



# Becker SAR DF 517 Training

# Introduction



- Task: Become better acquainted with the Becker DF
- Conditions: Given checklist and classroom environment with handouts
- Standards: Implement proper DF techniques utilizing Becker DF
- Background: Currently all new CAP aircraft from the factory will come equipped with the Becker, and over 1/5<sup>th</sup> of the national fleet already have them

# Becker SAR DF 517 System Components



Two Primary components

Control-Display Unit (CDU)



Antenna-Receiver Unit (ARU)

# Becker SAR DF-517



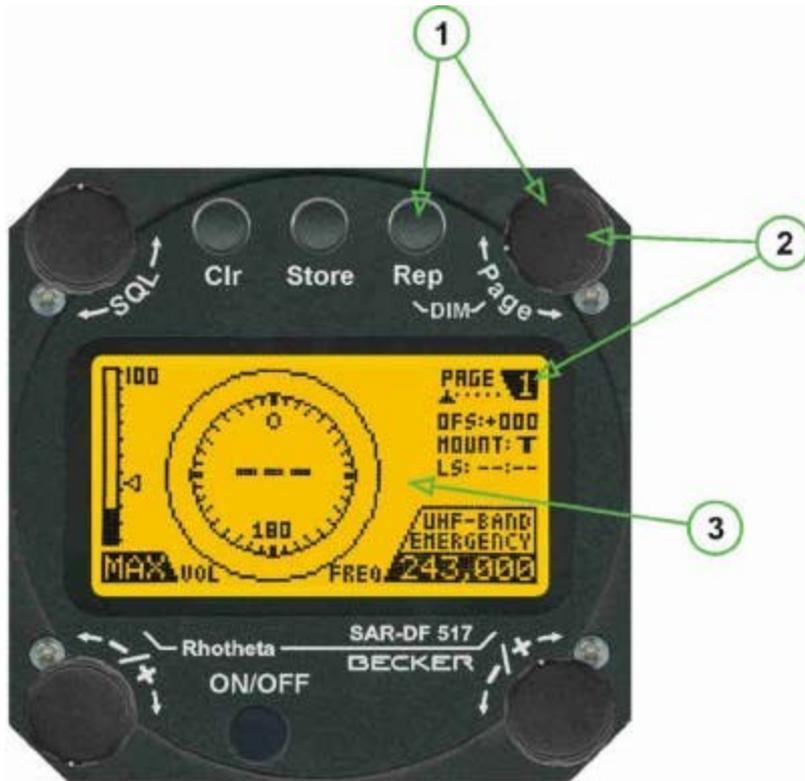
- The Becker SAR DF-517 is an automatic direction finder. It supports 121.5, 243 and 406 MHz frequencies
- The DF unit will display a bearing relative to the nose of the aircraft for signals received
- There are two sets of frequencies that may be selected. These are Emergency Mode or Training Mode frequencies
- The Emergency Mode or Training Mode can only be selected at power up

# Power Up



- If your aircraft is equipped with Mission Master it must be on for DF to operate
- On power up (1), verify Emergency or Training mode. To change the setting, turn the page dial (2) and select the appropriate mode (3). Note: this option is only available for the first 10 seconds of power up – then the system automatically cycles into the function selected

# Initial Setup



- The Page dial (2) is used to switch the DF-517 between the different pages
- By holding the Rep button and rotating the page dial (1) the brightness can be adjusted

# DF-517 DFing



- Select the desired frequency to DF by using the bottom right rotary dial (1) to select the desired preprogrammed frequency
- Use the volume (2) rotary dial to set the volume level
- Once the desired frequency is selected, use the SQL (3) dial to select the squelch level

# DF-517 DFing cont.



- According to the manufacturer DF signal can be heard by selecting the ADF monitor toggle on the audio panel
  - This of course begs the question...”What if your aircraft is not equipped with ADF?”
- DFing is done using Page 1 or Page 2
- Page 1 displays a full circle with the signal and bearing in 360°
- Page 2 displays a 90° window with the relative bearing and signal

# DF-517 DFing cont.



## DF-517 Page 1 Display

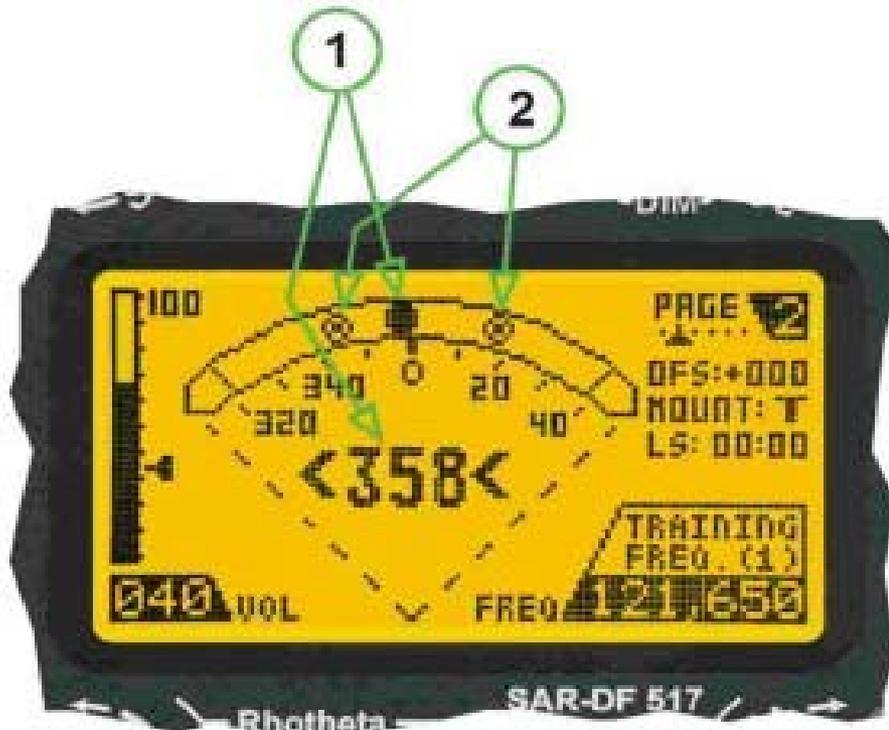


- (1) The signal and relative bearing
- (3) Signal Strength
- (4) Squelch level
- Tracking frequency 406.025 in Emergency mode
- Note that to DF a signal, the squelch level must be below the maximum signal strength

# DF-517 DFing cont.



## DF-517 Page 2 Display



- (1) Signal level and relative bearing
- (2) Position error
- Tracking Freq.  
121.775 in Training Mode for CAP (not .650 as was default with original systems)

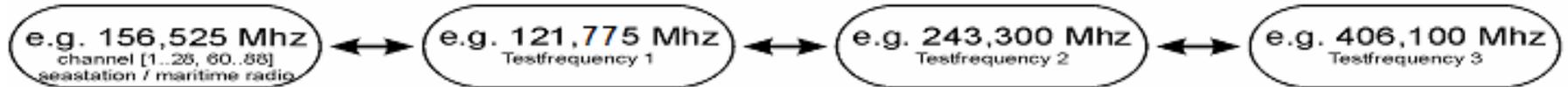
# DF-517 frequencies



Mode: **Emergency** (all international emergency/distress frequencies)

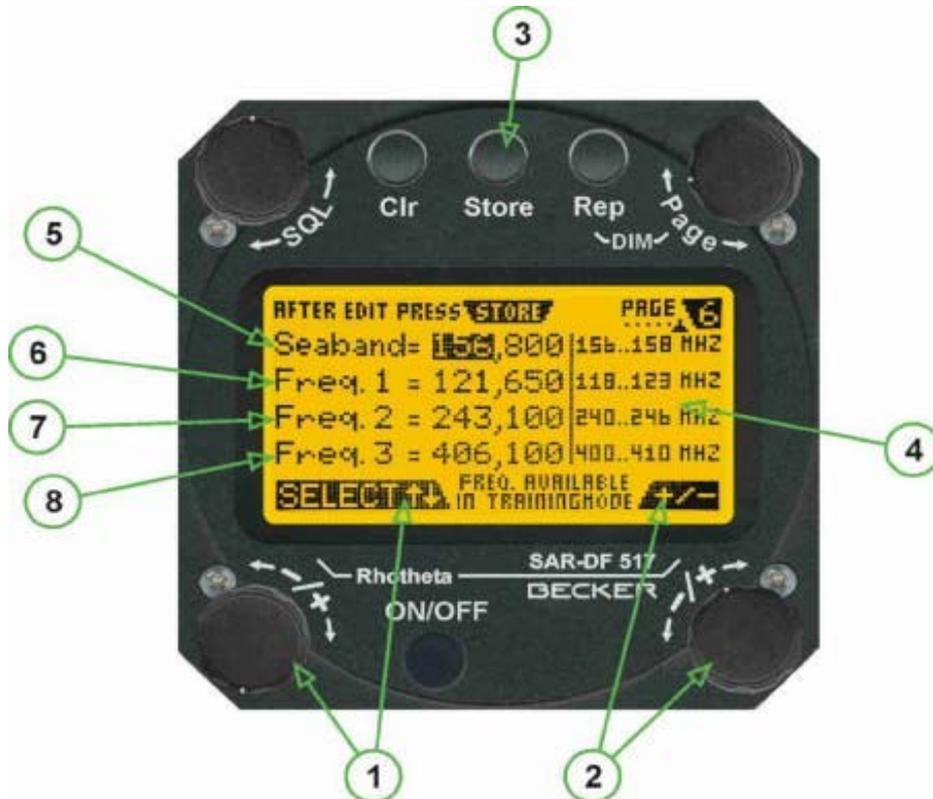


Mode: **Training** (with free adjustable test/trainings-frequencies)



# DF-517

## Adjusting Frequencies



- Page 6 enables you to adjust the training frequencies
- **(1)**  $\text{>}\pm\text{Select}\text{<}$  rotary switch selecting the trainings-frequency (MHz/kHz)
- **(2)**  $\text{>}\pm\text{<}$  rotary switch changing the frequency. Confirm the changed value by pressing pushbutton  $\text{>STORE}\text{<}$
- **(3)**  $\text{>STORE}\text{<}$  Pushbutton to confirm changed values

# DF-517



- The backlight is controlled by adjusting the top panel light adjustment and setting the annunciator panel switch in the “Night” position
- Additional information on the Becker DF-517 can be found in the manual
- Link at: [http://www.becker-avionics.de/666571\\_C\\_Images/ImgProductsUSA/ProductsUSAPDF/ACF564.pdf](http://www.becker-avionics.de/666571_C_Images/ImgProductsUSA/ProductsUSAPDF/ACF564.pdf)

# Operation

## Power-On and operation modes emergency or training

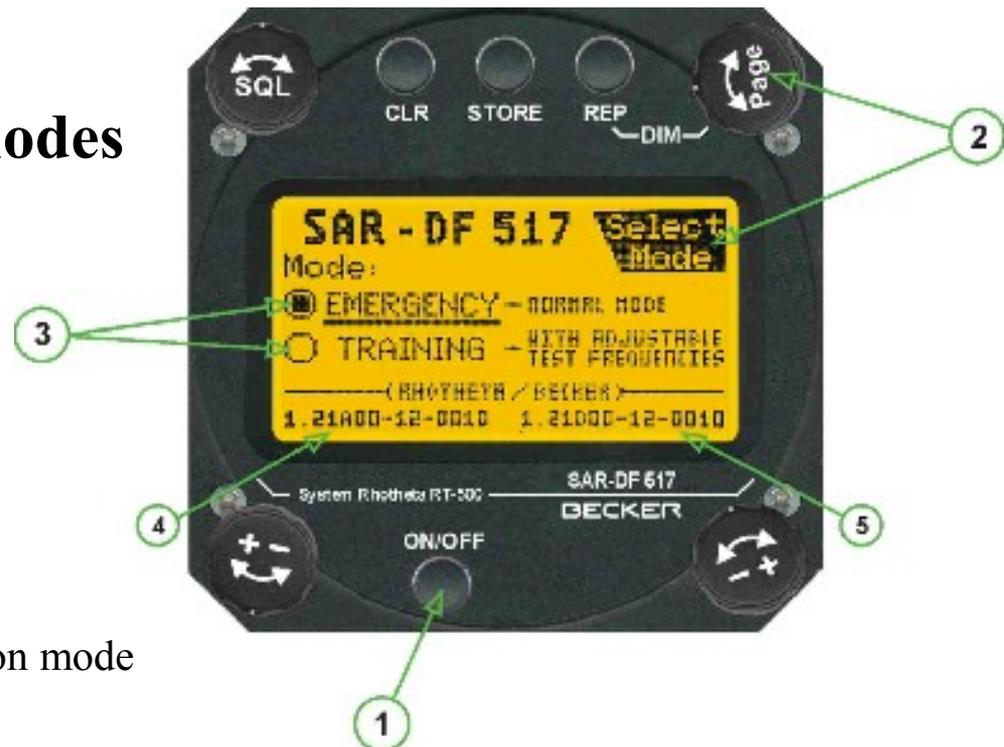
(1) ON/OFF

(2) PAGE

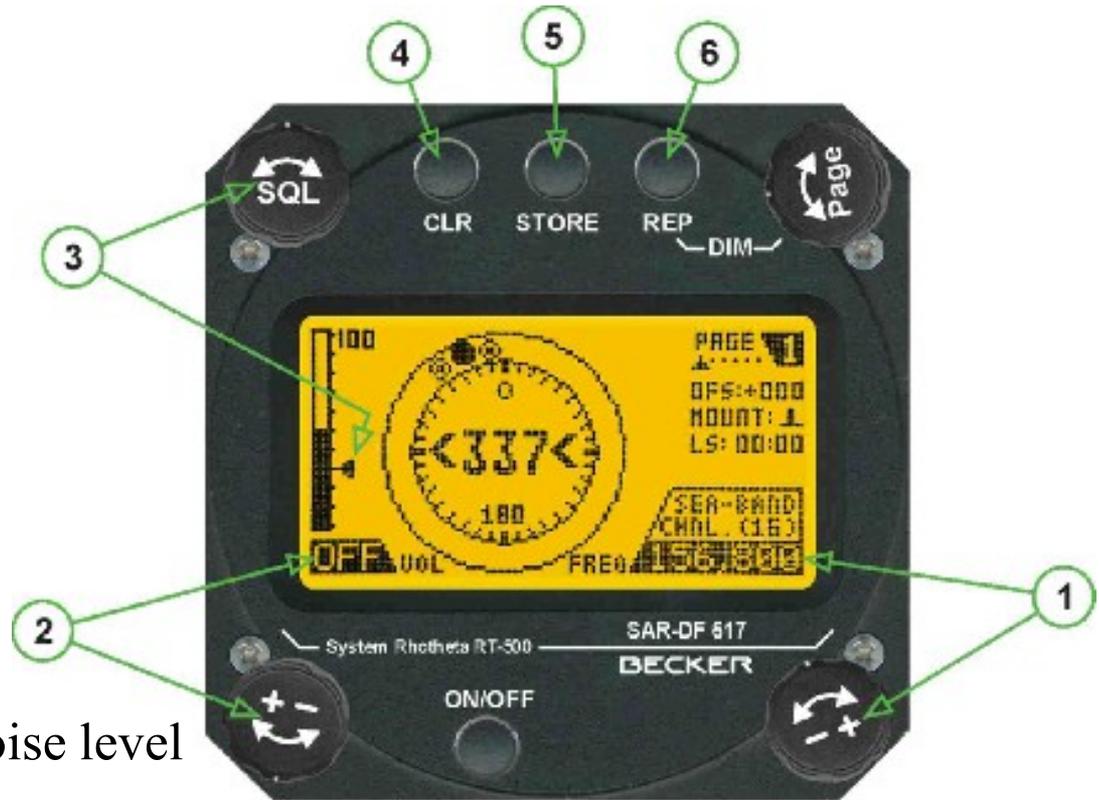
(3) MODE Indication of the actual operation mode

(4) ARU Version Software version and serial number of antenna-receiver Unit

(5) CDU Version Software version and serial number of control-display Unit



# Bearing mode (pages 1 to 3)



(1) FREQUENCY Selected

(2) VOLUME

(3) SQL Should be above the noise level

(4) CLR For erasing the stored bearing value

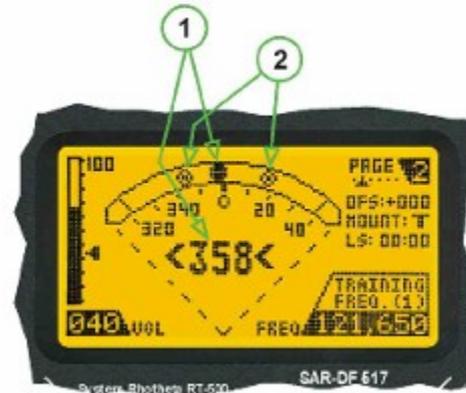
(5) STORE While bearing an AM signal a 3 kHz sound is superimposed to the audio signal for technical reasons

(6) REPEAT Displays the last valid bearing value with the corresponding receive level

# Display Readings



*Page 1: 360° bearing*



*Page 2: expanded 90°*



*Page 3: bearing text*

## (1) Bearing value

(2) **Spread** Maximum deviation of unaveraged bearing. Good bearing results even with a spread of 45° as a result of the averaging procedure

(3) **Receive level** Field strength

(4) **Squelch level** Squelch level must be above the noise level without a received signal

(5) **Offset** Corrects for antenna alignment (adjusted in the edit-menu)

(6) **Mounting** TOP mounted or BOTTOM mounted antenna

(7) **LS: ---:---** Internal timer (LS meaning last signal) indicating the time since the last signal was received, displayed in min /sec

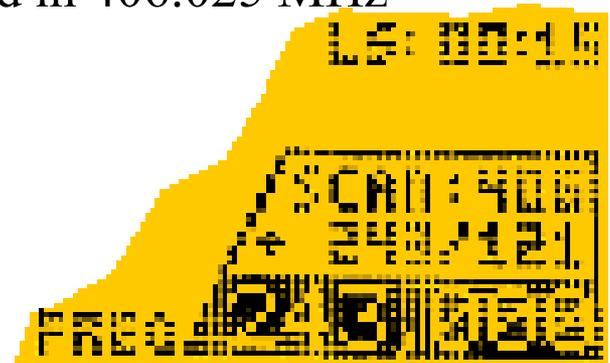
# Using the SCAN mode while bearing COSPAS/SARSAT signals

The COSPAS/SARSAT signal on 406,025 MHz is only transmitted every 50 sec (Pulse length of 400ms)

The scanning mode is possible with frequencies 406,025MHz or 121,500/243,000MHz or the matching training frequencies

The **LS: ---:---** timer (LS meaning last signal) always displays the time since last COSPAS/SARSAT signal was received in 406.025 MHz

**Frequency displayed in scanning mode**



# Becker Antenna



- Antenna mounted on bottom of aircraft
- Solid one piece unit
- This DF does not use wing null method



# Techniques



- Audio Panel Tip: **Hard to track what you can't hear.** The bar on the left side of the display is a visual Squelch indicator, which **MUST BE SET BELOW THE AMBIENT NOISE LEVEL** for the unit to work. You can see this when the little triangle turns solid
- During regular operations, you can set the squelch above the ambient noise. (Which would alert you if you happen across an ELT, but otherwise not bug you with static noise)

# Techniques



- To hear the ELT access your ADF monitoring on the Comm panel
- Turn the squelch ALL the way down when actively searching
- COSPAS/SARSAT page will display ELT Lat/Long if it is a 406 ELT
- MO can enter Lat/Long in to GPS as waypoint
- When overflying the target, the marble will do a little wiggle, and then rapidly jump down to the bottom of the (360° View) display
- If the Observer recommends a sudden and steep turn to either direction, it's *a good bet* that the wing would be pointing *right at* the target in the turn.

# Techniques



- Becker DF range is not as far as L-Tronics
- Utilize Aircraft comm radios to acquire the ELT signal – remember to have squelch pulled
- Conduct Wing Null – to get general location
- Proceed to Lat/Long of intersection of two Wing Nulls
- Once the Becker acquires the signal the Mission Observer will advise Pilot on course correction so that the bearing on the DCU is 0° or 360°
- Avoid minor corrections
- Once bearing drops off to 180° you just flew over the ELT
- Mark location with GPS



# QUESTIONS?