

 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
SUBJECT:	Installation of GTX 335 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 GTX 335 transponder with mode S that meets the FAA requirements on ADS-B OUT capability after January 1, 2020. Therefore, Garmin GTX 335 1090-MHz ADS-B transponder with the inner GPS module and the WAAS - GA35 antenna is to be installed instead of the original transponder with mode C or S to meet the requirement.

GTX 335 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 manhours

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:

GTX 335	1.22 A
GTX 320	1,67 A
GTX 327	1,83 A
GTX 328	3,1 A

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REFERENCES:

N/A

PUBLICATIONS AFFECTED:

POH (updated POH will be provided by the airplane manufacturer on request and against charge)
 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	DRAWING / NOMENCLATURE	Pieces
1	Console	CX0215L	1
2	Console	CX0215P	1
3	Angle	CX0216L	1
4	Angle	CX0216P	1
6	GTX 335/GPS Transponder - STANDARD KIT	010-01214-41	1
7	GPS GA35 Antenna	013-00235-00	1
10	Screw with half round head and cross groove	MS35206-244	2
11	Screw with countersunk head and cross groove	MS24693-S48	12
15	Washer	AN960-8L	14
16	Self-locking nut	MS21083N08	14

COSTS:

To be covered by the aircraft owner.

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, remove the central panel and continue with actions from point 8 below.**

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If the original transponder is installed in the left instrument panel, remove the left panel and continue with actions from point 31 below.

Variant with the original transponder installed in the central instrument panel

8. Disconnect the GTX 320 / 327 / 328 wiring from the aircraft wiring system.
9. Determine the respective variant of the original transponder installation according to the Figures 1 – 7. Dismantle the original transponder GTX320 / 327 / 328 / 330 from the instrument panel.
10. Dismantle the GPS unit from the central instrument panel and disconnect it from the aircraft wiring system.
11. Dismantle the original COM radio or NAV / COM radio KY97A / SL30 / SL40 / GNC255 from the original mounting rack.
12. Install the GTX 335 mounting rack P/N 115-01771-01 (see position 6 in the 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 the Figures below) or by using new holders ordered according to the respective variant.
13. Use the fasteners for installation as per the respective Figures and the Table 1.
14. Determine the altitude source of the original transponder - see Table 2. Depending on the altitude source, produce the wiring according to the wiring diagram – see Figure 8.
15. Install the GPS back into the central instrument panel using the original fasteners.
16. Install NAV/COM - KY97A / SL30 / SL40 / GNC255 into the central instrument panel by inserting it into the mounting rack.
17. Install the GTX 335 Transponder with WAAS GPS into the mounting rack (it will connect automatically).
18. Install the GPS GA35 antenna according to the Figure 9.
19. Connect the GA35 antenna to the GTX 335 transponder by coaxial cable made according to the wiring diagram – see Figure 8.
20. Connect the aircraft wiring to the NAV/COM KY97A / SL30 / SL40 / GNC255.
21. Change the value of the circuit breaker / fuse of the transponder to the value of 3A. Perform also description of the prescribed value of the circuit breaker/fuse.
22. Connect the aircraft battery terminals.
23. Switch on the GTX 335 transponder with GPS and perform the setup to required parameters according to the GTX 335 Installation Manual IM 190-01499-02, Rev. 1, May 2015.
24. Perform functional check of the HF part and ADS-B OUT mode of the GTX 335 transponder with GPS using IFR6000 tester.
25. Install the engine lower cowling (see the CR-MM-1-0-00, the latest revision).
26. 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).
27. 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).

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28. Install the engine upper cowling (see the CR-MM-1-0-00, the latest revision).
29. Perform the check of communication protocol by verifying that the aircraft modified according to this service bulletin is visible to other aircraft equipped with ADS-B IN system. For correct display, see Figure 10.
30. Complete the aircraft records (log book) to reflect compliance with this service bulletin. Send a written information on due execution of this Service Bulletin (including relevant details, as may be required) to the airplane manufacturer or to its authorized partner with a request for providing updated POH for the respective aircraft. Such updated POH will be worked out and supplied against extra charge.

Variant with the original transponder installed in the left instrument panel

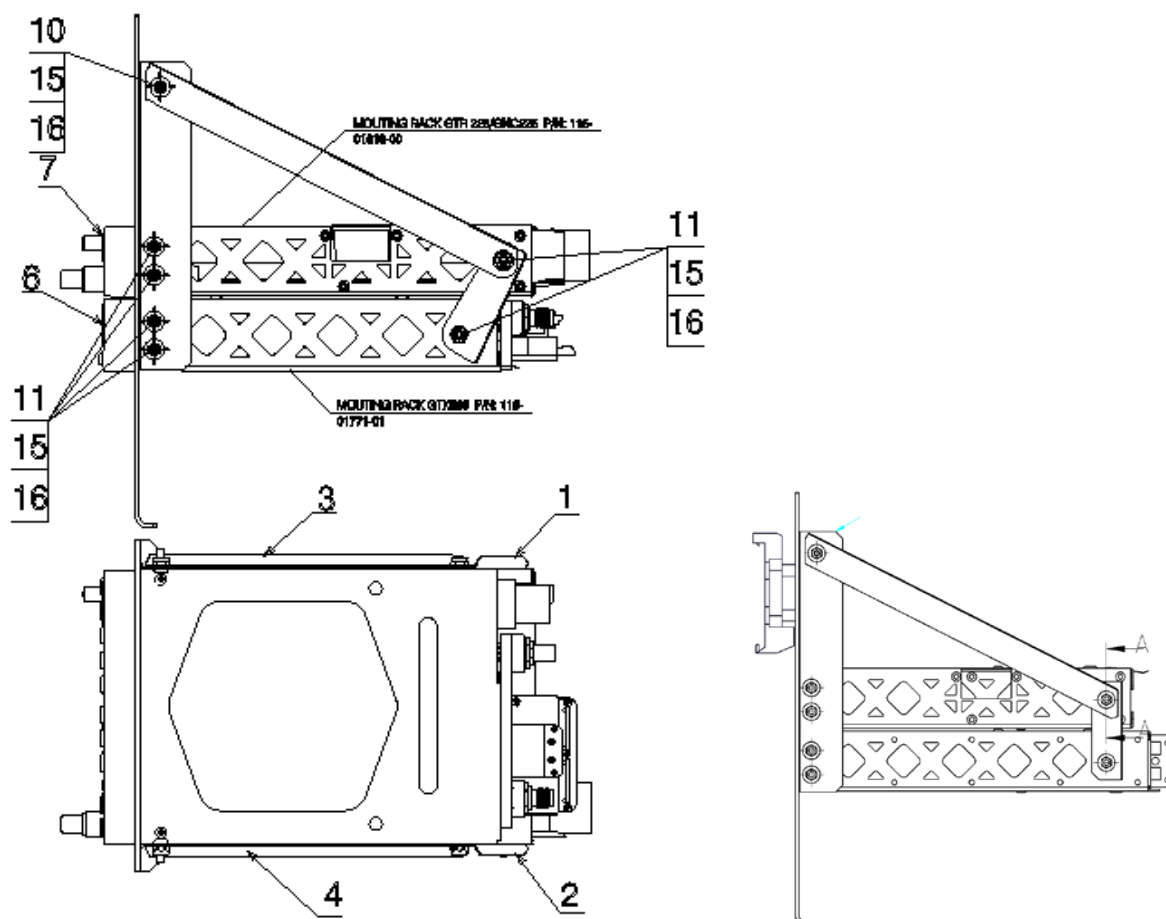
31. Dismantle the original GTX320 / 327 / 328 / 330 transponder from the left instrument panel – see Figure 13.
32. Modify the console on the left instrument panel by drilling the hole of 4 mm diameter according to the Figure 14.
33. Install the mounting rack for the GTX 335 transponder into the modified console on the left instrument panel.
34. Determine the altitude source of the original transponder - see Table 2. Depending on the altitude source, produce the wiring according to the wiring diagram – see Figure 8.
35. Install the GTX 335 Transponder with WAAS GPS into the mounting rack (it will connect automatically).
36. Install the GPS antenna GA35 according to the Figure 9.
37. Connect the GA35 antenna to the GTX 335 transponder by coaxial cable made according to the wiring diagram – see Figure 8.
38. Perform functional check of the HF part and ADS-B OUT mode of the GTX 335 transponder with GPS using IFR6000 tester.
39. Perform the check of communication protocol by verifying that the aircraft modified according to this service bulletin is visible to other aircraft equipped with ADS-B IN system. For correct display see Figure 10.
40. Complete the aircraft records (log book) to reflect compliance with this service bulletin. Send a written information on due execution of this Service Bulletin (including relevant details, as may be required) to the airplane manufacturer or to its authorized partner with a request for providing updated POH for the respective aircraft. Such updated POH will be worked out and supplied against extra charge.



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Figures 1-7 show possible variants of the original / new transponder installation into the central instrument panel

Figure 1 - Installation of the GTX 335 Transponder and NAV/COM GNC255 into the central instrument panel



Installation of the original
transponder

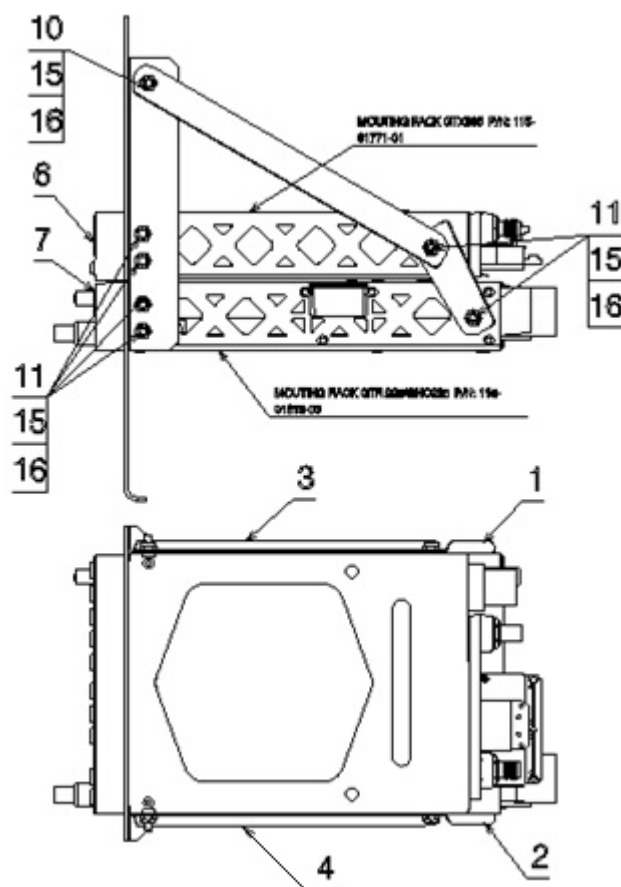
Additional instructions to this variant:

1. Exchange the original transponder GTX328 or GTX330
2. Leave the original angles - pos. 3,4
3. Use the new angles - pos. 1, 2 (CX0216L,P).
4. Use the fasteners according to the Table 1



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Figure 2 - Installation of the GTX 335 Transponder and NAV/COM GNC255 into the central instrument panel



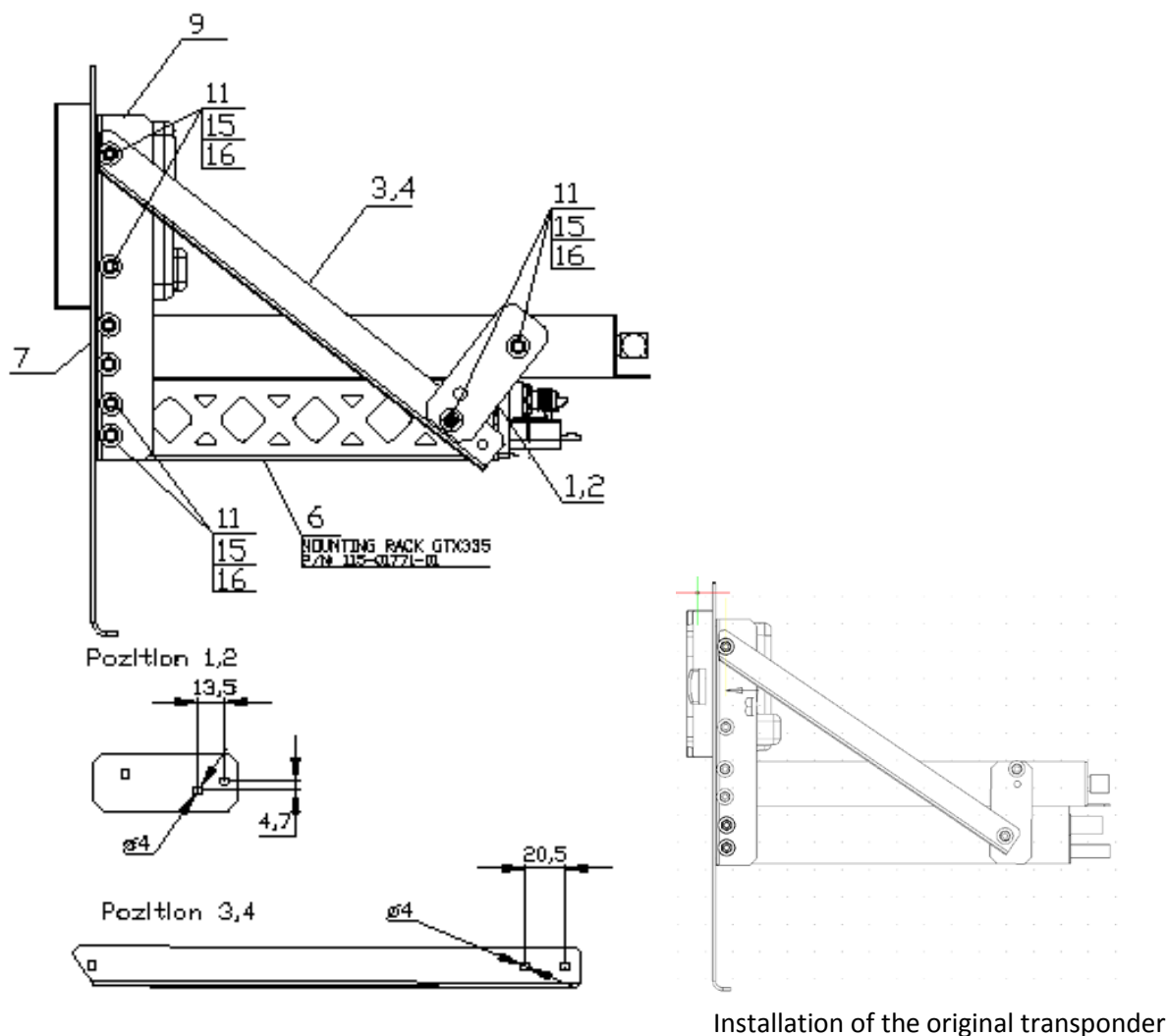
Additional instructions to this variant:

1. Exchange the original transponder GTX327 or GTX320
2. Use the new angles pos. 3, 4 (CX0215L,P).
3. Use the new angles pos. 1, 2 (CX0216L,P).
4. Use the fasteners according to the Table 1.



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Figure 3 - Installation of the GTX 335 Transponder and NAV/COM (SL30 / SL40) into the central instrument panel



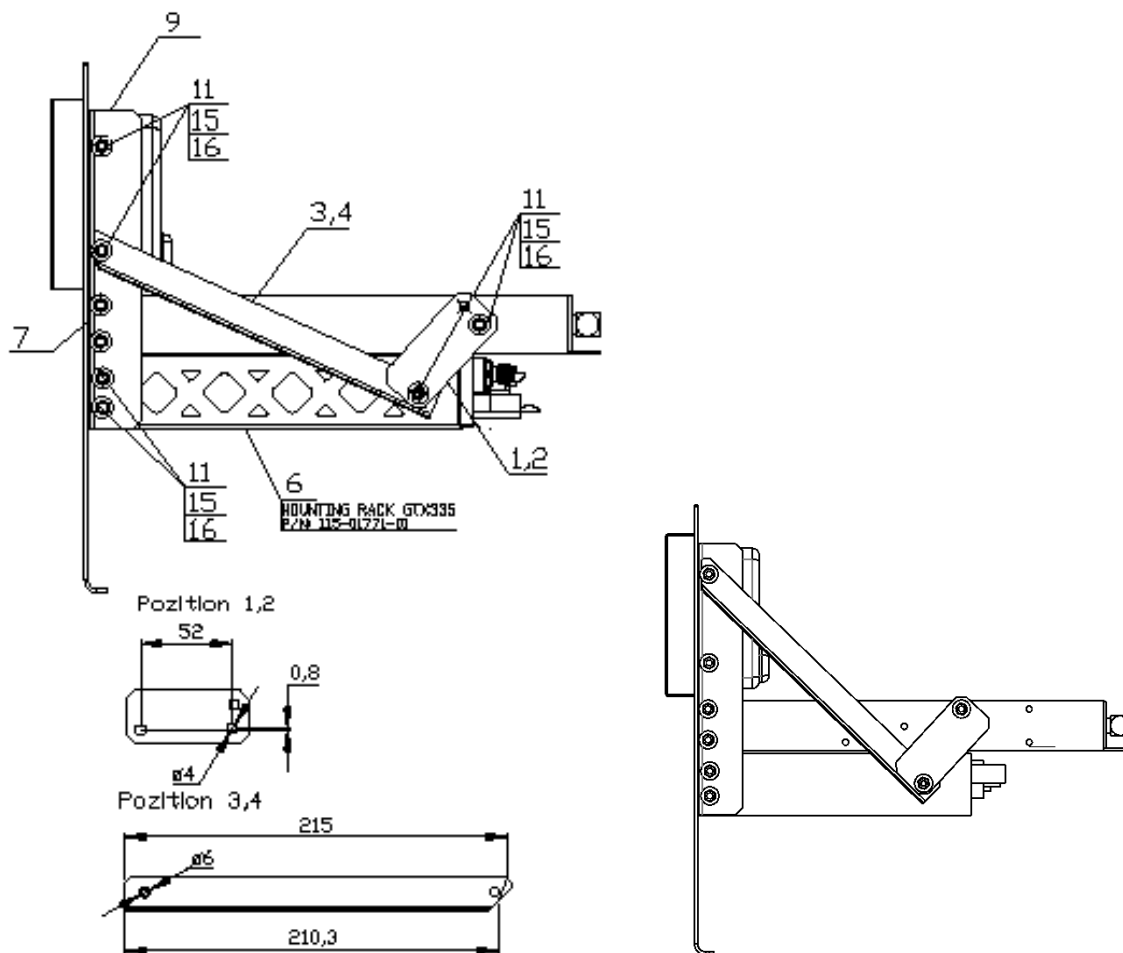
Additional instructions to this variant:

1. Exchange the original transponder GTX330 or GTX328
2. It is possible to use the original angles pos. 1, 2, 3, 4 after drilling new holes (diameter 4 mm) according to the sketches above.
3. Use the fasteners according to the Table 1.



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Figure 4 - Installation of the GTX 335 Transponder and NAV/COM (SL30 / SL40) into the central instrument panel



Installation of the original transponder

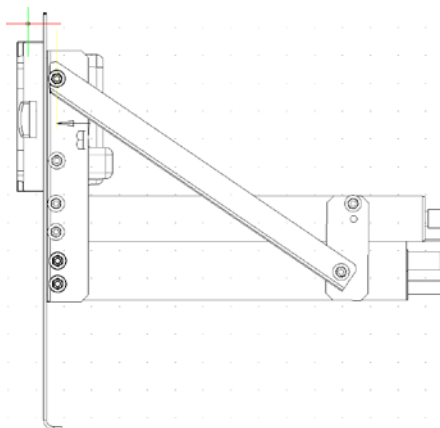
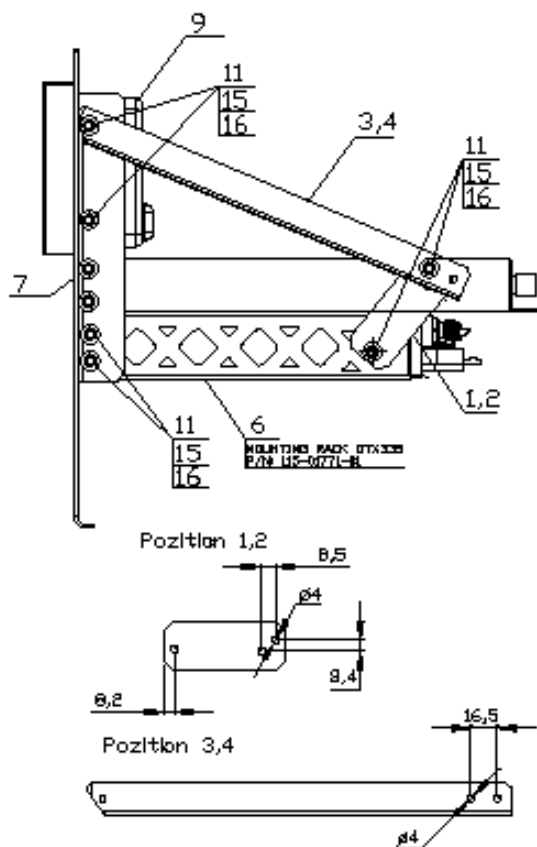
Additional instructions to this variant:

1. Exchange the original transponder GTX320 or GTX327
2. It is possible to use the original angles pos. 1, 2, 3, 4 after drilling new holes according to the sketches above. Angle pos. 1, 2: new holes of 4 mm diameter; angle pos. 3, 4: original holes of 6 mm diameter.
3. Use the fasteners according to the Table 1.



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Figure 5 - Installation of the GTX 335 Transponder and NAV/COM (SL30 / SL40) into the central instrument panel



Installation of the original transponder

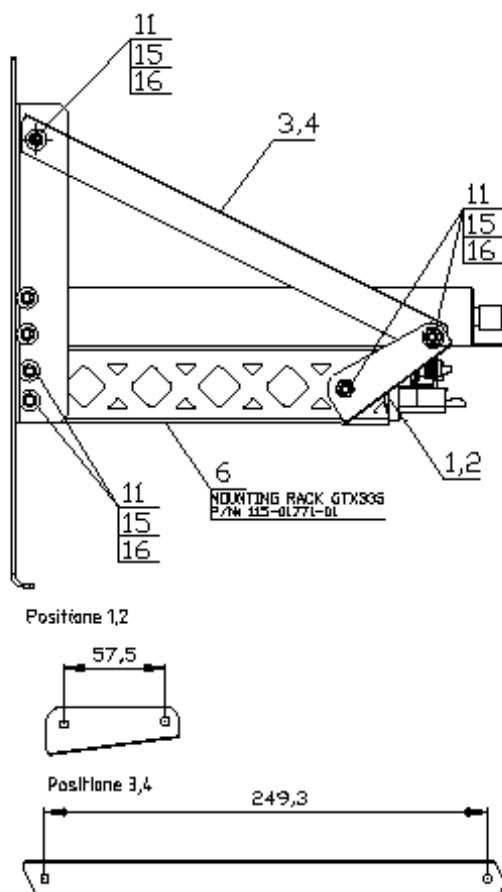
Additional instructions to this variant:

1. Exchange the original transponder GTX320 or GTX327.
2. It is possible to use the original angles pos. 1, 2, 3, 4 after drilling new holes of 4 mm diameter according to the sketches above.
3. Use the fasteners according to the Table 1.



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Figure 6 - Installation of the GTX 335 Transponder and NAV/COM (KY97A) into the central instrument panel

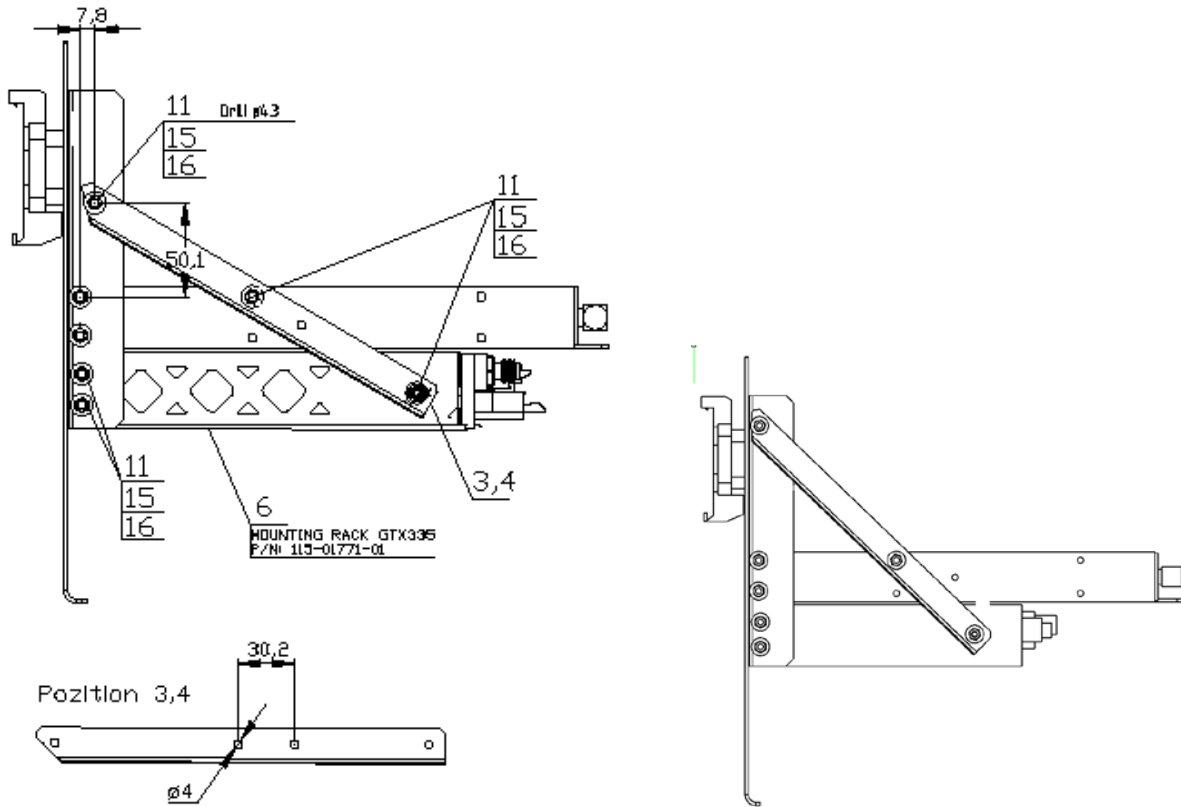


Additional instructions to this variant:

1. Exchange the original transponder GTX320 / GTX327 / GTX328
2. It is necessary to use new angles pos. 1, 2, 3, 4 according to sketches above and the Figure 11 (angle pos. 1, 2) and the Figure 12 (angle pos. 3, 4).
3. Use the fasteners according to the Table 1.

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Figure 7 - Installation of the GTX 335 Transponder and NAV/COM (SL30 / SL40) into the central instrument panel



Installation of the original transponder

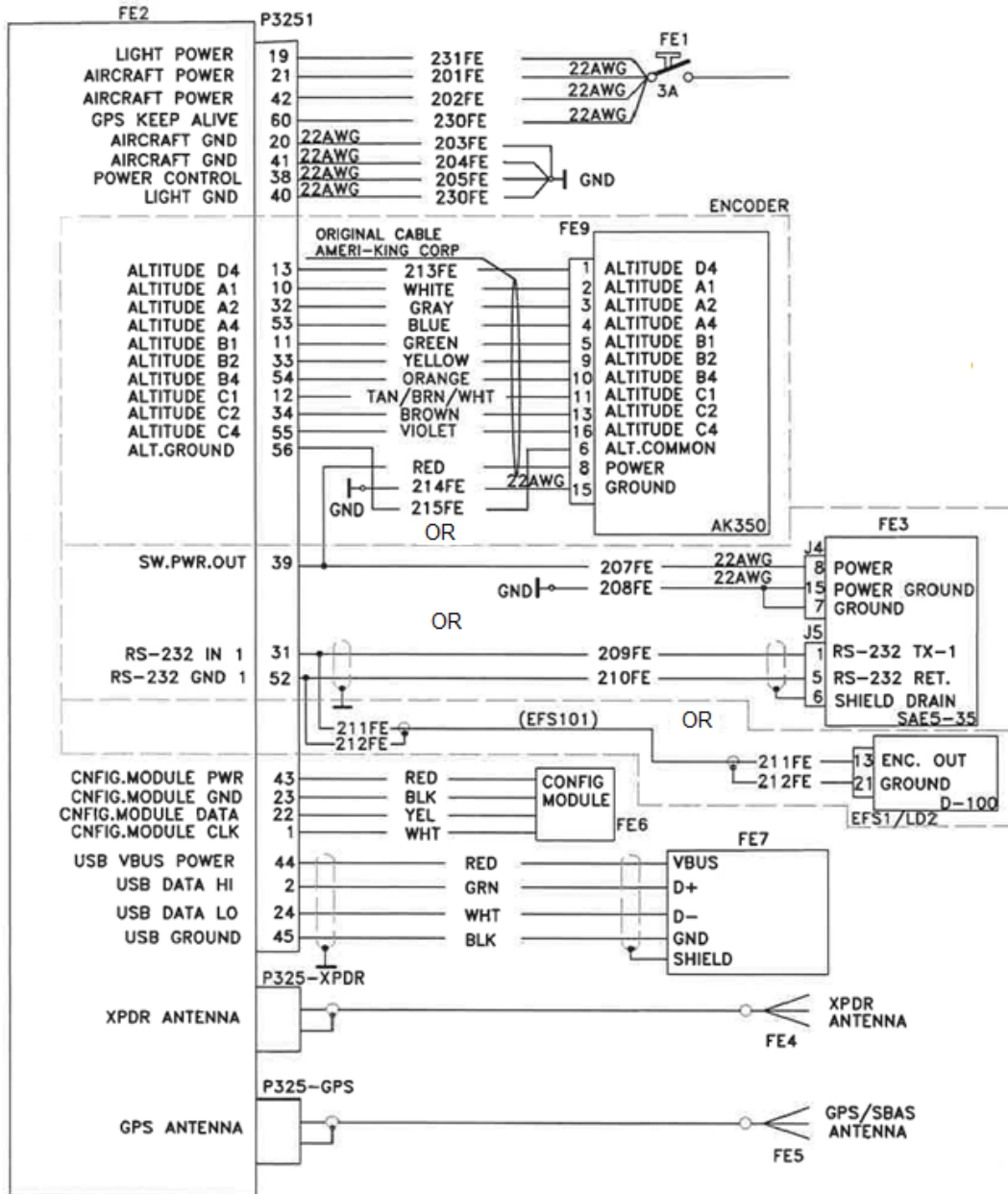
Additional instructions to this variant:

1. Exchange the original transponder GTX320 or GTX327
2. It is possible to use the original angles pos. 3, 4 after drilling new holes according to the sketches above.
3. Drill the holes with 4 mm diameter in the angles pos. 3, 4 according to the sketches above.
4. Use the fasteners according to the Table 1.



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Figure 8 Wiring diagram of the GTX 335 Transponder



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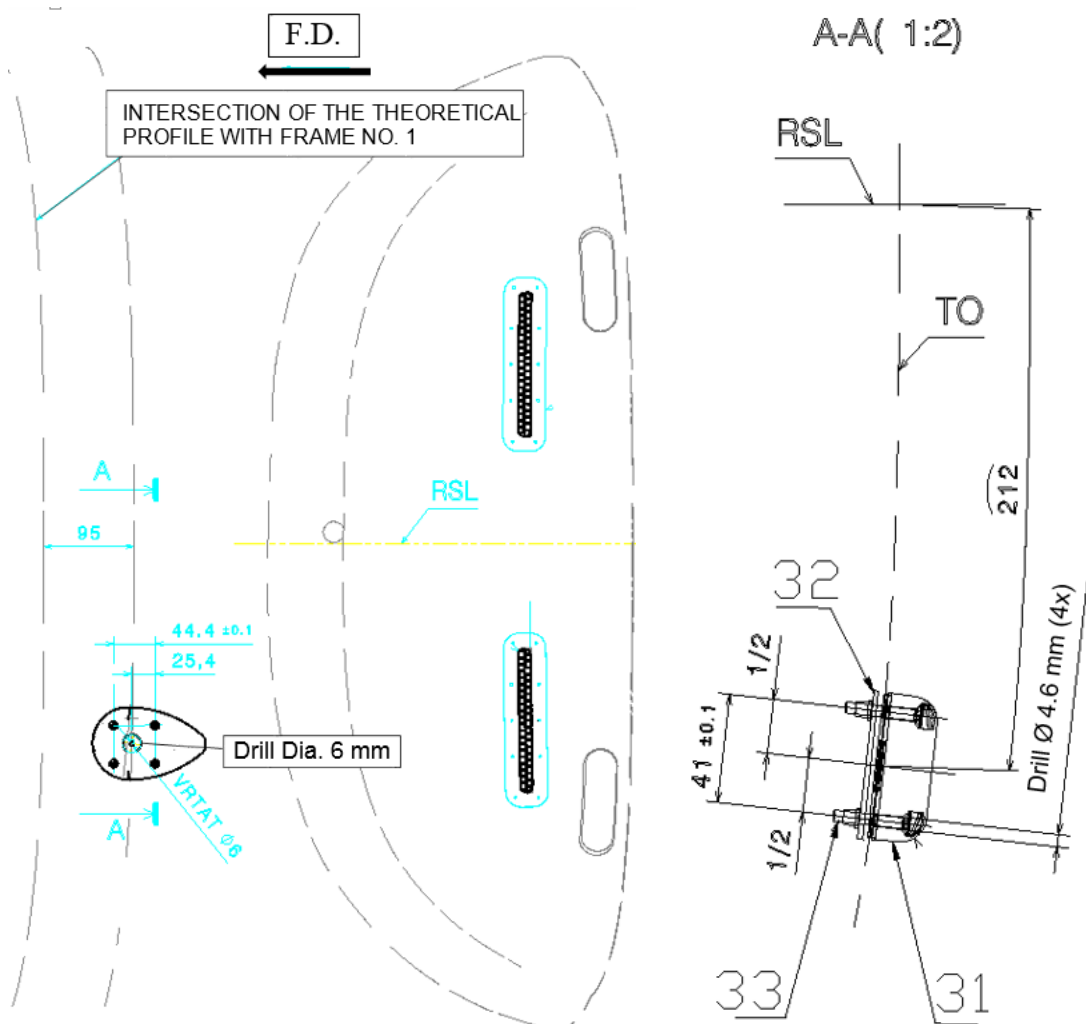
Table 2 - Table of wires

Wire No.:	Starts from:	Goes to:	Note:
	GTX 335		
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 GA35 (CX0217N) antenna



ITEM	NAME	DRAWING / NOMENCLATURE	Pcs
31	ANTENNA GPS/WAAS GA35	6202GP20	1
32	SHEET METAL SUBASSY	CI0158N	1
33	BOLT ISO7047-M4x25-A2	3111X426	4

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





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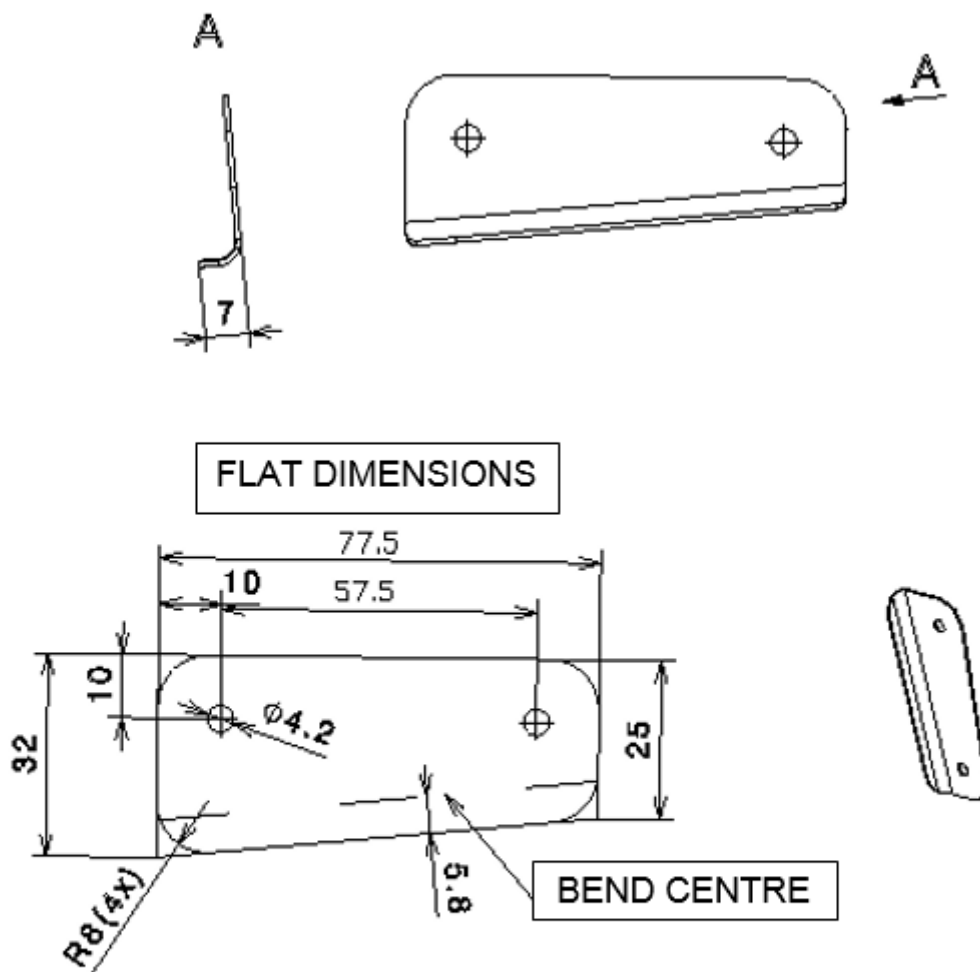
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Figure 11 - Angle pos. 1, 2 for variant with NAV/COM KY97A



Inner bend radius R3

Drawn the left part, the right part – mirrored

Material: Sheet metal P0,032"- 78 x 32, AMS-QQ-A-250/11



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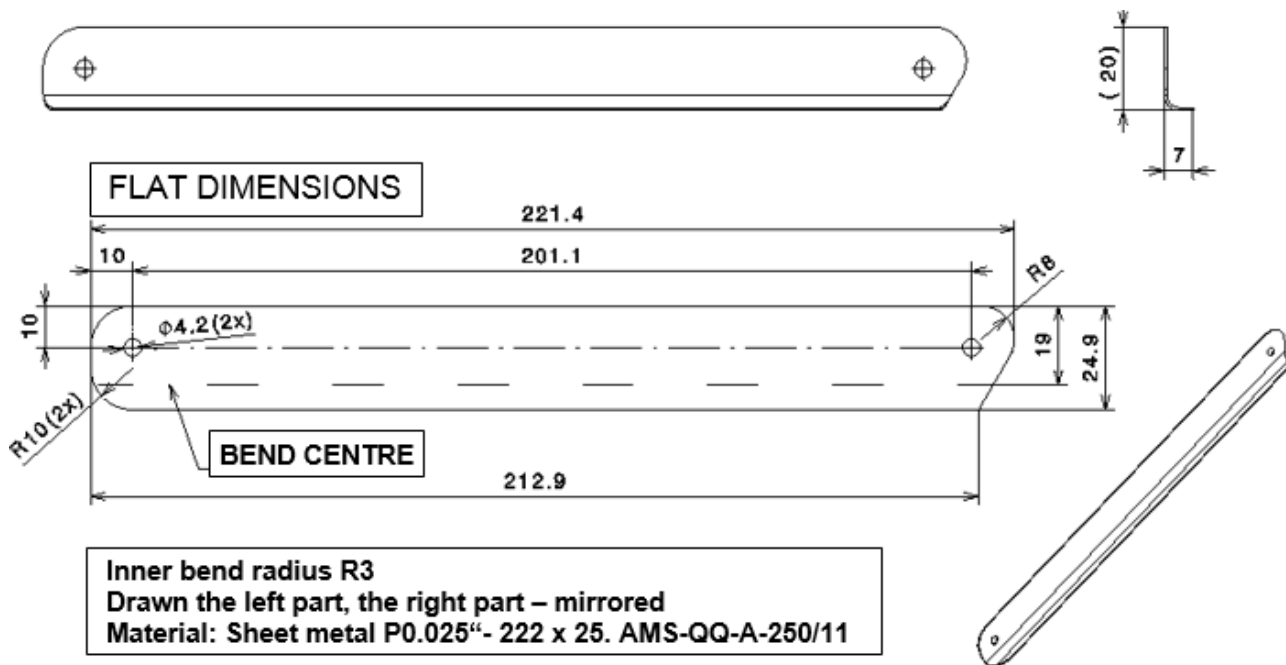
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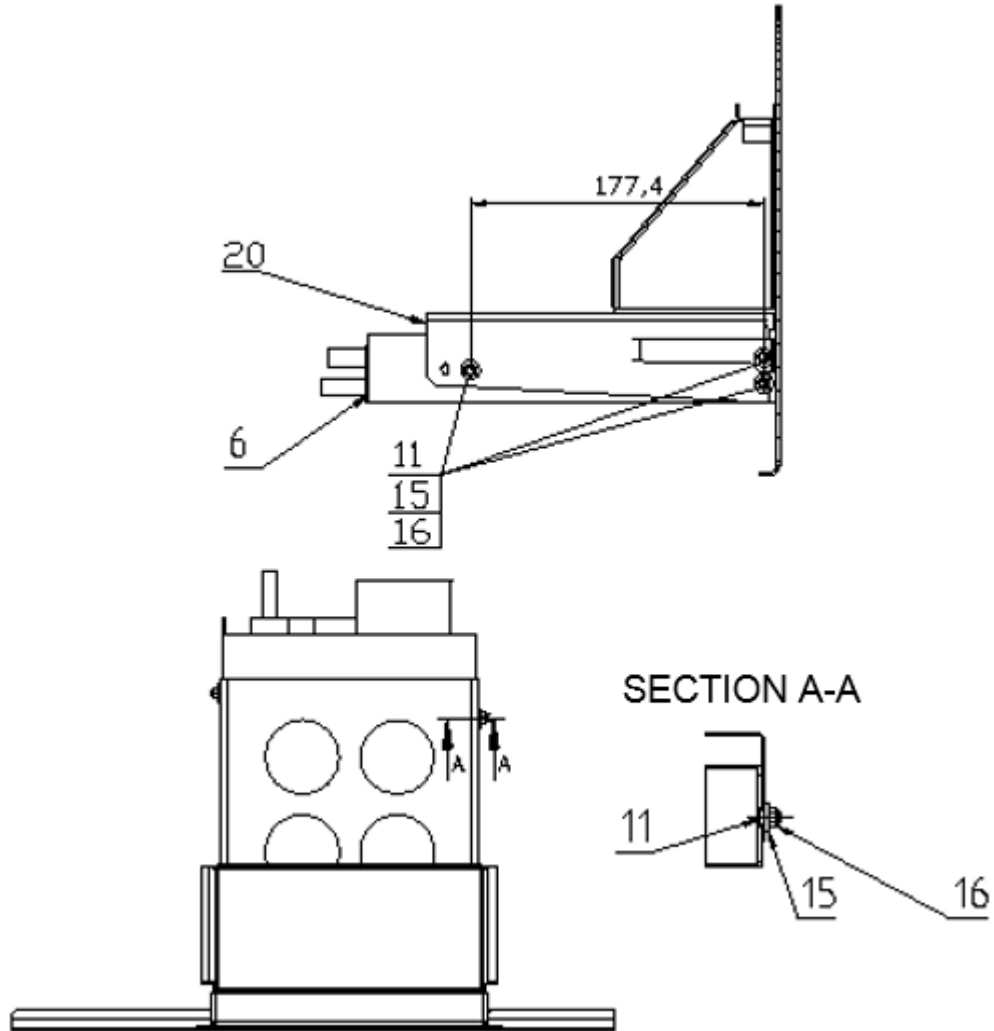
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Figure 12 - Angle pos. 3, 4 for variant with NAV/COM KY97A



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Figure 13 - Installation of GTX 335 Transponder on the left instrument panel



Additional instructions to this variant:

1. Exchange the original transponder GTX328 or GTX330
2. It is possible to use the original console pos. 20 after drilling new holes according to the Figure 14, right on the left instrument panel
3. Use the fasteners according to the table below.

ITEM	NAME	DRAWING / NOMENCLATURE	Pcs
6	TRANSPONDER GTX 335	6702GTX10	1
11	BOLT	M4X12 DIN 965	6
15	WASHER	4 mm DIN6798A	6
16	NUT	M4 DIN 934	6
20	CONSOLE GTX 328	SI0118N	1



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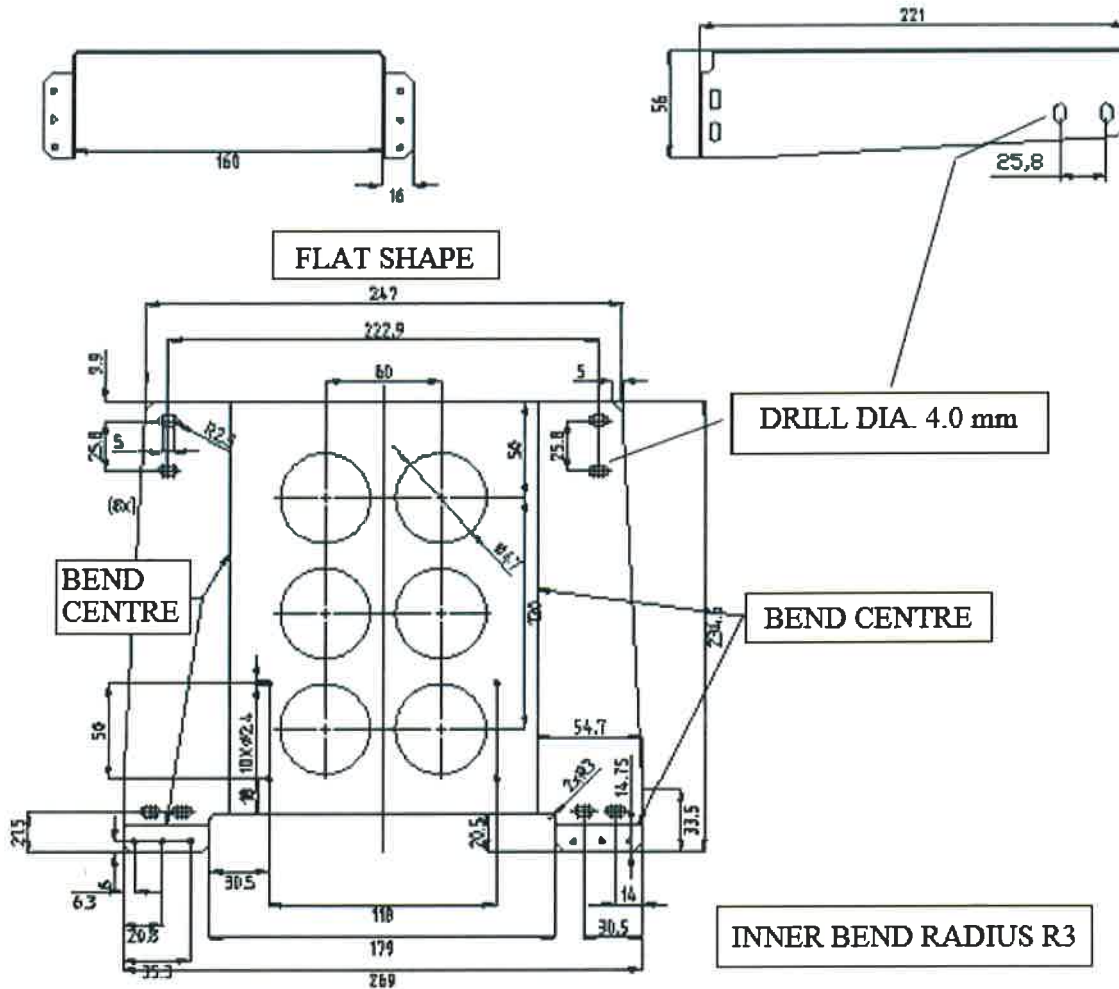
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Figure 14 - Modification of transponder holder for GTX 335 installation on the left instrument panel



APPROVAL:

This SB was approved by:

Title	Head of the Design Organisation	Airworthiness Manager
Name	Jiří Konečný	Miroslav Koukal
Hand written signature		