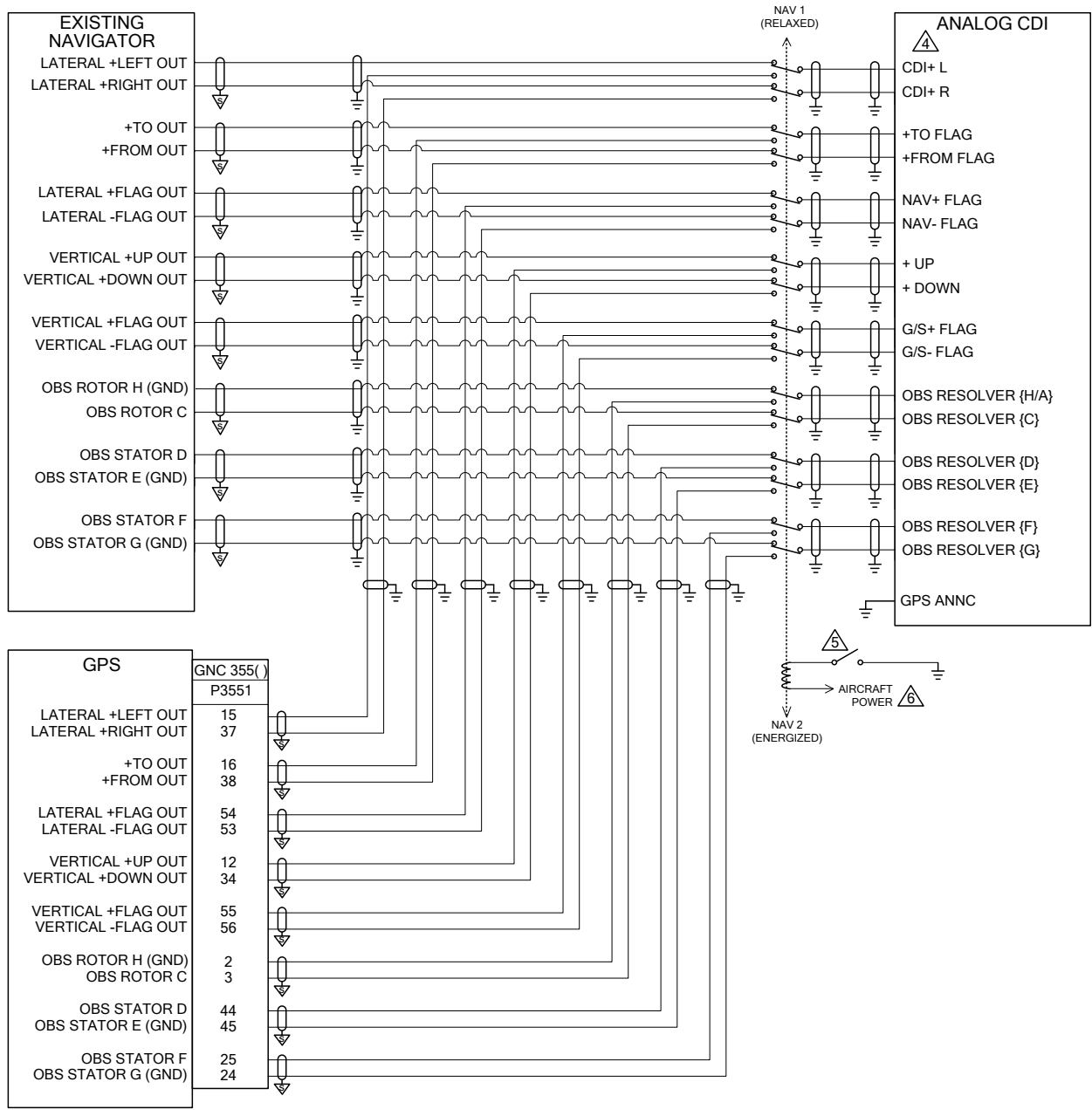







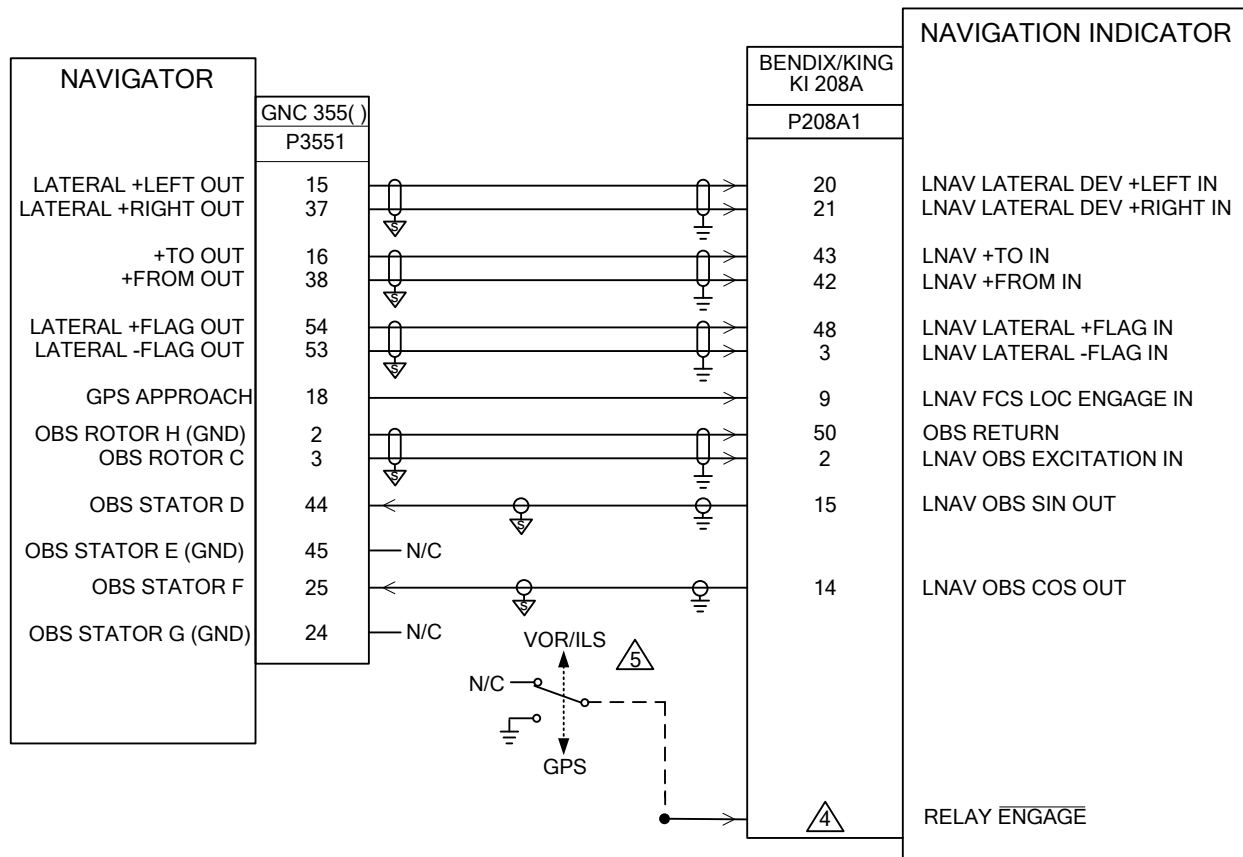
Figure B-10 Analog CDI with Existing Navigator Interconnect  
Sheet 1 of 2



**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
  3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL..
-  FOR REFERENCE ONLY. FOR SPECIFIC CDI PINS, REFER TO INTERCONNECTS IN FIGURE B-8 AND FIGURE B-9.
-  PREFERRED RELAY IS THE MD41-24( ). RELAY MUST BE INTERFACED WITH APPROPRIATE SWITCH AND ANNUNCIATOR. AN ACCEPTABLE SWITCH IS CARLING SWITCH (P/N 112-A-63). ACCEPTABLE ANNUNCIATOR EXAMPLES ARE SHOWN IN FIGURE B-27. INSTALLATION OF RELAY, SWITCH, AND ANNUNCIATOR IS NOT COVERED UNDER THIS STC AND MUST BE INSTALLED UNDER OTHER FAA APPROVAL.
-  CONNECT TO RELAY COIL TO CIRCUIT BREAKER FOR AIRCRAFT POWER.

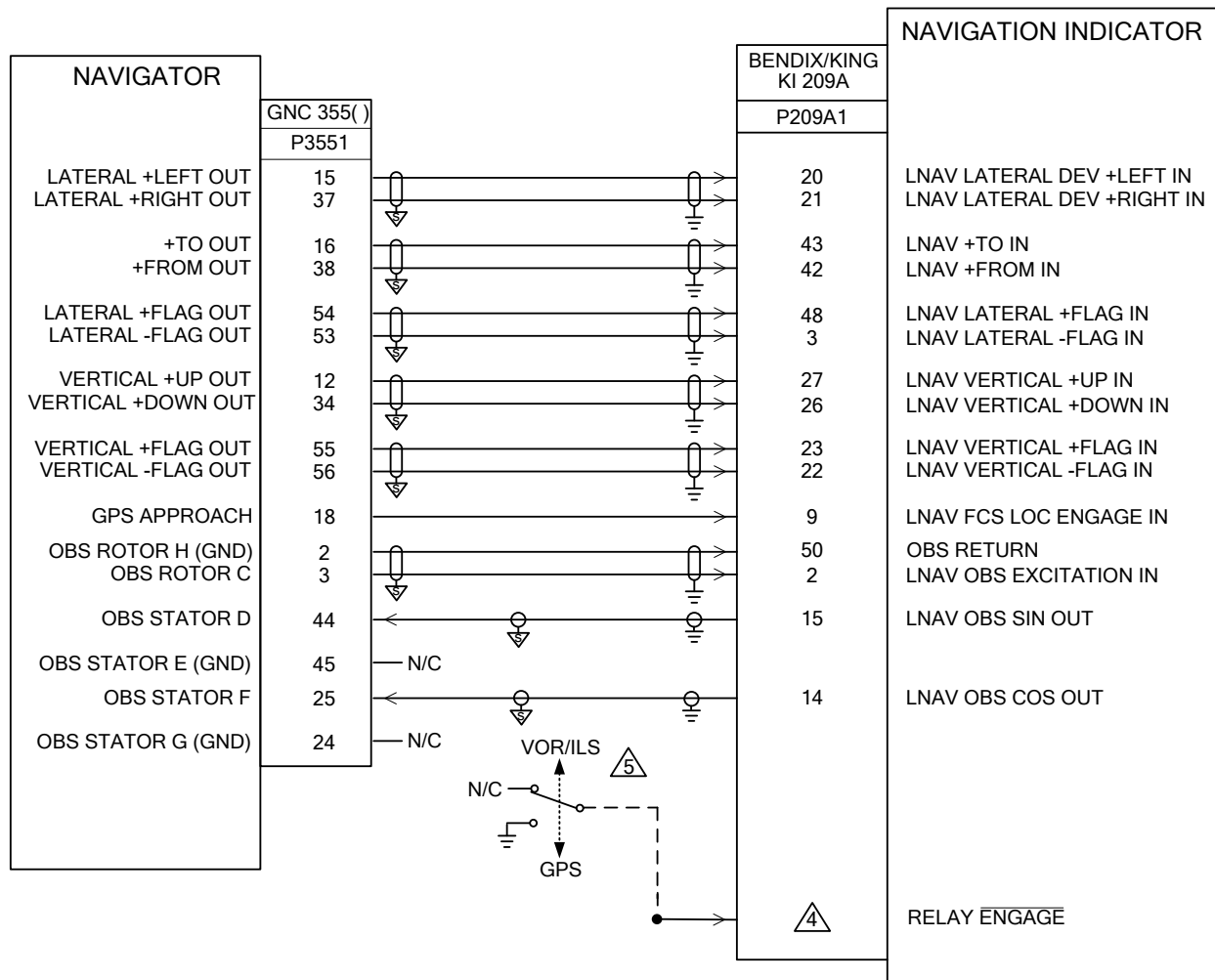
**Figure B-10 Analog CDI with Existing Navigator Interconnect**  
**Sheet 2 of 2**



### NOTES

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND
  3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
- PROPER CONNECTION OF THE RELAY ENGAGE INPUT OF THE KI 208A IS DEPENDENT ON THE POWER SUPPLY VOLTAGE. REFER TO KI 208A DOCUMENTATION FOR PROPER CONNECTION.
- IF THE GNC 355( ) IS INSTALLED AND A VOR/ILS RECEIVER IS AVAILABLE TO DRIVE THE NAVIGATION INDICATOR, AN EXTERNAL SOURCE SELECTION SWITCH/ANNUNCIATOR MUST BE USED. SWITCH IS SHOWN HERE FOR COMPLETENESS ONLY, REFER TO KI 208A DOCUMENTATION FOR SWITCH/ANNUNCIATOR INSTALLATION. INSTALLATION OF SWITCH/ANNUNCIATOR IS NOT COVERED UNDER THIS STC AND MUST BE INSTALLED UNDER OTHER FAA APPROVAL.

**Figure B-11 KI 208A Interconnect**



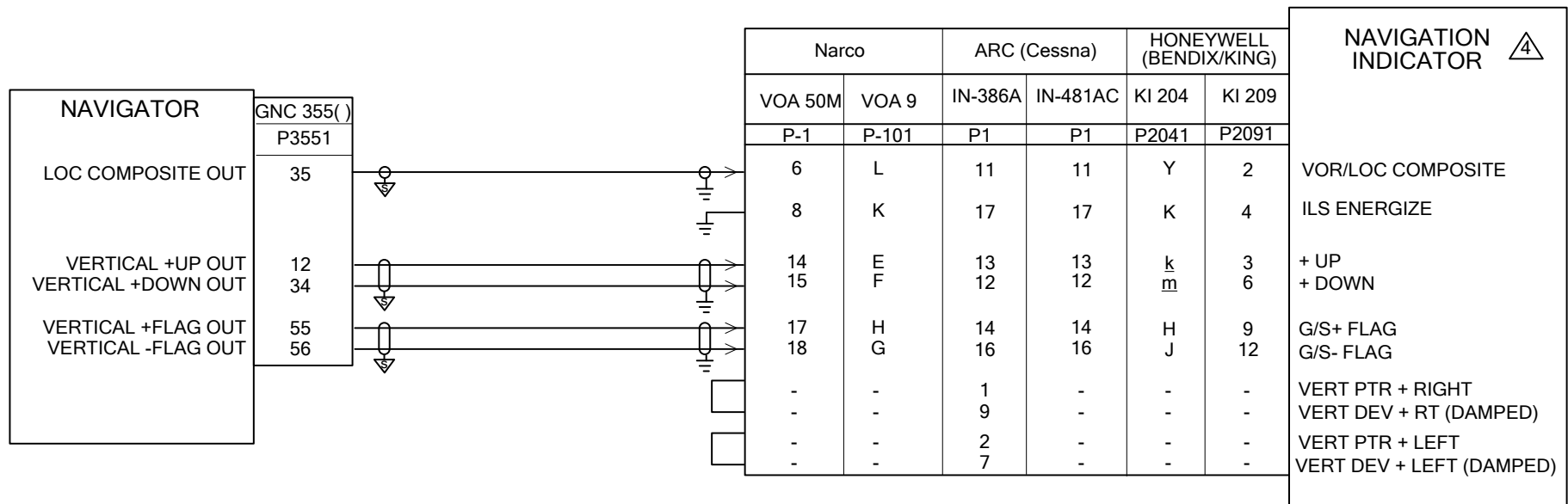
**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

PROPER CONNECTION OF THE RELAY ENGAGE INPUT OF THE KI 209A IS DEPENDENT ON THE POWER SUPPLY VOLTAGE. REFER TO KI 209A DOCUMENTAION FOR PROPER CONNECTION.

IF THE GNC 355( ) IS INSTALLED, AND A VOR/ILS RECEIVER IS AVAILABLE TO DRIVE THE NAVIGATION INDICATOR, AN EXTERNAL SOURCE SELECTION SWITCH/ANNUNCIATOR MUST BE USED. SWITCH IS SHOWN HERE FOR COMPLETENESS ONLY; REFER TO KI 209A DOCUMENTATION FOR SWITCH/ANNUNCIATOR INSTALLATION. INSTALLATION OF SWITCH/ANNUNCIATOR IS NOT COVERED UNDER THIS STC AND MUST BE INSTALLED UNDER OTHER FAA APPROVAL.

**Figure B-12 KI 209A Interconnect**

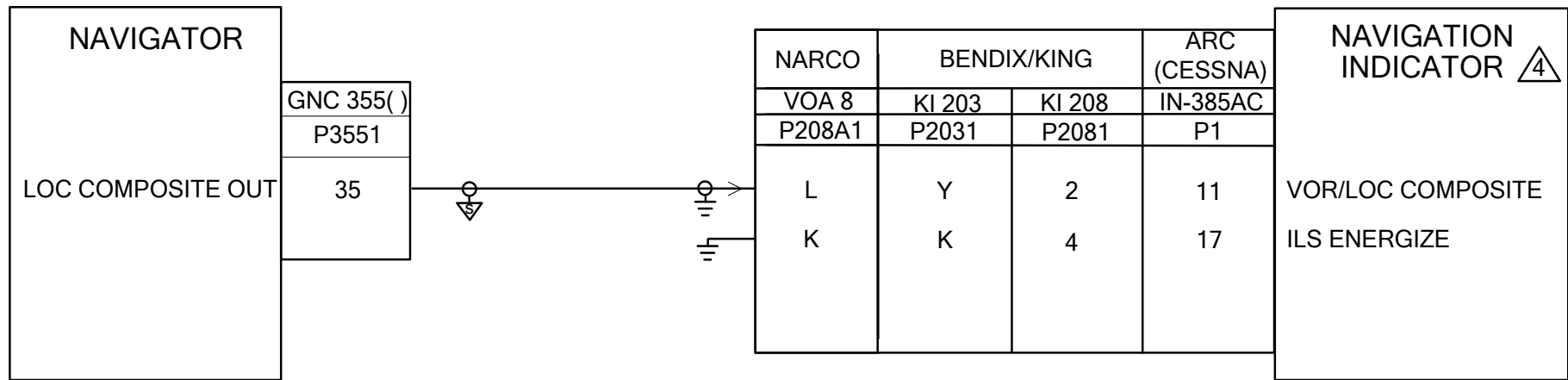


**NOTES**



1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

A PLACARD/LABEL READING "TO/FROM FLAG WILL NOT FUNCTION CORRECTLY WHEN DISPLAYING GPS DEVIATION. USE TO/FROM INDICATION ON GPS" MUST BE MANUFACTURED AND INSTALLED IMMEDIATELY ADJACENT TO INTERFACED CDI. FONT MUST BE MINIMUM 0.1 INCHES TALL, ARIAL NARROW BOLD.

**Figure B-13 Composite CDI Interconnect**

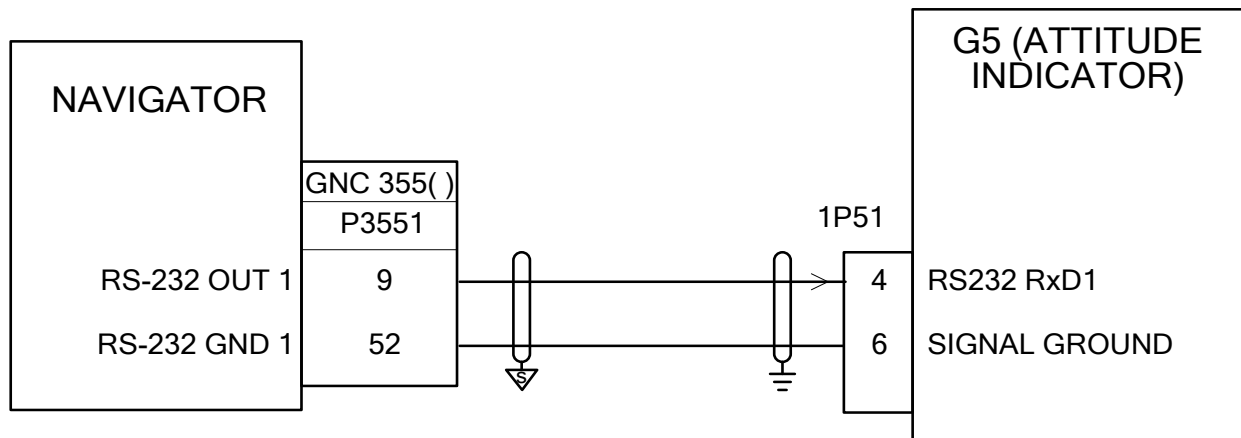


**NOTES**



1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

 A PLACARD/LABEL READING “TO/FROM FLAG WILL NOT FUNCTION CORRECTLY WHEN DISPLAYING GPS DEVIATION. USE TO/FROM INDICATION ON GPS” MUST BE MANUFACTURED AND INSTALLED IMMEDIATELY ADJACENT TO INTERFACED CDI. FONT MUST BE MINIMUM 0.1 INCHES TALL, ARIAL NARROW BOLD.

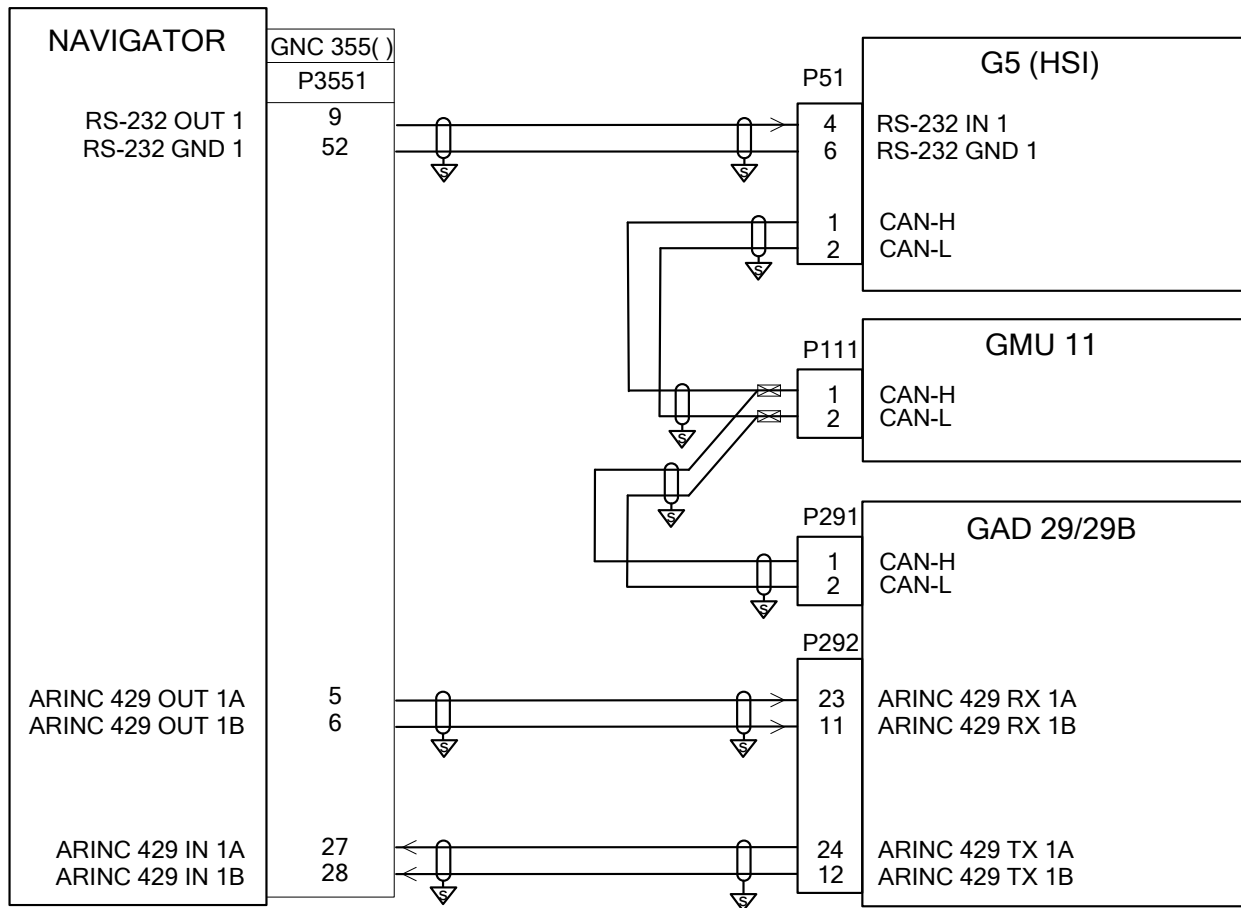
**Figure B-14 Composite CDI (VFR) Interconnect**





**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

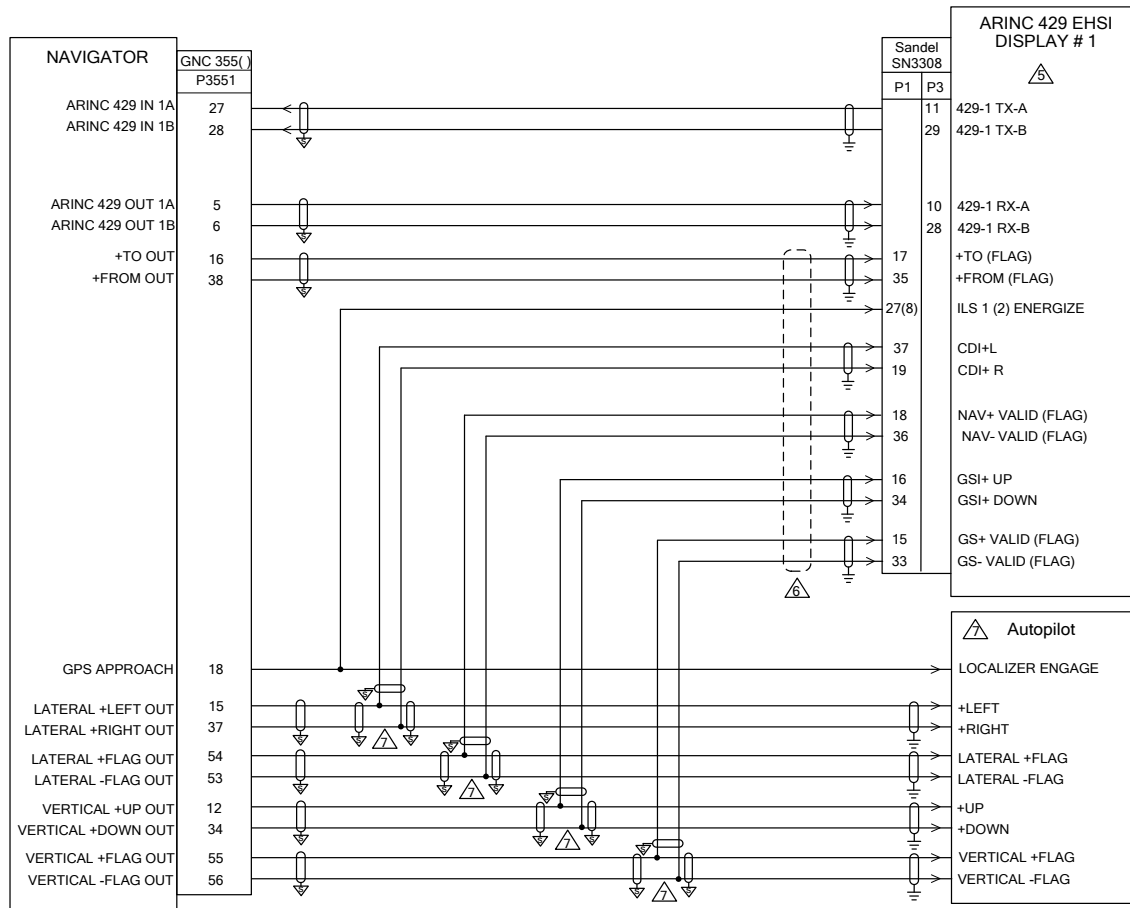
**Figure B-15 G5 ADI Interconnect**



**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

**Figure B-16 G5 HSI Interconnect**



### NOTES

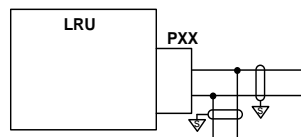
1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND
3. AT GNC 355(), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

AUTOPILOT SHOWN FOR REFERENCE ONLY. REFER TO THE APPROPRIATE AUTOPILOT INTERCONNECT DIAGRAM.

REFER TO APPENDIX A FOR CONFIGURATION SETTINGS.

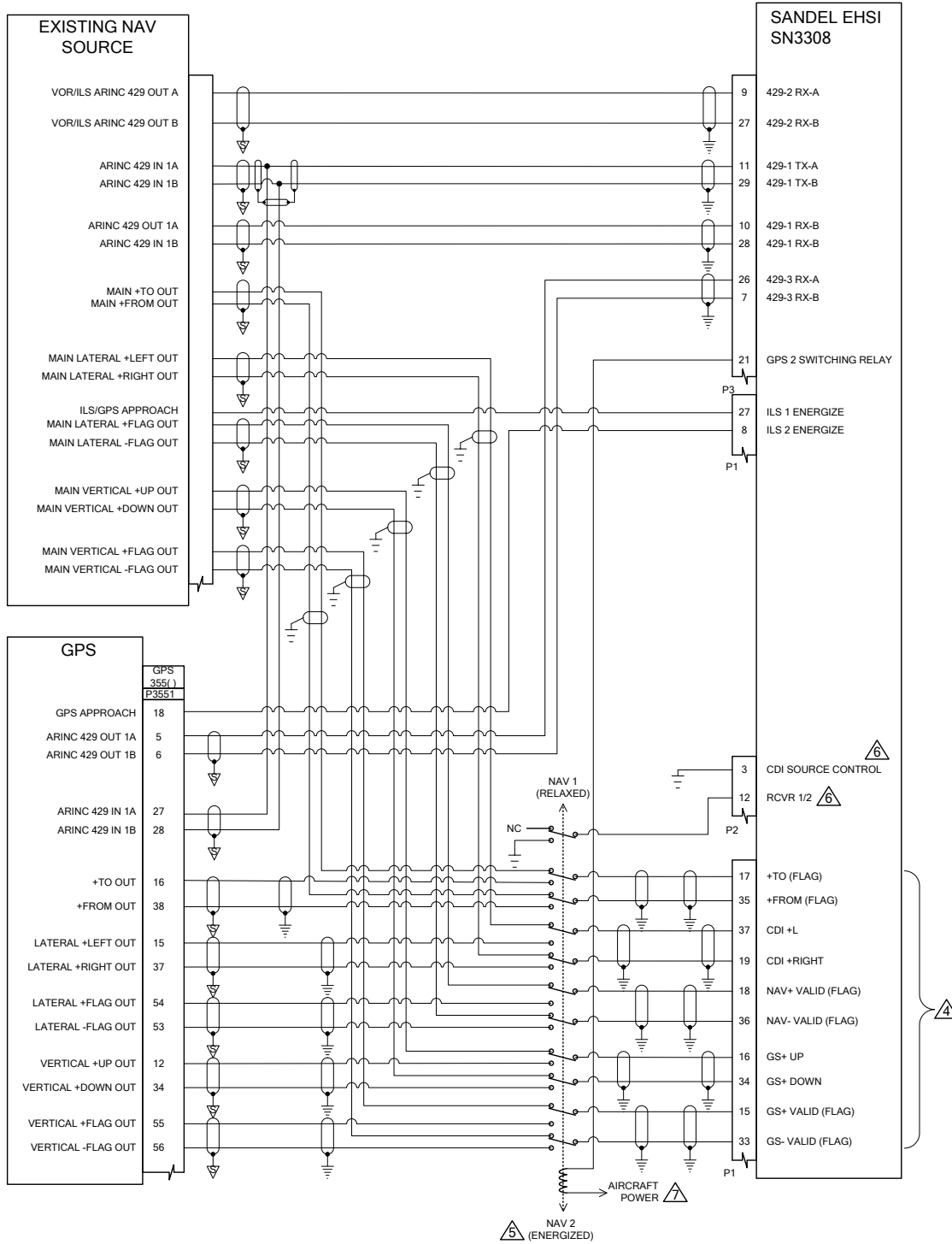
FOR SN3308 SOFTWARE VERSIONS PRIOR TO v2.30, ANALOG CONNECTIONS TO SN3308 ARE REQUIRED TO ALLOW VERTICAL GUIDANCE TO BE DISPLAYED FOR GPS APPROACHES. FOR SOFTWARE v2.30 AND LATER, THESE ANALOG CONNECTIONS ARE NOT REQUIRED.

THE SPLICE MUST BE PERFORMED AT THE GNC 355() CONNECTOR END OF THE WIRE. SPLICE AS SHOWN:









**Figure B-17 Sandel SN 3308 EHSI Interconnect**





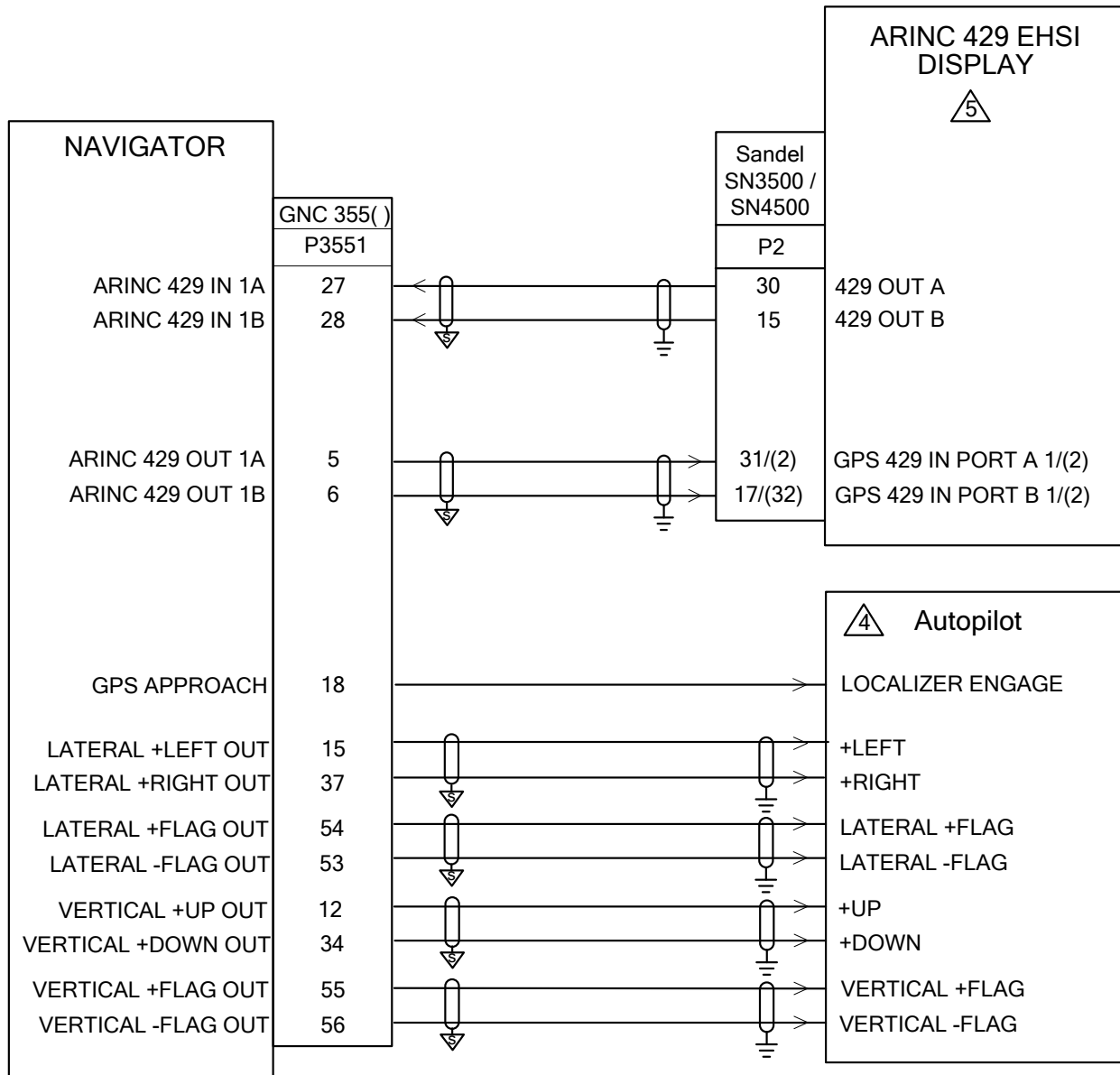
**Figure B-18 Sandel SN 3308 EHSI with Existing Navigator Interconnect**  
**Sheet 1 of 2**

## NOTES

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
  3. AT GNC 355(), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
-  FOR SANDEL SOFTWARE VERSIONS PRIOR TO V2.30, ANALOG CONNECTIONS TO THE SN3308 ARE REQUIRED TO ALLOW VERTICAL GUIDANCE TO BE DISPLAYED FOR GPS APPROACHES. FOR SOFTWARE v2.30 OR LATER, THESE ANALOG CONNECTIONS ARE NOT REQUIRED.
-  USE AN MD41-244 OR MD41-248 REMOTE RELAY OR EQUIVALENT PREVIOUSLY FAA-APPROVED REMOTE RELAY.
-  THESE PINS ON THE SN3308 ARE CONFIGURABLE AND CAN BE CHANGED TO SUIT THE PARTICULAR INSTALLATION.
-  CONNECT TO SANDEL 3308 EFIS CIRCUIT BREAKER FOR AIRCRAFT POWER.

**Figure B-18 Sandel SN 3308 EHSI with Existing Navigator Interconnect**

**Sheet 2 of 2**



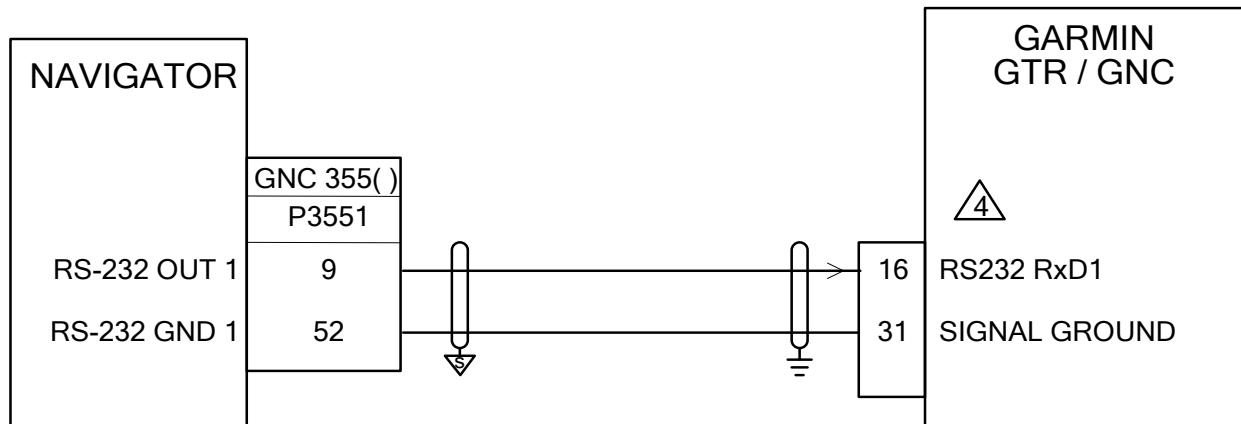
**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.




AUTOPILOT SHOWN FOR REFERENCE ONLY. REFER TO THE APPROPRIATE AUTOPILOT INTERCONNECT DIAGRAM.

REFER TO APPENDIX A FOR CONFIGURATION SETTINGS

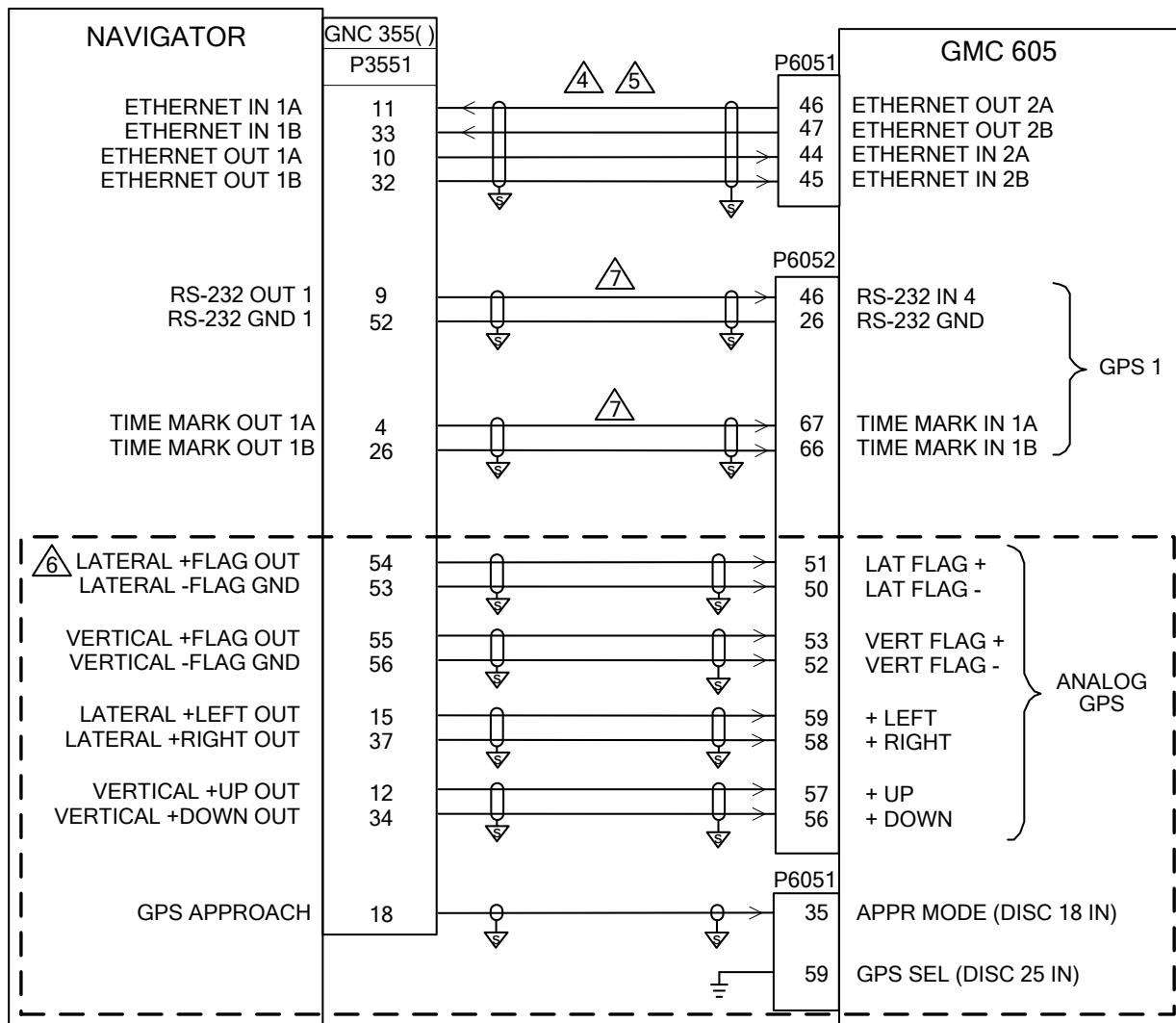
**Figure B-19 Sandel SN 3500/4500 EHSI Interconnect**



**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
  3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
-  CONFIGURE GTR/GNC SERIAL PORT FOR "AVN IN/MAPCOM".

**Figure B-20 GTR/GNC GPS Source Interconnect**



**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
- USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.1 FOR PART NUMBERS.
- IF INSTALLATION HAS AN EXISTING NAV1/NAV2 SWITCH, WITHOUT A GARMIN GDU OR EFIS, DO NOT CONNECT THE ETHERNET (HSDB) WIRING TO THE GNC 355( ).
- ONLY REQUIRED IF INSTALLATION DOES NOT INCLUDE A GARMIN GDU.
- IT IS ACCEPTABLE TO SPLICE WIRES TO EXISTING WIRING.
5. REFER TO *GMC 605 INSTALLATION MANUAL* (P/N 190-01488-01) FOR COMPLETE PINOUT AND INTERCONNECT INFORMATION. PINOUTS OF OTHER UNITS SHOWN FOR REFERENCE ONLY.

**Figure B-21 GFC 600/GMC 605 Interconnect**

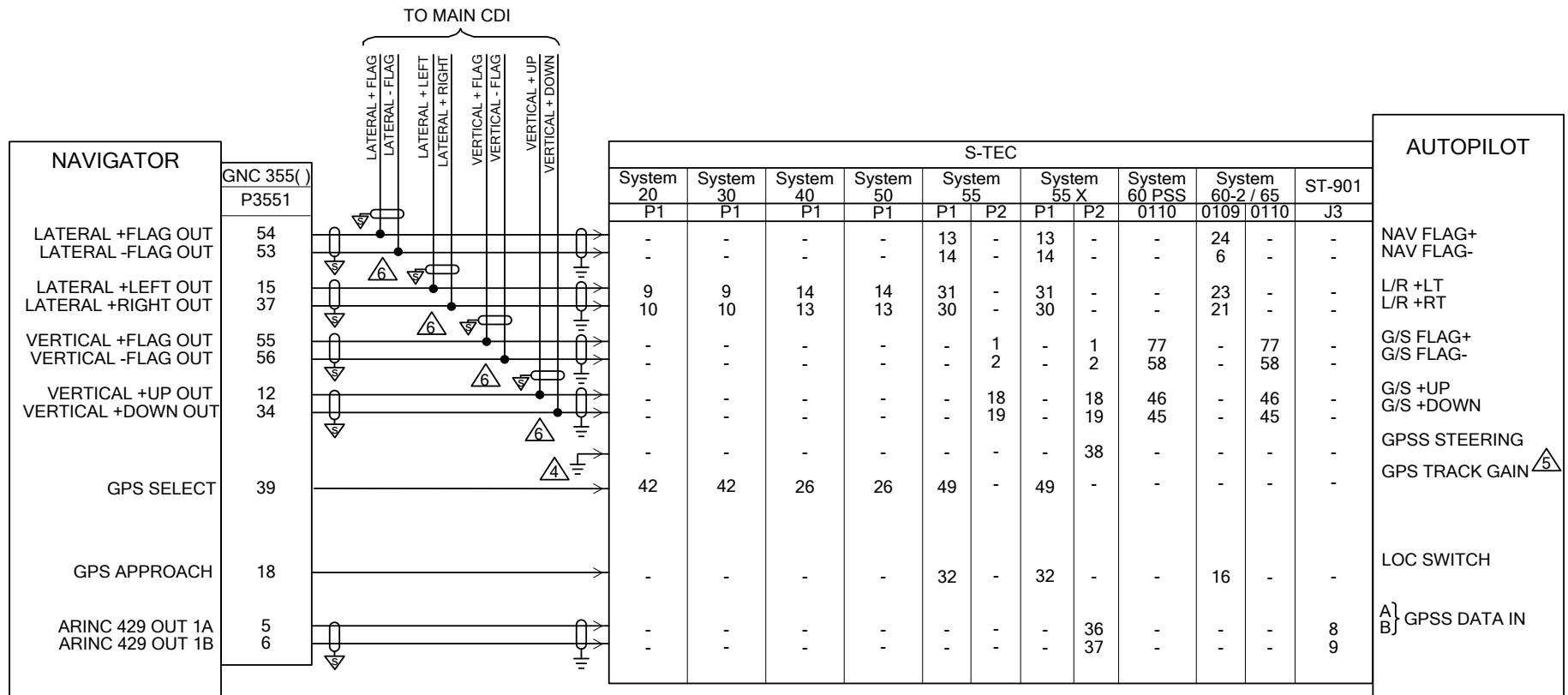


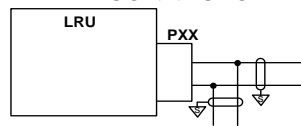


Figure B-22 S-TEC AP Interconnect  
Sheet 1 of 2

**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
- △ WHEN USED IN CONJUNCTION WITH A NAV RADIO, THESE PINS MUST BE OPEN WHEN THE NAV RADIO IS THE NAVIGATION SOURCE BEING USED BY THE AUTOPILOT.
- △ GPS TRACK GAIN IS USED TO IMPROVE TRACKING WHEN GPS IS SELECTED ON THE CDI AND THE AUTOPILOT IS IN ANALOG NAVIGATION MODE (AND ROLL STEERING IS NOT ENGAGED).
- △ THE SPLICE MUST BE PERFORMED AT THE CONNECTOR END OF THE WIRE. SPLICE AS SHOWN:



**Figure B-22 S-TEC AP Interconnect**  
**Sheet 2 of 2**

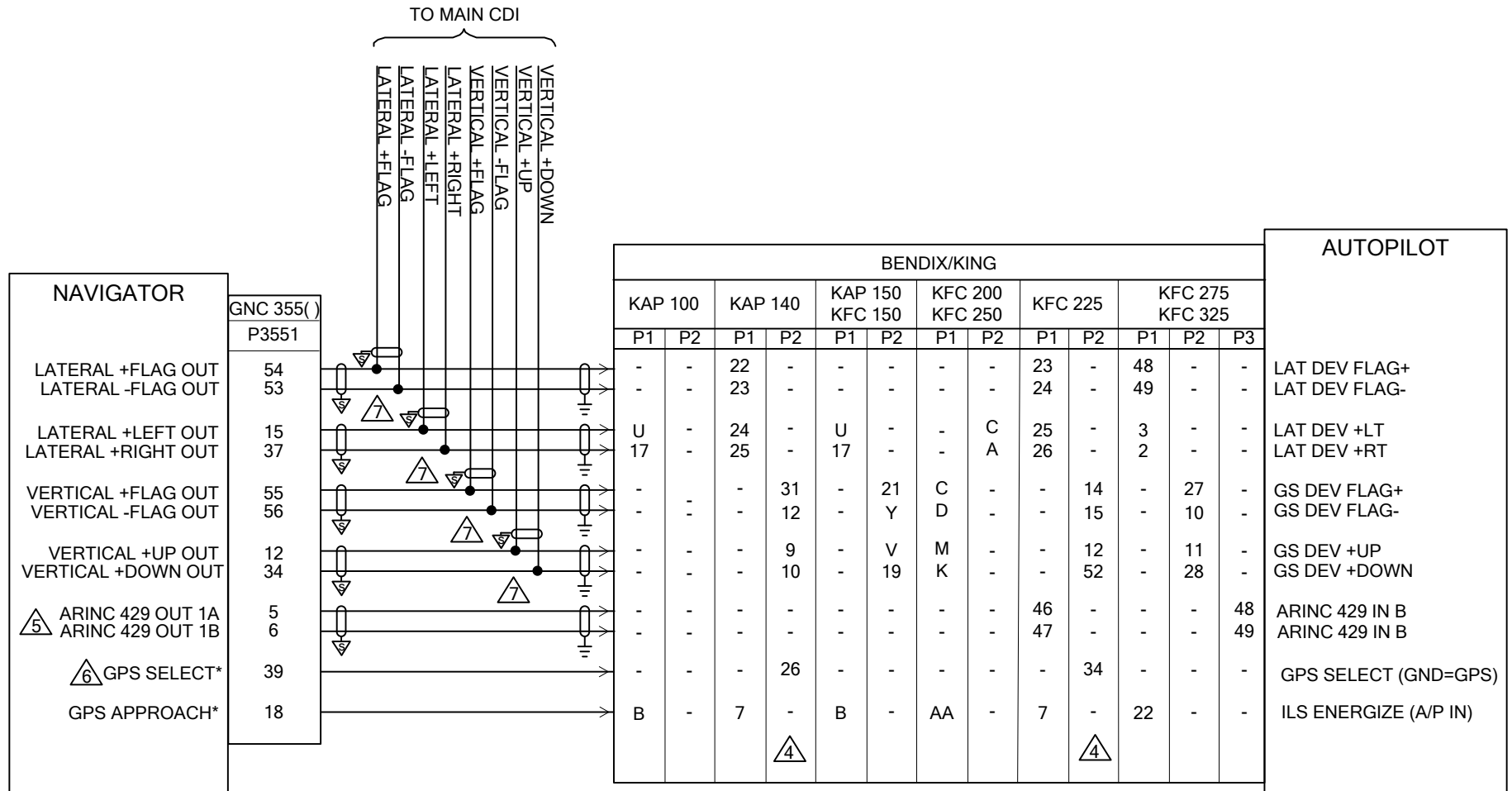






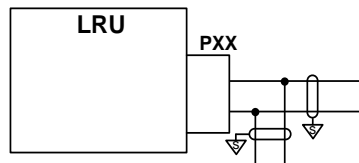


Figure B-23 Honeywell (Bendix/King) AP Interconnect  
Sheet 1 of 2

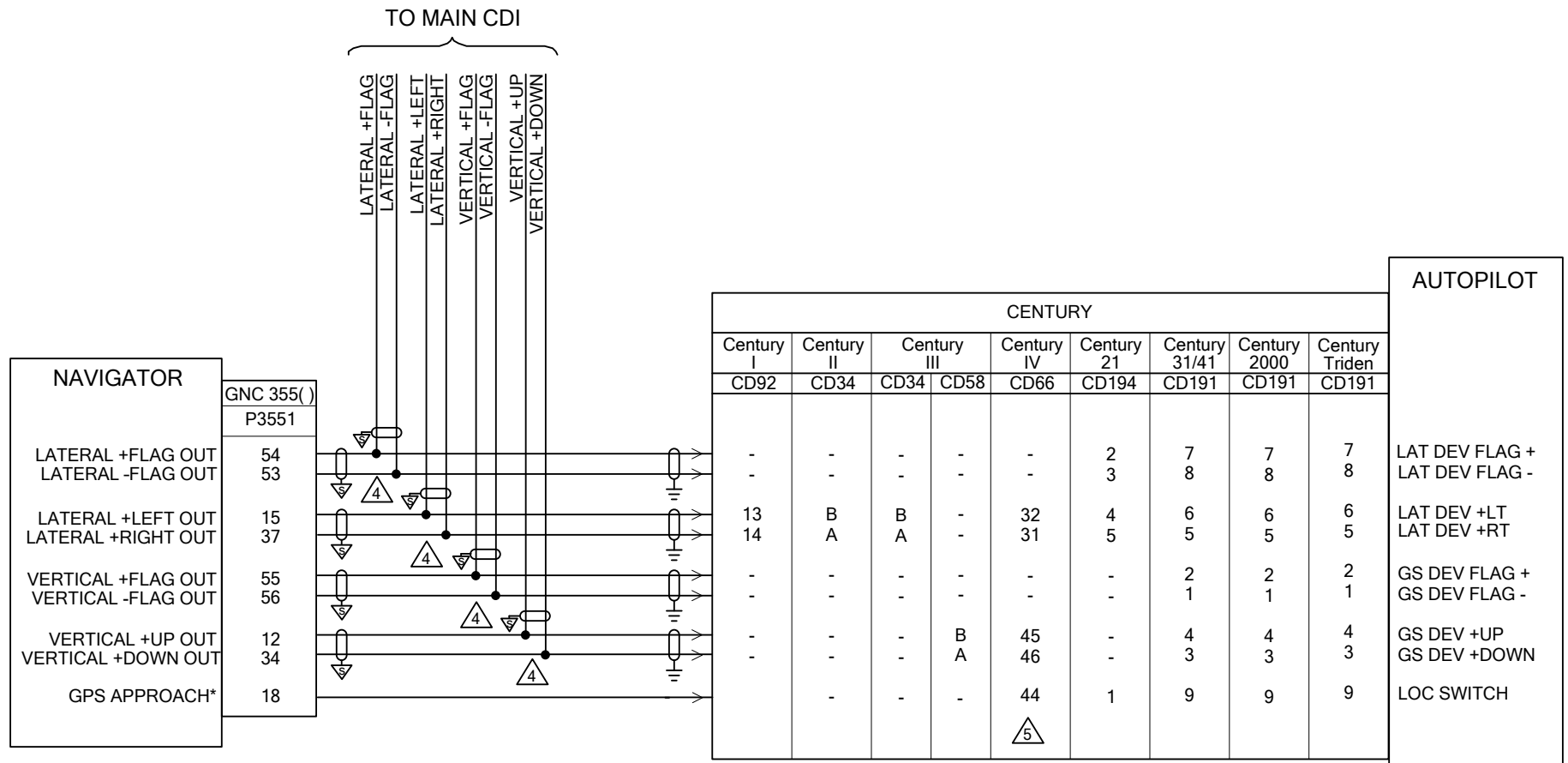


**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
  3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
-  THE GPS SELECT OUTPUT MUST BE CONNECTED TO THE GPS SELECT INPUT OF THE AUTOPILOT. THIS OUTPUT IS GROUNDED IN GPS MODE, UNLESS A GPS APPROACH IS ACTIVE AND THE PILOT HAS ENABLED THE A/P APPROACH OUTPUTS. THIS WILL ALLOW THE AUTOPILOT TO CAPTURE THE GPS GLIDEPATH WHILE THE CDI IS DISPLAYING GPS INFORMAITON.
-  BOTH GAMA 429 CONFIGURATIONS OF THE GPS ARINC 429 OUTPUT PROVIDE DATA REQUIRED BY THE AUTOPILOT FOR GPSS.
-  REFER TO APPENDIX SECTION A.1.2 FOR THE CORRECT GPS SELECT CONFIGURAITON SETTINGS. FOR THE BENDIX/KING KFC 225 AND KAP 140 AUTOPILOTS, THE GPS SELECT CONFIGURATION SETTING MUST BE SET TO 'PROMPT'.
-  THE SPLICE MUST BE PERFORMED AT THE CONNECTOR END OF THE WIRE. SPLICE AS SHOWN:





**Figure B-23 Honeywell (Bendix/King) AP Interconnect  
Sheet 2 of 2**

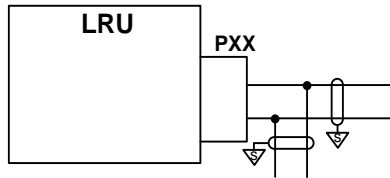



**Figure B-24 Century AP Interconnect**  
Sheet 1 of 2

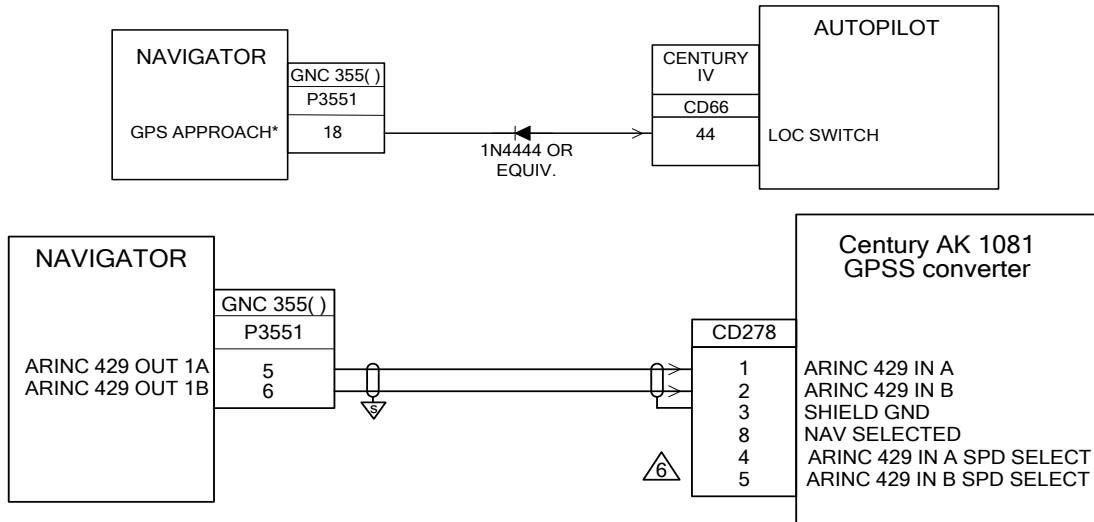
**NOTES**


1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.

 THE SPLICE MUST BE PERFORMED AT THE CONNECTOR END OF THE WIRE. SPLICE AS SHOWN:

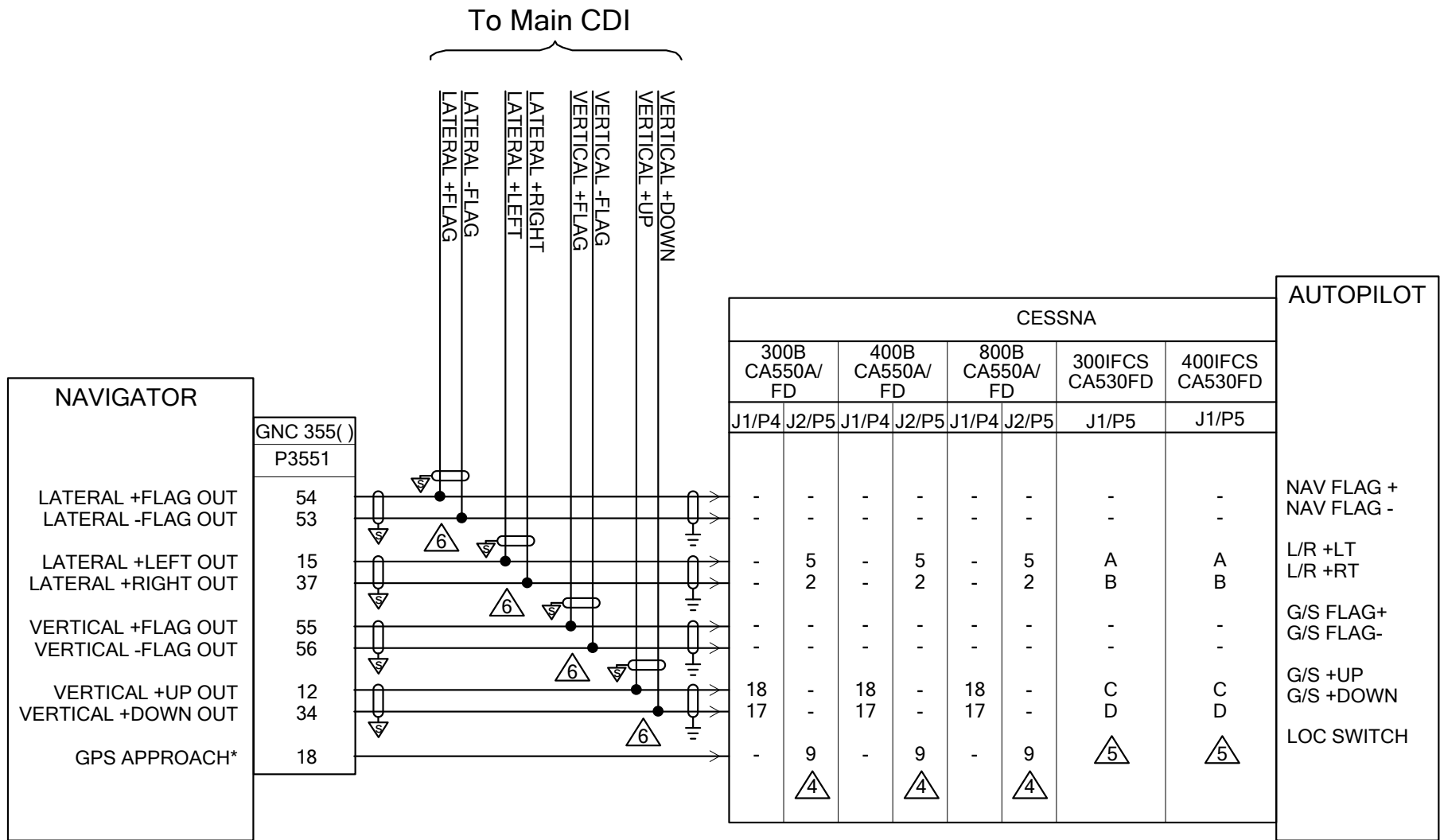


 THE CENTURY IV REQUIRES AN ISOLATION DIODE TO BE INSTALLED ON THE LOCALIZER SWITCHING INPUT AS SHOWN BELOW. THE GPS APPROACH OUTPUT MUST BE CONNECTED TO THE LOC SWITCH INPUT OF THE AUTOPILOT. THIS OUTPUT IS GROUNDED IN GPS MODE, UNLESS A GPS APPROACH IS ACTIVE AND THE PILOT HAS ENABLED THE A/P APPROACH OUTPUTS. THIS WILL ALLOW THE AUTOPILOT TO CAPTURE THE GPS GLIDEPATH WHILE THE CDI IS DISPLAYING GPS INFORMATION.








 INSTALL JUMPER AS REQUIRED TO SET AK 1081 ARINC 429 SPEED TO MATCH THE GNC 355( ) OUTPUT SETTING. REFER TO MANUFACTURER'S DOCUMENTATION FOR ADDITIONAL DETAILS.

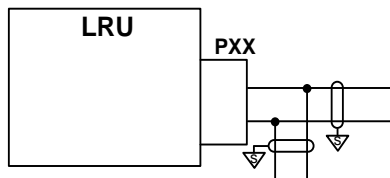
**Figure B-24 Century AP Interconnect  
Sheet 2 of 2**



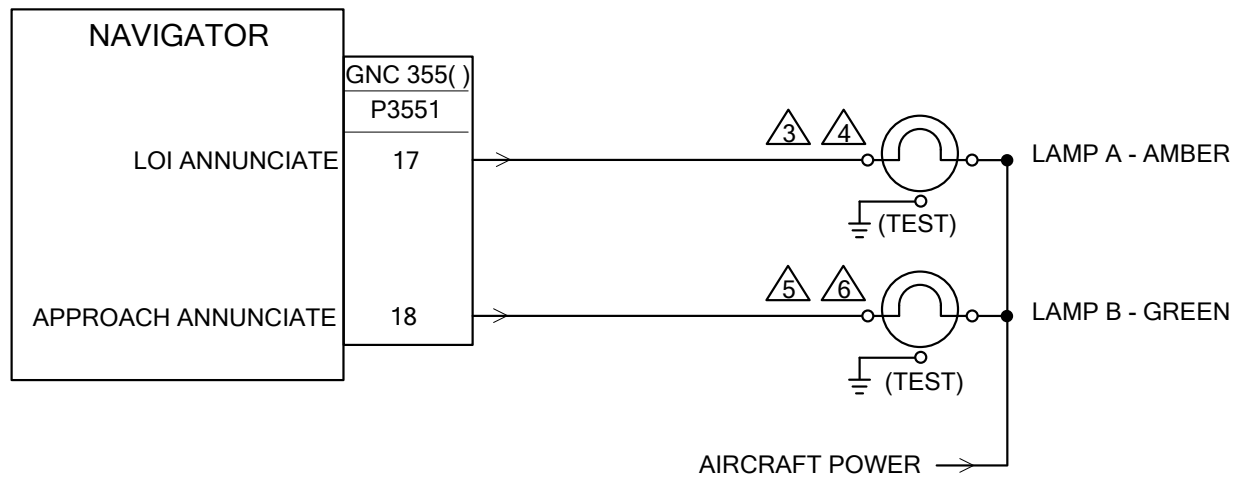
**Figure B-25 Cessna AP Interconnect**  
Sheet 1 of 2

**NOTES**







1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
  3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
-  THE GPS APPROACH DISCRETE OUTPUT MUST ALSO BE CONNECTED TO THE BACK COURSE RELAY – REFER TO MANUFACTURER’S DOCUMENTATION FOR ADDITIONAL DETAILS.
-  REFER TO MANUFACTURERS DOCUMENTATION FOR CORRECT CONNECTION OF THE VOR/LOC RELAY USING AN ACTIVE LOW INPUT.
-  THE SPLICE MUST BE PERFORMED AT THE CONNECTOR END OF THE WIRE. SPLICE AS SHOWN:



**Figure B-25 Cessna AP Interconnect  
Sheet 2 of 2**

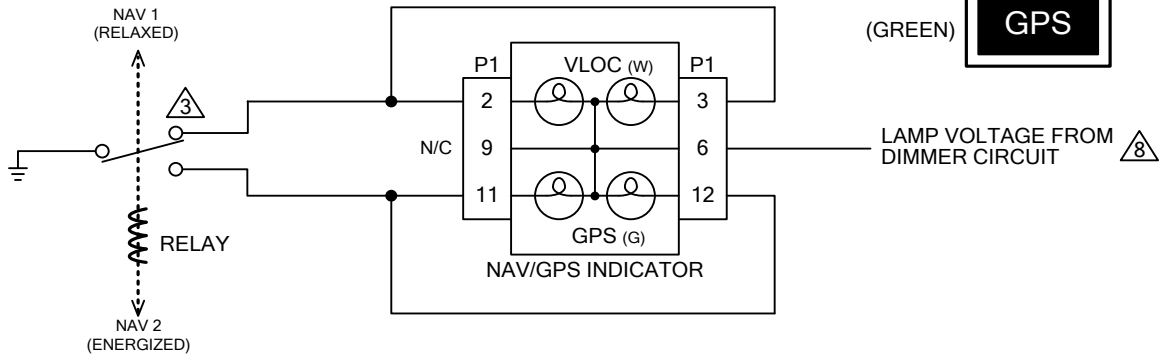


**NOTES**

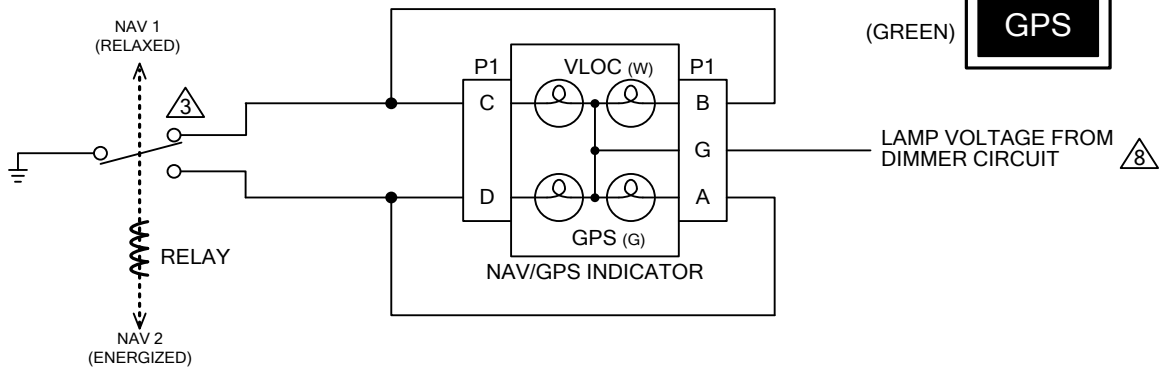
1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
-  USE MS25041-4 INDICATOR WITH MS25237-327 LAMP (28 VDC DIMMER) OR MS25237-330 LAMP (14-VDC DIMMER).
-  A PLACARD/LABEL READING “LOI” MUST BE INSTALLED IMMEDIATELY ADJACENT TO ANNUNCIATOR LAMP A. FONT MUST BE MINIMUM 0.1 INCHES TALL, ARIAL NARROW BOLD.
-  A PLACARD/LABEL READING “APPR” MUST BE INSTALLED IMMEDIATELY ADJACENT TO ANNUNCIATOR LAMP B. FONT MUST BE MINIMUM 0.1 INCHES TALL, ARIAL NARROW BOLD.
-  USE MS25041-3 INDICATOR WITH MS25237-327 LAMP (28 VDC DIMMER) OR MS25237-330 LAMP (14-VDC DIMMER).

**Figure B-26 Annunciator Interconnect**

STACO INDICATOR CONNECTION <sup>△6</sup>



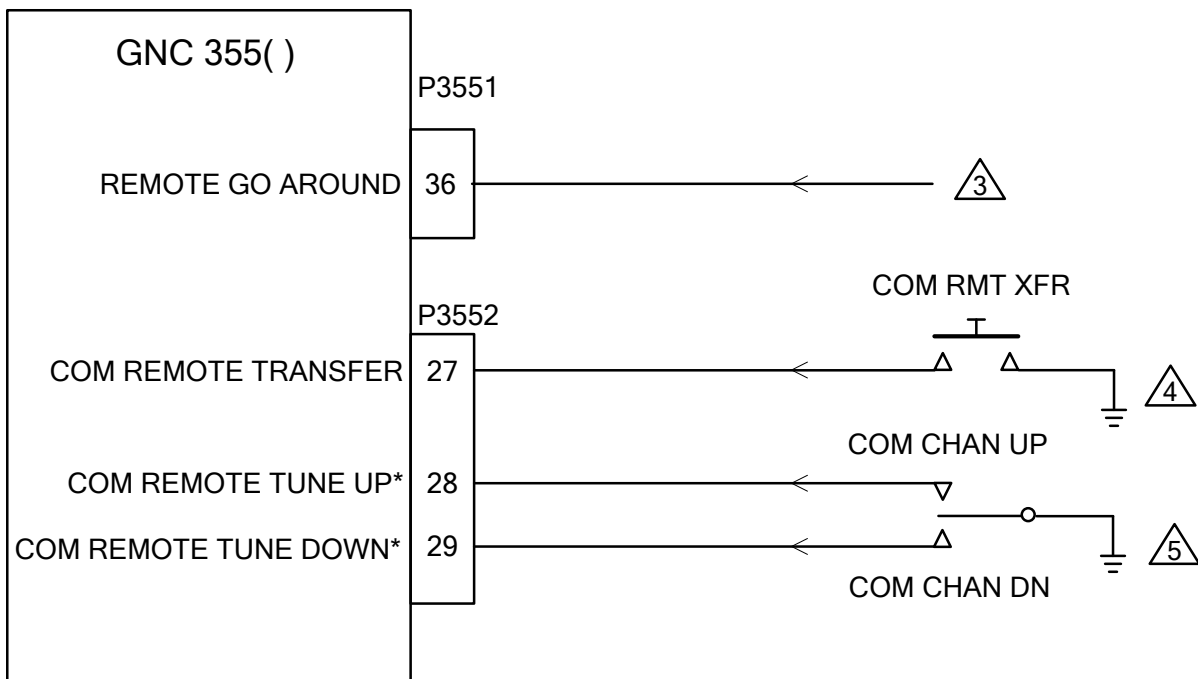
VIVISUN INDICATOR CONNECTION <sup>△7</sup>



NOTES

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
2. GROUND DESIGNATIONS: <sup>△</sup> SHIELD BLOCK GROUND <sup>≡</sup> AIRFRAME GROUND
- <sup>△3</sup> CONNECT ANNUNCIATOR PINS, AS SHOWN, TO UNUSED POLE OF SWITCHING RELAY SUCH THAT THE INTENDED ANNUNCIATION IS ACTIVE FOR THE DESIRED SOURCE SELECTION.
- <sup>△4</sup> LEGENDS ARE HIDDEN (BLACK) WHEN NOT ILLUMINATED.
- <sup>△5</sup> WHEN INTERFACING WITH EXISTING NAV SOURCE, THE PREFERRED ANNUNCIATION IS "VLOC/GPS", ALTHOUGH "NAV/GPS" IS ACCEPTABLE. WHEN INTERFACING WITH EXISTING GPS, THE PREFERRED ANNUNCIATION IS "GPS 1/GPS 2".
- <sup>△6</sup> STACO SWITCH INDICATOR P/N 992561-1241762200 (14V SYSTEMS) AND P/N 992561-1241862200 (28V SYSTEMS) SHOWN.
- <sup>△7</sup> VIVISUN INDICATOR P/N 95-40-17-B6-E1YGN (28V SYSTEMS) SHOWN. INDICATOR MAY BE CONVERTED TO 14V OPERATION BY REPLACING 28V LAMPS WITH 14V LAMPS P/N 14-113.
- <sup>△8</sup> LAMPS SHOULD RECEIVE POWER FROM THE SAME POWER BUS TO WHICH THE GNC 355() IS CONNECTED.

Figure B-27 External Navigation Source Selection Annunciator Interconnect





**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.

2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND

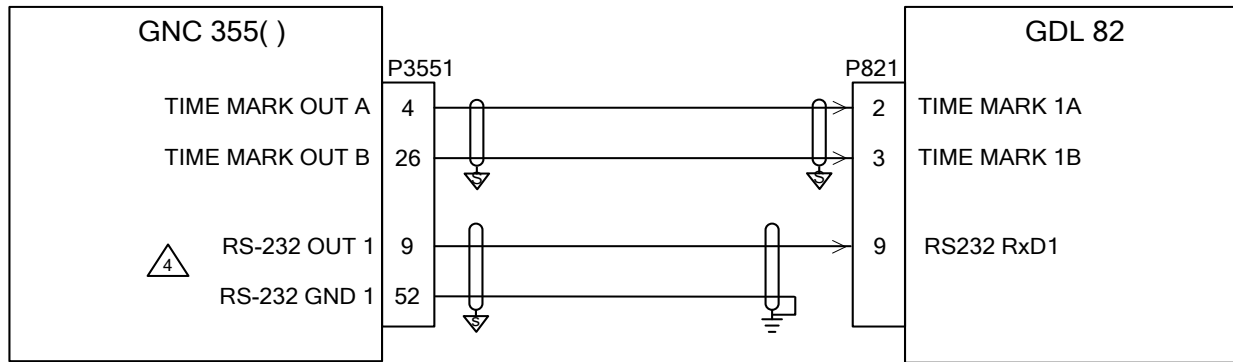
 CONNECT TO EXISTING SWITCH.

 COM REMOTE TRANSFER MAY BE USED TO TRANSFER THE STANDBY COM FREQUENCY TO THE ACTIVE COM FREQUENCY VIA REMOTE SWITCH. REFER TO SECTION A.1.5 FOR ADDITIONAL INFORMATION. USE GRAYHILL SWITCH P/N 30-3. THE SWITCH MUST BE LABELED AS SHOWN DIRECTLY ADJACENT TO THE SWITCH. REFER TO SECTION 4.5.2 FOR ADDITIONAL SWITCH INSTALLATION REQUIREMENTS




 COM REMOTE TUNE UP AND COM REMOTE TUNE DOWN MAY BE USED TO SCROLL THROUGH A LIST OF PRESET COM FREQUENCIES. REFER TO SECTION A.1.5 FOR ADDITIONAL INFORMATION. MAY USE TWO GRAYHILL SWITCHES P/N 30-3. THE SWITCHES MUST BE LABELED AS SHOWN DIRECTLY ADJACENT TO THE SWITCH. ADDITIONALLY, AN ON-OFF-ON SWITCH, CARLING SWITCH P/N 62012481-0-0 CAN BE USED. REFER TO SECTION 4.5.2 FOR ADDITIONAL SWITCH INSTALLATION REQUIREMENTS.

**Figure B-28 Switches**

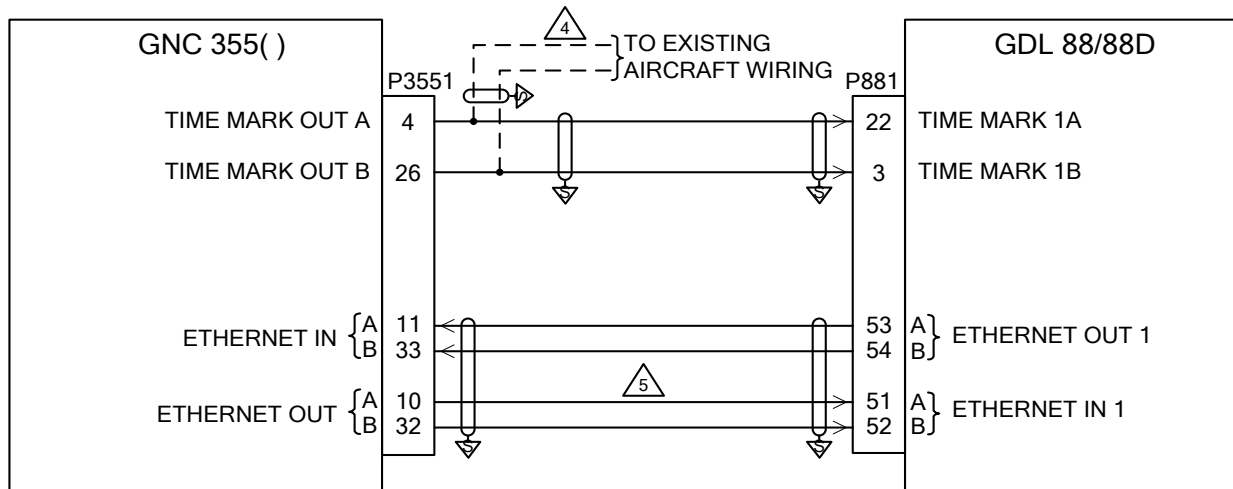








**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
  3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
-  IF THE SPECIFIED RS-232 PORT ON THE GNC 355( ) IS ALREADY USED, ANY RS-232 PORT MAY BE CONNECTED.

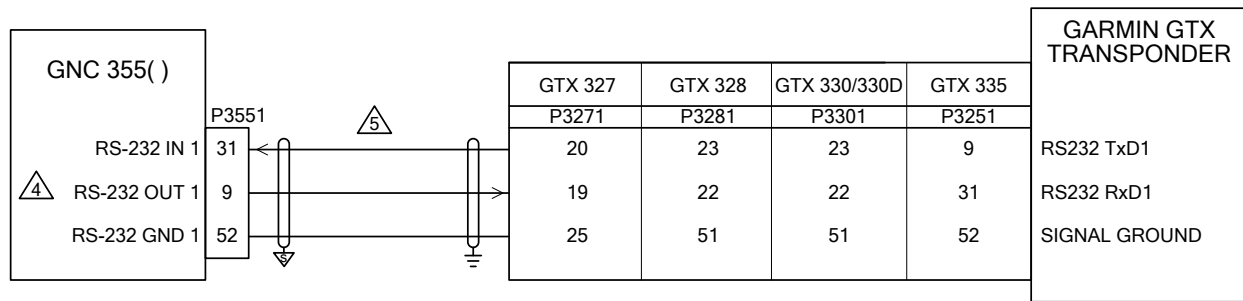
**Figure B-29 GNC 355( ) - GDL 82 Interconnect**



**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
  3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
-  IF GNC 355( ) TIME MARK OUTPUT IS ALREADY CONNECTED TO AIRCRAFT WIRING, SPLICE INTO THIS WIRING FOR THE CONNECTION TO THE GDL 88.
-  USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.2.2 FOR PART NUMBERS.

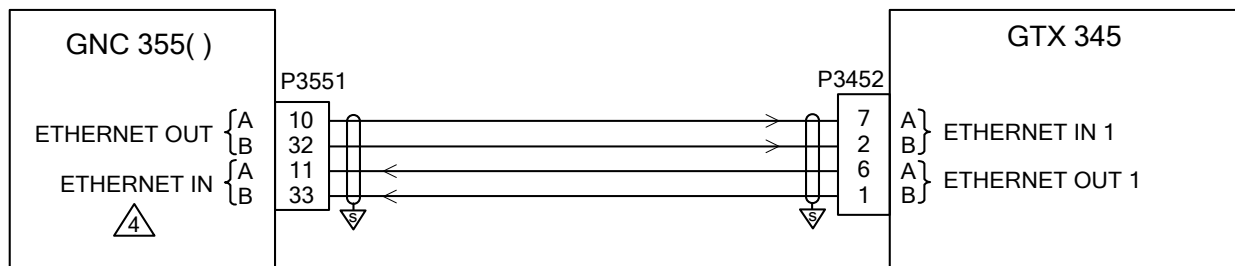
**Figure B-30 GNC 355( ) - GDL 88/88D Interconnect**






**NOTES**

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS: SHIELD BLOCK GROUND AIRFRAME GROUND
  3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
- IF THE SPECIFIED RS-232 PORT ON THE GNC 355( ) IS ALREADY USED, ANY RS-232 PORT MAY BE CONNECTED.
- IF THIS INSTALLATION IS REPLACING A GNS 400W/500W SERIES UNIT, THE RS-232 DATA PATH REPLACES THE ARINC 429 AND DISCRETE SIGNALS PREVIOUSLY USED TO INTERFACE THE TRANSPONDER TO THE GNS 400W/500W SERIES.

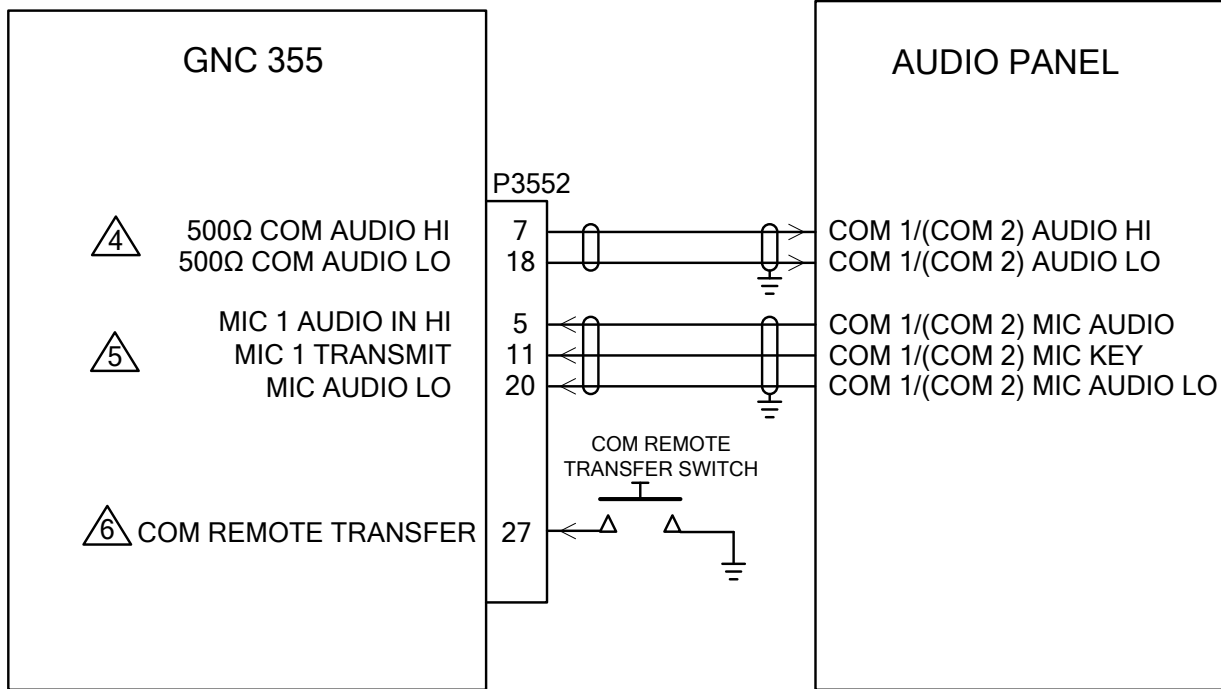
**Figure B-31 GNC 355( ) - GTX 3XX Interconnect**



**NOTES**

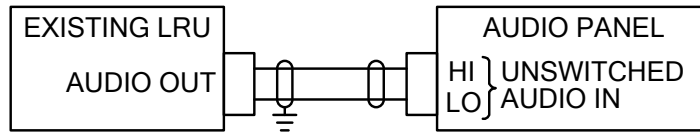
1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
  3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
-  USE AIRCRAFT GRADE CATEGORY 5 ETHERNET CABLE. REFER TO SECTION 3.2.2 FOR PART NUMBERS.

**Figure B-32 GNC 355( ) - GTX 345 Interconnect**

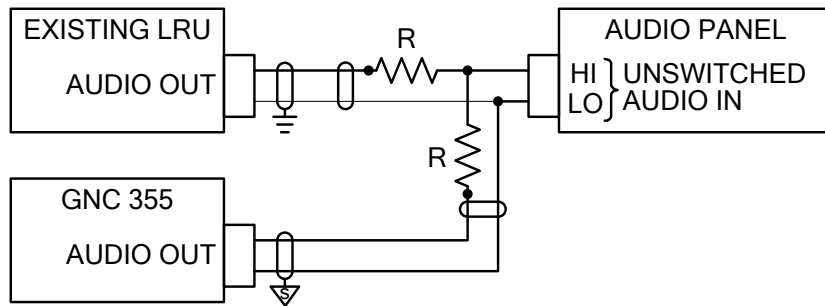


MIXING AUDIO SIGNALS USING RESISTORS

BEFORE MODIFICATION









AFTER MODIFICATION



**Figure B-33 Audio Panel Interconnect**  
Sheet 1 of 2

## NOTES

1. ALL WIRES 24 AWG OR LARGER UNLESS OTHERWISE SPECIFIED.
  2. GROUND DESIGNATIONS:  SHIELD BLOCK GROUND  AIRFRAME GROUND
  3. AT GNC 355( ), CONNECT SHIELD GROUNDS TO THE CONNECTOR BACKSHELL. TERMINATION LEADS MUST BE LESS THAN 3.0 INCHES. CONNECT OTHER END OF THE SHIELD PER THE REMOTE EQUIPMENT INSTALLATION REQUIREMENTS. IF NO SHIELD TERMINATION REQUIREMENT EXISTS FOR THE REMOTE EQUIPMENT, TERMINATE SHIELDS AS SHORT AS POSSIBLE, NOT TO EXCEED THE REQUIREMENTS IN THIS MANUAL.
-  THE 500 OHM AUDIO OUTPUTS ARE BALANCED OUTPUTS, AND THE LO OUTPUTS MUST BE CONNECTED. IF THE AUDIO PANEL DOES NOT HAVE A LO INPUT, THE LO OUTPUT SHOULD BE CONNECTED TO A GROUND LUG AT THE AUDIO PANEL.
-  CONNECTING TWO MICROPHONES TO MIC AUDIO HI/LO AT THE SAME TIME MAY RESULT IN WEAK OR DISTORTED AUDIO. MIC ISOLATION RELAYS ARE RECOMMENDED SO THAT ONLY ONE MIC IS ACTIVE AT A TIME.
-  THE COM REMOTE TRANSFER INPUT MAY BE USED FOR EMERGENCY OPERATION OF THE COM TRANSMITTER. IF THE REMOTE TRANSFER SWITCH IS ACTIVE FOR TWO SECONDS, THE ACTIVE COM FREQUENCY WILL CHANGE TO 121.50 MHZ.
-  IF AUDIO PANEL DOES NOT HAVE AN AVAILABLE UNSWITCHED INPUT, AUDIO FROM THE UNIT MUST BE MIXED WITH AN EXISTING AUDIO SOURCE USING RESISTORS TO ISOLATE THE AUDIO OUTPUT FROM EACH LRU. A TYPICAL VALUE FOR MIXING RESISTORS IS 390 OHM ¼ W. THE AUDIO LEVELS OF EXISTING AUDIO SOURCES WILL HAVE TO BE RE-EVALUATED AFTER MIXING RESISTORS ARE INSTALLED.

**Figure B-33 Audio Panel Interconnect  
Sheet 2 of 2**

## APPENDIX C EQUIPMENT COMPATIBILITY

The following equipment listed in this appendix is compatible with the GNC 355( ) system when configured as described. For the GNC 355( ) configuration information, refer to Section 5.4.

### C.1 Autopilots

**Table C-1 Autopilots**

Manufacturer	Model	Data Format	Interface Configuration	GNC 355( ) Configuration Setting
Honeywell (Bendix/King)	KAP 100/140/150, KFC 150/200/250	Analog Deviation, Discrete	N/A	GPS Select: Prompt
	KFC 225/275/325	Analog Deviation, Discrete, ARINC 429 GPSS	N/A	GPS Select: Prompt Configure output to any GAMA format.
Century	I/II/III/IV, 21/31/41, 2000, Triden	Analog Deviation, Discrete	N/A	
	AK 1081 [1]	ARINC 429 GPSS	N/A	GPS Select: Prompt Configure output to any GAMA format.
S-TEC	System 20/30/40/50/55/60- 2/60 PSS/65	Analog Deviation, Discrete	N/A	
	System 55X	Analog Deviation, Discrete, ARINC 429 GPSS	N/A	GPS Select: Prompt Configure output to any GAMA format.
	ST-901 [1]	ARINC 429 GPSS	N/A	GPS Select: Prompt Configure output to any GAMA format.
Cessna	300B/400B/800B	Analog Deviation, Discrete	N/A	
	300 IFCS/400 IFCS			
Garmin	GFC 500/GFC 600 [2]	Analog Deviation, ARINC 429, HDSB	N/A	

**Notes:**

[1] GPSS Roll Steering Converter.

[2] The GFC 500 is fed via the G5. Refer to Figure B-16.

### C.2 Bluetooth

**Table C-2 Bluetooth**

Manufacturer	Model	Data Format	Interface Configuration	GNC 355( ) Configuration Setting
Garmin	Internal	Bluetooth	N/A	Bluetooth: Enabled

### C.3 Navigation Indicators

**Table C-3 Navigation Indicators**

Manufacturer	Model	Data Format	IFR/VFR
Garmin	GI 106/106B	Analog	IFR
	GI 102/102A		VFR
Honeywell (Bendix/King)	KI 204/209	Composite	IFR
	KI 203/208		VFR
	KI 209A	Analog/Composite	IFR
	KI 208A		VFR
	KI 206/525A, KPI 552/552B/553/553A/553B	Analog	IFR
	KI 202		VFR
ARC (Cessna)	IN-386A, IN-481AC	Composite	IFR
	IN-385AC		VFR
Century	NSD 360A, NSD 1000	Analog	IFR
Collins	331A-6P, PN-101, IND-351D	Analog	IFR
S-TEC	ST 180	Analog	IFR
Mid Continent	MD222-406, MD200-306, MD200-307	Analog	IFR
	MD222-402, MD200-302, MD200-303		VFR
Narco	VOA 9/50M	Composite	IFR
	VOA 8		VFR



## C.4 EFIS Displays

**Table C-4 EFIS Displays**

Manufacturer	Model	Data Format	Interface Configuration	GNC 355( ) Configuration Settings
Aspen	EFD 1000/500	ARINC 429	ID #1: C ID #2: NONE  Description GNS 400, no GPS 2 Tracker Autopilot	<b>ARINC 429 Setup:</b> IN: Low, EFIS/ADC OUT: Low, GAMA Format 3
Garmin	GDU 620	ARINC 429, RS-232	<b>System Config:</b> GPS1: Present, GPS400W [2]  ARINC 429 and RS-232 ports are auto formatted once selection is made.	<b>ARINC 429 Setup:</b> IN: Low, GDU Format 1 [1] OUT: High, GAMA Format 1 SDI: LNAV 1 (for GPS 1) LNAV 2 (for GPS 2) GDU: Present <b>RS-232 Setup:</b> OUT: MapMX
	GDU 700/1060 TXi [1]	HSDB	GPS 1: GNC 355/355A	GDU: Present
	G3X GDU 4XX/37X	RS-232, ARINC 429	GDU 4XX/37X: RS-232: MAPMX ARINC 429 in: Garmin GPS and "NAV 1" ARINC 429 Out: EFIS/AIRDATA	RS-232: MAPMX Format 1 <b>ARINC 429 Setup</b> In: Low, GDU Format 1 Out: Low, GAMA Format 1 In Setup/Main Indicator (Analog), set Selected Course: Allowed
	G5 (ADI)	RS-232	MapMX	RS-232: MapMX

**Notes:**

- [1] Interface requires minimum GDU software v3.01.
- [2] GPS2 may also be used if the GNC 355( ) is a secondary GPS.

## C.5 EHSI Displays

**Table C-5 EHSI Displays**

Manufacturer	Model	Data Format	Interface Configuration	GNC 355( ) Configuration Setting
Garmin	G5 (HSI)	RS-232, ARINC 429	RS-232: MapMX ARINC 429 IN: Garmin GPS (SDI 1) ARINC 429 OUT: EFIS/AIRDATA (SDI 1)	RS-232: MapMX ARINC 429: IN: [3] OUT: GAMA Format 1
Sandel	SN 3308 [1]	Analog/ ARINC 429	LNAV 1/2 SELECT: GNS 430 (ARINC) ANNUN: SERIAL RELAY SENSE: NAV-2 OFF COURSE: OBS/LEG GPS-1: OFF DEVIATION: ANALOG GPS-2: OFF OBS ROT: NORMAL CDI SRC SEL: OFF OBS CAL: 000.0 RCVR 1/2: OFF	GAMA Format 3, low speed
	SN 3500/4500 [2]	ARINC 429	LNAV 1/2 SELECT: GNS 530 (ARINC) ANNUN: SERIAL LAT DV: SERIAL VERT DV: SERIAL VERT ENA: SERIAL	GAMA Format 3

**Notes:**

- [1] GPS lateral and vertical guidance is provided using the analog interface.
- [2] Vertical Guidance is provided for GPS approaches. Software v3.06 or later is required for SN3500.
- [3] On GNC 355( ), select GDU Format 1.

## C.6 Garmin Data Links

**Table C-6 Data Links**

Manufacturer	Model	Data Format	Interfaced Configuration	GNC 355( ) Configuration Setting
Garmin	GDL 82	RS-232	ADS-B+ Format 2	ADS-B+ Format 2
	GDL 88/88D	HSDB	Ethernet Configuration: GTN 6XX/7XX Present	ADS-B SRC: GDL 88 or GDL 88 No TX

## C.7 Heading Reference Sources

**Table C-7 Heading Reference Sources**

Manufacturer	Model	Data Format	Interface Configuration	GNC 355( ) Configuration Setting
Aspen	EFD 1000	ARINC 429	N/A	EFIS/ADC [4] (Speed: Low)
Garmin	GAD 42	ARINC 429	N/A	EFIS/ADC [1] (Speed: Low)
	GDU 620	ARINC 429	GENERAL	GDU Format 1 [4] (Speed: High)
	GDU 700/1060 TXi [5]	HSDB	GPS 1: GNC 355/355A	GDU: Present
Sandel	SN3500	ARINC 429	N/A	EFIS/ADC [1] (Speed: Low)
	SN3308			EFIS/ADC [1] (Speed: Low)

**Notes:**

- [1] Heading information only.
- [2] Attitude and heading information.
- [3] Altitude, airspeed, altitude rate, and heading information.
- [4] Altitude, airspeed, and heading information.
- [5] Interface requires minimum GDU software v3.01.

## C.8 Multifunction Displays

**Table C-8 Multifunction Displays**

Manufacturer	Model	Data Format	Interface Configuration	GNC 355( ) Configuration Setting
Garmin	MX20	RS-232	Verify External GPS Position Source Port	<p>Aviation Output 2 format for MX20 v5.5 and earlier.</p> <p>Aviation Output 1 format for MX20 v5.6 and later. (MX20 will not accept GPS altitude even though it is part of Aviation Output 1 Format).</p> <p>MapMX format for MX20 v5.6 or later. (preferred)</p> <p>Refer to Section 5.4.3 if installation enables RF Leg navigation on the GNC 355( ).</p>
	GMX 200	RS-232	MapMx	<p>Aviation Output 1 format</p> <p>MapMX format (preferred)</p> <p>Refer to Section 5.4.3 if installation enables RF Leg navigation on the GNC 355( ).</p>

## C.9 Transponders

**Table C-9 Transponders**

Manufacturer	Model	Data Format	Interface Configuration	GNC 355( ) Configuration Setting
Garmin	GTX 327	RS-232	GPS	Aviation Output 1
	GTX 328		REMOTE	ADS-B+ Format 1
	GTX 330/330D			
	GTX 330/330D w/ES			
	GTX 335		<p>ADS-B+ FMT 1</p> <p>ADS-B+ FMT 2</p>	<p>ADS-B+ Format 1</p> <p>ADS-B+ Format 2</p>
	GTX 345	HSDB	<p>HSDB INTERFACE: GTN</p> <p>PRESENT: YES</p>	ADS-B SRC: GTX #1, GTX #2

## APPENDIX D AIRCRAFT MODEL-SPECIFIC INFORMATION

Additional requirements and limitations that are placed on some aircraft as a part of this STC are provided in Table D-1

**Table D-1 Aircraft Model-Specific Information**

<b>Aircraft Make</b> (TCDS Holder) [Common name or Previous Make]	<b>Aircraft Model</b>	<b>Requirements and Limitations</b>
<b>Diamond</b> (Diamond Aircraft Industries Inc.)	DA20-A1, DA20-C1	Installation approved for VFR operation only.
<b>Diamond</b> (Diamond Aircraft Industries GmbH)	DA 40	Require OSB 40-004/3 modification for IFR operation.  Models without OSB 40-004/3 modification approved for VFR operation only.
<b>Grob Aircraft AG</b> (GROB Aircraft AG) [Grob Werke GmbH & Co. KG; BURKHART GROB Juft-und Raumfahrt GmbH & Co. KG; GROB-WERKE; GROB Aerospace GmbH; GROB Aerospace GmbH i. I.]	G115, G115A, G115B	Installation approved for VFR operation only.
<b>Textron Aviation</b> (Textron Aviation Inc.) [Beechcraft Corporation] [Hawker Beechcraft] [Raytheon] [Beech]	D17S (Army UC-43, UC-43B, Navy GB-1, GB-2), SD17S	Aircraft must have approved firewall modification to accommodate the depth of the LRU.