ICAO recommended airport equipment

Approach lighting system

| Aerochart code letter	Description	Aerochart Symbol
A	Precision approach CAT II / III lighting system	
B	Precision approach CAT II / III lighting system	5 lights in a row / Sequenced flashing lights - EFAS -
C	Precision approach CAT I lighting system (Calvert)	
D	Precision approach CAT I lighting system (Barette centre line)	5 lights in a row / Sequenced flashing lights - EFAS -
E	Simple approach lighting system. Single row with roll guidance bars. / Simple approach lighting system. Single row without roll guidance bars.	
F	Simple approach lighting system. Parallel row.	

Change: New

U.S. standard approach lighting system

Used within USA, U.S AFB and countries applying U.S. standard. Standard length is 730m except for systems with code letters K and L.

Aerochart code letter	Description	Aerochart Symbol
G	ALSF-2 Approach Lighting System with Flashing light CAT 2	5 lights in a row / Sequenced flashing lights - EFAS -
H	ALSF-1 Approach Lighting System with Flashing light CAT 1	5 lights in a row / Sequenced flashing lights - EFAS -
I	SSALS Short Simplified Approach Lighting System with Runway alignment indicator / MSALR Medium intensity SALR / SALS Short Approach Light System	Sequenced flashing lights - EFAS - / 5 lights in a row
K	SSALF / SSALS / MALSR / MALF	Sequenced flashing lights - RAIL - / 5 lights in a row
G	ODALS OmniDirectional ALS	Omnidirectional sequence flashing lights - EFAS -

Runway approach End Identification Lights (REIL)

REIL consists of a pair of synchronized flashing lights, one on each side of the runway threshold, directed towards the approach area.
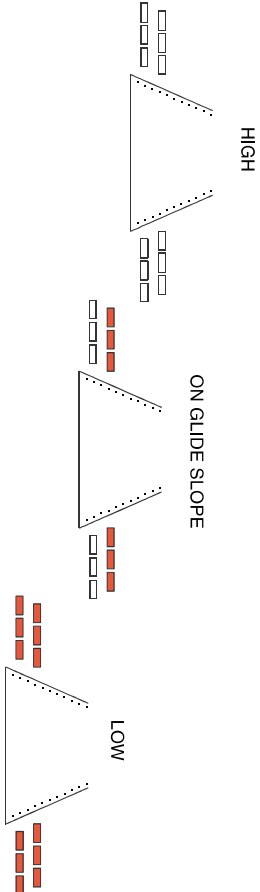

REIL
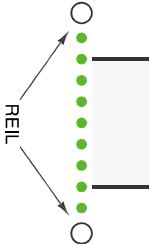
Change: New

2-bar VASIS / AVASIS

The full system comprises twelve units arranged to form two lighted wingbars on each side of the runway and which project white light above the glideslope and red below.
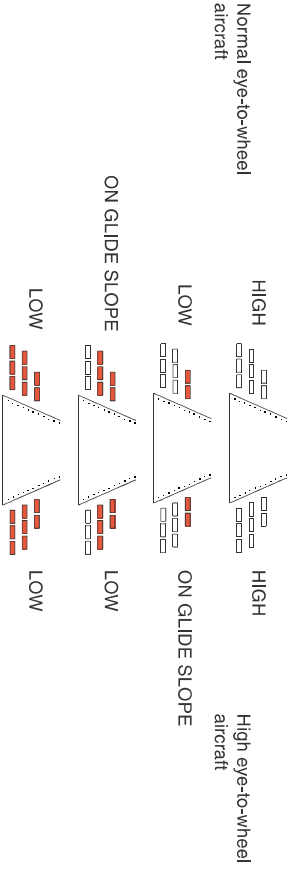
2-bar AVASIS is a system where a reduced number of light units are used for each wingbar either on one or both sides of the runway.

HIGH

ON GLIDE SLOPE

LOW

3-bar VASIS / AVASIS

3-bar VASIS consist of a third additional upper wingbar to a standard VASIS. The light units shall be arranged in such manner that the pilot of an aeroplane may select an approach slope formed by either the lower and middle wingbars, or the middle and upper wingbars. The lower/middle wingbar combination is intended for normal eye-to-wheel height aircrafts (MD80, B737, AB320 etc.) and the middle/upper wingbar combination is intended for high eye-to-wheel height aircrafts (B747, AB340, MD11 etc.).

3-bar AVASIS is a system where a reduced number of light units are used for each wingbar on one or both sides of the runway.

Normal eye-to-wheel aircraft

HIGH

ON GLIDE SLOPE

LOW

LOW

HIGH

ON GLIDE SLOPE

LOW

LOW

High eye-to-wheel aircraft

T-VASIS and AT-VASIS

T-VASIS shall consist of twenty light units symmetrically disposed about the runway centreline in the form of two wing bars of four lights each, with bisecting longitudinal lines of six lights.

AT-VASIS is a T-VASIS installed on one side of the runway only.

Very high

High

Slightly high

On glide path

Low

Very low

Slightly low
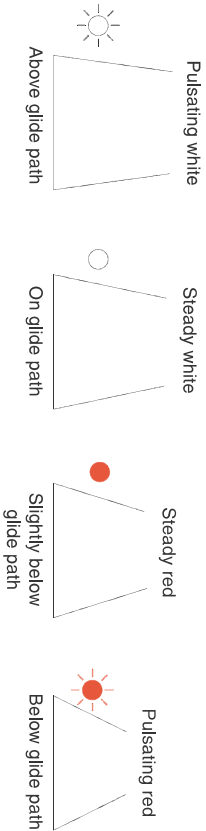
Change: New
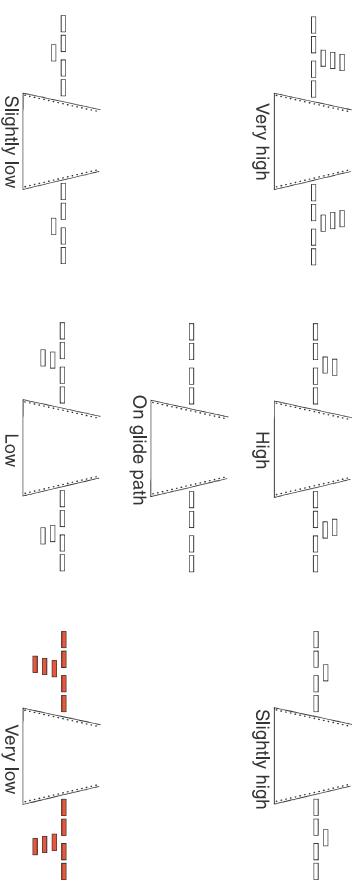
PAPI / APAPI

The PAPI system shall consist of a wing bar of four light units. The system is located on the left side of the runway unless impracticable to do so.

The APAPI system shall consist of a wing bar of two light units. The system is located on the left side of the runway unless impracticable to do so.

High

Slightly low

On glide path
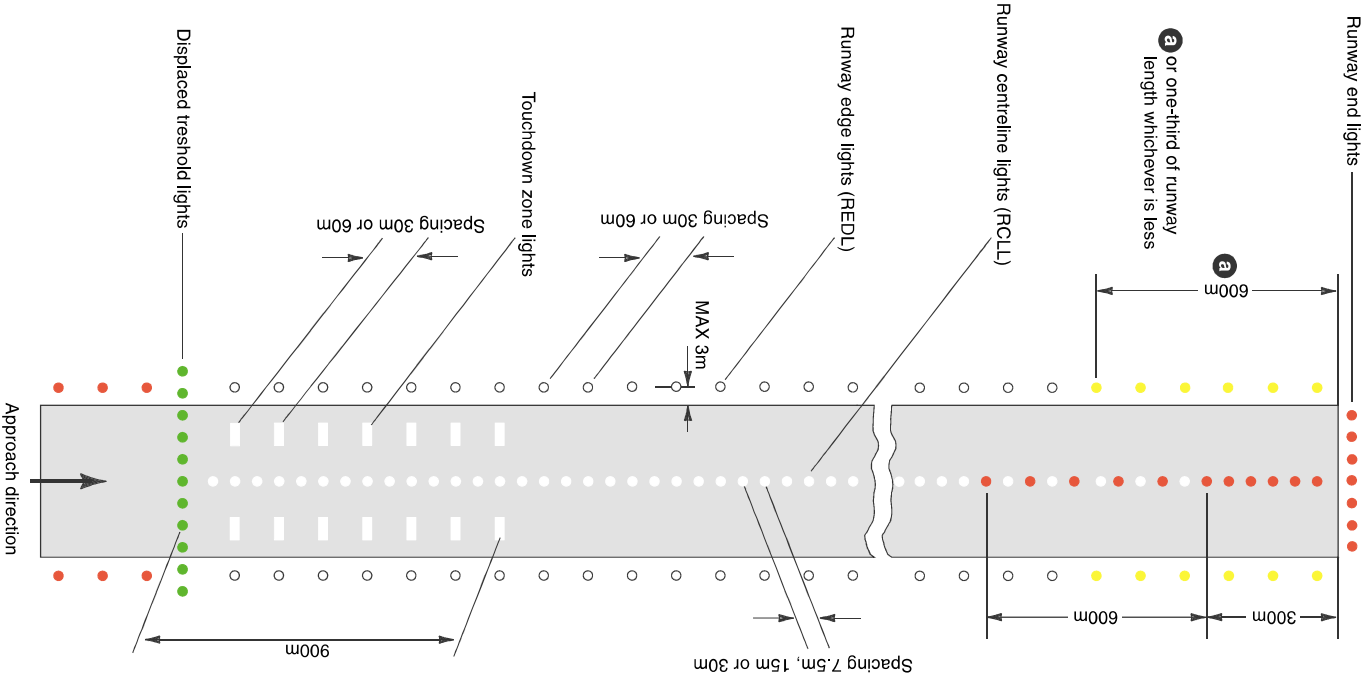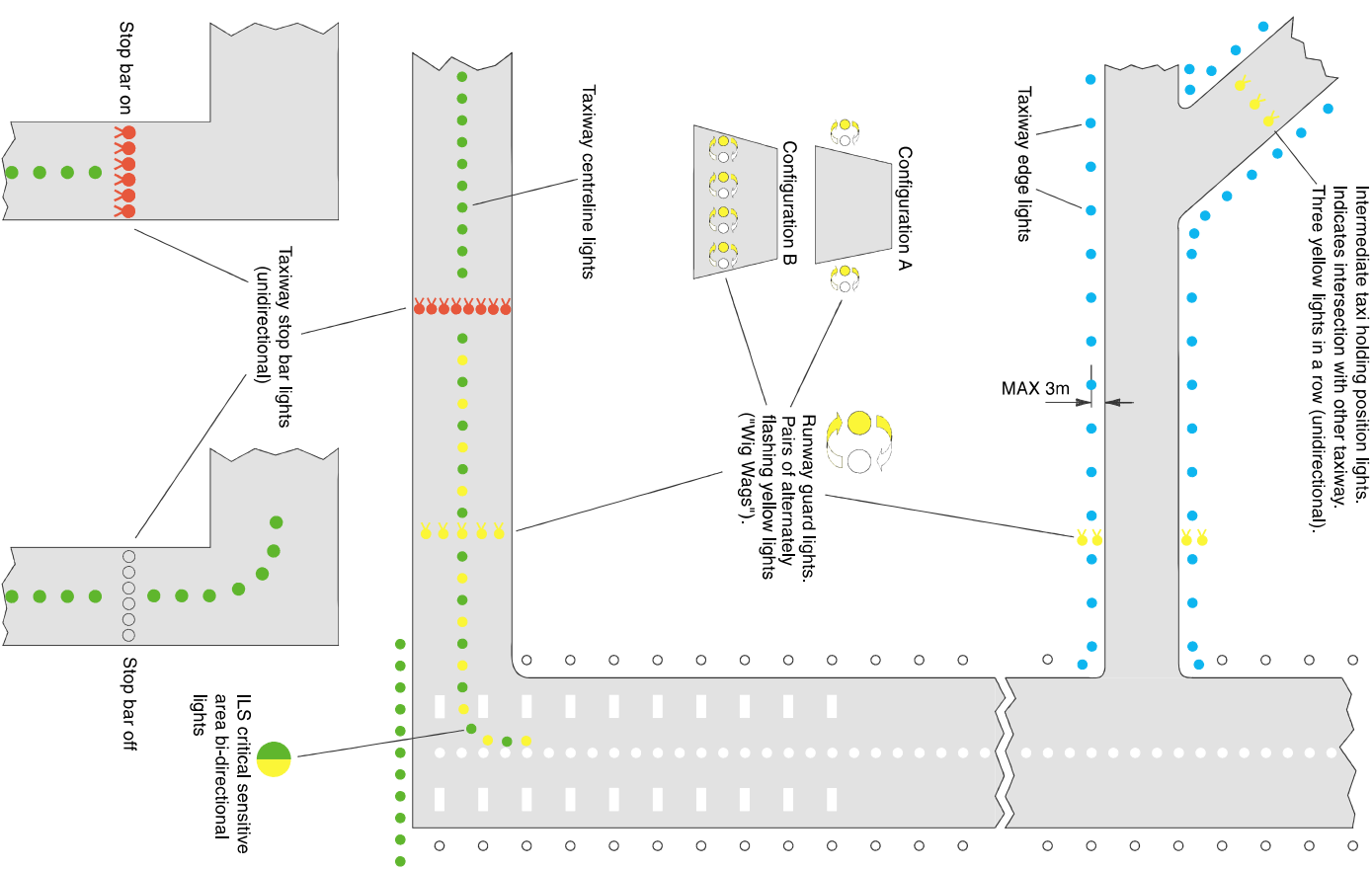
Slightly high

Low
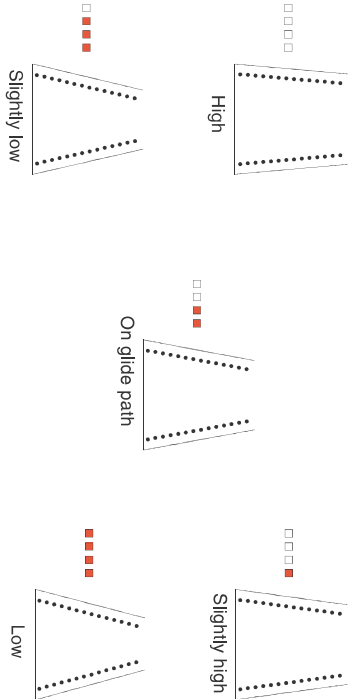
PLASII

A system that emits pulsing white and red lights to indicate when the aircraft is too high or too low. A steady white light indicates when on glide path.

Pulsating white

Steady white

Steady red

Pulsating red

Above glide path

On glide path

Slightly below glide path

Below glide path

Change: PAPI / APAPI examples

Runway lights and threshold lights
ICAO annex 14.

Displaced treshold lights

Touchdown zone lights

Spacing 30m or 60m

Spacing 30m or 60m

Runway edge lights (REDL)

Runway centreline lights (RCLL)

MAX 3m

Runway end lights

a or one-third of runway
length whichever is less

a

600m

Approach direction

900m

Spacing 7.5m, 15m or 30m

600m

300m

Taxiway lights
ICAO annex 14.

Taxiway edge lights

MAX 3m

Intermediate taxi holding position lights.
Indicates intersection with other taxiway.
Three yellow lights in a row (unidirectional).

Configuration A

Configuration B

Runway guard lights.
Pairs of alternately
flashing yellow lights
("Wig Wags").

Taxiway centreline lights

Stop bar on

Taxiway stop bar lights
(unidirectional)

Stop bar off

ILS critical sensitive
area bi-directional
lights

Runway touchdown zone markings and aiming point markings

ICAO annex 14.

Runway with basic pattern

Runway with distance coding

150m
150m
150m
150m
150m
150m

Aiming point markings beginning at distance ⓐ from threshold

20

20

ⓐ

When LDA is less than 800m distance ⓐ is 150m

When LDA is 800m up to 1199m distance ⓐ is 250m

When LDA is 1200m up to 2399m distance ⓐ is 300m

When LDA is 2400m and above distance ⓐ is 400m
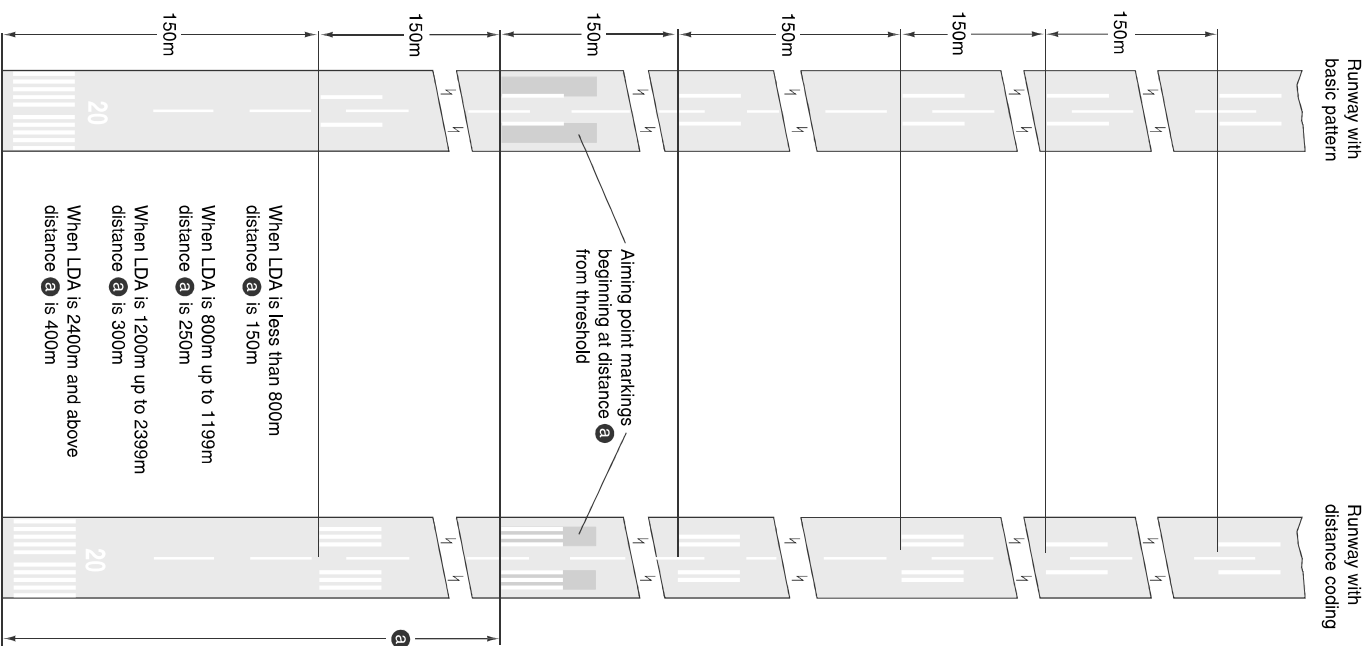
Runway designator, threshold and closure markings

ICAO annex 14.

Runway designator marking.

02

Runway designator marking for parallel runways.

02
L

Runway threshold marking. The number of stripes in threshold marking shall be in accordance with the runway width as follows:

| Runway width	Number of stripes
18m	4
23m	6
30m	8
45m	12
60m	16

20
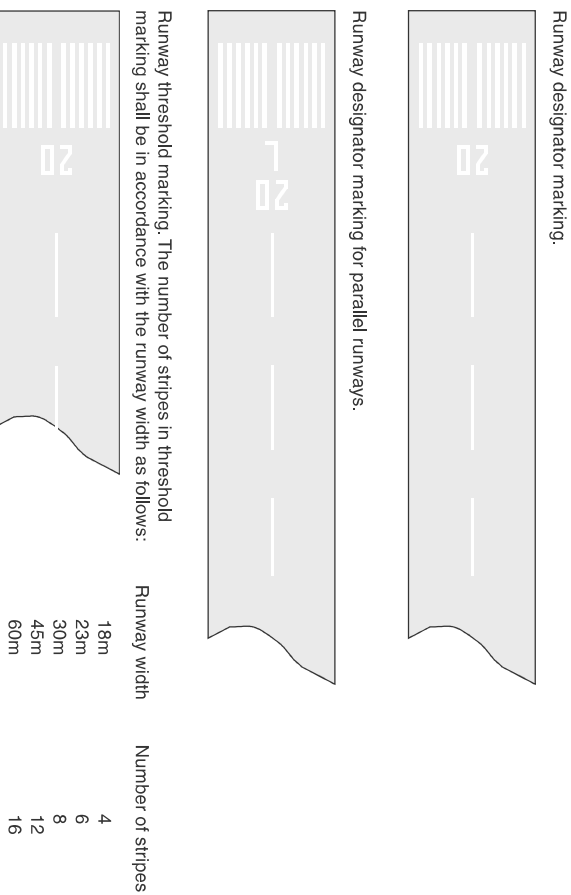
Permanent or temporarily displaced threshold.
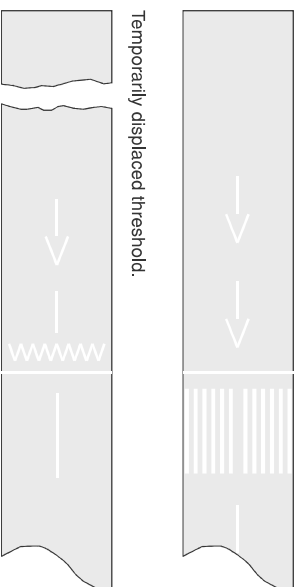
Temporarily displaced threshold.
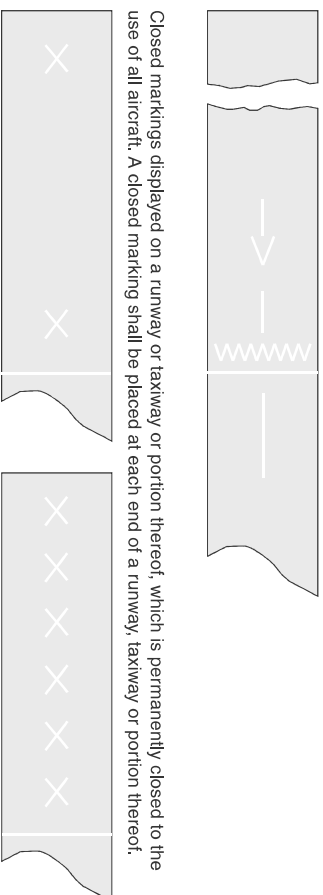
Closed markings displayed on a runway or taxiway or portion thereof, which is permanently closed to the use of all aircraft. A closed marking shall be placed at each end of a runway, taxiway or portion thereof.

Pre-treshold area. When the surface before a threshold is paved and exceeds 60m in length and is not usable for normal use of aircraft, the entire length before the threshold should be marked with a chevron marking (preferably yellow) pointing in the direction of the runway threshold.
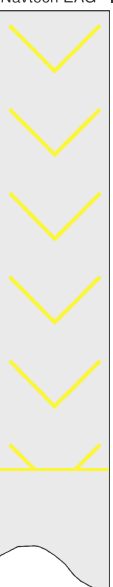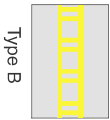
Holding positions
ICAO annex 14.

Runway taxi-holding position marking type "A" identifying the last holding position prior to entering the runway.


Type A
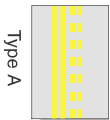
Runway taxi-holding position marking type "B" identifying CAT I / II / III holding position where a closer to runway non presicion or CAT I taxi-holding position is provided.

Type B

The diagrams below illustrate typical runway taxi-holding position signs and associated taxiway markings.

Intermediate taxi-holding position marking is located so as to provide clearance from aircraft passing in front of the holding aircraft.
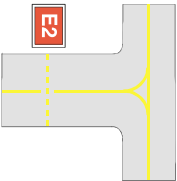
Signs indicating that entrance to an area is prohibited. Located at both sides of the taxiway leading to the prohibited area, as viewed by the pilot.

NO ENTRY

Change: New

Location, direction and destination signs
ICAO annex 14.

Location signs are used to identify taxiways and, when nessesary, runways.

A location sign consists of the character identifying a runway or taxiway i yellow lettering on black background surrounded by a yellow border.

B
Taxiway location

16
Runway location

D2
Specific location

A
Taxiway ending

Direction and destination signs consist of a route or destination label accompanied by an arrow pointing in the appropriate direction.

Direction and destination signs are formed by black characters on a yellow background.

←B
Direction sign

26→
Runway destination

APRON↑
Inbound destination

The diagrams below exemplifies the use of information signs.

Change: New
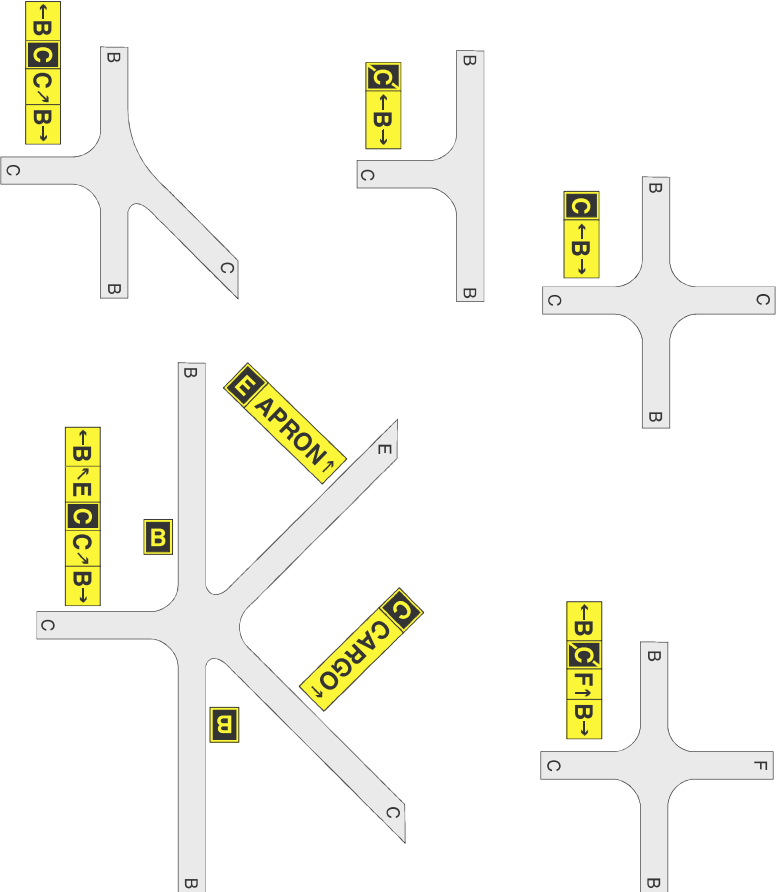
Visual docking guidance systems

Azimuth guidance fo nose-in stand (AGNIS)

AGNIS provides stand centreline alignment guidance and is normally used in conjunction with either SMB (Side Marker Board), SML (Side Marker Lines) or PAPA (Parallax Aircraft Parking Aid), which provide stopping guidance separately.

The system is designed for use from the left pilot position and the unit displays two closely spaced vertical light bars mounted in a box at about flight deck height ahead of the pilot.

The light bars display one of the following signals:

Left of centreline turn towards green.

On centreline.

Right of centreline turn towards green.
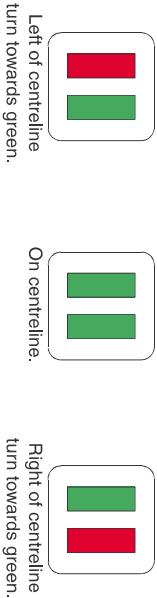
Side Marker Board (SMB)

The aid is positioned to the left of the stand and provides stopping guidance by employing a series of vertically mounted boards bearing aeroplane type indentification lables. The boards are viewed against a contrasting background and as the aeroplane enters the stand, the pilot sees the board faces as green colour -meaning continue ahead- and the rear faces as red -indicating too far- appropriate to the aeroplane type. The stop point is abeam the appropriate board viewed end - on with neither the green face nor the red face visible to handling pilot.

B727
B737   F28
TU154
TU134
TU134A

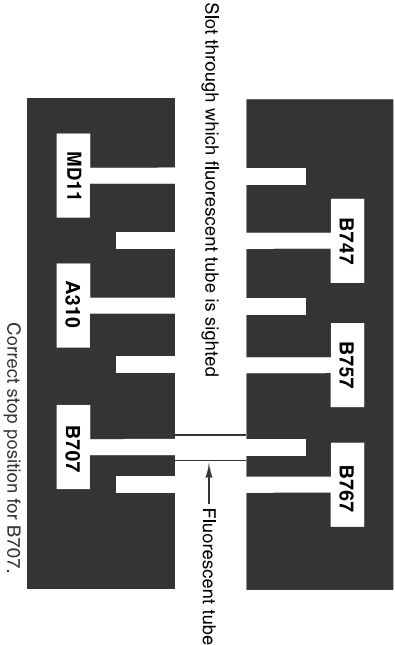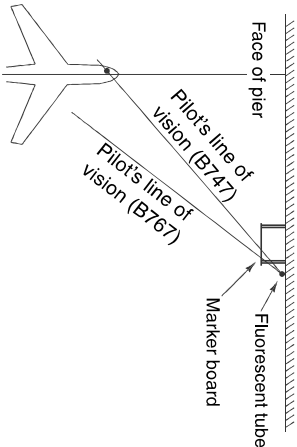Correct stop position for TU154.
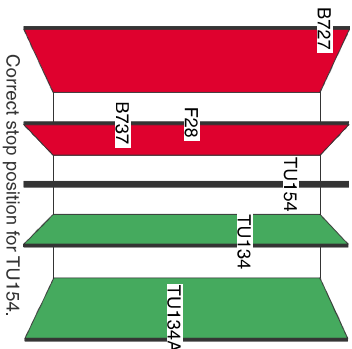
Side Marker Line (SML)

Where the required stop-point is abeam the jetty itself, (it may not be possible to employ SMB), type labelled SML are painted inside the jetty end. The stop point is where the appropriate SML appears to the pilot to be entirely vertical as illustrated.

B727
DC9
B737

Correct stop position for B727.

Change: New
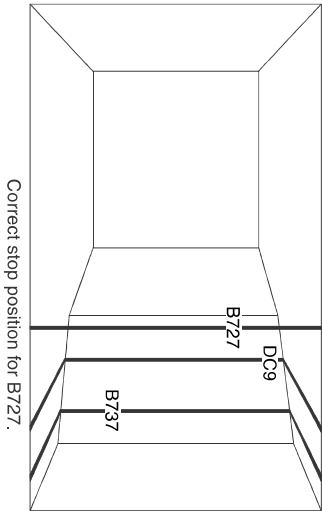
Parallax Aircraft Parking Aid (PAPA)

PAPA is positioned to the left side of the centreline and provides stopping guidance by employing a black board marked with white vertical lines bearing aeroplane type identification lable in which a horizontal slot has been cut out. A short distance behind the slot is a vertically mounted white fluorescent light tube which, when aligned with the required aeroplane type line, indicates the stop point.

Face of pier
Pilot's line of vision (B747)
Pilot's line of vision (B767)
Fluorescent tube
Marker board

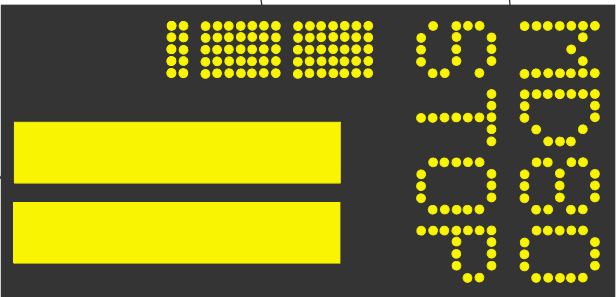### Aircraft Parking and Information System (APIS)

APIS is designed for use from the left pilot position and combines both alignment and stopping signals in one visual display, mounted at flight deck height ahead of the pilots.

Alphanumeric dot matrix:-

• Aircraft type/series
• OK STOP - aircraft correctly parked
• TFAR - aircraft has overrun the stopping position
• STSH -aircraft have stopped short of stopping position
• ESTP - emergency stop

Abort docking if display shows STOP or wrong aircraft type/series.

A dot progress matrix that will decrease in length by one row at a time. When aircraft is in the correct stop position the progress strip will be extinguished. One row is approx. 0.6m.

Azimuth guidance element.

Turn right

On centreline

Turn left

Slot through which fluorescent tube is sighted

B747
B757
B767
MD11
A310
B707
Fluorescent tube

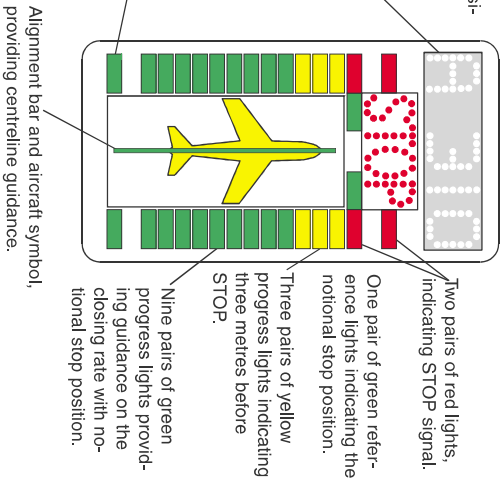Correct stop position for B707.

Change: New

Safe Gate

Safegate is designed for use from the left pilot position and combines both alignment and stopping guidance in one display.

Alphanumeric dot matrix light element indicating:

- Aircraft type
- STOP SHORT
- TOO FAR
- OK
- Door number

System is ready for use when:
- the correct aircraft type is displayed in flashing white.
- the bottom pair of green lights is flashing (indicating ready for docking). These two green lights will turn to steady when aircraft enters stand.

Two pairs of red lights, indicating STOP signal.

One pair of green reference lights indicating the notional stop position.

Three pairs of yellow progress lights indicating three metres before STOP.

Nine pairs of green progress lights providing guidance on the closing rate with notional stop position.

Alignment bar and aircraft symbol, providing centreline guidance.

Safedock type 1

Alphanumeric matrix display, indicating as appropriate:

- Aircraft type
- STOP
- OK
- TOO FAR
- ERROR or ID FAIL

Turning arrows

Dot progress matrix
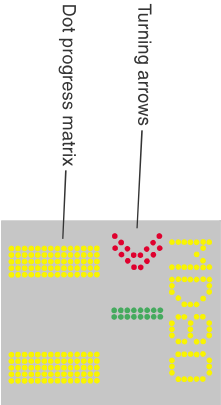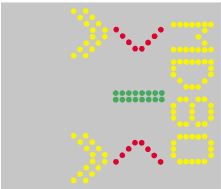
Safedock type 2

The alphanumeric display will show as in Safedock type 1.

A lead in line will be shown when system is ready to use.

Azimuth guidance information is given by turning arrows.

When aircraft is 12m from stop position, closing rate is given. One row is corresponding to appox. 1.5m.
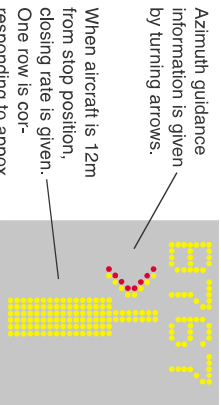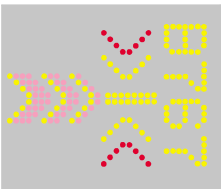
Safedock type 2S and 3

The alphanumeric display will show as in Safedock type 1.
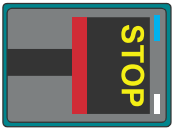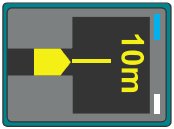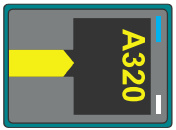
Flashing red arrow shows direction to steer.

Solid yellow arrow will indicate aircraft position from centreline and stop position

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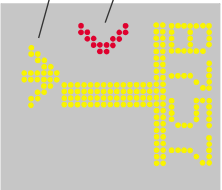
Video DOCKing System (VDOCKS)

A video docking system with an aircraft guidance display located at the head of the parking stand. Indication of aircraft type, distance to stop and centreline deviation is given. Pilots should not exceed a speed of 6 kt.

1)
System ready.
Text display
(aircraft type)
is flashing.

2)
Aircraft recognition.
Text panel is steady
and distance needle
is full length.

3)
Aircraft verification
and guidance.
Display of actual
centreline deviation.

4)
Reduction of distancem needle starts at approx. 30m from STOP. From approx. 10m distance to STOP a numeric countdown value will appear.

5)
At correct stop position, STOP will appear. If overshooting the stop position, TOO FAR will appear.

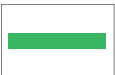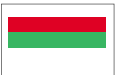## RLG visual docking guidance system

1. Docking procedure,
   A pilot, while taxiing his/her aircraft into a fixed gate shall **stop the aircraft immediately**, if he/she sees that the docking system is not swiched on or is unservicable or when it shows a different aircraft type.

2. Aircraft type indication.
   - Confirm aircraft type displayed prior to turning into stand.
   - Discontinue docking when wrong aircraft type is illuminated (aircraft marshaller shall re-check system or marshall aircraft int stand).

3. Centre line guidance.
   - Look at bottom half of housing and interpret vertical neon lights as shown:

Left of centreline - steer towards green

Aircraft on centreline

Right of centreline - steer towards green

4. Stopping guidance.
   Look at round incandescent lamps on top half of housing and interpret as shown:

Type 1
- STOP
- Slow down 4.5m to stop
- Ramp clear

Type 2
- STOP
- Slow down
- Slow down
- Ramp clear

- Discontinue docking when lights go off (marshaller shall marshall aircraft into stand).

- Discontinue docking immediately should lights go off (marshaller shall marshall aircraft into stand).

5. To avoid overshooting.
   - When using the RLG system, pilots are to taxi into stand at minimum speed.
   - On sseing the round incandescent amber lights, slowdown and prepare to stop.
   - The round incandescent amber and red lights are activated manually by the RLG system operator as the aircraft approaches the stop bar. Pilots should stop aircraft immediately when the red lights come on suddenly or when given the stop sign by the aircraft marshaller.