# DIA AEROBRIDGE OPERATING GUIDELINES AND PROCEDURES

## APRON DRIVE + FIXED AEROBRIDGES

Darwin
International Airport

# Contents

# 1.0 INTRODUCTION

Darwin International Airport has Aerobridges installed on Bays 1-5 on the Air Transport Apron.

An Aerobridge (or PBB – Passenger Boarding Bridge) is typically defined as a suspended, moveable tunnel which extends from an airport building to an aircraft, enabling passengers to board and disembark easily and efficiently. These Aerobridges allow for the safe and efficient transfer of passengers between the aircraft and the airport terminal without being affected by weather conditions and improve security by limiting access to aprons and operational areas.

The Aerobridges installed at Darwin International Airport (DIA) are the Apron Drive Aerobridge on Bays 1, 2 and 5; and the fixed T-Head type Aerobridge on Bays 3 and 4.

The Apron Drive Aerobridge operation is flexible, and it can serve a wide range of aircraft and parking positions. The Apron Drive Aerobridge can extend and move across the bay to various stop positions, raise or lower depending on the aircraft size. The Bay 1 Apron Drive Aerobridge is able to service aircraft on the primary Bay 1 position and the secondary parking positions Bay 1E and Bay 1W.

The Fixed T-Head Aerobridge can be raised and lowered depending on the aircraft size, and the Aerobridge head section moves forward/reverse to/from the parked aircraft. The cabin section has limited amounts of slewing and relies on the aircraft being parked correctly.

All Aerobridges are owned and maintained by DIA and are common-use facilities.

Aerobridges can only be operated by personnel who are authorised employees of airlines or ground handling agents (and authorised DIA personnel and contractors), and who have received appropriate training and certified as competent to operate each type of Aerobridge.

The operations of Aerobridges during an aircraft turnaround is one of the more demanding and technical jobs carried out by airport staff and the purpose of this guide and accompanied operating procedures is to ensure that personnel have the skills and knowledge to operate the aerobridges safely and confidently without injury to themselves or others and without damage to the aerobridge or the aircraft and equipment.

# 2.0 AEROBRIDGE OPERATOR CERTIFICATION

It is the responsibility of personnel operating the Aerobridge to ensure that they have completed training and are certified to operate the Aerobridge.

Certification as an Aerobridge Operator is restricted to those persons who will be required to regularly operate Aerobridges as part of their job function and have successfully completed Aerobridge operations training and assessment.

To receive certification as an Aerobridge Operator you are required to demonstrate a theoretical and practical understanding of these procedures, you will be required to do the following:

- ✓ Complete the initial Aerobridge Training Record signed by an Authorised Aerobridge Trainer
- ✓ Complete the Online Aerobridge Induction and Assessment

Aerobridge Operator training will be provided by an authorised Aerobridge Training Officer and be conducted over a minimum of three dockings during actual aircraft turnaround.

For Apron Drive Aerobridges on Bays 1, 2 and 5 training will include docking usual Manual Procedure from the Home Position and from a Pre-position.

Airlines and ground handling agents have designated employees who have been approved by DIA as an Authorised Company Aerobridge Trainer. The accredited Aerobridge Training Officer is then permitted to provide Aerobridge Operator training for other employees of the same company.

It is a DIA requirement that Aerobridge Operator Certification is renewed every two (2) years via the Online Induction and Assessment.

The Aerobridges are fitted with swipe card sensors to activate the Aerobridge console control panel and the operation of the Aerobridge. The operators' Aviation Security Identification Card (ASIC) will be validated with the appropriate Aerobridge control access once Aerobridge Certification has been approved following completion of the practical training program and/or online induction and assessment. Aerobridge swipe access will be aligned with the applicant's ASIC and will expire at the same time the ASIC expiry date. Renewal Certification by the Online Induction and Assessment is required when renewing an expired ASIC.

# 3.O AEROBRIDGE CONDTIONS OF USE

- It is a DIA requirement that aerobridges are only operated by persons who have been trained and certified for the appropriate Aerobridge type.

- Personnel operating the Aerobridges must always follow safety precautions and use the Aerobridges in accordance with the operating procedures outlined by DIA.

- Aerobridge Operator certification is valid for two (2) years from date of training and be aligned with the applicant's ASIC expiry date. Aerobridge access will be deactivated if renewal training is not completed by the training expiry date.

- Re-familiarisation training is required if an operator has not carried out Aerobridge operation for six (6) months or more.

- Persons who are not certified Aerobridge Operators may only operate an Aerobridge for training purposes, and only when under the control and direct supervision of a DIA accredited Aerobridge Training Officer or an accredited Aerobridge Operator with a minimum of 3 months practical experience.

- An accredited Aerobridge Operator may only use their programmed access card to enable aerobridge operations for another person if that person is currently training for their Aerobridge Operator certification.

- An Aerobridge Operator is not permitted to enable Aerobridge operations for an employee of another company and/or for an unauthorised user. Evidence of an Operator enabling the controls for other personnel will result in Aerobridge access being withdrawn.

- Aerobridge Operator certification is only valid while the Operator is employed by the company authorising the Aerobridge Operations application. If the Operator transfers to a new employer, the aerobridge certification authorised by the previous Employer is cancelled and access deactivated. If Aerobridge operations access is required for new employment duties, a separate Aerobridge Operator application must be authorised by the new Employer.

- DIA can at any time review individuals Aerobridge Operator certification and carry out routine checks of an Operators performance to ensure that certification standards are being met. DIA reserves the right to audit Aerobridge Operator training records at any time. DIA may, at its discretion, withdraw or cancel an operator's certification.

- DIA staff are not authorised to drive Aerobridges onto any aircraft. DIA staff may remove an Aerobridge off an aircraft in an emergency and only in the presence of an airline representative.

# 4.0 GENERAL SAFETY RULE

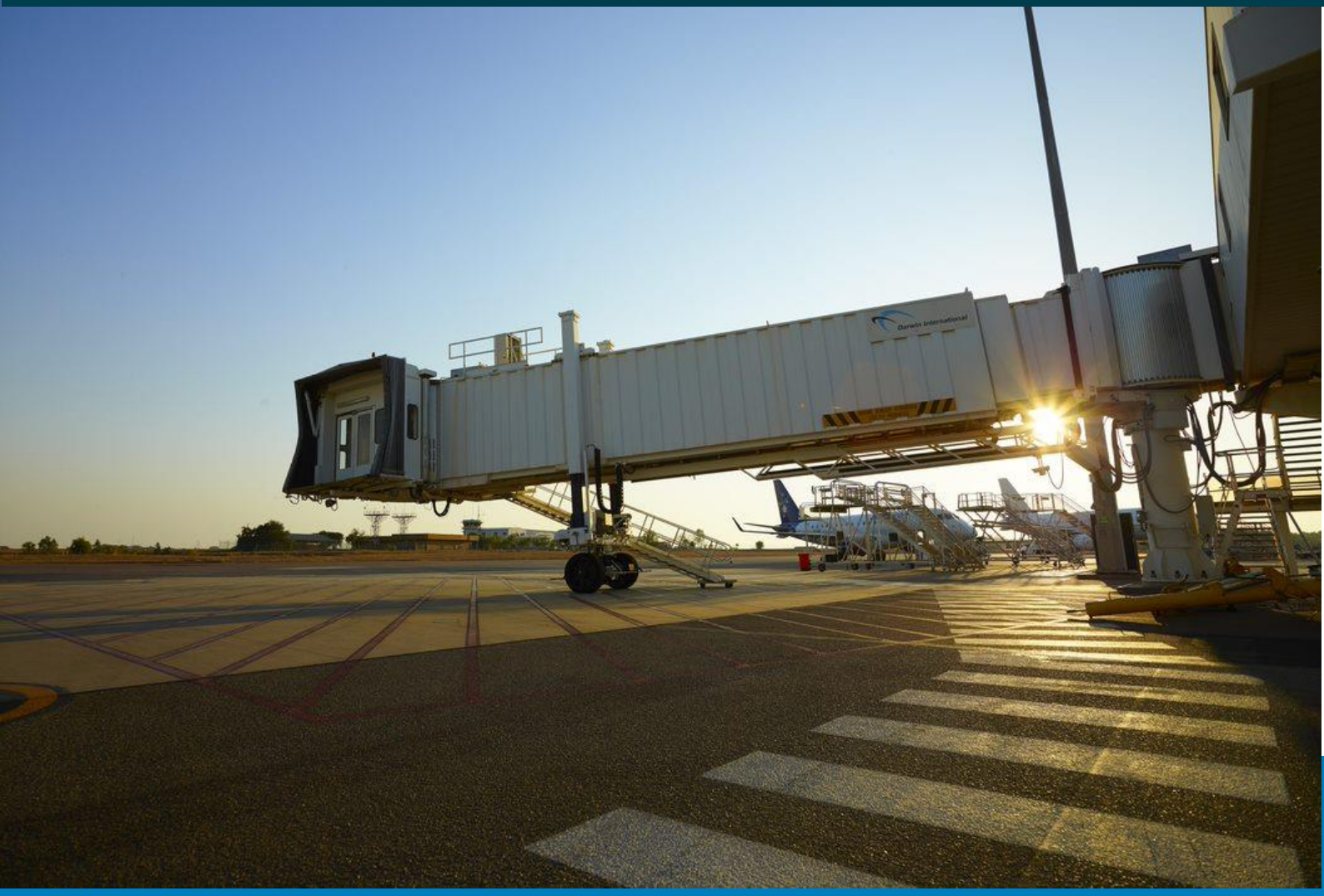
- Appropriate PPE should be worn at all times to ensure personal safety, including High Vis Clothing and Hearing protection.
- The Aerobridge operator needs to ensure that they are familiar with hazards that may be associated with the operation of an aerobridge, including:
  - Slip, trip, fall - in particular during wet conditions
  - Aircraft engine noise
  - Pinch or crush points
  - Damage to aerobridge
  - Damage to aircraft
  - Falls from heights – ensure safety doors are closed when Aerobridge not in use
- Before operating any Aerobridge, the Aerobridge Operator **must** check under the moveable parts of the Aerobridge to ensure that no apron equipment or vehicles will obstruct the normal operation of the Aerobridge, or the moveable stairs attached to the Apron Drive Aerobridge.
- Only **essential personnel** should be in the Aerobridge cabin area during Aerobridge docking procedure. It is the responsibility of the operator to ensure that any personnel in the Aerobridge cabin area or tunnel sections are clear of any potential pinch or crush points before commencing aerobridge operations; and ground staff are clear of the wheel bogie.
- Whenever the Drive Aerobridge is in motion, the Operator must continually check for apron obstructions underneath the moveable parts of the Aerobridge by using the CCTV image provided in the top left-hand corner of the control touch screen.
- To ensure safe clearance from wing tips, engines, aircraft fuselage, the Aerobridge must be correctly parked in either the HOME position or the appropriate aircraft type PRE-POSITION before an aircraft enters the bay.
- The Aerobridge Operator **must not** dock the Aerobridge until the engineer/marshaller gives the GO or "thumbs up" to ground support staff to indicate that it is clear to approach the aircraft, and in accordance with company procedures.
- The service stairs ("Jacob's Ladder") attached to the Aerobridge must not be used for the movement of passengers and other unauthorised persons, or the carriage of goods to or from the Aerobridge to the apron.
- The service stairs ("Jacob's Ladder") attached to the aerobridge **must not** be used while the Aerobridge is moving.
- All personnel MUST remain clear of the marked Aerobridge manoeuvring area during Aerobridge operations.
- The Aerobridge Operator **must** "log off" once the aerobridge has been docked on an aircraft, and "control off" when the bridge has been returned to the HOME position and is no longer required.
- Under **NO** circumstance is the aircraft door to be opened until docking is completed AUTO CONTROL is selected and the canopy and auto-levelling arm have been deployed.

- Aerobridge Operators must be aware that from time-to-time a critical alarm, such as the Safety Shoe alarm, may be activated on the Aerobridge during refuelling or the loading/unloading of the aircraft. To avoid any potential injury to personnel or damage to the aircraft or aerobridge, a certified Aerobridge Operator should remain within audible range of the Aerobridge cabin during refuelling and loading/unloading activity so that they are able to respond to any alarms that may occur.
- The Aerobridge Operator must ensure that the cabin Safety Door (or Safety Chain) remains closed until the aircraft has stopped in its final position; and the aerobridge docking has been completed and the AUTO MODE button is displayed.
- The Aerobridge MUST NOT be retracted from an aircraft unless the aircraft door is closed.
- When using the Bay 1 Apron Drive Aerobridge to service an aircraft on Bay 1W, the aerobridge **must** be pre-positioned prior to the aircraft arriving onto the Bay and **must not** be returned to the Home position until after the aircraft has pushed- back.
- The Bay 1 Apron Driver Aerobridge **must not** be driven in manual mode between Bay 1E & 1W – must be returned to the Home Position.
- When placing the Safety Shoe under the open aircraft door ensure the middle of the shoe is directly under the aircraft door. If the Safety Shoe is activated the bridge will lower by 12cm. Note, the safety shoe is not required for some aircraft (B767) where the aircraft door opens inwards.
- **Fit for Work -** Staff must not present to work and operate Aerobridges or any other equipment when unfit for work. This could include:
  - Being under the influence of drugs or alcohol or other medication that may affect performance Aircraft engine noise
  - Fatigue or stress

  It is the responsibility of the Aerobridge Operator to know if you are fit for work; and that you are confident that you are fully competent to operate the Aerobridge.
- **Pitot Tubes** are an important instrument that is used to calculate aircraft airspeed. The pitot tube protrudes out from the front of the fuselage and is made from an expensive aluminium alloy. This is located in different positions on each aircraft and care must be taken to avoid any contact with the instrument.

  It is essential that aerobridge operators are aware of all safety requirements, in particular any specific requirements, which need to be considered when docking onto an aircraft.

# APRON DRIVE AEROBRIDGES



# 5.0 APRON DRIVE AEROBRIDGES

## 5.1 EXTERNAL EQUIPMENT

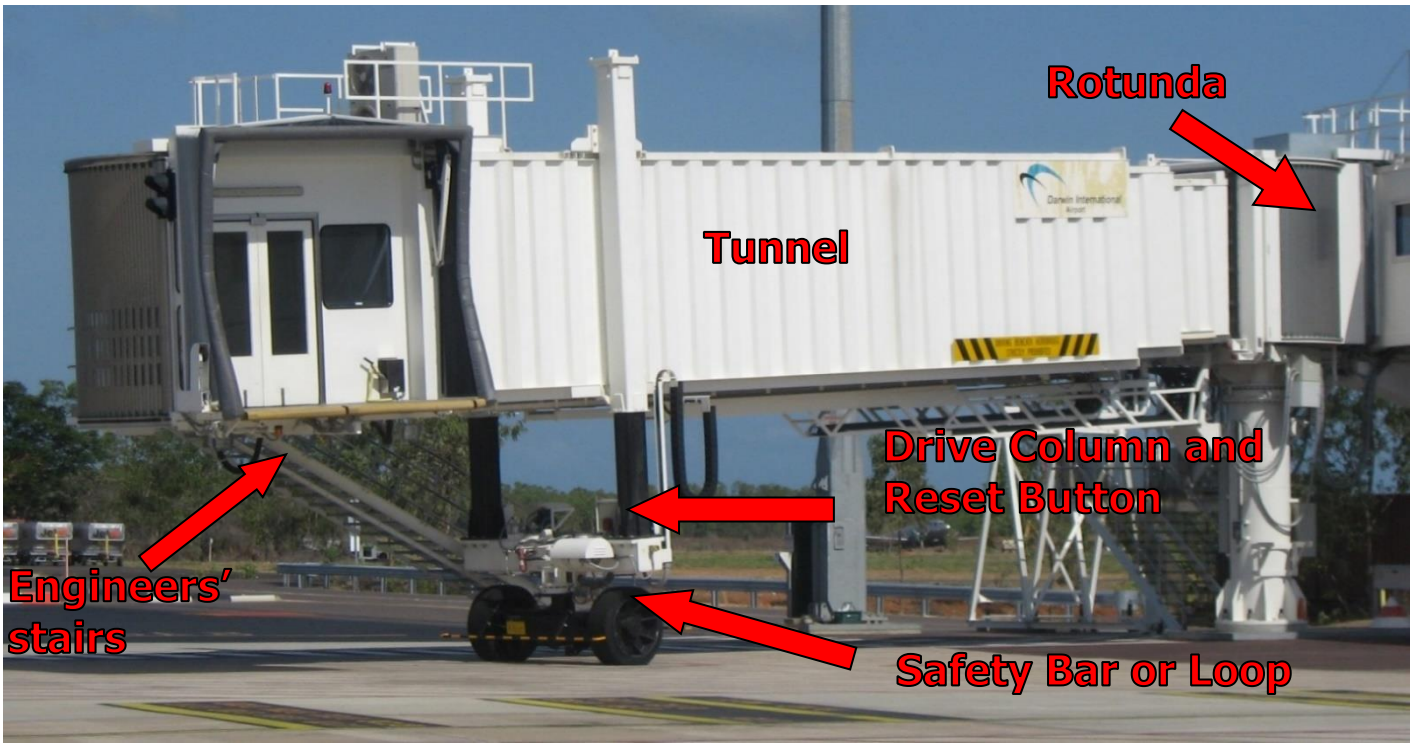
Tunnel: enclosed and suspended corridors that extend from the end of the walkway link to the aircraft. Operators need to be aware of the moving sections during extending and retracting the aerobridge and the potential pinch points as the equipment is moving.

Rotunda: the pivot mechanism supported with its own base and permanently attaching three lengths of passenger tunnels. The rotunda allows the aerobridge tunnel closest to the aircraft to swing around its centre point.

Drive Column: the electro-mechanical wheel drive and hydraulic lifting column of the bridge that controls all of the main movements of the bridge over the apron and consists of 180° steerable two-wheel bogie which carries the hydraulic installation, the lifting column, and the tunnel frame. The bridge is lowered and raised by two hydraulic cylinders.

Engineers (or Service) stair (Jacob's ladder): stairs provide access from the apron to the aerobridge cabin.

Safety bar: the safety bar (or loop on Bay 5) on either side of the wheel bogie will stop aerobridge movement if it comes into contact with equipment or a person. The aerobridge cannot be restarted without checking the cause and removing any obstruction and pushing the green **RESET** button located on the side of the wheel bogie assembly.



## 5.2 AEROBRIDGE CABIN

Canopy - the accordion-type canopy allows the aerobridge to dock with aircraft with differing contours and provide a near weather-proof seal.

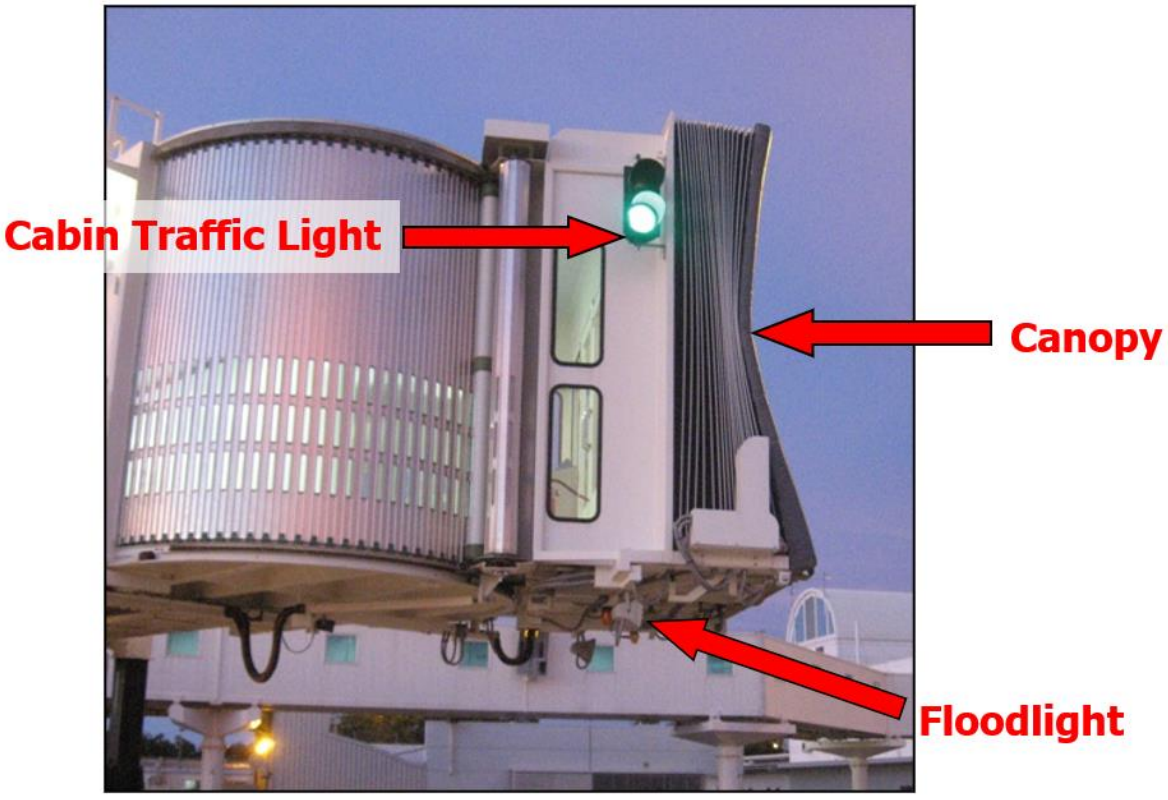
Cabin Traffic Light - the cabin traffic light has a red and green light. The green light indicates that the aerobridge is in a safe position and the aircraft can proceed onto the bay. The red light will display when the aerobridge is activated but is not in the HOME position or designated aircraft type PRE-POSITION and will stop an aircraft from proceeding onto the bay until the aerobridge position is corrected. The Traffic Light status is displayed on the aerobridge control console.

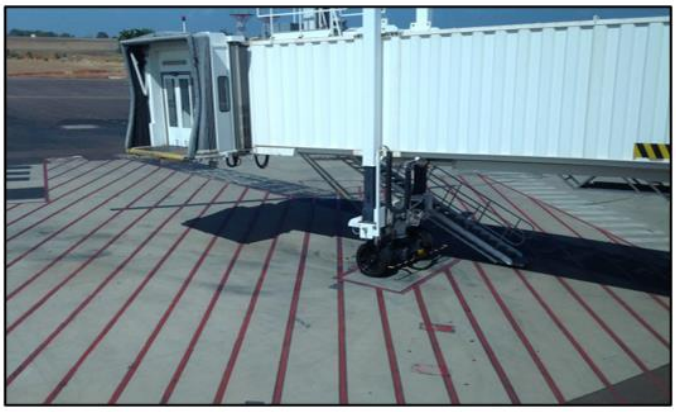
Cabin Safety Door - is a critical safety feature, the Safety Door is designed to protect personnel inside the cabin while the aerobridge is moving and provides a sound barrier to protect personnel inside the cabin from excessive engine noise when aircraft are powering onto the bay. The aerobridge control console will not respond if the Safety Door is not secured.

Auto-leveller - the auto-leveller arm detects movement of the aerobridge during refuelling, disembarking/boarding and loading/unloading of baggage and cargo, and will automatically adjust the aerobridge height to compensate for changes to the height of the aircraft. Note auto-leveller arm is located on the outside of the cabin on the Bay 1 Apron Drive Aerobridge.

Safety Shoe - the Safety Shoe is used as a precaution in the event the auto-leveller fails. If the Safety Shoe makes contact with the aircraft door due to the aircraft height lowering, an alarm will sound, and the aerobridge will rapidly lower by 120mm to prevent damage to the aircraft door.

Flood light - flood lights are located underneath the cabin. These can be turned on as required through the LIGHTING CONTROL button on the LCD Touch Screen on the control console.

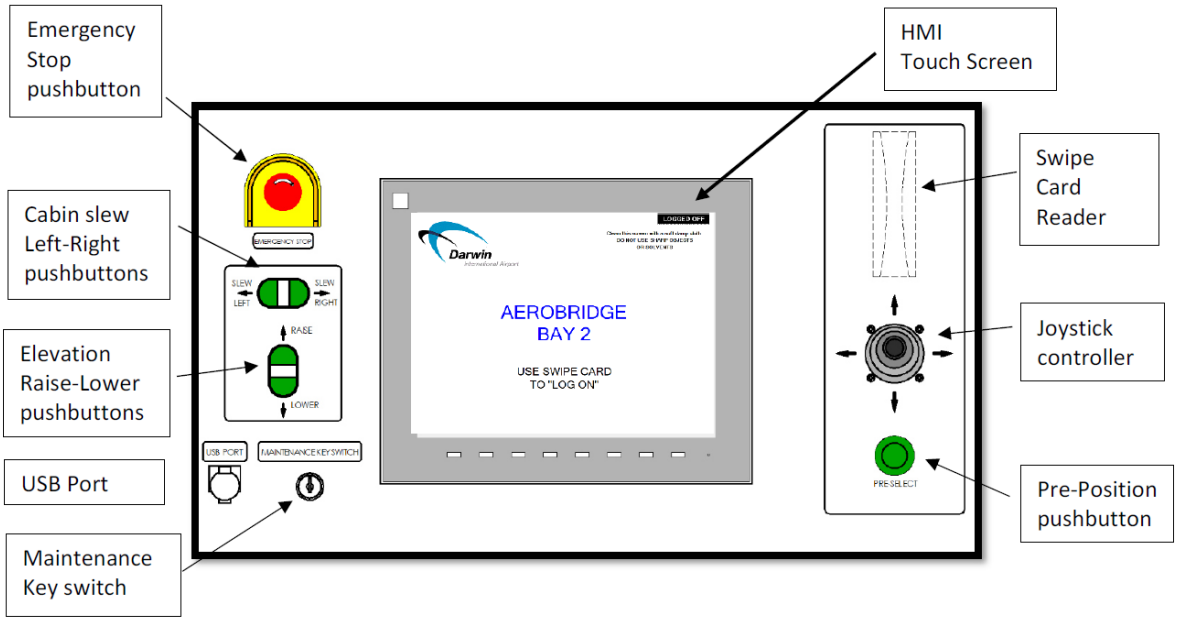


Apron Drive Aerobridge in the correct HOME position

## 5.3 INTERNAL EQUIPMENT

CONTROL PANNEL TOUCH SCREEN



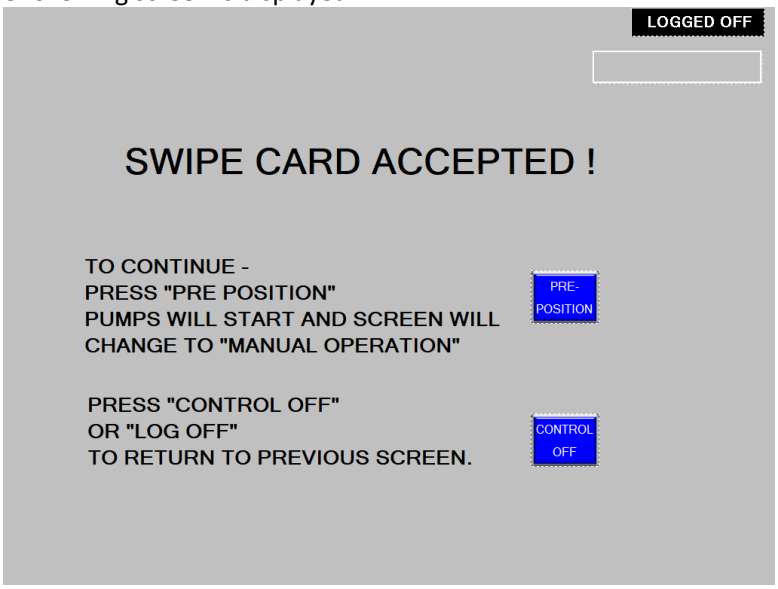

Note: This guide will show Bay 2 as the example. Bays 1 and 5 console may differ ever so slightly, however the operating procedure is exactly the same.

### OPERATING PROCEDURE

When the operator first arrives at the Aerobridge console the standby screen will be displayed on the console touch screen. If the console is in sleep mode, the screen will appear blank, simply touch any part of the screen to activate and the standby screen will appear. The stand-by screen will identify the Bay No.

### LOG ON

Swipe your ASIC/Access Card across the card reader to log on.
Once logged on, the following screen is displayed.



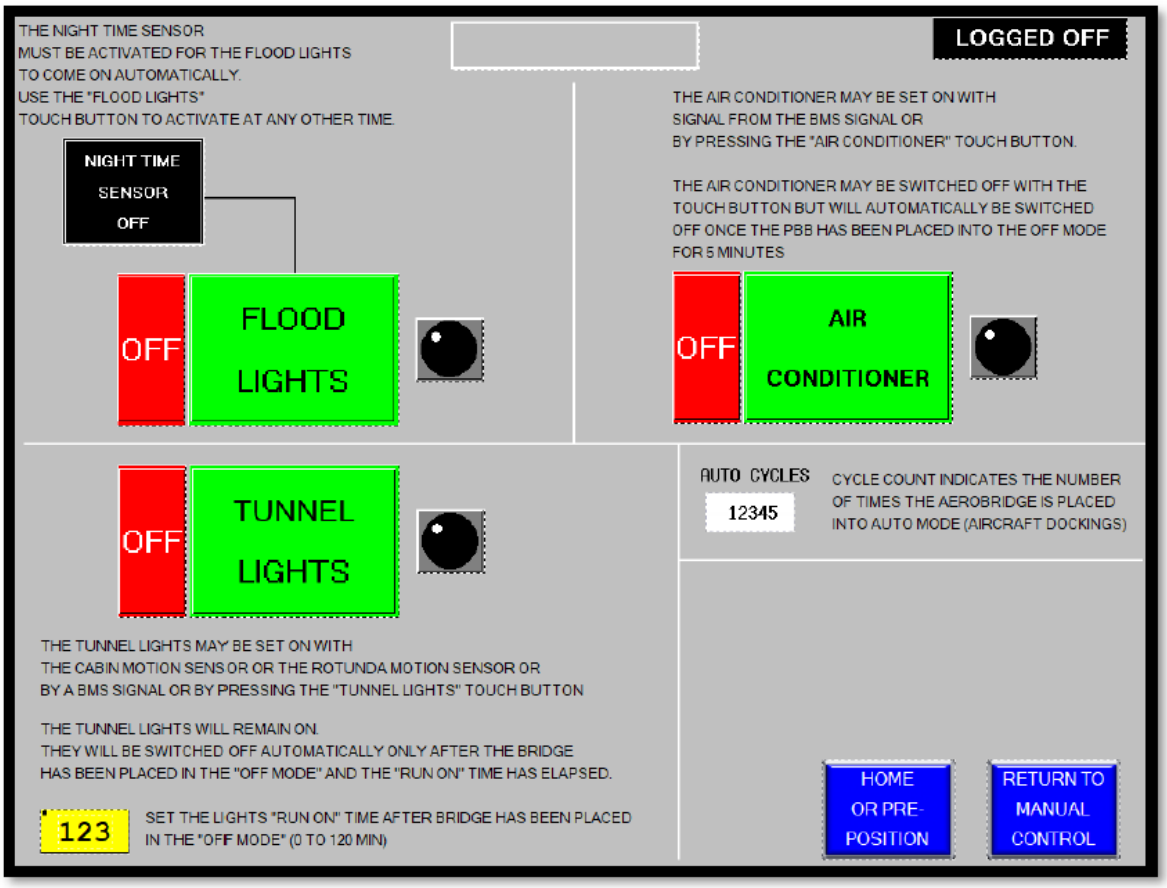
To continue with the operation of the Aerobridge, simply press the “PRE-POSITION” button. The screen will change ready to pre-position the Aerobridge.
If you press “CONTROL OFF” you will be logged off and the screen will change to the stand-by screen described above.

## CLEAR TO MOVE

Before attempting to manoeuvre the Aerobridge whether by Pre-Position of Manual control ensure that the hatched area is clear of any obstructions. Make use of the Aerobridge windows and glass walls of the tunnel. Check the vision on the camera display for obstructions around the bogie wheels. We recommend using Pre-Positioning function.

## LIGHTS AND AIR CONDITIONING CONTROL

Pressing this button will access an ancillary screen to control the Aerobridge lighting. The following screen will be displayed.




## FLOOD LIGHTS

The external flood lights are for the illumination of the wheels and the area in the front of the PBB. They come on automatically in low ambient light conditions. However, they may also be switched on as required on this screen.

## TUNNEL LIGHTS

The Aerobridge internal tunnel lights may be switched on and off on this screen. The internal lights are normally controlled by movement sensors at the rotunda entry and in the cabin area. The lights will be switched off automatically after a pre-set time that the Aerobridge has been placed into the OFF mode. The duration for the lights to remain on once the Aerobridge is in OFF Mode is also set on this screen

## AIR CONDITIONER

The air conditioning within the Aerobridge is switched on by touching the green AIR CONDITIONER button and switched off by touching the red OFF button. The air conditioner will switch off automatically after a period of 5 minutes has elapsed when the Aerobridge is in the OFF Mode.

When you have set the lights and air conditioner as required, return to the operator control screen by touching the blue RETURN TO MANUAL CONTROL touch button Or to the pre-positioning screen by touching the blue HOME OR PRE-POSITION touch button.

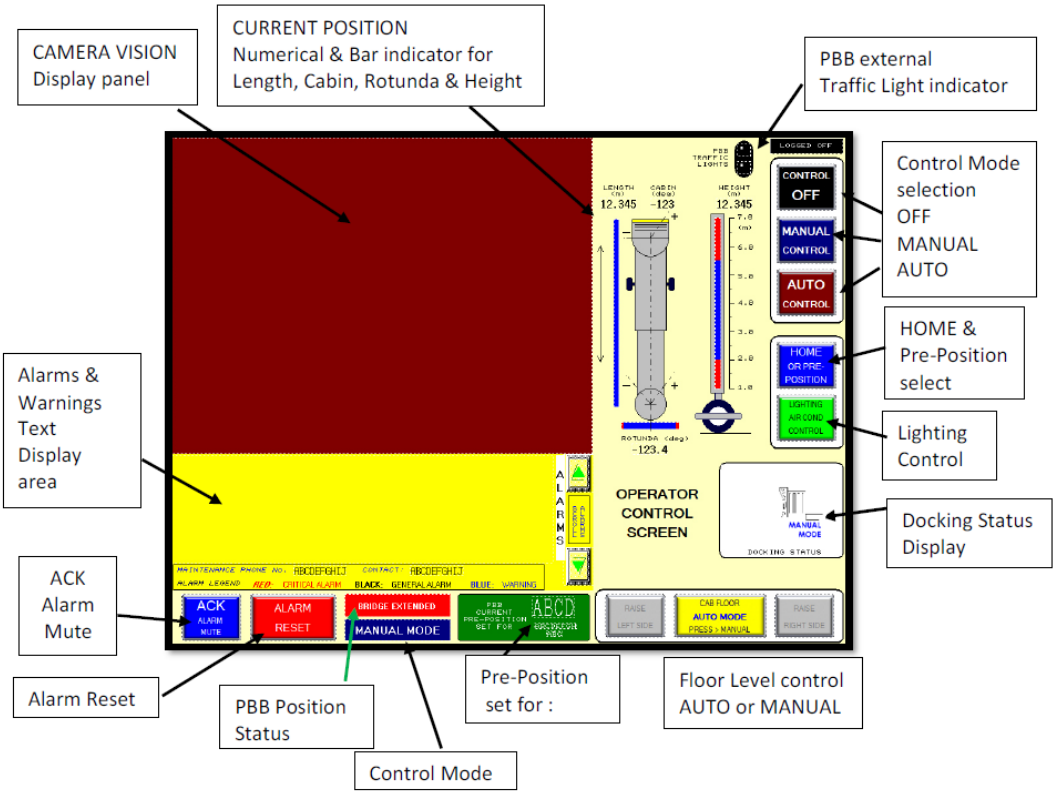
## MOVEMENT SOUNDER

Whenever the Aerobridge is moving, a slow Beep, Beep, Beep sound will be emitted. The sounder is located externally under the cabin floor.

## MOVEMENT LIGHTS

As well as the sounder, amber flashing lights will be displayed when the Aerobridge is moving. The flashing lights are located on the left and right of the bogie wheels and under the cabin adjacent to the movement sounder.

# OPERATOR SCREEN – DESCRIPTION




The following describes in brief the functions located on the Operator Control Screen. A detailed description of the relevant controls are described in the Manual Control section below.

## CAMERA VISION

A CCTV will display the apron area around the Aerobridge wheel assembly. The vision is to alert the operator of possible obstacles in front of the driving wheels. A forward-facing camera will be show the vision of the wheel assembly. The camera is used to observe the apron, it should not be used as an aide to drive the Aerobridge.

### CURRENT POSITION

The current numerical position of the Cabin angle (deg), length (m), rotunda angle (deg), and gantry height (m) are displayed. A bar indicator provides a graphic display of the position. The Aerobridge graphic is not animated.

Blue bar indicates that the PBB is within working (normal) position limits. The bar will change to red if the Aerobridge exceeds the set limits of the Aerobridge. The position data shown on the operator screen is for reference only. It gives a guide to the operator that they are within the working limits of the Aerobridge.

### TRAFFIC LIGHTS

The external traffic light status is displayed. A green light signals to the incoming aircraft that the Aerobridge is in a safe position for the aircraft to continue to the stop line. The green light will be on when the Aerobridge is at HOME or a set pre-position. A red signal will be shown for all other situations.

Note that the green will turn to red if the Aerobridge is moved from the set pre-position (Joystick moved away from the neutral position).

## CONTROL MODE

### CONTROL OFF

Press to switch the Aerobridge controls to OFF. This will log you off and return the screen to standby.

### MANUAL CONTROL

When on the operator screen and logged on, the Aerobridge is in Manual mode. The controls for manoeuvring the Aerobridge are active.

### AUTO CONTROL

When the Aerobridge is buffed onto the aircraft, an overlay will prompt the operator to press this AUTO CONTROL button. This action will deploy the auto levelling arm and extend the canopy to form a weather seal to the aircraft. Additional details are provided later in this operator manual.

### HOME or PRE-POSITION.

The pressing of this button will return to the pre-position screen described previously.

### LIGHTING CONTROL

The pressing of this button will display a screen to allow the control of the internal and external lighting. The Aerobridge air conditioner is also controlled on this screen. The lighting controls have been described earlier in this manual.

### DOCKING STATUS

This graphic display will show the main stages of the Aerobridge docking onto the aircraft. Additional details are provided later in this operator manual.

### CABIN FLOOR

The cabin floor level may be adjusted with these buttons. The levelling of the floor will provide an horizontal surface for the alighting passengers to step onto. The automatic levelling is selected by default. However manual control is available by pressing the yellow button. The left and right floor raise buttons then become active.

### PRE-POSITION SET
The Pre-Position to which the Aerobridge has been set will be displayed here. If the Aerobridge is moved after this has been set then “NOT SET” will be displayed. The traffic light will turn red.

### CONTROL MODE
The set mode will be displayed, MANUAL or AUTO MODE.

### AEROBRIDGE POSITION STATUS
This display is similar to the traffic lights. Green, Aerobridge retracted, OK for the aircraft to approach. Red, Aerobridge extended indicates that it is not safe for the aircraft to approach the apron stop line.

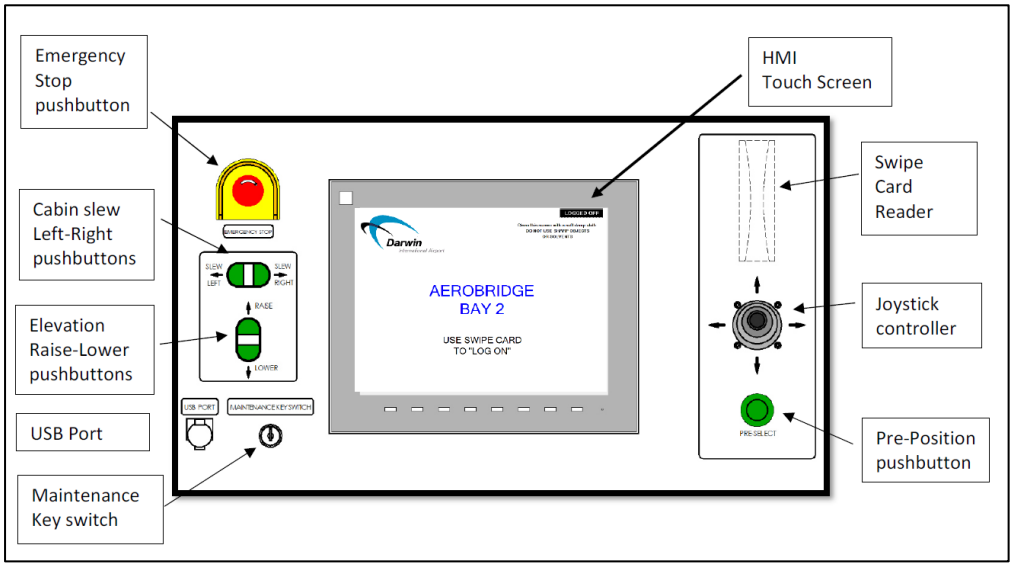
### ALARM RESET
The pressing of this button will reset any alarm that has been latched on. The alarm can only be reset after corrective action has been taken as described in the text display areas located above this button.

### ACK ALARM MUTE
The audible alarm may be silenced by acknowledging the alarm. This is done by pressing the alarm mute button. However, any change in alarm conditions will re-activate the sounding of the alarm.
Press mute again to silence the sounder.

### ALARM and WARNINGS
This area will display in text any current active alarm and display the corrective action required. The alarms will always be listed with the most critical first followed by general alarms and warning.
Always consult this display if the Aerobridge is not performing as expected.

### ALARM LIGHTS AND SOUNDER
An active alarm will illuminate an external red flashing light. The flashing light is located under the cabin adjacent to the movement light. An audible, varying frequency sounder will be emitted at the same time. However, the alarm sounder may be muted as noted above.

## 5.4 MANUAL CONTROL
When on the operator control screen, the Aerobridge may be manually controlled to dock onto the arriving aircraft. Refer to the control console part description noted at the beginning of this operator manual. Make use of the cabin slew, elevation, and joystick to control the movement of the Aerobridge.



## CABIN SLEW

The cabin or bridgehead may be slewed (turned) left or right with these pushbuttons. They allow the bumper to be aligned with the aircraft fuselage and minimise any gap between the aircraft and the Aerobridge.

## ELEVATION

The Aerobridge may be RAISED or LOWERED with these push buttons. They allow the Aerobridge to be aligned with the aircraft door to set a minimal step for passengers disembarking and boarding the aircraft. The sill of the aircraft door should be set between 100 and 150mm above the Aerobridge floor.

## JOYSTICK CONTROLLER

The joystick is used to manually control the movement of the Aerobridge across the apron. It can be moved in any direction. This movement of the joystick is transferred to the Aerobridge wheel speed and steering direction. The system of control on this Aerobridge is called “Point and Go”.

Move the joystick into the direction you wish to travel, the further the joystick is pushed the faster the Aerobridge will travel. Acceleration and deceleration are automatically controlled. Release the joystick and allow it to come back to the centre neutral position will slow the Aerobridge to a stop.

## EMERGENCY STOP

When pressed, this button will latch and stop all movements of the Aerobridge. The resetting of the Emergency Stop must be performed before any further movement will be permitted. Follow the onscreen resetting procedure and only if safe to do so.

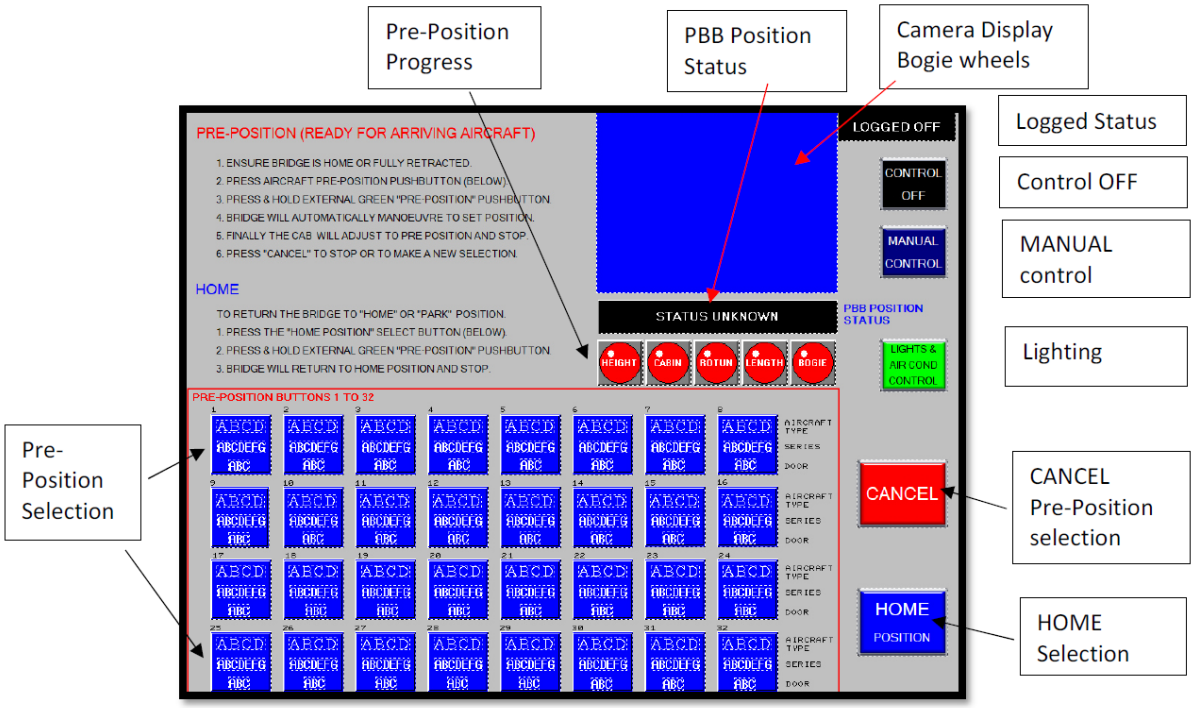
**Note: the Emergency Stop button should only be pressed in an emergency. It is not designed to provide a means to switch the Aerobridge off.**

# 6.0 OPERATOR PROCEEDURE – ARRIVAL

## 6.1 PREPARE AND PRE-POSITION - APRON DRIVE AEROBRIDGE

### PRE-POSITION - RECOMMENDED

The following screen will be displayed when the “PRE-POSITION” button is pressed. The pre-position screen is used to select and drive the PBB to a location on the apron in preparation for the arriving aircraft.




Follow the on-screen instructions to prepare for the **arriving aircraft**.

1. The Aerobridge should be HOME or fully retracted to commence the pre-positioning of the Aerobridge.

2. Select the arriving aircraft model and type by pressing the corresponding pre-position touch button (Blue button, 1 to 32). Only a programmed and enabled button will be available for this bay. The selected button will be highlighted yellow.

3. Press and hold the external green "PRE-POSITION" pushbutton.

4. The Aerobridge will perform various manoeuvrers during the Pre-Position process, adjusting the height, setting the length, rotunda angle, cabin slew and final wheel axle direction for the selected Aircraft.
   Note: Releasing of the external green button will stop movements. Press and hold again to continue.

5. The last part of the Pre-Position involves setting the cab angle and adjusting the wheels. Upon completion, the screen will automatically change to the operator control screen.

The Pre-Position progress may be observed by noting the changing of the progress lamps from red to green.

When the screen changes, the selected Aircraft Pre-Position will be displayed.

### CANCEL

If you make a mistake during the selection process, simply press “CANCEL”, and select again. If you choose not to pre-position, press “MANUAL CONTROL” to go to the operator screen. This will also cancel any selection you may have made.

### CONTROL OFF

If you press “CONTROL OFF” you will be logged off and the screen will change to the stand-by screen described above.

## 6.2 DOCKING PROCEDURE - APRON DRIVE AEROBRIDGE

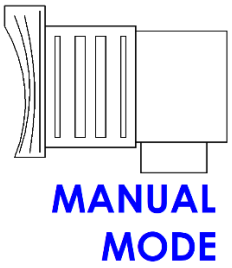
When the arriving aircraft stops on the bay and the signal to dock is provided by the ramp engineer, you may manually drive the Aerobridge to dock onto the aircraft. Use the manual controls described above to position the Aerobridge against the aircraft.

### CLEAR TO MOVE

Before attempting to manoeuvre the Aerobridge to the aircraft, ensure that the hatched area is clear of any obstructions. Make use of the Aerobridge windows and glass walls of the tunnel. Check the vision on the camera display for obstructions around the bogie wheels.

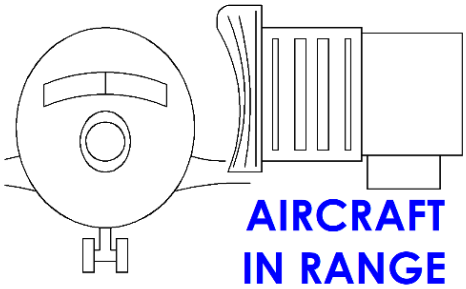
### DOCKING STATUS - IMAGES

**0 - Manual Mode. No Aircraft in range.**




The Aerobridge is in manual mode but still not close enough to the aircraft to detect with the range sensor. Steer as required and extend the Aerobridge using the joystick.

**1 - Manual Mode, Aircraft in range of optic sensor.**

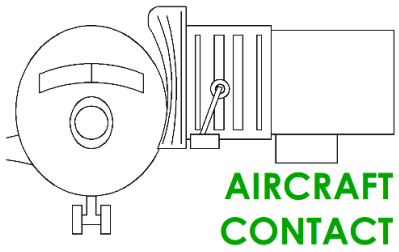



The aircraft has been detected by the Aerobridge. Make your final corrections to the docking position and proceed with the docking. The presence of the aircraft in the display confirms that the aircraft is in range. Note that when close to the aircraft, the Aerobridge drive will be in slow speed mode.

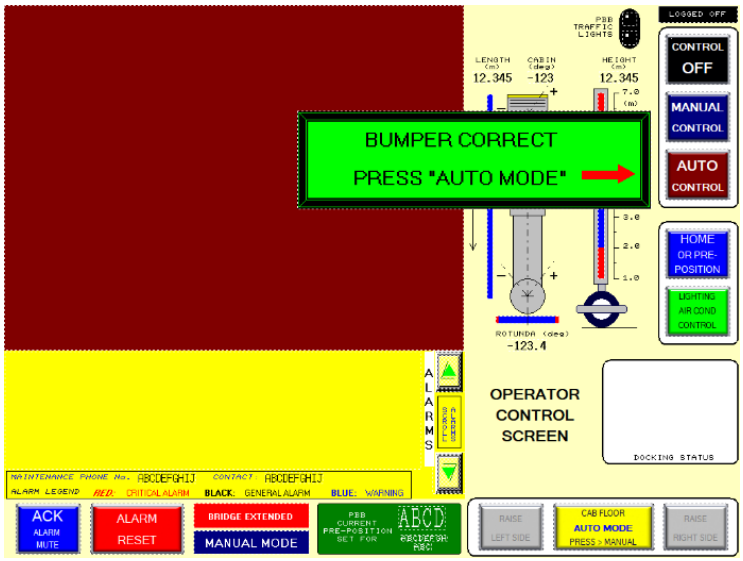
## AUTO SLEW

If this option has been included, it will aid in the docking onto the aircraft. As you approach the aircraft and say just the left bumper touches the aircraft fuselage, the cabin will automatically slew to the left and thus bring the right side of the bumper to touch the aircraft. This adjustment will only occur if the joystick is pressed forward. The adjustment may happen a few times until at least two of the three bumper sensors contact the aircraft.

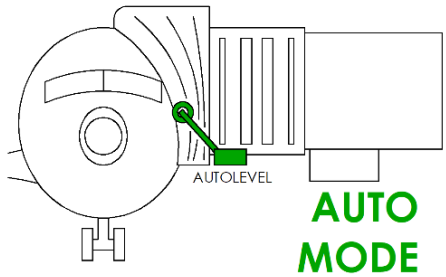
**2 - Bumper switches have contacted the aircraft. Ready to select Auto mode.**




The Aerobridge has two of the bumper switches contacting the aircraft. The Aerobridge is still in manual mode, and it is at this time, the operator is prompted to switch into “AUTO”.




**3 - Auto Mode. Auto leveller has engaged with aircraft.**




Once set to AUTO, the auto levelling arm will automatically extend onto the aircraft. Auto leveller contact with the aircraft is confirmed with the presence of the green auto leveller arm in the status display. The canopy will also be extended to make a seal against the aircraft.
Below is a description of the AUTO Mode procedure.

## AUTO MODE PROCEDURE

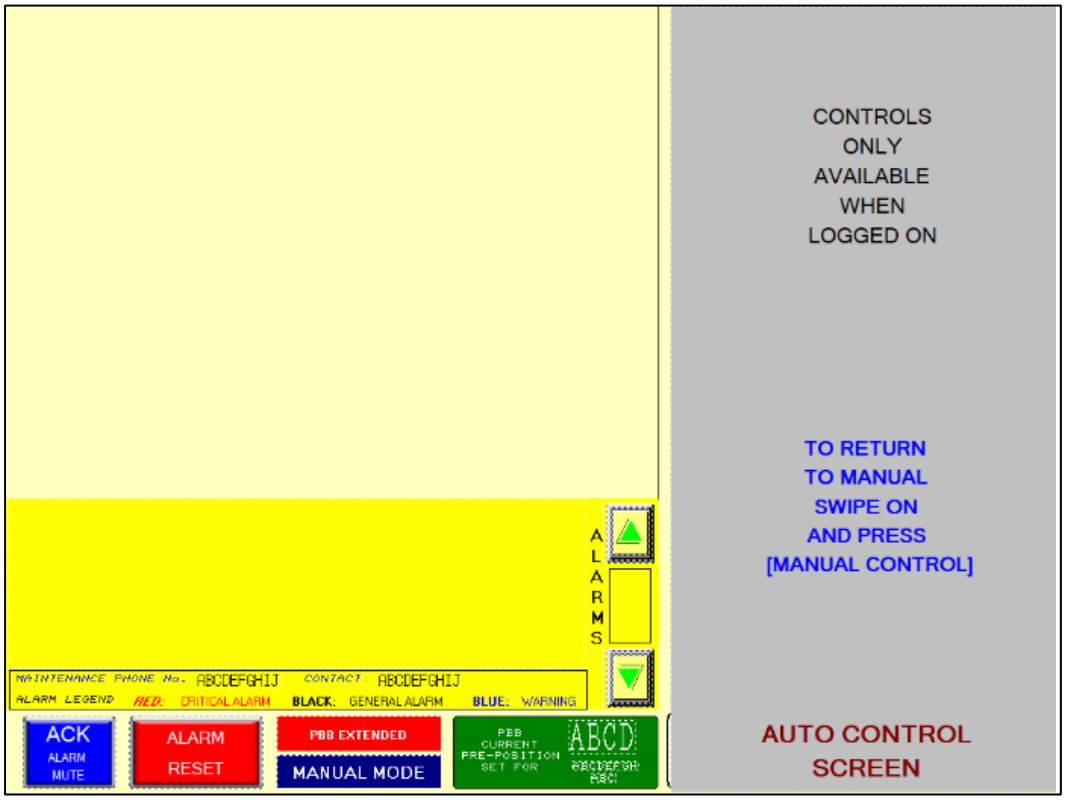
With the Aerobridge docked and in “AUTO” mode, the operator **must log off** with their swipe card.

At this time, the cabin doors may be opened and locked in place.

Follow the airline procedures for the opening of the aircraft door. Once the door is opened, place the safety shoe under the aircraft door, such that in the event of a fault with the auto levelling system, the underside of the aircraft door will strike the safety shoe thus activating a secondary safety measure to ensure that the Aerobridge floor does not contact the opened aircraft door.

With the Aerobridge controls in AUTO and logged off, the canopy deployed, the cabin doors open, the aircraft door open and the safety shoe in place, passengers may disembark.

It is safe to leave the Aerobridge control console unattended from this time. In AUTO none of the console push buttons or joystick will be active. The AUTO mode screen will be as shown below.



# 7.0 OPERATOR PROCEEDURE – DEPARTURE

## 7.1 RETRACT & RETURN TO HOME POSITION - APRON DRIVE AEROBRIDGE

### AUTO TO MANUAL PROCEDURE

Once all the passengers are on board the aircraft, follow the airline procedures for the closing of the aircraft door.

Place the safety shoe back into the stowed position. Close and lock the cabin doors.

When the aircraft is ready for departure, retract the Aerobridge:

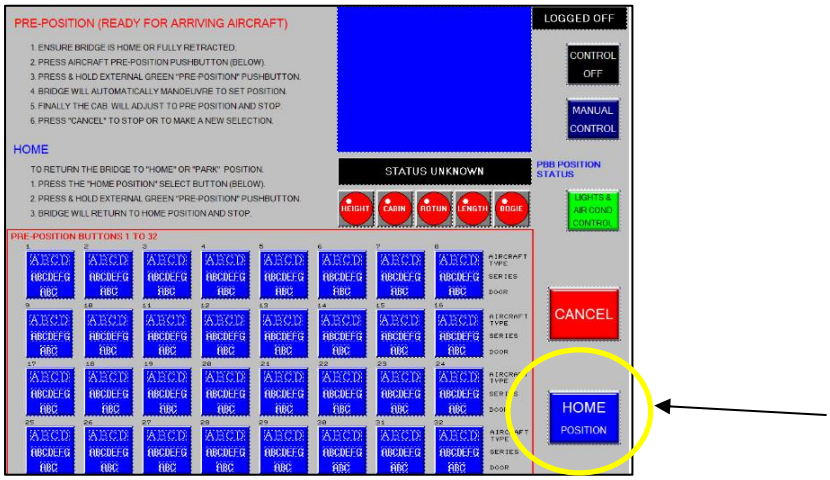
### RETRACT

Swipe on with your access card and press the MANUAL CONTROL button. The canopy will automatically retract from the aircraft. The Auto Leveller will also retract.

Use the joystick to retract the Aerobridge straight off the aircraft. Keep retracting until there is approximately one-meter clearance between the Aerobridge and the aircraft.

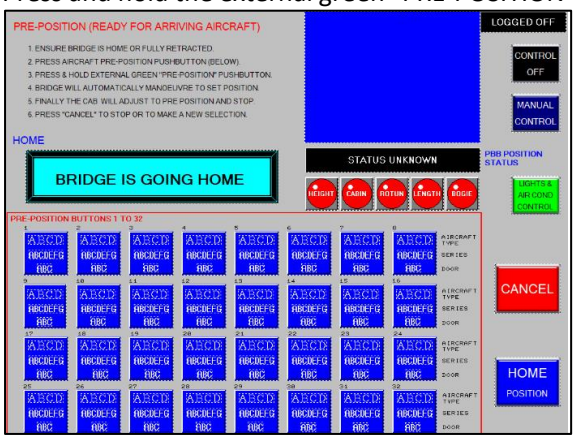
### HOME

Once the Aerobridge is clear of the aircraft and the push back has been completed, the Aerobridge is to be taken back to the HOME position. Select the HOME push button to access the Pre-Position screen.




Press the blue HOME button and observe the change of button colour to yellow.

Press and hold the external green "PRE-POSITION" pushbutton. The going home overlay will appear.



The Apron Drive Aerobridge will perform various manoeuvrers during the Pre-Position process, adjusting the height, setting the length, rotunda angle, cabin slew and final wheel axle direction for the selected HOME position.

NOTE: releasing of the external green button will stop movements. Press again to continue and hold down until process is complete.

When the Aerobridge has reached its designated HOME position, the Aerobridge Home overlay will be displayed.

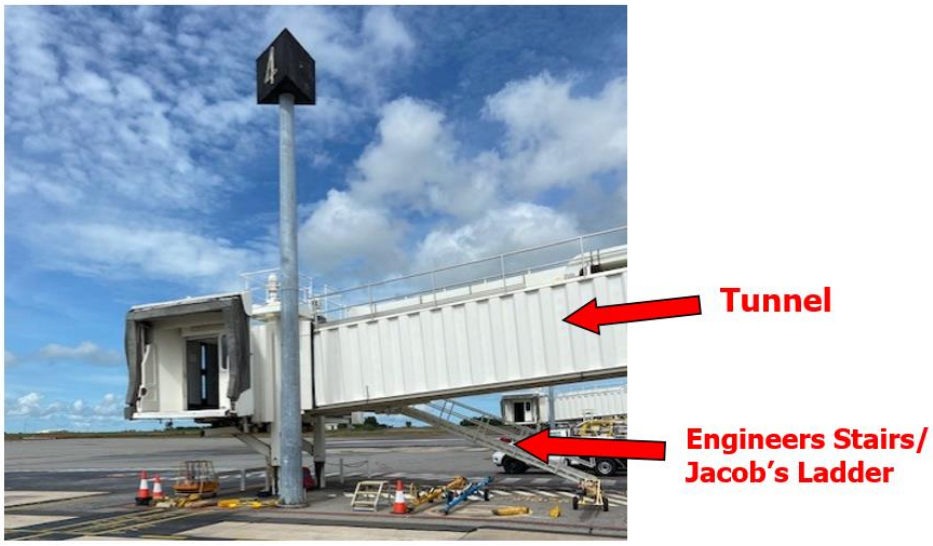

Follow the on-screen instructions. Use your card to swipe off and turn the Aerobridge to the OFF mode.

The standby screen will be displayed. The Aerobridge is now safe to leave and is ready for the next aircraft arrival.

# FIXED DRIVE AEROBRIDGES

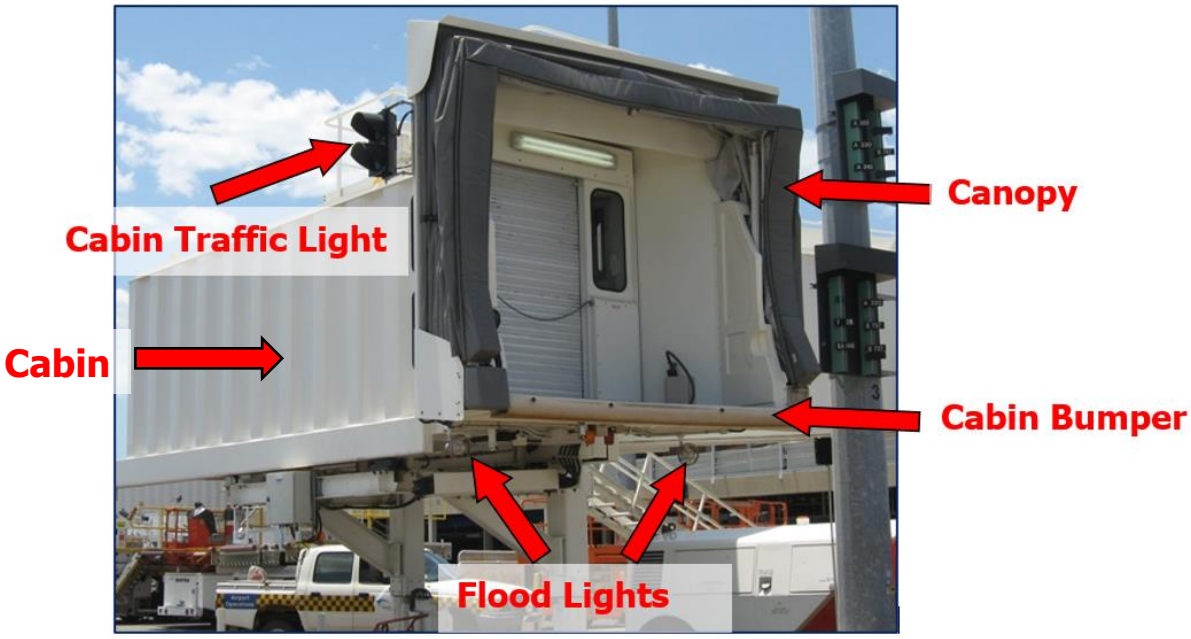
# 8.0 FIXED DRIVE AEROBRIDGES

## 8.1 EXTERNAL EQUIPMENT




Tunnels: enclosed and suspended corridors that extend from the end of the walkway link to the aircraft.

Engineers (or Service) stair (Jacob's ladder): stairs provide access from the apron to the aerobridge cabin.




Cabin – the cabin will extend and retract moving forward and back when operated with the joystick. The tunnel will not move, ensure the connection points between cabin and tunnel are clear when in operation.

Canopy - the accordion-type canopy allows the aerobridge to dock with aircraft with differing contours and provide a near weather-proof seal.

Cabin Traffic Light - the cabin traffic light has a red and green light. The green light indicates that the aerobridge is in a safe position and the aircraft can proceed onto the bay. The red light will display when the Aerobridge is activated but is not in the HOME position or designated aircraft type PRE-POSITION and will stop an aircraft from proceeding onto the bay until the Aerobridge position is corrected. The Traffic Light status is displayed on the aerobridge control console.

Cabin Safety Door - is a critical safety feature, the Safety Door is designed to protect personnel inside the cabin while the Aerobridge is moving and provides a sound barrier to protect personnel inside the cabin from excessive engine noise when aircraft are powering onto the bay. The Aerobridge control console will not respond if the Safety Door is not secured.

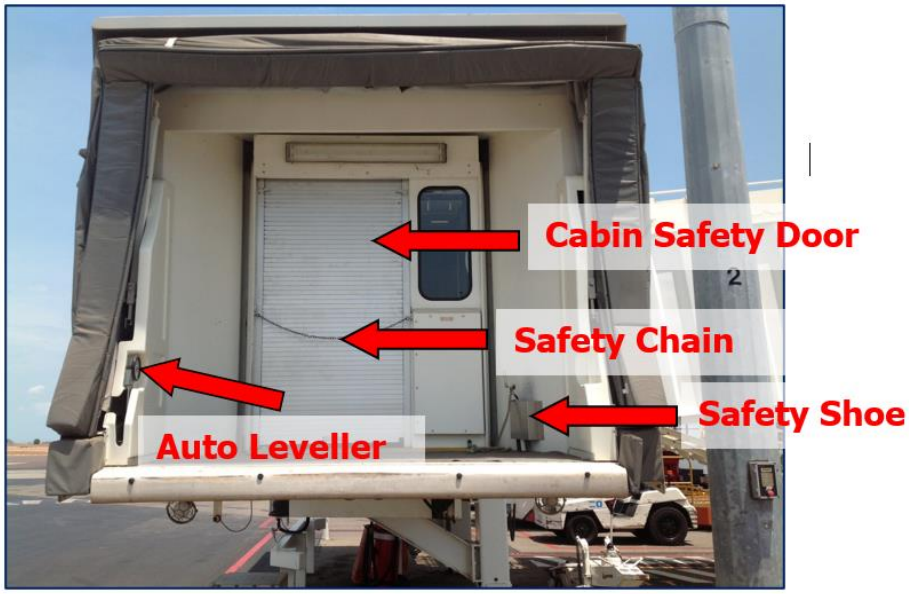
Cabin Safety Bumper – is a rubber material that assists to protect the aircraft fuselage. The bumper has 4 sensors, when docking at least 2 sensors must meet the aircraft fuselage in order for the canopy to deploy.

Auto-leveller – the Auto-Leveller arm detects movement of the Aerobridge during refuelling, disembarking/boarding and loading/unloading of baggage and cargo, and will automatically adjust the aerobridge height to compensate for changes to the height of the aircraft. Note Auto-Leveller arm is located on the outside of the cabin on the Bay 1 Apron Drive Aerobridge.

Safety Shoe - the Safety Shoe is used as a precaution in the event the auto-leveller fails. If the Safety Shoe makes contact with the aircraft door due to the aircraft height lowering, an alarm will sound, and the aerobridge will rapidly lower by 120mm to prevent damage to the aircraft door.

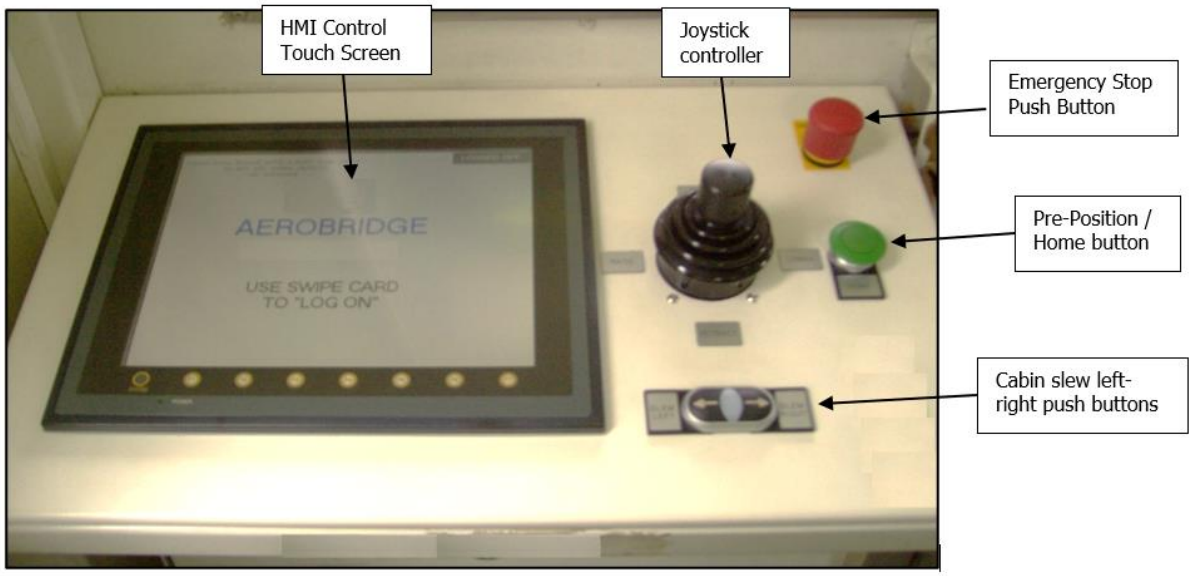
Safety Chain – the Aerobridges are fitted with roller doors and a safety chain. The Aerobridge console will not respond unless the safety chain is in place.

Flood light - flood lights are located underneath the cabin. These can be turned on as required through the LIGHTING CONTROL button on the LCD Touch Screen on the control console.



## 8.2 INTERNAL EQUIPMENT

### CONTROL PANNEL TOUCH SCREEN

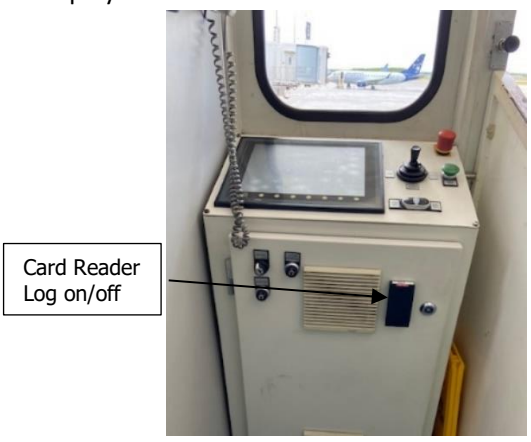


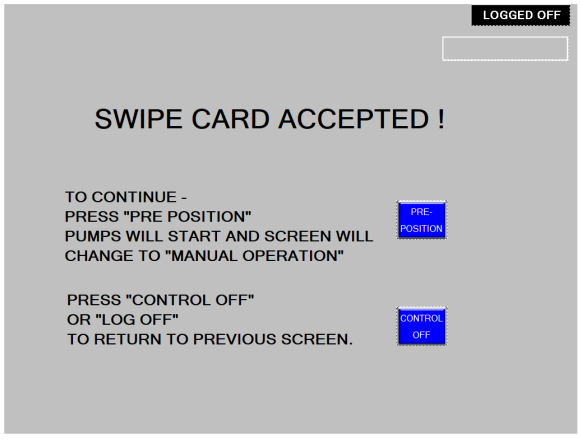

### OPERATING PROCEDURE

When the operator first arrives at the Aerobridge console the standby screen will be displayed on the console touch screen. If the console is in sleep mode, the screen will appear blank, simply touch any part of the screen to activate and the standby screen will appear. The stand-by screen will identify the Bay No.

### LOG ON

Swipe your ASIC/Access Card across the card reader to log on. Once logged on, the following screen is displayed.




To continue with the operation of the Aerobridge, simply press the “PRE-POSITION” button. The screen will change ready to pre-position the Aerobridge.
If you press “CONTROL OFF” you will be logged off and the screen will change to the stand-by screen described above.

### CLEAR TO MOVE

Before attempting to manoeuvre the Aerobridge whether by Pre-Position of Manual control ensure that the hatched area is clear of any obstructions. Make use of the Aerobridge windows and glass walls of the tunnel. Check the vision on the camera display for obstructions. We recommend using Pre-Positioning function.

### MOVEMENT SOUNDER (TRAVEL HOOTER)

Whenever the Aerobridge is moving, a slow Beep, Beep, Beep sound will be emitted. The sounder is located externally under the cabin floor.

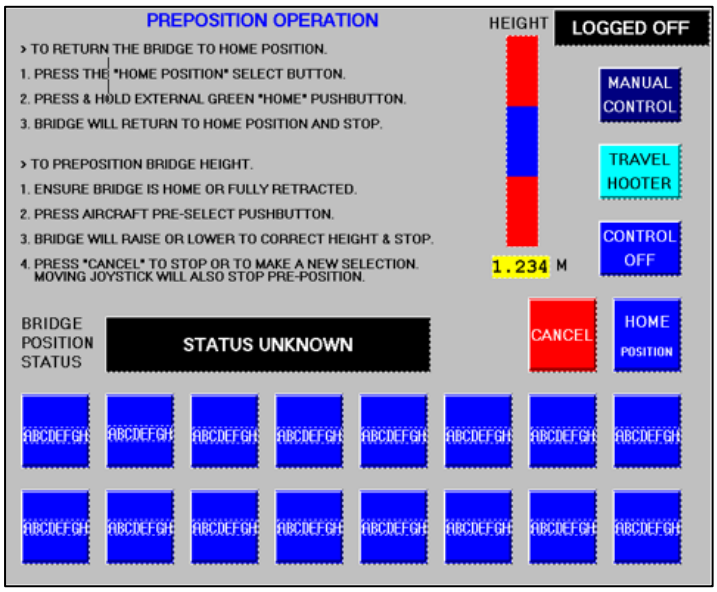
### MOVEMENT LIGHTS

As well as the sounder, amber flashing lights will be displayed when the Aerobridge is moving. The flashing lights are located on the left and right of the bogie wheels and under the cabin adjacent to the movement sounder.

## OPERATOR SCREEN – DESCRIPTION

The following describes in brief the functions located on the Operator Control Screen. A detailed description of the relevant controls are described in the Manual Control section below.

### PRE-POSITION




### CAMERA VISION

A CCTV will display the apron area around the Aerobridge wheel assembly. The vision is to alert the operator of possible obstacles in front of the driving wheels. A forward-facing camera will be show the vision of the wheel assembly. The camera is used to observe the apron, it should not be used as an aide to drive the Aerobridge.

### CURRENT POSITION

The current numerical position of the Cabin gantry height (m) is displayed. A bar indicator provides a graphic display of the position. The Aerobridge graphic is not animated.

The blue bar indicates that the Aerobridge is within working (normal) position limits. The bar will change to red if the Aerobridge exceeds the set limits of the Aerobridge. The position data shown on the operator screen is for reference only. It gives a guide to the operator that they are within the working limits of the Aerobridge.

## TRAFFIC LIGHTS

The external traffic light status is displayed. A green light signals to the incoming aircraft that the Aerobridge is in a safe position for the aircraft to continue to the stop line. The green light will be on when the Aerobridge is at HOME or a set pre-position. A red signal will be shown for all other situations.
Note that the green will turn to red if the Aerobridge is moved from the set pre-position (Joystick moved away from the neutral position).

## CONTROL MODE


## CONTROL OFF

Press to switch the Aerobridge controls to OFF. This will log you off and return the screen to standby.

## CONTROL MANUAL

When on the operator screen and logged on, the Aerobridge is in Manual mode. The controls for manoeuvring the Aerobridge are active.

## AUTO MODE

When the Aerobridge is buffed onto the aircraft, an overlay will prompt the operator to press this AUTO CONTROL button. This action will deploy the auto levelling arm and extend the canopy to form a weather seal to the aircraft. Additional details are provided later in this operator manual.

## HOME or PRE-POSITION.

The pressing of this button will return to the pre-position screen described previously.

## LIGHTING CONTROL

The pressing of this button will display a screen to allow the control of the internal and external lighting. The Aerobridge air conditioner is also controlled on this screen. The lighting controls have been described earlier in this manual.

## DOCKING STATUS

This graphic display will show the main stages of the Aerobridge docking onto the aircraft. Additional

details are provided later in this operator manual.

### PRE-POSITION SET

The Pre-Position to which the Aerobridge has been set will be displayed here. If the Aerobridge is moved after this has been set then “NOT SET” will be displayed. The traffic light will turn red.

### CONTROL MODE

The set mode will be displayed, MANUAL or AUTO MODE.

### AEROBRIDGE POSITION STATUS

This display is similar to the traffic lights. Green, Aerobridge retracted, OK for the aircraft to approach. Red, Aerobridge extended indicates that it is not safe for the aircraft to approach the apron stop line.

### ALARM RESET

The pressing of this button will reset any alarm that has been latched on. The alarm can only be reset after corrective action has been taken as described in the text display areas located above this button.

### ACK ALARM MUTE

The audible alarm may be silenced by acknowledging the alarm. This is done by pressing the alarm mute button. However, any change in alarm conditions will re-activate the sounding of the alarm. Press mute again to silence the sounder.

### ALARM and WARNINGS

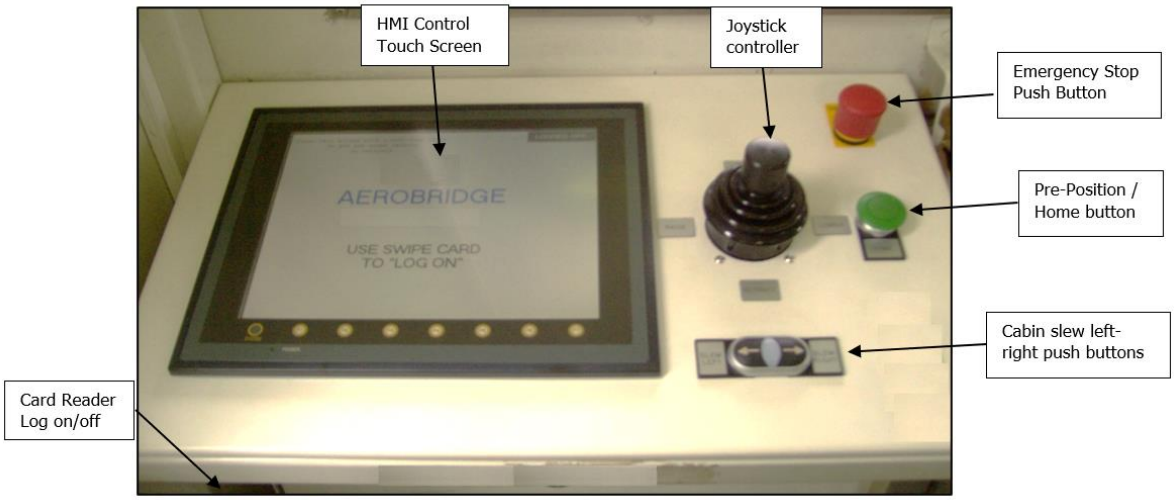
This area will display in text any current active alarm and display the corrective action required. The alarms will always be listed with the most critical first followed by general alarms and warning. Always consult this display if the Aerobridge is not performing as expected.

### ALARM LIGHTS AND SOUNDER

An active alarm will illuminate an external red flashing light. The flashing light is located under the cabin adjacent to the movement light. An audible, varying frequency sounder will be emitted at the same time. However, the alarm sounder may be muted as noted above.

## 8.3 MANUAL CONTROL

When on the operator control screen, the Aerobridge may be manually controlled to dock onto the arriving aircraft. Refer to the control console part description noted at the beginning of this operator manual. Make use of the cabin slew, elevation, and joystick to control the movement of the Aerobridge.




## CABIN SLEW

The cabin or bridgehead may be slewed (turned) left or right with these pushbuttons. They allow the bumper to be aligned with the aircraft fuselage and minimise any gap between the aircraft and the Aerobridge.

## JOYSTICK CONTROLLER

The joystick is used to manually control the movement of the Aerobridge cabin toward and away from the aircraft. It can also be used to raise and lower the cabin height.

Move the joystick into the direction you wish to travel, the further the joystick is pushed the faster the Aerobridge will travel. Acceleration and deceleration are automatically controlled. Release the joystick and allow it to come back to the centre neutral position will slow the Aerobridge to a stop.

## EMERGENCY STOP

When pressed, this button will latch and stop all movements of the Aerobridge. The resetting of the Emergency Stop must be performed before any further movement will be permitted. Follow the onscreen resetting procedure and only if safe to do so.

**Note: the Emergency Stop button should only be pressed in an emergency. It is not designed to provide a means to switch the Aerobridge off.**

Now that you are familiar with the Fixed Drive Aerobridge Components let's Log On and Operate the bridge.

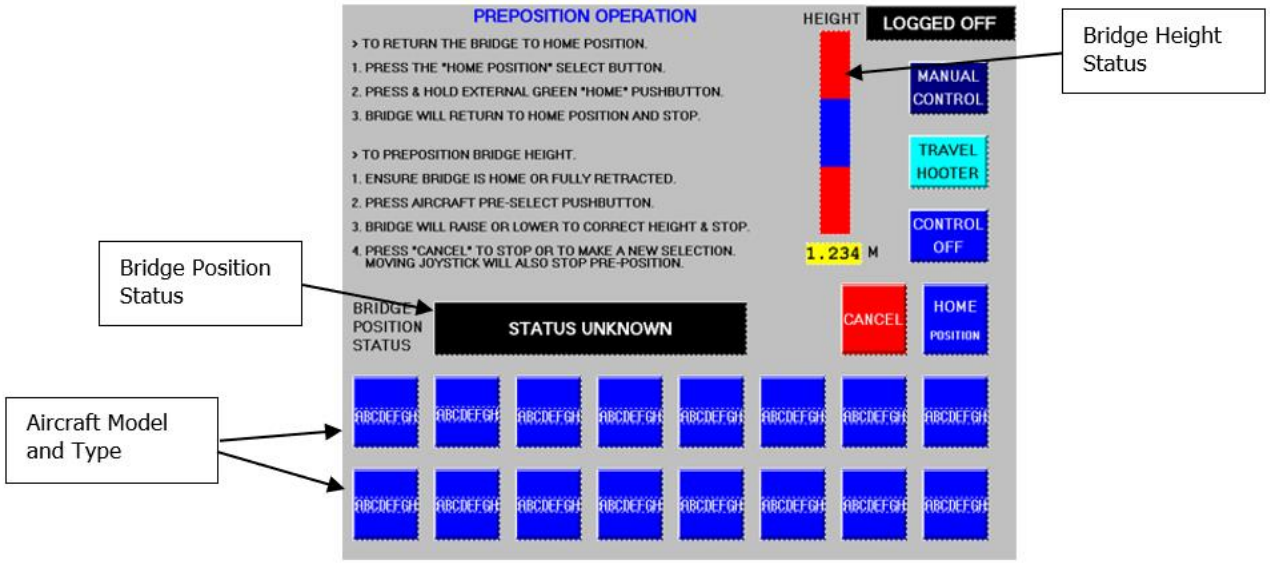
# 9.0 OPERATOR PROCEEDURE – ARRIVAL

## 9.1 PREPARE AND PRE-POSITION - FIXED AEROBRIDGE

### PRE-POSITION - RECOMMENDED

Swipe to Logon and press the “PRE-POSITION” button, the following screen will be displayed. The pre-position screen is used to select and drive the Aerobridge to a location on the apron in preparation for the arriving aircraft.

Note: This should be set up prior to the arrival of the aircraft turning onto the Bay and NIGs being set.




Follow the on-screen instructions to prepare for the **arriving aircraft**.

1. The Aerobridge should be HOME or fully retracted to commence the pre-positioning of the Aerobridge.

2. Select the arriving aircraft model and type by pressing the corresponding pre-position blue touch button. Only a programmed and enabled button will be available for this bay. The selected button will be highlighted yellow.

3. Press and hold the external green "PRE-POSITION" pushbutton*.

4. The Aerobridge will raise or lower to the correct height and stop.
   *Releasing of the external green button will stop movements. Press again and hold to continue.

5. Upon completion, the screen will automatically change to the operator control screen for Manual Control.

### CANCEL

If you make a mistake during the selection process, simply press “CANCEL”, and select again. If you choose not to pre-position, press “MANUAL CONTROL” to go to the operator screen. This will also cancel any selection you may have made.

### CONTROL OFF

If you press “CONTROL OFF” you will be logged off and the screen will change to the stand-by screen described above.

## 9.2 DOCKING PROCEDURE – FIXED AEROBRIDGE

When the arriving aircraft stops on the bay and the signal to dock is provided by the ramp engineer, you may manually drive the Aerobridge to dock onto the aircraft. Use the manual controls described above to position the Aerobridge against the aircraft.
It is very important that you wait until the Engineer or Ground Staff have given the “all clear” or thumbs up before moving the Aerobridge.

### CLEAR TO MOVE

Before attempting to manoeuvre the Aerobridge to the aircraft, ensure that the hatched area is clear of any obstructions. Make use of the Aerobridge windows and glass walls of the tunnel. Ensure the safety cabin door is raised but keep the safety chain in place for now.

### MOVE CABIN TOWARDS AIRCRAFT AND LINE UP

Use the Joystick to direct the Aerobridge cabin towards the aircraft doorsill by moving it forward to extend the bridge. If required, move the joystick left or right to raise or lower the cabin as required. Moving the joystick back towards you will retract the bridge.

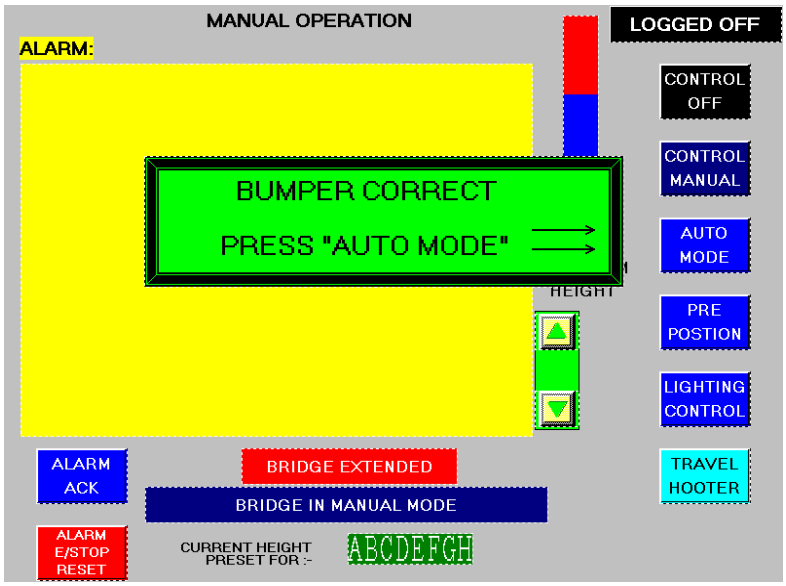
Make your final corrections to the docking position and proceed with the docking. The presence of the aircraft in the display confirms that the aircraft is in range. Note that when close to the aircraft, the Aerobridge drive will be in slow speed mode. Continue with the joystick until aircraft docking is complete.

### ADJUST (SLEW) THE BUMPER

Use the Slew Left/Right Buttons to adjust the Aerobridge bumper so that it is parallel to the aircraft. This will ensure the correct docking onto the aircraft.

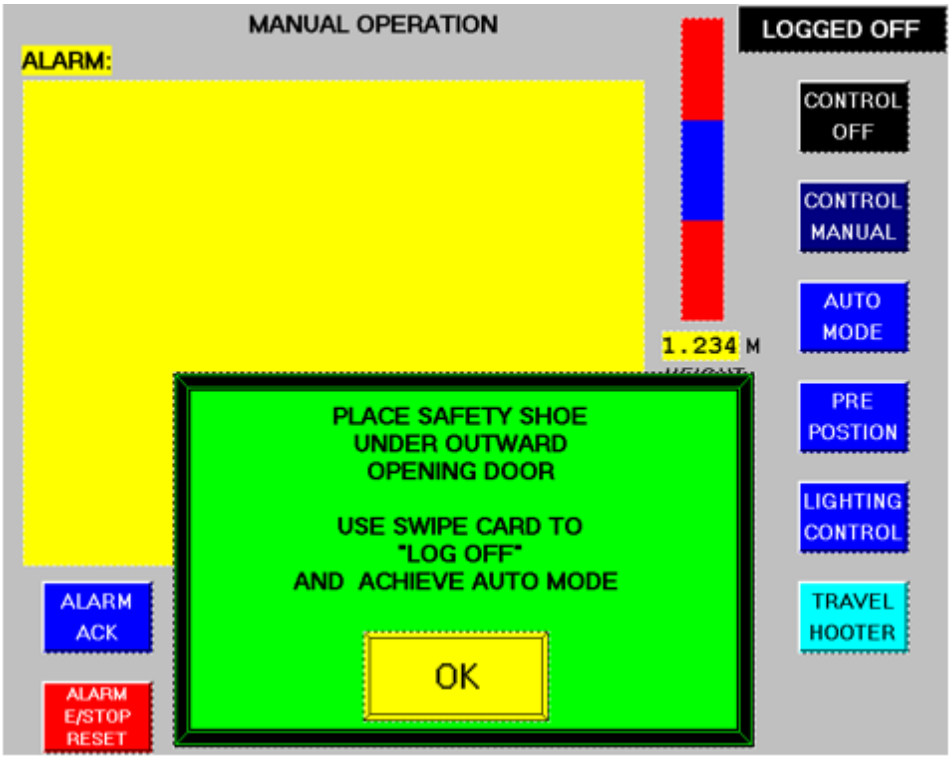
In order for the canopy to deploy at least 2 of the 4 sensors located on the bumper must be in contact with the aircraft fuselage.

Once the Aerobridge has two of the bumper switches contacting the aircraft the operator is prompted to switch into “AUTO MODE”.




Once set to AUTO, the Auto Leveller arm and Canopy will automatically extend onto the aircraft. Continue reading for a description of the AUTO Mode procedure.

## AUTO MODE PROCEDURE




With the Aerobridge docked and in “AUTO” mode, the operator must log off with their swipe card.

At this time, the cabin doors may be opened and locked in place. Follow the airline procedures for the opening of the aircraft door.

Once the door is opened, place the Safety Shoe under the aircraft door, such that in the event of a fault with the auto levelling system, the underside of the aircraft door will strike the safety shoe thus activating a secondary safety measure to ensure that the Aerobridge floor does not contact the opened aircraft door.

*Note: If the Safety Shoe is activated the Aerobridge Cabin will automatically lower by 12cm.*

With the Aerobridge controls in AUTO and logged off, the canopy deployed, the cabin doors open, the aircraft door open and the safety shoe in place, passengers may disembark.

It is safe to leave the Aerobridge control console unattended from this time. In AUTO none of the console push buttons or joystick will be active.

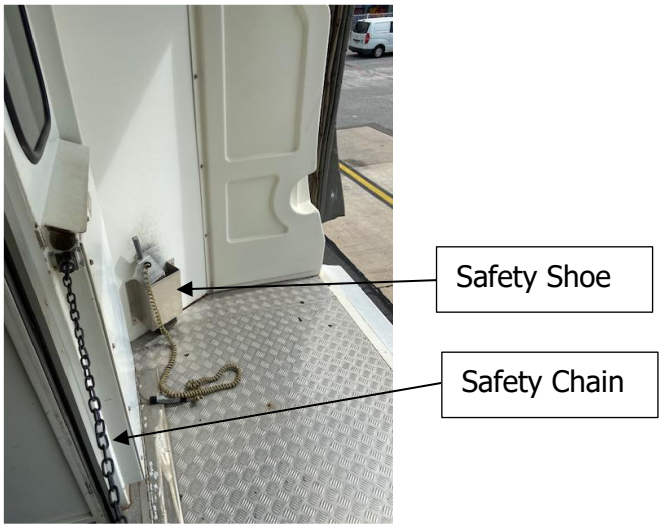
# 10.0 OPERATOR PROCEEDURE – DEPARTURE

## 10.1 RETRACT & RETURN TO HOME POSITION - FIXED DRIVE AEROBRIDGE

### AUTO TO MANUAL PROCEDURE

Once all the passengers are on board the aircraft, follow the airline procedures for the closing of the aircraft door.

Place the safety shoe back into the stowed position. Relatch the Safety Chain across the doorway and close the Cabin Safety Door.




When the aircraft is ready for departure, retract the Aerobridge:

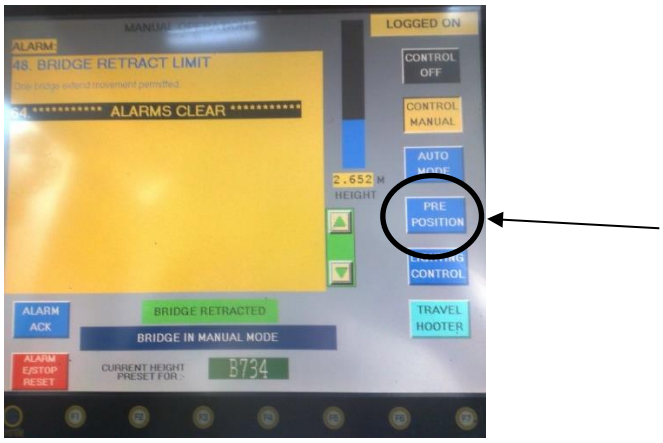
### RETRACT

Swipe on with your access card and press the MANUAL CONTROL button. The canopy and Auto Leveller will automatically retract from the aircraft.

Use the joystick to retract the Aerobridge straight off the aircraft. Keep retracting until there is approximately one-meter clearance between the Aerobridge and the aircraft.

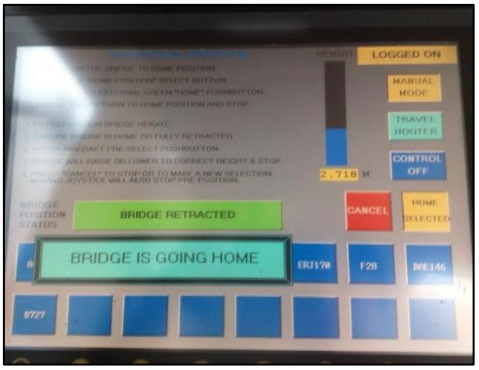
### HOME

Once the Aerobridge is clear of the aircraft and the push back has been completed, the Aerobridge is to be taken back to the HOME position. Select the PRE-POSITION button.



Press the blue HOME POSITION button and observe the change of button colour to yellow.

Press and hold the external green "PRE-POSITION" pushbutton. The going home overlay will appear.

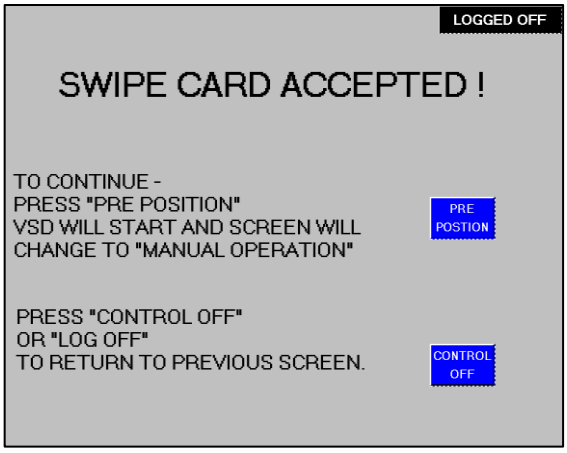



Note: Releasing of the external green button will stop movements. Press again to continue until you reach the HOME position.

When the Aerobridge has reached its designated HOME position, the Aerobridge Home overlay will be displayed.


Follow the on-screen instructions. Use your card to swipe off and turn the Aerobridge to the OFF mode.

The standby screen will be displayed. The Aerobridge is now safe to leave and is ready for the next aircraft arrival.



# 11.0 PROTECTION SENSORS AND LIMITS – ALARMS

Immediately report any Aerobridge problem or malfunction to DIA Operations. The Airport Duty Manager (ADM) is the first point of contact; if you are unable to contact the ADM, the Airport Operations Officer (AOO) can be contacted, both are available 24/7. The ADM or Operations Officer will arrange for technical staff assistance if required.

Any fault messages that appear on the Aerobridge Control Console will also need to be advised to DIA so technical staff can inspect and follow-up any faults. Please make sure to note down the fault information on the control panel screen.

## DIA ADM – 0401 005 977
## DIA AOO – 0402 088 145

### AUTO LEVELLER NOT ON AIRCRAFT

A sensor on the auto levelling arm will detect if the levelling wheel has contacted the aircraft. If the presence of the aircraft has not been sensed, then this alarm will occur "AUTO LEVELLER NOT ON AIRCRAFT". This alarm may tale 5 seconds after the Auto mode has been set.

You will need to place the Aerobridge back into the Manual mode, retract the Aerobridge say 300mm and redock. If this alarm persists, call the DIA ADM or report to company supervisor.

### BUMPER OVERPRESSURE

If during the final stages of docking onto the aircraft, the Aerobridge bumper presses too hard onto the aircraft, an alarm will be displayed "BUMPER OVER PRESSURE, AUTO RETRACTED".

The Aerobridge will stop any extending of the Aerobridge attempted by the operator and automatically retract the Aerobridge away from the aircraft for approximately 3 seconds. Follow the corrective action to clear the alarm.

Reset the alarm, retract the Aerobridge to a nominal 300mm and attempt to dock onto the aircraft. If the over pressure alarm issue persists, call the DIA ADM or report to company supervisor.

### HYDRAULIC ALARMS

The raising and lowering of the Aerobridge is performed with hydraulic rams. There are several alarms relating to the hydraulic system that may be displayed. The clearing of most of the hydraulic related alarms will require maintenance to attend the Aerobridge. Call the DIA ADM or report to company supervisor.

### HORIZONTAL DRIVE FAULT

The wheels are controlled by variable speed drives. A fault displayed relating to the drives will require maintenance to attend the Aerobridge. Note that an emergency stop will initiate a drive fault. Clear the emergency stop first before attempting to reset a drive fault.

### LIMIT SWITCHES

The Aerobridge is fitted with electronic (soft) limits, working limits and ultimate limit switches. The soft limits provide control signals, and the working and ultimate limits prevent damage to the Aerobridge in the event of overtravel. This includes height, cabin slew, rotunda swing, extend and retract and bogie wheel rotation. The rotunda limits maintain the Aerobridge within the hatched apron area.

## SAFETY HOOP/BAR

The bogie wheel assembly is surrounded by a safety hoop or bar. The striking of the hoop in any direction will prevent any further travel of the Aerobridge across the apron. The tripping of the safety hoop will be signalled to the operator and the corrective action noted on the alarms and warning display. The resetting can only be performed at the wheel assembly.

The safety hoop is mounted approximately 300mm above the apron. Objects less than this will not be detected. The bogie wheel camera vision must be checked to see that the way is clear of items such as chocks, tugs, and the like.

## SLOPE LIMIT

The slope or gradient of the Aerobridge is determined by the current length and current height of the Aerobridge. The raising or lowering of the Aerobridge will alter the slope. The extending of the Aerobridge will reduce the slope while the retracting will increase the slope.

There is a limit to the amount of slope that the Aerobridge may have. This can be for passenger ease of access when walking through the Aerobridge to and from the docked aircraft or a mechanical restraint limiting the movement of the Aerobridge.

Alarms for down slope and for up slope limits will be displayed with the corrective action to take to clear the alarm. Follow the instructions to reset the alarm.

## SOFT LIMIT

Electronic sensors signal to the controlling PLC the current position of the Aerobridge. The soft limits enable the smooth control of the Aerobridge when moving across the apron. The operator will be notified with a text message stating that the Aerobridge is in slow speed mode, which is usually an indication that the Aerobridge has reached a soft limit. You may proceed to operate the Aerobridge noting that you are getting close to a working limit.

## ULTIMATE LIMIT

The striking of an ultimate limit switch will also be signalled to the operator, however, an ultimate limit will shut the Aerobridge down and trip the emergency stop circuit. Maintenance personnel will need to be called to investigate and take corrective action to reset the Aerobridge. The ultimate limit is designed to prevent mechanical damage to the Aerobridge if the electronic soft limit and the working limits both fail to stop the Aerobridge. The operator cannot reset a tripped ultimate limit- contact your supervisor or the DIA ADM.

## WORKING LIMIT

The striking a working limit will be signalled to the operator and the corrective action noted on the alarms and warning display. Follow the directions to clear the working limit. The working limit is designed to prevent any further movement of the Aerobridge past the limit but will still allow full movement away from the working limit.

## 11.1 INCIDENT REPORTING

All incidents must be reported to DIA. This includes incidents involving staff, passengers, aircraft and other equipment.

Details of incident should include:

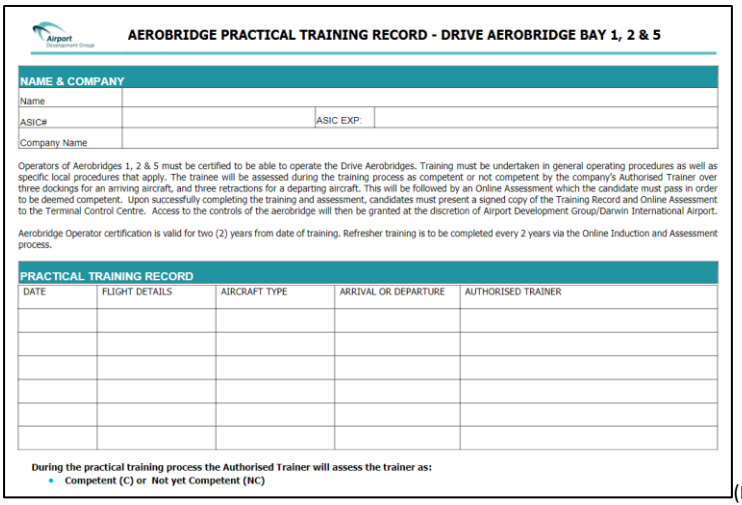
- Date and time;
- The type of incident;
- The location of the incident;
- Type of equipment failure (if applicable);
- If any emergency agencies are required.

To comply with CASA's DAMP Policy, a Drug and Alcohol test is required post-accident or serious incident. Your company will make arrangement for the testing to be done, otherwise DIA can arrange the testing on behalf of the company

**If the event of a fire, contact Airport Response Fire Fighters (ARFF) on 08 8920 4899**

# 12.0 TRAINING, INDUCTION AND ASSESSMENT

Each applicant must supply a completed Training Record, available for download from our website Operations | Darwin International Airport (darwinairport.com.au) or upon request via email.



**AEROBRIDGE PRACTICAL TRAINING RECORD - DRIVE AEROBRIDGE BAY 1, 2 & 5**

**NAME & COMPANY**

| | | | |
|---|---|---|---|
| Name | | | |
| ASIC# | | ASIC EXP: | |
| Company Name | | | |

Operators of Aerobridges 1, 2 & 5 must be certified to be able to operate the Drive Aerobridges. Training must be undertaken in general operating procedures as well as specific local procedures that apply. The trainee will be assessed during the training process as competent or not competent by the company's Authorised Trainer over three dockings for an arriving aircraft, and three retractions for a departing aircraft. This will be followed by an Online Assessment which the candidate must pass in order to be deemed competent. Upon successfully completing the training and assessment, candidates must present a signed copy of the Training Record and Online Assessment to the Terminal Control Centre. Access to the controls of the aerobridge will then be granted at the discretion of Airport Development Group/Darwin International Airport.

Aerobridge Operator certification is valid for two (2) years from date of training. Refresher training is to be completed every 2 years via the Online Induction and Assessment process.

**PRACTICAL TRAINING RECORD**

| DATE | FLIGHT DETAILS | AIRCRAFT TYPE | ARRIVAL OR DEPARTURE | AUTHORISED TRAINER |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**During the practical training process the Authorised Trainer will assess the trainer as:**

- **Competent (C) or Not yet Competent (NC)**

(Example of training record)

Once the training record has been filled out completely and signed off by the accredited trainer the applicant is required to successfully complete the online Induction & multiple-choice quiz. To request the online inductions please email diatraining@adgnt.com.au

Following completion of the online induction please notify diatraining@adgnt.com.au, attaching the training record, or visit the Terminal Control Centre to advise. The applicant will then have the Aerobridge Control Panel reader access added to their ASIC Access Control Permissions.

Each time your ASIC is renewed you will be required to refresh your Aerobridge knowledge and re-sit the online induction and quiz.