AIRCRAFT SERIOUS INCIDENT

FINAL REPORT

SI 08/24

Air Accident Investigation Bureau (AAIB)

Ministry of Transport, Malaysia

Fixed Wing Aircraft Boeing 737-800, Registration 9M-MXQ

at Yangon International Airport, Myanmar

on 19 July 2024

Air Accident Investigation Bureau
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FINAL REPORT SI 08/24

AIR ACCIDENT INVESTIGATION BUREAU (AAIB)MALAYSIA

REPORT NO.: SI 08/24

OPERATOR	**: MALAYSIA AIRLINES BERHAD**
AIRCRAFT TYPE	**: BOEING 737-800**
NATIONALITY	**: MALAYSIA**
REGISTRATION	**: 9M-MXQ**
PLACE OF OCCURRENCE	**: YANGON INTERNATIONAL AIRPORT, MYANMAR**
DATE AND TIME	**: 19 JULY 2024 AT 2200 LT (1530 UTC)**

The sole objective of the investigation is the prevention of accidents and incidents. In accordance with Annex 13 to the Convention on International Civil Aviation, it is not the purpose of this investigation to apportion blame or liability.

All times in this report are Local Time (LT) unless stated otherwise. LT is Coordinated Universal Time (UTC) + 8 hours.

INTRODUCTION

The Air Accident Investigation Bureau (AAIB) is the authority responsible for investigating air accidents and incidents in Malaysia, operating under the Ministry of Transport. The AAIB's mission is to promote aviation safety through independent and objective investigations into air accidents and serious incidents. Additionally, the AAIB investigates incidents that reveal potential safety issues.

All investigations by the AAIB are conducted in accordance with Annex 13 to the Convention on International Civil Aviation (ICAO Annex 13) and the Civil Aviation Regulations 2016. It is important to note that AAIB reports are not intended to apportion blame or determine liability, as neither the investigations nor the reporting processes are designed for those purposes. The sole objective of this investigation and the Final Report is the prevention of accidents and incidents.

In accordance with ICAO Annex 13, notification of the serious incident was sent out on 19 July 2024 to the National Transport Safety Board (NTSB), United States of America as the State of Design and Manufacture, and to the International Civil Aviation Organisation (ICAO). The Preliminary Report for this accident was subsequently submitted to the ICAO, the Civil Aviation Authority of Malaysia (CAAM) and the aircraft operator on 18 August 2024.

In accordance with ICAO Annex 13 paragraph 6.3, a copy of the Draft Final Report was sent on 22 May 2025 to the NTSB, MTSB, CAAM and the aircraft operator inviting their significant and substantiated comments on the report.

Unless otherwise indicated, recommendations in this report are addressed to the investigating or regulatory authorities of the State having responsibility for the matters with which the recommendations are concerned. It is for those authorities to decide what action is to be taken.

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APPENDICES

GLOSSARY OF ABBREVIATIONS

A	
AAIB	Air Accident Investigation Bureau
AMOS	Aircraft Maintenance and Operations System
ACM	Air Cycle Machine
ATC	Air Traffic Controller
AJL	Aircraft Journey Log
AMM	Aircraft Maintenance Manual
ACAU	Air Conditioning Accessory Unit
ARS	Airworthiness Release Section
APU	Auxiliary Power Unit
ACARS	Aircraft Communication Addressing and Reporting System
C	
CAAM	Civil Aviation Authority of Malaysia
CDI	Course Deviation Indicator
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CVR	Cockpit Voice Recorder
CSMM	Corporate Safety Management Manual
D	
DME	Distance Measuring Equipment
DMI	Deferred Maintenance Item
E	
EGR	Engine Ground Run
ECS	Environmental Control System
F	
FDR	Flight Data Recorder
FI	Flight Instructor
ft	feet

FOD	Foreign Object Debris
FIM	Fault Isolation Manual
FCOM	Flight Crew Operating Manual

G

GPS	Global Positioning System

H

hrs	hours
HPWS	High-Pressure Water Separator

I

IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IR	Instrument Rating

L

LT	Local Time
LH	Left Hand
LO	Low
LS	Leading Steward

M

MAHB	Malaysia Airport Holding Berhad
MASB	Malaysia Airport Sendirian Berhad
MAG	Malaysia Aviation Group
MTBUR	Mean Time Between Unscheduled Removal
MSL	Minimum Stock Level
MOR	Mandatory Occurrence Reporting
m	meter
MAB	Malaysia Airlines Berhad
MABES	Malaysia Airlines Engineering Services

P

PIREP	Pilot Report
PM	Pilot Monitoring
PIC	Pilot In Command
PF	Pilot Flying

Q

QA	Quality Assurance

R

REV	Revision
RH	Right Hand
RGN	Yangon Airport

S

SL	Service Letter
SPD	Speed
SIC	Second In Command

T

TES	Technical Service Engineering
TAT	Total Air Temperature
TSI	Technical Servcie Instruction

V

VFR	Visual Flight Rules
VOR	Very High-Frequency Omni-Directional Range
VMO	Maximum Operating Velocity
VYYY	Yangon International Airport
VNKT	Kathmandu Airport, Nepal

W

WMKK	Kuala Lumpur International Airport (KUL - IATA code)

SYNOPSIS

On 19 July 2024, a Boeing 737-800 operated by Malaysia Airlines Berhad, registration 9M-MXQ, experienced a serious incident during a scheduled flight from Kuala Lumpur International Airport (WMKK) to Kathmandu Airport (VNKT), Nepal. The aircraft took off at approximately 1302 UTC, carrying 150 passengers and 7 crew members. During the flight, the aircraft encountered an issue with the hot air conditioning system, which led to uncontrolled cabin pressurisation at FL340.

The crew initiated an emergency descent and deployed oxygen masks, levelling off at FL100. After approximately 2 hours of flight, the crew diverted to Yangon Airport (RGN), Myanmar, where they safely landed at 1550 UTC. The landing was conducted under overweight conditions and there were no injuries reported.

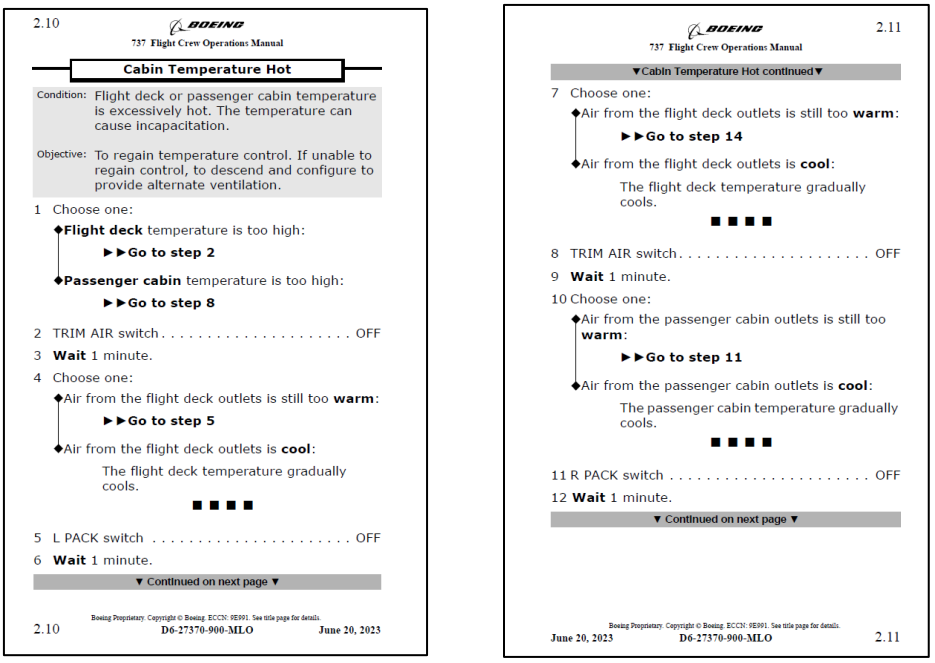
A Mandatory Occurrence Report (MOR) was submitted by the operator to the Civil Aviation Authority of Malaysia (CAAM) and the Air Accident Investigation Bureau, Malaysia (AAIB), as required to notify them of the incident.

1.0 FACTUAL INFORMATION

1.1 History of the Flight

On 19 July 2024, a Boeing 737-800 aircraft operated by Malaysia Airlines Berhad (MAB), bearing registration 9M-MXQ, was involved in a serious incident during a scheduled passenger flight from Kuala Lumpur International Airport (WMKK) to Kathmandu Airport (VNKT), Nepal. Operating as flight MH114, the aircraft departed WMKK at 1302 UTC with 150 passengers and 7 crew members on board. The Pilot in Command (PIC) performed the duties of the Pilot Flying (PF), while the Second in Command (SIC) served as the Pilot Monitoring (PM).

While cruising at Flight Level (FL) 340 and after passing waypoint LALAT[1] on airway M770, the Leading Steward (LS) reported elevated temperatures in the forward cabin to the PIC. The PIC initiated the Cabin Temperature Hot Non-Normal Checklist (NNC).



2.10

BOEING

737 Flight Crew Operations Manual

Cabin Temperature Hot

Condition: Flight deck or passenger cabin temperature is excessively hot. The temperature can cause incapacitation.

Objective: To regain temperature control. If unable to regain control, to descend and configure to provide alternate ventilation.

1 Choose one:

◆**Flight deck** temperature is too high:

►►**Go to step 2**

◆**Passenger cabin** temperature is too high:

►►**Go to step 8**

2 TRIM AIR switch . . . . . OFF

3 **Wait** 1 minute.

4 Choose one:

◆Air from the flight deck outlets is still too **warm**:

►►**Go to step 5**

◆Air from the flight deck outlets is **cool**:

The flight deck temperature gradually cools.

■ ■ ■ ■

5 L PACK switch . . . . . OFF

6 **Wait** 1 minute.

▼ Continued on next page ▼

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BOEING

737 Flight Crew Operations Manual

▼Cabin Temperature Hot continued▼

7 Choose one:

◆Air from the flight deck outlets is still too **warm**:

►►**Go to step 14**

◆Air from the flight deck outlets is **cool**:

The flight deck temperature gradually cools.

■ ■ ■ ■

8 TRIM AIR switch . . . . . OFF

9 **Wait** 1 minute.

10 Choose one:

◆Air from the passenger cabin outlets is still too **warm**:

►►**Go to step 11**

◆Air from the passenger cabin outlets is **cool**:

The passenger cabin temperature gradually cools.

■ ■ ■ ■

11 R PACK switch . . . . . OFF

12 **Wait** 1 minute.

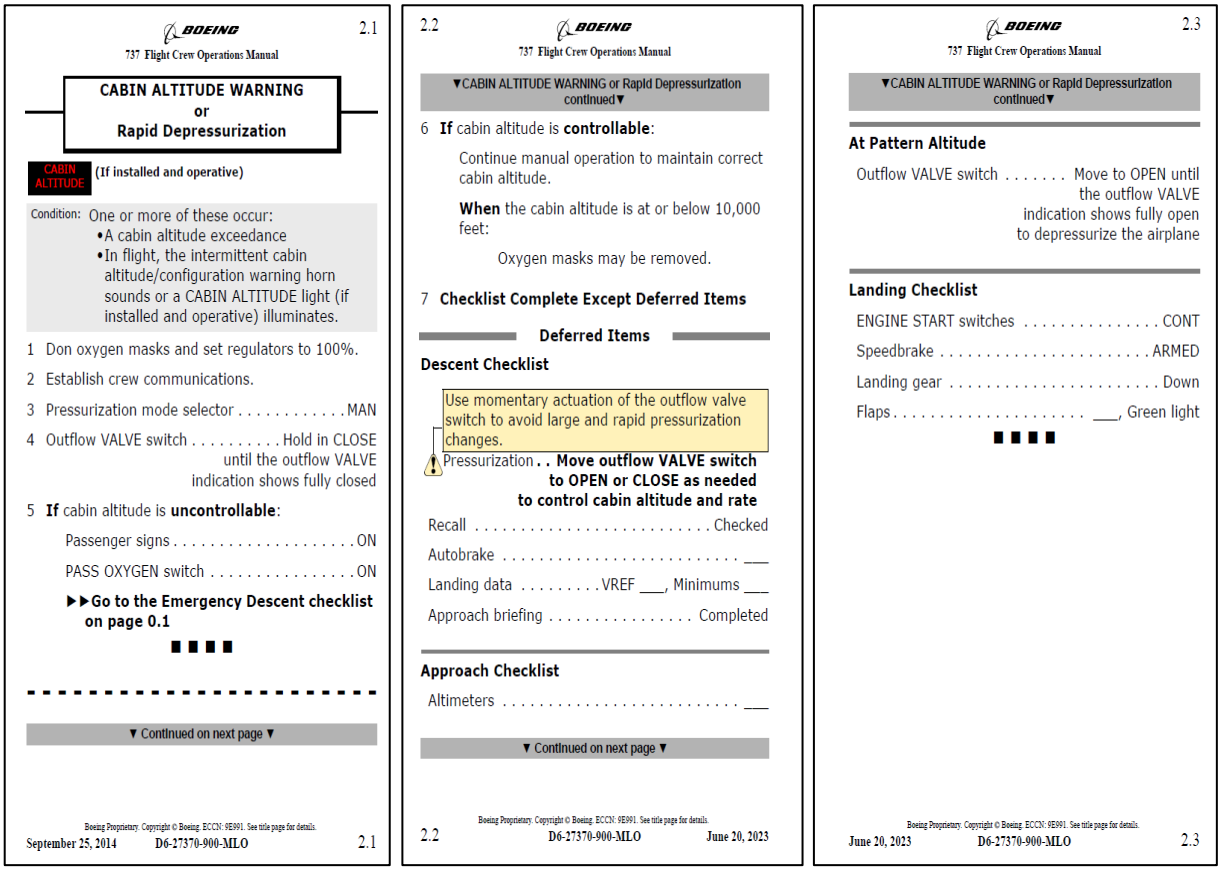
▼ Continued on next page ▼

Figure 1: Boeing 737- 800 NNC Cabin Temperature Hot

[1]LALAT is a waypoint identifier used in aviation. It refers to a specific location or waypoint in the air navigation system. In the context of aviation, waypoints like LALAT are used for navigation and flight planning.

Since the high temperature anomaly affected both the flight deck and passenger cabin, the PIC proceeded with the flight deck temperature high sequence to prevent potential crew incapacitation. The trim air switch was set to OFF; however, after one minute, the cockpit temperature remained abnormally high, with the supply duct temperature reported at approximately 70°C by the SIC.

While the non-normal checklist was being carried out the airflow from the cockpit vents remained hot, and cabin temperature continued to escalate. The cabin altitude rate increased rapidly, peaking at 8,000 feet per minute, resulting in a loss of effective pressurisation at cruising altitude FL340.



BOEING 2.1
737 Flight Crew Operations Manual

CABIN ALTITUDE WARNING or Rapid Depressurization

CABIN ALTITUDE (If installed and operative)

Condition: One or more of these occur:
- A cabin altitude exceedance
- In flight, the intermittent cabin altitude/configuration warning horn sounds or a CABIN ALTITUDE light (if installed and operative) illuminates.

1 Don oxygen masks and set regulators to 100%.
2 Establish crew communications.
3 Pressurization mode selector . . . . . MAN
4 Outflow VALVE switch . . . . . Hold in CLOSE until the outflow VALVE indication shows fully closed
5 **If** cabin altitude is **uncontrollable**:
Passenger signs . . . . . ON
PASS OXYGEN switch . . . . . ON
▶▶**Go to the Emergency Descent checklist on page 0.1**

▼ Continued on next page ▼

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September 25, 2014 D6-27370-900-MLO 2.1

2.2 BOEING
737 Flight Crew Operations Manual

▼CABIN ALTITUDE WARNING or Rapid Depressurization continued▼

6 **If** cabin altitude is **controllable**:
Continue manual operation to maintain correct cabin altitude.
When the cabin altitude is at or below 10,000 feet:
Oxygen masks may be removed.
7 **Checklist Complete Except Deferred Items**

Deferred Items

Descent Checklist

Use momentary actuation of the outflow valve switch to avoid large and rapid pressurization changes.
Pressurization . . **Move outflow VALVE switch to OPEN or CLOSE as needed to control cabin altitude and rate**
Recall . . . . . Checked
Autobrake . . . . . ___
Landing data . . . . . VREF ___, Minimums ___
Approach briefing . . . . . Completed

Approach Checklist

Altimeters . . . . . ___

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2.2 D6-27370-900-MLO June 20, 2023

BOEING 2.3
737 Flight Crew Operations Manual

▼CABIN ALTITUDE WARNING or Rapid Depressurization continued▼

At Pattern Altitude

Outflow VALVE switch . . . . . Move to OPEN until the outflow VALVE indication shows fully open to depressurize the airplane

Landing Checklist

ENGINE START switches . . . . . CONT
Speedbrake . . . . . ARMED
Landing gear . . . . . Down
Flaps . . . . . ___, Green light

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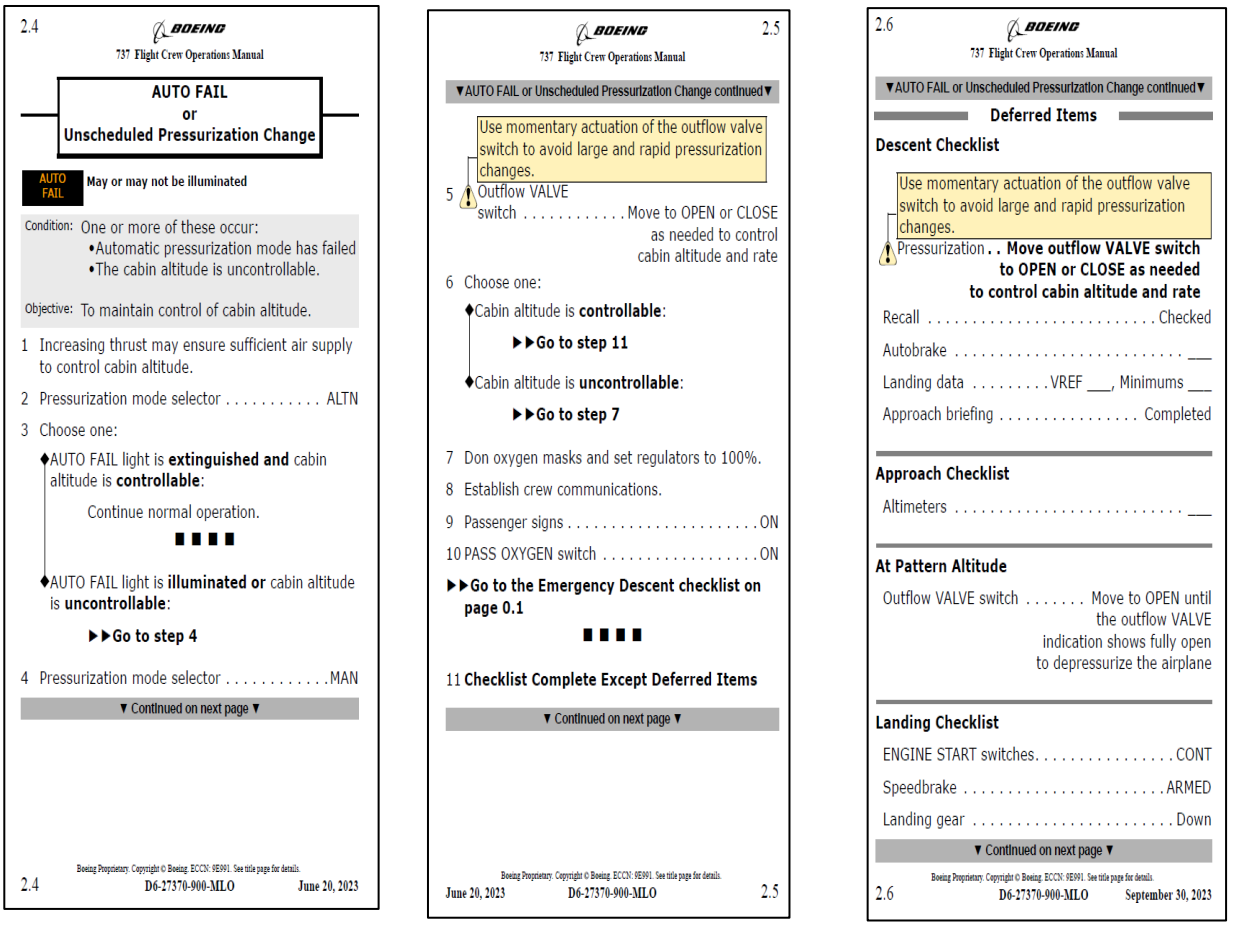
June 20, 2023 D6-27370-900-MLO 2.3

Figure 2: Boeing 737- 800 NNC Cabin Altitude Warning or Rapid Depressurisation.

Off the coast of Myanmar, the aircraft deviated north toward the diversion field and began its descent. While descending from FL340 and approximately passing through FL200, the flight crew observed the cabin altitude light illuminating and heard the cabin altitude warning horn, signaling a potential pressurisation issue.

The crew promptly initiated the emergency descent procedure according to the Non-Normal Checklist (NNC) for Cabin Altitude Warning or Rapid Depressurisation.



2.4

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737 Flight Crew Operations Manual

AUTO FAIL or Unscheduled Pressurization Change

AUTO FAIL — **May or may not be illuminated**

Condition: One or more of these occur:
- Automatic pressurization mode has failed
- The cabin altitude is uncontrollable.

Objective: To maintain control of cabin altitude.

1 Increasing thrust may ensure sufficient air supply to control cabin altitude.

2 Pressurization mode selector . . . . . ALTN

3 Choose one:

♦AUTO FAIL light is **extinguished and** cabin altitude is **controllable**:

Continue normal operation.

■ ■ ■ ■

♦AUTO FAIL light is **illuminated or** cabin altitude is **uncontrollable**:

▶▶**Go to step 4**

4 Pressurization mode selector . . . . . .MAN

▼ Continued on next page ▼

2.5

BOEING

737 Flight Crew Operations Manual

▼AUTO FAIL or Unscheduled Pressurization Change continued▼

Use momentary actuation of the outflow valve switch to avoid large and rapid pressurization changes.

5 Outflow VALVE switch . . . . . Move to OPEN or CLOSE as needed to control cabin altitude and rate

6 Choose one:

♦Cabin altitude is **controllable**:

▶▶**Go to step 11**

♦Cabin altitude is **uncontrollable**:

▶▶**Go to step 7**

7 Don oxygen masks and set regulators to 100%.

8 Establish crew communications.

9 Passenger signs . . . . . .ON

10 PASS OXYGEN switch . . . . . .ON

▶▶**Go to the Emergency Descent checklist on page 0.1**

■ ■ ■ ■

11 **Checklist Complete Except Deferred Items**

▼ Continued on next page ▼

2.6

BOEING

737 Flight Crew Operations Manual

▼AUTO FAIL or Unscheduled Pressurization Change continued▼

Deferred Items

Descent Checklist

Use momentary actuation of the outflow valve switch to avoid large and rapid pressurization changes.

Pressurization . . **Move outflow VALVE switch to OPEN or CLOSE as needed to control cabin altitude and rate**

Recall . . . . . Checked

Autobrake . . . . . ___

Landing data . . . . . .VREF ___, Minimums ___

Approach briefing . . . . . Completed

Approach Checklist

Altimeters . . . . . ___

At Pattern Altitude

Outflow VALVE switch . . . . . Move to OPEN until the outflow VALVE indication shows fully open to depressurize the airplane

Landing Checklist

ENGINE START switches. . . . . .CONT

Speedbrake . . . . . .ARMED

Landing gear . . . . . .Down

▼ Continued on next page ▼

Figure 3: Boeing 737- 800 NNC Auto Fail or Unscheduled Pressurisation Change

Passenger oxygen masks were automatically deployed. Upon reaching approximately FL100, cabin altitude stabilised, allowing the crew to remove their masks, and the distress condition was cancelled. The crew selected Yangon International Airport (VYYY) as the nearest suitable diversion airport and prepared for an approach to Runway 21. The SIC attempted to contact the aircraft operator, Malaysia Airlines Berhad (MAB), via SATCOM[2] and ACARS[3]. A Passenger Address (PA)

[2] Satellite Communication (SATCOM) is a facilitates communication between aircraft and ground stations or other aircraft using satellite technology. It enables voice, data, and internet access, particularly useful in remote or oceanic areas where traditional communication infrastructure is lacking.

[3] Aircraft Communication Addressing and Reporting System (ACARS) is a facilitates is a digital data link system used in aviation for communication between an aircraft and ground stations, typically the airline's operations center or air traffic control. It allows for the transmission of short messages related to various operational and logistical aspects of a flight

announcement was made to inform the passengers of the diversion. Following a performance evaluation, the PIC opted for an overweight landing.

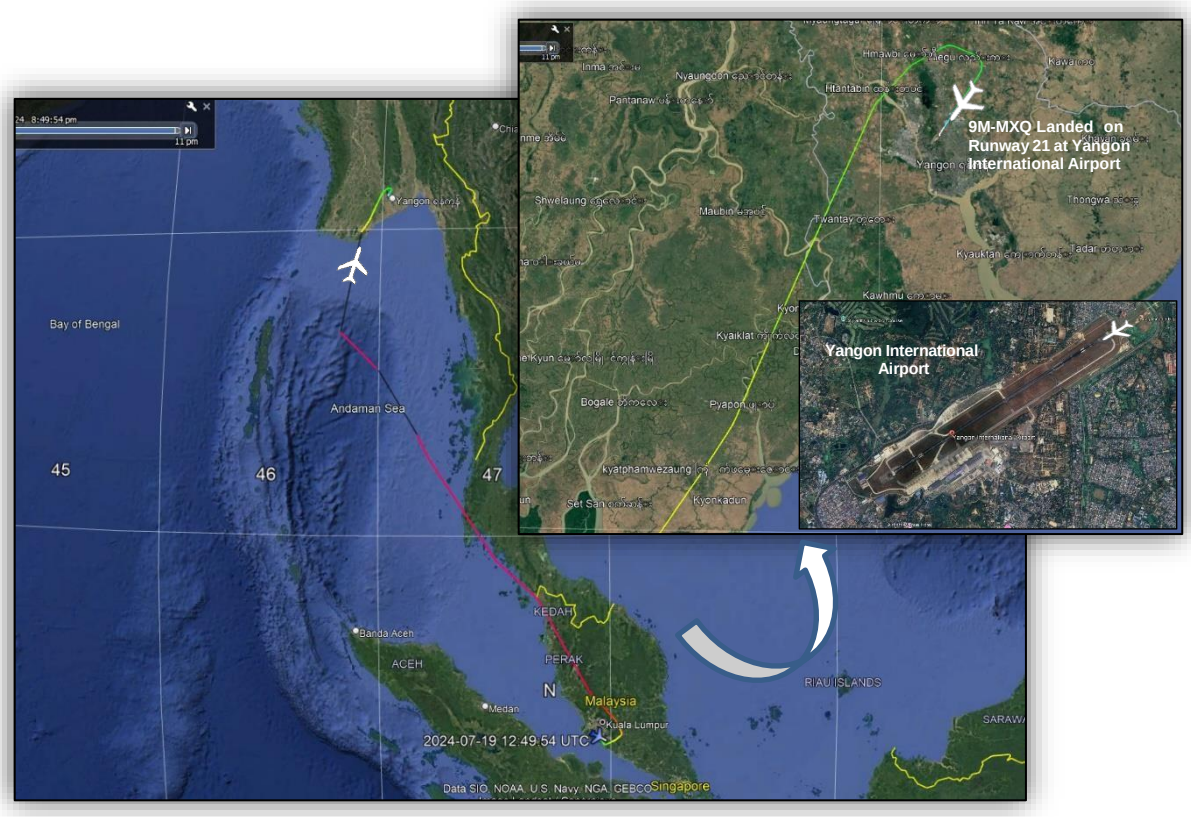


Figure 4: Flight Path of 9M-MXQ

The landing distance was calculated using the Operational Performance Tool (OPT), and procedures from the Flight Crew Training Manual (FCTM) were reviewed by both pilots. The landing was safely executed on Runway 21 at 1550 UTC with no injuries reported among passengers and crew. Following the landing, the aircraft was inspected and removed from service by the operator under the direction and approval of the Air Accident Investigation Bureau (AAIB).

In response to the incident, the operator promptly sought technical assistance from Boeing. Boeing subsequently provided troubleshooting guidance and recommended preventive measures to address the identified issues and mitigate the risk of recurrence. On 21 July 2024, aircraft 9M-MXQ was declared serviceable and ferried back to Kuala Lumpur (KUL) without passengers on board. The aircraft arrived at KUL on 22 July 2024 for further maintenance and rectification actions.

1.2 Injuries to Persons

There was no injury to any of the aircraft occupant or personnel on ground

Injuries	Crew	Passengers	Others	Total
Fatal	NIL	NIL	NIL	NIL
Serious	NIL	NIL	NIL	NIL
Minor	NIL	NIL	NIL	NIL
None	7	150	NIL	157

Table 1: Injuries to persons

1.3 Damage to Aircraft

A general visual inspection was conducted to assess and identify any damage to the aircraft following the occurrence. The inspection confirmed that the aircraft sustained no damage.

1.4 Other Damage

There was no reported damage to aerodrome facilities or any other properties.

1.5 Personnel Information

1.5.1 Pilot in Command (PIC)

Status	Pilot in Command (PIC)
Nationality	Malaysian
Age	41 years old
Gender	Male
License Type	ATPL2763
License Validity	Valid until 31 December 2024
Aircraft Rating	Multi-Engine Land
Total Hours on Type	5872:14 hours
Total Flying Hours	11683:00 hours
Rest Period Since Last Flight	48:58 hours
Date of Medical Examination	28 November 2024

Table 2: Personnel Information – Pilot in Command

1.5.2 Second in Command (SIC)

Status	Second in Command (SIC)
Nationality	Malaysian
Age	32 years old
Gender	Male
License Type	ATPL 6067
License Validity	Valid until 30 April 2024
Aircraft Rating	Multi-Engine Land
Total Hours on Type	2707:43 hours
Total Flying Hours	2925:55 hours
Rest Period Since Last Flight	33:50 hours
Date of Medical Examination	31 October 2024

Table 3: Personnel Information – Pilot Second in Command

Both pilots were licensed, qualified, and approved to operate the flight in accordance with existing regulations. They were medically fit and adequately rested for the flight.

1.6 Aircraft Information

1.6.1 General

Boeing B737-800 is a subsonic, medium range, civil transport aircraft. The aircraft is installed with two high bypass turbofan engines manufactured by international Aero Engines. The aircraft is designed for operation with two pilots and passenger seating capacity of 189. The maximum take-off weight (MTOW) is 79015Kgs. The maximum landing weight is 65317Kgs. The aircraft length 39.47 meters, wingspan is 34.31 meters and height is 12.57 meters. The distance between main wheel centres is 5.71 meters. The ground clearance is 0.48 meters.

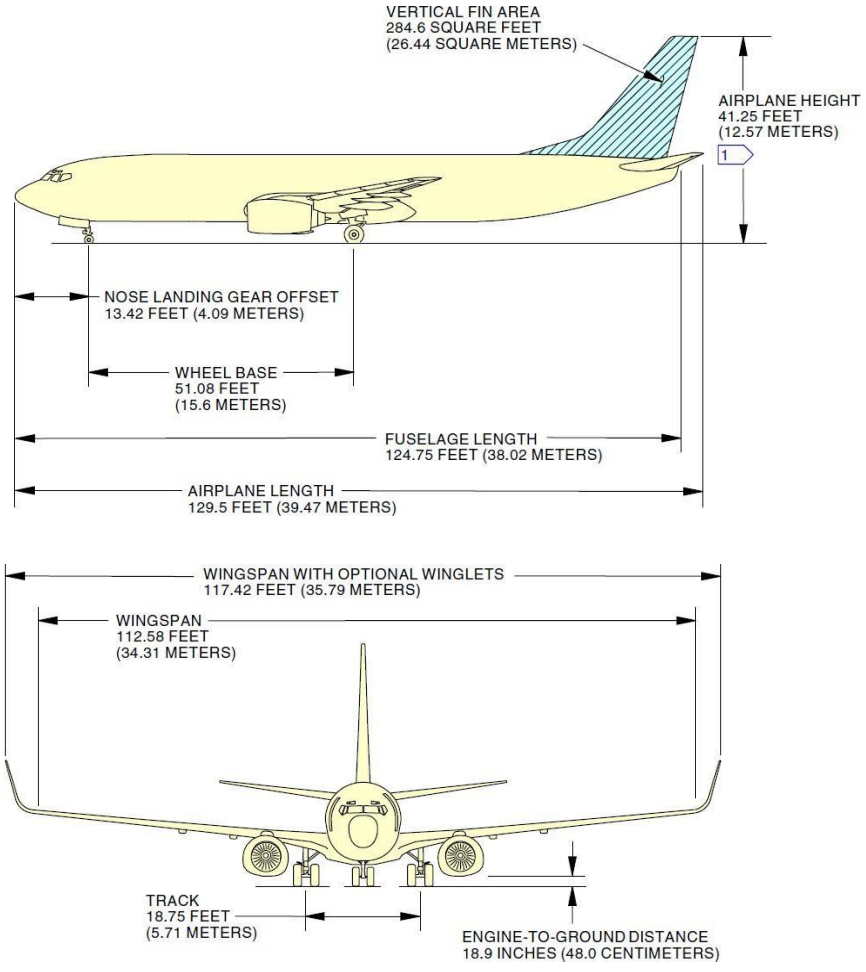


Figure 5: 737-800 Structure Dimension

1.6.2 Aircraft Data

The aircraft was active flying and before incident happened that aircraft previously flown from Dhaka to Kuala Lumpur on 19 Jul 2024. The aircraft holds a valid registration and Certificate of Airworthiness (C of A) and has been maintained in full compliance with applicable regulations. The tables below provide the aircraft information and details of the RH flexible pressure sleeve, which was directly involved in the occurrence

Aircraft Type	Boeing 737-800
Manufacturer	Boeing Company
Year of Manufacturer	2014
Owner	Malaysia Airlines Berhad
Registration No.	9M-MXQ
Aircraft Serial No.	40154
C of A Expiry Date	13 January 2025 (**Appendix A**)
C of R Expiry Date	26 September 2027 (**Appendix B)**

Table 4: Aircraft General Information

Description	Flexible Pressure Sleeve
Manufacturer	Boeing
Part Number	AS1505-18A0032
Time Since New	November 2013
Last Maintennce Date	7 November 2023
Part Status	On Condition

Table 5: RH Flexible Pressure Sleeve

1.6.2.1 Right Hand (RH) Flexible Pressure Sleeve Ruptured

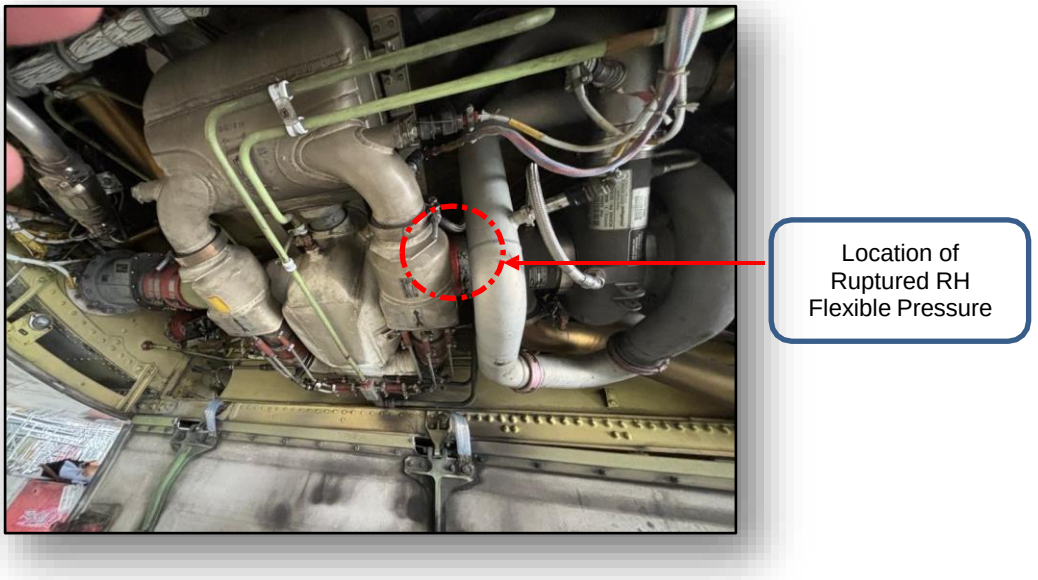


Figure 6: RH Flexible Pressure Sleeve at Air Conditioning Compartment

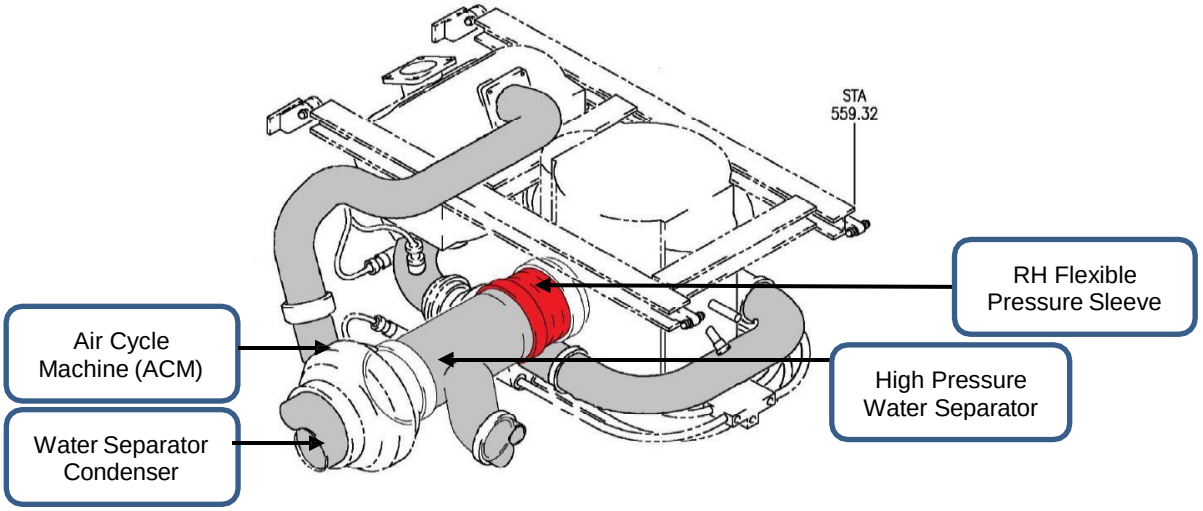


Figure 7: RH Flexible Pressure Location

The ruptured pressure sleeve was located between the Air Cycle Machine (ACM) and the High-Pressure Water Separator (HPWS). Because the pressure sleeve is situated upstream within the cooling system, its failure caused cooled air to leak from the right-hand (RH) cooling pack, resulting in the loss of positive air supply to the system. This confirmed the information provided by the cabin crew, who reported that the forward cabin area was hot

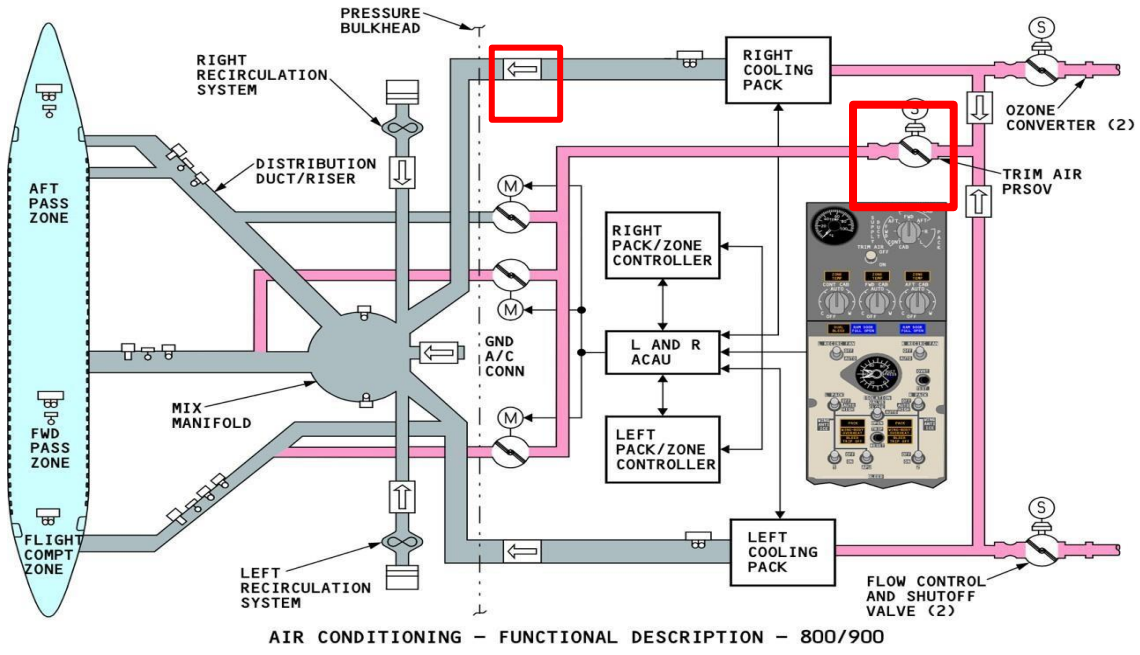


Figure 8: RH Flexible Pressure Sleeve Functional Description

As part of the investigation, a review of the Boeing 737-800 air-conditioning system was conducted to understand its functionality, particularly in relation to the Trim Air system. The system is designed such that when the Trim Air Switch is selected to the OFF position, the Trim Air Pressure Regulating and Shutoff Valve (PRSOV) closes. This action disables the trim air channels in both the Left and Right Pack/Zone Controllers, preventing hot bleed air from being introduced into the mix manifold or zone ducts.

In this configuration, only positively cooled conditioned air is supplied to the aircraft cabin. A check valve (also known as a one-way valve) plays a critical role in this setup by preventing reverse airflow or back pressure, thereby maintaining the integrity of the cooling airflow path. This design ensures that cooled air does not leak back into upstream components, nor is it mixed with unintended hot bleed air once the trim air system is isolated. Further review confirmed that when the Trim Air PRSOV is closed, the trim air function is fully disabled, and no hot air is delivered to the zone ducts for fine temperature control.

As a result, the system defaults to full cooling mode under these conditions. Within this airflow path, the Right-Hand (RH) Flexible Pressure Sleeve plays a crucial role. Positioned immediately downstream of the Air Cycle Machine (ACM) and High

Pressure Water Separator (HPWS), and upstream of the ozone converter and Trim Air PRSOV, the sleeve serves as a critical ducting interface between the Right Cooling Pack and the downstream fixed duct assemblies.

The ACM, a key component of the cooling pack, uses bleed air and ram air to produce conditioned air, which then passes through the HPWS to remove excess moisture. Installed after the HPWS, the Flexible Pressure Sleeve connects the moving components of the pack to the rigid duct system. It provides necessary mechanical flexibility, accommodating vibrations, thermal expansion, and airframe movements, while ensuring an airtight, pressure-resistant seal. Moreover, it protects adjacent components such as the ozone converter and pressure regulating valves from mechanical stress, thereby contributing to overall system reliability.

1.6.2.2 Preventive Maintenance

Over the life of the 737-800, Boeing issued Service Letter (SL) 737-SL-21-145, dated 3 May 2021, which provides guidance on the Cabin Pressurization System, including best practices, maintenance recommendations, and troubleshooting steps to assist operators in addressing cabin pressurization events caused by various factors.

The purpose of the SL was to provide operators with a summary of best practices for the Cabin Pressurization System, assisting in identifying common root causes and performing inspections or maintenance tasks. It also outlined available hardware and software upgrades to mitigate the potential for future incidents.

Following a cabin pressurization incident in 2023, it was found that two (2) Technical Service Inspections (TSIs) are currently ongoing across the entire Malaysia Airlines (MAB) fleet of Boeing 737-800 aircraft. Several service letters have not been implemented yet, due to the recommended priority status (high or medium) of the issues. These inspections are being conducted to address air conditioning-related issues. The details of the ongoing TSIs are as follows:

No.	Description	Document No	Effective Date
1.	Cabin Pressure System: Inspection and Replacement	TSI-B73NG-23-0111- R00	17 July 2023
2.	Air Conditioning: Sidewall Riser Hose Duct Replacement	TSI-B73NG-23-0044- R01	16 June 2023

Table 6: Ongoing TSIs

Upon reviewing AMOS (Aircraft Maintenance and Operations System) for the completion status of both TSIs, it was found that both inspections are still actively ongoing. Based on the investigation and witness interviews on July 2024, a total of eleven (11) aircraft are awaiting maintenance scheduling for TSI-B73NG-23-0111-R00, while twenty-five (25) aircraft are scheduled for TSI-B73NG-23-0044-R01.

According to MAB's 2025 response, TSI-B73NG-23-0111-R00, which covers the replacement and inspection of Flexible Pressure Sleeves along with functional checks of related components, was carried out across the entire fleet. The TSI was implemented on 47 B737-800 aircraft and was fully completed in January 2025.

The implementation of TSI-B73NG-23-0044-R01, which mandates a one-time replacement of the sidewall riser hose duct (Part Numbers: AS1591-10-0232A and AS1591-10-0260A), has been fully completed across all 47 Boeing 737-800 aircraft in the MAG fleet. This includes 42 aircraft operated by Malaysia Airlines (MH) and 5 aircraft operated by Firefly (FY).

1.6.2.3 Corrective Maintenance

The investigation revealed that the aircraft experienced both excessive cabin temperature and cabin decompression on the day of the incident. A total of three (03) Licensed Aircraft Engineers (LAEs) were assigned to recover aircraft 9M-MXQ. Of the three (3), two (2) were from Malaysia Airlines Berhad Engineering Services (MABES), and one (1) was from Thai Airways, serving as the stationed line engineer at Yangon (RGN).

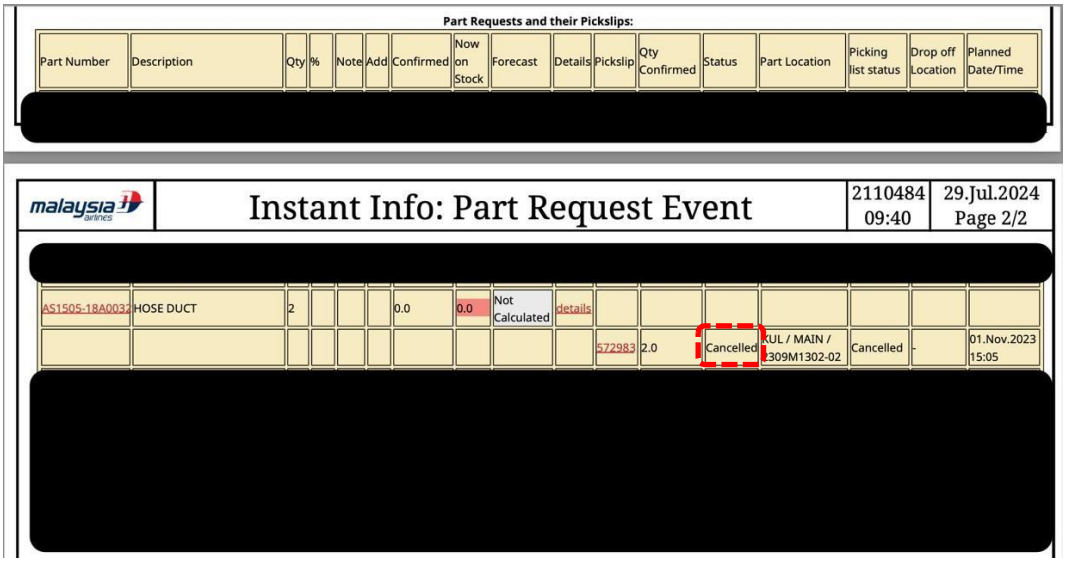
On 21 July 2024, 9M-MXQ was declared serviceable and ferried to Kuala Lumpur (KUL) without passengers on board. The aircraft arrived at KUL on 22 July 2024 for further maintenance and rectification. The following is a summary of the maintenance activities carried out at the RGN line station:

Work Order No.	Defect Description	Action Taken	Date Task Completed
5334679	During cruise at FL340, both the cabin and flight deck were reported to be excessively hot, with the supply duct temperature reaching approximately 70°C. The flight crew initiated the Cabin Temperature Hot non-normal checklist in response. While performing the checklist, the cabin altitude was observed to be increasing. Subsequently, a cabin altitude warning was triggered. The flight crew executed the applicable memory items and conducted an emergency descent	The Flexible Pressure Sleeve was replaced in accordance with the procedures outlined in the Aircraft Maintenance Manual (AMM)	20 July 2024
5334682	Aircraft pressurization was verified in conjunction with the Airplane Pack Operation Confidence Check	The functional check revealed no abnormalities and all parameters were within the limits specified in the Aircraft Maintenance Manual (AMM)	21 July 2024
5334680	Overweight landing	No Damage was found	20 July 2024
3809835	TSI-B73NG-23-0111-R00 (**Appendix C**)	The pending task was completed	24 July 2024
3781764	TSI-B73NG-23-0044-R01 (**Appendix D**)	A total of 18 parts were replaced.	24 July 2024

Table 7: Maintenance Activities

After conducting a thorough review of Work Order No 3809835, it was found that the TSI- B737NG-23-0111-R00 was originally underwent maintenance on 10th November 2023 and had been left partially closed. This Work Order was documented as closed on 24th July 2024 after the incidents.

A detailed review of the work order, as shown in **Appendix E**, revealed a statement indicating that the pack pressure sleeve located between the Air Cycle Machine (ACM) and the High-Pressure Water Separator (HPWS) had been replaced. However, upon further examination of the related part request documents, it was discovered that the parts were actually cancelled, as illustrated in the figure below.



Part Requests and their Pickslips:

Part Number	Description	Qty	%	Note	Add	Confirmed	Now on Stock	Forecast	Details	Pickslip	Qty Confirmed	Status	Part Location	Picking list status	Drop off Location	Planned Date/Time
[redacted]																

malaysia airlines — Instant Info: Part Request Event — 2110484 09:40 — 29.Jul.2024 Page 2/2

[redacted]																
AS1505-18A0032	HOSE DUCT	2				0.0	0.0	Not Calculated	details							
										572983	2.0	Cancelled	KUL / MAIN / 309M1302-02	Cancelled	-	01.Nov.2023 15:05
[redacted]																

Figure 9: Cancellation of Demand for RH Flexible Pressure Sleeve

On 23 July 2024, the part that had been replaced (RH Cooling Pack) at RGN line station was obtained. The part received was found heavily ruptured. A picture and details of the defective part is shown below.

Figure 10: Condition of RH Flexible Pressure Sleeve Ruptured

The Aircraft Technical Log entry (Work Order No. 5334680) was obtained and reviewed. The entry recorded that during cruise at FL340, both the cabin and flight deck experienced elevated temperatures, with the supply duct temperature reaching approximately 70°C. The flight crew carried out the 'Cabin Temperature Hot' non-normal checklist; however, during the execution of the checklist, the cabin altitude began to rise. Subsequently, the cabin altitude warning was triggered, prompting the crew to perform the required memory items, followed by an emergency descent.

1.7 Meteorological Information

At 1530 UTC on 19 July 2024, a METAR observation at Yangon International Airport (VYYY) reported light south-westerly winds at 4 knots and visibility of 6,000 meters. The sky had broken clouds at 2,000 and 10,000 feet, with a few cumulonimbus clouds at 2,500 feet, suggesting a potential for thunderstorms.

On the day of the incident, the Outside Air Temperature (OAT) was 26°C, with a dew point of 25°C, indicating high humidity. The barometric pressure at sea level (QNH) was measured at 1005 hPa, slightly below the standard atmospheric pressure of 1013 hPa. Despite these conditions, the weather did not contribute to the event, and 9M-MXQ safely landed at VYYY at 1550 UTC. The recorded weather parameters at the time of landing were as follow:

METAR VYYY 191530Z 23004KT 6000 BKN020 FEW025CB BKN100 26/25 Q1005

1.8 Aids to Navigation

All navigation aids fitted on the aircraft and installed at VYYY were operational at the time of the occurrence.

1.9 Communications

The aircraft maintained normal two-way communication with ATC.

1.10 Aerodrome Information

Yangon International Airport (IATA: RGN, ICAO: VYYY) is the primary international gateway to Myanmar, located in Mingaladon, about 17.7 km (10.9 miles) from north of Yangon City. The airport's coordinates are N16°54.26' / E96°7.59'. It features a single runway, Runway 03/21, with a length of 3,414 meters and an elevation of about 33 meters.

Figure 11: Aerial view of Yangon International Airport (Source: Google Earth)

1.11 Flight Recorders

The aircraft (9M-MXQ) was equipped with both a Flight Data Recorder (FDR) and a Cockpit Voice Recorder (CVR). Data from both recorders were downloaded on 21 July 2024, two days after the incident, and sent to the AAIB's Flight Recorder Laboratory for analysis. Details of the FDR and CVR are as follows:

Description	Flight Data Recorder	Cockpit Voice Recorder
Part No.	2100-4045-22	2100-1025-22
Serial No.	000905112	00103675
Manufacturer	L3 Communications	L3 Communications
Model	FA2100FDR	FA2100CVR

Table 8: Aircraft Flight Recorder 9M-MXQ

The flight data downloaded from the FDR was verified and found to align with data from the aircraft manufacturer, providing reliable evidence to support the findings in this report. The results of the data analysis are presented in **Section 2**. Regarding the CVR, the recording was retrieved during the investigation but unfortunately contained no relevant information, as it had been overwritten.

1.12 Wreckage and Impact Information

There was no damage to the aircraft.

1.13 Medical and Pathological Information

The pilots underwent a urine drug screen, with negative results for substance abuse. Blood alcohol testing showed results within normal limits.

1.14 Fire

There was no evidence of fire inflight or after landing.

1.15 Survival Aspects

There were no reported injuries among the passengers or crew. All individuals safely exited the aircraft without incident, and no further medical assistance was required.

1.16 Tests and Research

The investigation determined that the rupture of the RH Flexible Pressure Sleeve was primarily caused by progressive thermal fatigue and material degradation over time.

Rectification involved replacing the ruptured part and conducting a ground functional test, which was found satisfactory by the technical team. The aircraft was subsequently released as fully serviceable, and its performance has been monitored by MAB's Technical Record – Record and Project Management with no abnormalities observed to date.

1.17 Organisational and Management Information

1.17.1 Aircraft Operator

Malaysia Airlines Berhad (MAB), the national carrier of Malaysia, operates under the Malaysia Aviation Group (MAG). Headquartered in Kuala Lumpur, the airline's primary hub is Kuala Lumpur International Airport (KLIA). The fleet includes both wide body and narrow body aircraft, providing comprehensive services to domestic and international destinations across Asia, Europe, and Oceania. MAB is part of the Malaysia Aviation Group (MAG), which also includes subsidiaries such as MASwings, Firefly, MAB Kargo, and AeroDarat Services, covering various aviation market segments.

1.17.2 Proactive Measures Taken by the Aircraft Operator

The aircraft operator took proactive measures by reaching out to Boeing for assistance in troubleshooting and preventing future incidents. The aircraft operator also convened an immediate meeting with relevant personnel to address the issues affecting aircraft 9M-MXQ, demonstrating their commitment to safety and swift resolution.

Comprehensive tests and inspections were carried out on critical systems, to verify their functionality and compliance with airworthiness standards. After two days of troubleshooting, the system failure was resolved by replacing the RH Pressure Sleeve between the Air Cycle Machine (ACM) and the High-Pressure Water Separator (HPWS), Part No: AS1505-18A0032. The aircraft then conducted a ferry flight from RGN without passengers on 22 July 2024, departing at 0703 UTC and landing safely at WMKK at 0945 UTC.

Further inspection and maintenance, conducted on 24 July 2024 in accordance with Technical Service Instructions (TSI) TSI-B73NG-23-0111-R00 and TSI-B73NG-23-0044-R01, revealed no abnormalities and confirmed compliance with Aircraft Maintenance Manual (AMM) recommendations.

1.18 Additional Information

1.9 Useful or Effective Investigation Techniques

The investigation into the cabin overheat and pressurisation incident on MH114 employed a comprehensive approach, beginning with the collection of statements from the flight crew, cabin crew, and maintenance personnel. These accounts provided valuable insights into the sequence of events, crew actions, and decision-making process. A detailed examination and system analysis of the environmental control system, including the air-conditioning packs and flexible pressure sleeves, was conducted to identify any mechanical failures or contributing factors.

The investigation also assessed human factors, including the flight crew's adherence to the Quick Reference Handbook (QRH) procedures and operational decision-making under abnormal conditions. Maintenance records were thoroughly reviewed to assess recent work performed on the environmental and pressurisation systems, as well as the operator's compliance with Boeing service letters and technical service instructions. By integrating mechanical analysis, human factor evaluation, and maintenance record review, the investigation provided a comprehensive understanding of the cause.

2.0 ANALYSIS

2.1 FDR Analysis

The FDR analysis of the occurrence flight revealed two significant events. The first event was a notable increase in cockpit temperature, as reported by the flight crew during the cruise phase. The second event was the activation of the cabin altitude warning, triggered when cabin pressure exceeded the preset safety threshold, necessitating immediate corrective action by the flight crew.

2.1.1 Excessive Cockpit Temperature

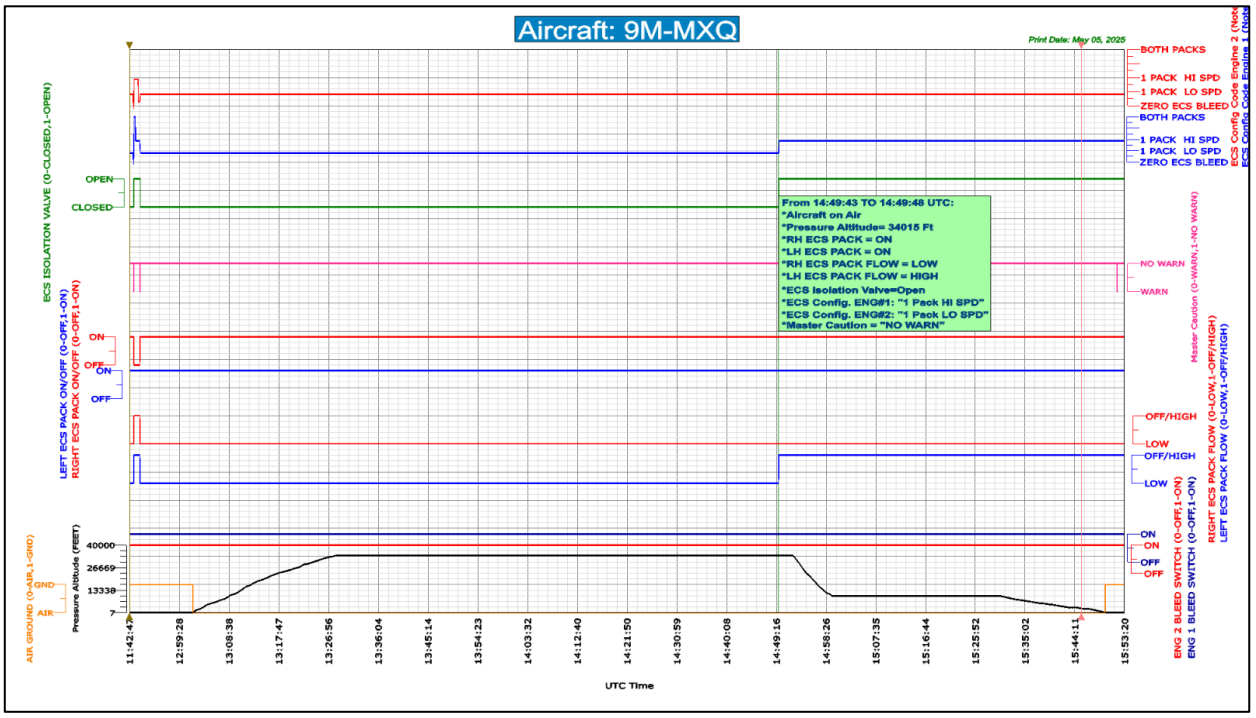


Figure 12: Excessive Cockpit Temperature Event

- At time **14:49:43** UTC, with pressure Altitude= 34014 ft:
  - **'LH** ECS Pack' was **ON** and '**LH** ECS Pack FLOW' set to **HIGH,** with **'RH** ECS Pack' was **ON** and '**RH** ECS Pack FLOW' was **LOW.**

- At time **14:49:44** UTC, with Pressure Altitude= 34015 ft:
  - 'ECS **Isolation** Valve' was **Open.**

- At time **14:49:48** UTC, with Pressure Altitude= 34012 ft:
  - 'ECS Config. **ENG #1'** changed from "1 Pack **LO** SPD" to "1 Pack **HI** SPD".
  - 'ECS Config. **ENG #2**' maintain at "1 Pack **LO** SPD".

At 14:49:43 UTC, while cruising at an altitude of approximately 34,014 feet, the FDR indicated that both ECS Left Pack and Right Pack were operational. However, the LH ECS pack flow was configured to HIGH, while the RH ECS pack flow remained in the LOW setting. The ECS Isolation Valve was open, which is designed to enable crossflow of air between both sides of the ECS system. Subsequently, the ECS configuration for Engine No. 1 transitioned from "1 Pack LOW Speed" to "1 Pack HIGH Speed," whereas Engine No. 2 maintained "1 Pack LOW Speed." This asymmetric configuration likely led to uneven distribution of conditioned air throughout the cabin, particularly affecting the cockpit zone, which depends on

balanced airflow from both packs. The reduced performance of the RH pack may have contributed to insufficient cooling in the cockpit, resulting in the excessive cockpit temperature reported by the flight crew.

2.1.2 Cabin Altitude Warning

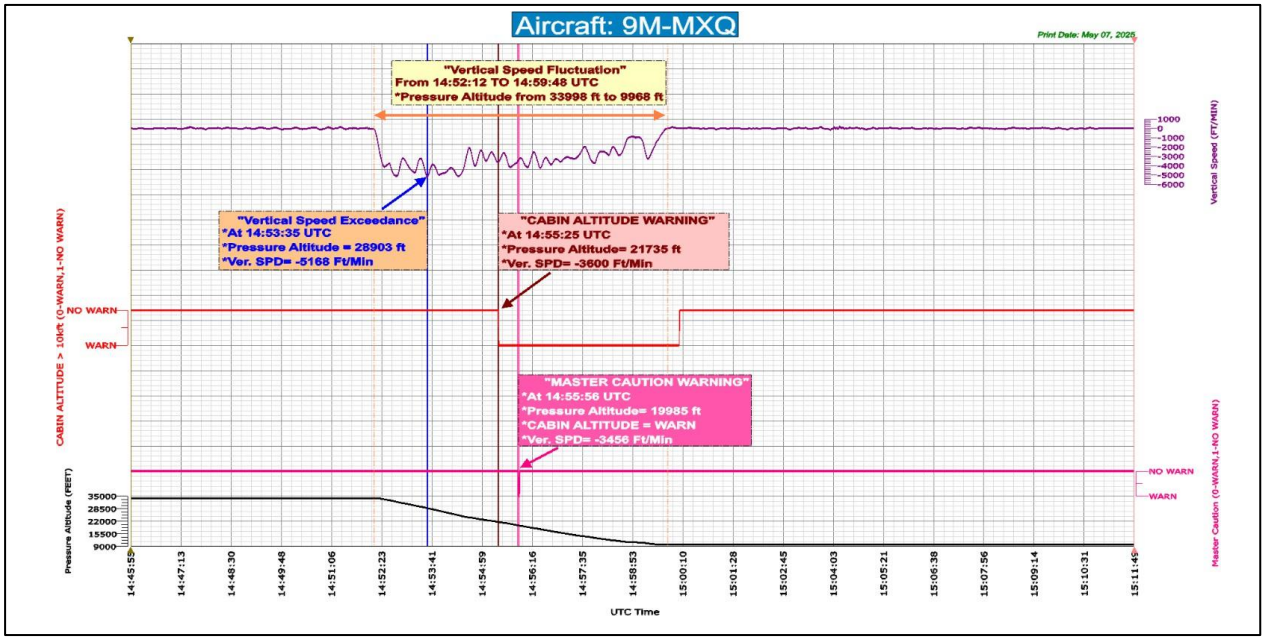


Figure 13: Cabin Altitude Warning Event

- During descent, Vertical **Speed Fluctuation** recorded from **14:52:12** to **14:59:48** UTC with Pressure Altitude from 33998 ft to 9968 ft, Vertical Speed Exceed the limits mentioned in **FCOM**.
- At **14:53:35** UTC vertical speed reached its **Max** value Ver. SPD= **-5168 Ft/Min** at pressure Altitude = 28903 ft.
- At **14:55:25** UTC & Pressure Altitude= 21735 ft with Ver. SPD= **-3600** Ft/Min, **CABIN ALTITUDE WARNING** was triggered as indicated by the intermittent cabin altitude/configuration warning horn sounds indicated that CABIN ALTITUDE reached above 10,000ft.
- **CABIN ALTITUDE WARNING** was **ON** for (4Min & 40 Sec) till **15:00:05** UTC.
- At **14:55:56** UTC & Pressure Altitude= 19985 ft "**MASTER CAUTION WARNING**" was triggered with CABIN ALTITUDE = **WARN** at Ver. SPD= **-3456** Ft/Min.

Between 14:52:12 and 14:59:48 UTC during the descent phase, the aircraft experienced pronounced vertical speed fluctuations ranging from a cruise altitude of 33,998 feet down to 9,968 feet. At 14:53:35 UTC, the vertical speed peaked at -5,168 feet per minute.

At 14:55:25 UTC, with the aircraft descending through 21,735 feet at a rate of -3,600 ft/min, the Cabin Altitude Warning was triggered, indicating that the cabin altitude had exceeded 10,000 feet. The warning persisted for 4 minutes and 40 seconds, deactivating at 15:00:05 UTC. Additionally, at 14:55:56 UTC, a Master Caution Warning was activated, further highlighting the seriousness of the decompression event.

The activation of the cabin altitude and master caution warnings was likely attributed to a combination of factors that adversely affected the aircraft's pressurisation system. A significant reduction in conditioned airflow, most likely caused by the rupture of the right-hand flexible pressure sleeve—an essential component for directing pressurised air from the ECS Pack into the cabin.

The failure of this component would have degraded the right Pack's ability to contribute to cabin pressurisation, Collectively, these conditions led to the system's inability to maintain the cabin altitude within safe operating limits, thereby requiring the flight crew to take immediate corrective action.

2.1.3 Troubleshooting Analysis of The Event

In light of the technical log entry, further clarification was sought from the flight crew to better understand the sequence of actions taken during the event. A review of the Pilot Report (PIREP) and related documentation confirmed that the aircraft experienced abnormally high cabin temperatures during cruise. According to the QRH, the "Cabin Temperature Hot" procedure distinguishes between the flight deck and passenger cabin, instructing the crew to monitor the affected area for one minute

and, if elevated temperatures persist, to select the LH Pack OFF for flight deck issues or the RH Pack OFF for cabin issues.

In this occurrence, the flight crew reported abnormal warmth in the forward cabin and increasing cockpit temperatures, with the supply duct temperature reaching approximately 70°C. Acting in accordance with the NNC and guided by reports from the cabin crew and cockpit indications, the flight crew took steps to manage the hot temperature. At the time, there were no fault indications from the RH Pack, and the crew was unaware of any malfunction associated with it. However, the subsequent engineering investigation revealed that the pressure sleeve on the RH air-conditioning Pack had ruptured, rendering the RH Pack ineffective and significantly reducing cooling capacity.

This degraded RH Pack performance contributed to the elevated cabin temperature and the progressive increase in cabin altitude. Boeing's post-event analysis confirmed that the ruptured RH pressure sleeve was the primary cause of both the high cabin temperature and the subsequent loss of cabin pressurization.

The Boeing 737 Flight Crew Operation Manual – QRH NNC Section 2.9 - Cabin Temperature Hot was reviewed. It was found that the temperature of the cabin was divided into two (2) categories. Based on the Work Order, the PIREP reported that the hot temperature had begun to rise in the forward cabin and cockpit area. Furthermore, referring to the checklist, it was directed to step 2 which requires the Trim Air Switch to be turned OFF. This requires a 1-minute delay to verify the temperature before moving on to the next step on the checklist. The details of NNC are shown in Figure 1.

The Trim Air Switch system description was reviewed in tandem with the system design. The Trim Air Switch system operates by controlling the trim air pressure regulating and shutoff valve. It has two positions, categorized as follows:

'ON' - The trim air pressure regulating and shutoff valve opens. Zone trim air channels in Pack/zone controllers are enabled.
'OFF' - The trim air pressure regulating and shutoff valve closes. Zone trim air channels in the Pack/zone controllers are disabled.

3.0 CONCLUSION

3.1 Findings

The findings of this investigation should not be seen as assigning blame or liability to any specific organisation or individual. They highlight safety factors, events, and conditions that have increased risk, including contributing elements that, while not directly linked to the occurrence, are important for improving safety awareness. The report may also include additional findings relevant to the broader context.

3.1.1 Crew/Pilot

3.1.1.1 Both pilots were qualified and authorised to operate the flight in accordance with existing regulations.

3.1.1.2 Both pilots were medically fit and adequately rested for the flight.

3.1.1.3 The results of the urine drug panel screen were negative for substance abuse, and the blood alcohol screening test was within the prescribed limit.

3.1.1.4 There was no evidence suggesting that incapacitation or any physiological factors affected the performance of the flight crew.

3.1.1.5 The flight crew followed the applicable Quick Reference Handbook (QRH) procedures, including the “Cabin Temperature Hot” checklist, and made correct attempts.

3.1.2 Aircraft

3.1.2.1 The aircraft was airworthy when cleared for the flight.

3.1.2.2 The aircraft is certified, equipped, and maintained in accordance with current regulations and approved procedures.

3.1.2.3 The aircraft holds a valid Certificate of Airworthiness (C of A) and has been maintained in compliance with applicable regulations.

3.1.2.4 A rupture in the RH flexible pressure sleeve**,** located between the Air Cycle Machine (ACM) and the High-Pressure Water Separator (HPWS), led to a loss of conditioned air from the RH ECS Pack and impaired the aircraft's ability to maintain cabin pressurisation.

3.1.2.5 The passenger oxygen masks were deployed by the flight crew.

3.1.3 Aircraft Operator

3.1.3.1 The operator has proactively contacted Boeing for troubleshooting recommendations and preventive actions to reduce the risk of future incidents.

3.1.3.2 The task involving the inspection and replacement of Flexible Pressure Sleeves, in accordance with TSI-B73NG-23-0111-R00 and TSI-B73NG-23-0044-R01, was carried out across 47 B737-800 aircraft and was successfully completed in January 2025.

3.1.4 Flight Recorders

3.1.4.1 The 120-minute CVR recording was overwritten and did not provide any relevant information from the flight.

3.1.5 Maintenance

3.1.5.1 Upon reviewing Work Order No. 3809835, it was initially noted that the RH Flexible Pressure Sleeve had been recorded as replaced. However, a closer examination of the related part request documents revealed that the replacement was later cancelled due to unavailability of spare parts.

3.1.5.2 Work Order No. 3809835, concerning the replacement of the RH Flexible Pressure Sleeve, was opened on 10 November 2023. It remained partially open until the occurrence of the incident and was fully closed on 24 July 2024.

3.1.5.3 The serious incident involving 9M-MXQ was due to the rupture of the RH Flexible Pressure Sleeve (Class C item), which is typically considered non-critical, but in this case had significant operational consequences.

3.2 Causes/Contributing Factor

The incident was caused by the rupture of the RH Flexible Pressure Sleeve, located downstream of the Air Cycle Machine (ACM) and High Pressure Water Separator (HPWS). This failure resulted in a significant loss of conditioned air from the right Environmental Control System (ECS) Pack, reducing the system's ability to cool and pressurize the cabin at high altitude. The compromised airflow contributed to inadequate cabin temperature control and degraded pressurisation during descent

The RH Flexible Pressure Sleeve failure is categorised as a **System/Component Failure or Malfunction – Non-Powerplant (SCF-NP)** under ICAO accident classification standards and represents a critical technical factor in the incident sequence.

4.0 SAFETY RECOMMENDATIONS

4.1 Immediate Safety Actions of Preliminary Report

4.1.1 The Preliminary Report for this serious incident, issued on 18 August 2024, included the following safety recommendations for pilots:

"Encouraging pilots to report any abnormalities or concerns regarding aircraft systems is essential, as it enables timely troubleshooting and intervention by maintenance teams. This proactive communication ensures that issues are addressed promptly, minimizing risks and maintaining the aircraft's airworthiness"

"Maintaining Situational Awareness: Pilots should maintain a high level of situational awareness during all phases of flight, particularly regarding aircraft systems and performance. Vigilance in monitoring cockpit instrumentation and responding promptly to any anomalies is critical for ensuring safe and efficient flight operations"

Based on these recommendations, the operator has taken immediate action for pilots by issuing a Flight Safety Memo (FSM) to share information and raise awareness of recent technical failures affecting flights.

4.1.2 The Preliminary Report also included the following recommendations for the aircraft operator:

"Continual Improvement Culture: Foster a culture of continual improvement within the organization, encouraging pilots and maintenance personnel to actively participate in identifying areas for enhancement related to aircraft systems and operational procedures"

In response, the operator has also taken immediate action by seeking assistance from Boeing to provide troubleshooting recommendations and preventive measures to mitigate the risk of similar incidents in the future.

4.2 Safety Recommendations of this Report

The following safety recommendations are issued to the respective organisations to address the safety concerns identified in this investigation:

4.2.1 Aircraft Operator

It is recommended that the aircraft operator to:

4.2.1.1 Develop a strategy to enhance the availability of serviceable non-critical components that may have a significant impact on operational performance.

4.2.1.2 Expediting the procurement process and improving spare parts inventory management in line with minimum stock level (MSL) requirements.

4.2.1.3 Enhance spare parts management to sustain the serviceability of the Boeing 737-800 fleet.

5.0 COMMENTS TO DRAFT FINAL REPORT AS REQUIRED BY ICAO ANNEX 13 PARAGRAPH 6.3

In accordance with ICAO Annex 13 paragraph 6.3, the Draft Final Report was sent to the State of Registry (CAAM), the State of Manufacture (NTSB), the State of Occurrence (MTSB), the Aircraft Operator and Maintenance (Malaysia Airline Berhad) inviting their significant and substantiated comments on the report. The following are the status of the comments received:

Organisations	Status of Significant and Substantiated Comments
Civil Aviation Authority of Malaysia	Report accepted and no comments
NTSB	Report accepted and no comments
Myanmar Transport Safety Branch (MTSB)	Page 17, paragraph 1.10 - – Comments accepted and amended accordingly
Malaysia Airline Berhad	Page iv – Comments accepted and amended accordingly
	Page 3, paragraph 1.1 - – Comments accepted and amended accordingly
	Page 12, paragraph 1.6.2.2 – Comments accepted and amended accordingly
	Page 14, paragraph 1.6.2.3 – Comments accepted and amended accordingly
	Page 19, paragraph 1.16 – Comments accepted and amended accordingly
	Page 22, paragraph 2.1.2 – Comments accepted and amended accordingly
	Page 24, paragraph 2.1.3 – Comments accepted and amended accordingly
	Page 26, paragraph 3.1.3.2
	Page 27 - Comments accepted and amended accordingly
	Appendix D and E - Comments accepted and amended accordingly

6.0 AAIB'S FEEDBACK AFTER COMMENTS RECEIVED FROM ORGANISATION ON THE DRAFT FINAL REPORT

6.1 AAIB'S Feedback

AAIB would like to thank all respective organisations that have provided responses and comments to the Draft Final Report. The concerted effort by all organisations in meeting the standard required in ICAO Annex 13, paragraph 6.3 is much appreciated.

To improve the standard of future comments to any Draft Final Report, AAIB would like to highlight and impress upon the organisation's concern (Malaysia Airline Berhad) on the importance of meeting the standard stated in paragraph 6.3, which is to provide significant and substantiated comments. Organisations are welcome to highlight and point out if the facts, analysis, or evidence in the investigation report are incorrect or inaccurate, by providing the correct factual statement and substantiating it with the proper evidence.

To further improve the process action after receiving the Final Report from AAIB and in accordance with ICAO Annex 13, paragraph 6.10, **organisations are to inform AAIB within ninety days of the date of transmittal correspondence of this Final Report, of the preventive action taken or under consideration, or reasons why no action will be taken on the safety recommendations received.** Organisations are also required to implement procedures to monitor the progress of the action taken in response to the safety recommendations received in accordance with ICAO Annex 13, paragraph

CONCLUDING STATEMENT

This report presents the findings of the investigation into the serious incident involving 9M-MXQ, with a primary focus on identifying safety factors and areas for improvement. It is emphasised that these findings and recommendations are not intended to assign blame or liability to any individual or organisation but to enhance safety and prevent recurrence. By addressing the identified issues and implementing the proposed recommendations, stakeholders can strengthen operational safety, improve system reliability, and uphold the highest standards of aviation safety.

Investigator-in-charge

Air Accident Investigation Bureau (AAIB)

Ministry of Transport Malaysia

Appendix A

CAAM/AW/8301-00 010719

PIHAK BERKUASA PENERBANGAN AWAM MALAYSIA
CIVIL AVIATION AUTHORITY OF MALAYSIA

PERAKUAN KESELAMATAN TERBANG
CERTIFICATE OF AIRWORTHINESS

Tanda-Tanda Kenegaraan dan Pendaftaran *Nationality and Registration Marks*	**Pembuat dan Nama Sebutan Kapal Udara** *Manufacturer and Manufacturer's Designation of Aircraft*	**Nombor Siri Kapal Udara** *Aircraft Serial Number*
9M-MXQ	**THE BOEING COMPANY** **737-8H6**	**40154**

Kategori *Category* **14 CFR PART 25 TRANSPORT CATEGORY AIRPLANES**

Perakuan Keselamatan Terbang ini dikeluarkan menurut Konvensyen Penerbangan Awam Antarabangsa bertarikh 7 Disember 1944 dan Akta Penerbangan Awam 1969 dan peraturan-peraturan yang dikeluarkan di bawahnya, untuk kapal udara yang tersebut di atas yang didapati layak untuk terbang jika disenggarai dan dikendalikan menurut peraturan peraturan yang tersebut, dan had-had penerbangan yang bersabit.

This Certificate of Airworthiness is issued pursuant to the Convention on International Civil Aviation dated 7 December 1944 and with the Civil Aviation Act 1969 and regulations issued thereunder, in respect of the above-mentioned aircraft, which is considered to be airworthy if maintained and operated in accordance with foregoing regulations and pertinent operating limitations.

Tarikh dikeluarkan *Date of issue* **09-Jan-2025**

Tarikh tamat tempoh *Date of expiry* **13-Jan-2026**

AIR 36
DATO' CAPT. NORAZMAN BIN MAHMUD
Pihak Berkuasa Penerbangan Awam Malaysia
Civil Aviation Authority of Malaysia

Tiada apa-apa jua tulisan atau catatan boleh dibuat dalam Perakuan ini kecuali oleh Pihak Berkuasa Penerbangan Awam Malaysia.
No entries or endorsement may be made in this Certificate except by Civil Aviation Authority of Malaysia.

Appendix B

CAAM/AW/7101-00 250423

PIHAK BERKUASA PENERBANGAN AWAM MALAYSIA
CIVIL AVIATION AUTHORITY OF MALAYSIA

No. Perakuan / *Certificate No.*: AR/16/201

PERAKUAN PENDAFTARAN
CERTIFICATE OF REGISTRATION

1. Tanda-Tanda Kenegaraan dan Pendaftaran *Nationality and Registration Marks*	2. Pembuat dan Nama Sebutan Kapal Udara *Manufacturer and Manufacturer's Designation of Aircraft*	3. Nombor Siri Kapal Udara *Aircraft Serial Number*
9M-MXQ	**THE BOEING COMPANY 737-800**	**40154**

4a. **Dikeluarkan Kepada:** / *Issued To:* **MALAYSIA AIRLINES BERHAD**

Asas Pendaftaran: / *Basis of Registration:*

- ☒ **Pemilikan Kapal Udara** / *Ownership of Aircraft*
- ☐ **Pengendali Kapal Udara** / *Operator of Aircraft*
- ☐ **Lain-lain (Nyatakan):** / *Other (Explain):*

4b. **Alamat Pemegang Perakuan:** / *Address of Certificate Holder:*

1ST FLOOR, ADMINISTRATION BUILDING
SOUTHERN SUPPORT ZONE
KUALA LUMPUR INTERNATIONAL AIRPORT
64000 SEPANG
SELANGOR
MALAYSIA

5. **Nama dan Alamat Pemunya, Jika Berbeza dengan Pemegang Perakuan:** / *Name and Address of Owner, If Different from Certificate Holder:*

JADE AVIATION (IRELAND) AOE 1 LIMITED
NUMBER ONE BALLSBRIDGE
BUILDING ONE
SHELBOURNE ROAD,BALLSBRIDGE
DUBLIN 4
DUBLIN
IRELAND

6. **Adalah dengan ini diperakui bahawa kapal udara yang diperihalkan di atas telah dimasukkan ke dalam Daftar Kapal Udara menurut Konvensyen Penerbangan Awam Antarabangsa bertarikh 7 Disember 1944 dan Akta Penerbangan Awam 1969, dan peraturan-peraturan yang dikeluarkan di bawahnya.**

It is hereby certified that the above described aircraft has been duly entered on the Aircraft Register in accordance with the Convention on International Civil Aviation dated 7 December 1944 and with the Civil Aviation Act 1969 and regulations issued thereunder.

AIR 14

DATO' CAPTAIN NORAZMAN BIN MAHMUD
b/p Pihak Berkuasa Penerbangan Awam Malaysia
for Civil Aviation Authority of Malaysia

Tarikh Dikeluarkan: / *Date of Issue:* 18-SEP-2024

Tempoh Sah Laku: / *Validity Period:* 27-SEP-2024 — 26-SEP-2027

7. **Catatan:** / *Remarks:* AIRCRAFT REGISTERED PURSUANT TO REGULATION 6(4) OF CIVIL AVIATION REGULATIONS 2016.
AIRCRAFT LEASE EXPIRES ON 13-JAN-2030.

Tiada apa-apa jua tulisan atau catatan boleh dibuat dalam Perakuan ini kecuali oleh Pihak Berkuasa Penerbangan Awam Malaysia
No entries or endorsement may be made in this Certificate except by Civil Aviation Authority of Malaysia

Appendix C

TSI-B73NG-23-0111-R00

malaysia airlines	Modification/Repair Control Summary	18.Jul.2023 09:57	Page 1 / 2 2358127

DOCUMENT_NUMBER	DOCUMENT_TYPE
TSI-B73NG-23-0111-R00 Revision 00	TECHNICAL SERVICES INSTRUCTION
TYPE OF MODIFICATION	**ISSUED BY**
AIRCRAFT MODIFICATION	TECHNICAL SERVICES
COMPLIANCE / TYPE OF CHANGE	**ISSUE DATE / RECEIVING DATE / REVISION DATE**
Mandatory / NOT APPLICABLE	17.Jul.2023 / --- / 17.Jul.2023
ATA-CHAPTER	**EFFECTIVE DATE**
21-00(AIR CONDITIONING - GENERAL)	17.Jul.2023
EST.-GROUNDTIME / MANHOURS PER AIRCRAFT	**EST. LABOUR / MATERIAL COSTS PER AIRCRAFT**
--- HOURS / 10.00 HOURS	1'000.00 / ---

APPROVAL

Prepared by	Checked by	Approved by
[redacted]	[redacted]	☑ Approved ☐ Rejected [redacted]
Date 18 JULY 2023	Date 18 JULY 2023	Date 18 JULY 2023

SUBJECT

B737-800: CABIN PRESSURE SYSTEM-COMPONENTS REPLACEMENT AND INSPECTION

TEXT

DESCRIPTION:
To perform replacement of flexible pressure sleeves and trim air duct assembly P/N 213A1501-45 with P/N 213A1501-73. Additionally, this TSI also provides instructions to perform the functionality check of trim air check valves, in order to improve the reliability of the aircraft cabin pressure system.

REASON:
MAB B737NG fleet had two occurences of cabin depressurization. As requested by management, this TSI is issued to replace and inspect the components that maintain cabin pressure as recommended by Boeing through Service Letter 737-SL-21-138-B,

Form No. : 3090042 R2 02/2020 produced by AMOS www.swiss-as.com

malaysia airlines

Modification/Repair Control Summary

18.Jul.2023 09:57

2358127

EFFECTIVITY

A/C-Type	Range	Serial No-From	Serial No-To	Type	Auto-Assign
B73NG	ALL			S/N	

Time-Req.	Dim-Type	Dim	Amount	Base Line	Tolerance
	Before	D	31.Dec.2023		+0D/-0D

Req. Parts	Part No	Description	UM	Qty. Req.	Req.
	B0E2367-0001	SLEEVE	EA	2.0	100%
	AS1505-18A0032	HOSE DUCT	EA	2.0	100%
	B0E2236-0018	SEAL-PRESSURE	EA	3.0	100%
	B0E2236-0016	FLEX.DUCT.TSI/3/JC/08/135 R03	EA	2.0	100%
	3202444-1	VALVE CHECK,ZONE TEMP CONTROL(KA	EA	2.0	50%
	213A1501-73	DUCT AY	EA	1.0	90%

Shop Planning	Shop/Skill	Est-Man	Est-Mh	Total
	Staff	2.0	10:00	10:00
	Aircraft	1.0	10:00	10:00

SIGNOFF-TREE

Document-Number	Doc-Type	Revision	Compliance	Issued By
TSI-B73NG-23-0111-R00	TSI	00	Mandatory	TECHNICAL SERVICES

REFERENCES

Document-Number	Doc-Type	Revision	Issued By	Status
737-SL-21-138-B	SL	00	BOEING (MAIN)	DEFINED

ACTUAL STATUS AIRCRAFT

TOTAL	Affected	Open	Closed	Not Applicable
47	47	47	0	0

COST ESTIMATE

Labour Cost per A/C	Material Cost per A/C	Est. Total Cost (Affected)	Est. Total Cost (Open)
1'000,00 MYR	0,00 MYR	47'000,00 MYR	47'000,00 MYR

malaysia Airlines	Step Notes	DOCUMENT NUMBER
		TSI-B73NG-23-0111-R00

CERTIFIER / APPROVAL HOLDER TO ANNOTATE BELOW FOR ACCOMPLISHMENT OF TASKS:
■ AIRCRAFT REGISTRATION ■ COMPONENT P/N AND S/N ■ MANUAL(S) AND REVISION NUMBER

AIRCRAFT REGISTRATION	ENGINE / COMPONENT (FOR ENGINE OR COMPONENT TASK)	
	P/N :	S/N :

NO.	MANUAL	REV.	NO.	MANUAL	REV.	NO.	MANUAL	REV.
1	AMM / MP / JIC		4	SRM / ASR		7	Other:	
2	IPC / IPD / IPL		5	CMM		8	Other:	
3	TSM / AFI / FIM		6	NDTM		9	Other:	

ACCOMPLISHMENT INSTRUCTIONS SUB-TASKS	MECH. DATE	LIC/APP HLDR DATE

NOTE:

(i) Ensure all warnings and safety precautions are complied with during this TSI accomplishment.

(ii) Refer APPENDIX 1 for the applicable figures.

A. REPLACEMENT OF FLEXIBLE PRESSURE SLEEVES

1. Gain safe access to the flexible pressure sleeves listed below and prepare for the removal.

2. Replace the flexible pressure sleeves:

   I. Mix Manifold Pressure Sleeves – Refer Figure 1
   Removal: AMM TASK 21-51-07-000-802-002
   Installation: AMM TASK 21-51-07-400-802-002

   II. Pressure Sleeve between ACM and HPWS – Refer Figure 2
   Removal: AMM TASK 21-51-04-000-802-002
   Installation: AMM TASK 21-51-04-400-802-002

   III. Trim Air Duct Pressure Sleeves – Refer Figure 3
   Removal: AMM TASK 21-61-12-000-802
   Installation: AMM TASK 21-61-12-400-802

   IV. Aft APU Wheel Well Sleeve – Refer Figure 4
   Removal: AMM TASK 36-13-01-000-808
   Installation: AMM TASK 36-13-01-400-802

   V. Aft Pressure Bulk Head Sleeve – Refer Figure 5
   Removal: AMM TASK 36-13-01-000-808
   Installation: AMM TASK 36-13-01-400-802

3. Perform corresponding installation and leak tests after the replacement of flexible pressure sleeves. Ensure that the integrity of the sleeves and attaching components are in satisfactory condition.

4. Return the aircraft to a serviceable condition.

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malaysia airlines	Step Notes	DOCUMENT NUMBER
		TSI-B73NG-23-0111-R00

CERTIFIER / APPROVAL HOLDER TO ANNOTATE BELOW FOR ACCOMPLISHMENT OF TASKS:
■ AIRCRAFT REGISTRATION ■ COMPONENT P/N AND S/N ■ MANUAL(S) AND REVISION NUMBER

AIRCRAFT REGISTRATION	ENGINE / COMPONENT (FOR ENGINE OR COMPONENT TASK)	
	P/N :	S/N :

NO.	MANUAL	REV.	NO.	MANUAL	REV.	NO.	MANUAL	REV.
1	AMM / MP / JIC		4	SRM / ASR		7	Other:	
2	IPC / IPD / IPL		5	CMM		8	Other:	
3	TSM / AFI / FIM		6	NDTM		9	Other:	

ACCOMPLISHMENT INSTRUCTIONS SUB-TASKS	MECH. DATE	LICIAPP HLDR DATE

B. FUNCTIONALITY CHECK OF TRIM AIR CHECK VALVES

1. Gain safe access to the Trim Air Check Valves (Refer Figure 6).

2. Remove the left Trim Air Check Valve as per AMM TASK 21-61-09-000-801.

3. Inspect the Trim Air Check Valve (Refer Figure 7) for these defects:

   (a) The valve body [1] has cracks or corrosion.
   (b) The valve flappers [2] do not move freely.
   (c) The valve flappers [2] do not touch the valve body equally.
   (d) There are carbon particles at the valve flappers [2] and body interface.
   (e) The valve flappers [2] are bent.
   (f) The stop pin tube [3] has cracks or deterioration.
   (g) If the trim air check valve has one or more of the defects, replace the trim air check valve

4. Install the Trim Air Check Valve as per AMM TASK 21-61-09-400-801.

5. Perform Trim Air Check Valve Leakage Check as per AMM TASK 21-61-09-400-801 Para F.

6. Repeat the same procedures to inspect the right Trim Air Check Valve.

7. Return the aircraft to a serviceable condition.

malaysia Airlines	Step Notes	DOCUMENT NUMBER
		TSI-B73NG-23-0111-R00

CERTIFIER / APPROVAL HOLDER TO ANNOTATE BELOW FOR ACCOMPLISHMENT OF TASKS:
■ AIRCRAFT REGISTRATION ■ COMPONENT P/N AND S/N ■ MANUAL(S) AND REVISION NUMBER

AIRCRAFT REGISTRATION	ENGINE / COMPONENT (FOR ENGINE OR COMPONENT TASK)	
	P/N :	S/N :

NO.	MANUAL	REV.	NO.	MANUAL	REV.	NO.	MANUAL	REV.
1	AMM / MP / JIC		4	SRM / ASR		7	Other:	
2	IPC / IPD / IPL		5	CMM		8	Other:	
3	TSM / AFI / FIM		6	NDTM		9	Other:	

ACCOMPLISHMENT INSTRUCTIONS SUB-TASKS	MECH DATE	LICIAPP HLDR DATE

C. REPLACEMENT OF DUCT ASSEMBLY

1. Gain safe access to the Trim Air Duct Assembly (Refer Figure 8).
2. If Duct Assembly P/N 213A1501-45 is installed, replace with P/N 213A1501-73 as per AMM TASK 21-61-21.
3. Perform a leak check to confirm that there is no air leakage. Ensure that the integrity of the Duct Assembly and attaching components are in satisfactory condition.
4. Return the aircraft to a serviceable condition.

APPENDIX 1

1. MIX MANIFOLD PRESSURE SLEEVES – LH AND RH SIDE
   P/N B0E2367-0001
   IPC Reference: 21-51-07-01(L)/-02(R)

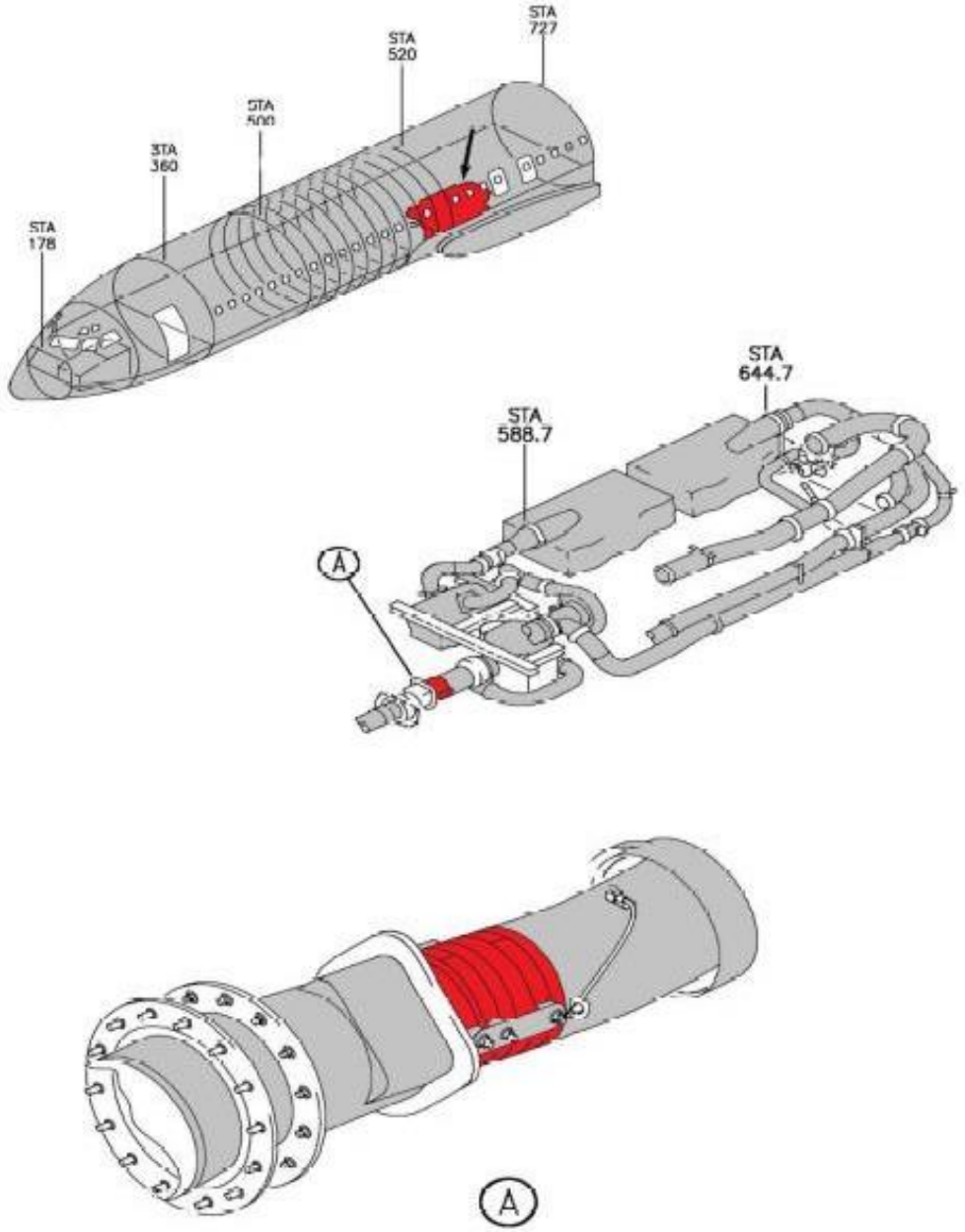


FIGURE 1: REPLACEMENT: MIX MANIFOLD PRESSURE SLEEVES (LEFT SIDE SHOWN).

APPENDIX 1

2. PRESSURE SLEEVE BETWEEN ACM AND HPWS – LH AND RH SIDE (IF APPLICABLE)
P/N: AS1505-18A0032
IPC Reference: 21-51-17

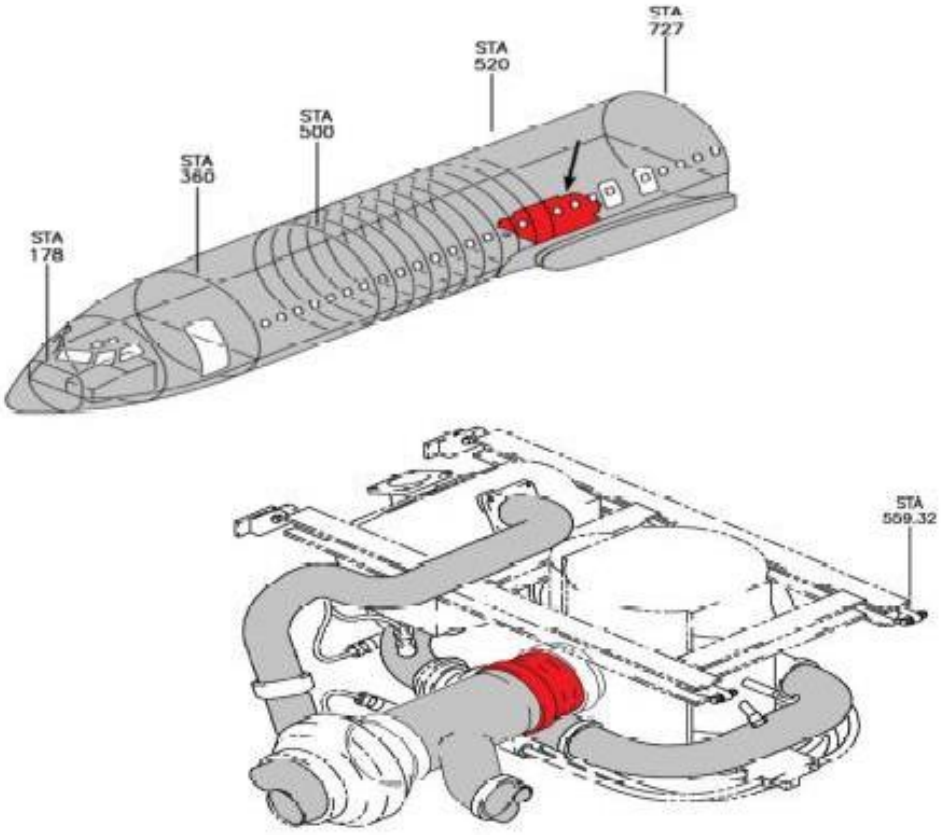


FIGURE 2: REPLACEMENT: PRESSURE SLEEVE BETWEEN ACM AND HPWS (LH SIDE SHOWN).

APPENDIX 1

3. TRIM AIR DUCT PRESSURE SLEEVES
P/N: B0E2003-0051 or B0E2236-0018 or D1859-51
IPC Reference: 21-61-21

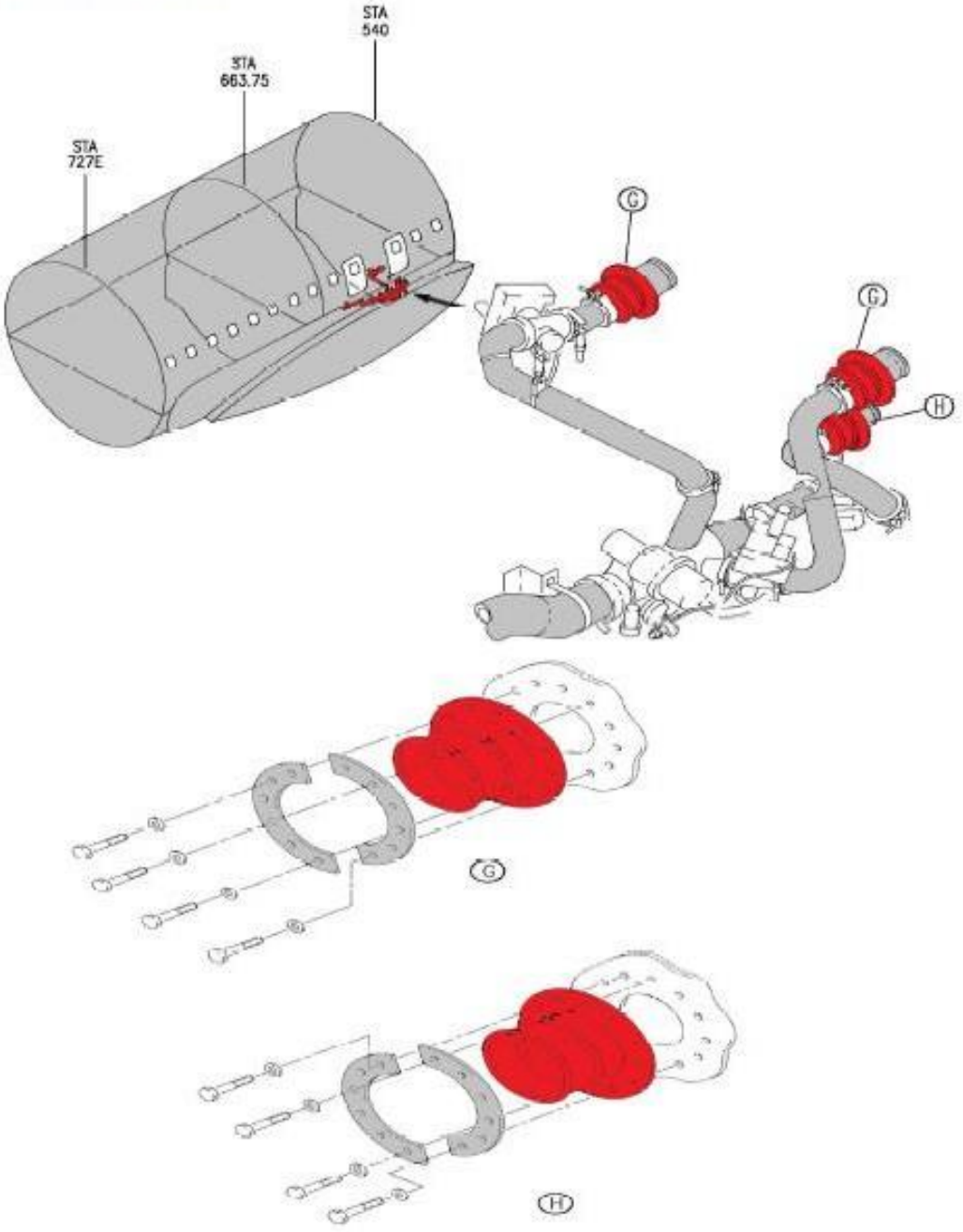


FIGURE 3: REPLACEMENT: TRIM AIR DUCT PRESSURE SLEEVES.

APPENDIX 1

4. AFT APU WHEEL WELL SLEEVE
   P/N: BOE2236-0016
   IPC Reference: 36-13-01-03

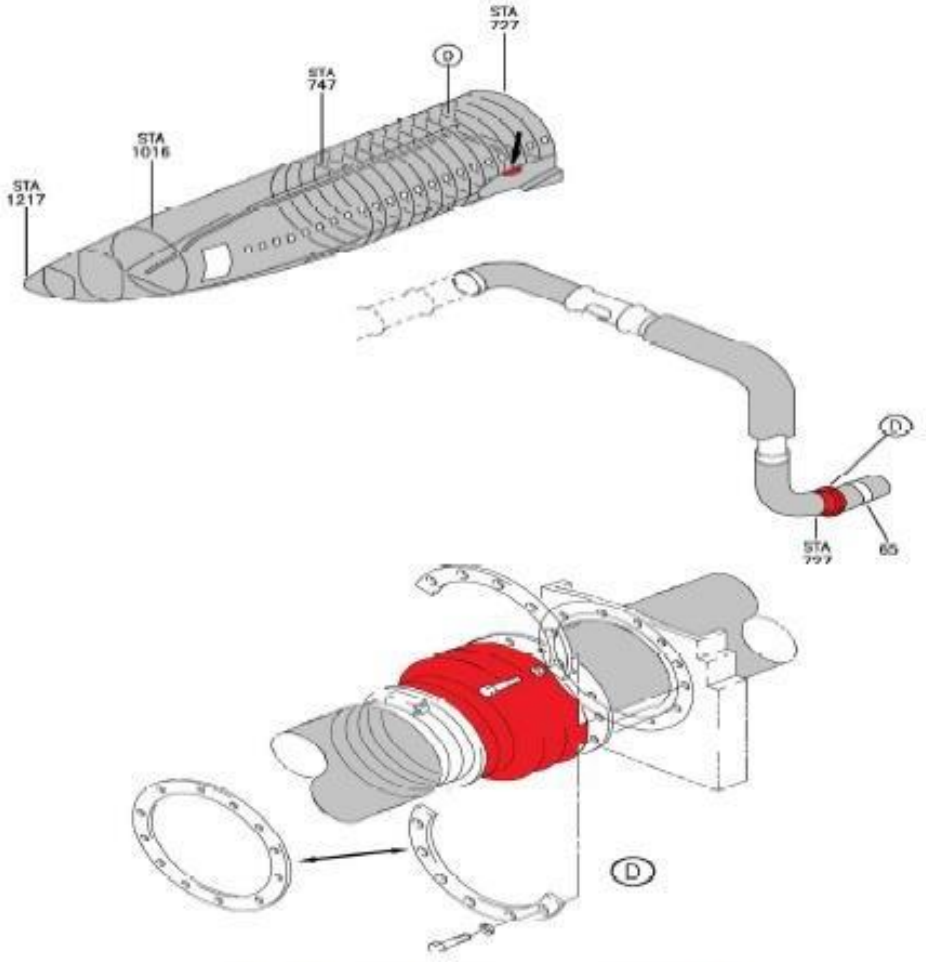


FIGURE 4: REPLACEMENT: AFT APU WHEEL WELL SLEEVE.

APPENDIX 1

5. AFT PRESSURE BULK HEAD SLEEVE
   P/N: BOE2236-0016
   IPC Reference: 36-13-01-04

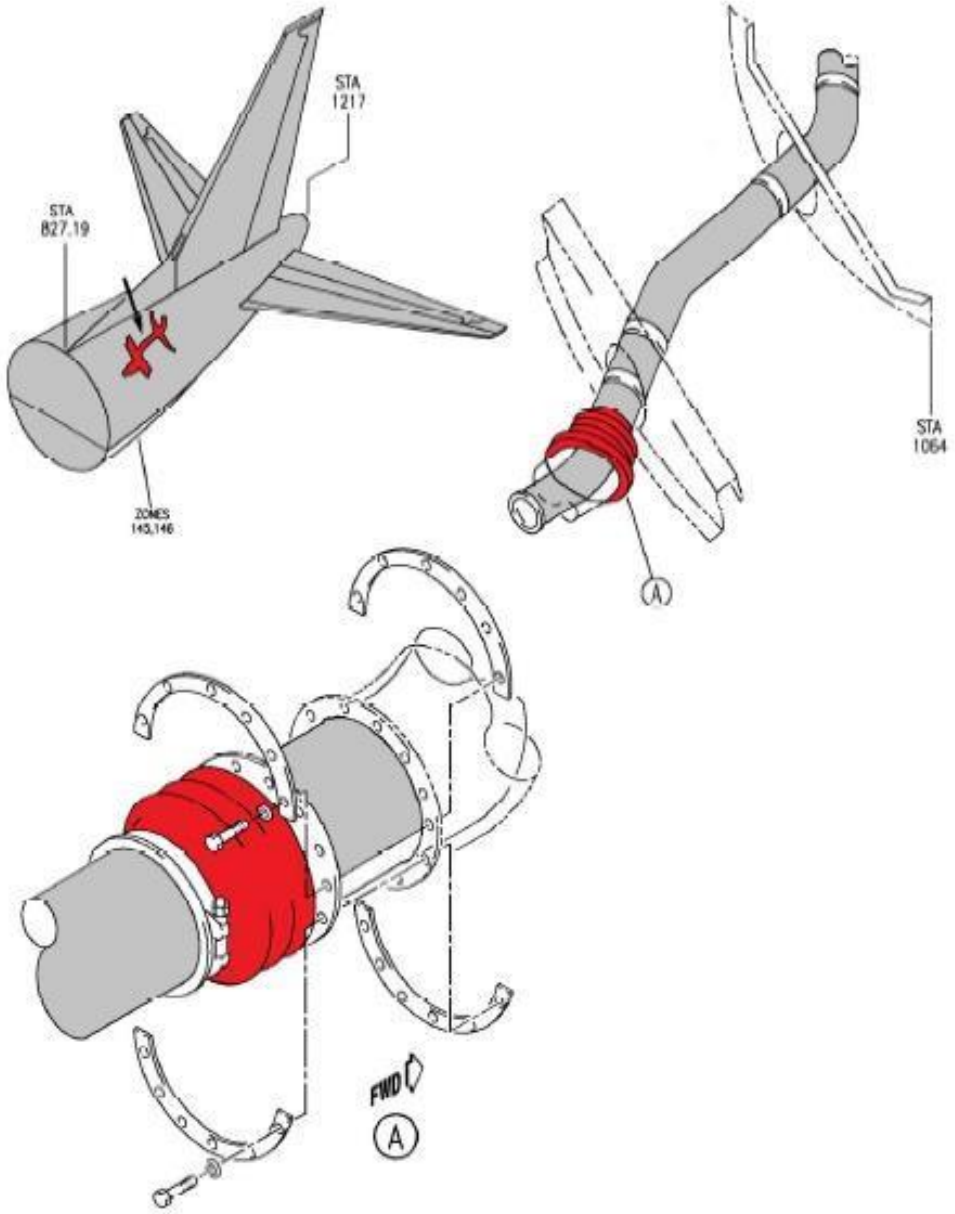
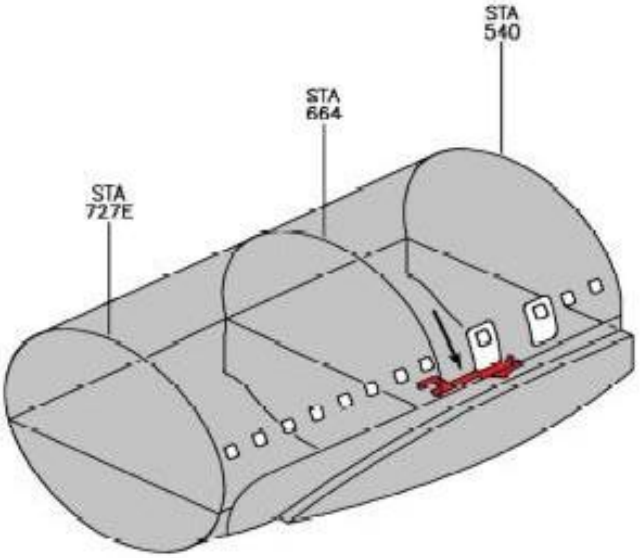


FIGURE 5: REPLACEMENT: AFT PRESSURE BULK HEAD SLEEVE.

APPENDIX 1

6. TRIM AIR CHECK VALVES – LH AND RH SIDE
   P/N: 3202444-1
   IPC Reference: 21-61-09-01



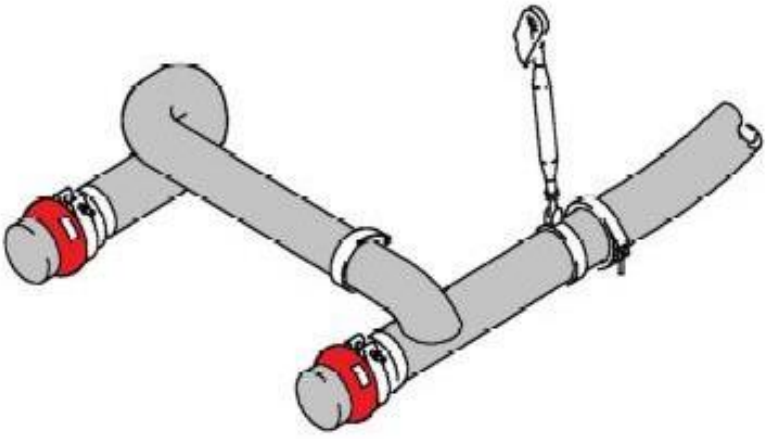


FIGURE 6: INSPECTION: TRIM AIR CHECK VALVES

APPENDIX 1

7. TRIM AIR CHECK VALVES – LH AND RH SIDE
   P/N: 3202444-1
   IPC Reference: 21-61-09-01

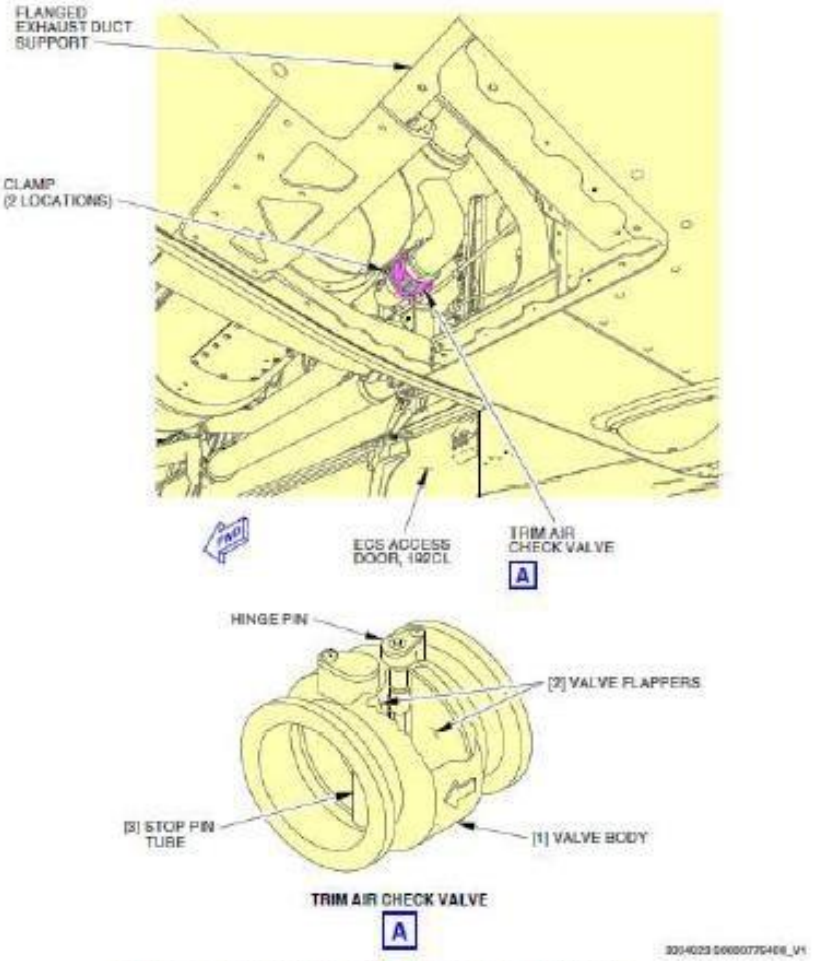


FIGURE 7: INSPECTION: TRIM AIR CHECK VALVES

APPENDIX 1

8. TRIM AIR DUCT ASSEMBLY
   P/N: 213A1501-45
   IPC Reference: 21-61-21-02

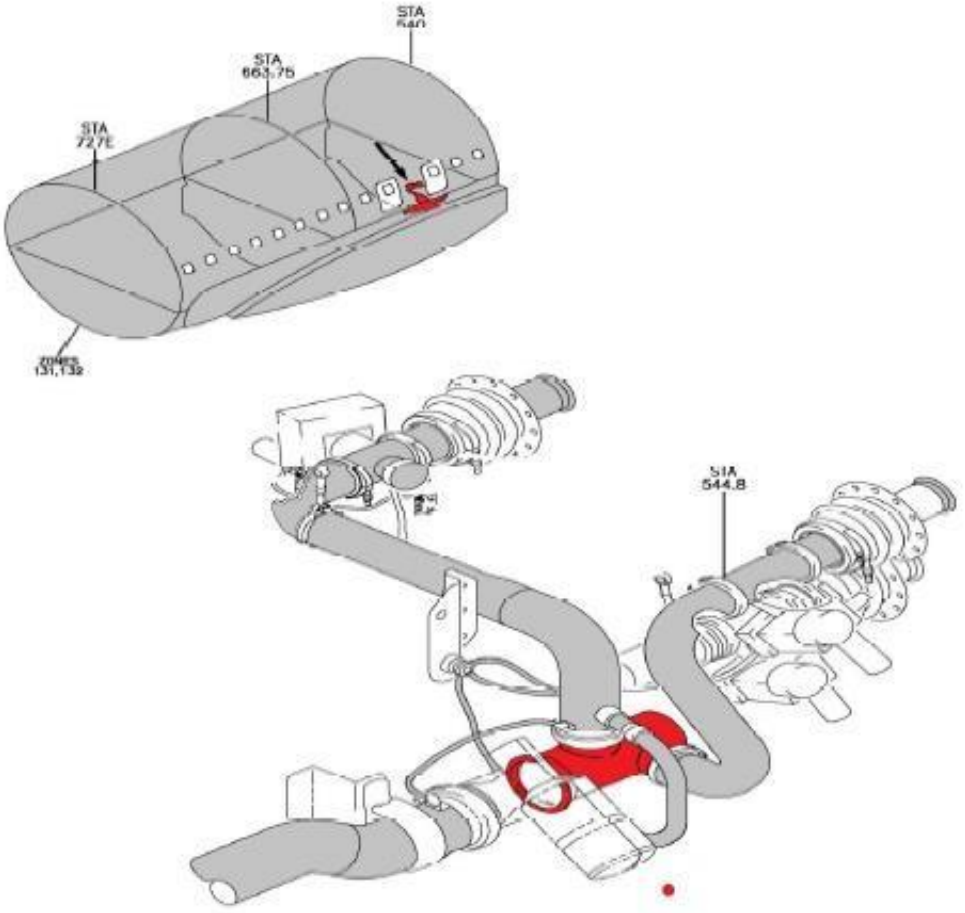


FIGURE 8: REPLACE TRIM AIR DUCT ASSEMBLY P/N 213A1501-45 WITH P/N 213A1501-73

Appendix D

TSI-B73NG-23-0044-R01

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Modification/Repair Control Summary

16.Jun.2023 04:49

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DOCUMENT_NUMBER	DOCUMENT_TYPE
TSI-B73NG-23-0044-R01 Revision 00	TECHNICAL SERVICES INSTRUCTION
TYPE OF MODIFICATION	**ISSUED BY**
AIRCRAFT MODIFICATION	TECHNICAL SERVICES
COMPLIANCE / TYPE OF CHANGE	**ISSUE DATE / RECEIVING DATE / REVISION DATE**
Recommended / NOT APPLICABLE	27.Mar.2023 / --- / 16.Jun.2023
ATA-CHAPTER	**EFFECTIVE DATE**
21-20(DISTRIBUTION)	16,Jun,2023
EST.-GROUNDTIME / MANHOURS PER AIRCRAFT	**EST. LABOUR / MATERIAL COSTS PER AIRCRAFT**
--- HOURS / 10,00 HOURS	1'000,00 / ---

APPROVAL

Prepared by	Checked by	Approved by
[redacted]	[redacted]	☑ Approved ☐ Rejected [redacted]
Date 16/06/2023	Date 16/06/2023	Date 16/06/2023

SUBJECT

B737-800 : AIR CONDITIONING - SIDEWALL RISER HOSEDUCT - INSPECTION OF

TEXT

Description:

This TSI is raised to perform once off replacement of sidewall riser hoseduct PN: AS1591-10-0232A and PN: AS1591-10-0260A during aircraft C-check as part of B737-800 FIP (Fleet Improvement Program).

TSI Revision 01 raised to amend the step note from inspection to replacement/change of all sidewall riser hoseduct (qty: 18) as per FIP decision on 11 May 2023.

REMARKS

Form No. : 3090042 R2 02/2020 produced by AMOS www.swiss-as.com

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Modification/Repair Control Summary

16.Jun.2023 04:49

2357268

Note to department;

i. Planing:
- to schedule the task during aircraft C-check.

ii. Production and Purchasing:
- to ensure the availability of the hoseducts; PN: AS1591-10-0232A (QPA: 15) and PN: AS1591-10-0260A (QPA: 03) prior to accomplishment of this TSI.

EFFECTIVITY

A/C-Type	Range	Serial No-From	Serial No-To	Type	Auto-Assign
B73NG	ALL			S/N	

Time-Req.	Dim-Type	Dim	Amount	Base Line	Tolerance
	Within	H	7'500	Effective Date	+0H/-0H

Req. Parts	Part No	Description	UM	Qty. Req.	Req.
	AS1591-10-0232A	HOSEDUCT	EA	15.0	100%
	AS1591-10-0260A	HOSE	EA	3.0	100%

Shop Planning	Shop/Skill	Est-Man	Est-Mh	Total
	Staff	2.0	10:00	10:00

SIGNOFF-TREE

Document-Number	Doc-Type	Revision	Compliance	Issued By
TSI-B73NG-23-0044-R01	TSI	00	Recommended	TECHNICAL SERVICES

ACTUAL STATUS AIRCRAFT

TOTAL	Affected	Open	Closed	Not Applicable
47	47	47	0	0

COST ESTIMATE

Labour Cost per A/C	Material Cost per A/C	Est. Total Cost (Affected)	Est. Total Cost (Open)
1'000.00 MYR	0.00 MYR	47'000.00 MYR	47'000.00 MYR

Appendix E

Maintenance Activities – Work Order 3809835

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Sequence No.	WO	Barcode	Registration
SEQ 4	3809835 Copy	WO3809835R1	9M-MXQ B73NG B738 B738C1

Type	Origin	ATA	Position	Zone	Area
S SCHED	TSI TECHNICAL SERVICES INSTRUCTION	21-00 AIR CONDITIONING - GENERAL	N/A	190 Wing to Body Fairings	N/A

Workpackage

Workpackage No. / Sequence No.	Planning-Date Start - Planned-Date End	Maintenance Provider
9M-MXQ/L491943-MAINT/MCC / SEQ 4 CREW OXY LOW	22.Jul.24, 12:00 - 25.Jul.24, 03:00 Flight-No.	MAB ENGINEERING SERVICES SDN BHD AMO/2023/01

Type	Reference	Description
DO	TSI-B73NG-23-0111-R00/TSI (RV.00)	
WO	4213333	
WO	4213417	

Description Step 1

TSI-B73NG-23-0111-R00

SEE ATTACHED STEP NOTES FOR REFERENCE.

Action Step 1-1

TSI-B73NG-23-0111-R00

TASK PERFORMED AS PER TSI-B73NG-23-0111-R00 DATED 17 JULY 2023. REFER ATTACHED STEPNOTES FOR DETAILS. SATISFACTORY.

Performed Signature

MOHAMMAD ASHWAD BIN SULONG JAMIL

Description Step 2

TSI-B73NG-23-0111-R00

A. REPLACEMENT OF FLEXIBLE PRESSURE SLEEVES

1. GAIN SAFE ACCESS TO THE FLEXIBLE PRESSURE SLEEVES LISTED IN STEP A(2) BELOW AND PREPARE FOR THE REMOVAL.

2. REPLACE THE FLEXIBLE PRESSURE SLEEVES BELOW:

I. MIX MANIFOLD PRESSURE SLEEVES – REFER FIGURE 1
REMOVAL: AMM TASK 21-51-07-000-802-002
INSTALLATION: AMM TASK 21-51-07-400-802-002

II. PRESSURE SLEEVE BETWEEN ACM AND HPWS – REFER FIGURE 2
REMOVAL: AMM TASK 21-51-04-000-802-002
INSTALLATION: AMM TASK 21-51-04-400-802-002

III. TRIM AIR DUCT PRESSURE SLEEVES – REFER FIGURE 3
REMOVAL: AMM TASK 21-61-12-000-802
INSTALLATION: AMM TASK 21-61-12-400-802

IV. AFT APU WHEEL WELL SLEEVE – REFER FIGURE 4
REMOVAL: AMM TASK 36-13-01-000-808
INSTALLATION: AMM TASK 36-13-01-400-802

V. AFT PRESSURE BULK HEAD SLEEVE – REFER FIGURE 5
REMOVAL: AMM TASK 36-13-01-000-808
INSTALLATION: AMM TASK 36-13-01-400-802

3. PERFORM CORRESPONDING INSTALLATION AND LEAK TESTS AFTER THE REPLACEMENT OF FLEXIBLE PRESSURE SLEEVES. ENSURE THAT THE INTEGRITY OF THE SLEEVES AND ATTACHING COMPONENTS ARE IN SATISFACTORY CONDITION.

4. RETURN THE AIRCRAFT TO A SERVICEABLE CONDITION.

Action Step 2-1

TSI-B73NG-23-0111-R00

CARRIED OUT REPLACEMENT OF RH PACK MIX MANIFOLD PRESSURE SLEEVES – REFER FIGURE 1 AS PER TASK 21-51-07-000-802-002, TASK 21-51-07-400-802-002 REV 82 DATED OCT 15/2023 AND TSI-B73NG-23-0111-R00 JUL 17/2023. FOUND SATISFACTORY.

CARRIED OUT REPLACEMENT OF RH PACK PRESSURE SLEEVE BETWEEN ACM AND HPWS – REFER FIGURE 2 AS PER AMM TASK 21-51-04-000-802-002, AMM TASK 21-51-04-400-802-002 REV 82 DATED OCT 15/2023 AND TSI-B73NG-23-0111-R00 JUL 17/2023. FOUND SATISFACTORY.

CARRIED OUT REPLACEMENT OF RH PACK TRIM AIR DUCT PRESSURE SLEEVES – REFER FIGURE 3 AS PER AMM TASK 21-61-12-000-802, AMM TASK 21-61-12-400-802 REV 82 DATED OCT 15/2023 AND TSI-B73NG-23-0111-R00 JUL 17/2023. FOUND SATISFACTORY.

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Sequence No.	WO	Barcode	Registration
SEQ 4	3809835 Copy	WO3809835R1	9M-MXQ B73NG B738 B738C1

CARRIED OUT REPLACEMENT OF AFT APU WHEEL WELL SLEEVE – REFER FIGURE 4 AS PER AMM TASK 36-13-01-000-808, AMM TASK 36-13-01-400-802 REV 82 DATED OCT 15/2023 AND TSI-B73NG-23-0111-R00 JUL 17/2023. FOUND SATISFACTORY.

POST INSTALLATION LEAK CHECK AT ALL AREA BEING DISTURBED DURING THE PROCESS OF SLEEVES REPLACEMENT BEING AFFECTED CARRIED OUT. NIL LEAK OBSERVED. FOUND SATISFACTORY.

Performed Signature
MOHAMMAD AG-HWAD BIN SULONG JAMIL

Action Step 2-2

TSI-B73NG-23-0111-R00

CARRIED OUT REPLACEMENT OF LH PACK MIX MANIFOLD PRESSURE SLEEVES – REFER FIGURE 1 AS PER TASK 21-51-07-000-802-002, TASK 21-51-07-400-802-002 REV 82 DATED OCT 15/2023 AND TSI-B73NG-23-0111-R00 JUL 17/2023. FOUND SATISFACTORY.

CARRIED OUT REPLACEMENT OF LH PACK PRESSURE SLEEVE BETWEEN ACM AND HPWS – REFER FIGURE 2 AS PER AMM TASK 21-51-04-000-802-002, AMM TASK 21-51-04-400-802-002 REV 82 DATED OCT 15/2023 AND TSI-B73NG-23-0111-R00 JUL 17/2023. FOUND SATISFACTORY.

CARRIED OUT REPLACEMENT OF LH PACK TRIM AIR DUCT PRESSURE SLEEVES – REFER FIGURE 3 AS PER AMM TASK 21-61-12-000-802, AMM TASK 21-61-12-400-802 REV 82 DATED OCT 15/2023 AND TSI-B73NG-23-0111-R00 JUL 17/2023. FOUND SATISFACTORY.

CARRIED OUT REPLACEMENT OF AFT APU PRESSURE BULKHEAD SLEEVE- REFER FIGURE 5 AS PER AMM TASK 36-13-01-000-808, AMM TASK 36-13-01-400-802 REV 82 DATED OCT 15/2023 AND TSI-B73NG-23-0111-R00 JUL 17/2023. FOUND SATISFACTORY.

REFER WORK STEP 6 FOR LEAK CHECK.

Performed Signature
ZAERUL HISYAM BIN ABDUL HAMID

Description Step 3

TSI-B73NG-23-0111-R00

B. FUNCTIONALITY CHECK OF TRIM AIR CHECK VALVES

1. GAIN SAFE ACCESS TO THE TRIM AIR CHECK VALVES (REFER FIGURE 6).

2. REMOVE THE LEFT TRIM AIR CHECK VALVE AS PER AMM TASK 21-61-09-000-801.

3. INSPECT THE TRIM AIR CHECK VALVE (REFER FIGURE 7) FOR THESE DEFECTS:
(A) THE VALVE BODY [1] HAS CRACKS OR CORROSION.
(B) THE VALVE FLAPPERS [2] DO NOT MOVE FREELY.
(C) THE VALVE FLAPPERS [2] DO NOT TOUCH THE VALVE BODY EQUALLY.
(D) THERE ARE CARBON PARTICLES AT THE VALVE FLAPPERS [2] AND BODY INTERFACE.
(E) THE VALVE FLAPPERS [2] ARE BENT.
(F) THE STOP PIN TUBE [3] HAS CRACKS OR DETERIORATION.
(G) IF THE TRIM AIR CHECK VALVE HAS ONE OR MORE OF THE DEFECTS, REPLACE THE TRIM AIR CHECK VALVE

4. INSTALL THE TRIM AIR CHECK VALVE AS PER AMM TASK 21-61-09-400-801.

5. PERFORM TRIM AIR CHECK VALVE LEAKAGE CHECK AS PER AMM TASK 21-61-09-400-801 PARA F.

6. REPEAT THE SAME PROCEDURES TO INSPECT THE RIGHT TRIM AIR CHECK VALVE.

7. RETURN THE AIRCRAFT TO A SERVICEABLE CONDITION.

Action Step 3-1

TSI-B73NG-23-0111-R00

CARRIED OUT FUNCTIONALITY CHECK OF RIGHT PACK TRIM AIR CHECK VALVE AS PER AMM TASK 21-61-09-000-801 AND AMM TASK 21-61-09-400-801 REV 82 DATED OCT 15/2023 AND AS PER TSI-B73NG-23-0111-R00 JULY 17/2023. NIL FINDING AND FOUND SATISFACTORY.

Performed Signature
MOHAMMAD AG-HWAD BIN SULONG JAMIL

Action Step 3-2

TSI-B73NG-23-0111-R00

CARRIED OUT FUNCTIONALITY CHECK OF LEFT PACK TRIM AIR CHECK VALVE AS PER AMM TASK 21-61-09-000-801 AND AMM TASK 21-61-09-400-801 REV 82 DATED OCT 15/2023 AND AS PER TSI-B73NG-23-0111-R00 JULY 17/2023. NIL FINDING AND FOUND SATISFACTORY.

malaysia airlines

Sequence No.	WO	Barcode	Registration
SEQ 4	3809835 Copy	WO3809835R1	9M-MXQ B73NG B738 B738C1

Performed Signature: ZAERUL HISYAM BEN ABDUL HAMID (2354862)

Description Step 4 — DEWI ANDHAMATE BENTI MOHAMAD HUSSEIN (2112282), 06.Sep.2023

TSI-B73NG-23-0111-R00

C. REPLACEMENT OF DUCT ASSEMBLY

1. GAIN SAFE ACCESS TO THE TRIM AIR DUCT ASSEMBLY (REFER FIGURE 8).

2. IF DUCT ASSEMBLY P/N 213A1501-45 IS INSTALLED, REPLACE WITH P/N 213A1501-73 AS PER AMM TASK 21-61-21.

3. PERFORM A LEAK CHECK TO CONFIRM THAT THERE IS NO AIR LEAKAGE. ENSURE THAT THE INTEGRITY OF THE DUCT ASSEMBLY AND ATTACHING COMPONENTS ARE IN SATISFACTORY CONDITION.

4. RETURN THE AIRCRAFT TO A SERVICEABLE CONDITION.

Action Step 4-1 — NUR FARAH SYAZLINA BENTI TALAHA (2360914), 24.Jul.2024

TSI-B73NG-23-0111-R00

TRIM AIR DUCT ASSEMBLY REPLACED WITH P/N 213A1501-73 AS PER TSI-B73NG-23-0111-R00 PARA C. SATISFACTORY.

Performed Signature: NUR FARAH SYAZLINA BENTI TALAHA (2360914)

Description Step 5 — DEWI ANDHAMATE BENTI MOHAMAD HUSSEIN (2112282), 06.Sep.2023

TSI-B73NG-23-0111-R00

TO CONFIRM FULL ACCOMPLISHMENT OF THIS TSI.

Action Step 5-1 — MOHAMMAD ASHWAD BEN SULONG JAMIL (2352619), 24.Jul.2024

TSI-B73NG-23-0111-R00

TASK PERFORMED AS PER TSI-B73NG-23-0111-R00 DATED 17 JULY 2023. DOCUMENT FULLY ACCOMPLISHED. SATISFACTORY.

Performed Signature: MOHAMMAD ASHWAD BEN SULONG JAMIL (2352619)

Description Step 6 — ZAERUL HISYAM BEN ABDUL HAMID (2354862), 13.Nov.2023

100 FWD / AF / RIGHT PACK SYSTEM LEAK CHECK

PERFORM CORRESPONDING INSTALLATION AND LEAK TESTS AFTER THE REPLACEMENT OF FLEXIBLE PRESSURE SLEEVES. ENSURE THAT THE INTEGRITY OF THE SLEEVES AND ATTACHING COMPONENTS ARE IN SATISFACTORY CONDITION. PERFORM A LEAK CHECK AT TRIM AIR DUCT ASSEMBLY (REFER FIGURE 8) TO CONFIRM THAT THERE IS NO AIR LEAKAGE. ENSURE THAT THE INTEGRITY OF THE DUCT ASSEMBLY AND ATTACHING COMPONENTS ARE IN SATISFACTORY CONDITION.

REF: TSI-B73NG-23-0111-R00 JULY 17/2023

Action Step 6-1 — MOHAMMAD ASHWAD BEN SULONG JAMIL (2352619), 24.Jul.2024

100 FWD / AF / RIGHT PACK SYSTEM LEAK CHECK

CARRIED OUT RH TRIM AIR DUCT ASSEMBLY POST INSTALLATION TEST AS PER AMM 21-61-12/401 PARA H REV 84 DATED JUNE15/2024. NIL LEAKS. SATISFACTORY.

Performed Signature: MOHAMMAD ASHWAD BEN SULONG JAMIL (2352619)

Work Performed Workorder Closed

Date	Total Aircraft Hours	Total Aircraft Cycles	Place / Station	Closing *Sign / Stamp
24.Jul.2024 06:59	30023:53	15007	KUL	MOHAMMAD ASHWAD BEN SULONG JAMIL (2352619)

*Certificate of Release To Service

Certifies that the work specified, except as otherwise specified, was carried out in accordance with CAA Malaysia requirements and in respect to that work the aircraft/aircraft component is considered ready for release to service

AMO/2023/01

Date: 24.Jul.2024 06:59

*Sign & Stamp: MOHAMMAD ASHWAD BEN SULONG JAMIL (2352619)

Commercial Information

Customer:

Project Number:

Material Used

Part No.	Pickslip No.	Batch No.	Description	Quantity
B0E2367-0001	572981	RD720614	SLEEVE	2.0
B0E2236-0018	572984	RD742004	SEAL-PRESSURE	3.0

malaysia airlines	Sequence No. SEQ 4	WO 3809835 Copy	Barcode WO3809835R1	Registration 9M-MXQ B73NG B738 B738C1
B0E2236-0016	572985	RD714564	FLEX.DUCT.TSI/3/JC/08/135 R03	2.0
213A1501-73	695106	RD948201	DUCT AY	1.0