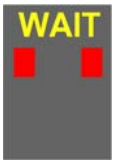
DOCKING GUIDANCE SYSTEM SAFEDOCK

SOCHI, RUSSIA
SOCHI

DOCKING GUIDANCE SYSTEM (SAFEDOCK) (STANDS 23–32)

1. The activation of docking procedure.

Docking procedure shall be activated by pressing one of the buttons, denoting the aircraft type, on the operator's panel. After pressing the button the display will show **WAIT**.



2. Search of the approaching aircraft.

The running arrows on the display show that the system is activated and is in the mode of search for the approaching aircraft.

It is necessary to check the compliance of the aircraft type shown on the display with the actual type of the aircraft. It is necessary to follow along the indicated line of entry.

THE PILOT MUST NOT BRING UP AN AIRCRAFT TO THE AEROBRIDGE UNTIL THE RUNNING ARROWS CHANGE TO THE APPROACH DISTANCE INDICATOR.

3. Guidance of the approaching aircraft.

After the aircraft is fixed by a laser, the running arrow will be replaced by a yellow indicator of the centre line.

Red flashing arrow shows the direction of turn.

Yellow vertical arrow shows the aircraft position relative to the centre line. This indicator shows the correct position and azimuth guidance.

4. Approach distance.

Approach distance is a countdown from a definite distance to the stopping position. A yellow vertical progress bar/centre line indicator is displayed with digital countdown or without it depending on the configuration.

The bar of approach progress characterizes the distance from the stopping position and is formed by a group of rows corresponding to a distance, for example, 0.3m or 0.6m (one row) depending on the configuration requirements. As far as the aircraft is approaching, the rows are gradually switching off (whereas the length of the progress bar is decreasing from bottom to top.) and after switching off the last row only an interval is left to one row, after that the display will show **STOP**.

Digital countdown (variant) represents a distance to the stopping position in a digitized form, for a example, 15, 20 or 30m depending on the configuration requirements.

In case of a digital counting during approach a decrement of another type is used.

An example of digital counting:

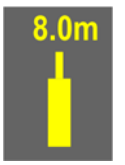
Starting with a decrement of 1m from 20m to 3 m, then with a decrement of 0.2m from 3.0m to 0.2m with subsequent representation of **STOP** on the display.

A figure shows the aircraft advance along the approach distance from the stopping position with a slight deviation to the left of the centre line. Red arrow shows the direction of turn.

Note: Some figures show devices where only the centre line is shown, without digital counting.

5. Centre line alignment (variant).

An aircraft is at the indicated distance from the stopping position. The absence of red arrows indicating the direction means that the aircraft is moving strictly along the centre line.



6. Slowdown (speed reduction).

The SAFEDOCK settings switch on the active area of speed reduction (the optional group of distances from the stopping position which is normally 6-24m), on the basis of the allowed speed of docking (the optional maximum allowed speed which is normally 2 m/s).

Note: The speed of 2 m/s with rounding down to integer values is approximately equal to 7 km/h, 4 miles per hour or 3 knots.

If the aircraft approaches the stopping position at a speed exceeding the allowed value, the system will show **SLOW** on the display as a caution for the pilot.

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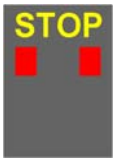
7. Azimuth guidance (variant).

The aircraft is at the indicated distance to the stopping position. The yellow arrow indicates that the aircraft is to the right of the centre line, while the red flashing arrow is indicating the direction of turn.

8. The aircraft is brought to the stopping position.

When the correct stopping position is reached by the aircraft, the display will show **STOP** in a red box or with red indicators.

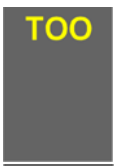


9. Docking on.

When the aircraft is correctly parked, the display will show **OK**.

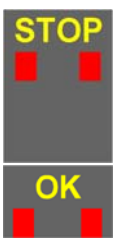
10. Overshooting.

When the aircraft has overshot the stopping position, the display will show **TOO FAR**.



11. Stop short.

When the aircraft is detected as already stopped, but not reached the assigned stopping position, the display will show **STOP OK** (pre-set) in a while.



12. Waiting mode.

If some object blocks the visibility in the direction of approaching aircraft or a laser scanner of the system loses the identified approaching aircraft in the process of docking close to the stopping position, the display will show **WAIT**. Docking of aircraft on the stopping position/stand will be resumed as soon as the system identifies the aircraft again.

THE PILOT MUST NOT BRING UP THE AIRCRAFT TO THE AEROBRIDGE UNTIL THE INDICATION “WAIT” IS CHANGED TO THE SPLIT SHOWING THE APPROACH SPEED.

13. Slowdown (in abnormal situations).

The display can show this indication due to two reasons:

a) Unfavourable weather conditions.

Due to heavy fog, snow or rain the coverage of the docking guidance system can be reduced. In this case when the system is activated and is in the mode of search, the running arrows will be switched off on the display and the text SLOW and the aircraft type will be shown on the display alternately. As soon as the system fixes the approaching aircraft, then a vertical bar, showing the approach speed, will appear.

If the system is configurated as an abbreviated identification system (check of the engine position is switched off), the aircraft symbol will flash to attract the attention.

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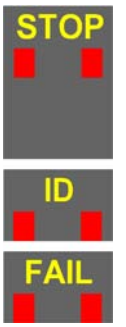
b) The identification of aircraft is lost during docking.

If the identification of aircraft is lost during docking, the display will show **SLOW**. As soon as the system fixes the approaching aircraft, then a vertical bar, showing the approach speed, will appear.

THE PILOT MUST NOT BRING UP THE AIRCRAFT TO THE AEROBRIDGE UNTIL THE SPLIT, SHOWING THE APPROACH SPEED, APPEAR .

14. The aircraft identification failure.



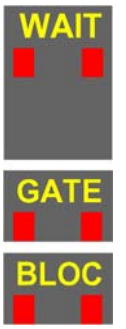
The geometrical parameters of the aircraft are checked during docking on the stand.

T1: If for any reason the aircraft identification is not achieved at 12 m from the stopping position, the display will show **WAIT** and a repeated check will be carried out. If it fails too, the display will show **STOP** and **ID FAIL**.

T2, T3: If for any reason the aircraft identification is not achieved at 12 m or at 40 m from the stopping position, depending on the settings, the display will show **WAIT** and a repeated check will be carried out. If it fails too, the display will show **STOP** and **ID FAIL**. The text will be shown in a successive order in two upper lines of the display.

THE PILOT MUST NOT BRING UP THE AIRCRAFT TO THE AEROBRIDGE WITHOUT GETTING THE INSTRUCTIONS UNTIL THE INDICATION “WAIT” IS CHANGED TO THE SPLIT SHOWING THE APPROACH SPEED.

15. The gate is blocked.



If an object is found which is blocking the field of vision from the gate/apron coverage of the SAFEDOCK system to the planned stopping position of the aircraft, the docking process will be delayed and the display will show **WAIT** and **GATE BLOCK**. The docking process will continue as soon as the blocking object is removed.

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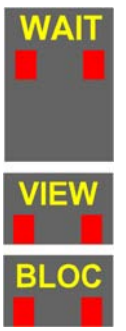
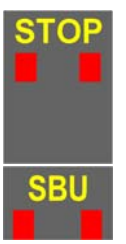
16. The view is blocked.



If the view is blocked in the direction of the approaching aircraft, for example, due to the internal problem of the laser lenses or unclean laser window or another object in the close coverage, the SAFEDOCK system will inform about the condition of the blocked view. As soon as the system restores the ability of scanning through the obstruction, the display will change **WAIT** to the display of the approaching aircraft.

THE PILOT MUST NOT BRING UP THE AIRCRAFT TO THE AEROBRIDGE WITHOUT GETTING THE INSTRUCTIONS UNTIL THE INDICATION “WAIT” IS CHANGED TO THE SPLIT SHOWING THE APPROACH SPEED.

17. SBU stop.



Any errors not subject to correction in the process of docking will lead to SBU (safety back up) mode activation. The display will show **STOP SBU**.

Manual reserve procedure will be used for docking guidance.

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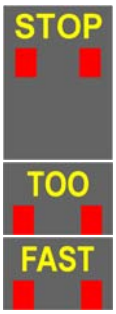
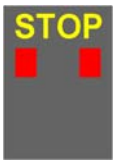
18. Speed is too fast.

If the aircraft approaches at a speed exceeding the abilities of the system, the display will show **STOP TOO FAST**. The docking guidance system must be reset or the docking procedure must be carried out manually under assistance of the instructions.



19. Emergency stop.

After pressing the button of emergency stop, the display will show **STOP**.



20. Chocks on (variant).

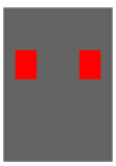
After the ground personnel inserts the chocks under the nose landing gear and the button “Chocks On” on the operator’s panel is pressed, the display will show **CHOC ON**.

21. Error.

When the system error occurs, the display will show **ERR** and the error code.

22. General failure of the system.

In case of the critical system failure, the display will go black, except for red stop indicator. Manual reserve procedures should be carried out for the guidance in the process of docking.



23. Power failure.

The display will go down in case of the power failure. Manual reserve procedures should be carried out for the guidance in the process of docking.