Working instruction No. 1 for TN DG-G-08
Installation of 406 MHZ ELT in DG sailplanes and motorgliders

Caution: The normal antennas supplied with 406 MHZ ELTs need a ground plane if not screwed to a metal aircraft. The radius of such ground plane should be the same as the length of the antenna (approx 600 mm). Such installation is impossible in most sailplanes and motorgliders. Thus special antennas are required. Possible antennas and favourable installation positions for ELTs and antennas are given in this working instruction.
All ELTs must be mounted with the actuation direction in parallel to the longitudinal axis of the aircraft.

1. **ELT installation on the baggage compartment floor:**
   Fix the ELT mounting tray with 4 bolts M5 securely 4 washer 5.3 and 4 nuts M5, (respectively for Ameri King AK-451 4 counter head screws M3, washers 3,2 and nuts M3) to one of the 2 baggage compartment floors.
   DG-500 and DG-1000S with optional enlarged baggage compartment (top, behind the spar ends) it is also possible to mount the ELT to the floor of this baggage compartment.
   Install the remote control in the instrument panel or in the right hand side-console.
   Run the wiring below the right hand side-console through one of the existing tubes.

a) **Installation of ELT Kannad 406 Compact or Kannad AF Integra 406 GPS ELT**:
   It is possible to mount this ELT as well in DG-single-seaters as in DG two-seaters on the baggage compartment floor in front of the spars.
   It is preferable to use the small mounting tray S18840502-01. Also however the universal mounting tray S18840502-02 may be used and shortened at the rear end to a total length of 157 mm.

Note: It is not possible to install an oxygen bottle in the baggage compartment of DG-500M, DG-500MB or DG-1000M with this installation

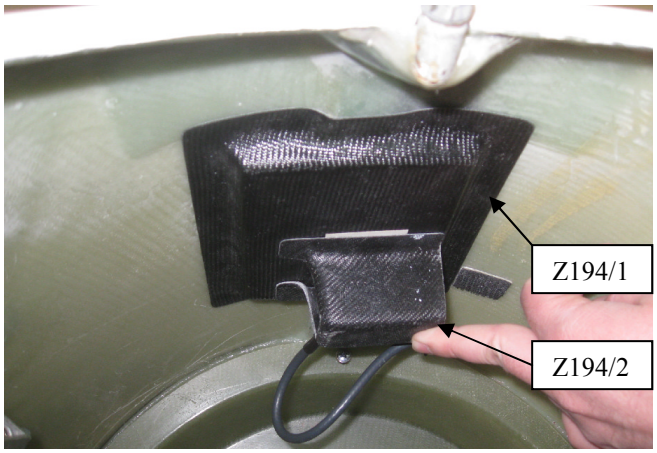


b) **Installation of ELT Artex ME406:**
   The installation is similar to the Kannad ELT installation
   As the Artex is longer than the Kannad, it can't be mounted in DG two-seaters on the baggage compartment floor in front of the spars.

c) **Installation of ELT ACK E-04:**
   This ELT may be mounted with the mounting tray supplied by ACK only in DG-500 and DG-1000S with optional enlarged baggage compartment (top, behind the spar ends) on the floor of that compartment, as this ELT is too long for the other mounting positions.
   Please pay attention to the notes for ELT ACK E-04, see section 4 of this instruction.

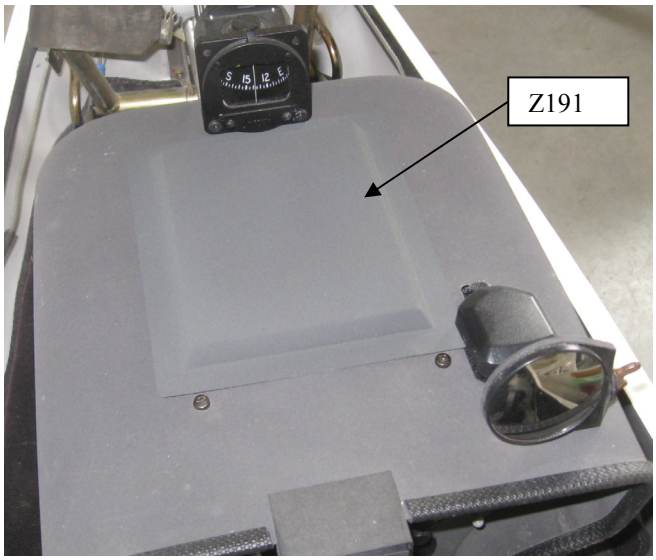
d) **Installation of ELT Ameri-King AK-451**
The installation is similar to the Kannad ELT installation however with counter head screws M3, washers 3,2 and nuts M3

e) **Installation of the antenna BD3 in the bagage compartment:**
Only possible in fuselages not constructed from carbon-fibre.
The antenna assy. Z194 (incl. BD3 and antenna wire) must be installed at the top of the baggage compartment (glued with epoxy resin/hardener thickened with cotton-flocks) to the fuselage shell.



Caution There should be no solar panel above the antenna as this will reduce the antenna performance.

f) **Installation of the antenna BD3 in the instrument panel:**
Necessary with carbon fibre fuselage and/or solar panel above the baggage compartment.



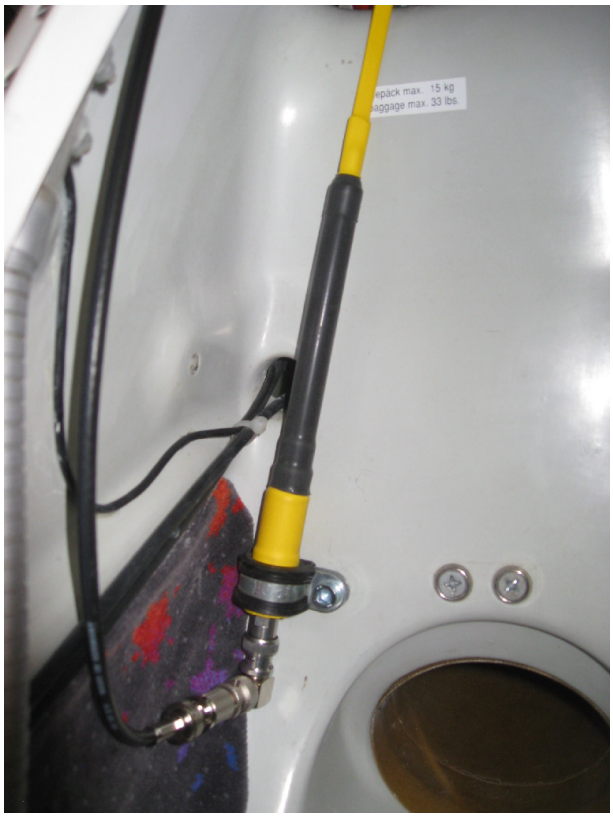
DG single-seaters: The antenna assy. Z191 (incl. BD3 and antenna wire) must be installed on top of the instrument panel cover (glued with epoxy resin/hardener thickened with cotton-flocks). Drill a dia. 10 mm hole for the coil connection first.
Connect the coil and rotate it into the area given on drawing Z191.

DG two-seaters: Installation according to drawing Z193.



Caution: Make sure that the antenna cable is installed loose (in waves) so that it can elongate in case of damage to the fuselage and won't be torn off or cut by sharp edges of a broken composite part.

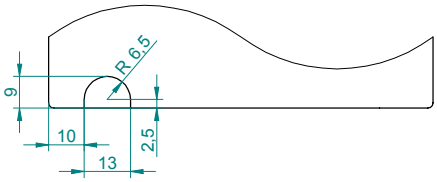
g) **Installation of a „portable antenna“**
(only sailplanes)
Instead of an antenna BD3 a „portable antenna“, if available for the ELT Type, may be installed in DG sailplanes.
Drill a dia. ∅ 6 mm hole into the front main bulkhead approx. 30 mm right abeam the right hand thread for the oxygen bottle holder. Fix the antenna with a hose clamp with rubber-sleeve DIN 3016, 20-15 and a bolt M6x20 DIN912-8.8zn + washer 6,4 DIN9021 St zn (below nut) + self-locking nut M6 DIN985-8 zn. Shorten the antenna cable as far as useful. Connect the wire to the antenna with a BNC elbow plug and a HF-adapter BNC.

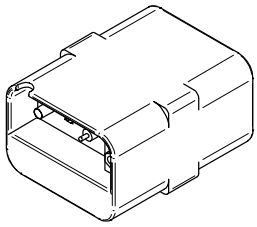


Note: „portable antennas“ are available for the Kannad, Artex and the for Ameri King ELTs, see material list.

2. **Installation of the ELT in the baggage compartment with a „portable antenna“ mounted directly at the ELT** (only DG-500 and DG-1000)
   a)Installation of ELT Kannad 406 Compact or Kannad AF Integra 406 GPS ELT with Kannad Whip antenna ANT 100 (BNC) P/N 0124206: The installation should be as far as possible to the fuselage centre on one of the floors. Connect the antenna with a BNC elbow plug to the ELT. Otherwise follow the instructions for ELT and remote control installation as given under 1. a).

   b) **Installation of ELT AK-451**
   The installation is similar to the Kannad ELT, but with bolts M3 and washer 3.2. Furthermore a notch for the antenna has to be made, as shown in the following drawing.







Caution There should be no solar panel above the antenna as this will reduce the antenna performance.

Note: Other types of ELTs can’t be installed at this position as they are too long.
Installation in DG single-seaters is not possible as the fuselages are not high enough for the antenna.

3. **Installation of the ELT at the upper side of the baggage compartment**
   Place the ELT mounting tray at the right hand fuselage wall above the spar ends so far up and back that the main pin handle can be rotated up to the fuselage wall without interfering with the ELT.
   Install the remote control in the instrument panel or in the right hand side-console.
   Run the wiring below the right hand side-console through one of the existing tubes.
   As no antenna can be installed directly at the ELT a special antenna Type BD3 must

be installed according to section 1. d) or 1. e). Instead of an antenna BD3 a „portable antenna“, if available for the ELT Type, may be installed in DG sailplanes according to section 1. f).

a) **Installation of the ELT Kannad 406 Compact and the ELT Artex ME406:**
The ELT mounting tray must be fixed with 4 GFRP holders (with thread M4, part no. 5RU130) which must be glued to the fuselage wall. Bolt the parts 5RU130 to the 4 most outside mounting holes of the mounting tray. Grind the gluing surfaces of 5RU130 and at the fuselage and glue the parts with resin/hardener mixed with cotton-flocks to the fuselage wall.

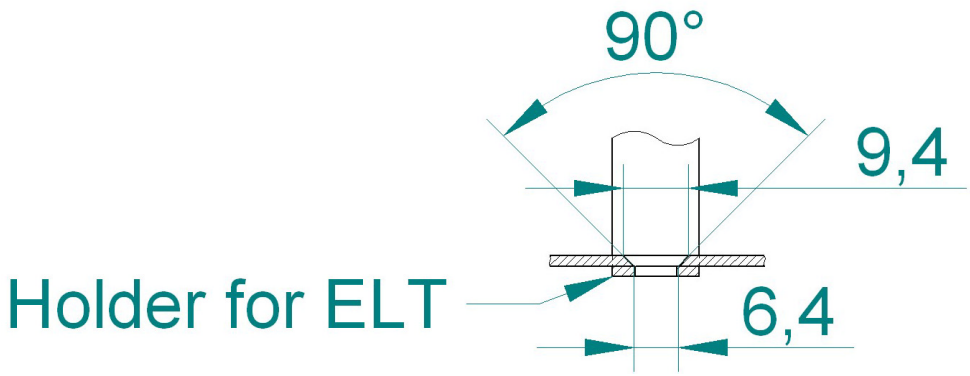


b) **Installation of the ELT ACK E-04:**
The mounting tray delivered by ACK is not suitable for this installation. A CFRP mounting tray Z67/1 must be glued over the full surface with resin/hardener mixed with cotton-flocks to the fuselage wall. Grind the gluing surfaces of Z67/1 and at the fuselage.
The ELT must be fixed in the mounting tray with 2 fixing brackets Z67/2, each of them fixed with 2 bolts M5x10 DIN933-8.8 zn and washers 5,3 DIN125 St zn. Secure the bolts with Loctite 243.

Note: The mounting tray is the same as for ELT ACK E-01 (see installation plan 8EP38 for single-seaters and 5EP50 for two-seaters). Installations already existing may be used for the new ELT.
Please pay attention to the information for ELT ACK E-04, see section 4 of this instruction.

c) Installation of the ELT AK-451:

The installation is similar to the Kannad 406 Compact ELT, but before bolt down ELT mounting with the GFK mounting, several drillings in the ELT mounting and the Holder for ELT have to be done, like shown in the drawing.



4. Note and cautionary advice for ACK E-04 ELT and Ameri King AK-451

a) Note for ACK E-04 ELT: The installation of an ACK E-04 only makes sense if an ELT ACK E-01 (same size) was already installed. Otherwise installation of other ELTs is much easier.

Caution for ACK E04: The remote control and the Audio alert unit of the ACK E-04 (in the wiring between remote control and ELT) must be installed in the instrument panel or in the right hand side console in the front cockpit.
It is necessary to provide openings for the sound of the "audio alert unit" in the instrument panel cover or in the side console, e.g. several holes dia. 5 mm.

b) Caution for AK-451:

The remote control and the Audio alert unit of the AK-451 (the Audio alert unit wiring is connected to the remote control via a T-connector) must be installed in the instrument panel.

5. Notes for all 406 MHZ ELT installations

Info: 406 MHZ ELTs transmit a country code (e.g. 038 for Germany) and the ser. No. of the ELT. These features will be checked by the electronics inspector.
The ELT must be registered to assign this data to the aircraft and to send messages.

Caution: After installation, a functional check and inspection must be performed by a licensed electronics inspector.

The ELT must be switched off during ground transport

Caution: To be able to use the ELT outside the aircraft after an accident a „portable antenna" should be carried on board.
An ELT installation with a „portable antenna", if possible, is therefore the cheapest alternative.

6. Material

In addition to the material delivered with the ELT (mounting tray, remote control, wiring) the following material will be needed:

Installation according to	Number of items	Designation
1. a), 1. b), 1 c), 2.	4	bolts M5x16 DIN 912-8.8 zn
1. a), 1. b), 1 c), 2.	4	self-locking nuts M5 DIN985-8 zn
1. a), 1. b), 1 c), 2.	4	washers 5,3 DIN9021 St zn
1. d), 2. b)	4	countersunk head screw M3x12 DIN 963-4.8 zn
1. d), 2. b)	4	self-locking nuts M3 DIN 985-8 zn
1. d), 2.b)	6	washer 3,2 DIN9021 St zn
1. e)	1	antenna assy. Z194 (incl. antenna BD3 and antenna wire)
1. f) DG single-seaters:	1	drawing Z191
1. f) DG single-seaters:	1	antenna assy. Z191 (incl. antenna BD3 and antenna wire)
1. f) DG two-seaters:	1	drawing Z193 with material given on the drawing
1. g)	1	HF-adapter BNC
1. g), 2.	1	Kannad Whip antenna ANT 100 (BNC) P/N 0124206 or „portable antenna 110-775“ for Artex ME406 or portable whip antenna model 451017-4S for Ameri-King Ak-451
1. g), 2.	1	BNC elbow plug
1. g)	1	NORMA-hose clamp with rubber sleeve, DIN 3016, 20-15, width 15 mm
1. g)	1	bolt M6x20 DIN912-8.8zn
1. g)	1	washer 6,4 DIN9021 St zn
1. g)	1	self-locking nut M6 DIN982-8 zn
1. g).	1	HF-adapter BNC
3. a) + c)	4	5RU130 GFK holder with thread M4
3. a) + c)	4	bolt M4x16 DIN 912-8.8 zn
3. b)	1	mounting tray Z67/1
3. b)	2	fixing brackets Z67/2
3. b)	4	bolts M5x10 DIN933-8.8 zn
3. b)	4	washers 5,3 DIN125 St zn
3. c)	6	washers 4,3 DIN125 St zn
3. a) + b) + c)		Epoxy resin/hardener and cotton flocks according to repair manual
all	diverse	Cable ties (Ty-raps)

Revision	**Modification**	**day**	**Name**
1	installation of Ameri-King AK-451 added	01.12.12	Hiesinger
2	Designation corrected Ameri-King portable whip antenna model 451017-4S	5.03.2013	W. Dirks