

 CZECH SPORT AIRCRAFT	<h1>SERVICE BULLETIN</h1>	Czech Sport Aircraft a.s. Na Záhonech 212, 686 04 Kunovice Czech Republic office@czechsportaircraft.com
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MODEL AFFECTED:	SportCruiser / PiperSport (excluding those operating under EASA rules)
SUBJECT:	Installation of GTX335 Transponder.
AIRCRAFT AFFECTED:	All SportCruiser / PiperSport aircraft without ADS-B OUT system installed, as applicable.
COMPLIANCE:	Apply this Service Bulletin when needed to comply with the FAA requirement for the ADS-B OUT capability.

DESCRIPTION:

This Service Bulletin contains instructions for replacement of the original transponder with mode C or S by the Garmin GTX335 transponder with mode S that meets the FAA requirements on ADS-B OUT capability after January 1, 2020. Therefore, Garmin GTX335 1090-MHz ADS-B transponder with the inner GPS module and the WAAS - GA35 antenna are to be installed instead of the original transponder with mode C or S to meet the requirement.

GTX335 installation according to this Service Bulletin will provide:

- Compliance with ADS-B OUT requirements;
- The frequency 1090 MHz enables the airplane to operate at any altitude in the air space all over the world;
- Combined transponder of the S Extended Squitter (ES) mode and selectable location source WAAS / GPS all in one unit;
- Useful display functions including flight time, countdown and reading of actual pressure altitude;
- Easy replacement of the original transponder with common altitude range of 1,65 inch.

AUTHORISATION TO PERFORM:

USA: Repairman (LS-M) or Mechanic (A&P)

REASON:

FAA requirement published through Federal Regulation [14 CFR 91.225](#) and [14 CFR 91.227](#) in May 2010 to equip also small airplanes with the ADS-B-OUT signal in the UAT (978 MHz) band or the S mode (1090 MHz).

MANPOWER:

Approximately 9 man hours.

SPECIAL TOOLS:

Common tools for aircraft maintenance (screwdrivers, spanners, battery powered drill with drills, etc.).

WEIGHT AND BALANCE:

Insignificant effect.

ELECTRICAL LOAD DATA:

Current consumption:

GTX335	1.22 A
GTX 320	1,67 A
GTX 327	1,83 A
GTX 328	3,1 A

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REFERENCES:

GTX 3X5 Transponder TSO Installation Manual, latest revision

PUBLICATIONS AFFECTED:

POH

SportCruiser / Piper Sport Maintenance Manual

SportCruiser / Piper Sport Wiring Manual

MATERIAL:

Wiring, lacquer C1005, pencil, ruler, etc.

The following parts are needed for execution of this service bulletin:

Table 1 List of parts and fasteners.

ITEM	NAME	PART NUMBER	Pieces
1	Console	CA1025L	1
2	Console	CA1025P	1
3	Angle	CA1026L	1
4	Angle	CA1026P	1
6	GTX335/GPS Transponder - STANDARD KIT	6702GTX10 (010-01214-41)	1
7	GA35 GPS Antenna	6202GP19 (013-00235-00)	1
8	Mount plate	CI0158N	1
10	Screw with half round head and cross groove	3111O644 (MS35206-244)	2
11	Screw with countersunk head and cross groove	3111O652 (MS24693-S48)	6
15	Washer	3131A802 (AN960-8L)	8
16	Self-locking nut	3121B661 (MS21083N08)	8
17	Bolt, stainless steel	3111X426 (ISO 7047 – M4x25-A2)	4
18	Emfimastic PU 50 glue or equivalent	4410V002	1
19	Loctite 243	4610A003	1
20	Coaxial cable RG142B /U-M17/60 for GA35 antenna	664KO142	1*
21	TNC Connector	66515016	2

*) 0,5 m

COSTS:

To be covered by the aircraft owner.

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ACCOMPLISHMENT INSTRUCTIONS:

1. Move the aircraft to a suitable place to perform the work.
2. Remove the engine upper cowling (see the CR-MM-1-0-00, the latest revision).
3. Disconnect the carburetor air inlet hose from the left NACA inlet of the lower cowling (see the CR-MM-1-0-00, the latest revision).
4. Disconnect the air inlet hose bringing the air into the heat exchanger (if installed) from the right NACA inlet of the lower engine cowling (see the CR-MM-1-0-00, the latest revision).
5. Remove the engine lower cowling (see the CR-MM-1-0-00, the latest revision).
6. Disconnect the battery terminals (see the CR-MM-1-0-00, the latest revision).
7. **If the original transponder is installed in the central instrument panel, continue with actions from the point 8 below.**

If the original transponder is installed in the left instrument panel, continue with actions from the point 26 below.

Variant with the original transponder installed in the central instrument panel

8. Remove the GPS unit from the central instrument panel and disconnect it from the aircraft wiring system.
9. Remove the original COM radio or NAV / COM radio KY97A / SL30 / SL40 / GNC255 from the original mounting rack.
10. Remove the GTX 320 / 327 / 328 Transponder from the original mounting rack.
11. Remove the left and the right instrument panel, put them on a suitable soft pad. Do not disconnect the cables, wiring.
12. Remove the central instrument panel and disconnect the wiring from the transponder and from other equipment if needed.
13. Determine the respective variant of the original transponder installation according to Figures 1 – 7.
14. Remove the GTX 320 / 327 / 328 original mounting rack.
15. Review the co-ax cable and make sure that the RG400 double shield type is used, see Fig.14.
 - If the RG400 double shield co-ax cable is not used, continue with the point 16.
 - If the RG400 double shield co-ax cable is used, continue with the point 22.
16. Unscrew the right side panel from the middle channel under the instrument desk, see Fig. 15.
17. Release spiral wrapping insulation from the wiring pack, remove pertinent zip cable ties in order to loosen the transponder single shield co-ax cable from the wiring pack.
18. Fold up the right seat back, disconnect the co-ax cable from the XPDR antenna and draw the whole co-ax cable out.
19. Use an adversary procedure and install the RG400 double shield co-ax cable between the XPDR antenna and transponder.
20. Put the wiring pack back in the original condition.
21. Screw the right side panel back in the original position.

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22. Install the GTX335 mounting rack P/N 115-01771-01 (see position 6 in Figures below) into the central instrument panel according to the respective variant, either by adjusting the original holders (see positions 1, 2, 3, 4 in Figures below) or by using new holders ordered according to the respective variant.
23. Use the fasteners for installation as per the respective Figures and the Table 1.
24. Determine the altitude source of the original transponder - see Table 2. Depending on the altitude source, use the wiring according to the wiring diagram— see Figure 8, cut off the original connectors and use new connectors delivered with the GTX335 transponder. Add (produce) the missing supply wiring.
25. Install the GA35 GPS antenna according to Figure 9. Make sure that cabin can be opened freely without any collision with GPS antenna. Prepare coaxial cable for connection of the GA35 antenna to the GTX335 transponder according to the wiring diagram – see Figure 8.
26. Install the central instrument panel and connect the wiring.
27. Connect the wiring to the GPS and insert the GPS into the mounting rack in the central instrument panel.
28. Insert the NAV/COM - KY97A / SL30 / SL40 / GNC255 into the mounting rack in the central instrument panel (it will connect automatically).
29. Insert the GTX335 Transponder with WAAS GPS into the mounting rack (it will connect automatically).
30. Replace the circuit breaker / fuse of the transponder by the new one with value of 3A.
31. Install the left and the right instrument panel.
32. Continue with the point 38 below.

Variant with the original transponder installed in the left instrument panel

33. Remove the original GTX320 / 327 / 328 / 330 transponder from the left instrument panel – see Figure 13.
34. Remove the left instrument panel, put on a suitable soft pad. Disconnect the transponder wiring.
35. Remove the original mounting rack.
36. Depending on the version of the original transponder use the original console without change or modify the original console on the left instrument panel by drilling the hole of 4.5 mm diameter according to Figure 13.
37. Install the mounting rack for the GTX335 transponder into the modified console on the left instrument panel.
38. Determine the altitude source of the original transponder - see Table 2. Depending on the altitude source, use the wiring according to the wiring diagram— see Figure 8, cut off the original connectors and use new connectors delivered with the GTX335 transponder. Add (produce) the missing supply wiring.
39. Install the GA35 GPS antenna according to Figure 9. Make sure that cabin can be opened freely without any collision with GPS antenna. Prepare coaxial cable for connection of the GA35 antenna to the GTX335 transponder according to the wiring diagram – see Figure 8.
40. Connect the transponder wiring, see the wiring diagram – Figure 8, and install the left instrument panel.
41. Insert the GTX335 Transponder with WAAS GPS into the mounting rack (it will be connected automatically).
42. Remove the right instrument panel, put on a suitable soft pad. Do not disconnect the cables, wiring.

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43. Replace the circuit breaker / fuse of the transponder by the new one with value of 3A.

44. Install the right instrument panel.

Common work for both the above mentioned variants to complete this Service Bulletin

45. Connect the aircraft battery terminals.

46. Switch on the GTX335 transponder with GPS and perform the setup to required parameters according to the GTX 3X5 Transponder TSO Installation Manual, latest revision.

47. In an open area, perform ground functional check of the HF part and of the ADS-B OUT mode of the GTX335 Transponder (with installed GA35 GPS antenna). Use a suitable tester, e.g. the AEROFLEX IFR6000.

48. Install the engine lower cowling (see the CR-MM-1-0-00, the latest revision).

49. Connect the carburetor air inlet hose on the left side of the NACA inlet of the lower cowling (see the CR-MM-1-0-00, the latest revision).

50. Connect the air inlet hose bringing the air into the heat exchanger (if installed) to the right NACA inlet of the lower engine cowling (see the CR-MM-1-0-00, the latest revision).

51. Install the engine upper cowling (see the CR-MM-1-0-00, the latest revision).

52. Update the POH section "WEIGHT AND BALANCE", the article "Installed equipment list" and the section "DESCRIPTION OF AIRPLANE AND SYSTEMS", article "Instruments and Avionics". Add or correct, as applicable, the newly installed or replaced components according to this Service Bulletin. The update of the POH can be performed by manual text correction on the relevant page and by insertion of a date of installation/replacement, with the reference to this SB and signature of the authorized person.

53. Complete the aircraft records (log book) to reflect compliance with this Service Bulletin.

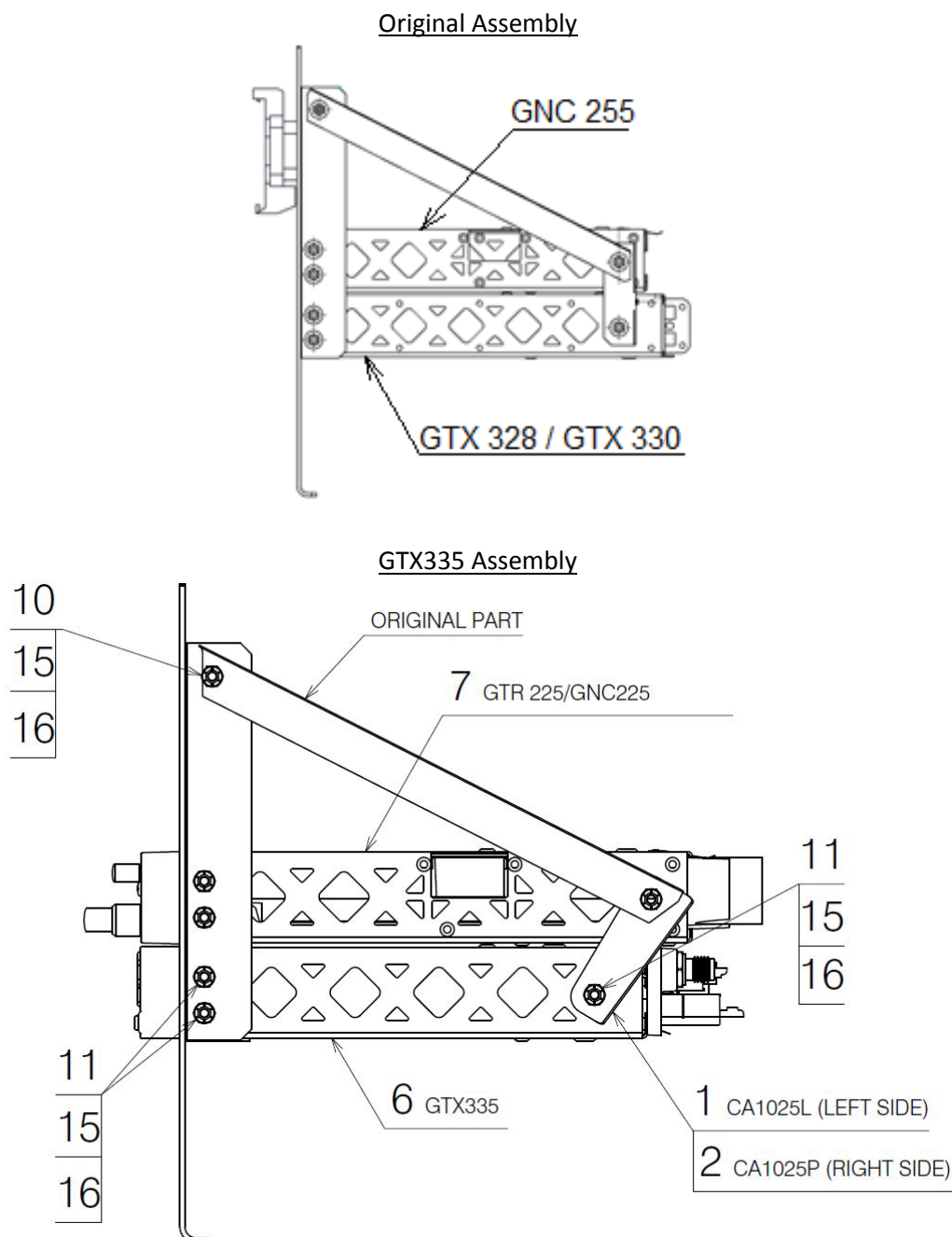
54. Perform the check of communication protocol by verifying that the aircraft modified according to this Service Bulletin is visible / identifiable to other aircraft equipped with the ADS-B IN system. For correct display, see Figure 10, or check correct function via any ATC.

55. Thereby, the performance of this Service Bulletin is duly completed.

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Figures 1-7 show installation of the new GTX335 Transponder into possible variants of the original central instrument panel arrangement.

Figure 1 Installation of the GTX335 Transponder and the NAV/COM GNC255 into the central instrument panel.

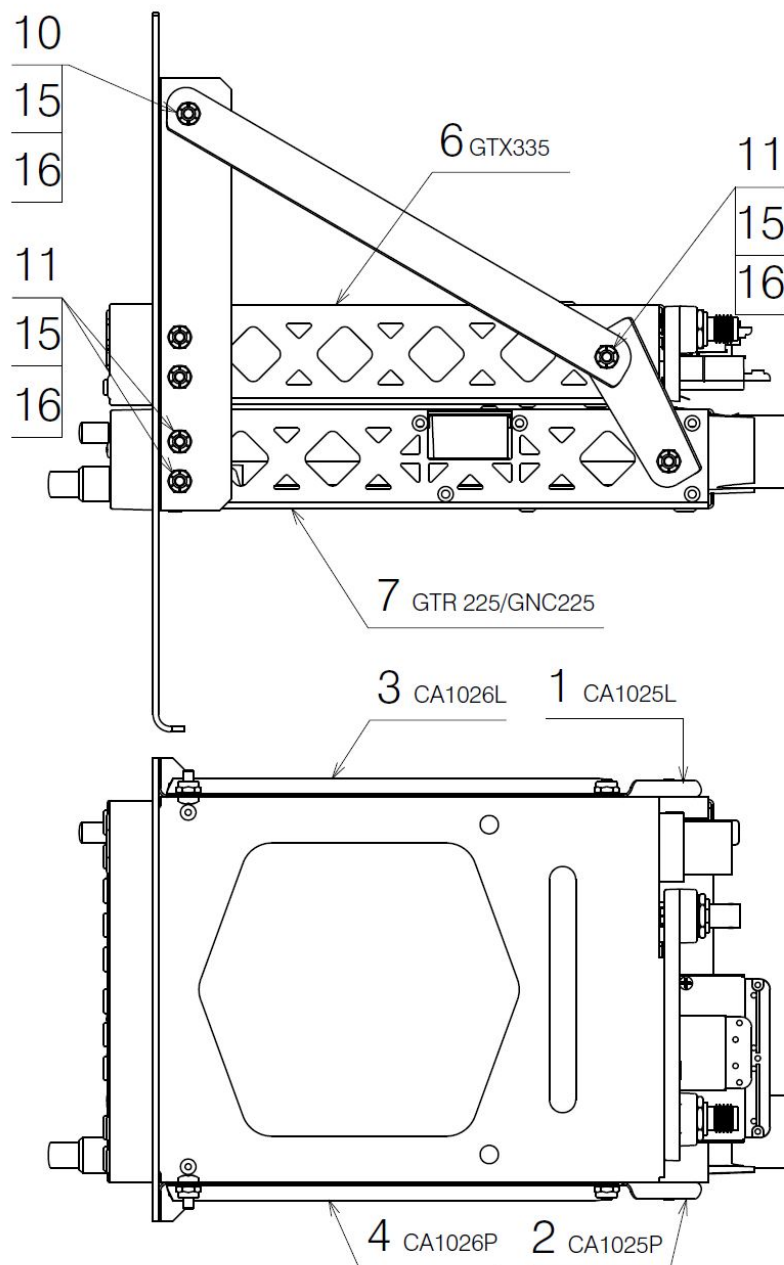


Additional instructions to this variant:

- Exchange the original GTX328 or GTX330 Transponder.
- Leave the original diagonal angles.
- Use the new angles - pos. 1, 2 (CA1025L / CA1025P).
- Use the fasteners according to the Table 1.

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Figure 2 Installation of the GTX335 Transponder and the NAV/COM GNC255 into the central instrument panel.



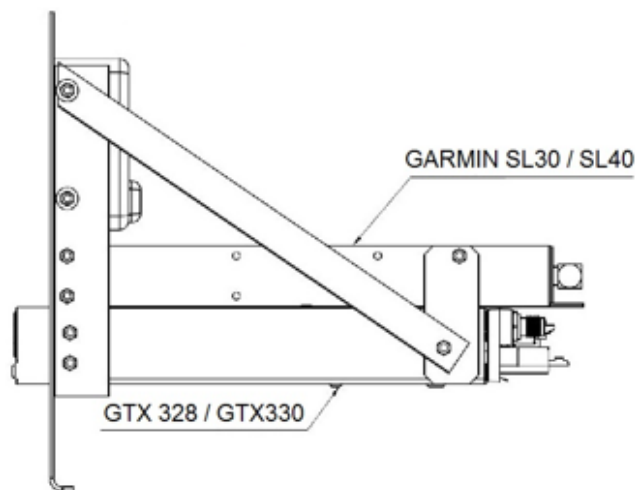
Additional instructions to this variant:

- Exchange the original GTX327 or GTX320 Transponder.
- Use the new angles pos. 3, 4 (CA1026L / CA1026P).
- Use the new angles pos. 1, 2 (CA1025L / CA1025P).
- Use the fasteners according to the Table 1.

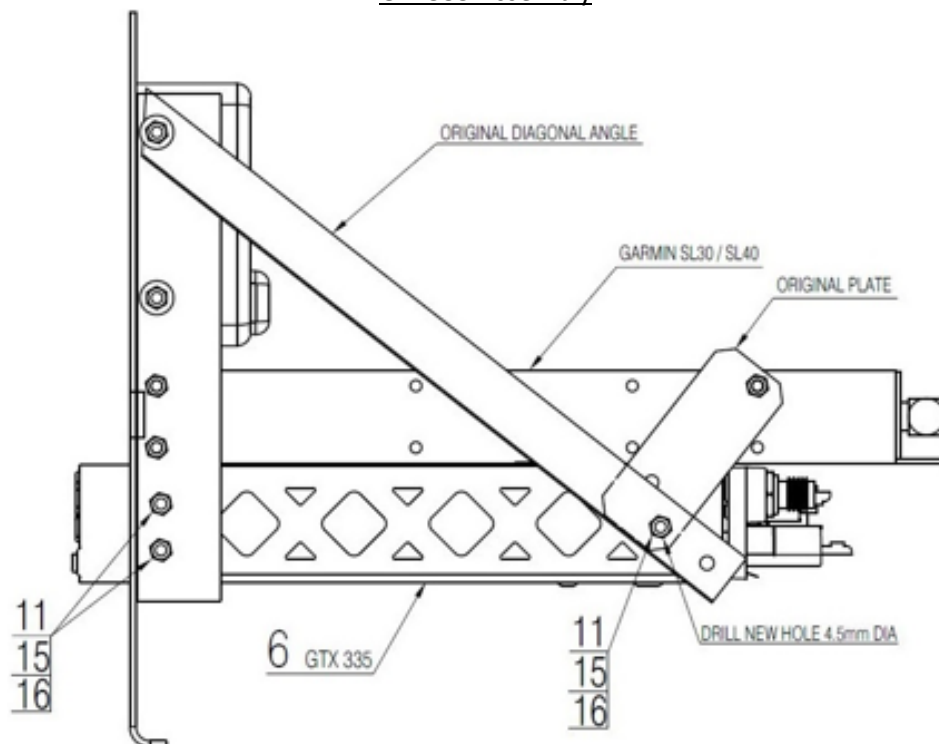
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Figure 3 Installation of the GTX335 Transponder and the NAV/COM (SL30 / SL40) into the central instrument panel.

Original Assembly



GTX335 Assembly



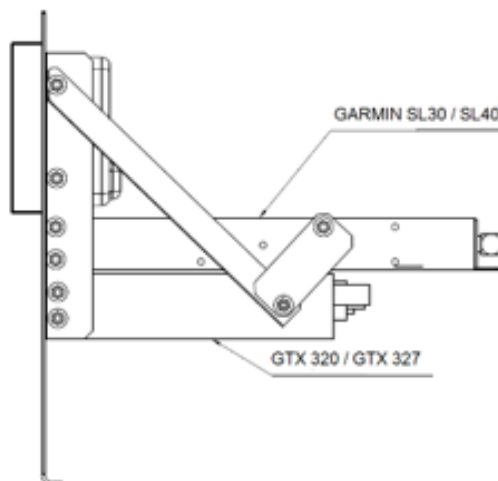
Additional instructions to this variant:

- Exchange the original GTX330 or GTX328 Transponder.
- It is possible to use the original angles and plates after drilling new holes (diameter 4.5 mm) according to the sketches above.
- Use the fasteners according to the Table 1.

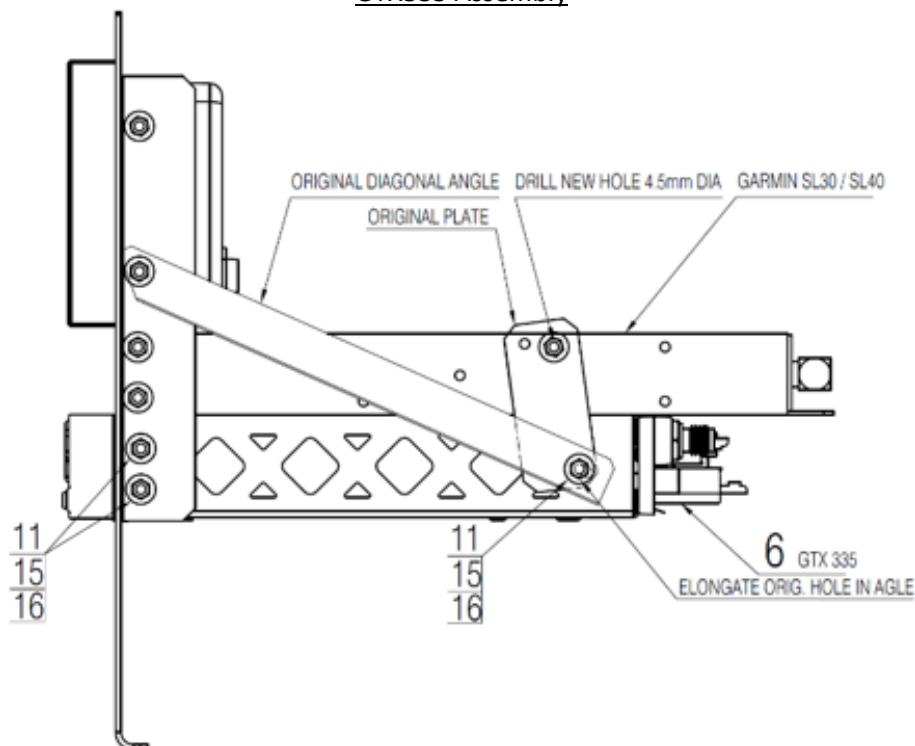
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Figure 4 Installation of the GTX335 Transponder and the NAV/COM (SL30 / SL40) into the central instrument panel.

Original Assembly



GTX335 Assembly



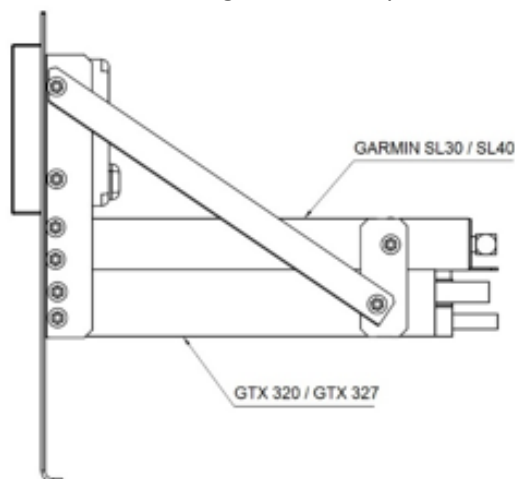
Additional instructions to this variant:

- Exchange the original GTX320 or GTX327 Transponder.
- It is possible to use the original angles and plates after drilling new holes according to the sketches above.
- Use the fasteners according to the Table 1.

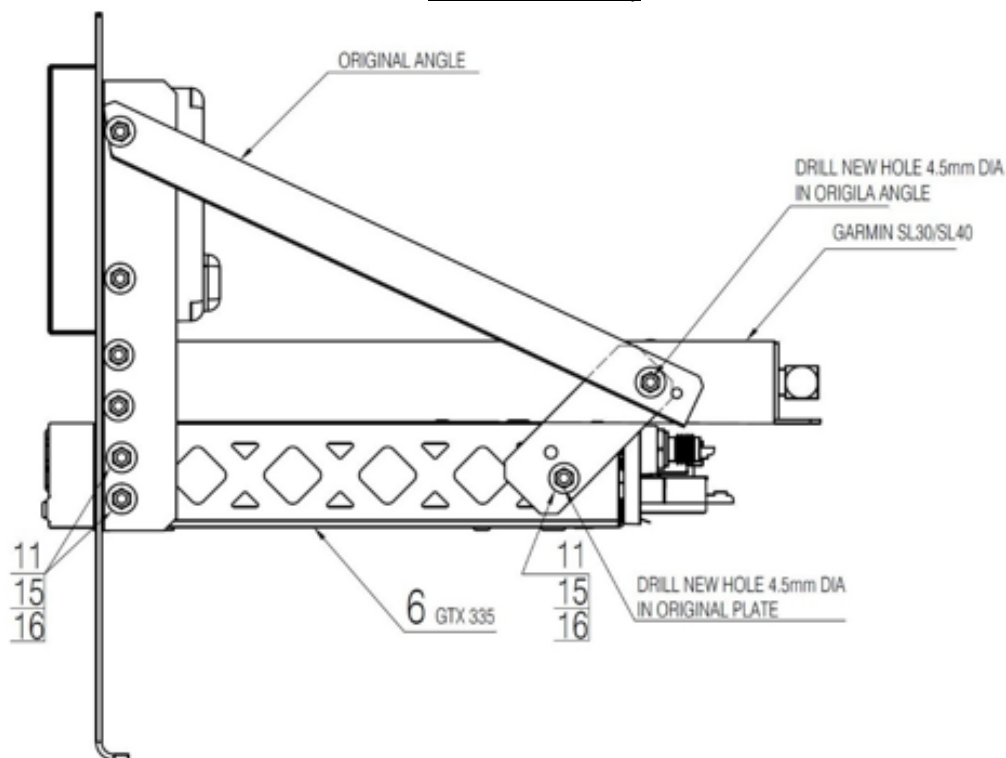
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Figure 5 Installation of the GTX335 Transponder and the NAV/COM (SL30 / SL40) into the central instrument panel.

Original Assembly



GTX335 Assembly

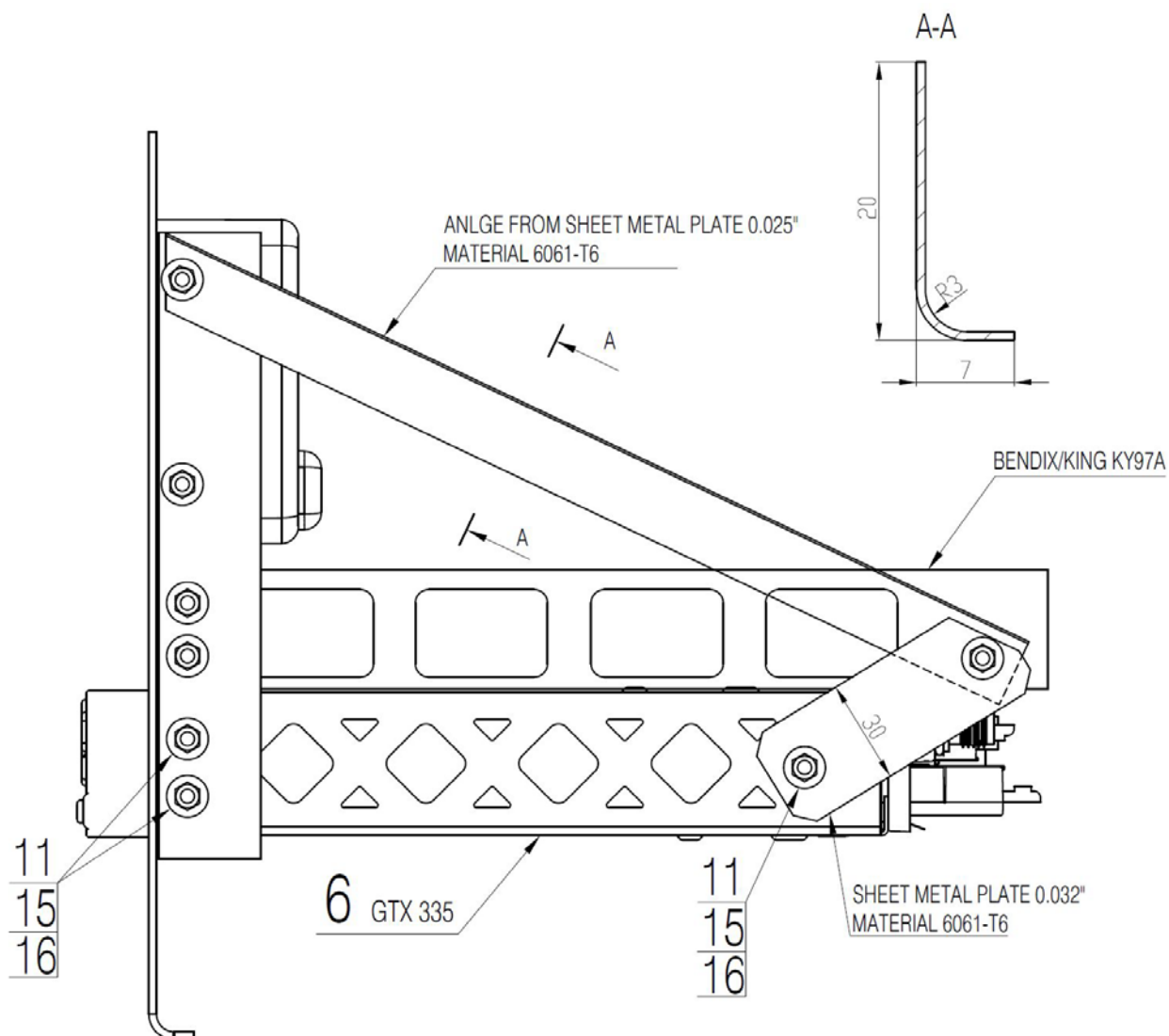


Additional instructions to this variant:

- Exchange the original GTX320 or GTX327 Transponder.
- It is possible to use the original angles and plates (after drilling new holes of 4.5 mm diameter) according to the sketches above.
- Use the fasteners according to the Table 1.

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Figure 6 Installation of the GTX335 Transponder and the NAV/COM (KY97A) into the central instrument panel.



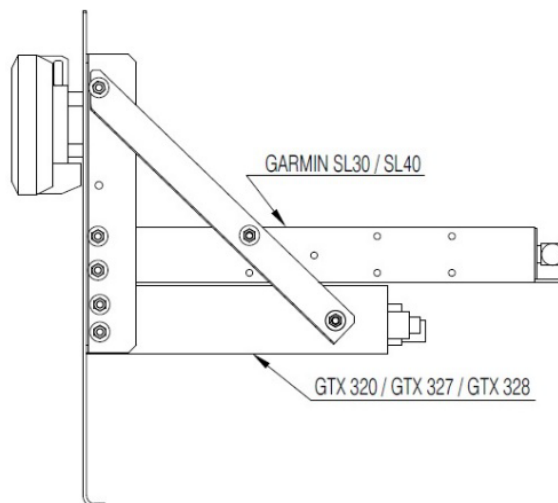
Additional instructions to this variant:

- Exchange the original GTX320 / GTX327 / GTX328 Transponder.
- Use original diagonal angle and plate or made new according to sketch above.
- Use the fasteners according to the Table 1.

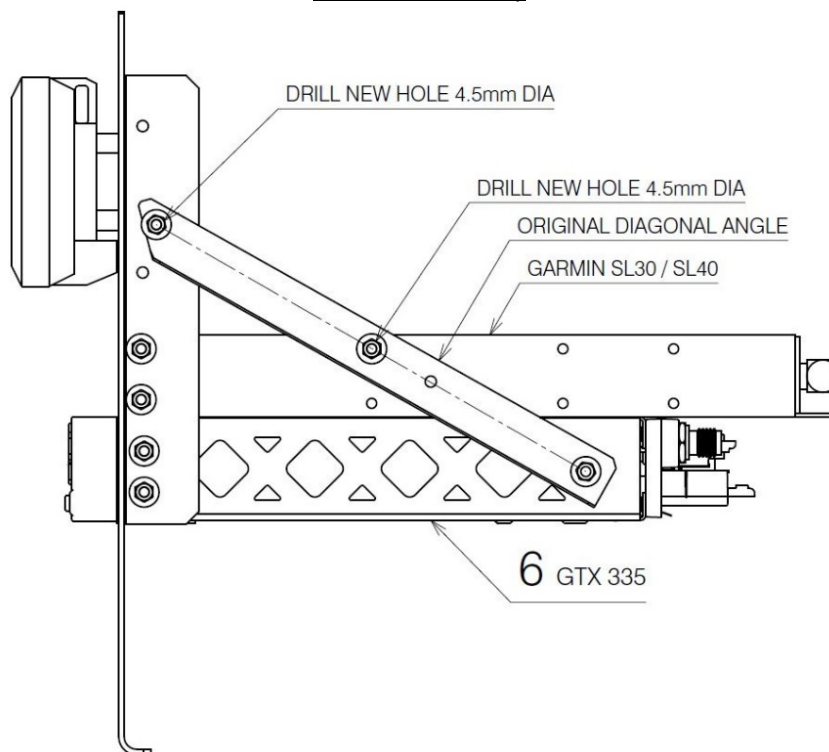
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Figure 7 Installation of the GTX335 Transponder and the NAV/COM (SL30 / SL40) into the central instrument panel.

Original Assembly



GTX335 Assembly



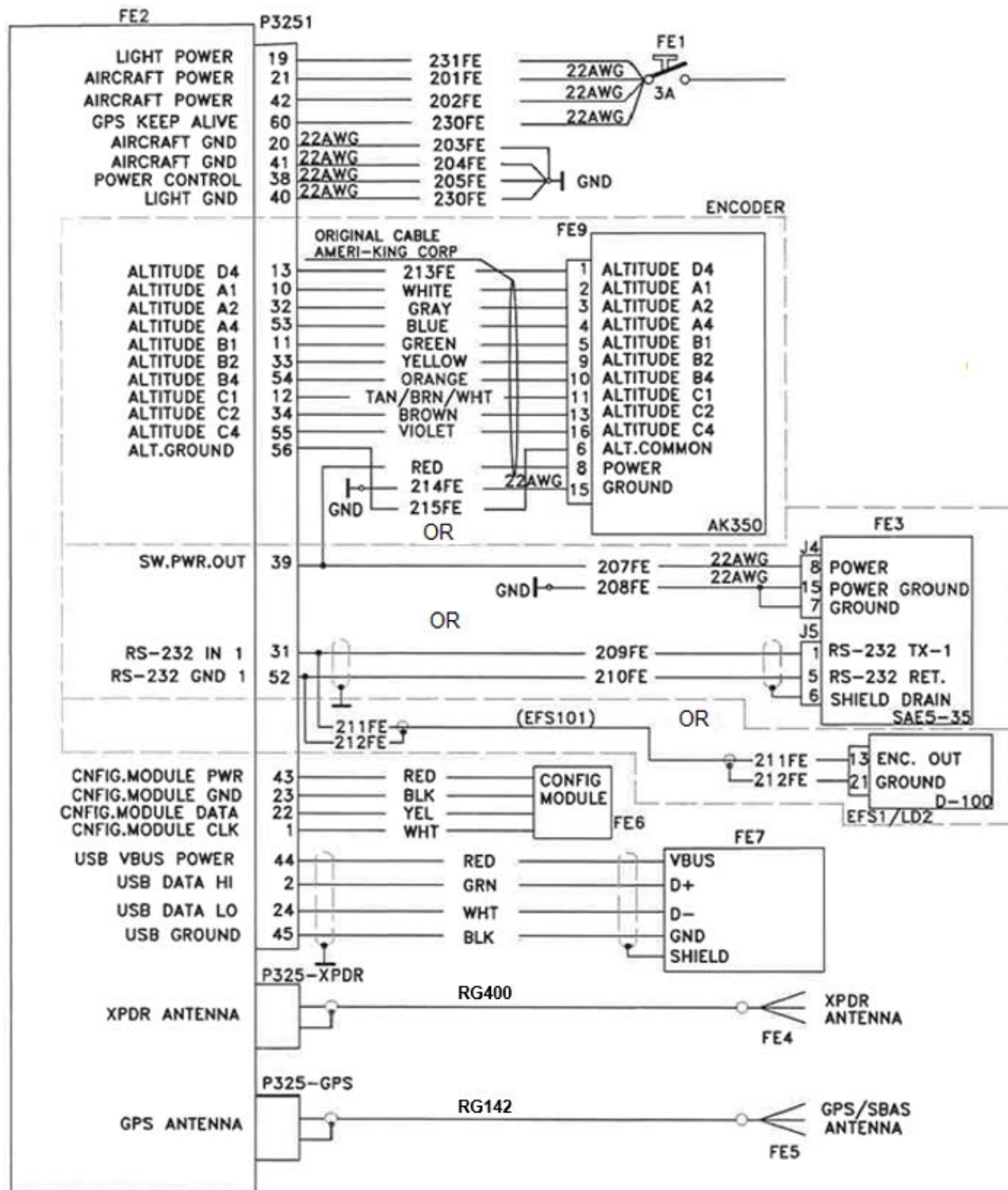
Additional instructions to this variant:

- Exchange the original GTX320 / GTX327 / GTX328 Transponder.
- It is possible to use the original diagonal angles after drilling new holes (4.5mm) according to the sketches above.
- Use the fasteners according to the Table 1.



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Figure 8 Wiring diagram of the GTX335 Transponder.



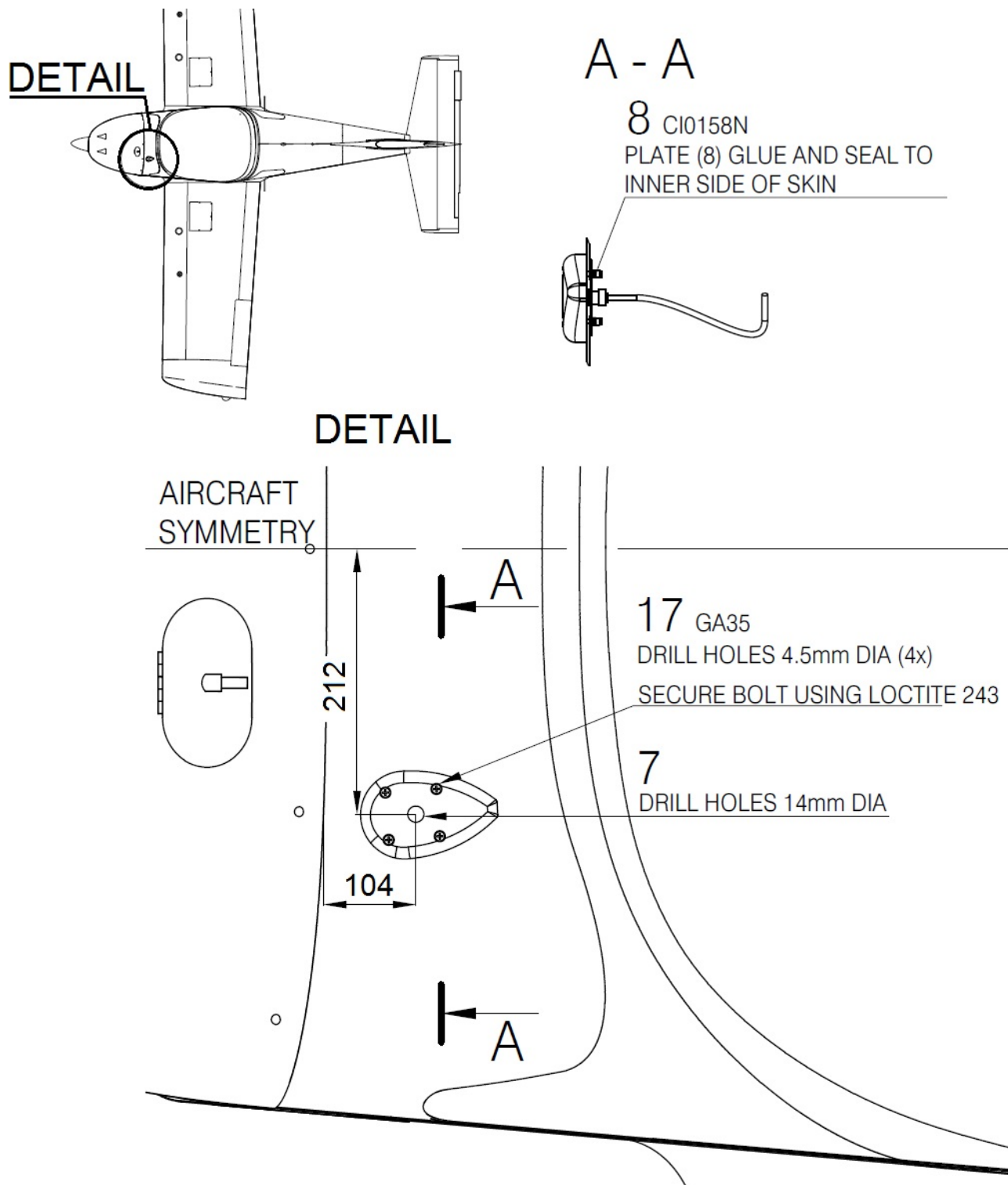
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Table 2 Table of wires.

Wire No.:	Starts from: GTX335	Goes to:	Note:
201FE	FE2-P3251.21	FE1.1	Circuit breaker
202FE	FE2-P3251.42	FE1.1	Circuit breaker
230FE	FE2-P3251.60	FE1.1	Circuit breaker
203FE	FE2-P3251.20	GND	Airframe
204FE	FE2-P3251.41	GND	Airframe
205FE	FE2-P3251.38	GND	Airframe
206FE	FE2-P3251.59	GND	Airframe
207FE	FE2-P3251.39	FE3-J4.8	ENCODER SEA5-35
209FE	FE2-P3251.31	FE3-J5.1	ENCODER SEA5-35
210FE	FE2-P3251.52	FE3-J5.5	ENCODER SEA5-35
211FE	FE2-P3251.31	EFS1-LD2.13	DISPLAY EFIS
212FE	FE2-P3251.52	EFS1-LD2.21	DISPLAY EFIS
RED	FE2-P3251.43	FE6	CONFIG.MODULE
BLK	FE2-P3251.23	FE6	CONFIG.MODULE
YEL	FE2-P3251.22	FE6	CONFIG.MODULE
WHT	FE2-P3251.1	FE6	CONFIG.MODULE
RED	FE2-P3251.44	FE7	USB RECEPTACLE
GRN	FE2-P3251.2	FE7	USB RECEPTACLE
WHT	FE2-P3251.24	FE7	USB RECEPTACLE
BLK	FE2-P3251.45	FE7	USB RECEPTACLE
208FE	FE3-J4.15	GND	USB RECEPTACLE
PROP	FE.-J4.15	FE3-J4.7	ENCODER SEA5-35
PROP	FE3-J5,STI	FE3-J5,6	ENCODER SEA5-35
213FE	FE2-P3251.13	FE9.1	ENCODER_GILHELM CODE
WHITE	FE2-P3251.10	FE9.2	ENCODER_GILHELM CODE
GRAY	FE2-P3251.32	FE9.3	ENCODER_GILHELM CODE
BLUE	FE2-P3251.53	FE9.4	ENCODER_GILHELM CODE
GREEN	FE2-P3251.11	FE9.5	ENCODER_GILHELM CODE
YELLOW	FE2-P3251.33	FE9.9	ENCODER_GILHELM CODE
ORANGE	FE2-P3251.54	FE9.10	ENCODER_GILHELM CODE
TAN/BRN/WHT	FE2-P3251.12	FE9.11	ENCODER_GILHELM CODE
BROWN	FE2-P3251.34	FE9.13	ENCODER_GILHELM CODE
VIOLET	FE2-P3251.55	FE9.16	ENCODER_GILHELM CODE
RED	FE2-P3251.39	FE9.8	ENCODER_GILHELM CODE
215FE	FE2-P3251.56	FE9.6	ENCODER_GILHELM CODE
214FE	FE9.15	GND	ENCODER_GILHELM CODE

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Figure 9 Installation of the GA35 antenna.



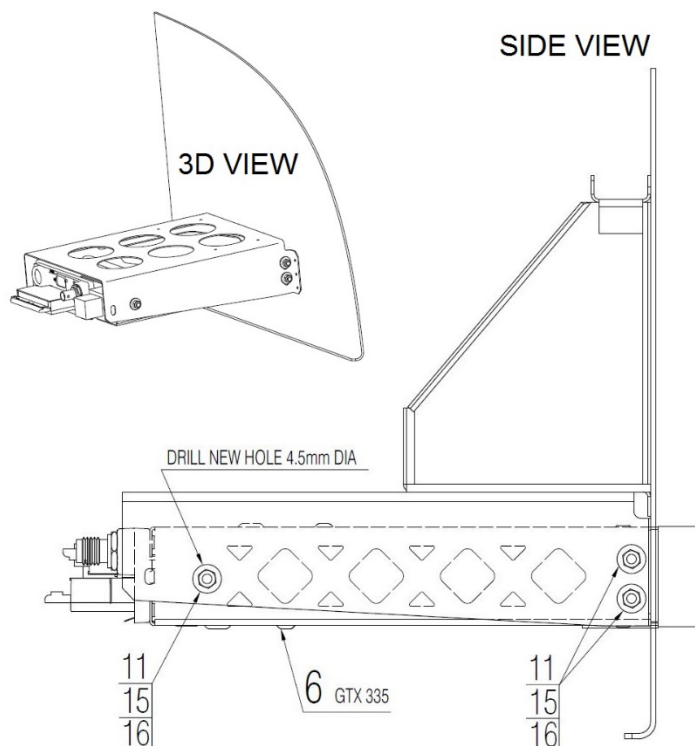
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Figure 10 Display of the ADS-B OUT mode at the aircraft display/screen.



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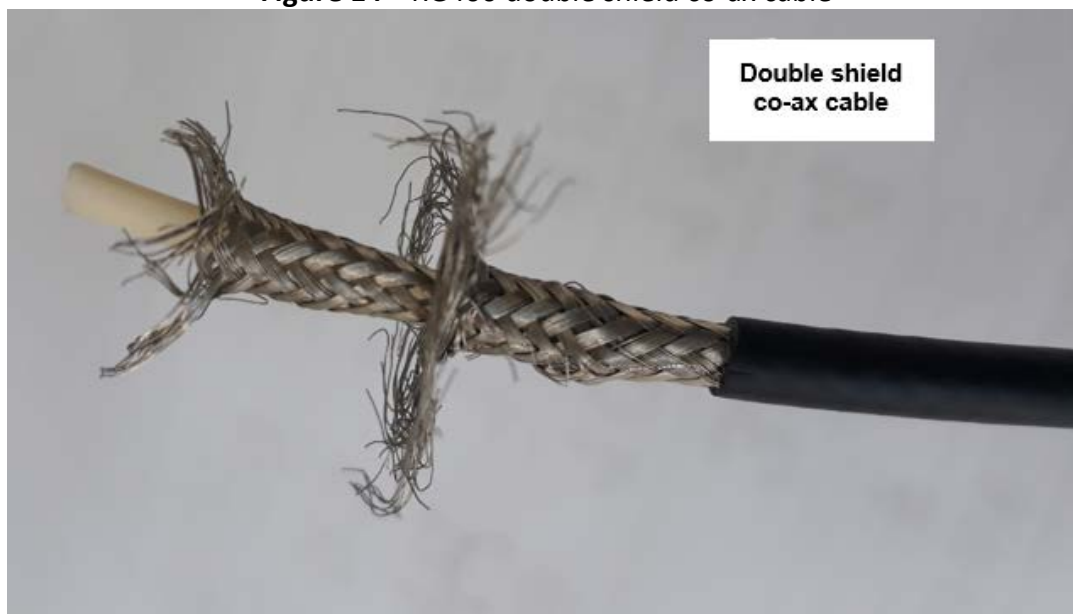
Figure 13 Installation of the GTX335 Transponder into the left instrument panel.



Additional instructions to this variant:

- Exchange the original GTX328 or GTX330 Transponder.
- It is possible to use the original console pos. 20 after drilling new holes according to the sketch above.
- Use the fasteners according to the Table 1.

Figure 14 RG400 double shield co-ax cable



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Figure 15 Dismantling of the right side panel from the middle channel under the instrument panel



APPROVAL:

This SB was approved by:

Title	Chief Operations Officer	Airworthiness Manager
Name	Lubor Směřička	Miroslav Koukal
Hand written signature	