

**CHAPTER**

**52**

**Doors**

CHAPTER 52  
DOORS

| Subject/Page       | Date        | COC | Subject/Page     | Date        | COC |
|--------------------|-------------|-----|------------------|-------------|-----|
| 52-EFFECTIVE PAGES |             |     | 52-11-00 (cont.) |             |     |
| 1 thru 6           | Sep 05/2018 |     | 11               | May 05/2015 |     |
| 52-CONTENTS        |             |     | 12               | May 05/2015 |     |
| 1                  | May 05/2015 |     | 13               | May 05/2015 |     |
| 2                  | Jan 05/2017 |     | 14               | May 05/2015 |     |
| 3                  | Jan 05/2017 |     | 15               | May 05/2015 |     |
| 4                  | Jan 05/2017 |     | 16               | May 05/2015 |     |
| 5                  | Sep 05/2017 |     | 17               | May 05/2015 |     |
| 6                  | May 05/2017 |     | 18               | May 05/2015 |     |
| 52-00-00           |             |     | 19               | May 05/2015 |     |
| 1                  | May 05/2015 |     | 20               | May 05/2015 |     |
| 2                  | May 05/2015 |     | 21               | May 05/2015 |     |
| 3                  | May 05/2015 |     | 22               | May 05/2015 |     |
| 4                  | BLANK       |     | 23               | May 05/2015 |     |
| 52-11-00           |             |     | 24               | May 05/2015 |     |
| 1                  | Sep 05/2016 |     | 25               | May 05/2015 |     |
| 2                  | Sep 05/2016 |     | 26               | May 05/2015 |     |
| 3                  | May 05/2015 |     | 27               | May 05/2015 |     |
| 4                  | May 05/2015 |     | 28               | May 05/2015 |     |
| 5                  | Sep 05/2016 |     | 29               | May 05/2015 |     |
| 6                  | Sep 05/2016 |     | 30               | May 05/2015 |     |
| 7                  | May 05/2015 |     | 31               | May 05/2015 |     |
| 8                  | May 05/2015 |     | 32               | May 05/2015 |     |
| 9                  | May 05/2015 |     |                  |             |     |
| 10                 | May 05/2015 |     |                  |             |     |

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

**52-EFFECTIVE PAGES**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

CHAPTER 52  
DOORS

| Subject/Page     | Date        | COC | Subject/Page     | Date        | COC |
|------------------|-------------|-----|------------------|-------------|-----|
| 52-11-00 (cont.) |             |     | 52-11-00 (cont.) |             |     |
| 33               | May 05/2015 |     | 55               | Sep 05/2016 |     |
| 34               | May 05/2015 |     | 56               | BLANK       |     |
| 35               | May 05/2015 |     | 52-30-00         |             |     |
| 36               | May 05/2015 |     | 1                | May 05/2015 |     |
| 37               | May 05/2015 |     | 2                | May 05/2015 |     |
| 38               | May 05/2015 |     | 3                | May 05/2015 |     |
| 39               | May 05/2015 |     | 4                | BLANK       |     |
| 40               | May 05/2015 |     | 52-34-00         |             |     |
| 41               | May 05/2018 |     | 1                | May 05/2015 |     |
| 42               | May 05/2018 |     | 2                | May 05/2015 |     |
| 43               | May 05/2015 |     | 3                | May 05/2015 |     |
| 44               | May 05/2015 |     | 4                | May 05/2015 |     |
| 45               | May 05/2015 |     | 5                | May 05/2015 |     |
| 46               | May 05/2015 |     | 6                | May 05/2015 |     |
| 47               | May 05/2015 |     | 7                | May 05/2015 |     |
| 48               | May 05/2017 |     | 8                | May 05/2015 |     |
| 49               | May 05/2015 |     | 9                | May 05/2015 |     |
| 50               | May 05/2015 |     | 10               | May 05/2015 |     |
| 51               | May 05/2015 |     | 11               | May 05/2015 |     |
| 52               | Sep 05/2016 |     | 12               | May 05/2015 |     |
| 53               | Sep 05/2016 |     | 13               | May 05/2015 |     |
| 54               | Sep 05/2016 |     | 14               | May 05/2015 |     |
|                  |             |     | 15               | May 05/2015 |     |
|                  |             |     | 16               | May 05/2015 |     |

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

## 52-EFFECTIVE PAGES

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

CHAPTER 52  
DOORS

| Subject/Page     | Date        | COC | Subject/Page     | Date        | COC |
|------------------|-------------|-----|------------------|-------------|-----|
| 52-34-00 (cont.) |             |     | 52-34-00 (cont.) |             |     |
| 17               | May 05/2015 |     | 39               | May 05/2015 |     |
| 18               | Sep 05/2017 |     | 40               | May 05/2015 |     |
| 19               | May 05/2015 |     | 41               | Sep 05/2017 |     |
| 20               | May 05/2015 |     | 42               | Sep 05/2016 |     |
| 21               | May 05/2015 |     | 43               | May 05/2015 |     |
| 22               | May 05/2015 |     | 44               | May 05/2015 |     |
| 23               | May 05/2015 |     | 45               | Sep 05/2017 |     |
| 24               | May 05/2015 |     | 46               | Sep 05/2017 |     |
| 25               | May 05/2015 |     | 47               | May 05/2015 |     |
| 26               | May 05/2015 |     | 48               | May 05/2015 |     |
| 27               | May 05/2015 |     | 49               | May 05/2015 |     |
| 28               | May 05/2015 |     | 50               | May 05/2015 |     |
| 29               | May 05/2015 |     | 51               | May 05/2015 |     |
| 30               | May 05/2015 |     | 52               | BLANK       |     |
| 31               | May 05/2015 |     | 52-35-00         |             |     |
| 32               | May 05/2015 |     | 1                | May 05/2015 |     |
| 33               | May 05/2015 |     | 2                | May 05/2015 |     |
| 34               | May 05/2015 |     | 3                | May 05/2015 |     |
| 35               | May 05/2015 |     | 4                | May 05/2015 |     |
| 36               | May 05/2015 |     | 5                | May 05/2015 |     |
| 37               | May 05/2015 |     | 6                | Sep 05/2016 |     |
| 38               | May 05/2015 |     | 7                | Sep 05/2016 |     |
|                  |             |     | 8                | Sep 05/2016 |     |

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

## 52-EFFECTIVE PAGES

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

CHAPTER 52  
DOORS

| Subject/Page     | Date        | COC | Subject/Page     | Date        | COC |
|------------------|-------------|-----|------------------|-------------|-----|
| 52-35-00 (cont.) |             |     | 52-35-00 (cont.) |             |     |
| 9                | Sep 05/2016 |     | 31               | Sep 05/2016 |     |
| 10               | Sep 05/2016 |     | 32               | Sep 05/2017 |     |
| 11               | Sep 05/2016 |     | 33               | Sep 05/2016 |     |
| 12               | Sep 05/2016 |     | 34               | Sep 05/2017 |     |
| 13               | Sep 05/2016 |     | 35               | Sep 05/2017 |     |
| 14               | Sep 05/2016 |     | 36               | Sep 05/2017 |     |
| 15               | Sep 05/2016 |     | 37               | Sep 05/2017 |     |
| 16               | Sep 05/2016 |     | 38               | Sep 05/2017 |     |
| 17               | Sep 05/2016 |     | 39               | Sep 05/2017 |     |
| 18               | Sep 05/2016 |     | 40               | Sep 05/2017 |     |
| 19               | Sep 05/2016 |     | 41               | Sep 05/2017 |     |
| 20               | Sep 05/2016 |     | 42               | BLANK       |     |
| 21               | Sep 05/2016 |     | 52-36-00         |             |     |
| 22               | Sep 05/2016 |     | 1                | May 05/2015 |     |
| 23               | Sep 05/2016 |     | 2                | May 05/2015 |     |
| 24               | Sep 05/2016 |     | 3                | May 05/2015 |     |
| 25               | Sep 05/2016 |     | 4                | May 05/2015 |     |
| 26               | Sep 05/2016 |     | 5                | May 05/2015 |     |
| 27               | Sep 05/2016 |     | 6                | May 05/2015 |     |
| 28               | Sep 05/2016 |     | 7                | May 05/2015 |     |
| 29               | Sep 05/2016 |     | 8                | May 05/2015 |     |
| 30               | Sep 05/2016 |     | 9                | May 05/2015 |     |
|                  |             |     | 10               | May 05/2015 |     |

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

## 52-EFFECTIVE PAGES

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

CHAPTER 52  
DOORS

| Subject/Page     | Date        | COC | Subject/Page     | Date        | COC |
|------------------|-------------|-----|------------------|-------------|-----|
| 52-36-00 (cont.) |             |     | 52-50-00 (cont.) |             |     |
| 11               | May 05/2015 |     | 7                | May 05/2017 |     |
| 12               | May 05/2015 |     | 8                | May 05/2017 |     |
| 13               | May 05/2015 |     | 9                | May 05/2017 |     |
| 14               | May 05/2015 |     | 10               | May 05/2017 |     |
| 15               | May 05/2015 |     | 11               | May 05/2017 |     |
| 16               | May 05/2015 |     | 12               | May 05/2017 |     |
| 17               | May 05/2015 |     | 13               | May 05/2017 |     |
| 18               | BLANK       |     | 14               | May 05/2017 |     |
| 52-40-00         |             |     | 15               | May 05/2017 |     |
| 1                | May 05/2015 |     | 16               | May 05/2017 |     |
| 2                | May 05/2015 |     | 17               | May 05/2017 |     |
| 3                | May 05/2015 |     | 18               | May 05/2017 |     |
| 4                | May 05/2015 |     | 19               | May 05/2017 |     |
| 5                | May 05/2015 |     | 20               | May 05/2017 |     |
| 6                | May 05/2015 |     | 21               | May 05/2017 |     |
| 7                | May 05/2015 |     | 22               | BLANK       |     |
| 8                | BLANK       |     | 52-71-00         |             |     |
| 52-50-00         |             |     | 1                | May 05/2015 |     |
| 1                | May 05/2015 |     | 2                | May 05/2015 |     |
| 2                | May 05/2015 |     | 3                | May 05/2015 |     |
| 3                | May 05/2015 |     | 4                | May 05/2015 |     |
| 4                | May 05/2015 |     | 5                | May 05/2015 |     |
| 5                | May 05/2015 |     | 6                | May 05/2015 |     |
| 6                | May 05/2015 |     |                  |             |     |

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

## 52-EFFECTIVE PAGES

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

CHAPTER 52  
DOORS

| Subject/Page     | Date        | COC | Subject/Page | Date | COC |
|------------------|-------------|-----|--------------|------|-----|
| 52-71-00 (cont.) |             |     |              |      |     |
| 7                | May 05/2015 |     |              |      |     |
| 8                | May 05/2015 |     |              |      |     |
| 9                | May 05/2015 |     |              |      |     |
| 10               | May 05/2015 |     |              |      |     |
| 11               | May 05/2015 |     |              |      |     |
| 12               | May 05/2015 |     |              |      |     |
| 13               | May 05/2015 |     |              |      |     |
| 14               | May 05/2015 |     |              |      |     |
| 15               | May 05/2015 |     |              |      |     |
| 16               | May 05/2015 |     |              |      |     |
| 17               | May 05/2015 |     |              |      |     |
| 18               | Sep 05/2016 |     |              |      |     |
| 19               | Sep 05/2016 |     |              |      |     |
| 20               | Sep 05/2016 |     |              |      |     |
| 21               | Sep 05/2016 |     |              |      |     |
| 22               | BLANK       |     |              |      |     |

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

**52-EFFECTIVE PAGES**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

## CHAPTER 52 DOORS

| <u>CH-SC-SU</u> | <u>SUBJECT</u>                                                                       | <u>PAGE</u> | <u>EFFECT</u> |
|-----------------|--------------------------------------------------------------------------------------|-------------|---------------|
| 52-00-00        | DOORS - INTRODUCTION                                                                 | 2           | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - INTRODUCTION                                      | 1           | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - COMPONENT LOCATIONS<br>- WITH DOOR LINERS REMOVED | 5           | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - DOORS AND SEALS                                   | 8           | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - DOOR HINGE                                        | 10          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - DOOR HINGE - LINEAR<br>LIFT FUNCTION              | 12          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - PROGRAMMING<br>MECHANISM CHAIN                    | 14          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - SNUBBER                                           | 16          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - HOLD-OPEN MECHANISM                               | 18          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - HANDLE MECHANISM AND<br>MECHANICAL SWITCHES       | 20          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - LATCH MECHANISM -<br>INTRODUCTION                 | 22          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - LATCH MECHANISM -<br>LATCH CRANK FUNCTION         | 24          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - LATCH MECHANISM -<br>SECONDARY LIFT FUNCTION      | 26          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - VENT DOOR MECHANISM -<br>INTRODUCTION             | 28          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - VENT DOOR MECHANISM -<br>INTERLOCK FUNCTION       | 30          | ARO ALL       |

## 52-CONTENTS



## CHAPTER 52 DOORS

| <u>CH-SC-SU</u> | <u>SUBJECT</u>                                                                                   | <u>PAGE</u> | <u>EFFECT</u> |
|-----------------|--------------------------------------------------------------------------------------------------|-------------|---------------|
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - FLIGHT LOCK MECHANISM AND FLIGHT LOCK SENSORS                 | 32          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - MODE SELECT MECHANISM AND MECHANICAL SWITCHES                 | 34          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - GIRT BAR MECHANISM AND GIRT BAR FLOOR FITTING - INTRODUCTION  | 36          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - GIRT BAR MECHANISM - FUNCTIONAL DESCRIPTION                   | 38          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - EMERGENCY POWER ASSIST SYSTEM (EPAS) - INTRODUCTION           | 41          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR - EMERGENCY POWER ASSIST SYSTEM (EPAS) - FUNCTIONAL DESCRIPTION        | 46          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR - EMERGENCY POWER ASSIST SYSTEM (EPAS) - DOOR 3 FUNCTIONAL DESCRIPTION | 48          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - FUNCTIONAL DESCRIPTION                                        | 50          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - OPERATION                                                     | 52          | ARO ALL       |
| 52-11-00        | PASSENGER/CREW ENTRY DOOR SYSTEM - SYSTEM TESTS                                                  | 54          | ARO ALL       |
| 52-30-00        | CARGO DOORS - INTRODUCTION                                                                       | 2           | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - INTRODUCTION                                                   | 2           | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 1                                        | 4           | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 2                                        | 6           | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 3                                        | 8           | ARO ALL       |

## 52-CONTENTS

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 2  
Jan 05/2017

## CHAPTER 52 DOORS

| <u>CH-SC-SU</u> | <u>SUBJECT</u>                                                      | <u>PAGE</u> | <u>EFFECT</u> |
|-----------------|---------------------------------------------------------------------|-------------|---------------|
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - DOOR AND DOOR SEAL                | 10          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - LIFT POWER UNIT                   | 12          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - LIFT MANUAL DRIVE                 | 14          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - ROTARY ACTUATOR                   | 16          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - LIFT MECHANISM                    | 18          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - LATCH POWER UNIT                  | 20          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - LATCH MANUAL DRIVE                | 22          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - LATCH MECHANISM                   | 24          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - PULL-IN HOOKS AND PINS            | 26          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - LATCH CAMS AND LATCH PINS         | 28          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - LOCK HANDLE MECHANISM             | 30          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - LOCK MECHANISM                    | 32          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - VENT DOOR AND VENT DOOR MECHANISM | 34          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - CONTROL SWITCHES                  | 36          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - PROXIMITY SENSORS                 | 38          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - ELECTRICAL OPERATION              | 41          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - MANUAL OPERATION                  | 45          | ARO ALL       |
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - MECHANICAL FUNCTIONAL DESCRIPTION | 48          | ARO ALL       |

## 52-CONTENTS

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 3  
Jan 05/2017

## CHAPTER 52 DOORS

| <u>CH-SC-SU</u> | <u>SUBJECT</u>                                                                    | <u>PAGE</u> | <u>EFFECT</u> |
|-----------------|-----------------------------------------------------------------------------------|-------------|---------------|
| 52-34-00        | FORWARD LARGE CARGO DOOR SYSTEM - ELECTRICAL FUNCTIONAL DESCRIPTION               | 50          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - INTRODUCTION                                        | 2           | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 1                             | 4           | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 2                             | 6           | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 3                             | 8           | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - AFT SMALL CARGO DOOR                                | 10          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - VENT DOOR AND VENT DOOR CAM                         | 12          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - LIFT/LATCH POWER DRIVE UNIT, BUNGEE, AND LIFT CRANK | 14          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - LIFT LOCK CAM - INTRODUCTION                        | 16          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - LIFT LOCK CAM - FUNCTIONAL DESCRIPTION              | 18          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - HINGE PDU AND MANUAL DRIVE FLEXIBLE SHAFT           | 20          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - ROTARY ACTUATOR                                     | 22          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - HINGE ARM - INTRODUCTION                            | 24          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - HINGE ARM - FUNCTIONAL DESCRIPTION                  | 26          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - PROXIMITY SENSORS                                   | 28          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - CONTROL SWITCHES                                    | 30          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - ELECTRICAL OPERATION                                | 32          | ARO ALL       |

## 52-CONTENTS

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

## CHAPTER 52 DOORS

| <u>CH-SC-SU</u> | <u>SUBJECT</u>                                                                             | <u>PAGE</u> | <u>EFFECT</u> |
|-----------------|--------------------------------------------------------------------------------------------|-------------|---------------|
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - MANUAL OPERATION                                             | 35          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - MECHANICAL FUNCTIONAL DESCRIPTION                            | 38          | ARO ALL       |
| 52-35-00        | AFT SMALL CARGO DOOR SYSTEM - ELECTRICAL FUNCTIONAL DESCRIPTION                            | 40          | ARO ALL       |
| 52-36-00        | BULK CARGO DOOR SYSTEM - INTRODUCTION                                                      | 2           | ARO ALL       |
| 52-36-00        | BULK CARGO DOOR SYSTEM - COMPONENT LOCATIONS                                               | 4           | ARO ALL       |
| 52-36-00        | BULK CARGO DOOR SYSTEM - DOOR AND SEAL                                                     | 6           | ARO ALL       |
| 52-36-00        | BULK CARGO DOOR SYSTEM - COUNTERBALANCE MECHANISM                                          | 8           | ARO ALL       |
| 52-36-00        | BULK CARGO DOOR SYSTEM - SNUBBER                                                           | 10          | ARO ALL       |
| 52-36-00        | BULK CARGO DOOR SYSTEM - HINGE ARM                                                         | 12          | ARO ALL       |
| 52-36-00        | BULK CARGO DOOR SYSTEM - LATCH MECHANISM                                                   | 14          | ARO ALL       |
| 52-36-00        | BULK CARGO DOOR SYSTEM - OPERATION                                                         | 16          | ARO ALL       |
| 52-40-00        | EQUIPMENT COMPARTMENT AND EQUIPMENT SERVICE DOORS - LEFT SIDE OF AIRPLANE                  | 2           | ARO ALL       |
| 52-40-00        | EQUIPMENT COMPARTMENT AND EQUIPMENT SERVICE DOORS - RIGHT SIDE AND BOTTOM OF AIRPLANE      | 4           | ARO ALL       |
| 52-40-00        | EQUIPMENT COMPARTMENT AND EQUIPMENT SERVICE DOORS - MEC AND FORWARD EQUIPMENT ACCESS DOORS | 6           | ARO ALL       |
| 52-50-00        | FIXED INTERIOR DOORS - INTRODUCTION                                                        | 2           | ARO ALL       |
| 52-50-00        | FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - FUNCTIONAL DESCRIPTION                    | 4           | ARO ALL       |
| 52-50-00        | FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - DOOR AND ELECTRIC STRIKE                  | 6           | ARO ALL       |

## 52-CONTENTS

**CHAPTER 52**  
**DOORS**

| <b><u>CH-SC-SU</u></b> | <b><u>SUBJECT</u></b>                                                                            | <b><u>PAGE</u></b> | <b><u>EFFECT</u></b> |
|------------------------|--------------------------------------------------------------------------------------------------|--------------------|----------------------|
| 52-50-00               | FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - KEYPAD                                          | 10                 | ARO ALL              |
| 52-50-00               | FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - CHIME<br>MODULE                                 | 12                 | ARO ALL              |
| 52-50-00               | FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - PRESSURE<br>SENSOR                              | 14                 | ARO ALL              |
| 52-50-00               | FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - SWITCH<br>MODULE                                | 16                 | ARO ALL              |
| 52-50-00               | FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - OPERATION                                       | 18                 | ARO ALL              |
| 52-50-00               | FIXED INTERIOR DOORS - ELECTRICAL/ELECTRONICS ACCESS HATCH<br>& VERTICAL STABILIZER ACCESS PANEL | 20                 | ARO ALL              |
| 52-71-00               | DOOR WARNING SYSTEM - INTRODUCTION                                                               | 2                  | ARO ALL              |
| 52-71-00               | DOOR WARNING SYSTEM - PASSENGER ENTRY DOOR SENSORS                                               | 4                  | ARO ALL              |
| 52-71-00               | DOOR WARNING SYSTEM - OFF-WING SLIDE COMPARTMENT DOOR<br>SENSOR AND LATCH ACTUATOR SWITCH        | 6                  | ARO ALL              |
| 52-71-00               | DOOR WARNING SYSTEM - LARGE CARGO DOOR SENSORS                                                   | 8                  | ARO ALL              |
| 52-71-00               | DOOR WARNING SYSTEM - SMALL CARGO DOOR SENSORS                                                   | 10                 | ARO ALL              |
| 52-71-00               | DOOR WARNING SYSTEM - BULK CARGO DOOR SWITCH                                                     | 12                 | ARO ALL              |
| 52-71-00               | DOOR WARNING SYSTEM - ACCESS DOOR SENSORS                                                        | 14                 | ARO ALL              |
| 52-71-00               | DOOR WARNING SYSTEM - FUNCTIONAL DESCRIPTION                                                     | 16                 | ARO ALL              |
| 52-71-00               | DOOR WARNING SYSTEM - INDICATIONS                                                                | 18                 | ARO ALL              |
| 52-71-00               | DOOR WARNING SYSTEM - INDICATIONS - CSCP/CACP - CABIN DOOR<br>STATUS SCREEN                      | 20                 | ARO ALL              |

## 52-CONTENTS



THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-00-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

## DOORS - INTRODUCTION

### General Description

These are the types of doors:

- Passenger/Crew entry doors
- Cargo doors
- Fixed interior doors
- Service doors

There is a door warning system that gives door status information to the flight crew.

### Abbreviations and Acronyms

- AC - alternating current
- ADP - air-driven pump
- AIMS - airplane information management system
- APU - auxiliary power unit
- ARINC - Aeronautical Radio, Inc.
- aux - auxiliary
- CACP - cabin area control panel
- cm - centimeter
- CSS - cabin services system
- CSCP - cabin system control panel
- DC - direct current
- ECS - environmental control system
- EICAS - engine indication and crew alerting system
- E/E - electrical and electronic
- EPAS - emergency power assist system
- fwd - forward
- gnd - ground
- hdlg - handling
- Hz - hertz

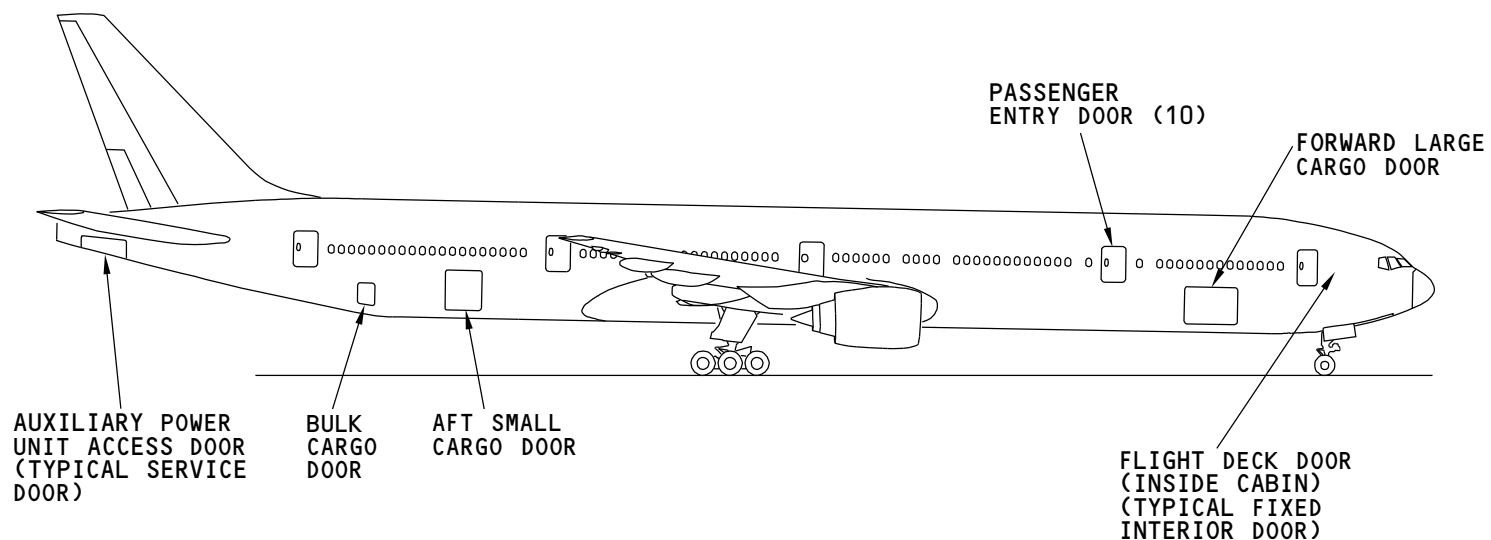
- inbd - inboard
- MAT - maintenance access terminal
- MEC - main equipment center
- outbd - outboard
- PDU - power drive unit
- pnl - panel
- PSI - pounds per square inch
- PSEU - proximity sensor electronics unit
- pwr - power
- ref - reference
- RPM - revolutions per minute
- V - volt

**52-00-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43237 S000620858\_V1

## DOORS - INTRODUCTION

**52-00-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details







## PASSENGER/CREW ENTRY DOOR SYSTEM - INTRODUCTION

### Purpose

Passenger/Crew entry doors give access to the passenger/crew compartment.

### General Description

Plug-type passenger/crew entry doors are on both sides of the airplane. The doors give a clear opening of 42 x 72 inches (106.7 x 188 cm). This size of opening allows two people to move through the door at the same time. The doors are identified by number from front to back and by the side of the airplane that they are on. These are the doors:

- 1 left and 1 right
- 2 left and 2 right
- 3 left and 3 right
- 4 left and 4 right.
- 5 left and 5 right.

The number three doors are over the wing area. These doors are for emergency use.

To open a door, you must unlock it then unlatch it and then open it. You unlock and unlatch a door manually. Usually you open a door manually. All doors have an emergency power assist system that you can use to open a door in an emergency. You use an interior or exterior door handle to unlock and unlatch a door. The first movement of the door handle towards the open position, opens the vent door and unlocks the door. Continued movement of the door handle to its full open position, causes the door to move inward (.4 inches, 1 cm) and upward (2 inches, 5 cm) out of its plug position. This is the door unlatched position. The doors open and close on a single hinge arm. When you move the door out away from the closed position, it translates forward (140 degrees) to the full open position. Translation means that the door does not turn in relation to the airplane. When full open, the inside of the door is next to the outside of the fuselage. A hold-open mechanism keeps the door full open.

To close a door, you release the hold-open device. Move the door to the closed position. Use an interior or exterior handle to latch and lock the door.

The doors have these major parts:

- Liners, covers and bustles
- Seals, pressurization and acoustic
- Stop pins and pads, pressurization
- Handle mechanism, interior and exterior
- Latch and primary lift mechanism
- Secondary lift mechanism
- Vent Door mechanism
- Flight lock mechanism
- Hinge and programing chain mechanism
- Hold open mechanism
- Mode select mechanism
- Emergency power assist system (EPAS)
- Girt bar mechanism
- Floor fittings.

Linings cover the hinge and upper part of the door. A bustle covers the lower part of the door.

Seals for pressurization are on the top and the sides of the door cutout and on the bottom part of the door. Acoustic seals (not shown) for noise reduction are on the sides of the door.

Stop pins and pads (not shown) move the force of pressurization on the door into the fuselage. The pins are on the sides of the door and the stop pads are on the sides of the door cutout.

An escape/slide raft is installed under the bustle for these doors: one, two, four, and five. A raft can be stowed under the bustle on door three. See the door-mounted escape slide section in the equipment and furnishings chapter for more information about the escape/slide raft (SECTION 25-66). An off-wing slide for the number three door is in the wing-to-body fairing area aft of the door. See the off-wing escape system section in the equipment and furnishings chapter for more information about the off-wing slide (SECTION 25-65).

# 52-11-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - INTRODUCTION**

Handles to unlock and unlatch or to latch and lock the door are on the inside and outside of the door.

The latch and primary lift mechanism (not shown) lowers and latches the door or unlatches and starts to lift the door when the door is unlocked. The mechanism has mechanical devices controlled by the interior and the exterior handles.

The secondary lift mechanism (not shown) lifts and holds the door up when you unlock the door. The mechanism has mechanical devices controlled by the latch and primary lift mechanism.

The vent Door mechanism vents cabin pressure when you unlatch a door and prevent door unlatching if cabin pressure is above safe limits ( $>.21$  psid). The mechanism has mechanical devices controlled by the latch and primary lift mechanism.

Flight lock mechanism (not shown) prevents door unlatching when the airplane airspeed is above safe limits ( $\geq 80$  knots).

The hinge and programing chain mechanism attaches the door to the fuselage, controls door translation and the speed that the door opens or closes.

The hold open mechanism locks the door in the full open position. The mechanism is part of the door hinge.

Mode select mechanism enables or disables the emergency power assist system (EPAS) and the deployment of the escape slide. The mechanism has mechanical and electrical devices that are controlled by the position of a mode select handle. The handle is on the inside of the door. A guard prevents accidental movement of the handle.

The mode select handle has these positions: AUTO and MANUAL. In the auto mode operation, when you move the internal door handle to the open position:

- The emergency power assist system (EPAS) (not shown) moves the door to the open position.
- The emergency escape slide/raft deploys (does not apply to doors that are over the wing).
- The off-wing slide deploys for door three.

Girt bar mechanism (not shown) is in the lower part of the door. The mechanism controls the position of the escape slide raft girt bar. The mechanism can lock the girt bar to the door or to the floor fittings.

Two floor fittings hold the girt bar and give visual indication when the girt bar is locked in the fittings.

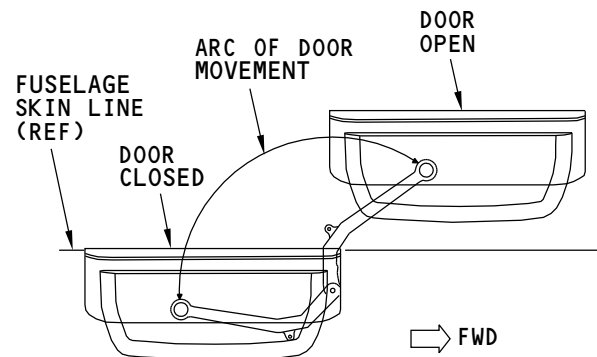
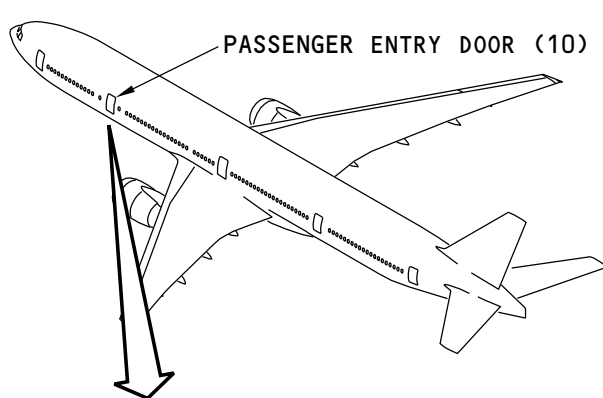
All passenger/crew entry doors have proximity sensors (not shown) that give door close, latched and lock information to the door warning system. See the door warning section for more information about the proximity sensors (SECTION 52-71).

**52-11-00**

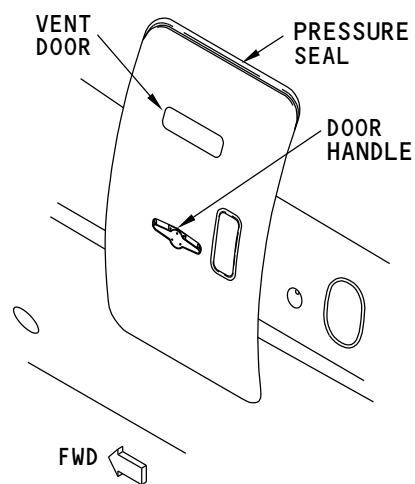
ARO ALL EFFECTIVITY

D633W101-ARO

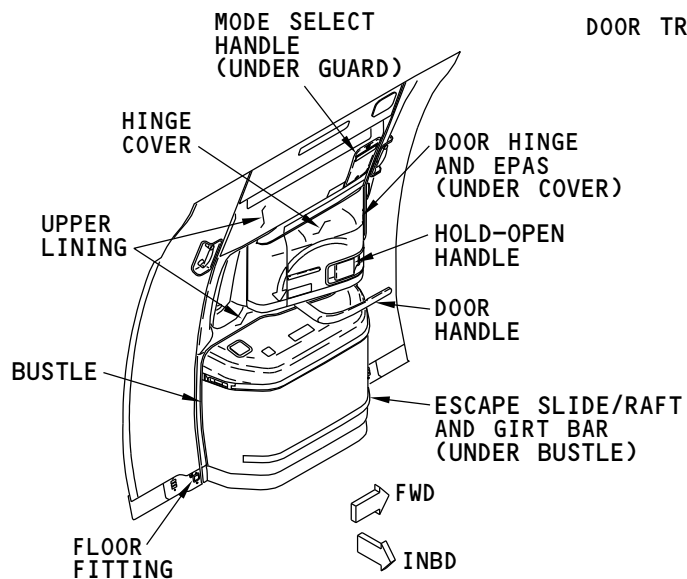
ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



DOOR TRANSLATION - TOP VIEW



OUTSIDE VIEW



INSIDE VIEW

## PASSENGER ENTRY DOOR SYSTEM - INTRODUCTION

M43242 S000620863\_V2

52-11-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-11-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - COMPONENT LOCATIONS - WITH DOOR LINERS REMOVED****Components on the Inside of the Door - Lining Removed**

The vent door mechanism is near the top of the door.

The mode select mechanism is on the forward, upper part of the door. The girt bar mechanism is on the bottom of doors one, two, four, and five. The push/pull cable connects the mode select mechanism and the girt bar mechanism.

The door hinge connects the middle of the door to the forward side of the door cutout.

These components are on the door hinge:

- Programming chain mechanism
- Snubber
- Hold-open mechanism
- Emergency power assist system (EPAS) battery
- EPAS reservoir
- EPAS actuator.

The EPAS actuator does not show in this view. It is on the outboard side of the door hinge.

**Components Outboard of the Door Hinge**

The flight lock mechanism is near the forward edge of the door. It connects to the Latch mechanism.

The door handle mechanism is near the middle of the door. It connects to the latch mechanism and the vent door mechanism.

The latch mechanism goes across the middle of the door. It connects to the handle mechanism and the vent door mechanism.

**Proximity Sensors and Mechanical Switches**

The proximity sensors on the aft door latch and the vent door are components of the door warning system. See the door warning section for more information on the door warning system (SECTION 52-71). The proximity sensors (not shown) on the flight lock mechanism are components of the door system.

The EPAS uses these two mechanical switches:

- The mode select switch on the mode select mechanism
- The door open switch on the door handle mechanism.

**Door Open Sequence**

Movement of the lever on the mode select mechanism disarms the escape slide/raft and EPAS. The mode select switch on the mechanism is the component that disarms the EPAS. The push/pull cable transmits mode select lever movement to the girt bar mechanism.

The door handle mechanism lets you unlatch the passenger/crew entry door. The mechanical switch on the mechanism starts the EPAS if the mode select mechanism is in the armed position.

The vent door mechanism releases pressurization before the passenger/crew entry door can unlatch completely. It also locks the latch mechanism if pressurization is too high for safe passenger/crew entry door operation.

The latch mechanism lifts and unlatches the door.

The door moves up past the stops on the cutout and translates open on the hinge.

The programming chain mechanism keeps the inside of the door parallel to the airplanes longitudinal axis as the door opens.

The snubber controls the rate of movement of the door.

The hold-open mechanism holds the door in the completely open position.

The EPAS moves the door open in emergencies.

**52-11-00**

ARO ALL EFFECTIVITY

D633W101-ARO

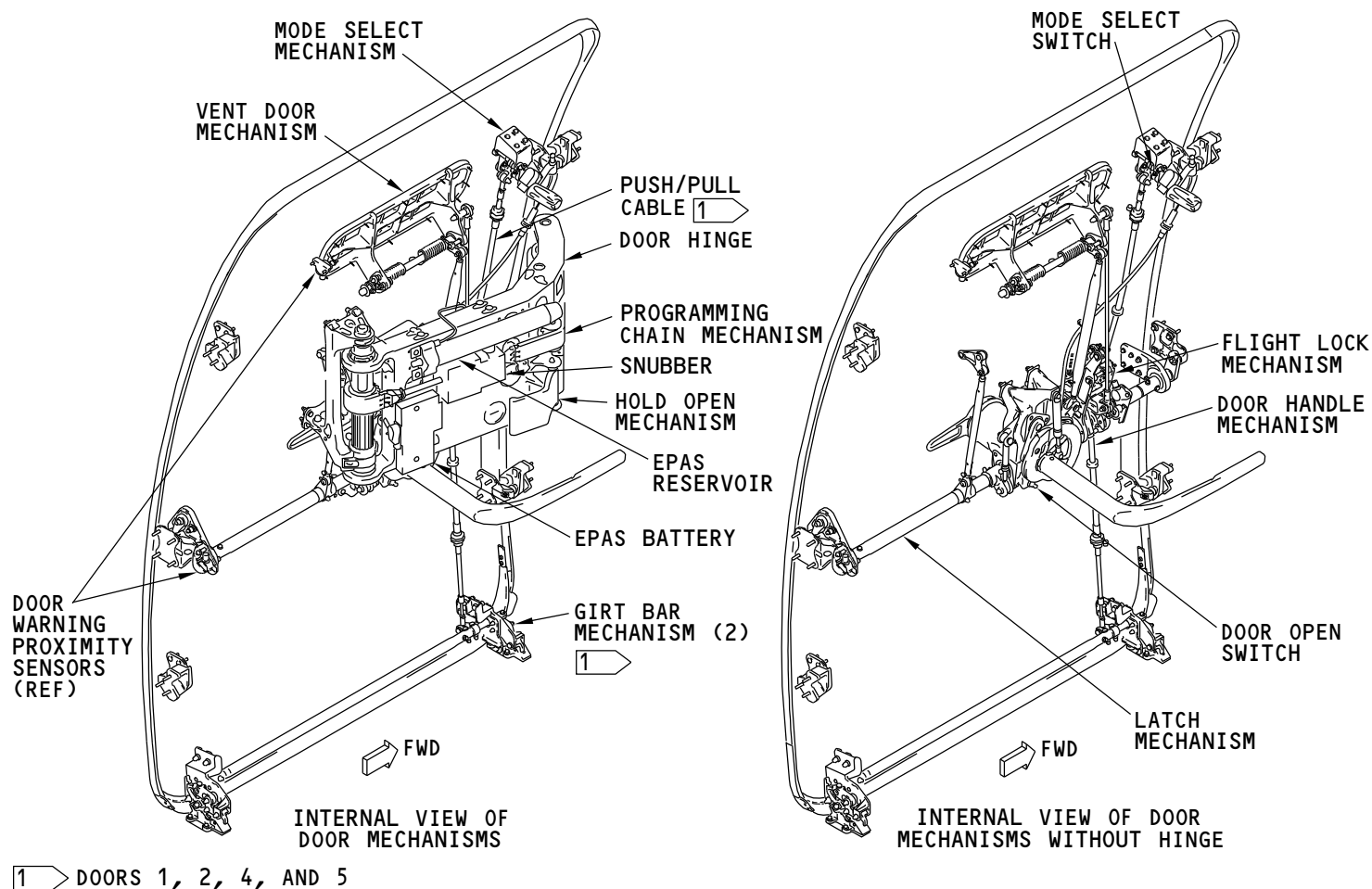
ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



**PASSENGER/CREW ENTRY DOOR SYSTEM - COMPONENT LOCATIONS - WITH DOOR LINERS REMOVED**

The girt bar mechanism locks the emergency escape slide/raft to the bottom of the cutout on doors one, two, four, and five when you open the door in emergencies.

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |



M43246 S000620867\_V1

PASSENGER ENTRY DOOR SYSTEM - COMPONENT LOCATIONS - WITH DOOR LINERS REMOVED

52-11-00

52-11-00-002

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



**PASSENGER/CREW ENTRY DOOR SYSTEM - DOORS AND SEALS****Purpose**

The passenger/crew entry doors and seals close and seal the external access to the passenger/crew compartment.

**Physical Description**

The door has these components:

- Outer skin
- Acoustic seal
- Inner skin
- Frames
- Intercostals
- Beams
- Stops
- Pressure seal.

Part of the blade-type pressure seal attaches to the bottom edge and corners of the door. The other part of the seal attaches to the sides and top of the door cutout.

The tube-type acoustic door seal attaches to the top door beam.

**Functional Description**

The door is a plug-type. The door stops fit against cutout stops. The stops prevent the outward movement of the door when the airplane is pressurized.

The pressure door seal prevents flow of cabin air to the outside.

The acoustic door seal reduces the outside noise that enters the cabin.

**Training Information Point**

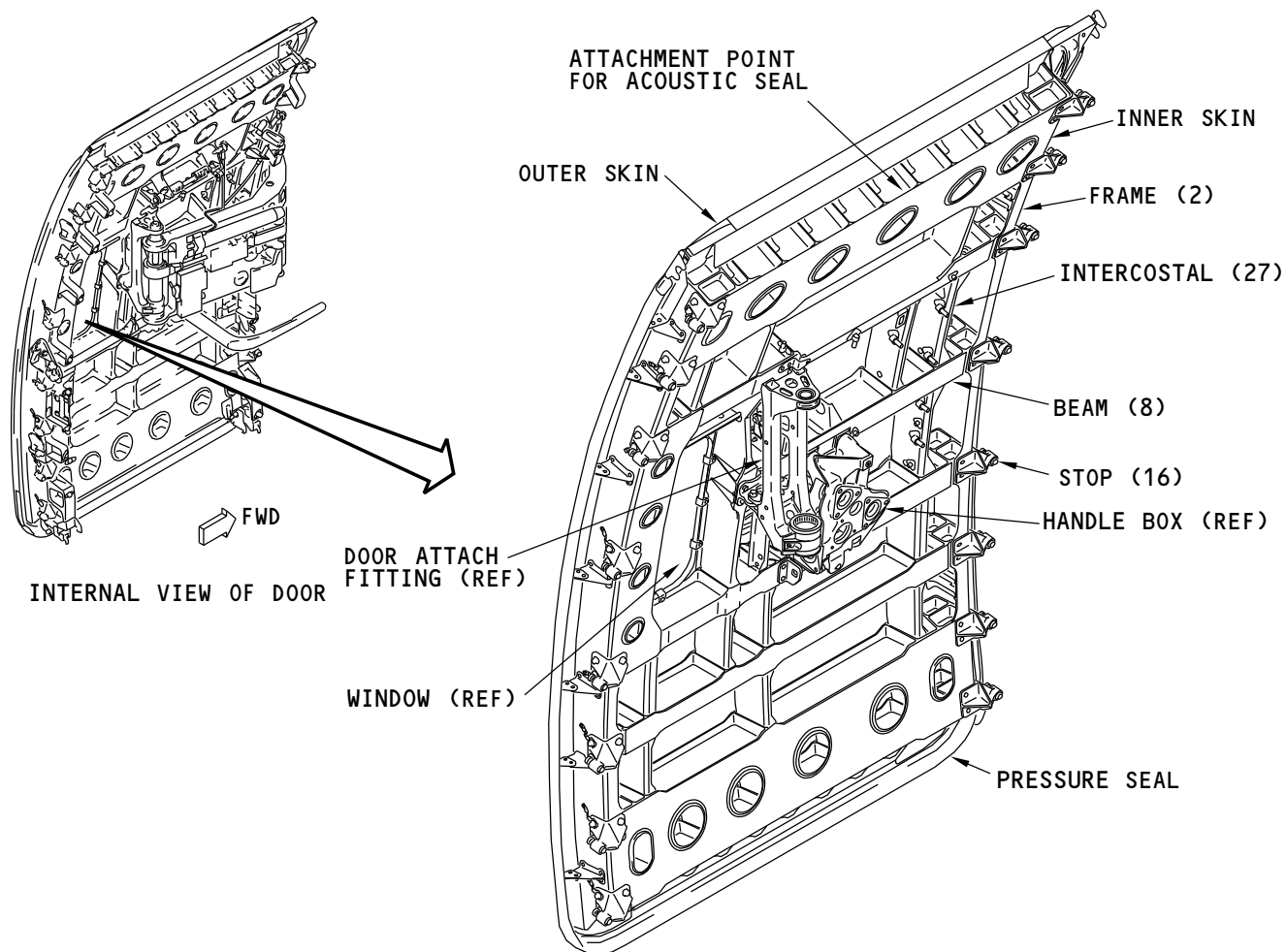
The pressure seal depressor (not shown) on the forward side of doors one left and one right may have one or two holes in the area 40 to 50 inches above the cabin floor. These holes help control air noise. Do not block these holes. If a new depressor is installed, drill the same size holes in the same location on the new depressor.

**52-11-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43247 S000620868\_V1

### PASSENGER/CREW ENTRY DOOR SYSTEM - DOORS AND SEALS

## 52-11-00

52-11-00-003

ARO ALL

EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - DOOR HINGE****Purpose**

The hinge connects the door to the airplane and lets the door open and close.

**Physical Description**

The door hinge has these components:

- Hinge support fitting
- Hinge arm
- Lift sleeve
- Linear lift
- Door attach fitting
- Bumpers (2)

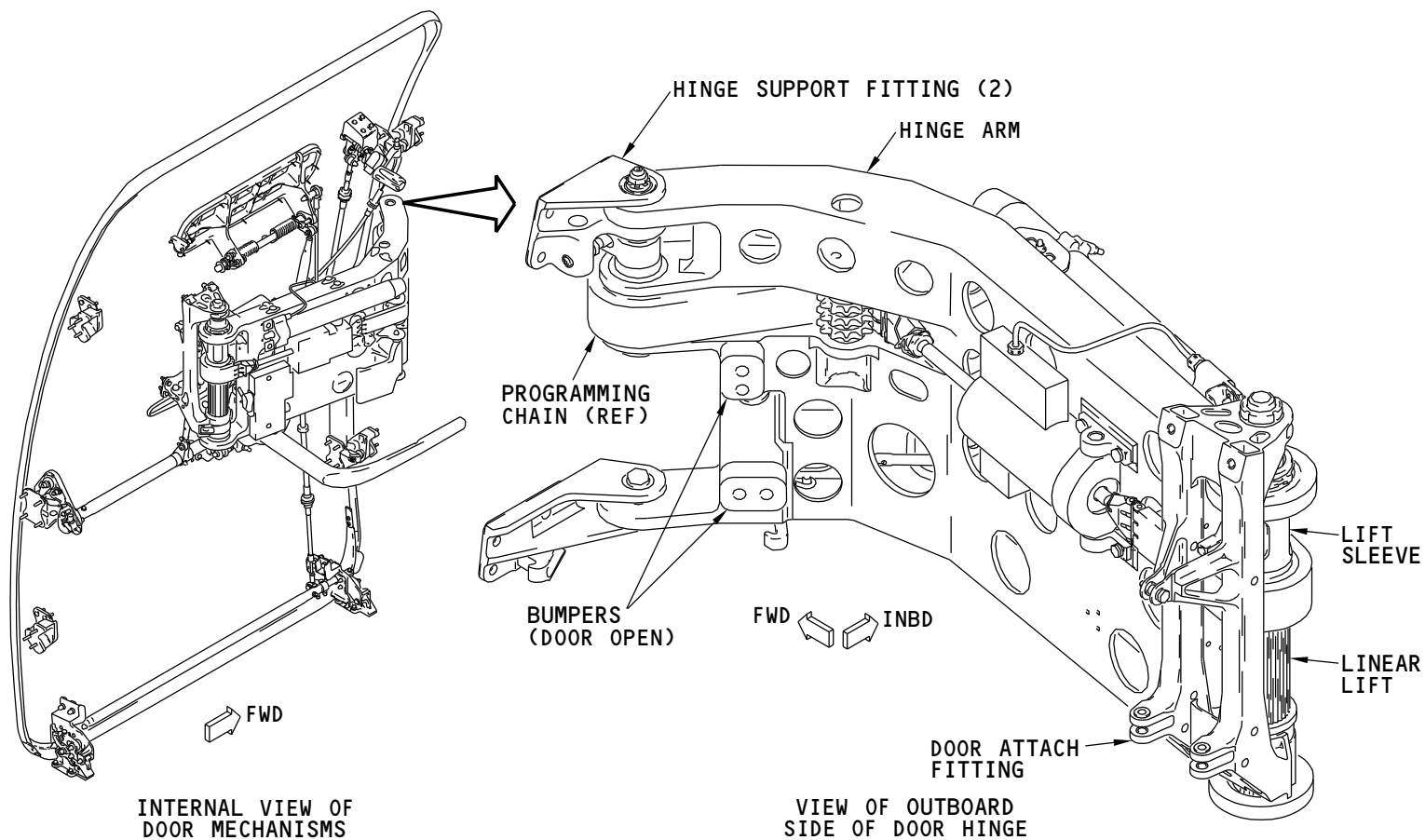
The hinge support fittings connect the hinge arm to the door cutout. The upper fitting has a sprocket for the programming chain.

The door attach fitting connects the door to the linear lift. The linear lift connects to the hinge arm. It has a sprocket for the programming chain. The programming chain is described later in this section.

**Functional Description**

As the door opens or closes:

- The hinge arm turns on the hinge support fittings
- The door turns and moves up and down on the linear lift.



M43248 S000620869\_V1

**PASSENGER/CREW ENTRY DOOR SYSTEM - DOOR HINGE**

**52-11-00**

52-11-00-004

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**PASSENGER/CREW ENTRY DOOR SYSTEM - DOOR HINGE - LINEAR LIFT FUNCTION****Linear Lift Functional Description**

The linear lift piston moves up and down inside the main shaft. The door counterbalance spring is inside the main shaft. It pushes the piston up.

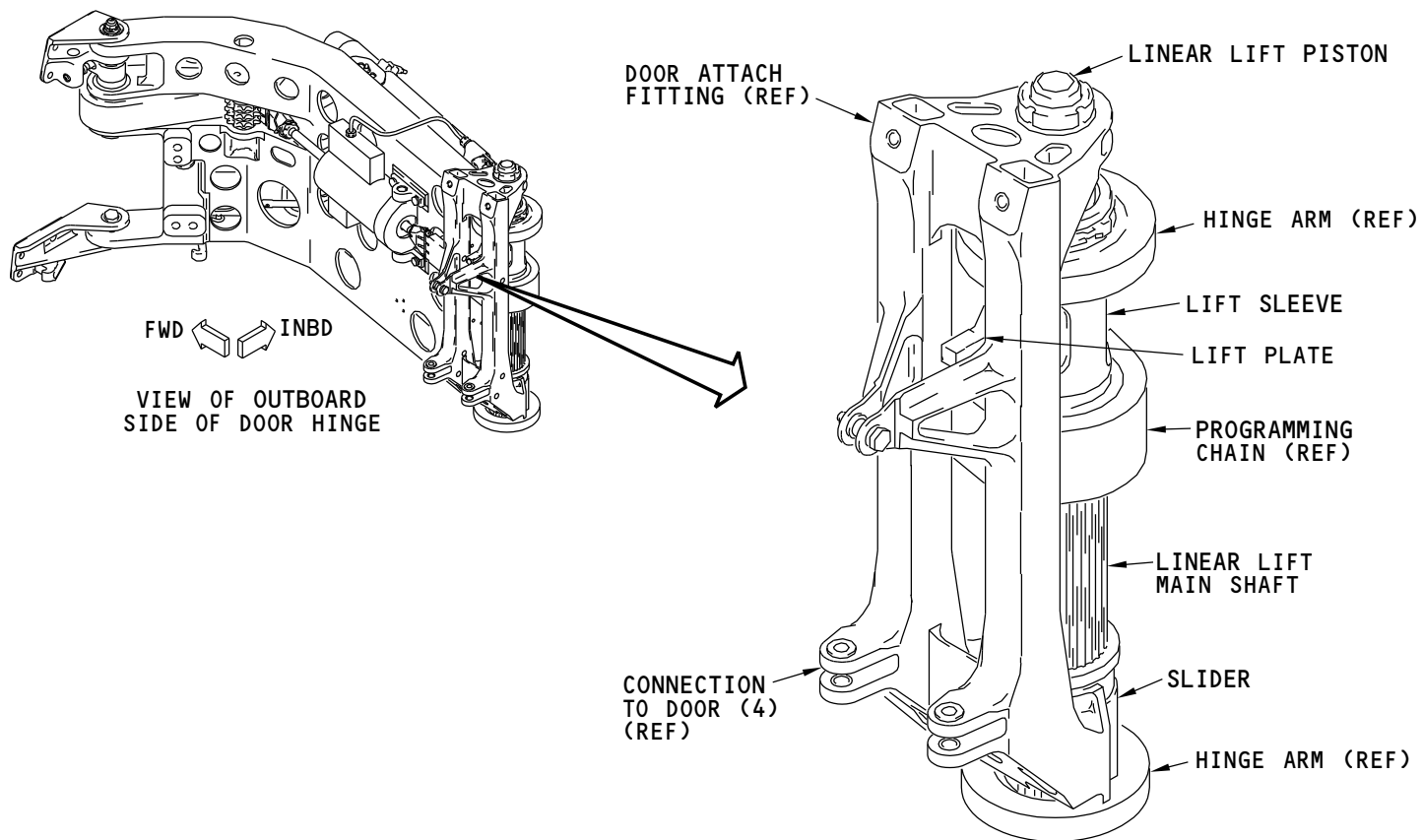
The top of the piston connects to the door attach fitting. A slider that moves up and down on the main shaft connects to the bottom of the door attach fitting.

The force of the counterbalance spring helps the latch mechanism lift the door. The movement of the piston inside the main shaft makes sure the door lift is vertical.

**Training Information Point**

Do not lubricate the linear lift. Its surface includes a dry lubricant. Liquid lubricants can collect dirt.

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |



M43249 S000620870\_V1

**PASSENGER/CREW ENTRY DOOR SYSTEM - DOOR HINGE - LINEAR LIFT FUNCTION**

**52-11-00**

52-11-00-005

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - PROGRAMMING MECHANISM CHAIN****Purpose**

The programming mechanism chain has these functions:

- Correctly aligns the door to the airplane as the door opens and closes
- Lets the door emergency power assist system (EPAS) open the door in emergencies.

**Physical Description**

The chain goes completely around the hinge arm.

The chain has two parts. One part of the chain connects to the snubber piston. It goes around the sprocket on the linear lift and connects to the EPAS actuator piston. The second part of the chain connects to the other end of the actuator piston. It goes around a sprocket on the hinge pin and connects to the other end of the snubber piston.

Idle sprockets let the chain follow the shape of the hinge arm.

**Functional Description**

The hinge arm turns on the hinge pin as the door opens and closes. The sprocket on the hinge pin does not turn. This causes the chain to move in relation to the hinge arm. The pistons of the EPAS actuator and the snubber pass the movement through to the other part of the chain.

The sprocket on the linear lift does not turn in relation to the door. The movement of the chain around the sprocket causes the door to move in relation to the hinge arm. This lets the door move forward and aft but not turn in relation to the airplane.

**Training Information Point**

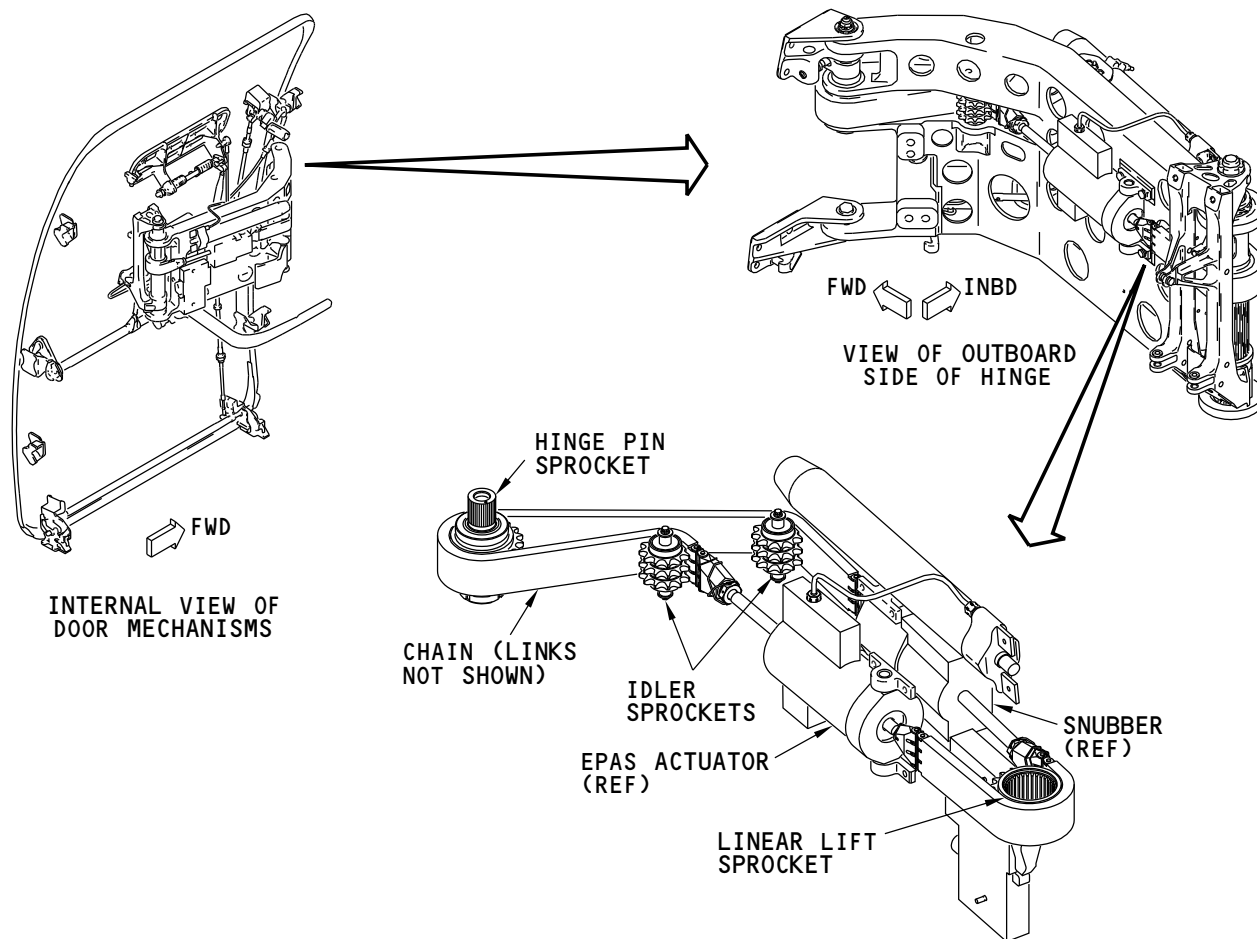
Do not lubricate the chain. Its surface includes a dry lubricant. Liquid lubricants can collect dirt.

**52-11-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43250 S000620871\_V2

**PASSENGER/CREW ENTRY DOOR SYSTEM - PROGRAMMING MECHANISM CHAIN**

**52-11-00**

52-11-00-006

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |





## PASSENGER/CREW ENTRY DOOR SYSTEM - SNUBBER

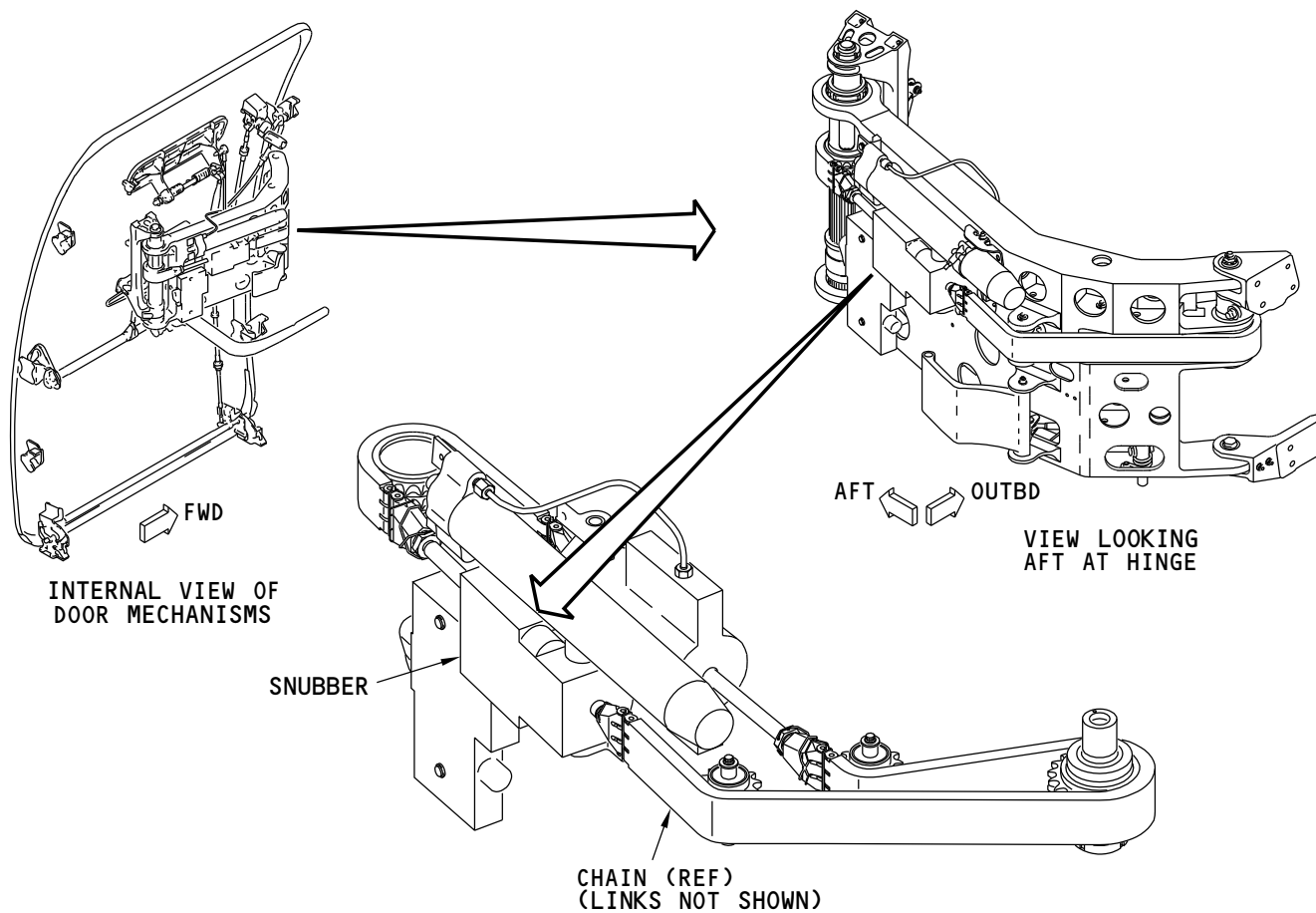
### Purpose

The snubber controls the rate at which the door opens or closes.

### Physical Description

The snubber attaches to the inboard side of the hinge arm. It has a piston and hydraulic fluid. The ends of the piston attach to the programming chain.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



PASSENGER/CREW ENTRY DOOR SYSTEM - SNUBBER

M43251 S000620872\_V1

**52-11-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - HOLD-OPEN MECHANISM****Purpose**

The hold open mechanism holds the door in the full open position. You use the mechanism handle to pull the door closed.

**Physical Description**

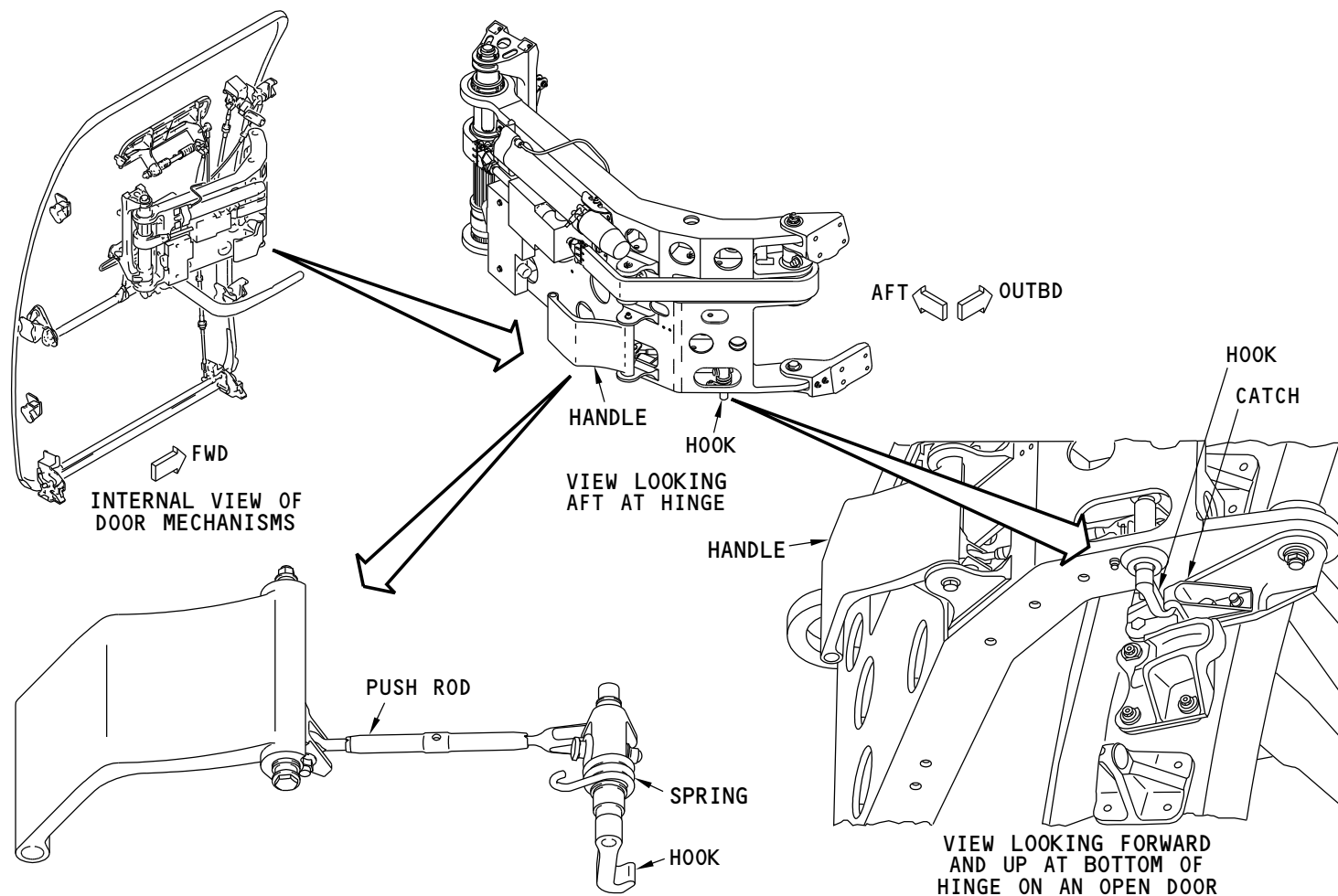
The mechanism is on the hinge arm and has these components:

- Handle
- Hook
- Catch
- Spring
- Push rod.

**Functional Description**

When the door is full open, the spring pushes the hook into the catch on the door cutout.

You pull on the handle to release the hook. The door closes if you continue to pull on the handle.



M43252 S000620873\_V1

**PASSENGER/CREW ENTRY DOOR SYSTEM - HOLD-OPEN MECHANISM**

**52-11-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - HANDLE MECHANISM AND MECHANICAL SWITCHES****Purpose**

The door handle mechanism lets you open and close the door.

**Physical Description**

The door handle mechanism has these components:

- Internal handle
- Inner shaft
- Outer shaft
- External handle
- External handle return spring
- Disarm crank
- Handle box
- Gas spring
- Vent door crank
- Door open switch
- Handle cam
- Lift crank.

The door open switch is on the door handle mechanism.

**Functional Description**

The external handle connects to the outer shaft. The internal handle connects to the inner shaft. The outer shaft fits over the inner shaft.

The external handle return spring holds the outer shaft over the inner shaft. When you pull outboard on the external handle, the outer and inner shafts lock together.

The inner shaft goes through the handle box which provides a bearing surface for the handle. The inner shaft connects to the handle cam. A lift drive crank and a latch drive rod connect the handle cam to the latch shaft. When you turn either handle, you move the latch shaft.

Pressure in the gas spring pushes down on the handle cam so the door handles are held in the full close position. Movement of either handle toward open compresses the gas in the spring. When the handle is past the center of movement, the compressed gas helps move the handle to full open.

A cable connects the disarm crank on the external handle to the mode select mechanism. When you pull the external handle out, you move the disarm crank. It pulls on the cable which moves the mode select mechanism to the disarm mode.

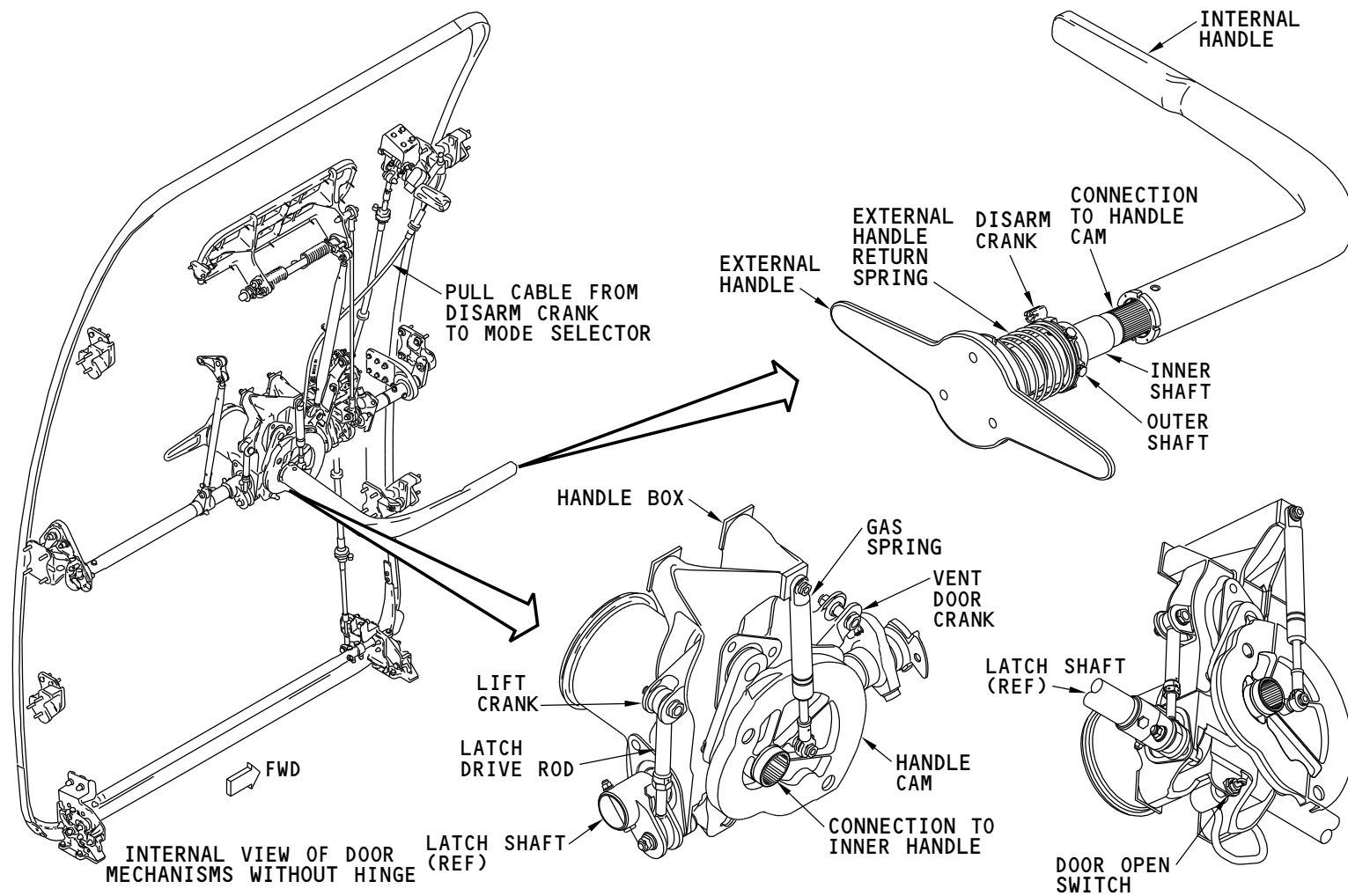
When the door is open, the handle cam will not transmit back drive forces from the latch shaft to the handles.

**52-11-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43253 S000620874\_V1

**PASSENGER/CREW ENTRY DOOR SYSTEM - HANDLE MECHANISM AND MECHANICAL SWITCHES**

**52-11-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - LATCH MECHANISM - INTRODUCTION****Purpose**

The latch mechanism does these functions:

- Unlatches and latches the door
- Lifts and lowers the door as it opens and closes so the door stops can move past the cutout stops.

**Physical Description**

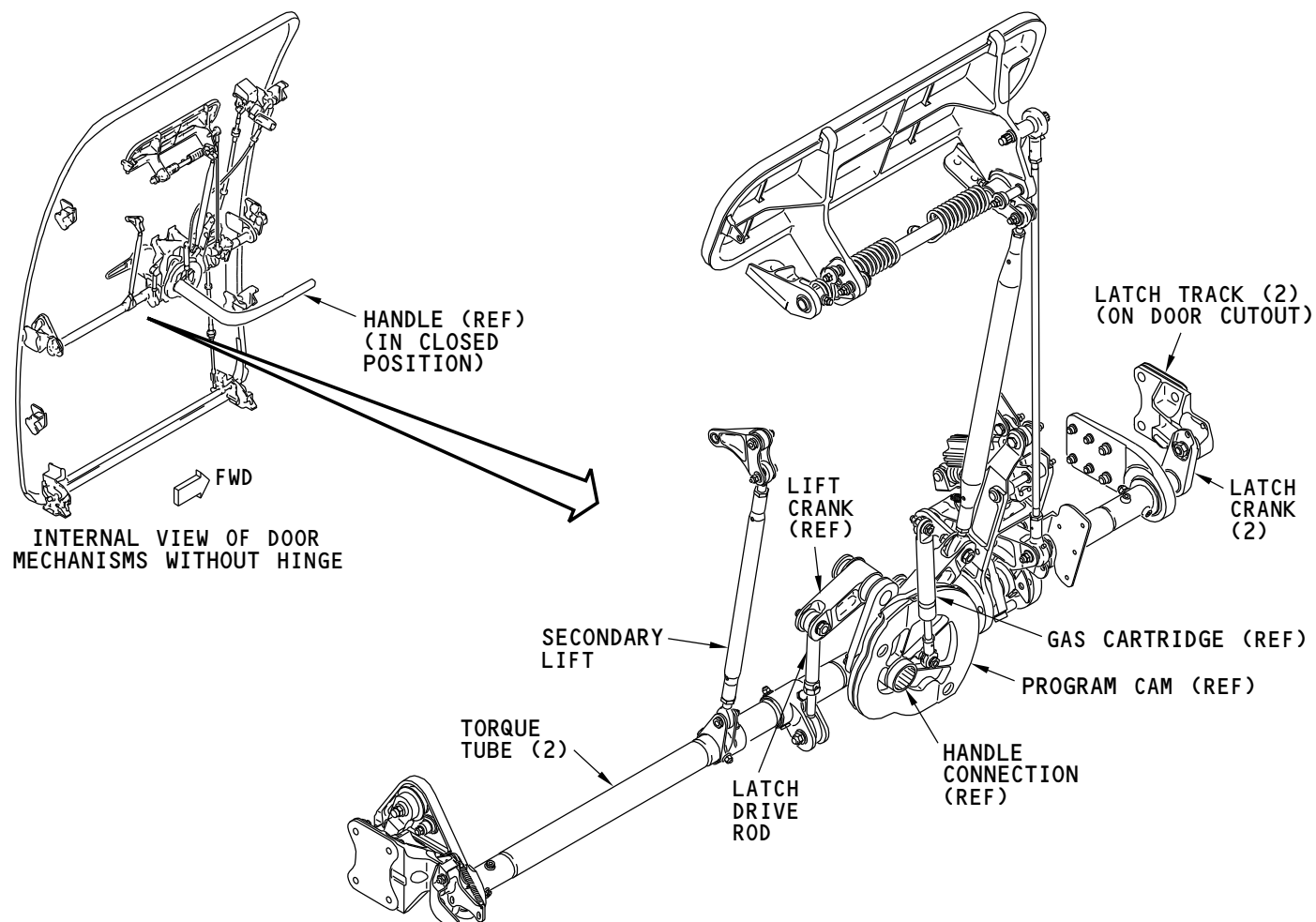
The mechanism has these components:

- Door locked proximity sensor
- Latch track (2)
- Latch crank (2)
- A latch drive rod
- A latch crank interlock
- Torque tube (2)
- A secondary lift.

**Functional Description - Cam, Crank, and Torque Tube**

The program cam moves the lift crank which pulls the latch drive rod up. This turns the torque tubes.

|         |             |
|---------|-------------|
| ARO ALL | EFFECTIVITY |
|---------|-------------|



M43254 S000620875\_V1

## PASSENGER/CREW ENTRY DOOR SYSTEM - LATCH MECHANISM - INTRODUCTION

# 52-11-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 23  
May 05/2015



**PASSENGER/CREW ENTRY DOOR SYSTEM - LATCH MECHANISM - LATCH CRANK FUNCTION****Functional Description**

The torque tubes turn the latch cranks. The latch crank rollers push down on the latch tracks when opening. This moves the door inboard and lifts the door. During closing they perform the opposite motions.

The aft latch has the latch crank interlock. In the door closed and door up positions, the latch track pushes the latch crank interlock outboard against its spring.

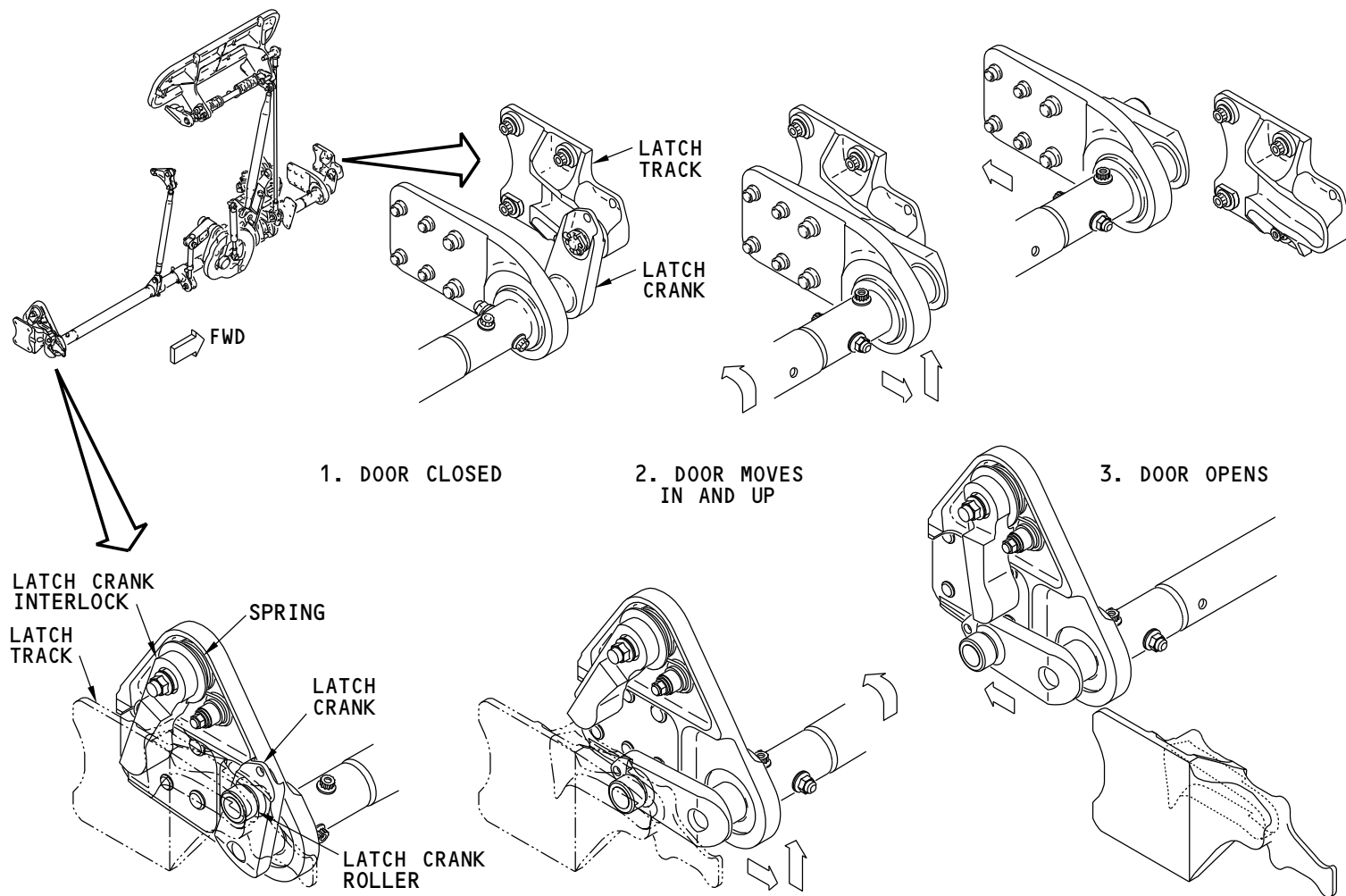
As the door opens, the latch cranks move out of the latch tracks. The spring on the latch crank interlock turns the interlock to a position over the aft latch crank. The latch crank cannot move back to the closed position. You cannot move the handle when the door is open.

As the door closes, the interlock moves against the latch track. The latch track pushes the interlock to a position where the latch crank can turn. When the crank turns, the door lowers to the close position.

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

**52-11-00**

D633W101-ARO



M43256 S000620877\_V1

### PASSENGER/CREW ENTRY DOOR SYSTEM - LATCH MECHANISM - LATCH CRANK FUNCTION

## 52-11-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 25  
May 05/2015

**PASSENGER/CREW ENTRY DOOR SYSTEM - LATCH MECHANISM - SECONDARY LIFT FUNCTION****Functional Description**

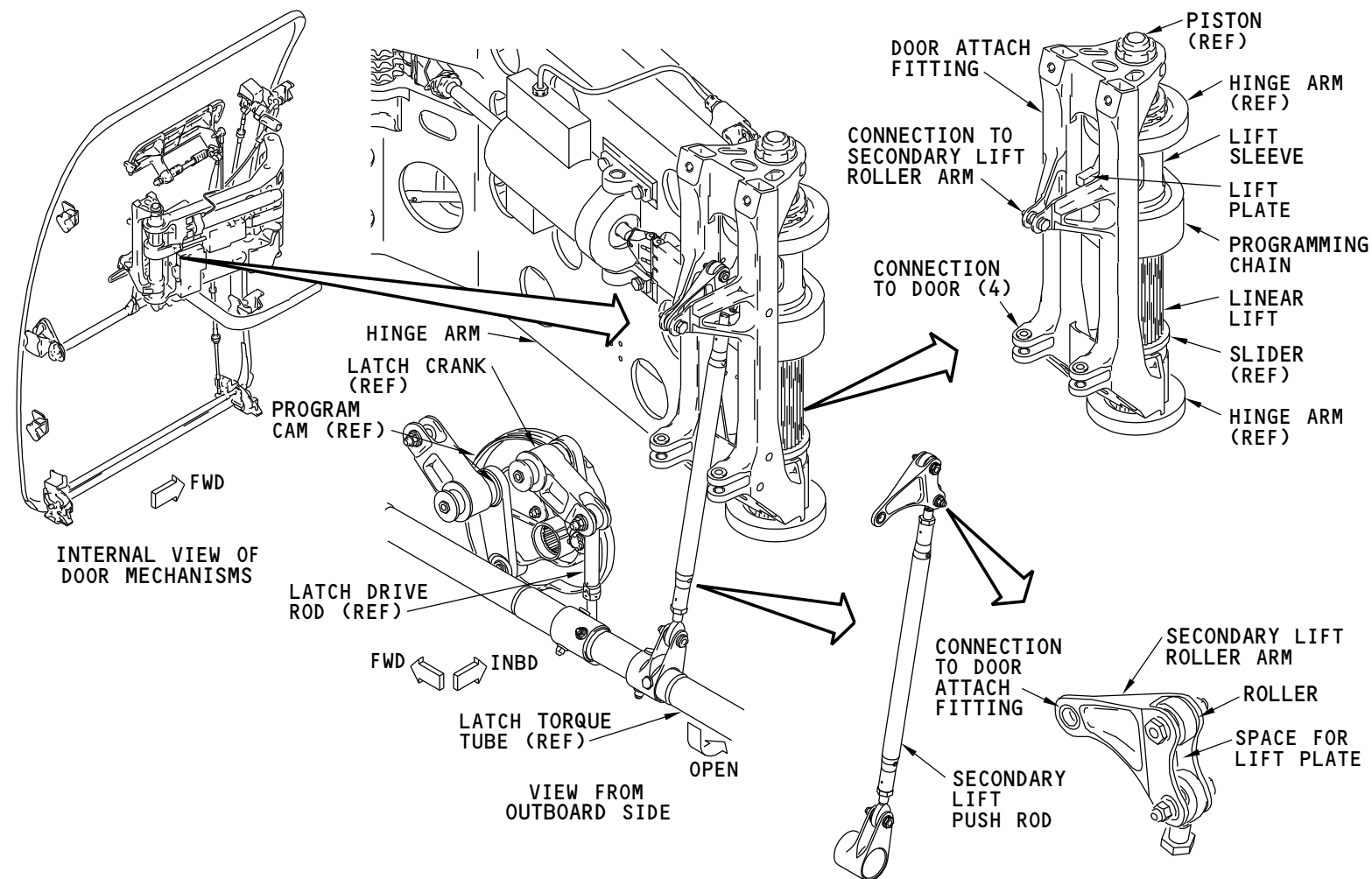
The secondary lift works with the door attach fitting and the lift sleeve.

The lift plate is part of the lift sleeve. The lift sleeve is held by the hinge arm. It can turn but cannot move up and down.

The secondary lift roller arm connects to the door attach fitting. The roller fits above the lift sleeve lift plate.

Rotation of the latch torque tube to open the door, pulls down on the secondary lift. The roller arm roller pushes down on the lift plate. This causes the outboard end of the roller arm to move up. This lifts the door attach fitting which lifts the door.

When the door is closed, the secondary lift works against aerodynamic forces or airplane movement that try to lift the door. When the door lifts on the end of the roller arm, the roller arm pushes down on the push rod. The rod push on the torque tube rotates the tube in the door close direction.



M43259 S000620879\_V1

# PASSENGER/CREW ENTRY DOOR SYSTEM - LATCH MECHANISM - SECONDARY LIFT FUNCTION

52-11-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - VENT DOOR MECHANISM - INTRODUCTION****Purpose**

The vent door mechanism:

- Releases pressurization to prevent damage when the passenger/crew entry door opens
- Will not let the passenger/crew entry door unlatch if differential pressurization is above 0.21 psi.

**Physical Description**

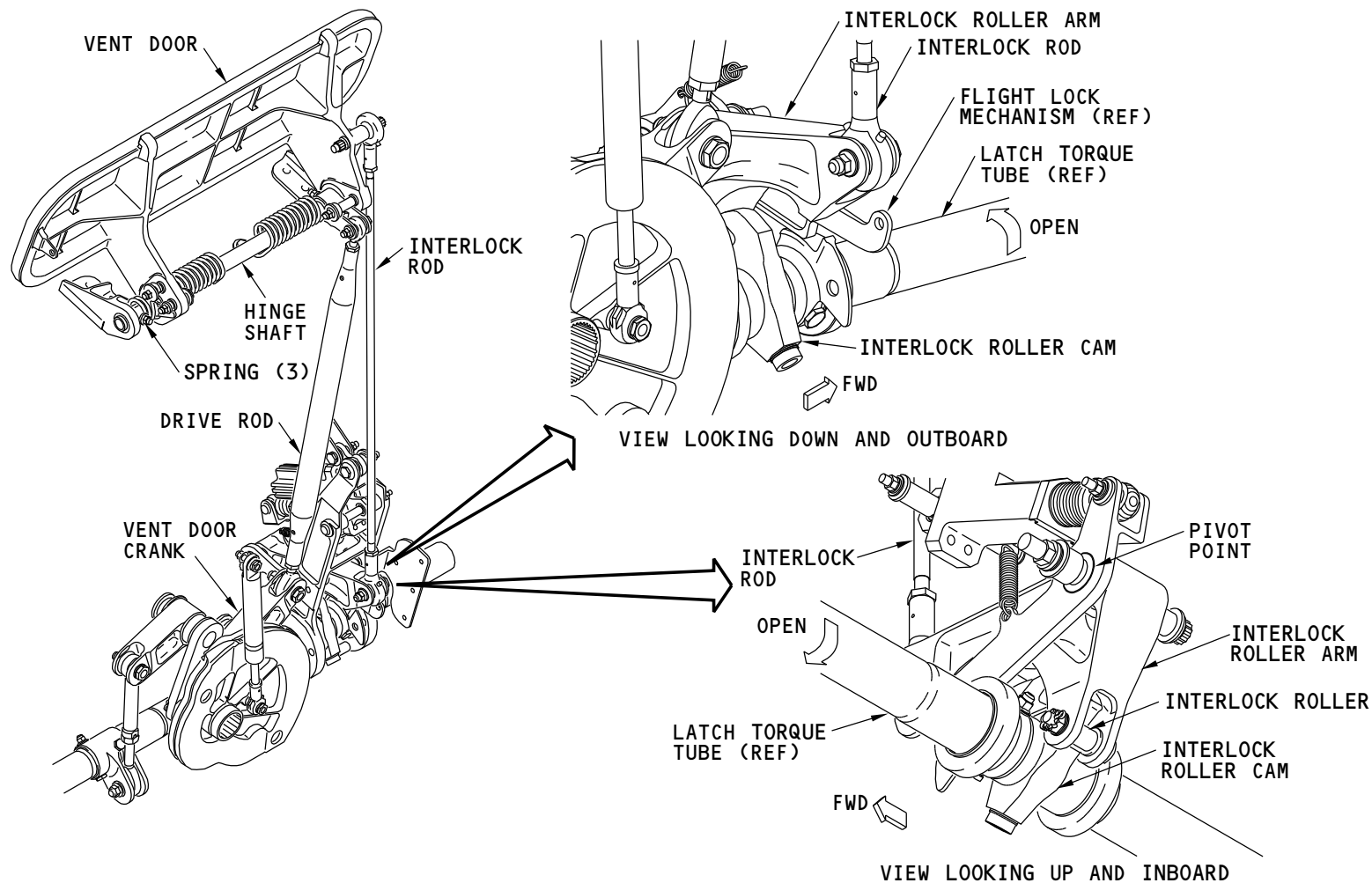
The vent door mechanism has these components:

- Vent door
- Interlock rod
- Interlock roller arm
- Interlock cam
- Drive rod
- Spring (3)
- Hinge shaft.

**Functional Description - Vent Door**

In the passenger/crew entry door closed position, the drive rod holds the vent door closed. The initial movement of the door handle pulls down on the drive rod which releases the vent door. The springs open the vent door if differential pressurization is below 0.125 psi.

When the vent door opens the interlock rod pushes down on the roller arm. The roller arm moves the roller away from the interlock cam so the cam will let the latch torque tube turn.



M43260 S000620880\_V1

PASSENGER/CREW ENTRY DOOR SYSTEM - VENT DOOR MECHANISM - INTRODUCTION

52-11-00

52-11-00-013

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - VENT DOOR MECHANISM - INTERLOCK FUNCTION****Pressurization Lockout Function**

When differential pressurization is above 0.125 psi, the vent door springs cannot open the vent door. The interlock rod continues to hold the interlock roller arm up. The interlock roller will not let the interlock cam turn. The latch torque tube cannot turn to unlatch the passenger entry door.

If differential pressurization is between 0.125 and 0.21 psi, and you continue to pull up on the door handle with sufficient force:

- The cam will force the roller to move outboard along the flat cam surface
- The roller arm will pull down on the interlock rod
- The vent door will open
- The roller will move past the hook.

If differential pressurization is above 0.21 psi, and you continue to pull up on the door handle with sufficient force:

- The cam will force the roller to move outboard along the flat cam surface
- The roller arm will pull down on the interlock rod sufficient to open the vent door 30 degrees
- The roller cannot move past the hook.

When the differential pressurization goes below 0.21 psi, upward force on the handle will move the vent door full open.

An example of sufficient force to open the vent door 30 degrees is approximately 200 pounds when differential pressurization is 1.0 psi.

**Vent Door Mechanism Failure**

If either rod fails or disconnects, the inboard end of the roller arm moves down. The rotation of the roller arm moves the roller away from the interlock cam so the interlock cam can turn. The cam can push the roller arm up to let you open the door. If you try to latch the door, the arm catches the cam. The cam cannot push the arm up to go back to the door close position.

**Training Information Point**

Do a check of the vent door mechanism if you cannot move either door handle to the close position when you try to close the door.

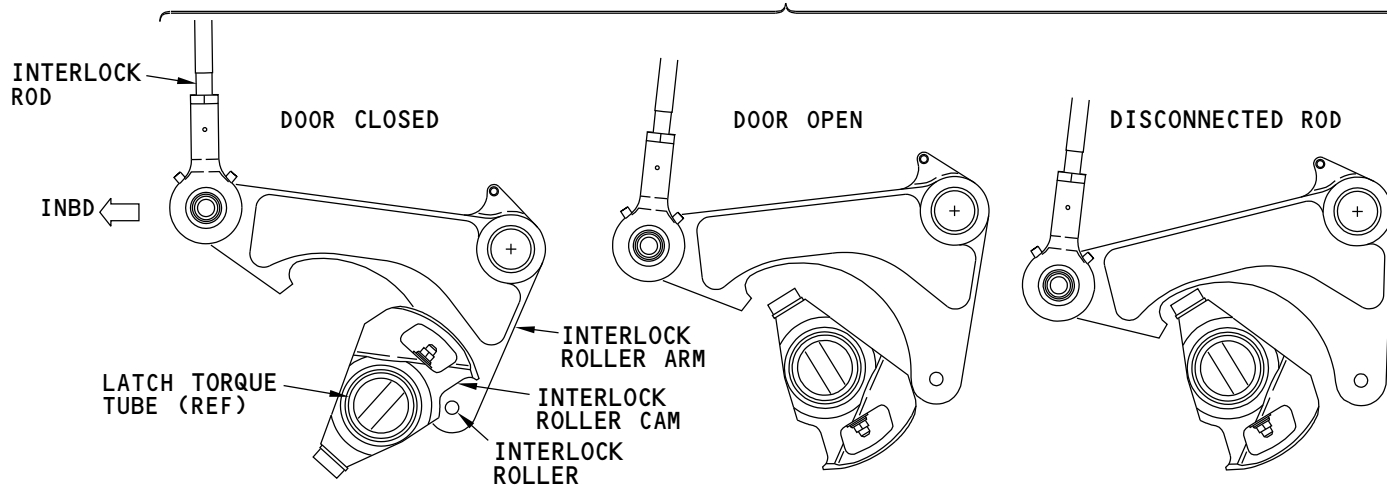
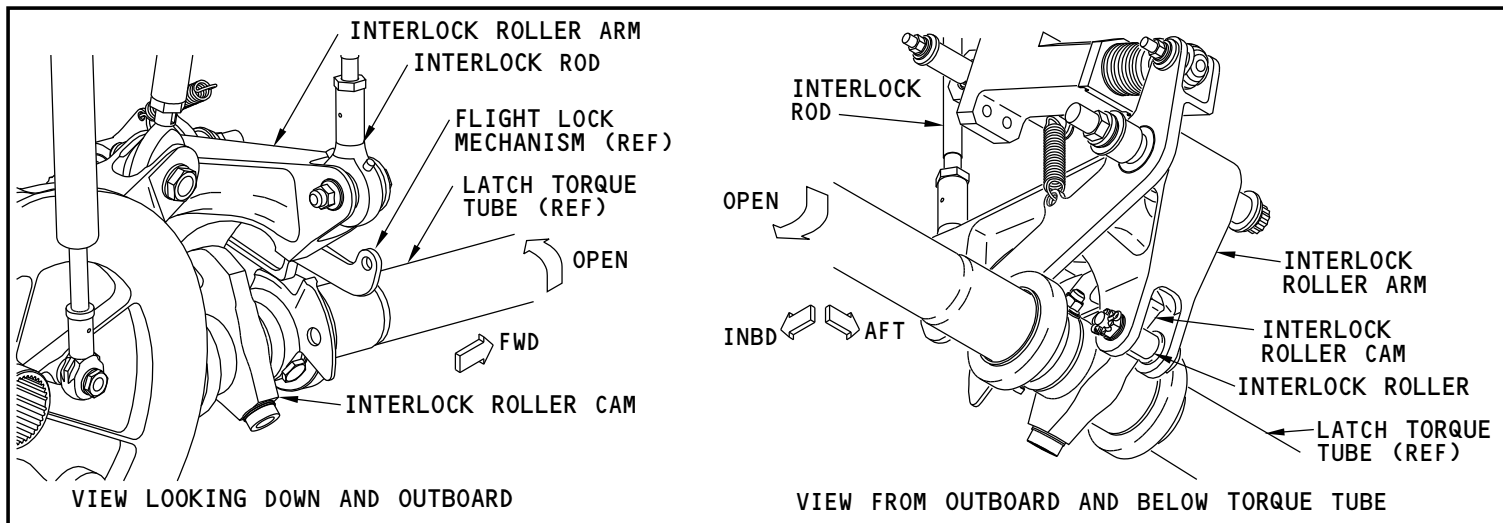
**52-11-00**

EFFECTIVITY

ARO ALL

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43261 S000620881\_V1

**PASSENGER/CREW ENTRY DOOR SYSTEM - VENT DOOR MECHANISM - INTERLOCK FUNCTION**

52-11-00-015

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

**52-11-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



**PASSENGER/CREW ENTRY DOOR SYSTEM - FLIGHT LOCK MECHANISM AND FLIGHT LOCK SENSORS****Purpose**

The flight lock mechanism locks the latch mechanism closed when the airplane airspeed is 80 knots or more.

**Physical Description**

The flight lock mechanism has these components:

- Motor
- Flight lock disengaged sensor
- Flight lock engaged sensor
- Target
- Lock pawl lever
- Cam
- Spring (2)

**Functional Description - Flight Lock Mechanism**

The air data inertial reference unit (ADIRU) and the secondary attitude and air data reference unit (SAARU) supply an airspeed signal when the airplane reaches 80 knots.

The PSEU and an ELMS energize relays that send power to the flight lock motor. The motor moves the lock pawl lever to the locked position. The motor stalls and holds the lever in the locked position. The lever engages the cam on the latch torque tube. The latch torque tube cannot turn to unlatch the door.

When the airplane goes below 80 knots, the relays open to remove power from the motor. The springs move the lever to the unlocked position. The latch torque tube can turn to unlatch the door.

**Functional Description - Flight Lock Sensors**

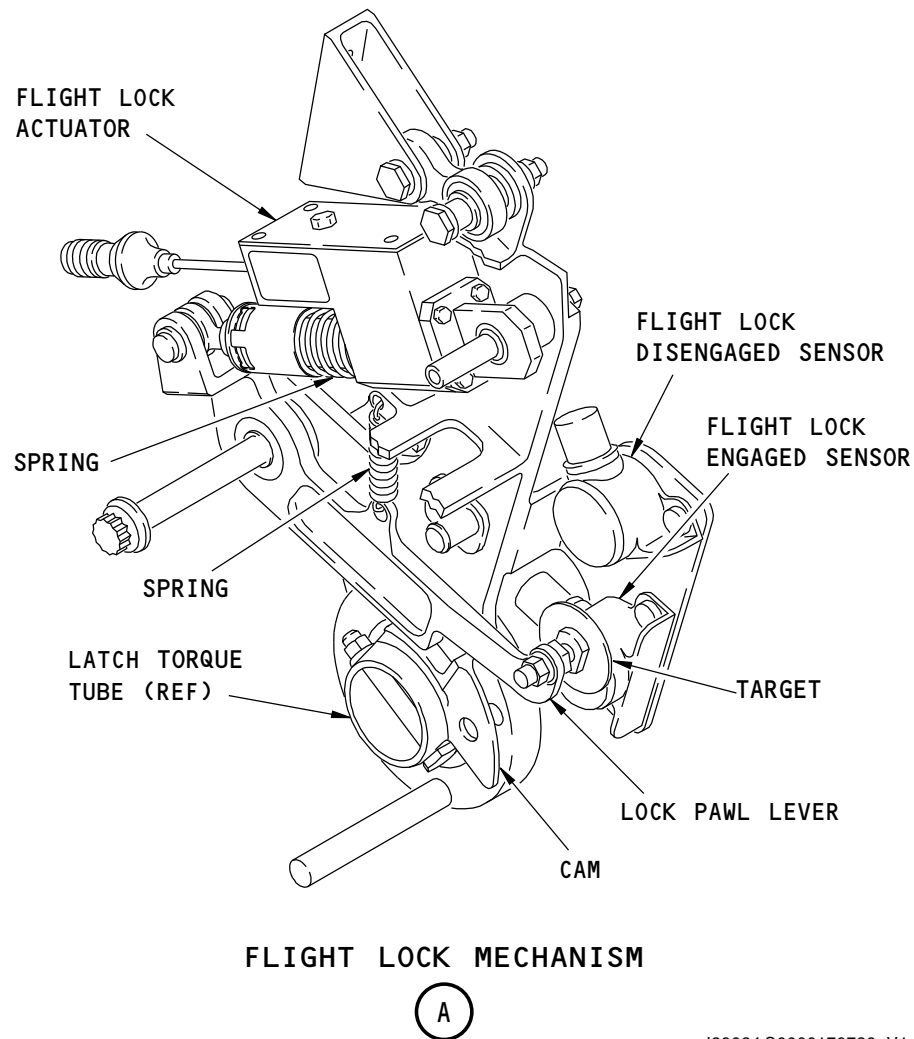
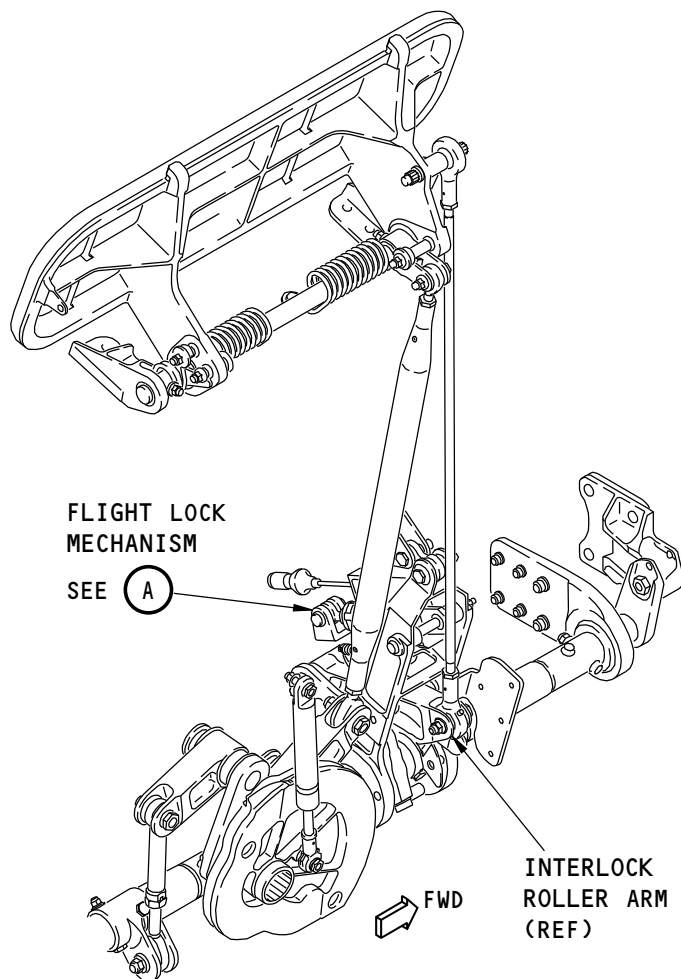
Flight lock engaged and the flight lock disengaged sensor information goes from the proximity sensor electronics units (PSEU) to the airplane information management system (AIMS). Status and maintenance messages show when the lock pawl lever is not in its commanded position.

**52-11-00**

| EFFECTIVITY |  |
|-------------|--|
| ARO ALL     |  |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



PASSENGER/CREW ENTRY DOOR SYSTEM-FLIGHT LOCK MECHANISM AND FLIGHT LOCK SENSORS

J29024 S0000170739\_V1

52-11-00-016

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

**52-11-00**

**PASSENGER/CREW ENTRY DOOR SYSTEM - MODE SELECT MECHANISM AND MECHANICAL SWITCHES****Purpose**

The mode select mechanism lets you set the operation mode for the emergency power assist system (EPAS) on all doors. It also sets the operation mode for the girt bar mechanism on doors one, two, four, and five.

**Physical Description**

The mode select mechanism has these components:

- Mode select handle
- Cable crank
- Push/pull cable assembly (doors one, two, four, and five)
- Cam lever
- Spring.

The mode select switch is on the mode select mechanism.

**Functional Description**

When you move the mode select handle aft, you select the auto mode. Selection of the auto mode does these two things:

- Closes the mode select switch which arms the emergency power assist system (EPAS)
- Pushes down on the push/pull cable which arms the girt bar mechanism on doors one, two, four, and five.

When you pull the external door handle outboard, the disarm crank pulls the cable that goes to the mode select lever. It moves the lever forward to the manual position.

When you move the external door handle inboard, the disarm crank pushes the cable. The cable slides through the mode select lever. It does not move the lever. The lever stays in the manual position.

When you move the mode select handle forward, it does not push on the cable. The cable slides through the handle. It does not move the external door handle.

The spring and cam lever are an overcenter device for the mode select handle. When you move the handle the spring and cam push the handle completely to the position you select.

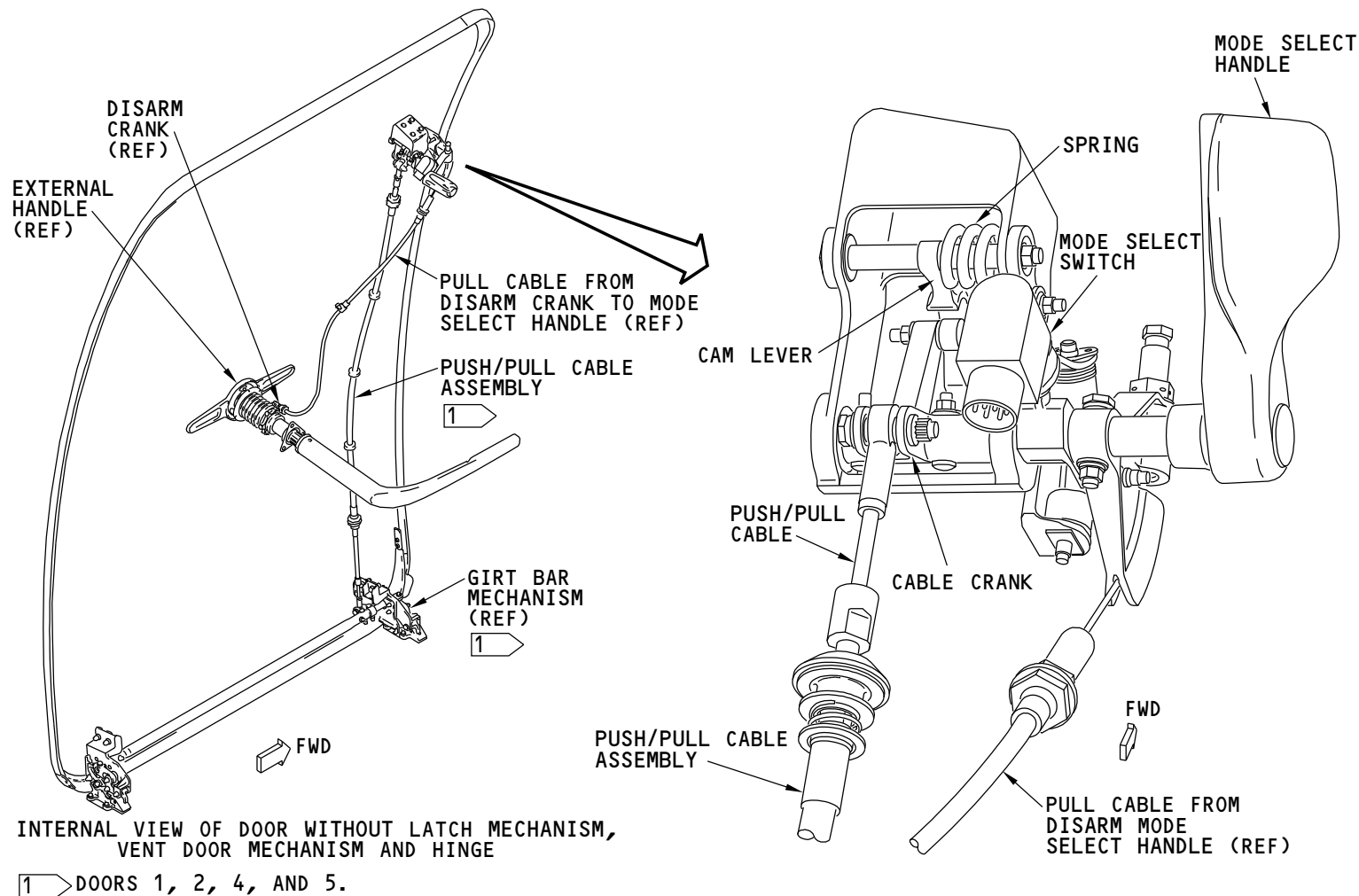
The mode select switch is one of two mechanical switches used in the emergency power assist system (EPAS) operation.

**52-11-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43263 S000620883\_V1

**PASSENGER/CREW ENTRY DOOR SYSTEM - MODE SELECT MECHANISM AND MECHANICAL SWITCHES**

52-11-00-017

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

**52-11-00**

**PASSENGER/CREW ENTRY DOOR SYSTEM - GIRT BAR MECHANISM AND GIRT BAR FLOOR FITTING - INTRODUCTION****Purpose**

Girt bar mechanisms on doors one, two, four, and five hold the emergency slide girt bar on the bottom of the door in the manual mode and release it into the girt bar floor fittings in the automatic mode.

The floor fittings hold the girt bar on the floor when you open the door in the automatic mode.

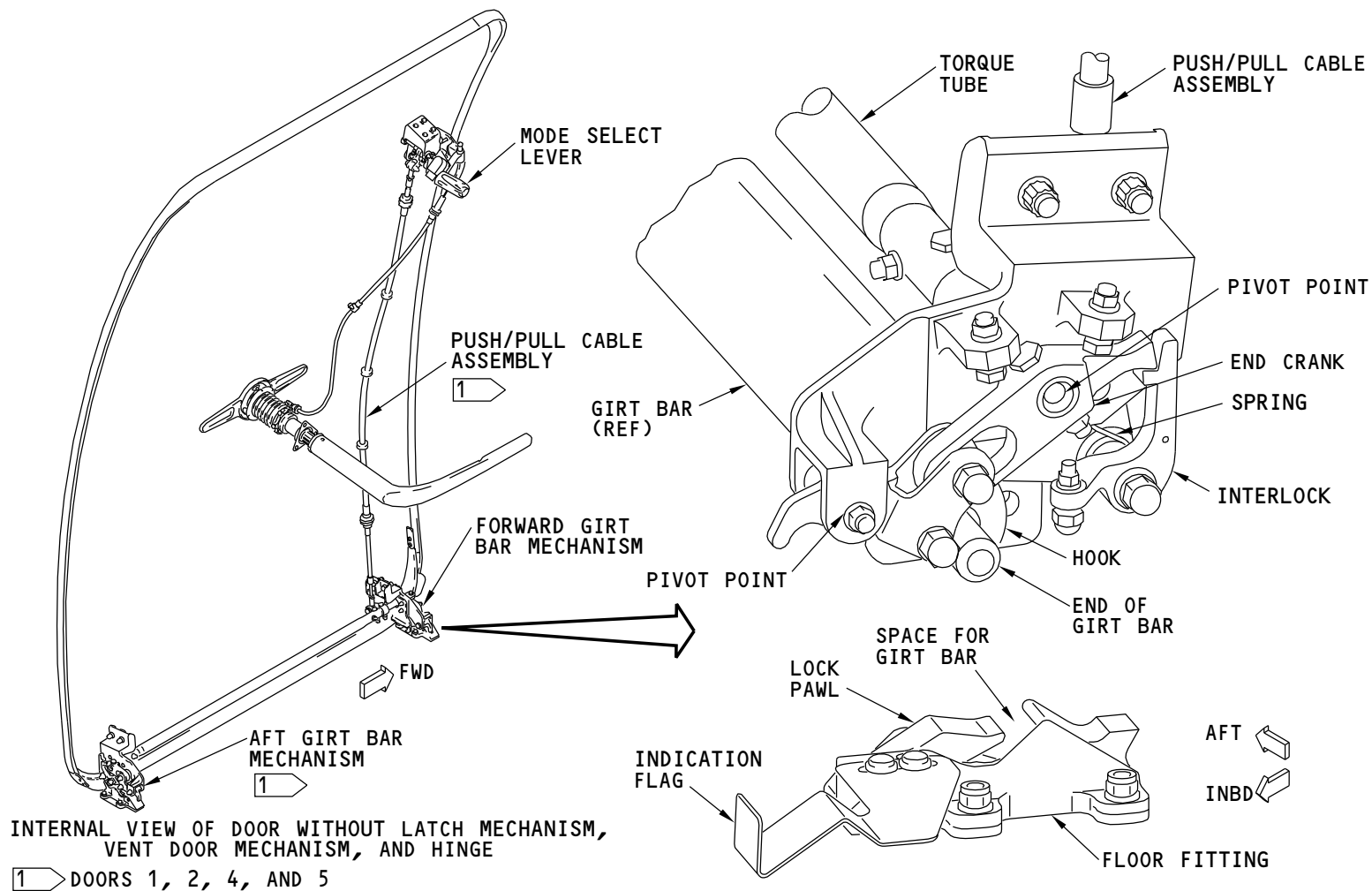
**Physical Description**

There are girt bar mechanisms on the lower forward and aft corners of the door. A torque tube connects the end crank of the two mechanisms to the push/pull cable assembly.

Each girt bar mechanism has these components:

- End crank
- Spring
- Interlock
- Hook
- Carrier fitting.

Each floor fitting assembly has a spring-loaded lock pawl. A yellow indication flag attaches to the lock pawl. The flag shows through a witness port on the sidewall. You see the witness port later in this section, in the door operation.



M43268 S000620888\_V2

PASSENGER/CREW ENTRY DOOR SYSTEM - GIRT BAR MECHANISM AND GIRT BAR FLOOR FITTING - INTRODUCTION

52-11-00

52-11-00-018

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - GIRT BAR MECHANISM - FUNCTIONAL DESCRIPTION****Door Lifted, Escape Slide Not Armed**

The girt bar mechanism holds the girt bar when the door is not latched and in the auto mode. The girt bar is held between the hook and the carrier fitting (not shown).

You cannot move the mode select lever when the door is open. The spring holds the interlock so the end crank cannot turn. The hook that holds the girt bar will not move to release the girt bar.

The indication flag is not lifted. You see the flag through the witness port in the sidewall.

**Door Latched, Escape Slide Not Armed**

When the door moves down to latch, these two things occur with the girt bar mechanism:

- The roller pushes down on the lock pawl and lifts the indication flag up out of the witness port
- The interlock pushes down on the floor fitting and turns to release the end crank.

**Door Latched, Escape Slide Armed**

When you move the mode select lever to the auto position, the push/pull cable turns the torque tube. The torque tube turns the end crank. The crank turns the hook.

When the hook turns, the outboard end moves up to releases the girt bar and releases the lock pawl. The spring in the lock pawl lifts the pawl and lowers the flag.

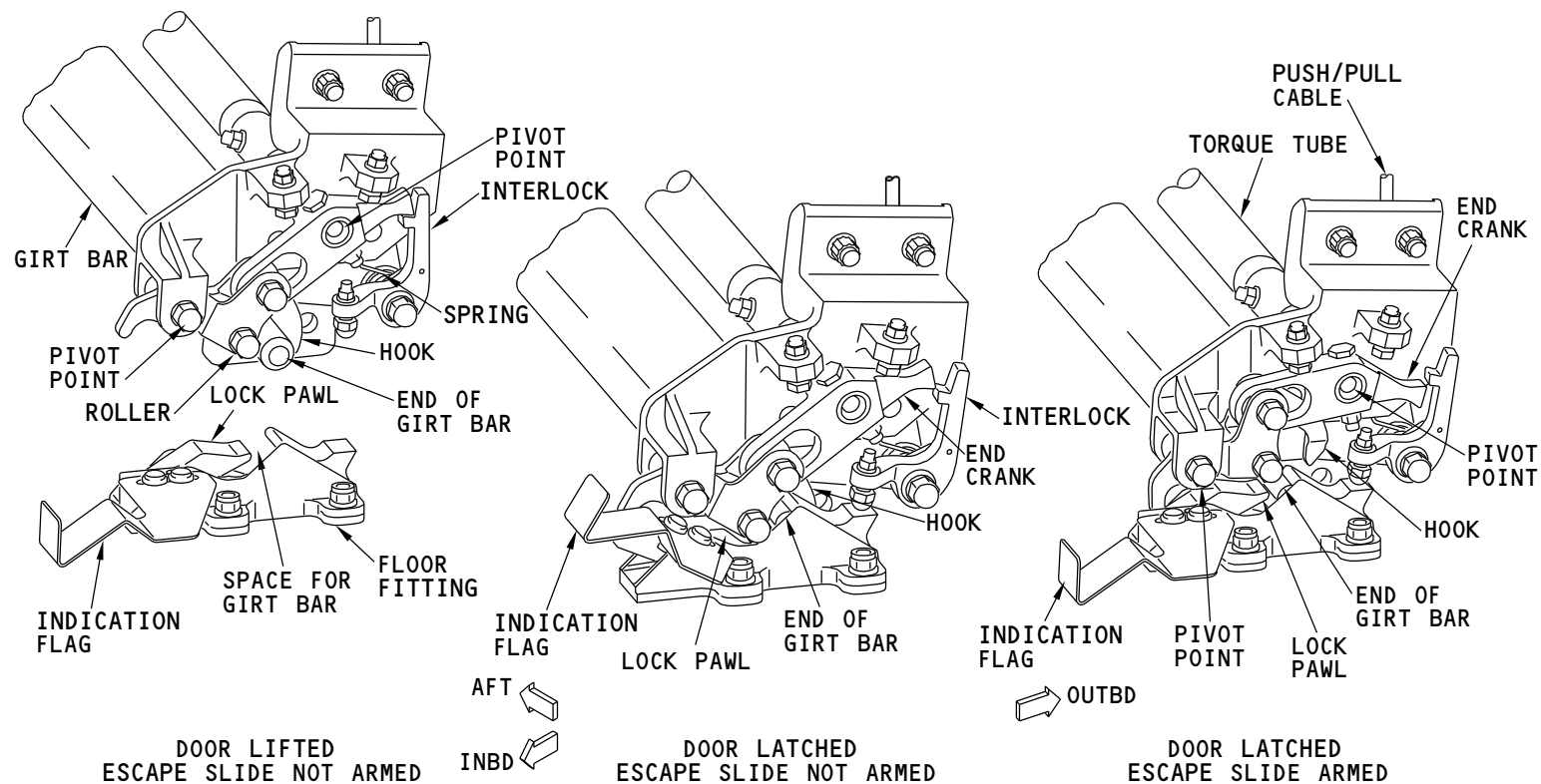
The lock pawl locks the girt bar to the floor. The door is in the auto mode. The flag in the witness port indicates the door is in the auto mode.

If you unlatch and open the door, the girt bar stays locked to the floor. The bar pulls the escape slide/raft out of the door.

**Training Information Point**

The interlock must release the end crank before you can move the mode select lever to the arm position. If you cannot move the lever to the arm position, it may show a blockage problem.

Make sure there is no unwanted material around the door bottom that keeps the door from moving completely outboard as it closes. When the door is not completely outboard, the floor fitting will not push the interlock sufficiently to release the end crank.



M43270 S000620890\_V1

**PASSENGER/CREW ENTRY DOOR SYSTEM - GIRT BAR MECHANISM - FUNCTIONAL DESCRIPTION**

**52-11-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details





THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-11-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - EMERGENCY POWER ASSIST SYSTEM (EPAS) - INTRODUCTION****Purpose**

The emergency power assist system (EPAS) supplies mechanical power to open the passenger entry door in emergencies.

This includes the number three door which is also called the over-wing door.

**Physical Description**

The EPAS has these components:

- Reservoir
- Actuator
- Battery pack.

Most doors have one battery pack. Door number three has two battery packs. These battery packs are not the same as the battery packs for doors one, two, four, and five. The door three EPAS and backup battery packs have a larger capacity to supply power for the EPAS reservoir squib, spoiler auxiliary retract device squib, and the off-wing slide inflation bottle squib.

**ARO ALL; AIRPLANES WITH THE S283W203-5 BATTERY**

Door three EPAS and backup battery packs have a test switch and indicator light on the bottom of the battery. These batteries are tested with the test switch and verified with the red indicator light.

**ARO ALL****General Description**

Power from the EPAS battery fires the squib on the reservoir when you move the internal door handle to open with the mode select handle in the AUTO mode. The squib breaks the rupture disc on the reservoir.

Compressed nitrogen gas from the reservoir goes through a tube to the actuator. Gas expansion in the actuator pushes on piston attached to the rod. This moves the chain. The chain pulls on the fixed sprockets to open the door open.

The battery on door three also supplies power for these units:

- Off-wing slide inflation bottle squib
- Spoiler auxiliary retract device (SARD) squib.

See the off-wing escape system section for more information about the inflation bottle squib (SECTION 25-65).

See the spoiler and speedbrake control section for more information about the SARD (SECTION 27-61).

**Training Information Point**

The safety switches on the EPAS and backup batteries are for maintenance. They disconnect the batteries from the squib circuits.

You must be careful when you do emergency lights tests. In this test, you begin to open the door with the mode select switch in the armed position. For doors 1, 2, 4, and 5, it is necessary to disarm only the EPAS battery. For door 3, you must disarm the EPAS battery and the backup battery.

If the door is opened with the mode select in the armed position and with the backup battery in the unsafe position, the slide will be deployed. Use of the backup system does not cause the EPAS squib to fire.

## PASSENGER/CREW ENTRY DOOR SYSTEM - EMERGENCY POWER ASSIST SYSTEM (EPAS) - INTRODUCTION



YOU MUST DISARM THE BACKUP BATTERY AND THE EPAS BATTERY. IF YOU DO NOT OBEY THIS INSTRUCTION, THE ESCAPE SLIDE WILL DEPLOY WHEN YOU TURN THE INTERIOR HANDLE TO THE OPEN POSITION, AND DAMAGE TO EQUIPMENT OR INJURY TO PERSONS CAN OCCUR.

### ARO ALL; AIRPLANES WITH THE S283W203-6 OR S283W203-7 BATTERY

On doors one, two, four and five, the battery pack has two built in test modes. The status of the test modes are indicated by two test lights located just above the battery pack safety switch. A green test light shows the battery pack status and an amber test light shows squib continuity. This battery pack does not have a test switch or test light on the bottom of the battery.

**NOTE:** The battery pack internal self test light will blink a continuous green color when all of these conditions exist:

- There is airplane power (28 volts DC) to the battery pack.
- The safety switch for the battery pack is in the ARM position.
- The battery pack's internal 9 volt backup batteries have a charge.
- The battery pack capacitor is charged and ready to fire.

**NOTE:** The battery pack squib continuity test light will show a continuous amber color when all of these conditions exist:

- There is airplane power (28 volts DC) to the battery pack.
- The safety switch for the battery pack is in the DISARM position.
- The PED door interior door handle is in the OPEN position.
- The PED mode select handle is in the AUTOMATIC/ARMED position.
- There is continuity in the squib circuit.

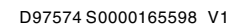
### ARO ALL; AIRPLANES WITH THE S283W203-5 BATTERY

Door three EPAS and backup batteries have a test switch and indicator light on the bottom of the battery pack. To test these batteries for sufficient charge, you push the test switch and make sure the red indicator light comes on for approximately ten seconds.

### ARO ALL

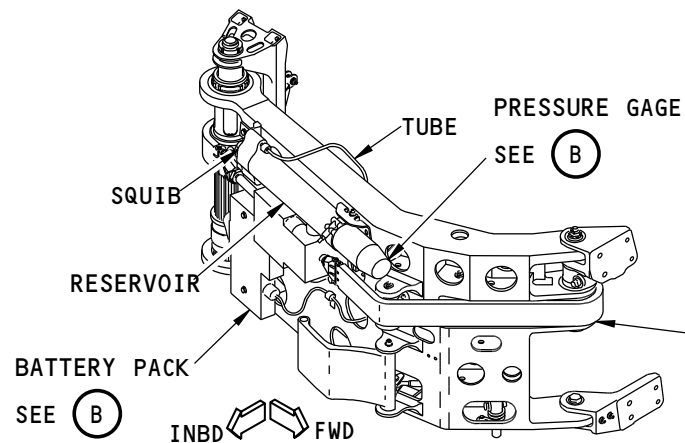
A gage on the forward end of the reservoir lets you know if the pressure in the reservoir is sufficient. You can see the gage through a hole in the hinge cover.

You cannot close the door when there is pressure in the actuator. It takes five minutes for actuator pressure to bleed down after the EPAS has fired on doors one, two, four, and five. It takes five seconds on door three.

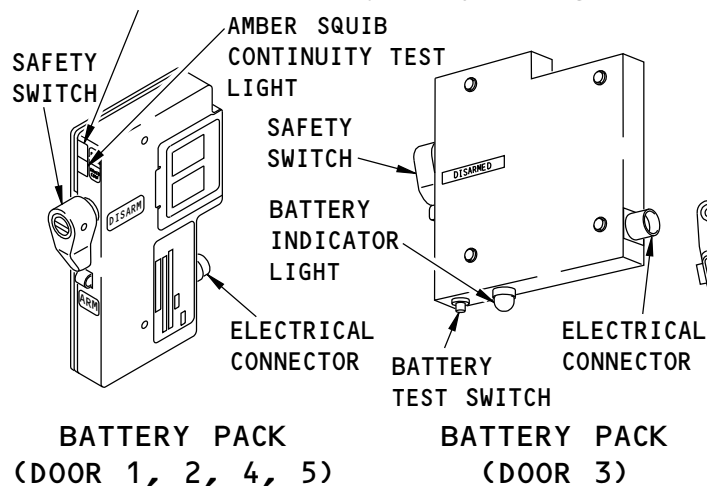


## PASSENGER/CREW ENTRY DOOR SYSTEM - EMERGENCY POWER ASSIST SYSTEM (EPAS) - INTRODUCTION

**52-11-00**

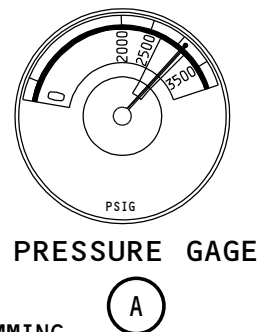


VIEW OF INBOARD  
SIDE OF HINGE



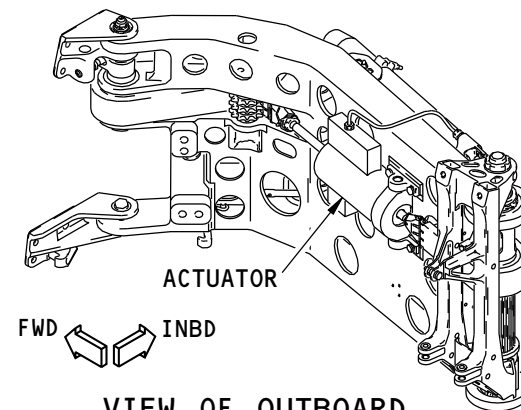
(B)

(B)

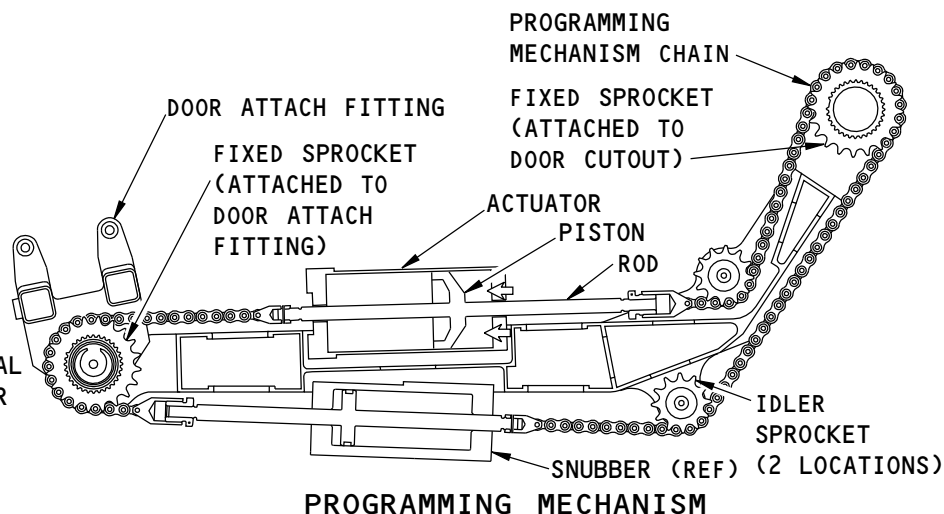


PRESSURE GAGE

(A)



VIEW OF OUTBOARD  
SIDE OF HINGE



(C)

D98183 S0000169056\_V1

PASSENGER/CREW ENTRY DOOR SYSTEM - EMERGENCY POWER ASSIST SYSTEM (EPAS) - INTRODUCTION

52-11-00

EFFECTIVITY  
ARO ALL; AIRPLANES WITH THE S283W203-6 OR S283W203-7 BATTERY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-11-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

## PASSENGER/CREW ENTRY DOOR - EMERGENCY POWER ASSIST SYSTEM (EPAS) - FUNCTIONAL DESCRIPTION

### Functional Description

This functional description has a relation to the EPAS circuit on doors one, two, four, and five. See the EPAS door three functional description for information on that circuit.

The emergency power assist system (EPAS) gets electrical power for its batteries from the same source as the emergency lights power supplies. See the emergency lights section for more information (SECTION 33-50).

### ARO ALL; AIRPLANES WITH THE S283W203-6 OR S283W203-7 BATTERY

The battery pack has two built in test modes, an internal self test and a squib circuit continuity test. The status of these test modes are indicated by two test lights located just above the battery pack safety switch. This battery pack does not have a test switch on the bottom of the battery.

**NOTE:** The battery pack internal self test light will blink a continuous green color when all of these conditions exist:

- There is airplane power (28 volts DC) to the battery pack.
- The safety switch for the battery pack is in the ARM position.
- The battery pack internal 9 volt alkaline backup batteries have a charge.
- The battery pack capacitor is charged and ready to fire.

**NOTE:** The battery pack squib continuity test light will show a continuous amber color when all of these conditions exist:

- There is airplane power (28 volts DC) to the battery pack.
- The safety switch for the battery pack is in the DISARM position.
- The PED interior door handle is in the OPEN position.
- The PED mode select handle is in the AUTOMATIC/ARMED position.

- There is continuity in the squib circuit.

### ARO ALL

The safety switch is for maintenance. It disconnects the battery from the circuit to the squib.

The mode select switch is part of the mode select mechanism. The mode select handle sets the mechanism to the AUTO or MANUAL mode. When the handle is in the AUTO position, the mode select switch is in the AUTO position. This arms the system.

The door open switch goes to the OPEN position when the door handle moves to the door full open position. Electrical power goes from the battery to the squib. The squib fires when it gets power.

Operation of the external door handle automatically moves the mode select handle to the MANUAL position. When the handle is in the MANUAL position, the mode select switch is in the MANUAL position.

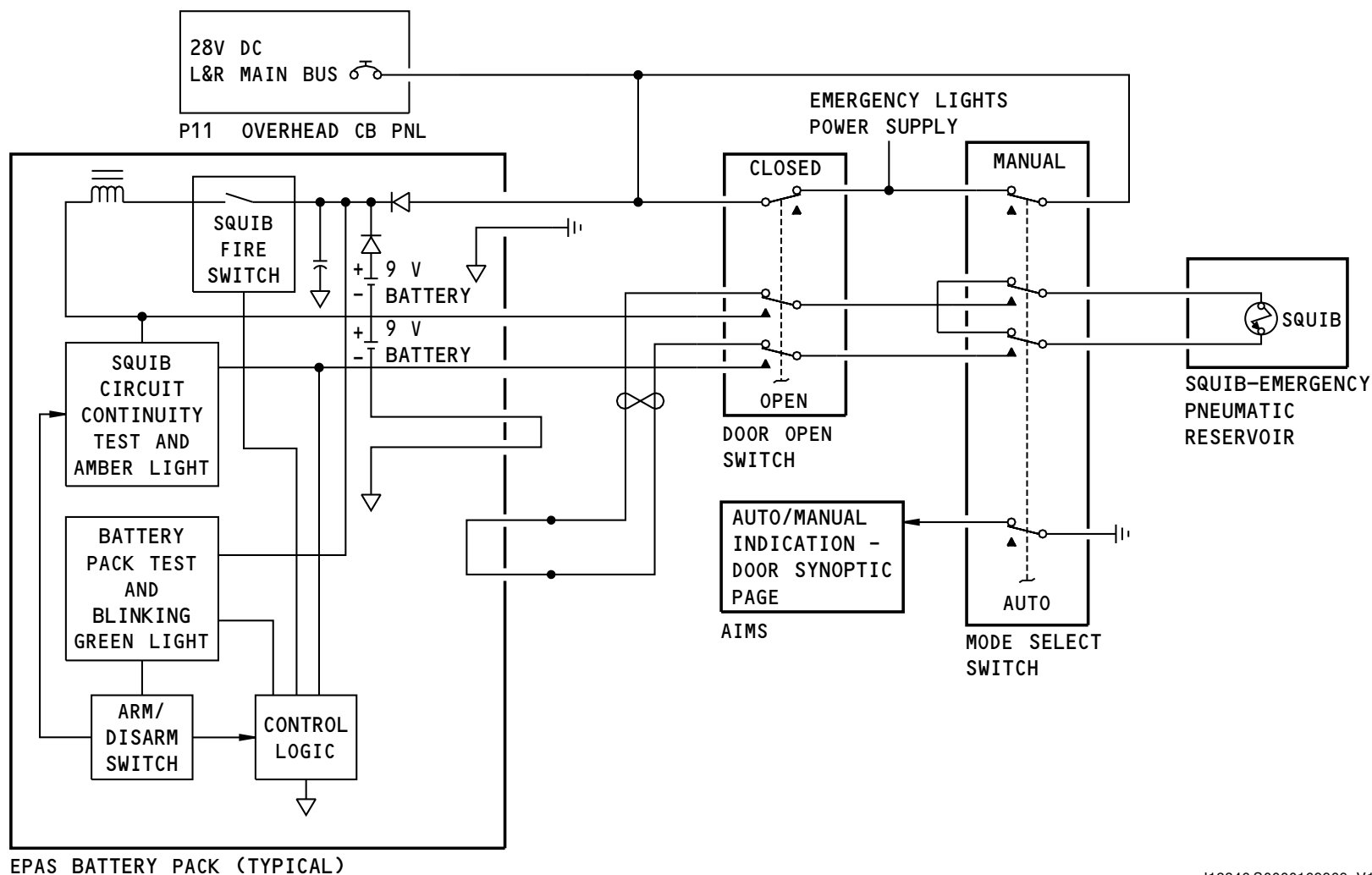
Contacts in the door open switch and the mode select switch and the safety switch short the squib and prevent accidental ignition.

The position of the mode select switch goes to the AIMS to show on the door synoptic display. See the door warning system section for more information about door indications (SECTION 52-71).

52-11-00

EFFECTIVITY  
ARO ALL

D633W101-ARO



J12346 S0000169969\_V1

### PASSENGER/CREW ENTRY DOOR-EMERGENCY POWER ASSIST SYSTEM(EPAS)-FUNCTIONAL DESCRIPTION

52-11-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



**PASSENGER/CREW ENTRY DOOR - EMERGENCY POWER ASSIST SYSTEM (EPAS) - DOOR 3 FUNCTIONAL DESCRIPTION****Functional Description**

The emergency power assist system (EPAS) on door 3 is different from other doors. The off-wing escape system at door 3 uses the EPAS battery pack to fire the squibs for the spoiler retract device (SARD) and for off-wing slide deployment.

The door 3 battery pack and backup battery pack are the same. Door 3 batteries are different from the EPAS batteries on other doors. The door 3 batteries do not have test circuits and are larger because they provide power to more squibs.

The battery pack and backup battery pack have safety switches. The safety switches are for maintenance. The switches disconnect the batteries from the circuits to the squibs. You must use the safety switches on both batteries to disconnect the off-wing escape system. If only the safety switch on the battery pack on the door is put to the DISARM position, the over-wing door backup battery can still start spoiler retraction and slide deployment.

EPAS gets electrical power for its batteries from the same source as the emergency lights power supplies. See the emergency lights section for more information (SECTION 33-50).

The mode select switch is part of the mode select mechanism. The mode select handle sets the mechanism to the AUTO or MANUAL modes. When the handle is in the AUTO position, the switch is in the AUTO position. This arms the system.

The door open switch goes to the OPEN position when a door handle moves to the door open position. This lets electrical power go from the battery to the EPAS, SARD, and Slide Deploy squibs. The squibs fire when they get power. (SECTION 25-65)

Operation of the external door handle automatically moves the mode select handle to the MANUAL position.

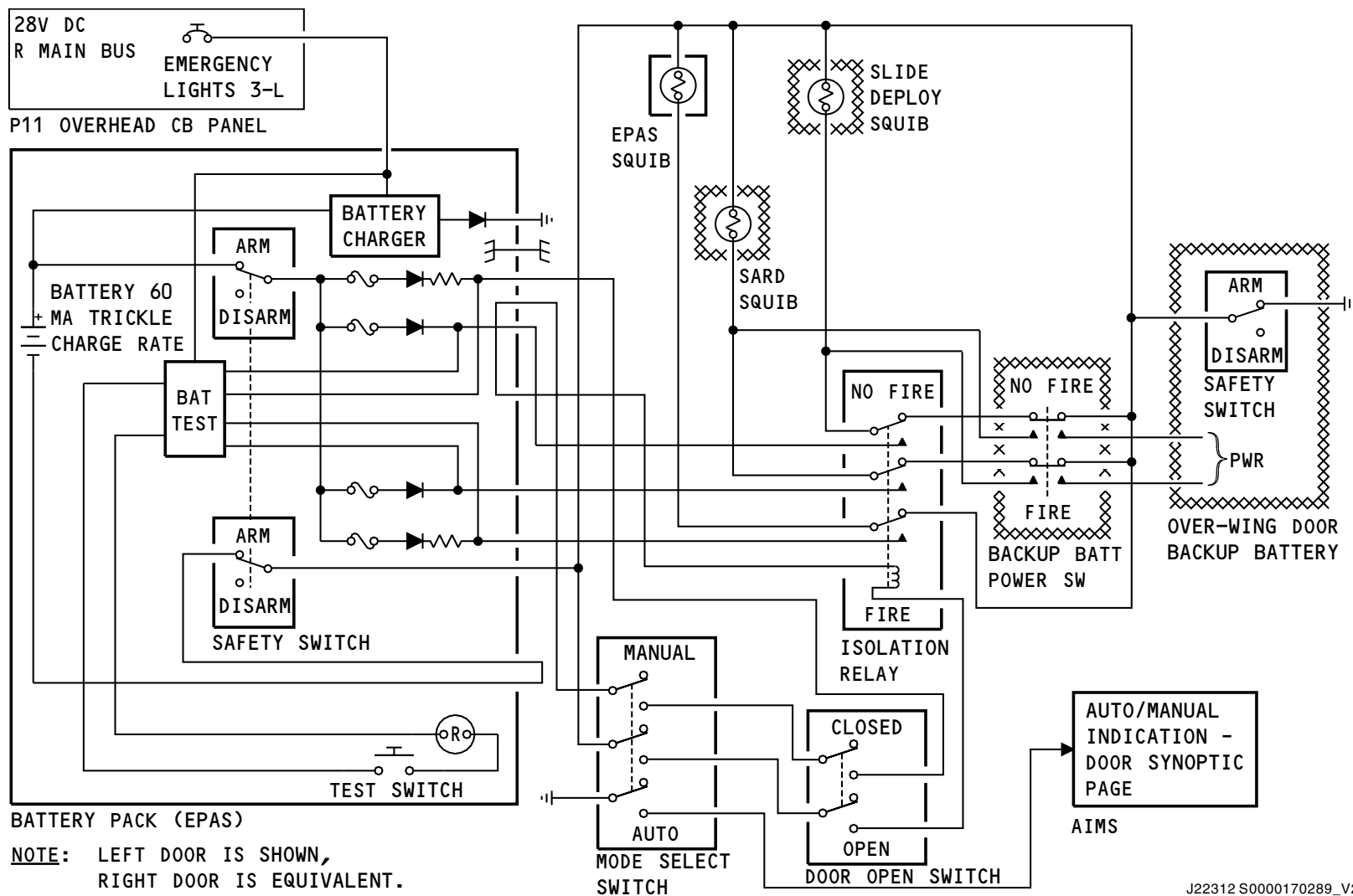
When the isolation relay is in the NO FIRE position, contacts short the squibs and prevent accidental ignition.

The position of the mode select switch goes to the AIMS to show on the door synoptic display. See the door warning system section for more information about indications (SECTION 52-71).

**52-11-00****ARO ALL EFFECTIVITY**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



PASSENGER/CREW ENTRY DOOR-EMERGENCY POWER ASSIST SYSTEM (EPAS)-DOOR 3 FUNCTIONAL DESCRIPTION

52-11-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

## PASSENGER/CREW ENTRY DOOR SYSTEM - FUNCTIONAL DESCRIPTION

### Flight Lock Disengage

Airplane airspeed below 80 knots removes electric power from the flight lock. The flight lock releases the latch mechanism.

### Disarm

Forward movement of the mode select handle opens the mode select switch so that the emergency power assist system (EPAS) can not operate. On doors one, two, four, and five, it also pulls the push/pull cable. This unlocks the girt bar from the floor fitting and locks it to the girt bar mechanism on the door.

### Unlatch

When you pull the external handle out, it pulls a cable that moves the mode select lever to the disarm position. When you pull the external handle outward, it connects with the internal handle.

When you turn the handle 180 degrees in the open direction, the initial movement of either door handle releases the vent door. The vent door opens if the airplane is sufficiently depressurized. The interlock rod pushes down on the interlock roller arm. The interlock roller releases the interlock cam on the latch torque tube.

The latch torque tube turns the latch cranks. The cranks push down on the latch tracks (not shown). The secondary lift pushes up on the door attach fitting and lifts the door. On doors one, two, four, and five, the girt bar mechanism interlock turns to stop movement of the mode select handle and girt bar mechanism.

### Open

The latch crank rollers move out of the latch tracks. The latch crank interlock locks the cranks.

The door translates open on the hinge. The programming chain keeps the door parallel to the fuselage. The snubber controls the rate of door movement.

When the door is completely open the hold open hook engages the hold open catch.

### Close

When you pull on the hold open handle (not shown), the hold open hook releases and the door moves aft.

Either the external or internal handle closes the door. The aft latch track pushes the latch crank interlock up. The secondary lift and latch cranks lower the door into the plug position inboard of the cutout stops (not shown). The drive rod pushes the vent door closed.

The girt bar mechanism interlock releases the end crank on doors one, two, four, and five.

### Arm

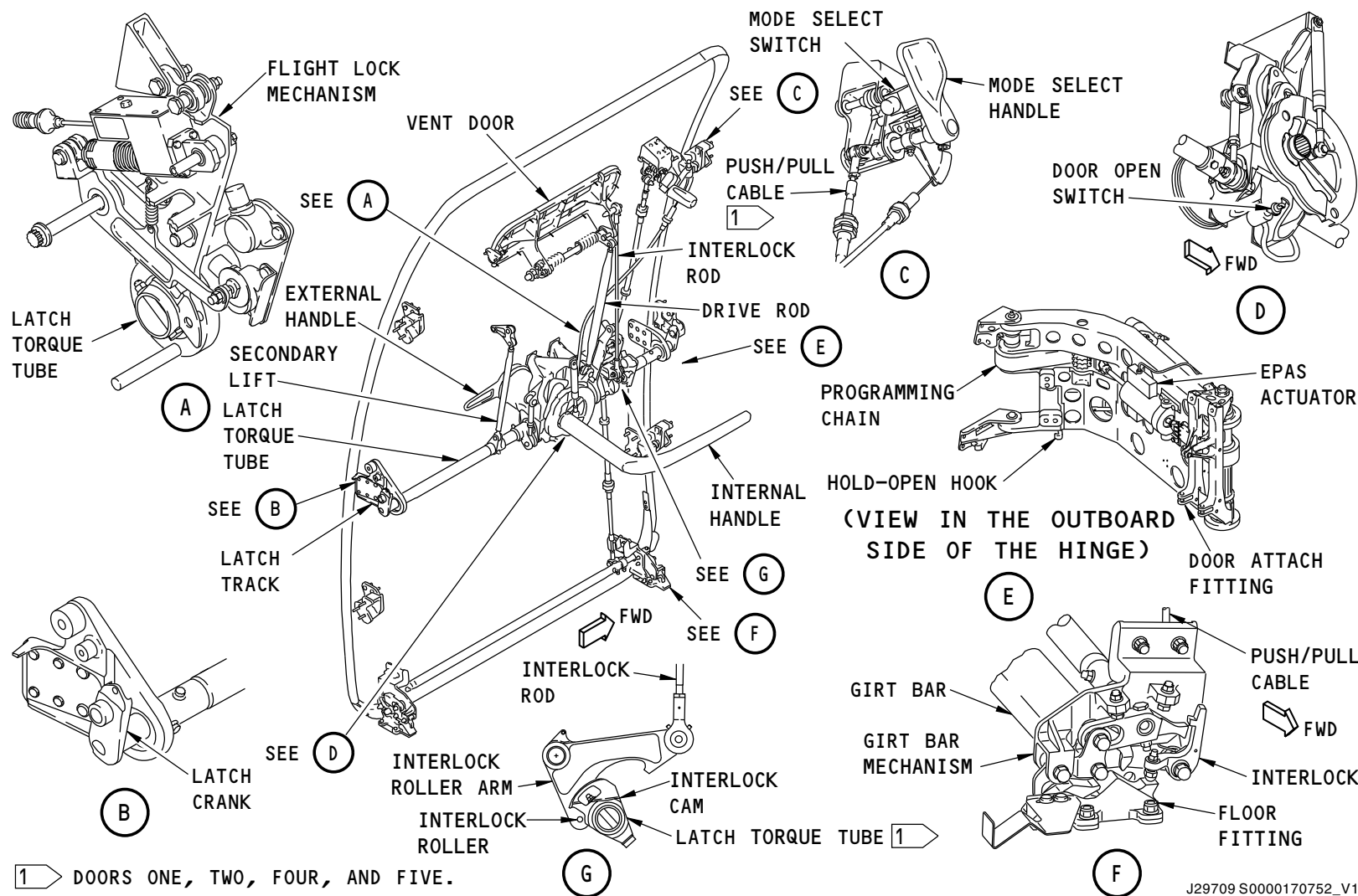
Aft movement of the mode select handle closes the mode select switch. This arms the EPAS electric power circuit. On doors one, two, four, and five, the movement also releases the girt bar from the girt bar mechanism. The floor fitting assembly locks the bar to the floor.

52-11-00

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



J29709 S0000170752\_V1

## PASSENGER/CREW ENTRY DOOR SYSTEM-FUNCTIONAL DESCRIPTION

52-11-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - OPERATION****General**

The general information that follows is for all of the doors. Information about girt bars, floor fittings, and yellow indication flags are for doors one, two, four, and five only.

There are markers on the door that tell you the direction to move the handles for door operation.

**External Open Operation**

Pull the external handle outboard. This moves the mode select handle to the MANUAL position if it has not already been set to that position.

Turn the handle 180 degrees in the open direction. The vent door should open as you start to turn the handle. The door will move inboard and upward as you continue to turn the handle. The external handle stays in the extended position while the door is open.

Pull the door outboard and push it forward until it stops. Do a check to see that the hold-open hook has engaged the hold-open catch.

**External Close Operation**

Do a check to see that the door area and girt bar floor fitting are not blocked.

If the external handle is not in the extended position, pull it outboard and rotate it 180 degrees. It will stay extended outboard.

Push the door forward and pull the hold-open release handle on the inside of the door. This releases the door hold-open hook. Pull and push the door toward the closed position. Use the extended, external handle to push the door inboard into the cabin.

Turn the external handle 180 degrees in the closed direction. The door will move downward and slightly outboard as it goes to the closed position. The vent door should close as you complete the door handle movement. The door is now closed, latched, and locked.

The handle is spring loaded and moves inboard to the faired position at the end of the rotation.

When you turn the external handle to close the door, it does not move the mode select handle to the AUTO position.

If the handle will not turn to the closed position, do a check of the door system.

**Internal Open Operation**

Move the mode select lever to the MANUAL position. Do a check of the two witness ports in the sidewall near the bottom of the door. The yellow door armed indication flags should not show.

If either flag shows, do not use the door. Do a system check.

Move the internal handle to the open position. Push outboard and forward on the door. When the door stops, do a check to see that the hold-open hook has engaged the hold-open catch.

**Internal Close Operation**

Do a check to see that the door area and girt bar floor fitting are not blocked. Push the door forward and pull on the hold-open release handle to release the door hold-open hook. Move the door into the cabin.

Turn the internal door handle in the closed direction. If the handle will not turn to the closed position, do a check of the door system.

**Training Information Point**

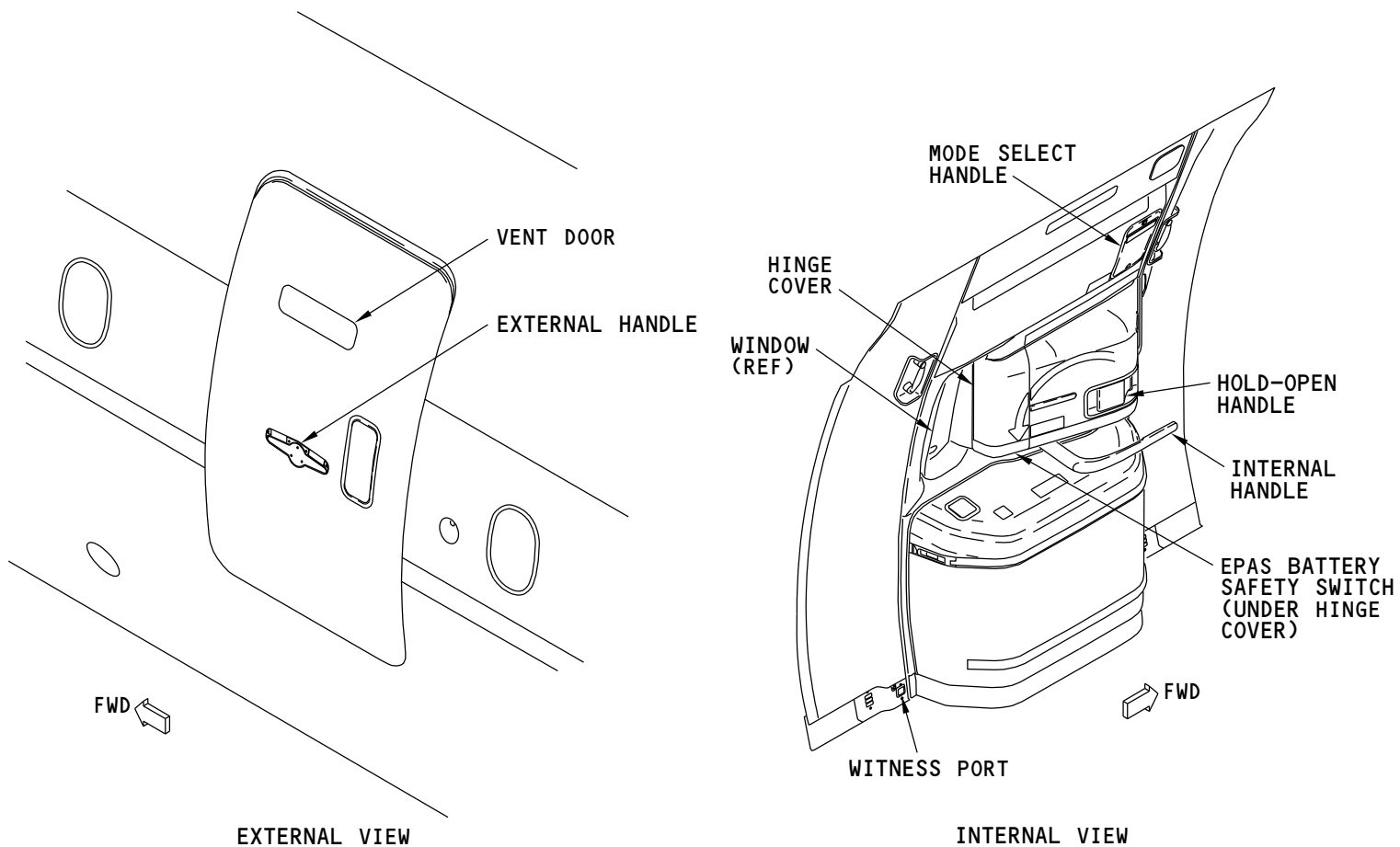
A safety switch on the EPAS battery lets you stop the EPAS operation when you do door maintenance. You cannot close the hinge cover when the switch is in the safe position.

**52-11-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



PASSENGER/CREW ENTRY DOOR SYSTEM - OPERATION

M43273 S000620893\_V1

**52-11-00**

52-11-00-021

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**PASSENGER/CREW ENTRY DOOR SYSTEM - SYSTEM TESTS****General**

ATA 52 Passenger/Crew Door Flight Locks has this systems test:

- Passenger/Crew entry doors, flight lock control test.

**Passenger/Crew Entry Doors, Flight Lock Control Test**

In this test, the proximity sensor electronics unit 1 (PSEU 1) sets the flight lock on all the passenger/crew entry doors. See the proximity sensor system section for more information about proximity sensors (SECTION 32-08).

You must operate each passenger/crew entry door to make sure that the flight lock is set. When you finish, you must select stop on the MAT or PMAT. No pass/fail shows for this test.

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

**GROUND TESTS**

**SELECT ATA SYSTEM**

|                                              |
|----------------------------------------------|
| 34 DISTANCE MEASURING EQUIPMENT SYSTEM       |
| 34 AUTOMATIC DIRECTION FINDER (ADF) SYSTEM   |
| 34 GLOBAL POSITIONING SYSTEM                 |
| 34 AIMS - FLIGHT MANAGEMENT COMPUTING SYSTEM |
| 36 AIR SUPPLY SYSTEM                         |
| 45 MAINTENANCE ACCESS TERMINAL               |
| 52 PASSENGER DOOR FLIGHT LOCKS               |
| 71 - 80 LEFT ENGINE                          |
| 71 - 80 RIGHT ENGINE                         |

**SELECT TEST TYPE**

|                                                 |
|-------------------------------------------------|
| <input checked="" type="checkbox"/> SYSTEM TEST |
| <input type="checkbox"/> OPERATIONAL TEST       |
| <input type="checkbox"/> LRU REPLACEMENT TEST   |

**SELECT SYSTEM TEST**

PASSENGER ENTRY DOORS, FLIGHT LOCK CONTROL TEST

CONTINUE

HELP

GO BACK

**SELECT SYSTEM TEST** (1)

PASSENGER ENTRY DOORS, FLIGHT LOCK CONTROL TEST

M43422 S000620905\_V1

### PASSENGER/CREW ENTRY DOOR SYSTEM - SYSTEM TESTS

**52-11-00**

|                |                    |
|----------------|--------------------|
| <p>ARO ALL</p> | <p>EFFECTIVITY</p> |
|----------------|--------------------|

D633W101-ARO







THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-30-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



## CARGO DOORS - INTRODUCTION

### Purpose

Cargo doors give access to the forward, aft, and bulk cargo compartments.

### Location

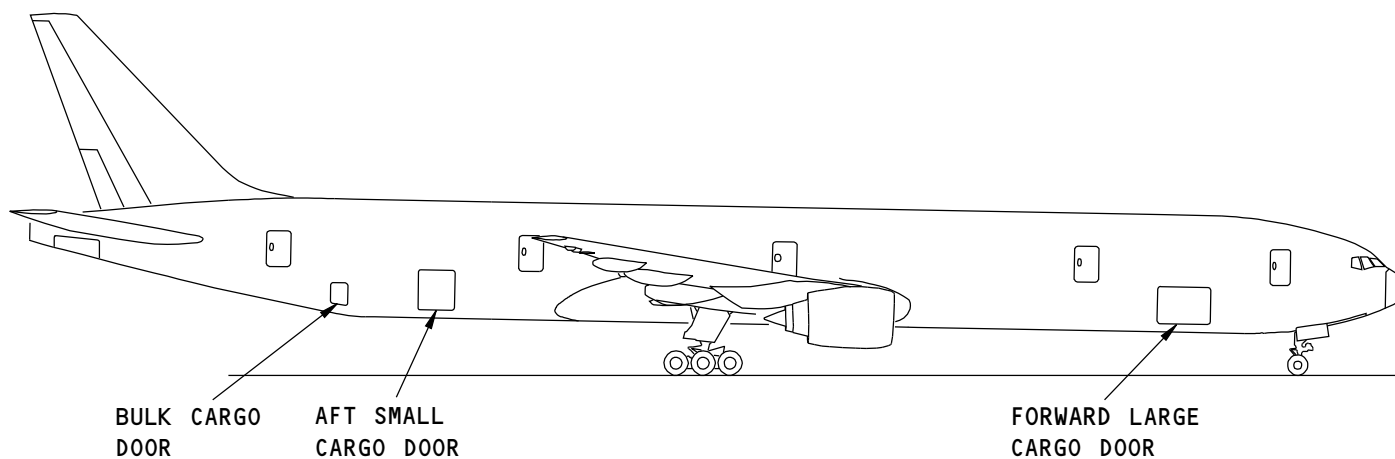
The lower deck cargo doors are on the right side of the airplane.

### General Description

The forward and aft cargo doors let the crew load cargo on pallets and in containers.

The bulk cargo door lets the crew load smaller cargo that is not on pallets or in containers.

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |



## CARGO DOORS - INTRODUCTION

2070594 S0000431580\_V1

**52-30-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details





THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-34-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FORWARD LARGE CARGO DOOR SYSTEM - INTRODUCTION****Purpose**

The forward large cargo door system gives access to the forward cargo compartment.

**Location**

The door is forward of the wing on the right side of the airplane.

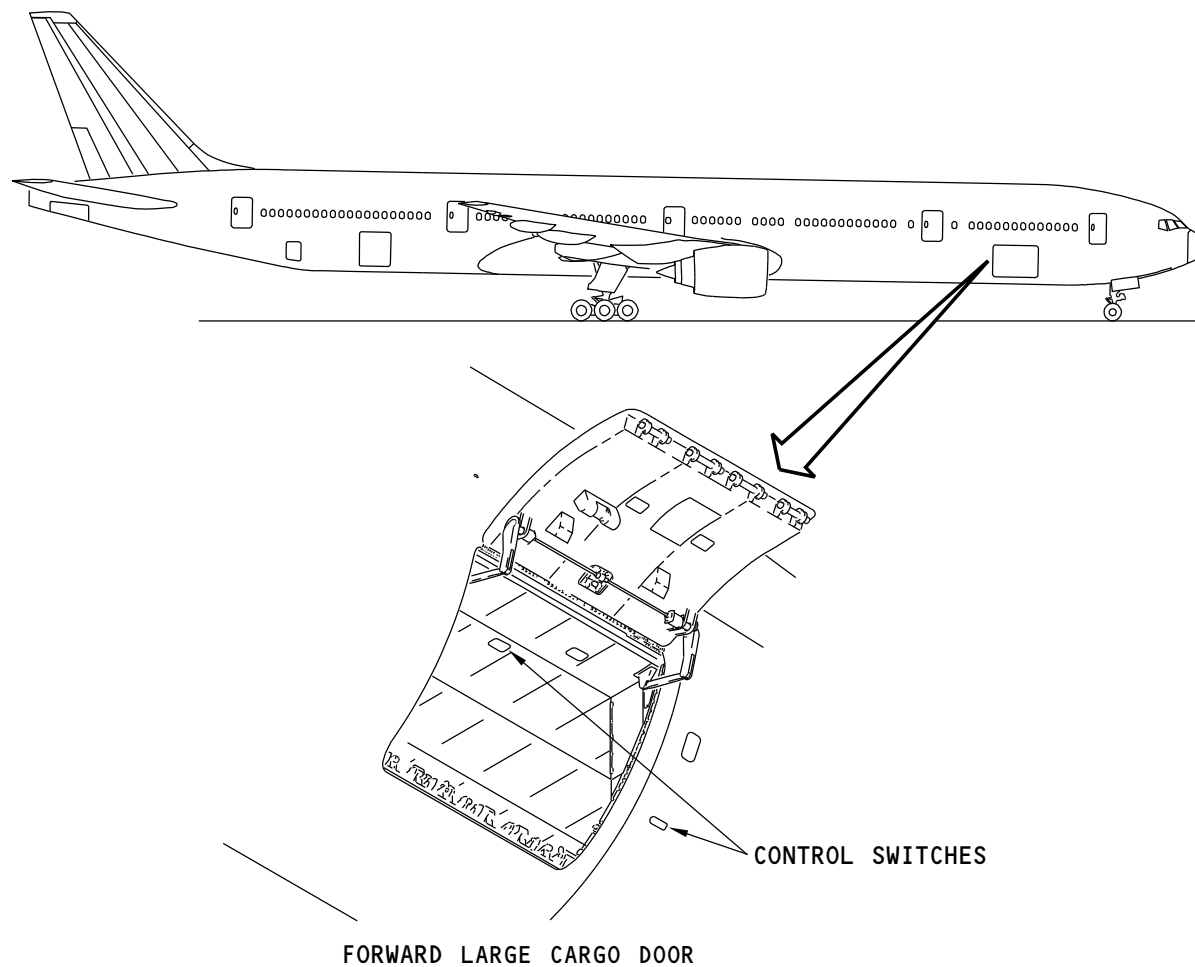
**General Description**

The large cargo door provides a clear opening of 106 inches (269.2 cm) wide and 67 inches (170.2 cm) high. The dimensions of the door lets cargo handlers load and unload pallets and containers.

The door is a non-plug type of door. Door latches hold the door closed against cabin pressure loads.

The door opens outward and upward. You can operate it electrically from inside or outside the cargo compartment. You can operate it manually from outside the cargo compartment.

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |



M43300 S000620920\_V1

**FORWARD LARGE CARGO DOOR SYSTEM - INTRODUCTION**

**52-34-00**

52-34-00-001

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



**FORWARD LARGE CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 1****Components on the Outside of the Door**

The lift manual drive sockets are on the upper, forward corner of the door.

The lock handle is on the lower half of the door, near the center. You can see the latch manual drive socket when you release the handle to the open position.

There are eight witness ports along the bottom edge of the door.

There are three sling attach points.

There are seven component access panels.

**Training Information Point**

Use the lock handle to lock and unlock the door. It connects to the lock mechanism on the inside of the door. Also, you enable electrical operation of the door when you release the lock handle.

The latch manual drive socket is for manual operation of the latch cams and pull-in hooks. It connects to the latch manual drive on the inside of the door.

The lift manual drive sockets are for manual operation of the lift mechanism. They connect to the lift manual drive on the inside of the door.

The witness ports let you make sure the door is latched and locked.

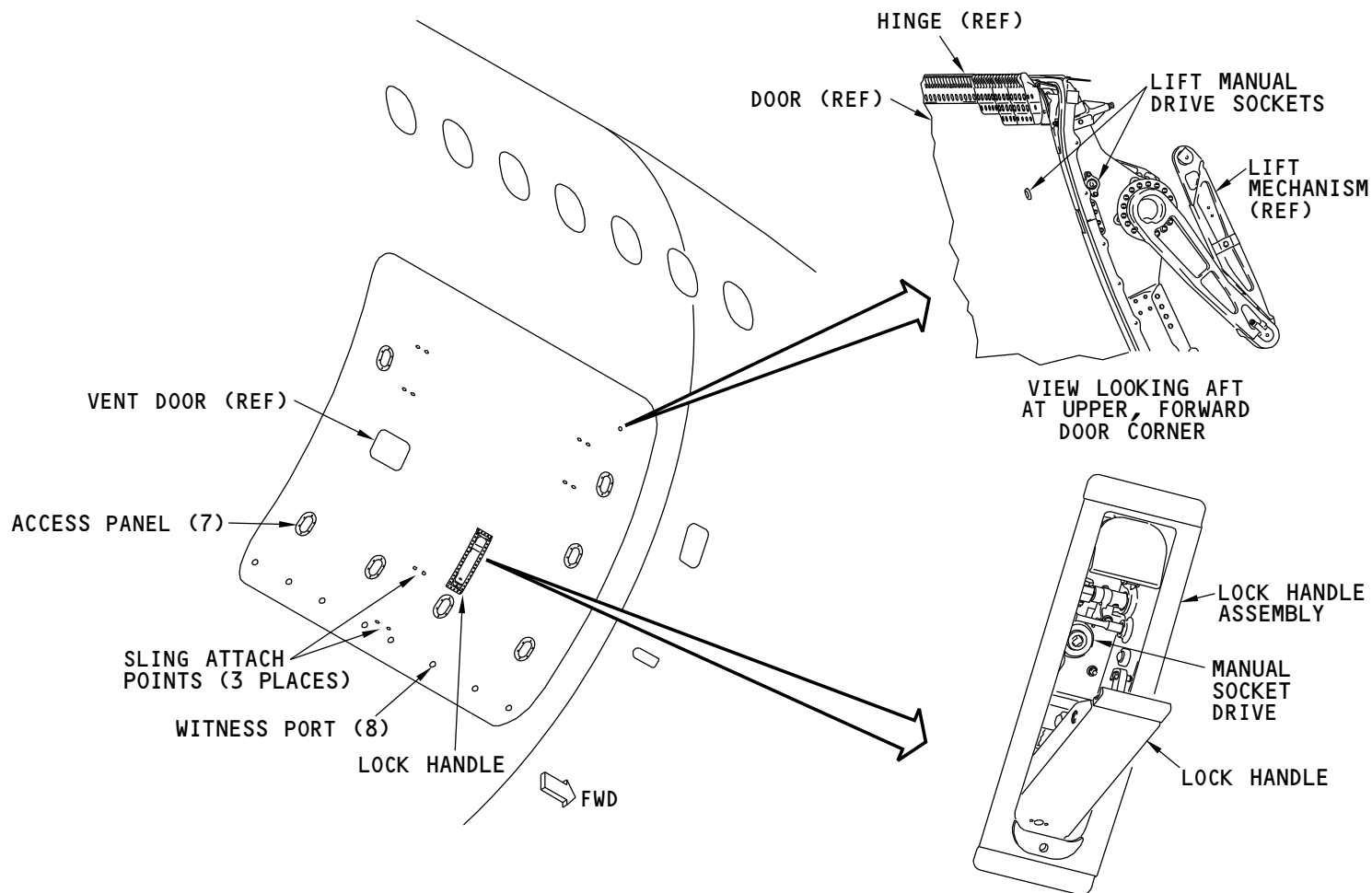
The sling attach points let you sue a sling to lift the door for removal and replacement. It also lets you lift the door open if the lift mechanism fails.

The access panels give access to failed components if the cargo door is not open.

**52-34-00****ARO ALL EFFECTIVITY**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43303 S000620923\_V2

FORWARD LARGE CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 1

52-34-00

52-34-00-002

ARO ALL

EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

## FORWARD LARGE CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 2

### Components on the Inside of the Door

The two lift mechanisms are near the upper forward and the upper aft corners of the cargo door.

The two rotary actuators are near the upper, forward and the upper, aft corners.

The lift manual drive is near the upper, forward corner.

The lift power unit is located near the top, center of the door.

The vent door is near the horizontal mid line of the cargo door, near the aft edge.

The two pull-in hooks are at the forward and aft edges.

The vent door mechanism goes from the vent door to the lock mechanism lock pawl on the aft latch cam.

The latch mechanism goes from the latch/hook power unit to the pull-in hooks and latch cams.

The latch power unit is on the lower part of the door, near the center.

Eight main latch cams are near the bottom of the door.

The lock mechanism goes from the lock handle to lock pawls on the eight main latch cams at the bottom of the door. The mechanism also goes to the vent door interlock.

The lock handle assembly is near the center of the cargo door.

The latch manual drive is goes from the lock handle assembly to the latch/hook power unit.

The graphic does not show the location of the proximity sensors that do control functions. Their locations are shown at the component level.

### General Description

This section describes the function of the components on the inside of the door as the door goes from the fully open position to the closed, latched, and locked position.

The motor in the lift power unit supplies the torque to lower the door. Torque can also come from the lift manual drive. The torque goes to the rotary actuators. The torque goes from the rotary actuators to the lift mechanism. The lift mechanism lowers the door.

Electric power shifts from the lift power unit to the latch power unit when a proximity sensor senses the door is completely lowered. Torque goes from the latch power unit to the pull-in hooks. Movement of the pull-in hooks around the pull-in pins on the door cutout, pulls the door into the latch position.

After the door is pulled in, torque goes from the latch power unit to all of the latch cams. The cams turn around the latch pins. This latches the door. When a proximity sensor senses the door is latched, electric power is removed from the power unit.

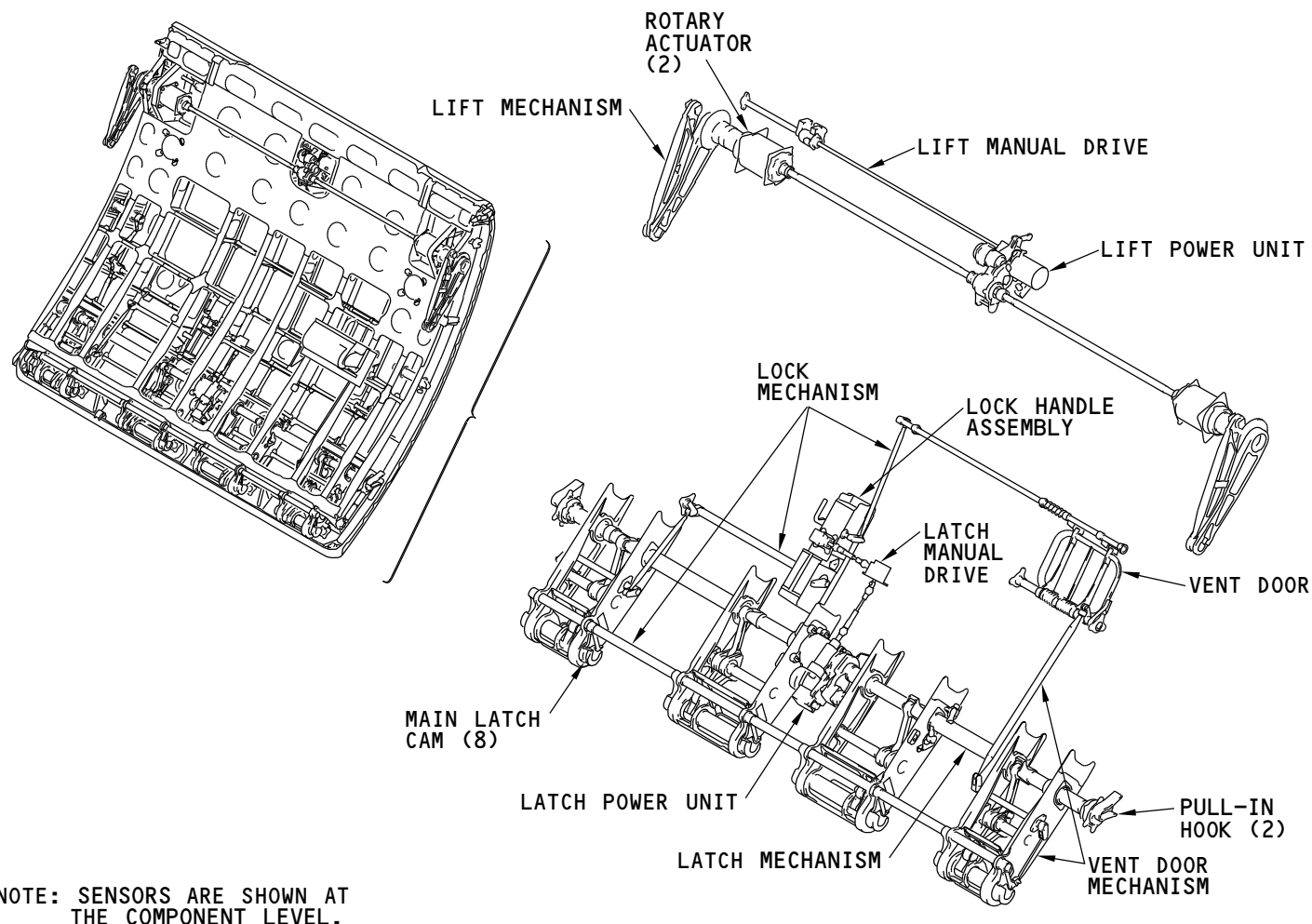
Movement of the lock handle on the outside of the door to the lock position, locks the door. The lock action causes these actions to occurs on the inside of the door:

- Proximity sensors cause electric door operation to be disabled
- The lock mechanism locks the main latch cams at the bottom of the door
- The lock mechanism holds the vent door closed.

# 52-34-00

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO



M43305 S000620925\_V1

### FORWARD LARGE CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 2

## 52-34-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FORWARD LARGE CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 3****Components on the Door Cutout**

The hinge is along the top of the door cutout.

The two pull-in pins are on the forward and aft side of the door cutout.

Eight main latch pins are along the bottom of the door cutout.

**Components Near the Door Cutout**

The internal door control switch is in the cargo compartment ceiling, near the forward end of the door cutout.

The P43, external cargo door control panel is forward of the door cutout.

**General Description**

The door rotates on the hinge as it opens and closes.

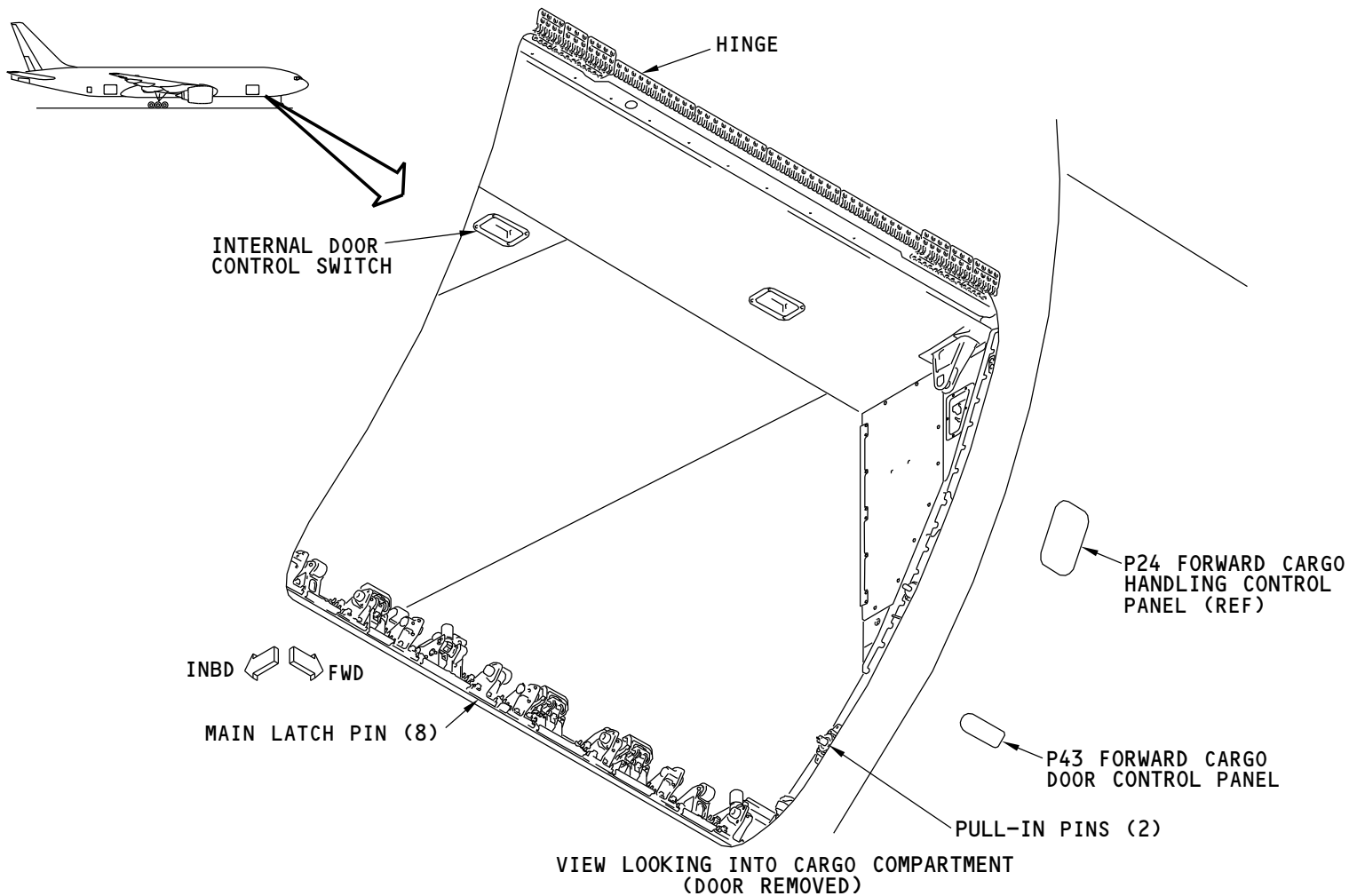
The pull-in hooks on the door engage the pull-in pins to pull the door into position where it can be latched.

The latch cams on the bottom of the door turn around the latch pins to latch the door.

**Training Information Point**

The internal cargo door control switch and the door control switch on the P43, external cargo door control panel, let you operate the door electrically.

|         |             |
|---------|-------------|
| ARO ALL | EFFECTIVITY |
|---------|-------------|



M43307 S000620927\_V1

FORWARD LARGE CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 3

52-34-00

52-34-00-004

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FORWARD LARGE CARGO DOOR SYSTEM - DOOR AND DOOR SEAL****Purpose**

The door and door seals close and seal the external access to the forward cargo compartment.

**Physical Description**

The door is a non-plug, structural load carrying type. It has inner and outer skins, beams, frames, intercostals, and a hinge.

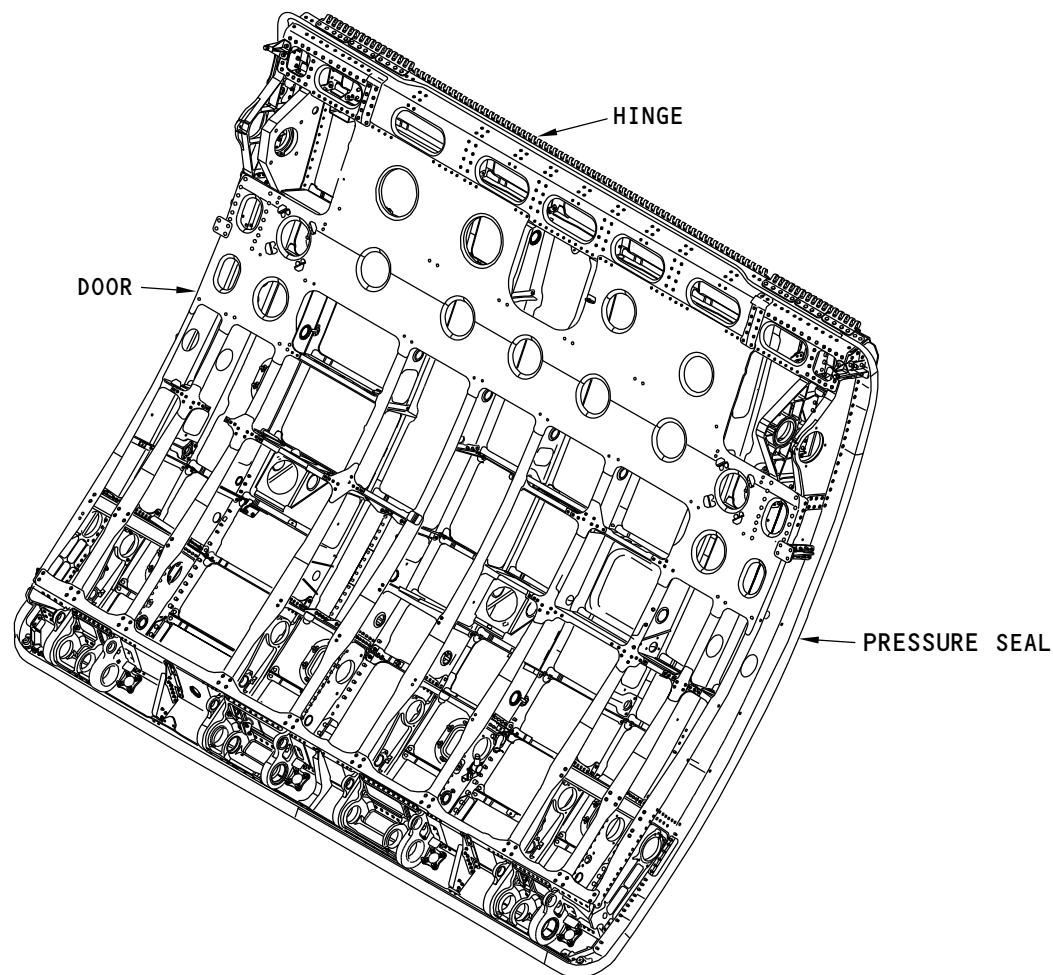
The blade type pressure seal goes completely around the edge of the door.

**Functional Description**

The continuous, piano-type hinge attaches the door to the airplane. Latches and locks hold the door closed. The door is part of the airplane load carrying structure when it is latched and locked.

The door pressure seal prevents air flow from the cargo compartment to the outside.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43308 S000620928\_V1

**FORWARD LARGE CARGO DOOR SYSTEM - DOOR AND DOOR SEAL**

**52-34-00**

52-34-00-005

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



**FORWARD LARGE CARGO DOOR SYSTEM - LIFT POWER UNIT****Purpose**

The lift power unit supplies the power to open and close the door.

**Physical Description**

The unit has these components:

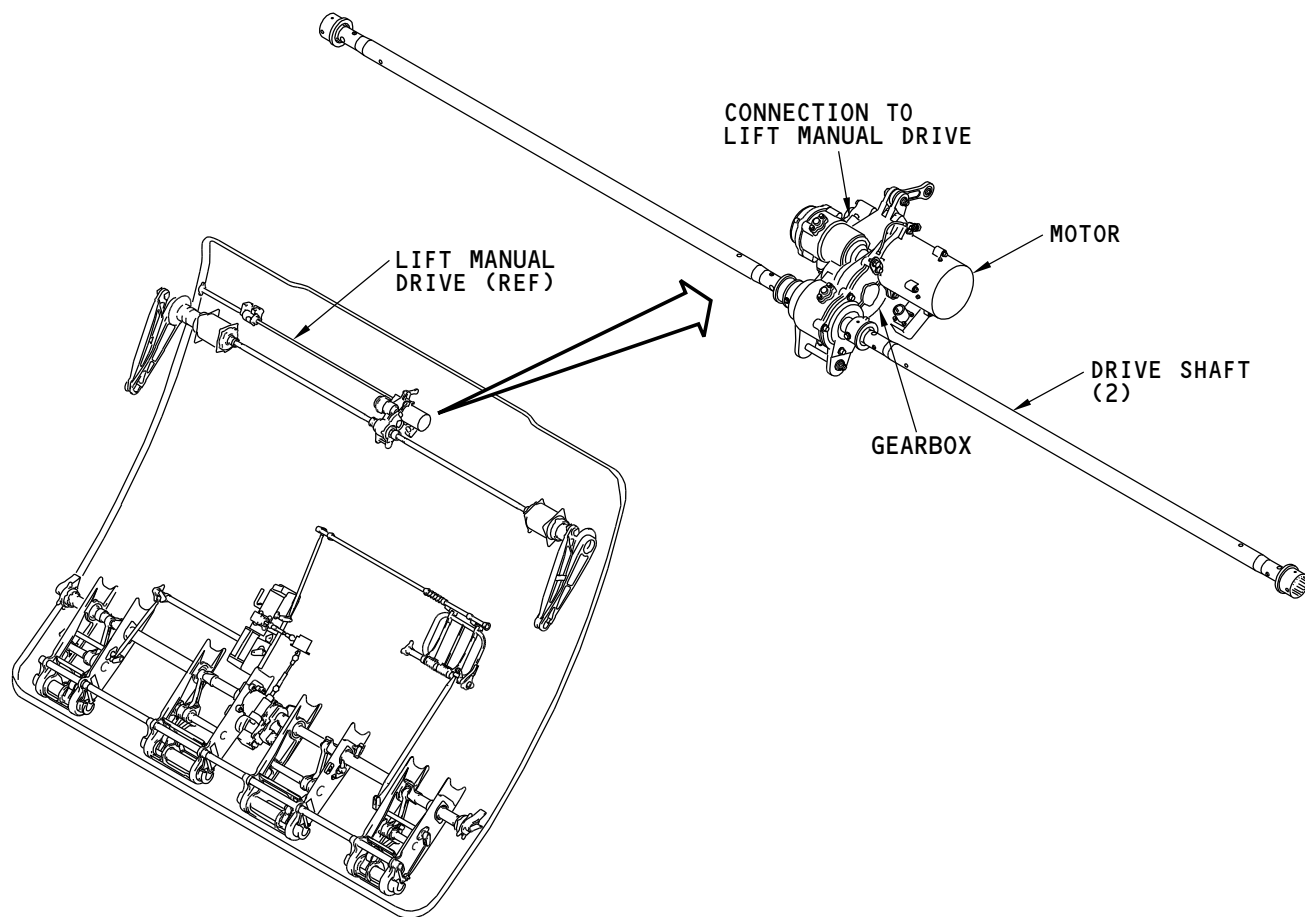
- Connection to the lift manual drive
- A three phase, 115/200v ac, 400 Hz motor with a brake
- A gear box
- Two drive shafts.

**Functional Description**

The motor supplies torque through the gearbox and torque tubes to rotary actuators.

The gearbox gets torque from the lift manual drive when you lift and lower the door manually.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43310 S000620930\_V1

**FORWARD LARGE CARGO DOOR SYSTEM - LIFT POWER UNIT**

**52-34-00**

52-34-00-006

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**FORWARD LARGE CARGO DOOR SYSTEM - LIFT MANUAL DRIVE****Purpose**

The lift manual drive lets you manually lift and lower the door.

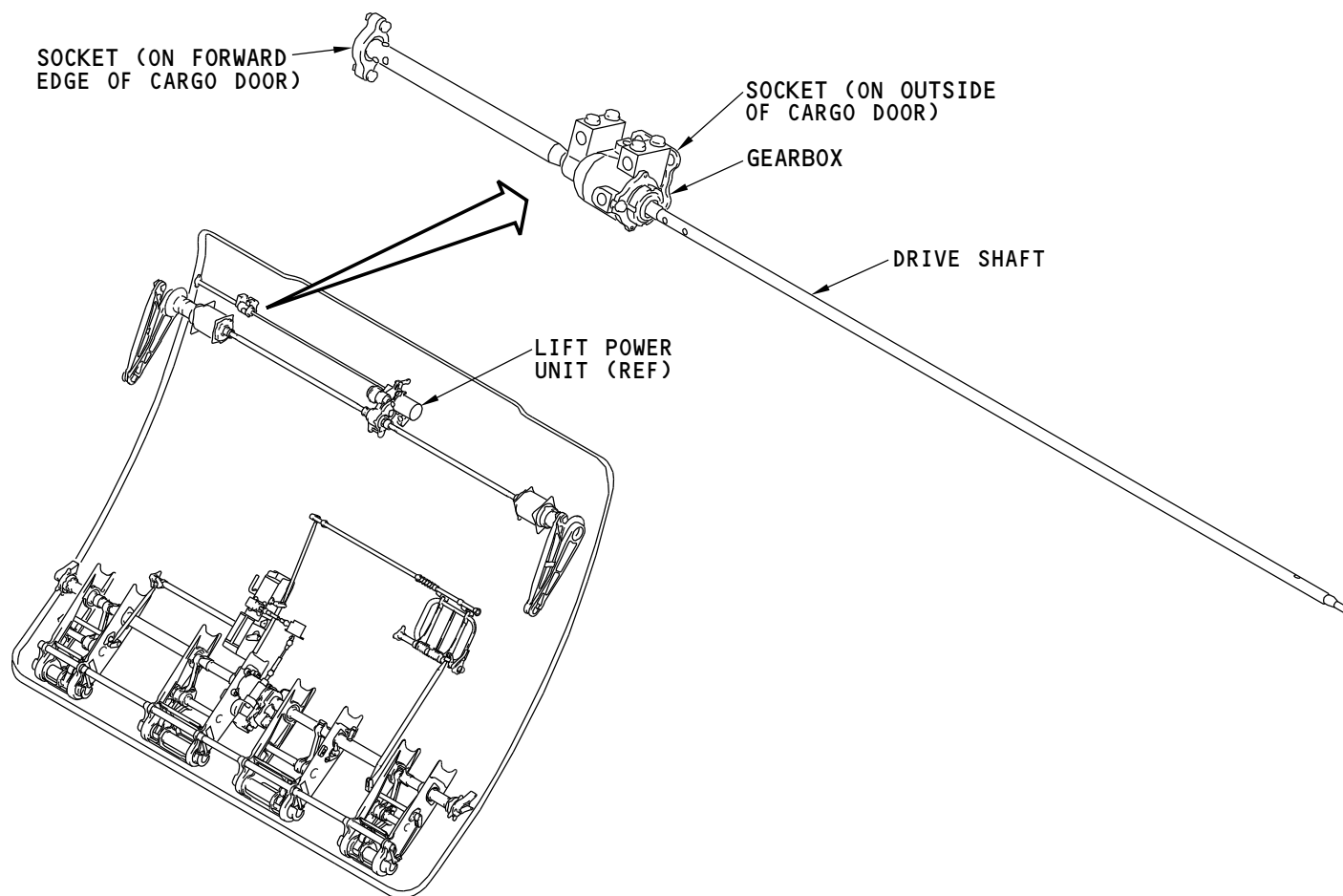
**Physical Description**

The lift manual drive has two 3/8-inch square drive sockets. A drive shaft goes from the socket on the forward edge of the door, through a gear box, to the lift power unit. A short shaft connects the socket on the outside of the door to the gear box.

**Functional Description**

The lift manual drive receives torque through the sockets. The torque goes from the sockets, through the gear box and torque tubes, to the lift power unit.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



**FORWARD LARGE CARGO DOOR SYSTEM - LIFT MANUAL DRIVE**

M43312 S000620932\_V1

52-34-00-007

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

**52-34-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FORWARD LARGE CARGO DOOR SYSTEM - ROTARY ACTUATOR****Purpose**

The two rotary actuators transmit torque from the lift power unit torque tubes to the door lift mechanisms.

**Physical Description**

The actuator has these parts:

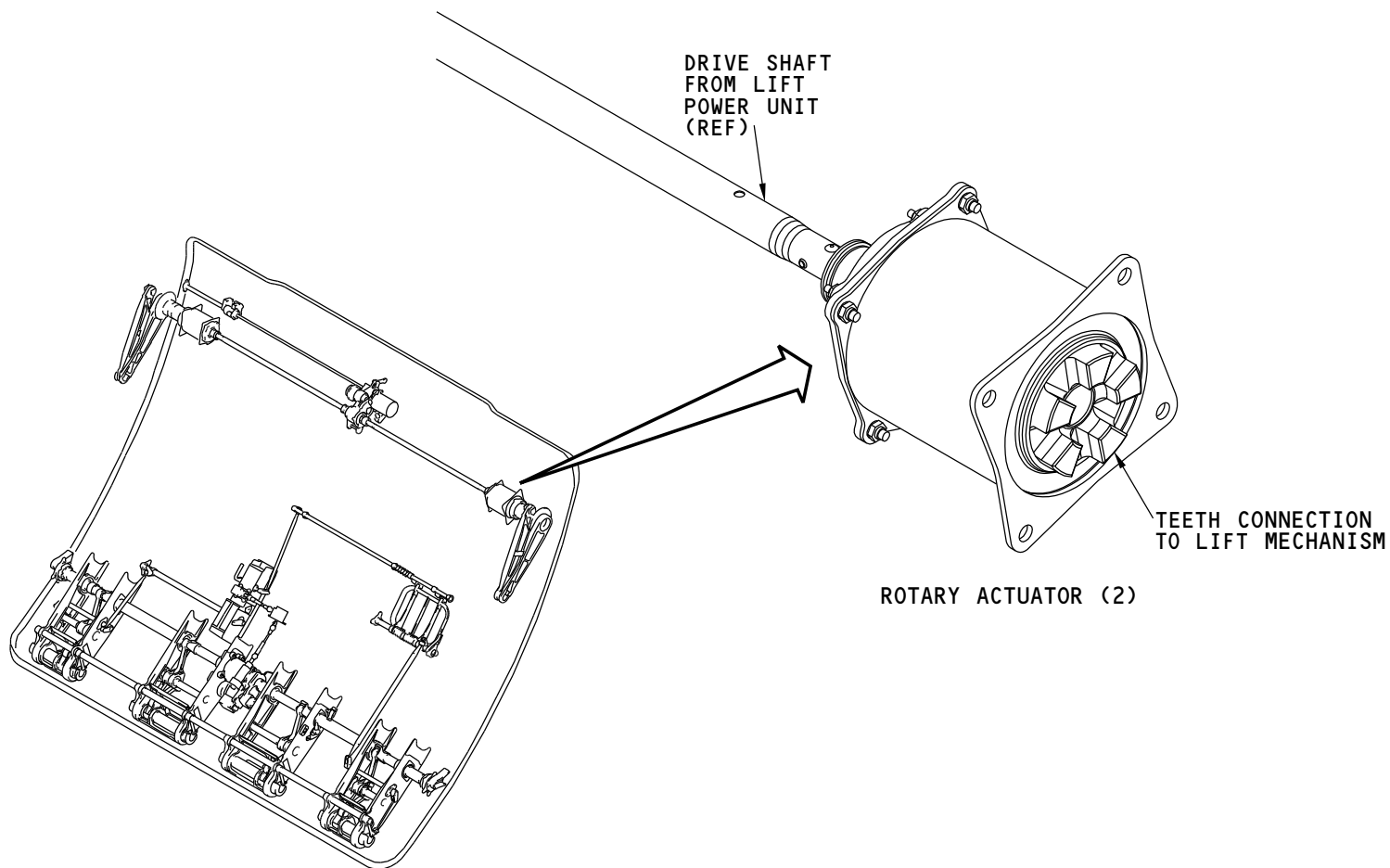
- A dog coupling to the lift drive mechanism
- Three planetary gear stages (internal)
- A no-back (internal).

**Functional Description**

The gears of the actuator reduce the rotation rate from the lift power unit. The teeth transmits torque into the lift mechanism. The free play in the teeth connection lets the door move a small amount without torque from the lift power unit. This lets the latch mechanism operate.

The no-back inside each actuator stops door movement toward closed when you remove power from the lift power unit.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



FORWARD LARGE CARGO DOOR SYSTEM - ROTARY ACTUATOR

M43314 S000620934\_V1

52-34-00-008

ARO ALL EFFECTIVITY

**52-34-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FORWARD LARGE CARGO DOOR SYSTEM - LIFT MECHANISM****Purpose**

The lift mechanisms supply the motion that lifts and lowers the door.

**Physical Description**

Each lift mechanism has a drive arm and a drive link. One end of the drive arm has a short shaft with a teeth connection to the rotary actuator. The other end is a pivot connection to the drive link. The drive link connects to the door cutout structure.

**Functional Description**

The lift mechanism takes the rotary motion of the rotary actuator and changes it into motion that lifts and lowers the door.

**Training Information Point**

If the door fails to open because of a problem with the lift mechanism, lift power drive unit, or rotary actuator, it may be necessary to remove the fasteners at the joint between the drive arm and the drive link at the forward and aft sides of the door. There are two panels (not shown) on the outside of the door that provide access to the fasteners.



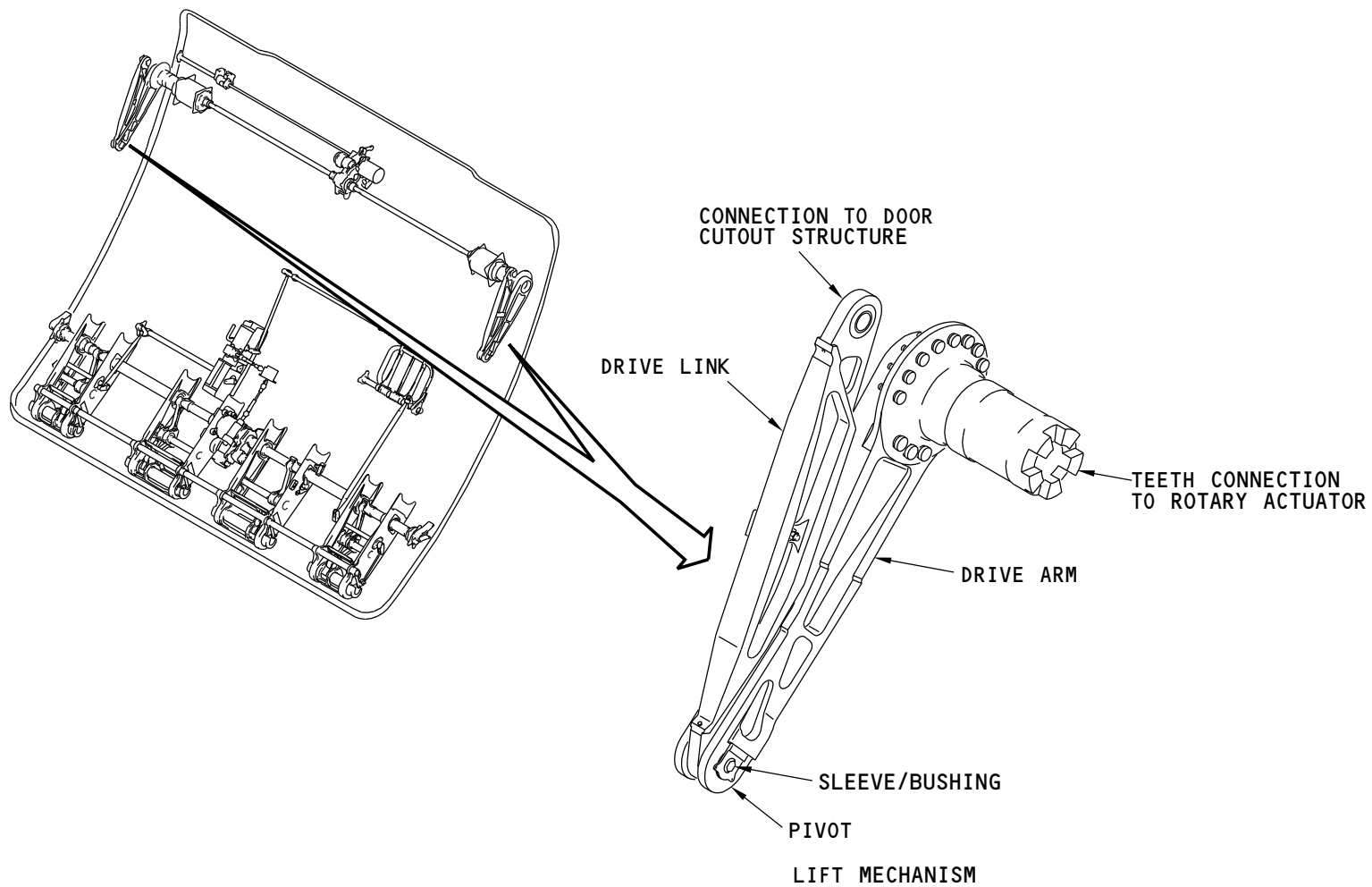
BLOCK THE DOOR AT THE LOWER EDGE. THE DOOR CAN OPEN SUDDENLY WITH GREAT FORCE AND INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

**52-34-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43316 S000620936\_V1

**FORWARD LARGE CARGO DOOR SYSTEM - LIFT MECHANISM**

**52-34-00**

52-34-00-009

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



**FORWARD LARGE CARGO DOOR SYSTEM - LATCH POWER UNIT****Purpose**

The latch power unit supplies torque to the latch cams and the pull-in hooks.

**Physical Description**

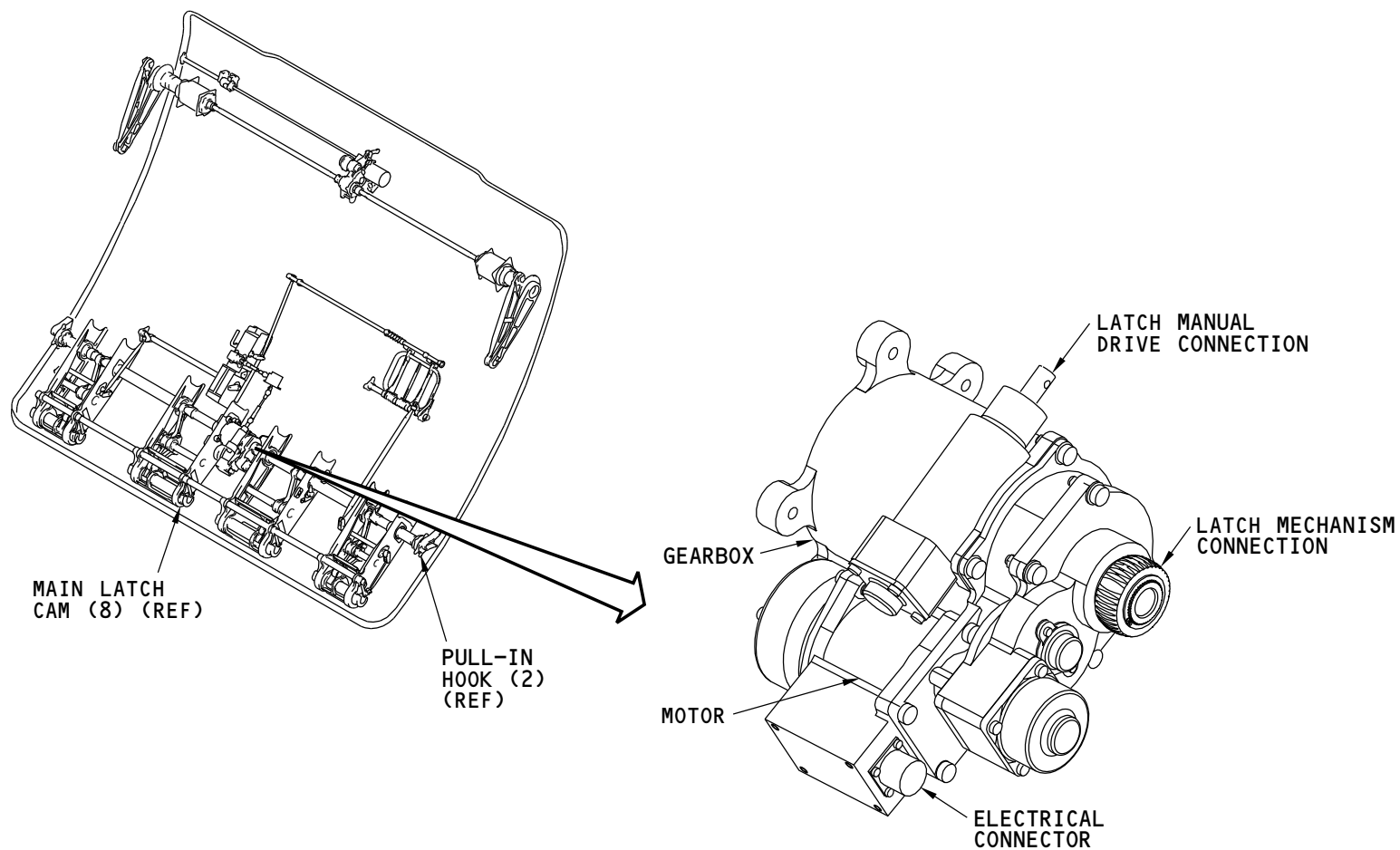
The latch power unit has these components:

- Latch manual drive connection
- Latch mechanism connection
- Electric power connection
- Three phase, 115/200v ac, 400 Hz motor
- Gear box
- Clutch (internal).

**Functional Description**

The motor supplies torque to the gearbox. The latch manual drive can also supply the torque. The clutch limits the torque supplied to the pull-in hooks and latch cams. This prevents damage when the latch cams or pull-in hooks are not able to move.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



FORWARD LARGE CARGO DOOR SYSTEM - LATCH POWER UNIT

M43318 S000620938\_V1

52-34-00-010

ARO ALL EFFECTIVITY

**52-34-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FORWARD LARGE CARGO DOOR SYSTEM - LATCH MANUAL DRIVE****Purpose**

The latch manual drive lets you manually unlatch and latch the cargo door.

**Physical Description**

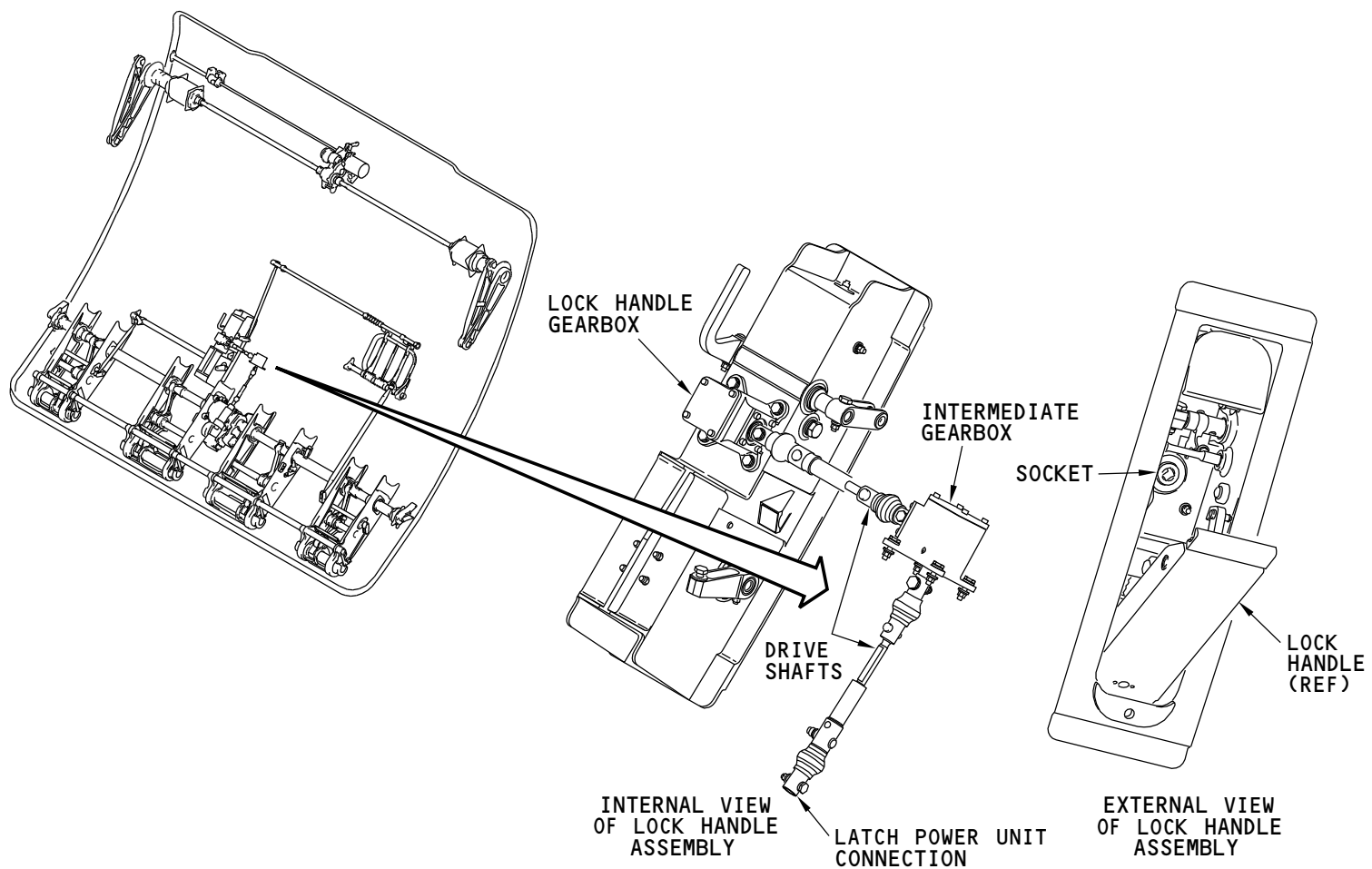
The manual drive has these components:

- Two gear boxes
- Two drive shafts
- A 3/8 inch drive socket
- A latch power unit connection.

**Functional Description**

The latch manual drive receives torque through the drive socket located in the lock handle housing. Torque goes from the sockets, through the gear boxes and shafts, to the latch power unit.

|         |             |
|---------|-------------|
| ARO ALL | EFFECTIVITY |
|---------|-------------|



M43320 S000620940\_V2

**FORWARD LARGE CARGO DOOR SYSTEM - LATCH MANUAL DRIVE**

**52-34-00**

52-34-00-011

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FORWARD LARGE CARGO DOOR SYSTEM - LATCH MECHANISM****Purpose**

The latch mechanism transmits torque from the latch power unit to the latch cams and pull-in hooks.

**Physical Description**

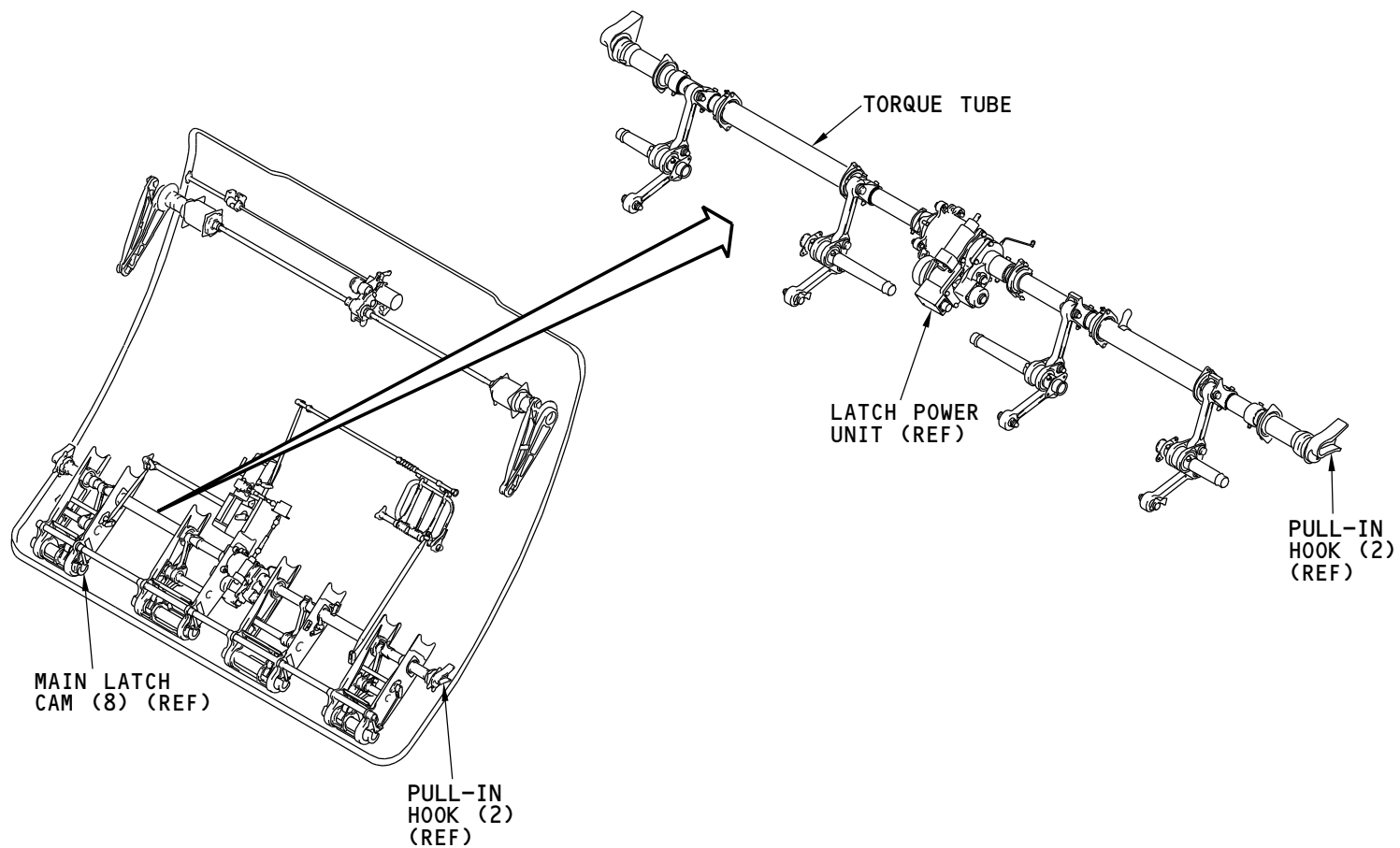
The mechanism has these components:

- Torque tubes
- Push rods
- Bellcranks
- Drive links
- Pull-in hooks
- Main latch cams.

**Functional Description**

The torque tubes transmit torque directly to the pull-in hooks. The push rods, bellcranks, and drive links transmits torque from the torque tube to the latch cams.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43322 S000620942\_V1

**FORWARD LARGE CARGO DOOR SYSTEM - LATCH MECHANISM**

52-34-00-012

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

**52-34-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FORWARD LARGE CARGO DOOR SYSTEM - PULL-IN HOOKS AND PINS****Purpose**

The pull-in hooks and pins pull the door into the position where the cargo door can latch.

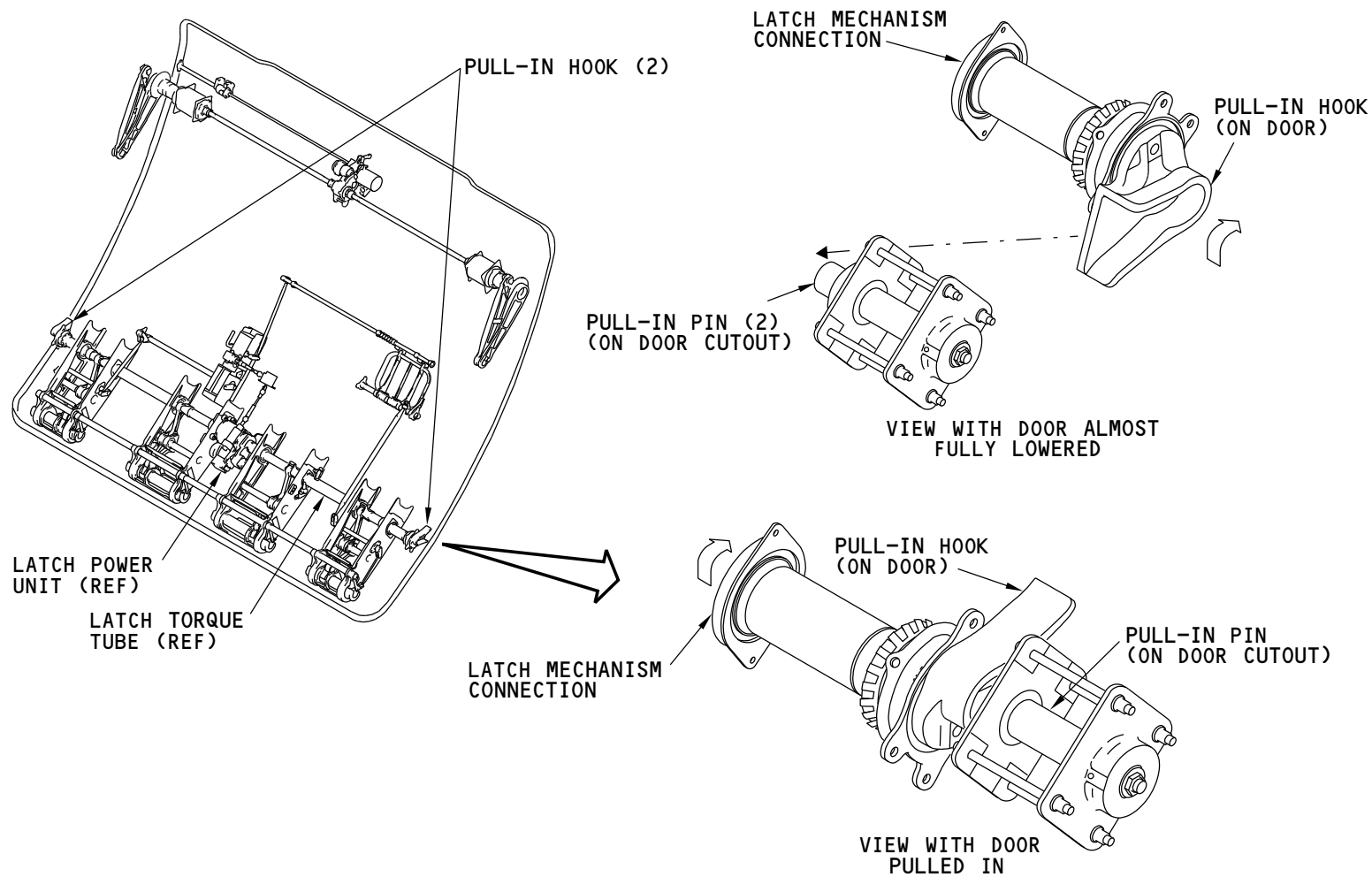
**Location**

The pull-in hooks are on the ends of the latch torque tubes. The pins are on the forward and aft sides of the door cutout.

**Functional Description**

The pull-in function begins when the door is lowered fully. In this position, the open end of the hook is around the pin. The latch power unit turns the pull-in hooks. As the hook turns around the pin, it pulls the door into the position where the latch cams can turn around the latch pins.

|         |             |
|---------|-------------|
| ARO ALL | EFFECTIVITY |
|---------|-------------|



M43325 S000620944\_V1

### FORWARD LARGE CARGO DOOR SYSTEM - PULL-IN HOOKS AND PINS

## 52-34-00

52-34-00-013

ARO ALL

EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



**FORWARD LARGE CARGO DOOR SYSTEM - LATCH CAMS AND LATCH PINS****Purpose**

The latch cams and latch pins hold the cargo door closed.

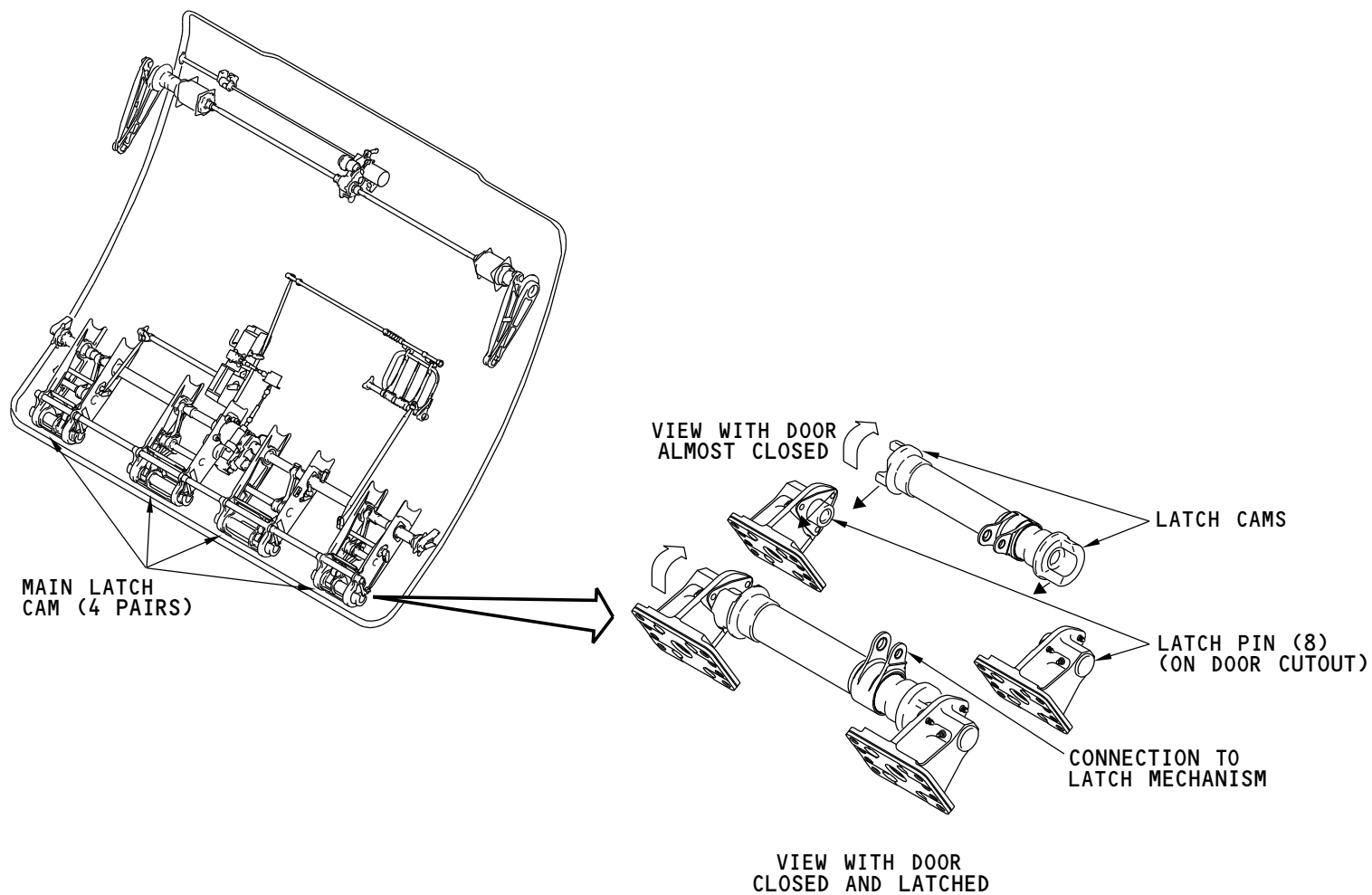
**Location**

The eight main latch cams are in pairs along the bottom of the door. The eight main latch pins are along the bottom of the door cutout.

**Functional Description**

Linkage connects the latch cams to latch mechanism torque tubes. Torque from the power unit turns the latch cams around the latch pins. In the rotated position the cams cannot move away from the pins. This latches the door.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43327 S000620946\_V1

**FORWARD LARGE CARGO DOOR SYSTEM - LATCH CAMS AND LATCH PINS**

**52-34-00**

52-34-00-014

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FORWARD LARGE CARGO DOOR SYSTEM - LOCK HANDLE MECHANISM****Purpose**

The lock handle controls the movement of the lock mechanism.

**Physical Description**

The lock handle mechanism has these components:

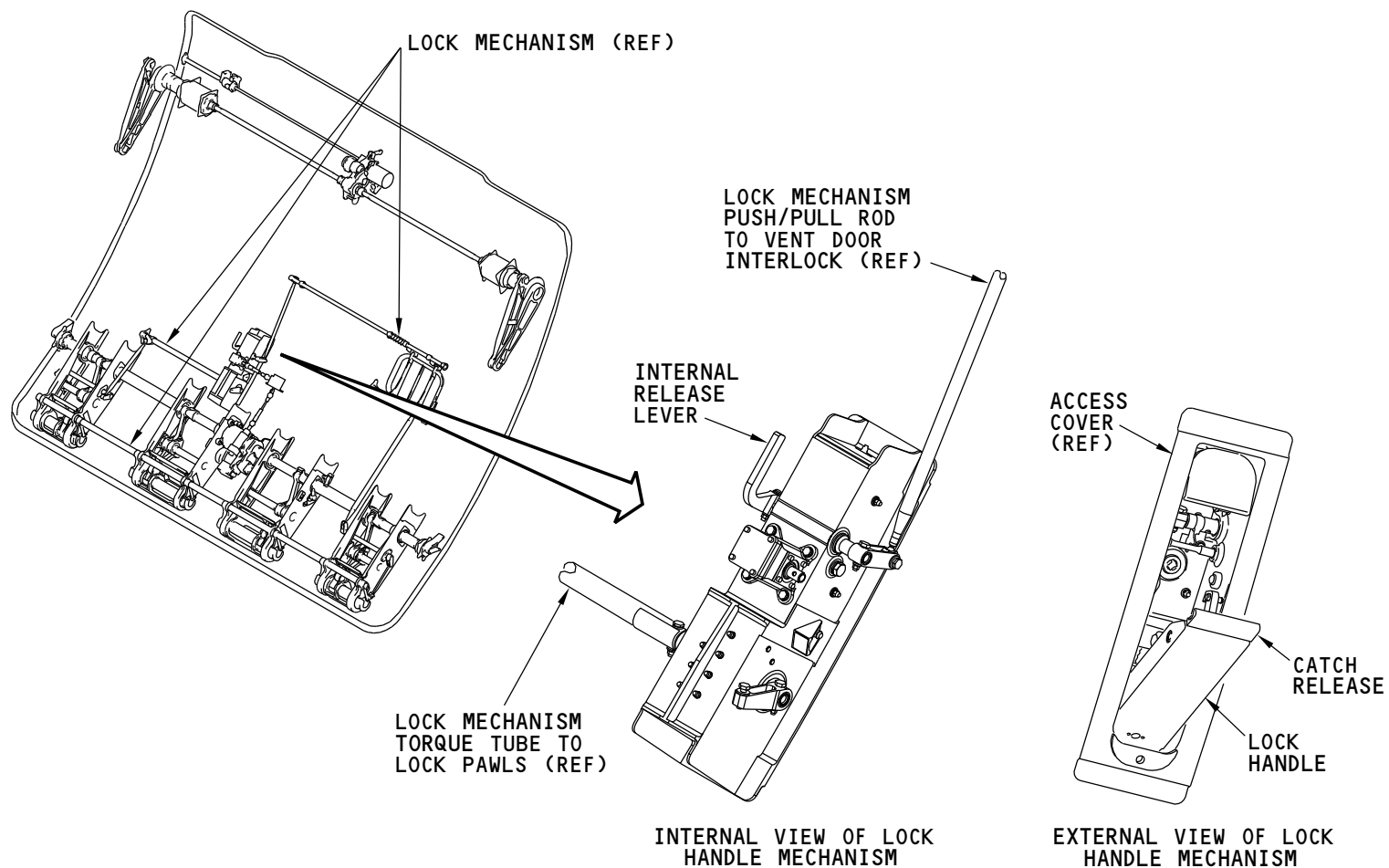
- Internal release lever
- Catch release
- Handle
- Spring (internal)
- Connection to the lock mechanism.

The handle is spring loaded to the open position. The catch holds it closed.

**Functional Description**

A pull outboard on the catch or a pull inboard on the internal catch release, releases the lock handle. The spring moves the handle. The connections to the lock mechanism transmits the movement to the lock pawls.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43329 S000620948\_V1

**FORWARD LARGE CARGO DOOR SYSTEM - LOCK HANDLE MECHANISM**

52-34-00-015

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

**52-34-00**

**FORWARD LARGE CARGO DOOR SYSTEM - LOCK MECHANISM****Purpose**

The lock mechanism holds the large cargo door main latch cams in the latched position and the vent door closed.

**Physical Description**

The lock mechanism has these components:

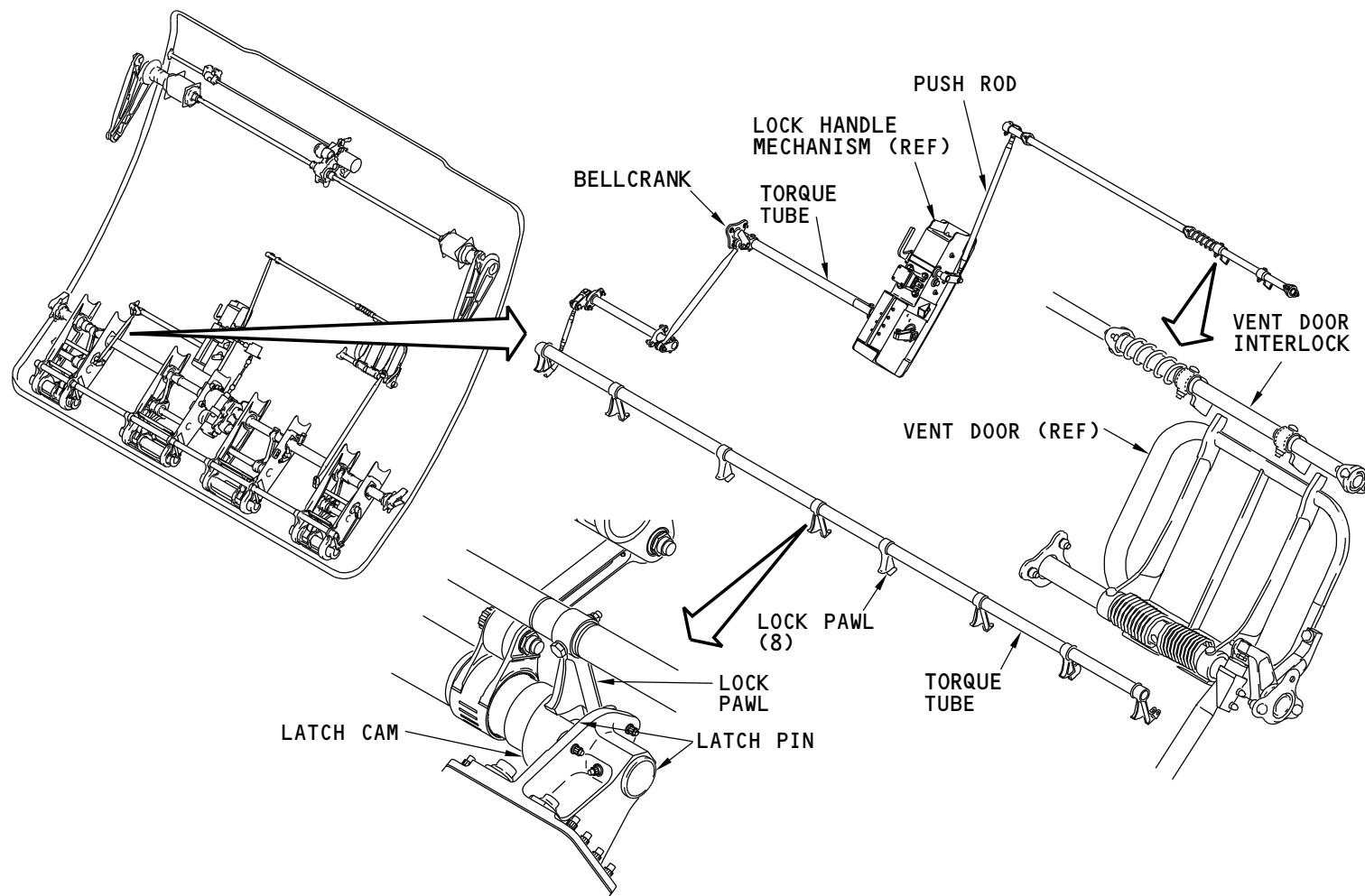
- Bellcranks
- Torque tubes
- Push rods
- Vent door interlock
- Torque tubes
- Lock pawls.

**Functional Description**

The lock mechanism does two things when you move the lock handle to the lock position.

The mechanism transmits the movement of the lock handle to the lock pawls. The lock pawls move to a position that will not let the main latch cams turn.

The mechanism also transmits the movement of the lock handle to the vent door interlock. The vent door interlock keeps the vent door closed if the airplane is ditched in water.



M43331 S000620950\_V1

### FORWARD LARGE CARGO DOOR SYSTEM - LOCK MECHANISM

## 52-34-00

52-34-00-016

ARO ALL

EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FORWARD LARGE CARGO DOOR SYSTEM - VENT DOOR AND VENT DOOR MECHANISM****Purpose**

The vent door and vent door mechanism prevent damage from pressurization when you open the cargo door.

**Physical Description**

The door has stops and connections to the torque shaft. The mechanism has these components:

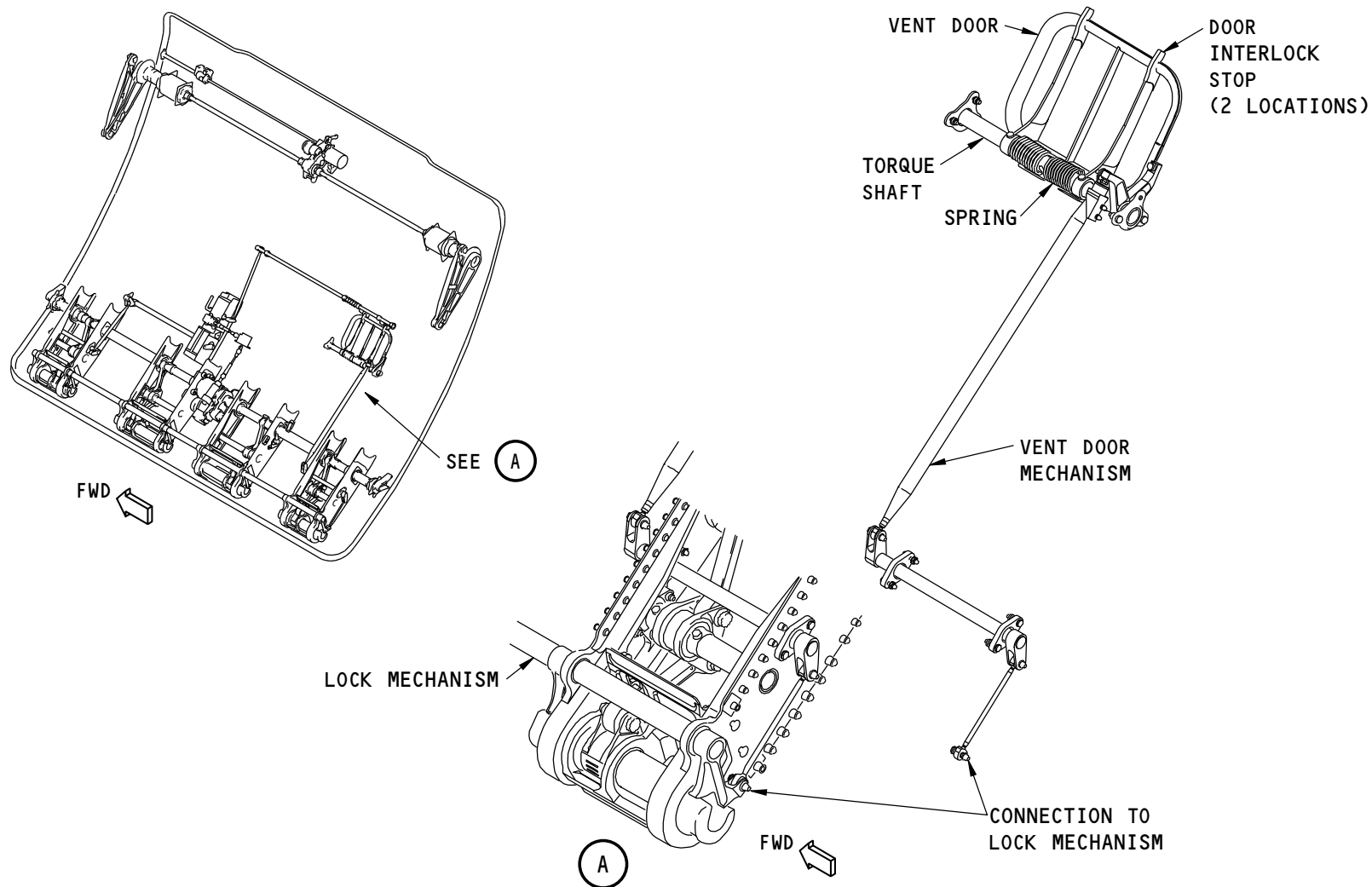
- A spring that pulls the vent door open
- A torque shaft
- Linkage that connects the vent door to the lock mechanism.

**Functional Description**

The door and vent door mechanism have two functions.

One function is to release air pressure from inside the airplane before you open the cargo door. When the lock mechanism moves to the unlock position, it causes the vent door mechanism to pull the vent door open. This releases any air pressure that remains.

The second function is to keep the cargo door locked if there is too much pressure to let you open the cargo door safely. Pressure on the vent door prevents movement of the vent door mechanism. This stops movement of the lock mechanism. You cannot unlock and open the cargo door.



M43423 S000620952\_V2

**FORWARD LARGE CARGO DOOR SYSTEM - VENT DOOR AND VENT DOOR MECHANISM**

**52-34-00**

52-34-00-017

| ARO ALL      | EFFECTIVITY |
|--------------|-------------|
| D633W101-ARO |             |



**FORWARD LARGE CARGO DOOR SYSTEM - CONTROL SWITCHES****Purpose**

Control switches let you operate the door electrically.

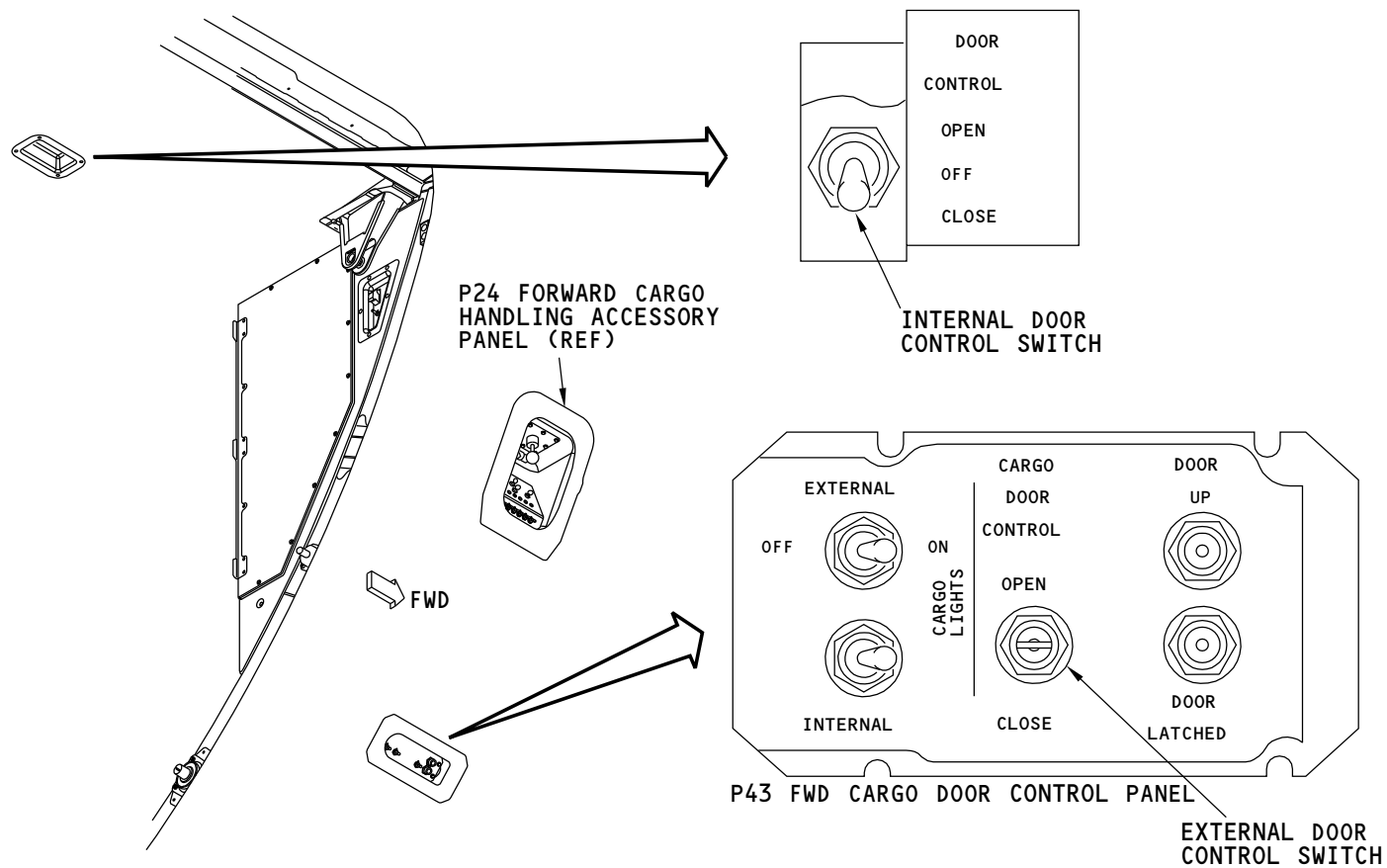
**Physical Description**

The internal and external toggle type door control switches are spring-loaded.

**Functional Description**

The switches let you operate the door electrically, after the door is unlocked. You can use either switch. The internal switch has priority over the external switch.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43333 S000620953\_V1

FORWARD LARGE CARGO DOOR SYSTEM - CONTROL SWITCHES

52-34-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FORWARD LARGE CARGO DOOR SYSTEM - PROXIMITY SENSORS****Purpose**

Proximity sensors supply door and door mechanism position information to the proximity sensor electronics unit (PSEU) for door operational control and door status indications.

**Physical Description**

The sensors are electrical devices that work with metal targets.

**Functional Description**

These sensors are for door operation control:

- Door up
- Door latched
- Door unlatched
- Latch range
- Handle unlocked.

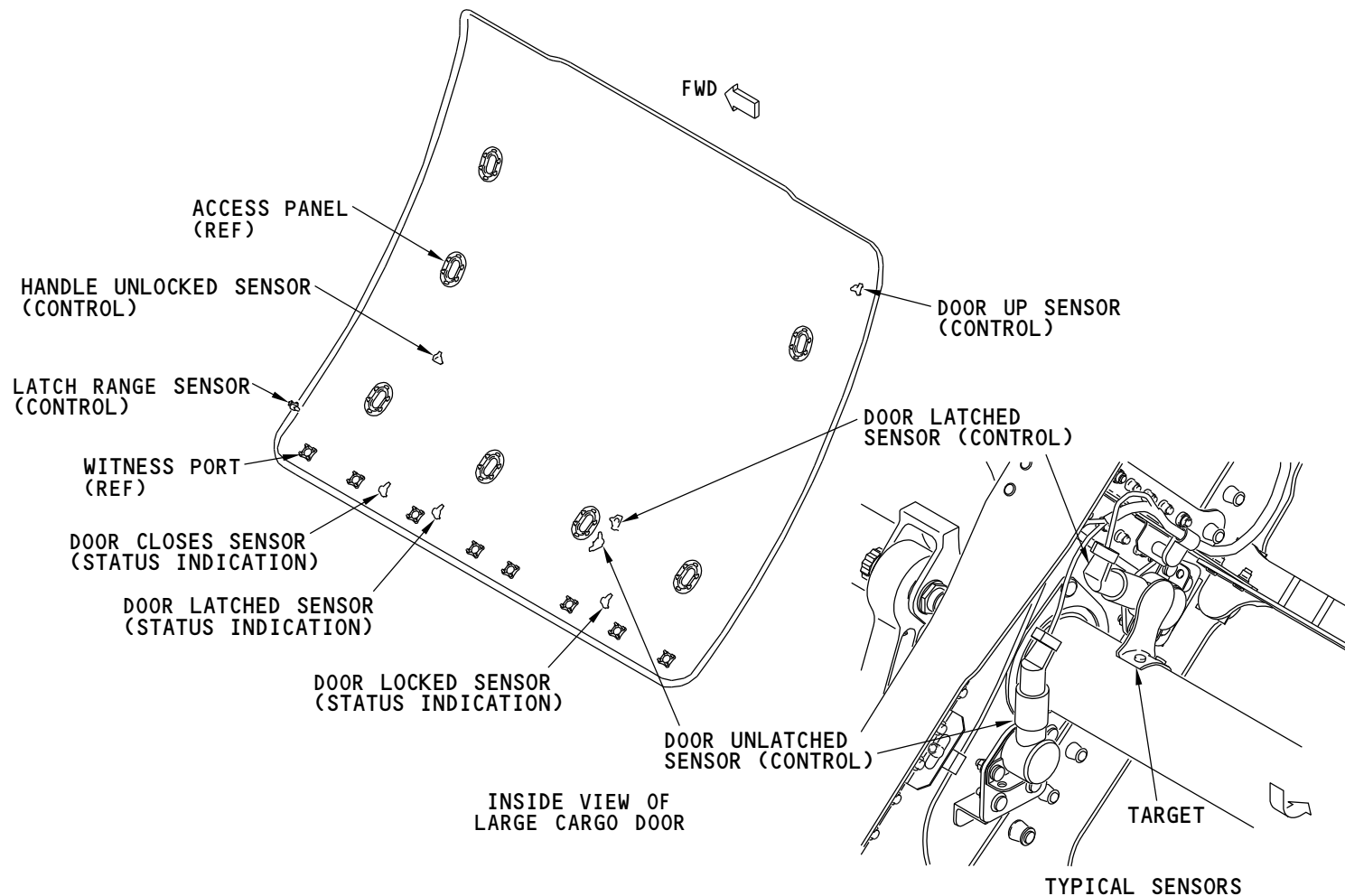
The door status indication sensors are:

- Door closed
- Door latched
- Door locked.

See the door warning system section for more information on the door status sensors (SECTION 52-71).

Each sensor has a related target. The sensor senses if the target is near or far. The position information goes to the PSEU.

The door operation control sensors tell the PSEU the position of the door and door mechanisms. The PSEU uses the information to control the cargo door operation and the door control panel indication lights.



M43334 S000620954\_V2

**FORWARD LARGE CARGO DOOR SYSTEM - PROXIMITY SENSORS**

**52-34-00**

52-34-00-019

| ARO ALL      | EFFECTIVITY |
|--------------|-------------|
| D633W101-ARO |             |



THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-34-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

## FORWARD LARGE CARGO DOOR SYSTEM - ELECTRICAL OPERATION

### General

The large cargo door uses power from the ground handling bus for electrical operation.



DO NOT OPERATE THE DOOR IN WINDS MORE THAN 40 KNOTS. DO NOT LET THE DOOR STAY OPEN IN WINDS MORE THAN 65 KNOTS. INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.



DO NOT OPEN THE DOOR WHEN THE AIRPLANE IS PRESSURIZED. INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

### Controls

The cargo door lock handle is on the outside of the door. There is an internal and an external release.

The external door control switch is on P43. The internal door control switch is in the cargo compartment ceiling.

### Displays and Indications

Indication lights on the external control panel supply door operation information.

Witness ports on the door let you see the position of the door latches and locks.

### Unlock Operation



STAY AWAY FROM THE PATH OF THE LOCK HANDLE. THE LOCK HANDLE IS SPRING-LOADED TO OPEN WHEN YOU PULL THE CATCH RELEASE LEVER AND INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

Release the lock handle to unlock the cargo door. If the vent door opens, the cargo door has unlocked. This enables cargo door electric operation.

### Unlatch and Open Operation



MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE PATH OF THE DOOR ON THE EXTERNAL SIDE. THE DOOR OPENS OUTBOARD AND UP. INITIALLY, THE DOOR MOVES DOWN BELOW THE DOOR CUTOUT. THE MOVEMENT OF THE DOOR CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.



DO NOT OPERATE THE DOOR ELECTRICALLY MORE THAN 2 FULL OPEN/CLOSE CYCLES WITHIN 5 MINUTES. DAMAGE TO THE LIFT MECHANISM CAN OCCUR.

Move either the external or the internal switch to the open position. The door unlatches.

Continue to hold the switch in the open position. The door moves to the full up position. When it stops. The amber door up light on the P43 comes on.

### Close and Latch Operation



MAKE SURE THE E/E EQUIPMENT DOORS ARE CLOSED ON THE SIDES OF THE DOOR CUTOUT BEFORE YOU CLOSE THE DOOR. THE CARGO DOOR CAN CAUSE DAMAGE TO OPEN E/E EQUIPMENT DOORS WHEN IT CLOSES.

Move either the external or the internal switch to the close position. The amber door up light goes off when the door leaves the full up position.

Continue to hold the switch in the close position. The door goes to the full down position. Then it latches. The green door closed and latched light comes on.

### Lock Operation

Close the lock handle. Make sure that the vent door closes. The door is locked if the vent door is closed.

# 52-34-00

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |



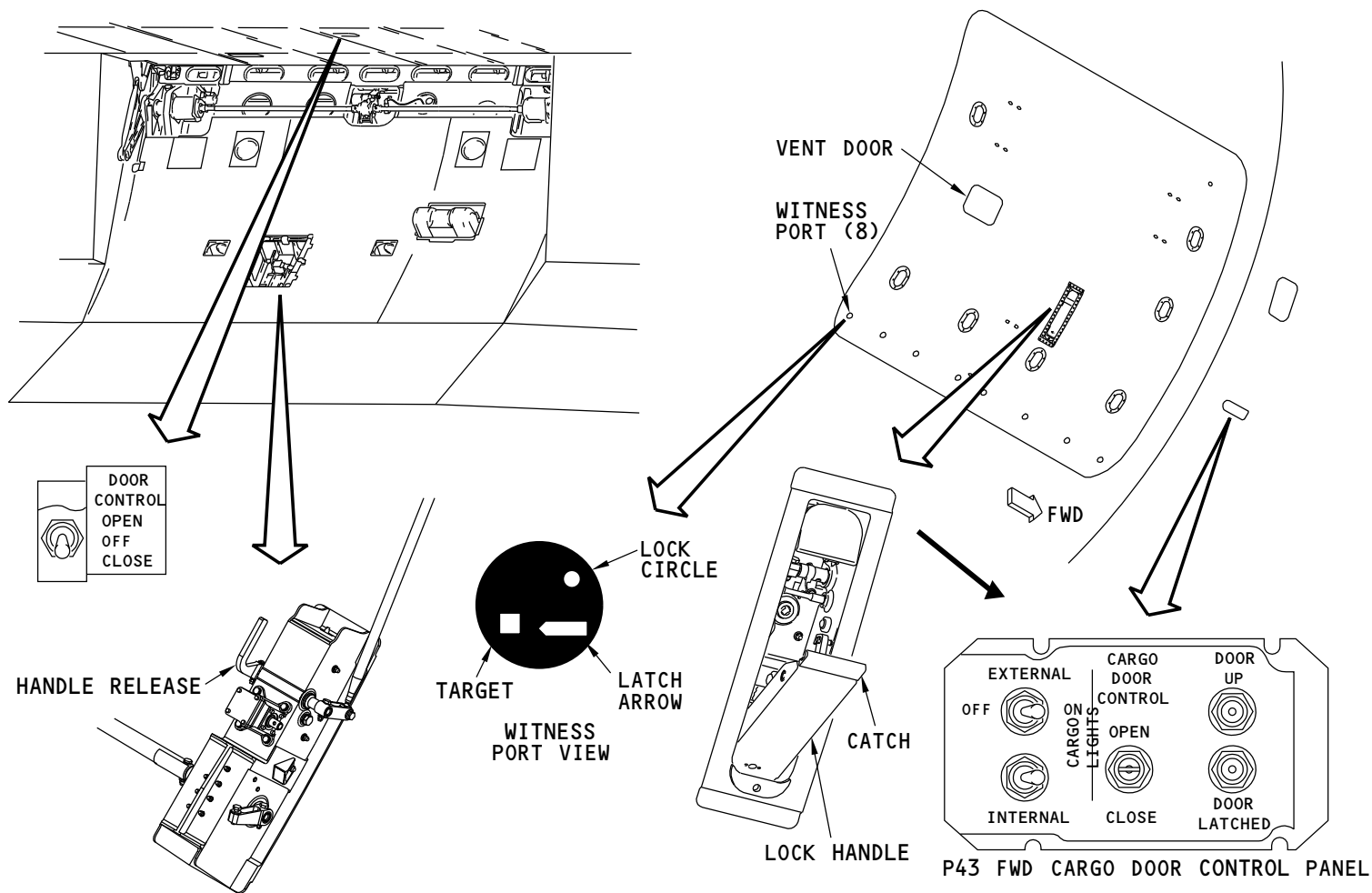
## FORWARD LARGE CARGO DOOR SYSTEM - ELECTRICAL OPERATION

Training Information Point

Look through each witness port along the bottom edge of the door for latch and lock indications. The latch and lock components are black. The indications and target are yellow.

The door is latched if the indication arrow on each latch cam points to the target on each latch fitting. The door is locked if you see all of the door locked circle on each lock pawls.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43335 S000620955\_V1

**FORWARD LARGE CARGO DOOR SYSTEM - ELECTRICAL OPERATION**

**52-34-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details





THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-34-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

## FORWARD LARGE CARGO DOOR SYSTEM - MANUAL OPERATION

### General

Use a 3/8 inch drive tool for manual door operations.



DO NOT OPERATE THE DOOR IN WINDS MORE THAN 40 KNOTS. DO NOT LET THE DOOR STAY OPEN IN WINDS MORE THAN 65 KNOTS. INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.



DO NOT OPEN THE DOOR WHEN THE AIRPLANE IS PRESSURIZED. INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

### Controls

The cargo door lock handle covers the latch manual drive socket. Release lock handle to access the socket.

There are two lift manual drive sockets on the upper, forward corner of the cargo door.

### Indications

Witness ports along the bottom edge of the door let you see if the door is latched and locked.

### Unlock and Unlatch Operations



STAY AWAY FROM THE PATH OF THE LOCK HANDLE. THE LOCK HANDLE IS SPRING-LOADED TO OPEN WHEN YOU PULL THE CATCH RELEASE LEVER AND INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

Release the lock handle. If the vent door opens, the door is unlocked.

Insert the drive tool into the latch manual drive socket. Turn it in the unlatch direction. The door is unlatched when it moves outboard to where you can move it freely a small distance inboard and outboard, approximately 120 full turns.

**NOTE:** The lower edge of door will move 2-3 inches (5-8 cm) outboard.

### Lift and Lower Operations



DO NOT LET THE POWER DRIVE UNIT OPERATE WITH TORQUE LIMITER SLIPPAGE FOR MORE THAN 5 SECONDS. DAMAGE TO THE POWER DRIVE UNIT CAN OCCUR. DO NOT OPERATE THE MANUAL DRIVE AT A SPEED FASTER THAN 500 RPM OR A TORQUE OF MORE THAN 110 POUNDS-INCHES. DAMAGE TO THE MANUAL DRIVE CAN OCCUR.

Insert the drive tool in the lift manual drive socket on the outside of the door. Turn it in the open direction, approximately 320 full turns. When the door is open sufficiently, move the tool to the lift manual drive socket on the forward edge of the door. Turn it in the open direction until the door is in the full up position, approximately 1150 full turns.

**NOTE:** It is usual for the door to stop at the low point of its travel.



MAKE SURE THE E/E EQUIPMENT DOORS ARE CLOSED ON THE SIDES OF THE DOOR CUTOUT BEFORE YOU CLOSE THE DOOR. THE CARGO DOOR CAN CAUSE DAMAGE TO OPEN E/E EQUIPMENT DOORS WHEN IT CLOSSES.

Reverse the operations to lower the door.

### Latch and Lock Operations

Insert the drive tool in the latch manual drive socket. Turn it in the latch direction. The door latches.

Close the handle. Check that the vent door closes. The door is locked if the vent door is closed.

# 52-34-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



## FORWARD LARGE CARGO DOOR SYSTEM - MANUAL OPERATION

Training Information Point

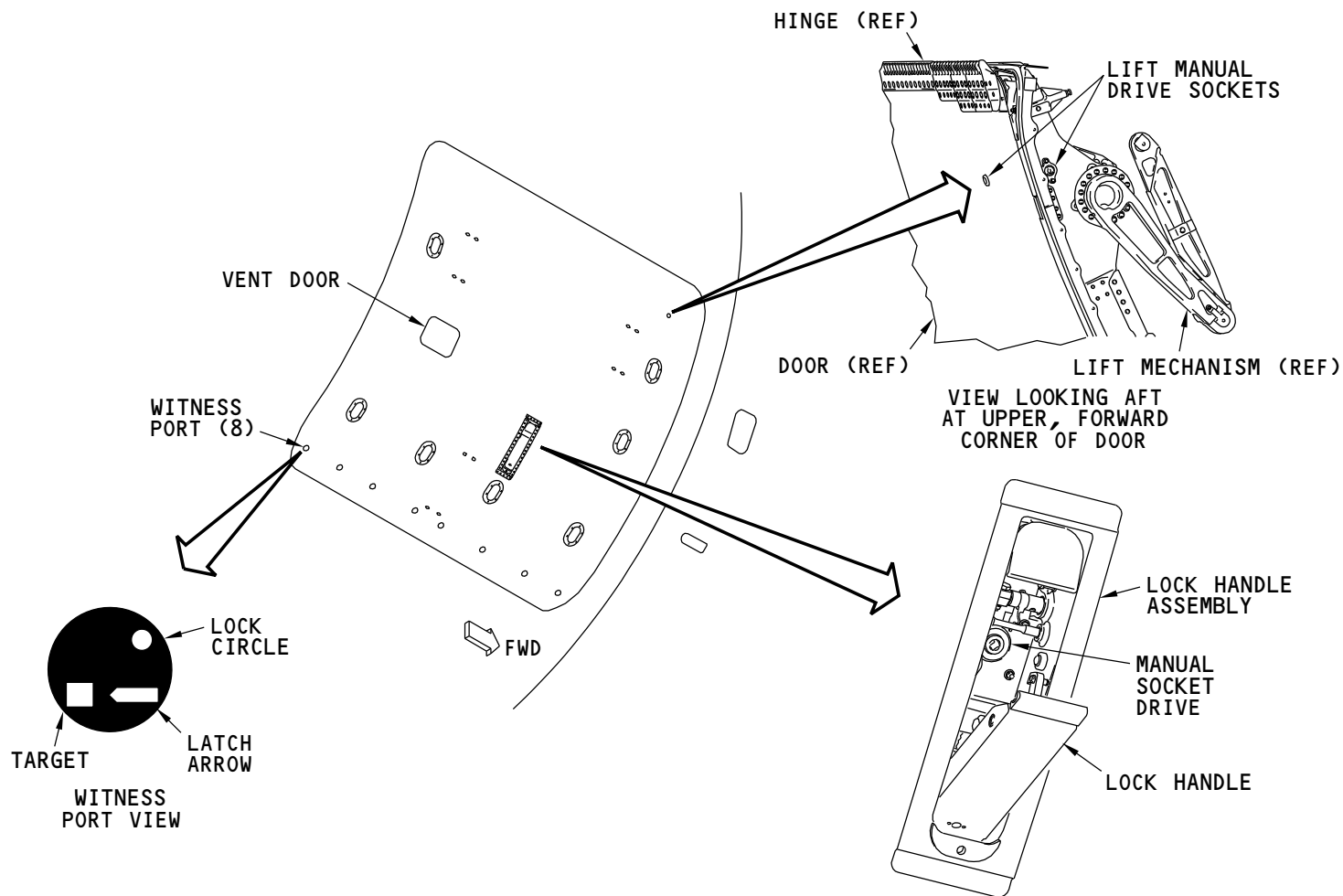
The door must be unlatched before you lift the door with the lift manual drive.

The door must be full down before you can latch the door with the latch manual drive.

Look through each witness ports along the bottom edge of the door for latch and lock indications. The latch and lock components are black. The indications and target are yellow.

The door is latched if the indication arrow on each latch cam points to the target on each latch fitting. The door is locked if you see all of the door locked circle on each lock pawls.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43336 S000620956\_V1

**FORWARD LARGE CARGO DOOR SYSTEM - MANUAL OPERATION**

**52-34-00**

52-34-00-021

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

## FORWARD LARGE CARGO DOOR SYSTEM - MECHANICAL FUNCTIONAL DESCRIPTION

### Unlock

Release of the cargo door lock handle starts the unlock operation.

The lock handle connects to the lock mechanism. The lock mechanism has a vent door interlock. Open movement of the lock handle releases the vent door from the vent door interlock. The vent door spring moves the vent door open if the airplane is not pressurized.

The vent door connects to the vent door mechanism. The vent door mechanism connects to the lock mechanism. Movement of the vent door and the lock handle cause the lock mechanism to turn. It moves the lock pawls away from the latch cams. This unlocks the door.

### Unlatch

With the door unlocked, the latch power unit or the latch manual drive can unlatch the door. The dog drive connection between the rotary actuator and the lift mechanism leaves free play sufficient to let the pull-in hooks move the door.

Torque goes through linkage to the latch cams and pull-in hooks. The latch cams turn from around the latch pins. The pull-in hooks turn from around the pull-in pins. The door is unlatched and can open.

### Lift and Lower Movement

With the door unlatched, the hinge power unit or the lift manual drive supplies torque. Power goes through the rotary actuators and lift mechanism to move the door up and down.

### Latch

The latch power unit or the latch manual drive can latch the door when the door is fully down. The dog drive connection between the rotary actuator and the lift mechanism leaves free play sufficient to let the pull-in hooks move the door.

Torque goes through linkage to the pull-in hooks, and the latch cams. The pull-in hooks turn around the pull-in pins. This pulls the door in to where the latch cams can turn around the latch pins. The door latches.

### Lock

Return of the lock handle to the close position locks the door. The movement of the handle moves the lock mechanism. The lock pawls move into a position that will not let the latch cams turn. Linkage from the lock mechanism to the vent door closes the vent door. Linkage from the lock handle moves the vent door interlock to a position that will not let the vent door open. The door is locked.

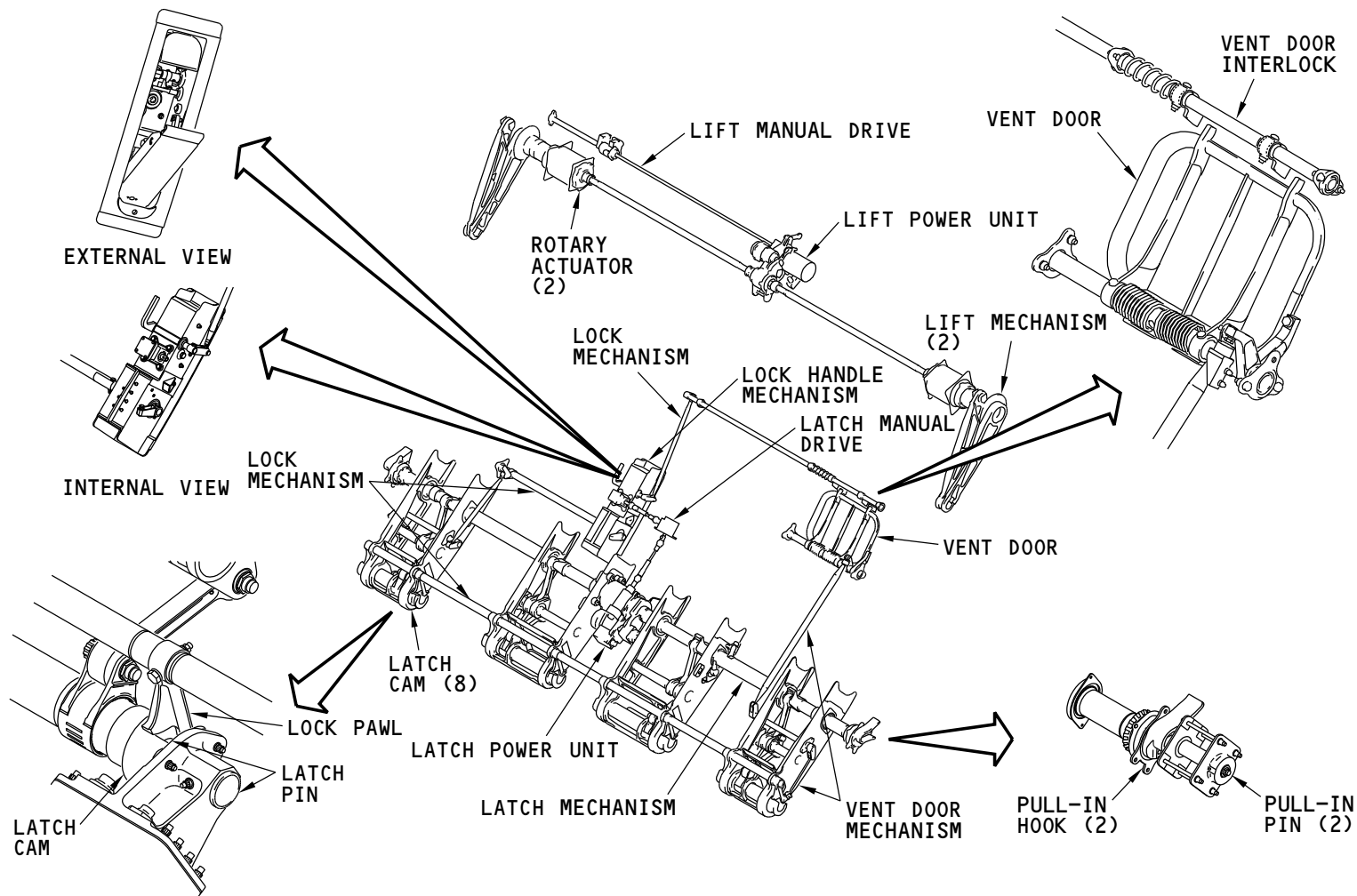
52-34-00

EFFECTIVITY

ARO ALL

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43338 S000620958\_V1

**FORWARD LARGE CARGO DOOR SYSTEM - MECHANICAL FUNCTIONAL DESCRIPTION**

52-34-00-022

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

**52-34-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FORWARD LARGE CARGO DOOR SYSTEM - ELECTRICAL FUNCTIONAL DESCRIPTION****General**

Sensors on the door give inputs to the proximity sensor electronics unit (PSEU). The PSEU uses the inputs to turn on door position indication lights, and enable door control relays.

The relays supply three phase power in specified configurations to power units on the door. The phase configuration controls whether a power unit opens or closes the door.

There are internal and external control switches. The internal switch has priority over the external switch.

**Unlock and Unlatch**

A full open door lock handle enables door operation. The PSEU uses inputs from the handle unlocked sensor and door unlatched sensor to enable the door control relay. Either control switch in the OPEN position energizes the relay. The relay configures the power phases so the latch power unit unlatches the door.

**Lift Movement**

The PSEU uses input from the door unlatched sensor and door up sensor to enable the hinge up relay. Either control switch in the OPEN position energizes the relay. The relay configures the power phases so the lift power unit moves the door up. The PSEU uses input from the door up sensor to open the hinge up relay, and turn on the door up light.

**Lower Movement**

The PSEU uses input from the door unlatched sensor and latch range sensor to enable the hinge down relay. Either the external or internal control switch in the CLOSE position energizes the relay. The relay configures the power phases so the lift power unit lowers the door.

The PSEU uses input from the door up sensor to turn off the door up light.

The PSEU uses input from the latch range sensor to open the hinge down relay.

**Latch and lock**

The PSEU uses input from the latch range sensor and handle unlocked sensor to enable the door latch relay. Either control switch in the CLOSE position energizes the relay. The relay configures the power phases so the latch power unit pulls in and latches the door. The PSEU uses input from the door latched sensor to open the door latch relay.

The PSEU uses input from the latch range sensor, door latched sensor, and handle unlocked sensor to turn on the door latched closed light.

When the lock handle is closed, the PSEU uses inputs from the handle unlocked sensor to turn off the door latched closed light.

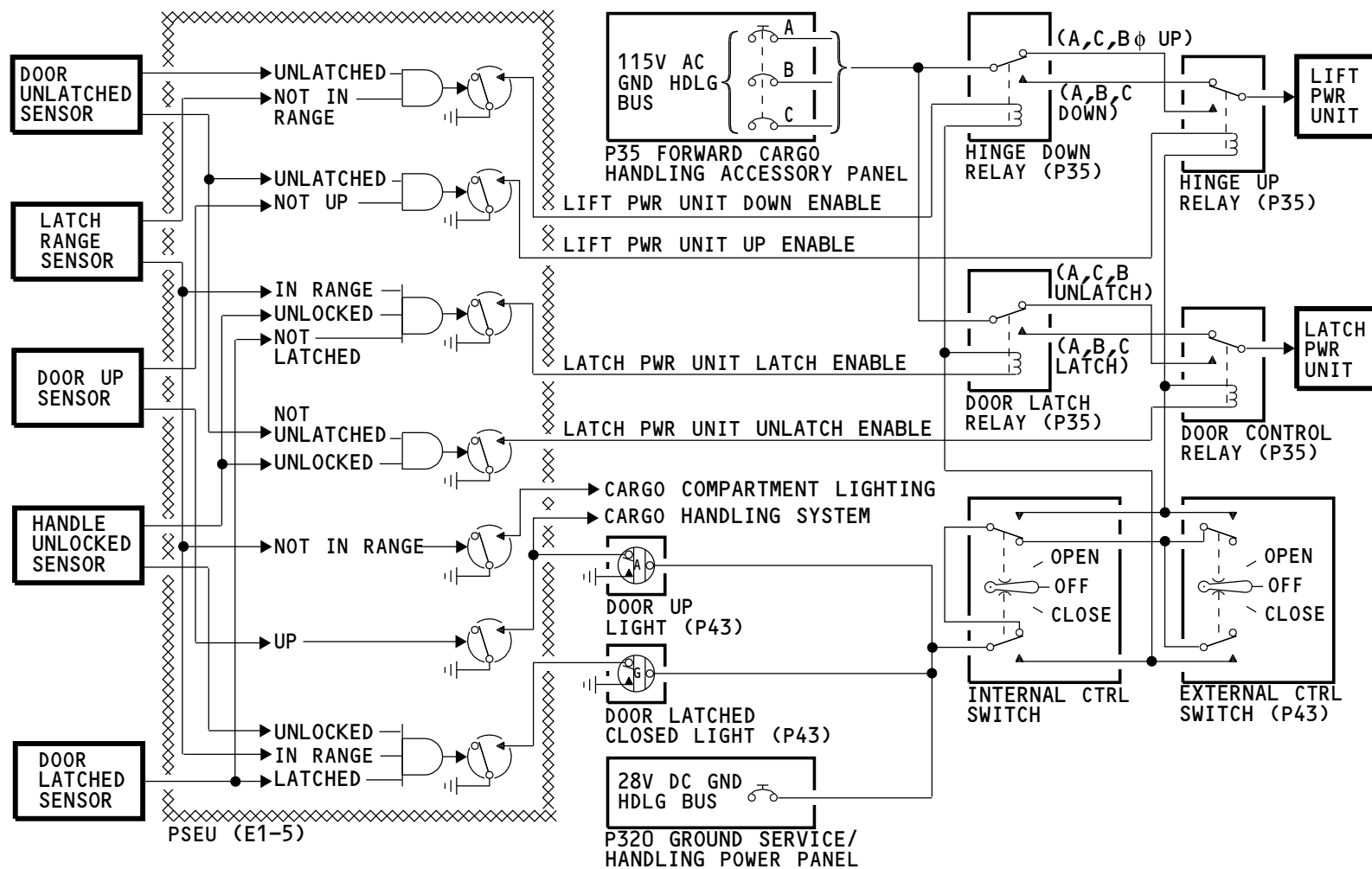
**52-34-00**

EFFECTIVITY

ARO ALL

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43339 S000620959\_V1

# FORWARD LARGE CARGO DOOR SYSTEM - ELECTRICAL FUNCTIONAL DESCRIPTION

52-34-00

ARO ALL EFFECTIVITY

D633W101-ARO

Page 51  
May 05/2015







THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-35-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**AFT SMALL CARGO DOOR SYSTEM - INTRODUCTION****Purpose**

The aft small cargo door system gives access to the aft cargo compartment.

**Location**

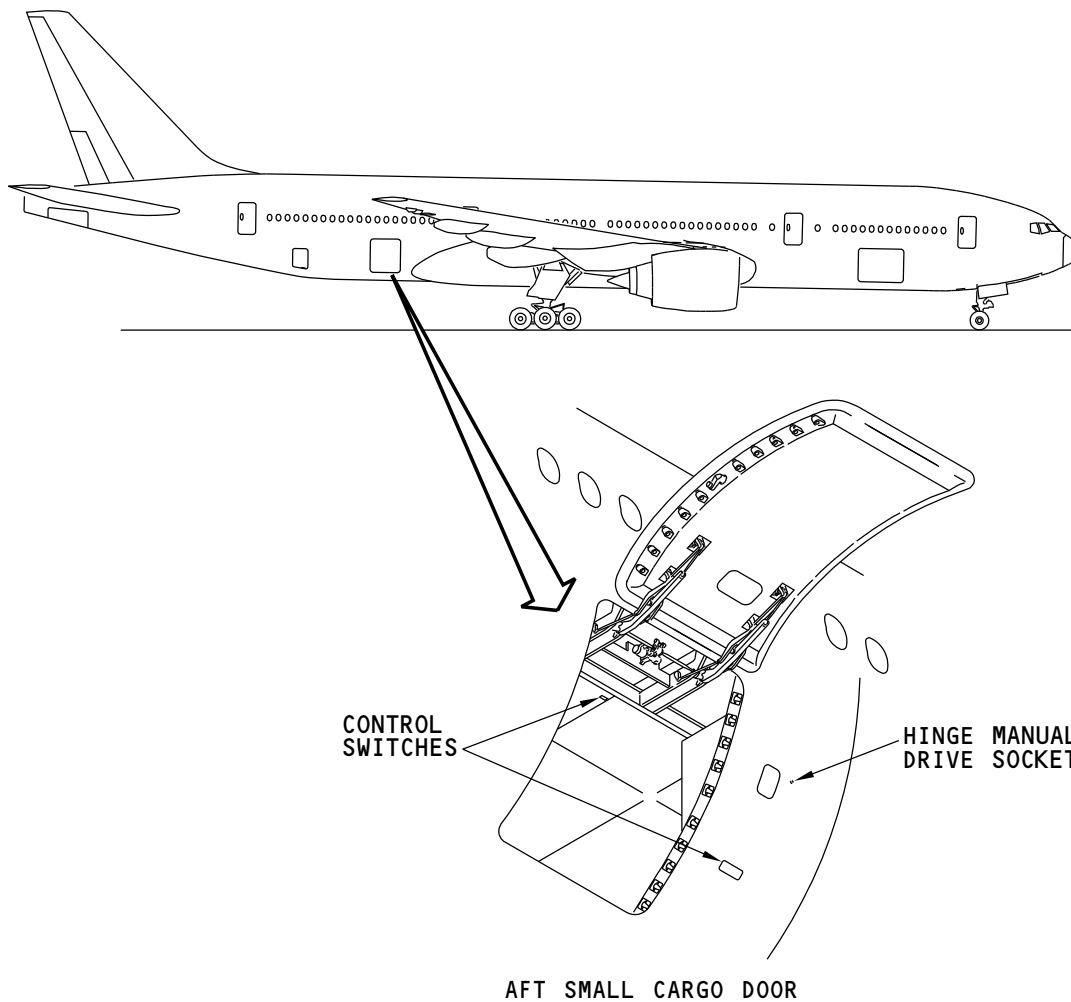
The door is aft of the wing on the right side of the airplane.

**General Description**

The small cargo door supplies a clear opening of 70 inches (177.8 cm) wide and 67 inches (170.2 cm) high. The dimensions of the door lets cargo handlers load and unload containers.

The door is a plug type. To open, it first moves up out of the plug position, then it opens outward and upward.

You can operate it electrically from inside or outside the cargo compartment. You can operate it manually from outside the cargo compartment.



M43340 S000620960\_V1

**AFT SMALL CARGO DOOR SYSTEM - INTRODUCTION**

**52-35-00**

52-35-00-001

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**AFT SMALL CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 1****Components on the Door Cutout**

The manual drive flexible shaft goes from the socket forward of the door to the hinge power drive unit (PDU).

The hinge PDU is on the top, center of the cargo door cutout.

The rotary actuators are forward and aft, along the top of the cargo door cutout. Torque tubes connect the hinge PDU to the actuators.

The hinge arms connect the rotary actuators to the cargo door.

Hooks on the top of the door cutout mate with stops on the top of the door.

These components are on the sides of the door cutout:

- Roller guide tracks
- Latch tracks
- Stop pads.

Stops on the bottom of the door cutout mate with hooks on the bottom of the door.

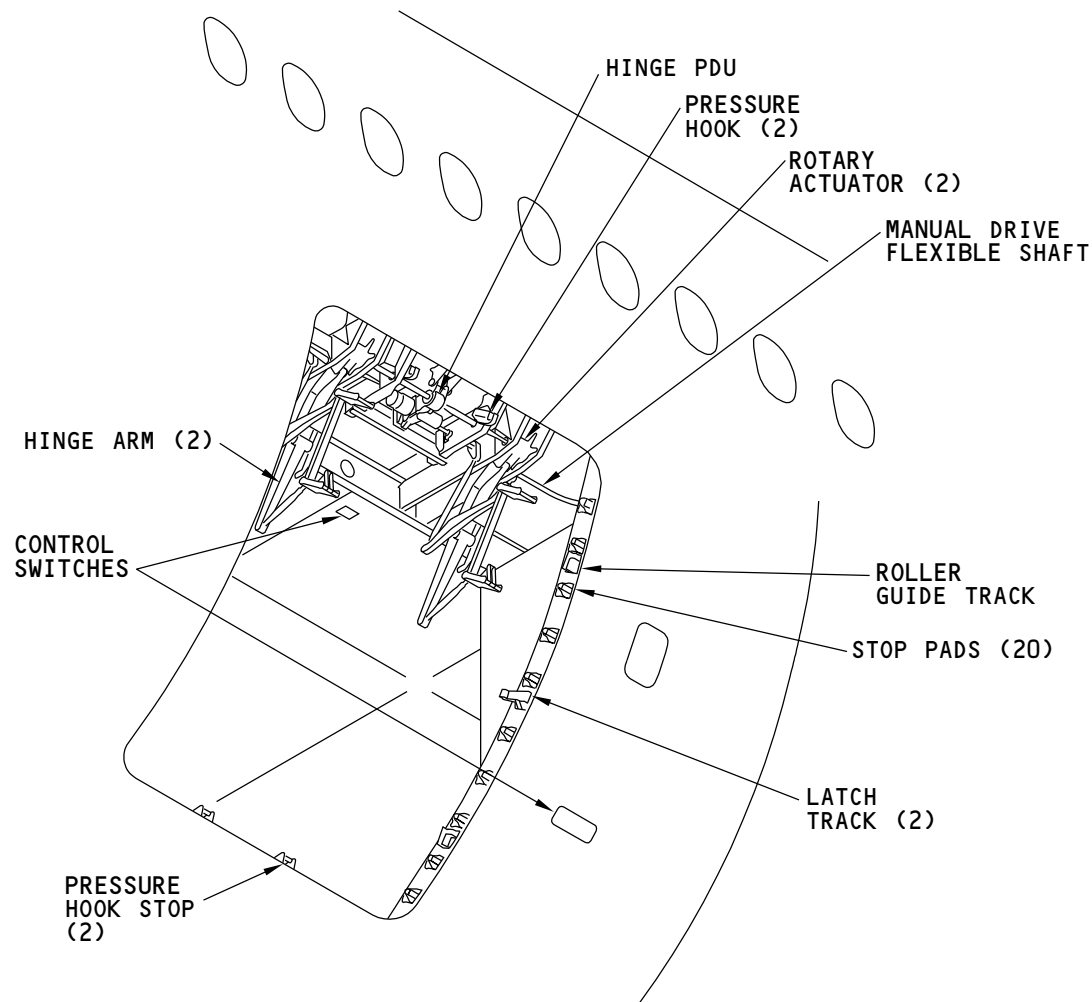
**Components near the Door Cutout**

The internal door control switch is in the cargo compartment ceiling, in line with the middle of the door cutout.

The P44 external cargo door control panel is forward of the door cutout.

**Training Information Point**

The internal cargo door control switch and the door control switch on the external cargo door control panel let you operate the door electrically.



M43343 S000620963\_V1

AFT SMALL CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 1

52-35-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**AFT SMALL CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 2****Components on the Inside of the Door**

Stops on the top of the door mate with hooks on the top of the door cutout.

These are the components on each side of the door:

- Two guide rollers
- Ten stop pins
- Five ditching stops.

The manual drive flexible shaft goes from the drive socket to the hinge PDU on the airplane structure.

The hinge arms attach the door to the rotary actuator.

The rotary actuators attach to the airplane structure. Torque tubes attach the actuators to the hinge power drive unit.

Hooks on the bottom of the door mate with stops on the bottom of the door cutout.

The two hinge arms on the top of the door attach the door to the rotary actuators on the door cutout.

The bungee is below the lift/latch PDU.

The lift/latch torque tube has latch cranks on each end.

The lift/latch power drive unit (PDU) is near the center of the door.

The lockout torque tube has lockout cams (not shown) on each end.

The vent door push rod goes from the lift/latch torque tube to the vent door.

The graphic does not show the location of the proximity sensors that do control and indication functions. Their locations are shown at the component level.

**General Description**

Pressurization and ditching loads are transmitted from the door to the airplane structure by:

- Hooks

- Stops
- Stop pins
- Ditching stops.

The following tells what the components on the inside of the door do as the door goes from the latched to the fully open position.

The cargo door PDUs get electric power from the ground handling bus when that bus has power. Manual drives can also supply power.

The arming and control switches can send electric power to the lift/latch PDU when a proximity sensor senses the door is not lifted. Force from the PDU actuator goes through cranks, torque tubes, and push rods to these components:

- Vent door
- Latch cranks
- Lockout cams.

The latch cranks lift the door out of the latched (plug) position. The bungee helps move the cranks to the full lift position when the bungee is past center on the lift/latch torque tube. At the end of the door lift, the lockout cams lock the door to the hinge arms so they will rotate the door outward and upward.

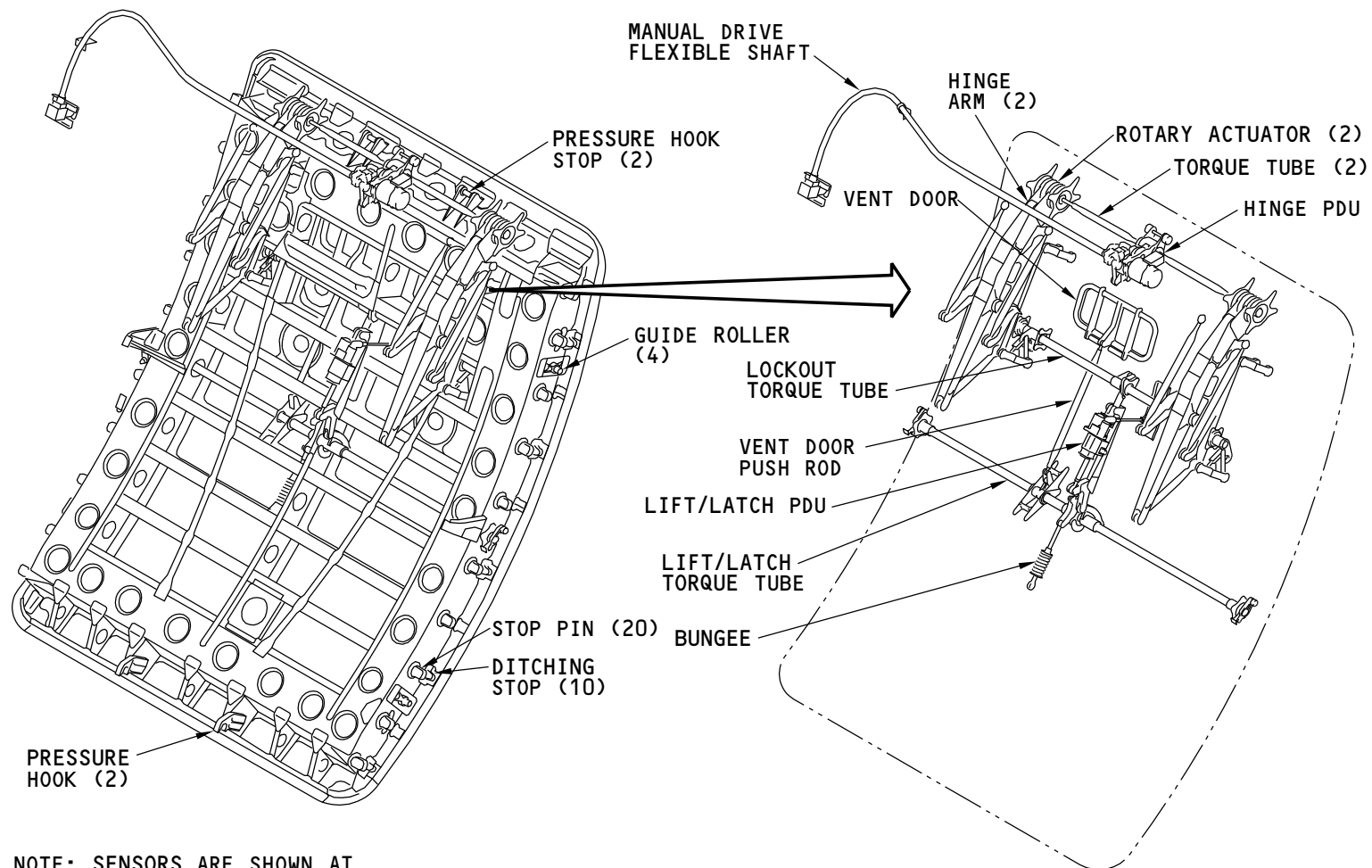
Electric power shifts from the lift/latch PDU to the hinge PDU when a proximity sensor senses the door is lifted. Torque tubes transmit torque from the PDU to the rotary actuators. The rotary actuators move the hinge arms so they will rotate the door outward and upward.

Electric power is shut off from the hinge PDU when a proximity sensor senses the door is completely open.

**52-35-00**

| EFFECTIVITY |  |
|-------------|--|
| ARO ALL     |  |

D633W101-ARO



NOTE: SENSORS ARE SHOWN AT THE COMPONENT LEVEL.

M43342 S000620962\_V1

### AFT SMALL CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 2

# 52-35-00

52-35-00-003

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



**AFT SMALL CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 3****Components on the Outside of the Door**

These are the components on the outside of the door:

- Component access panel (8)
- Lift/latch manual drive socket
- Sling attach point (3).

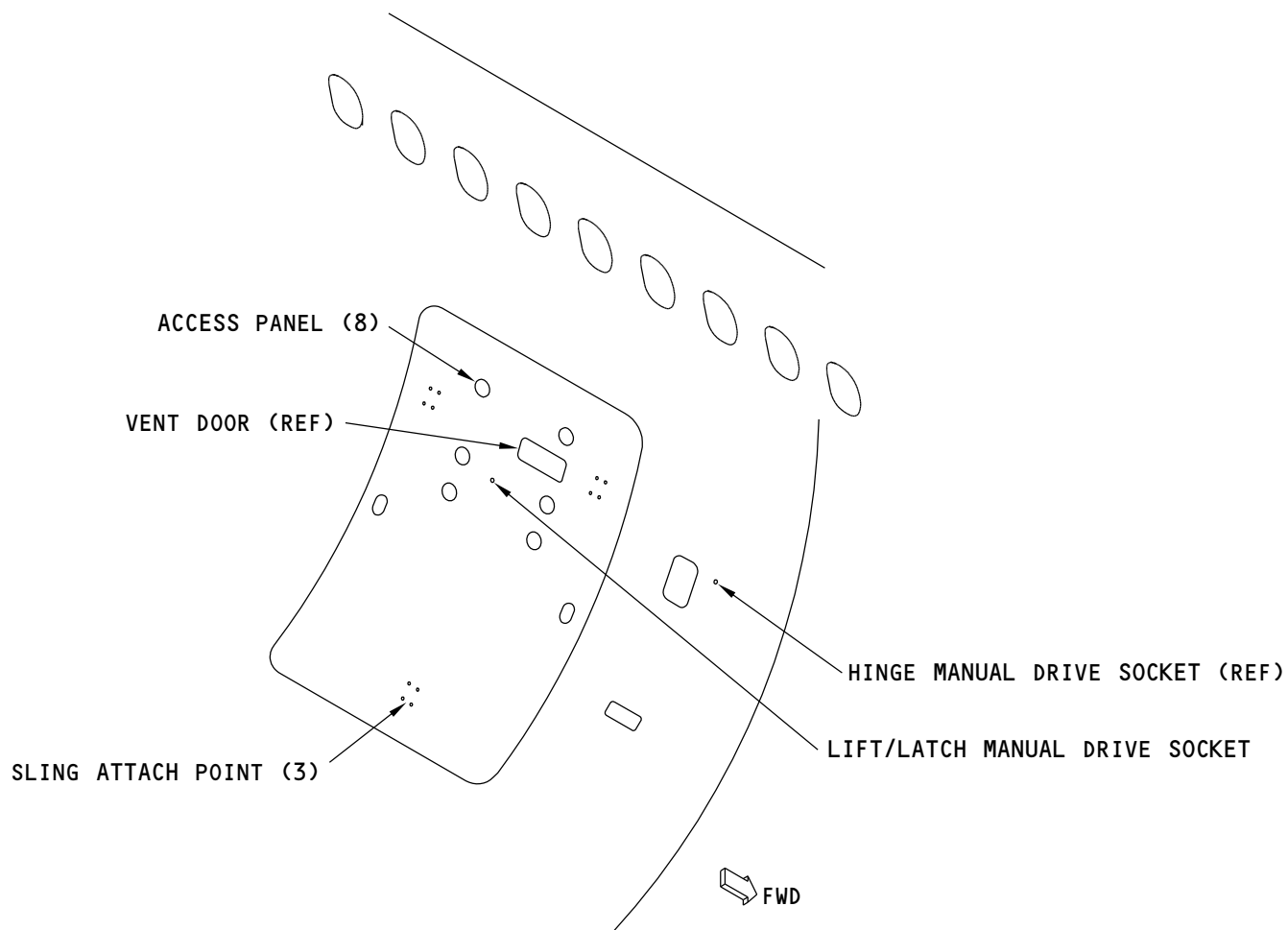
**Training Information Point**

The access panels give access to failed components if the cargo door is not open.

The lift/latch manual drive socket lets you open the door manually.

The sling attach points let you use a sling to lift the door for removal and replacement. It also lets you lift the door open if the lift mechanism fails.

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |



M43341 S000620961\_V1

**AFT SMALL CARGO DOOR SYSTEM - COMPONENT LOCATIONS - 3**

**52-35-00**

52-35-00-002

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**AFT SMALL CARGO DOOR SYSTEM - AFT SMALL CARGO DOOR****Purpose**

The door closes the external access to the aft cargo compartment.

**Physical Description**

The door is a plug type.

There are two pressure hook stops along the top of the door.

Two guide rollers and ten stop pins are on each side of the door.

There are two pressure hooks along the bottom of the door.

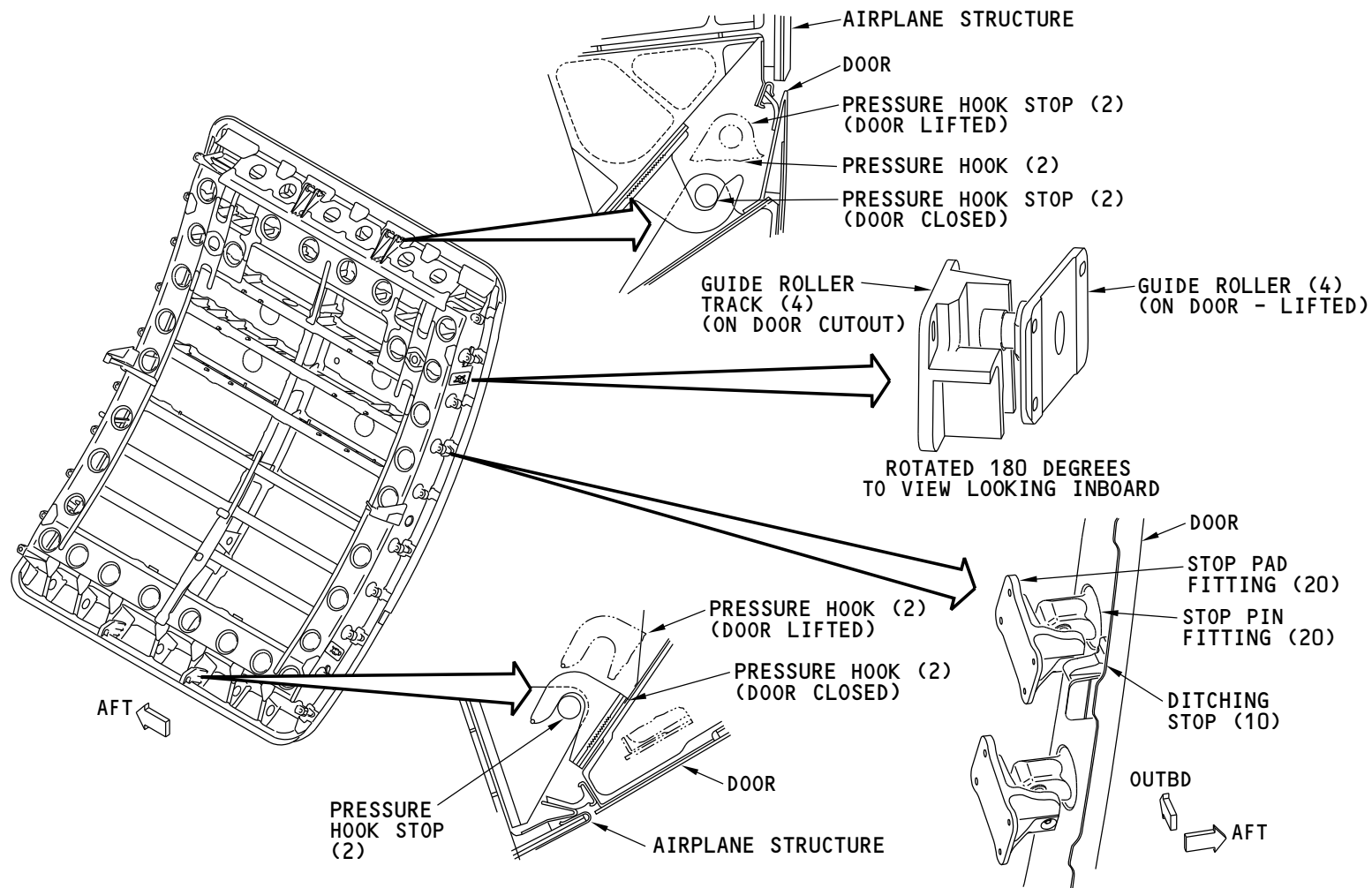
**Functional Description**

The guide rollers move in guide tracks on the door cutout. They guide the vertical movement of the door into and out of the plug position.

The hook stops on the top of the door mate with hooks on the top of the door cutout. The hooks on the bottom of the door mate with hook stops on the bottom of the door cutout.

The twenty stop pins on the sides of the door mate with twenty stop pads and ten ditching stops on the sides of the door cutout. The stop pins transmit pressurization loads on the door to the stop pads on the cutout. Ten of the stop pin fittings on the door will transmit loads to ditching stops on the cutout if a ditching occurs.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43344 S000620964\_V1

### AFT SMALL CARGO DOOR SYSTEM - AFT SMALL CARGO DOOR

## 52-35-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**AFT SMALL CARGO DOOR SYSTEM - VENT DOOR AND VENT DOOR CAM****Purpose**

The vent door has these functions:

- Releases remaining pressurization when you open the cargo door
- Prevents the door from lifting if there is too much pressure to let it open safely.

The vent door cam has these functions:

- Releases the vent door when the cargo door begins to unlatch
- Stops rotation of the lift/latch torque tube if residual pressurization is too high for safe operation of the cargo door.

**Location**

The vent door is on the upper, forward part of the cargo door above the lift/latch torque tube.

The vent door cam is on the lift/latch torque tube.

**Physical Description**

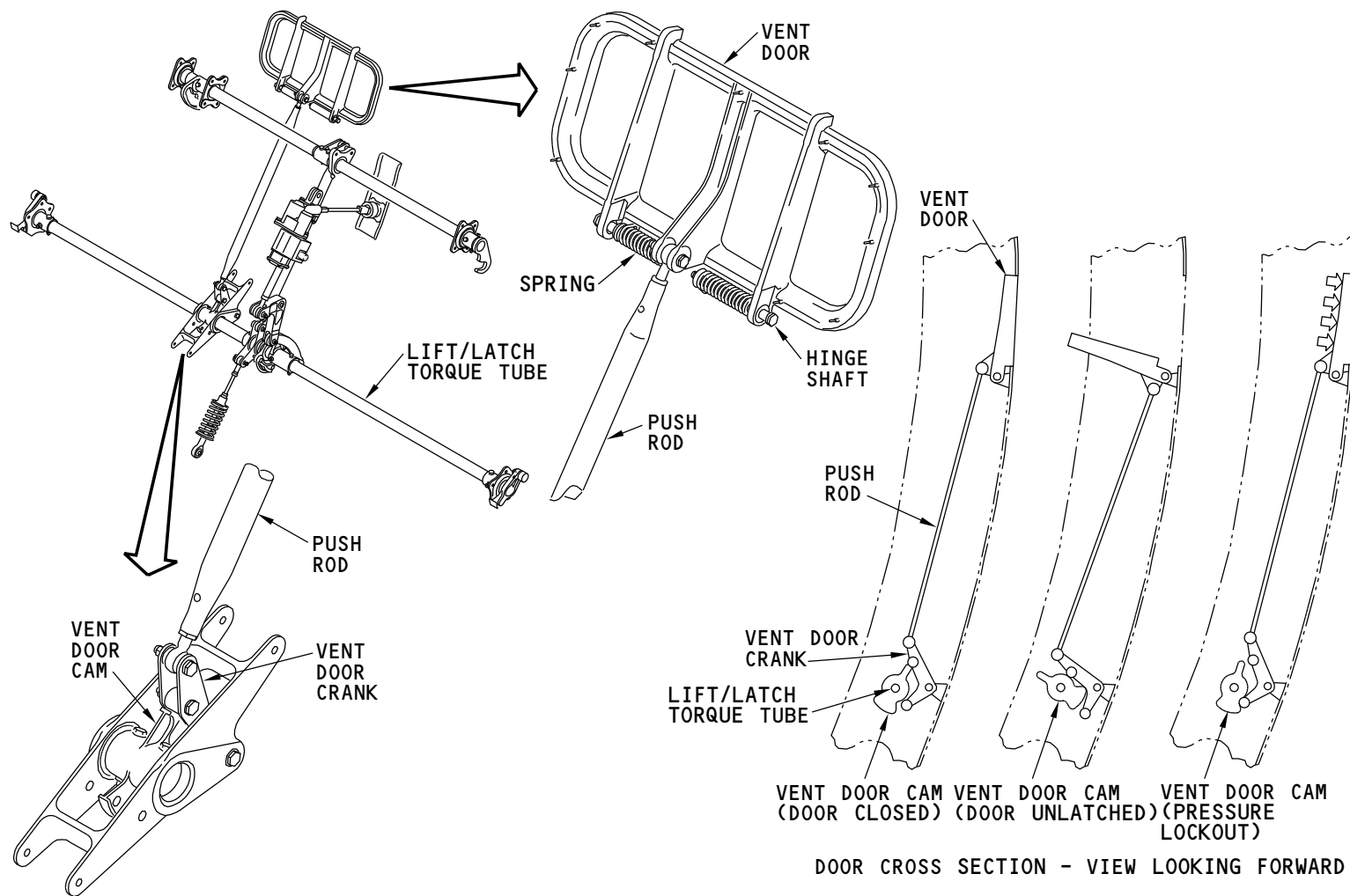
A hinge shaft connects the vent door to the cargo door. A torsion spring that is around the shaft, connects to the door. A push rod connects the vent door to the vent door crank that works with the vent door cam.

**Functional Description**

When the cargo door is closed and latched, the cam pushes against the crank. The push rod which attaches to the crank holds the vent door closed. When the lift/latch torque tube begins to rotate to unlatch the door, the cam lets the lever move. The spring on the hinge shaft opens the vent door.

If there is too much pressure to let it open safely, the excess pressure on the vent door holds it closed against the hinge spring pressure. The vent door crank does not move. The crank holds the cam so the lift/latch torque tube cannot rotate to lift the door.

|         |             |
|---------|-------------|
| ARO ALL | EFFECTIVITY |
|         |             |



M43353 S000620973\_V1

**AFT SMALL CARGO DOOR SYSTEM - VENT DOOR AND VENT DOOR CAM**

**52-35-00**

52-35-00-020

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

## AFT SMALL CARGO DOOR SYSTEM - LIFT/LATCH POWER DRIVE UNIT, BUNGEE, AND LIFT CRANK

### Purpose

The lift/latch power drive unit (PDU) supplies the force for these functions:

- Move the door out of and into the latch position
- Engage the lift lock cams with the lift pins.

The bungee is an overcenter device that makes the lift/latch torque tube moves to the limit of its rotation in either direction.

The latch crank lifts and lowers the door out of and into the latch (plug) position.

- The latch cranks to move the door up and down
- The crank (not shown) that moves the lockout pushrod.

The lockout pushrod moves a crank that turns the lockout torque tube. The torque tube turns the lift lock cams.

A disc brake (not shown) that attaches to the rotor of the motor will not let the weight of the door backdrive the actuator.

The bungee spring compresses as the lift/latch torque tube begins to rotate. It supplies force to complete the torque tube rotation when its connection to the torque tube is past the center of rotation of the tube.

### Location

The PDU is near the middle of the door above the lift/latch torque tube.

The bungee is on the center of the door, below the lift/latch torque tube.

The lift cranks are on the ends of the lift/latch torque tube.

### Physical Description

The PDU has these parts:

- A linear actuator
- An electric motor
- A manual drive input.

The bungee is a compression spring on a shaft.

One end of each latch crank attaches to the end of the lift/latch torque tube. The other end has a roller that fits into the latch tracks on the door cutout.

### Functional Description

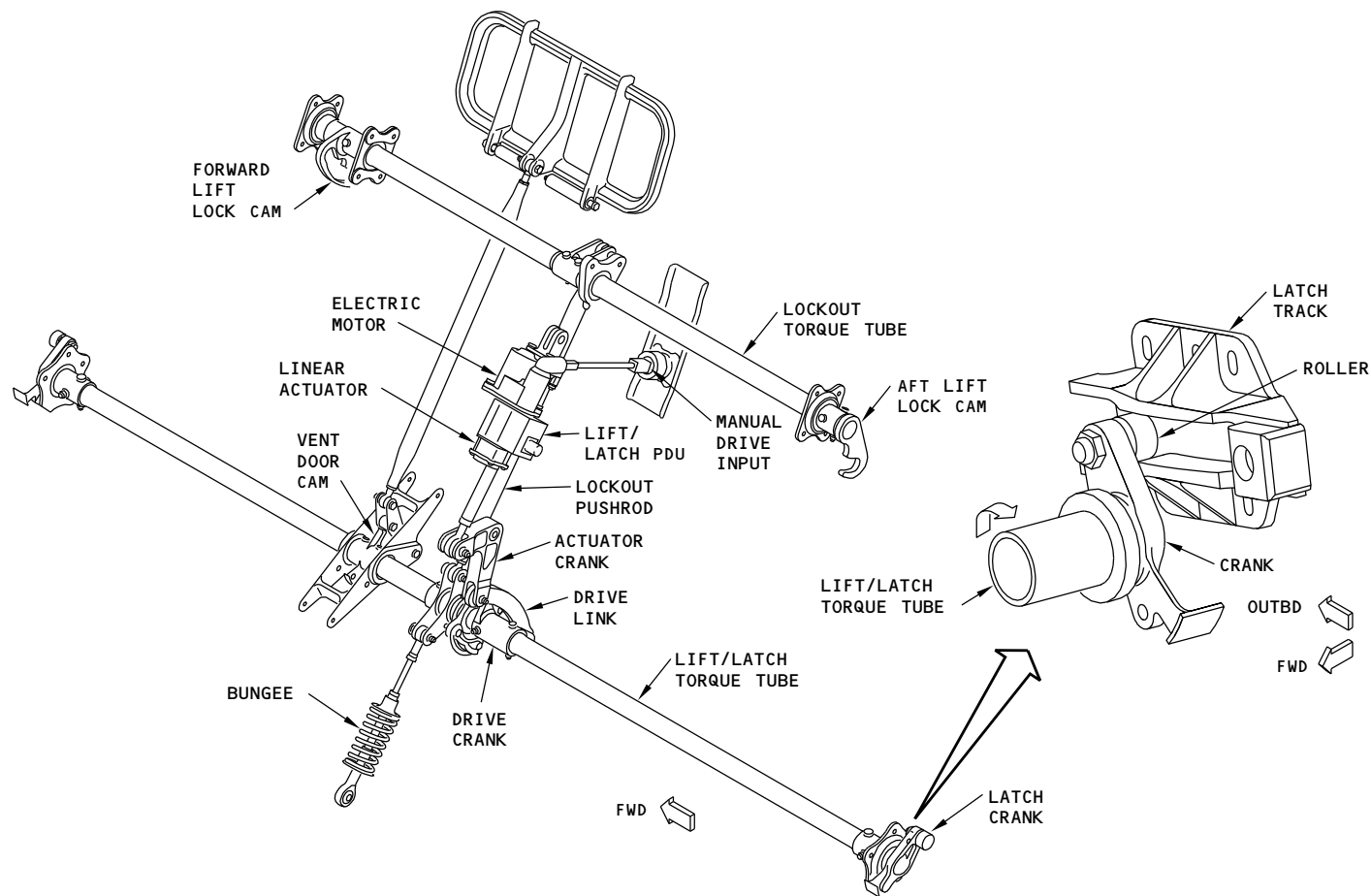
The electric motor moves the linear actuator. The manual drive can also move the actuator. The actuator moves the actuator crank, drive link, and drive crank to turn the lift/latch torque tube. The torque tube turns these components:

- The vent door cam to release or close the vent door

# 52-35-00

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO



M43354 S000620974\_V1

**AFT SMALL CARGO DOOR SYSTEM - LIFT/LATCH POWER DRIVE UNIT, BUNGEE, AND LIFT CRANK**

52-35-00-021

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**52-35-00**



**AFT SMALL CARGO DOOR SYSTEM - LIFT LOCK CAM - INTRODUCTION****Purpose**

The lift lock cams hold the door in the lifted (unlatched) position.

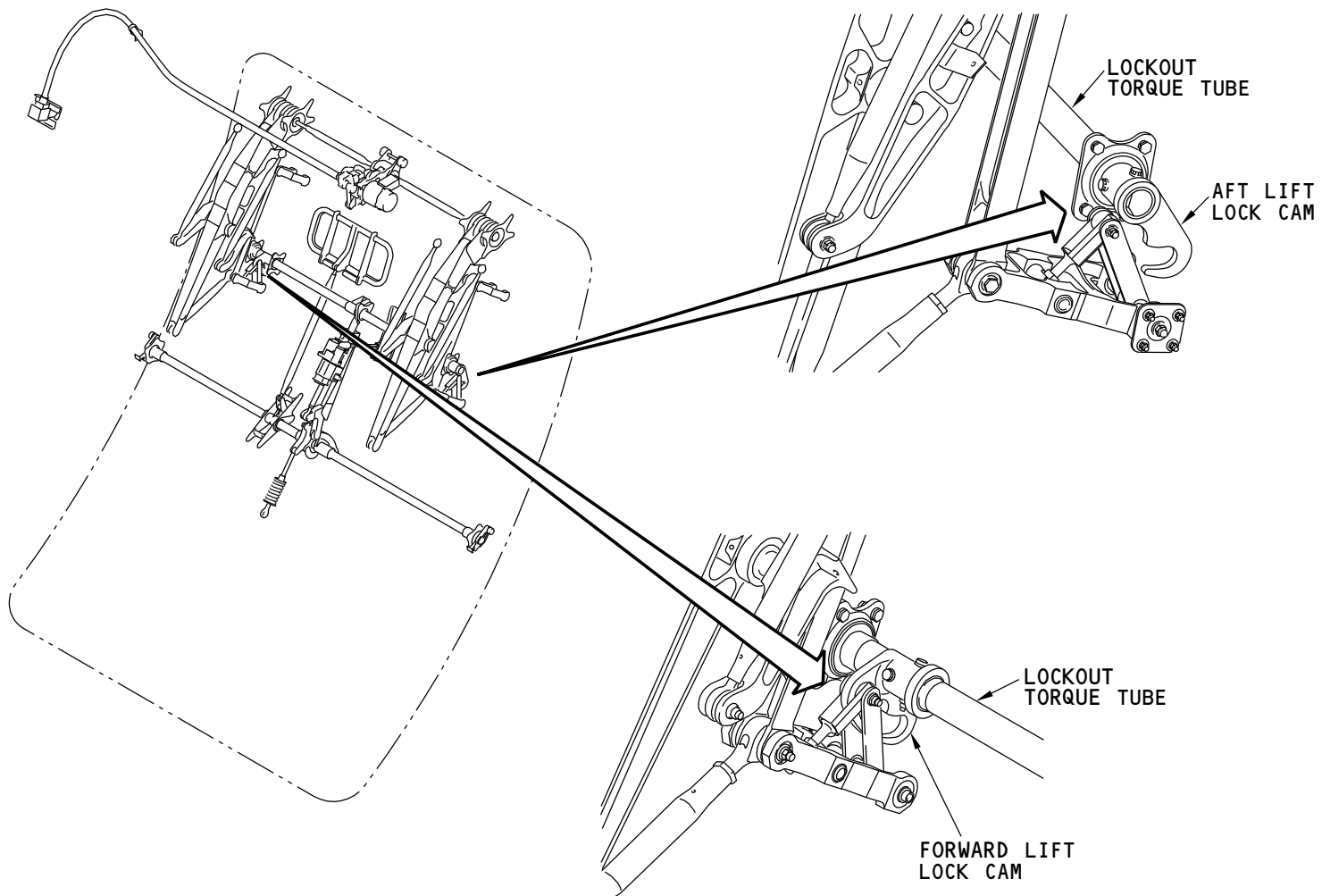
**Location**

There is a cam on each end of the lockout torque tube.

**Physical Description**

The aft cam has an open hook shape. The forward cam has a curved oval shape. It goes around the lift pin. This makes sure that wind cannot cause the pins to come out of the cams when the door is open.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43355 S000620975\_V1

**AFT SMALL CARGO DOOR SYSTEM - LIFT LOCK CAM - INTRODUCTION**

**52-35-00**

52-35-00-022

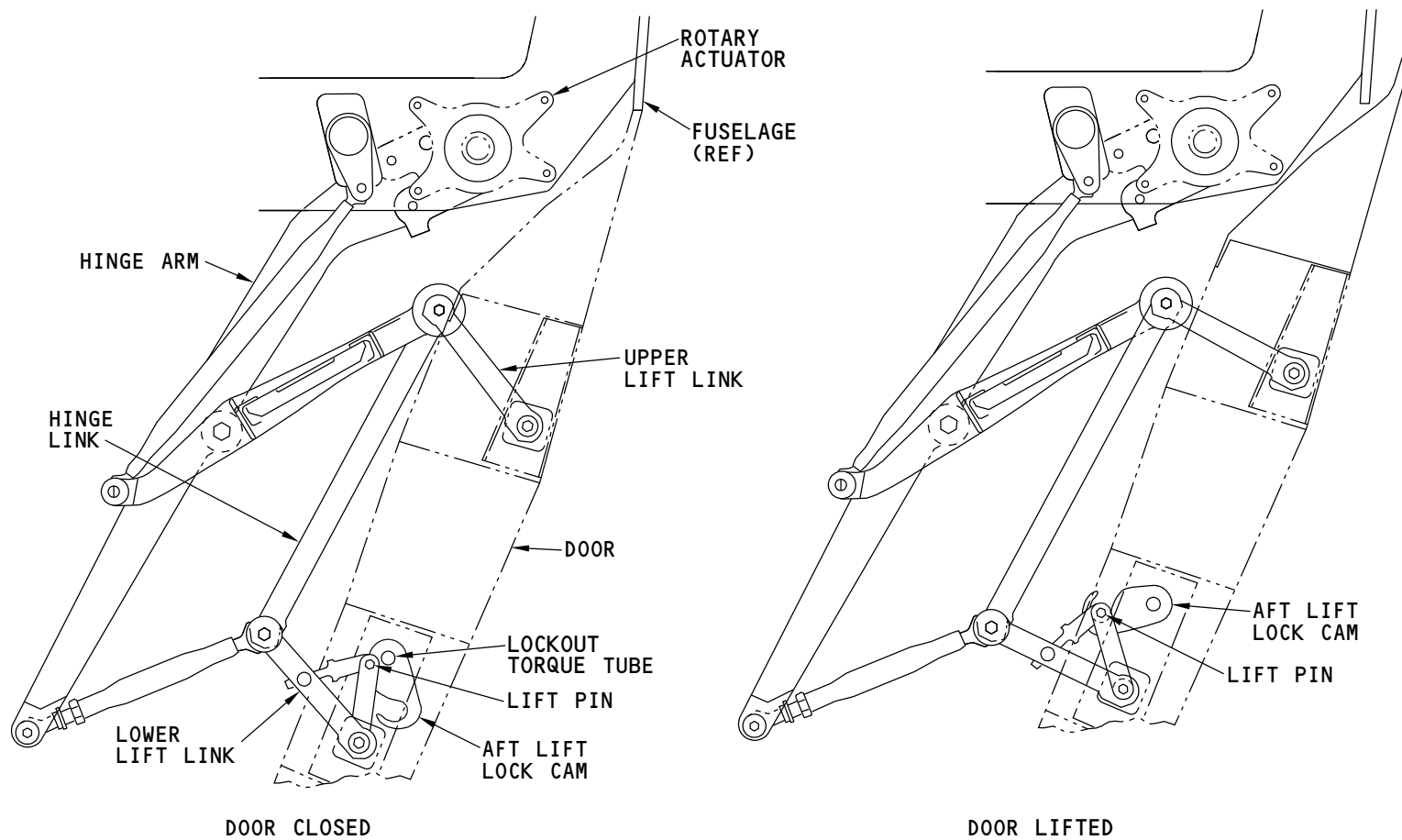
| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**AFT SMALL CARGO DOOR SYSTEM - LIFT LOCK CAM - FUNCTIONAL DESCRIPTION****Functional Description**

When the door is closed, the lift links, door, and hinge link are in a parallelogram that can change shape as the door lifts.

At the end of the door lift movement, the cams move into position under the bottom side of the lift pins. This locks the lift links, door, and hinge link in a rigid parallelogram and holds the door in the lifted position. When the rotary actuator turns the hinge arm, the door opens outward and up.

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |



**AFT SMALL CARGO DOOR SYSTEM - LIFT LOCK CAM - FUNCTIONAL DESCRIPTION**

M43358 S000620978\_V1

52-35-00-026

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**52-35-00**

**AFT SMALL CARGO DOOR SYSTEM - HINGE PDU AND MANUAL DRIVE FLEXIBLE SHAFT****Purpose**

The hinge power drive unit (PDU) supplies torque that opens and closes the door.

The manual drive flexible shaft lets you manually supply torque to open and close the door.

**Location**

The hinge PDU and the manual drive flexible shaft mount to airplane structure above the door. The input socket for the shaft is on the external skin, forward of the door.

**Physical Description**

The hinge PDU has these components:

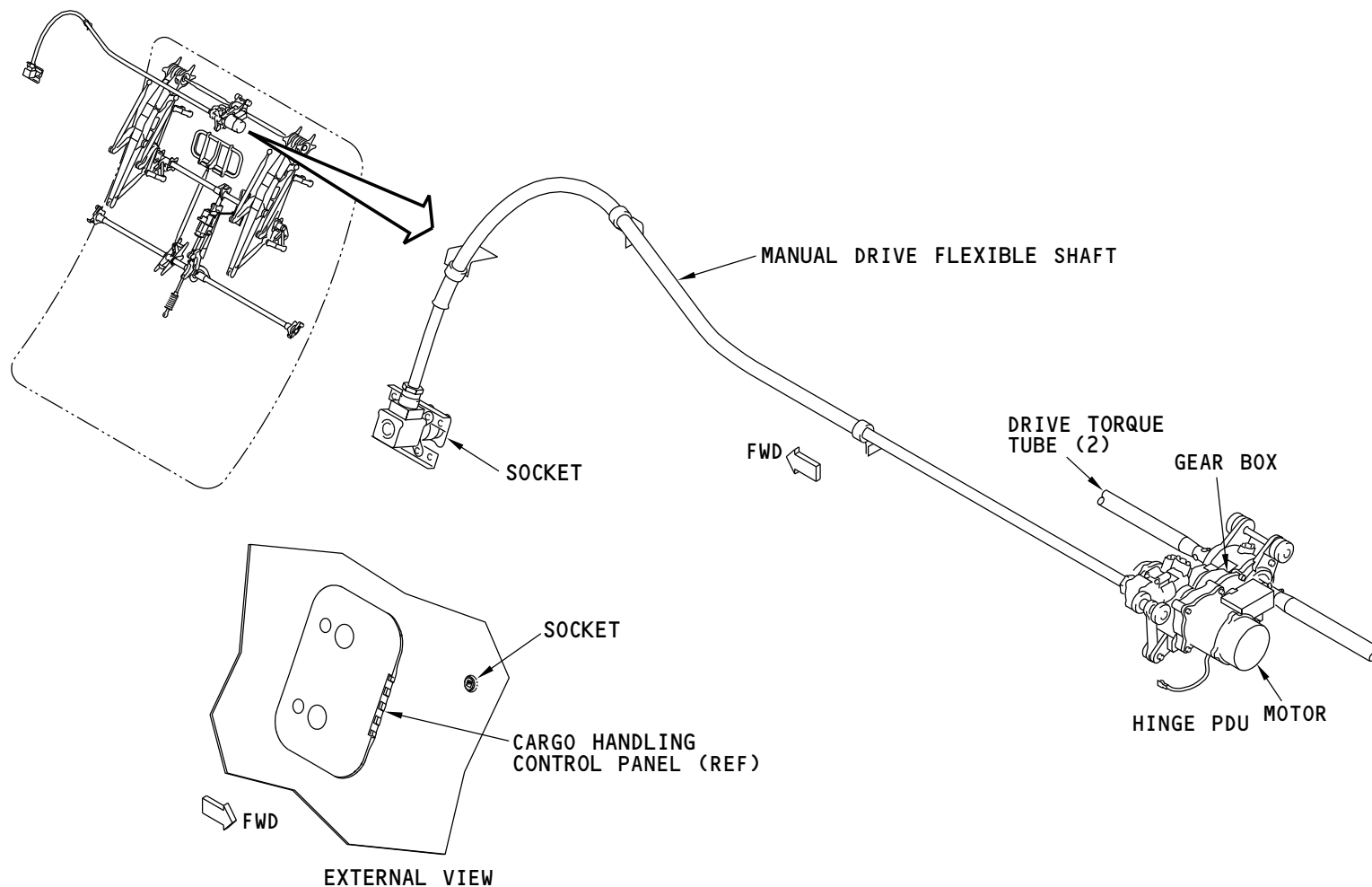
- Connection to the manual drive flexible shaft
- Connections to two drive torque tubes.
- A gear box
- A three phase, 115/200v ac, 400 Hz motor with a brake.

The manual drive flexible shaft is a teleflex cable that connects the manual drive socket to the hinge PDU.

**Functional Description**

The motor supplies torque through the gearbox and torque tubes to rotary actuators.

The gearbox gets torque from the manual drive flexible shaft when you open or close the door manually.



M43345 S000620965\_V1

**AFT SMALL CARGO DOOR SYSTEM - HINGE PDU AND MANUAL DRIVE FLEXIBLE SHAFT**

**52-35-00**

52-35-00-006

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**AFT SMALL CARGO DOOR SYSTEM - ROTARY ACTUATOR****Purpose**

The rotary actuators transmit torque from the hinge PDU to the hinge arms.

**Location**

The rotary actuators mount to airplane structure above the door.

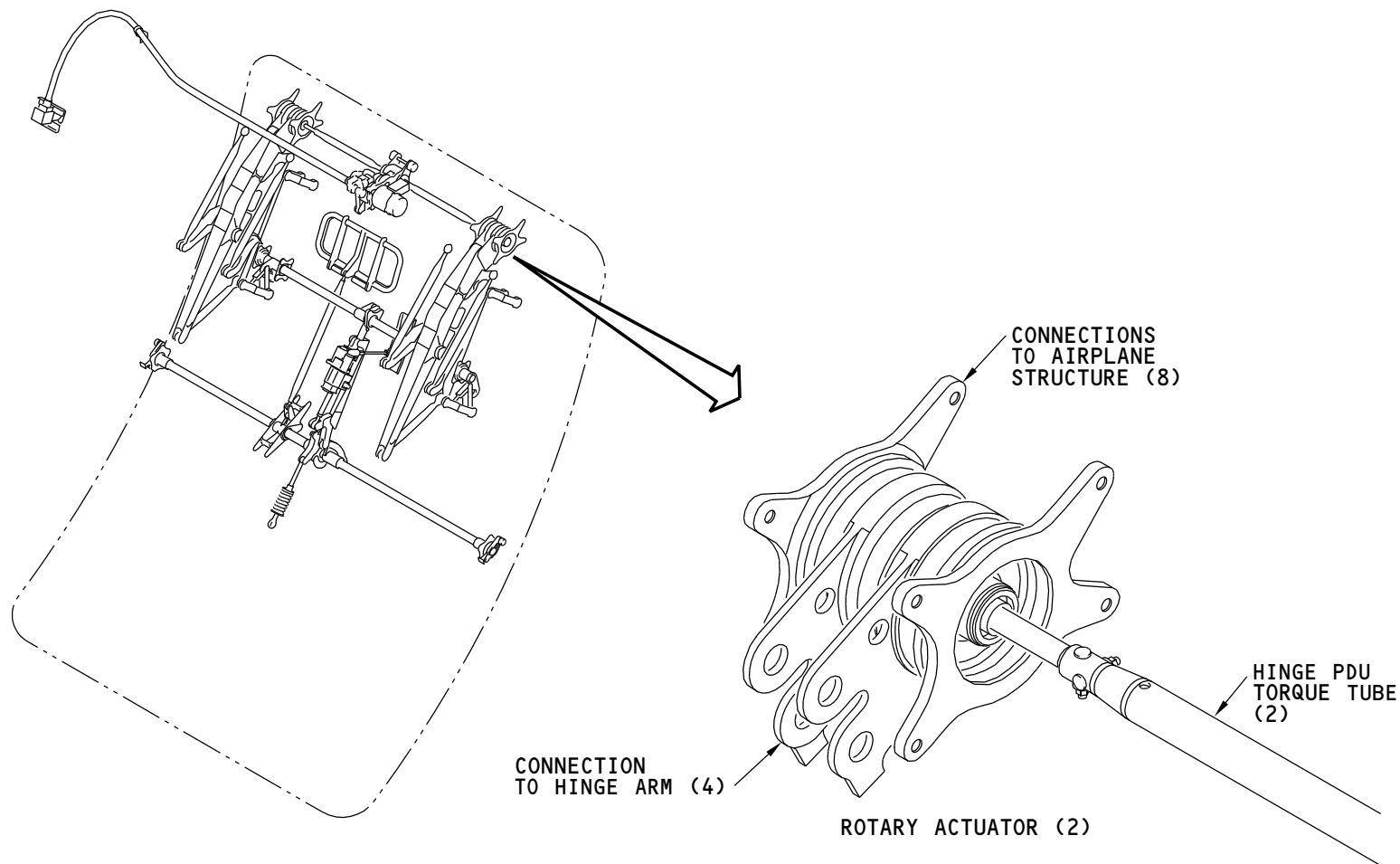
**Physical Description**

The actuators are compound, planetary differential gearboxes.

**Functional Description**

Torque tubes transmit torque from the hinge PDUs to the rotary actuators. The actuators transmit the torque to the hinge arms. The gears in the actuators will not let the weight of the door backdrive the actuators.

|         |             |
|---------|-------------|
| ARO ALL | EFFECTIVITY |
|---------|-------------|



M43356 S000620976\_V1

**AFT SMALL CARGO DOOR SYSTEM - ROTARY ACTUATOR**

**52-35-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details





## AFT SMALL CARGO DOOR SYSTEM - HINGE ARM - INTRODUCTION

### Purpose

The hinge arms connect the door to the rotary actuators, and move the door between the lifted (unlatched) and full open positions.

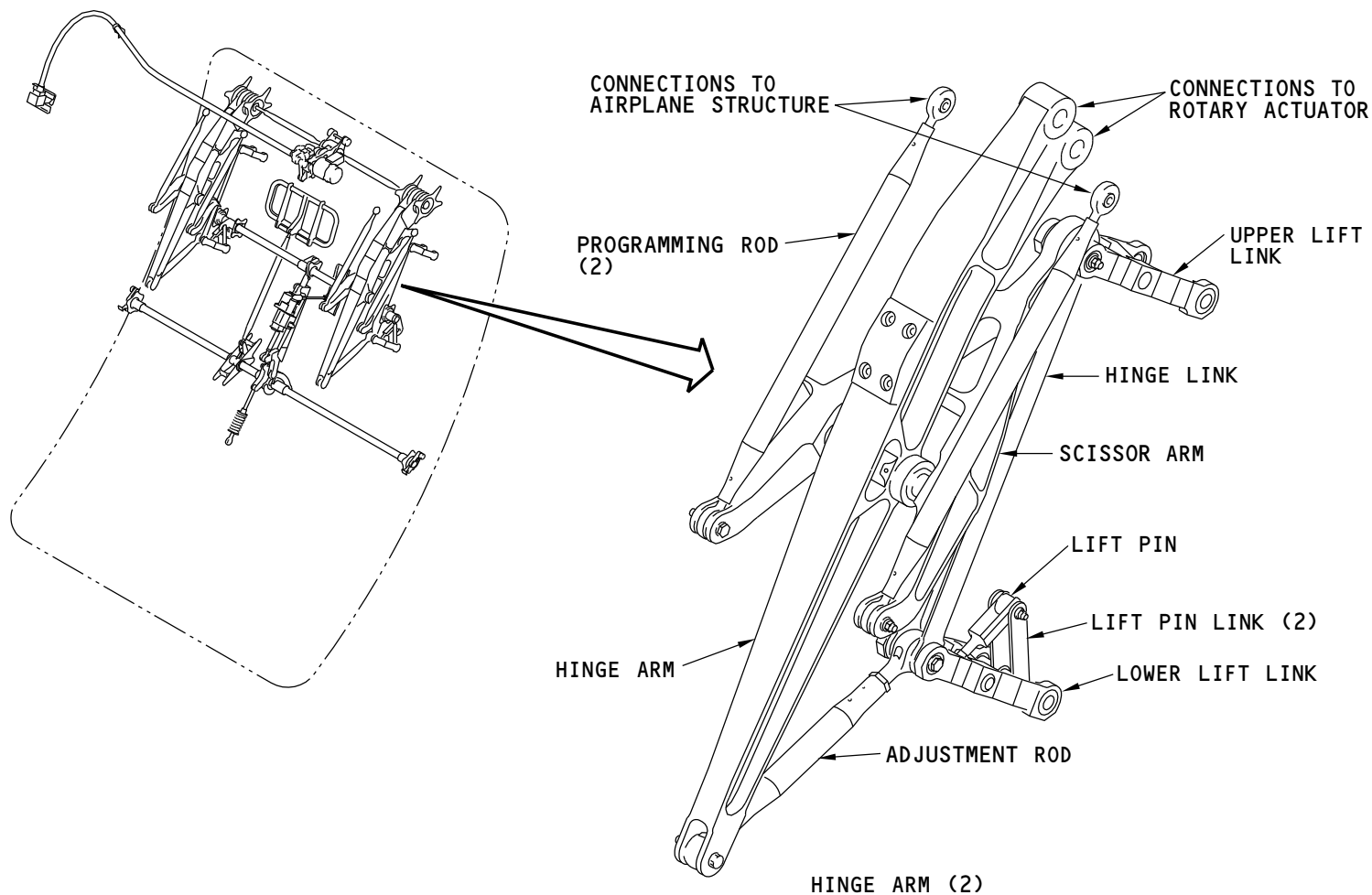
### Location

The hinge arms are on the upper, forward and aft corners of the door.

### Physical Description

The hinge arm assembly includes:

- Upper lift link
- Hinge link
- Scissor arm
- Lift pin
- Lift pin link (2)
- Lower lift link
- Adjustment rod
- Hinge arm
- Programming rod (2).



M43346 S000620966\_V1

### AFT SMALL CARGO DOOR SYSTEM - HINGE ARM - INTRODUCTION

# 52-35-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



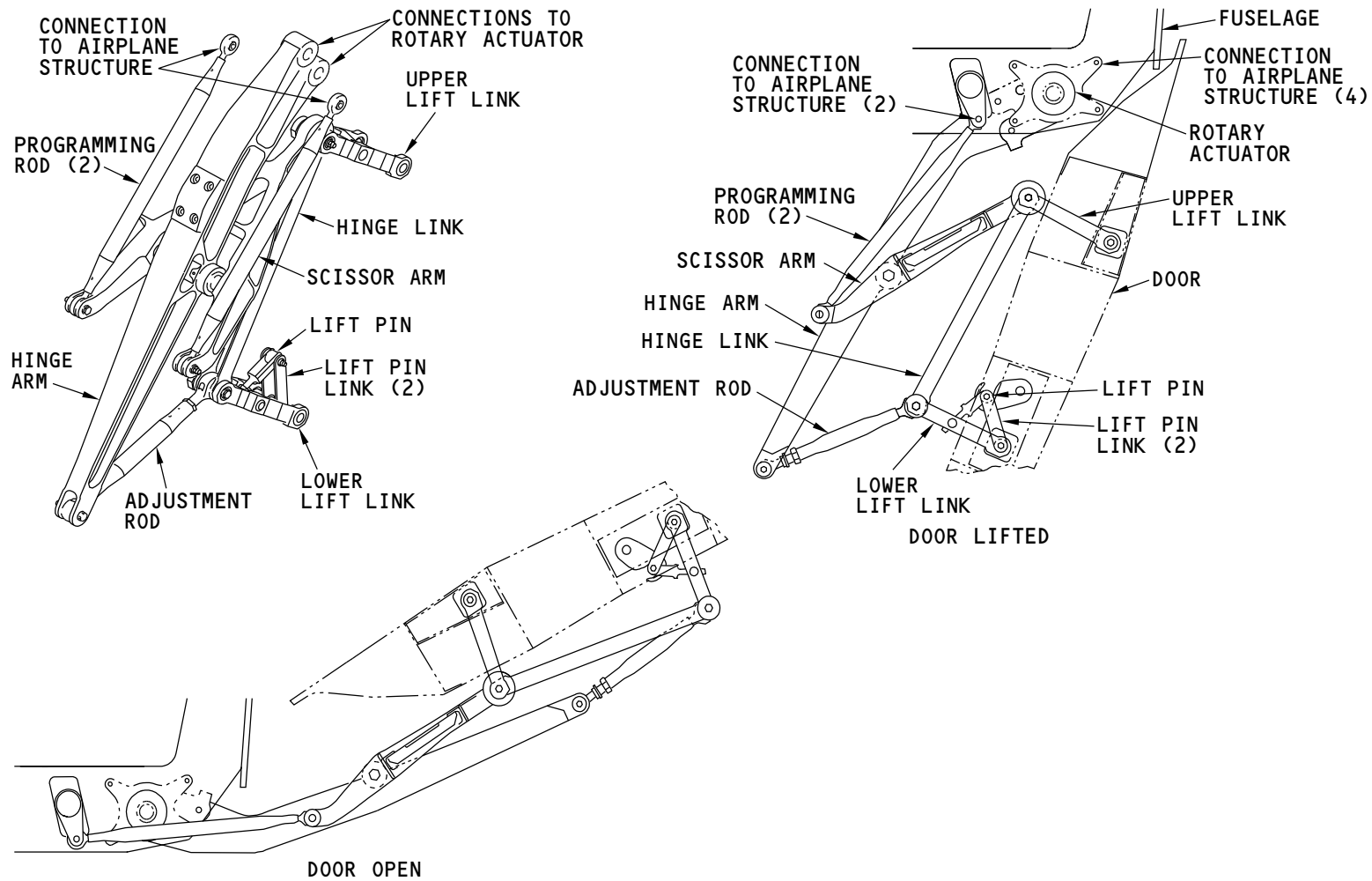
## AFT SMALL CARGO DOOR SYSTEM - HINGE ARM - FUNCTIONAL DESCRIPTION

Functional Description

At the end of the door lift movement, the lift lock cam moves up against the lift pin. This locks the upper lift link, door, lower lift link, and hinge link into a rigid parallelogram. It also holds the door in the lifted (unlatched) position.

The hinge link, adjustment rod, hinge arm, and scissor arm form a parallelogram that is not rigid. As the rotary actuator moves the hinge arm, the programming rod controls the shape of the parallelogram. The shape changes causes the door to move outward and the bottom of the door rotates upward.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



AFT SMALL CARGO DOOR SYSTEM - HINGE ARM - FUNCTIONAL DESCRIPTION

M43357 S000620977\_V1

52-35-00-025

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

52-35-00

**AFT SMALL CARGO DOOR SYSTEM - PROXIMITY SENSORS****Purpose**

Proximity sensors supply door and door mechanism position information to the proximity sensor electronics unit (PSEU) for door operational control and door status indications.

**Physical Description**

The sensors are electrical devices that work with metal targets.

**Location**

The sensors are on the door. Targets are on the door and on structure around the door.

**Functional Description**

These sensors are for door operational control:

- Door up (open)
- Door down
- Door lifted
- Door latched.

These sensors are for door status indications:

- Door closed
- Door latched and locked.

See the door warning system section for more information on the door status sensors (SECTION 52-71).

Each sensor has a related target. The sensor senses if the target is near or far. The position information goes to the PSEU.

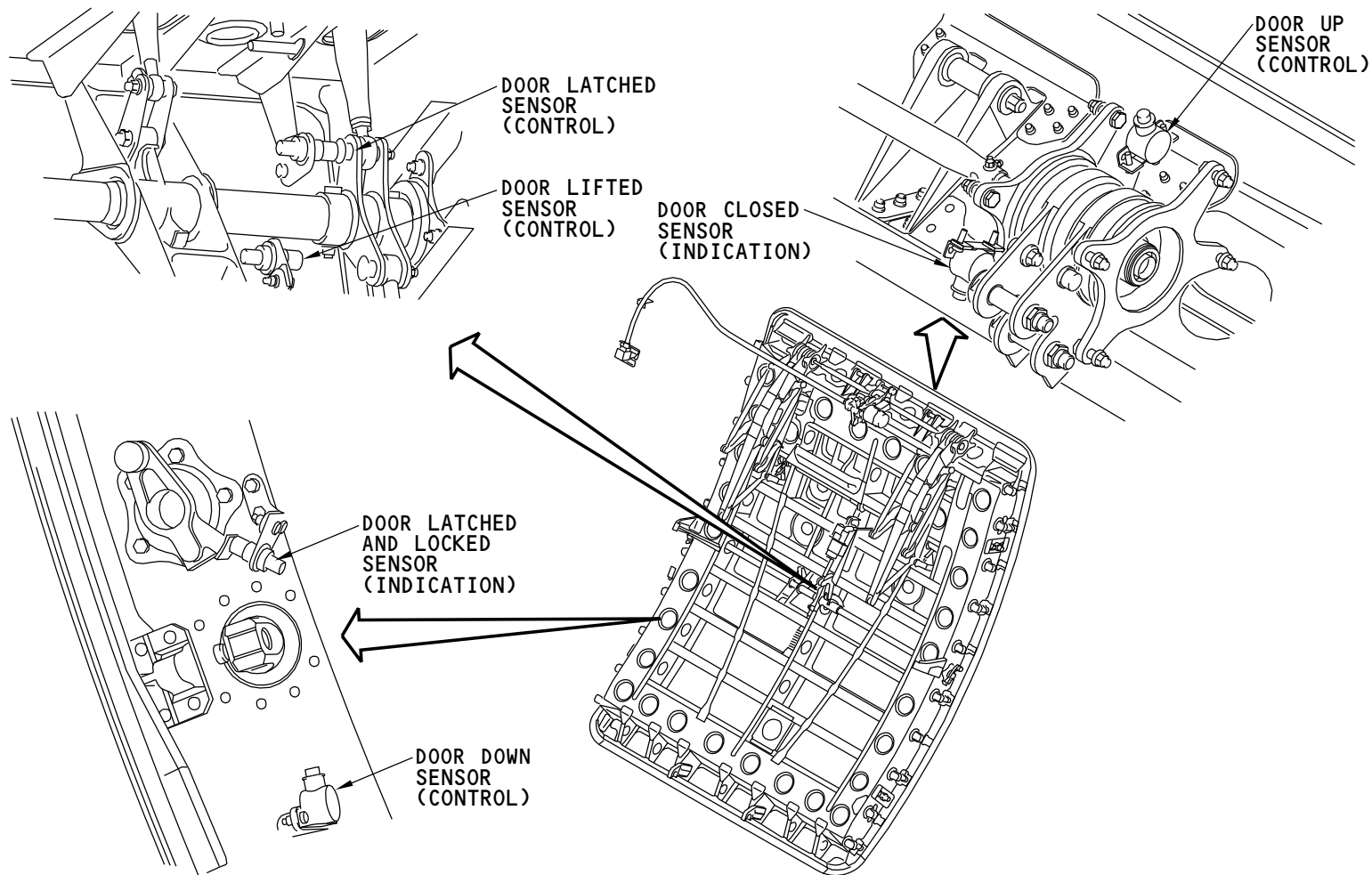
The door operation control sensors tell the PSEU the position of the door and door mechanisms. The PSEU uses the information to control the cargo door operation and the door control panel indication lights.

**52-35-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43347 S000620967\_V1

**AFT SMALL CARGO DOOR SYSTEM - PROXIMITY SENSORS**

**52-35-00**

52-35-00-012

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**AFT SMALL CARGO DOOR SYSTEM - CONTROL SWITCHES****Purpose**

Control switches let you arm and operate the door electrically.

**Location**

The switches are on the P44 aft cargo door control panel, and in the ceiling of the cargo compartment.

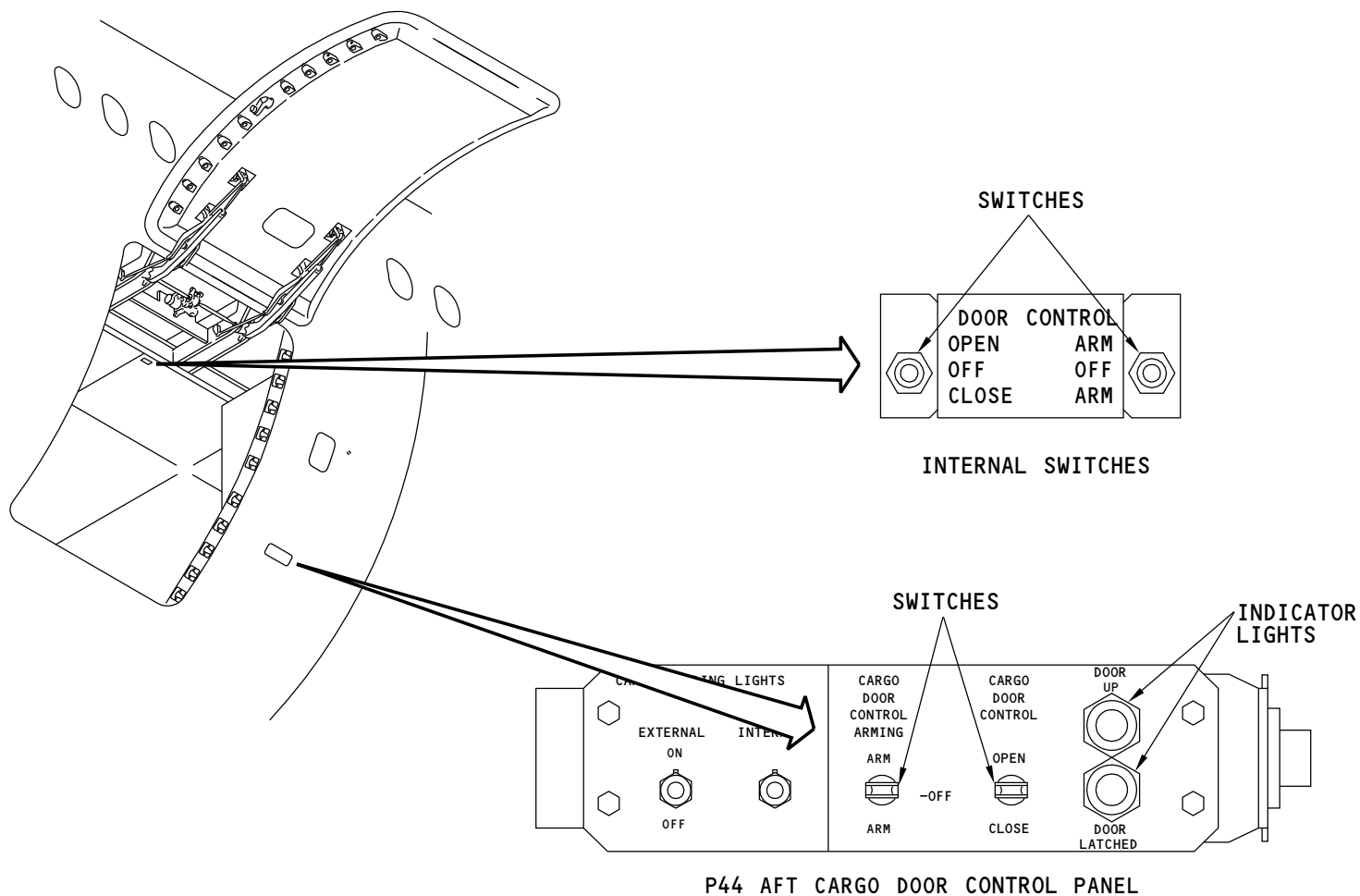
**Physical Description**

The internal and external toggle type door control switches are spring-loaded.

**Functional Description**

You can use either the external or internal switches to arm and operate the door electrically. The internal switches have priority over the external switches.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



AFT SMALL CARGO DOOR SYSTEM - CONTROL SWITCHES

M43348 S000620968\_V1

52-35-00-014

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

52-35-00



## AFT SMALL CARGO DOOR SYSTEM - ELECTRICAL OPERATION

### General

The aft small cargo door uses power from the ground handling bus for electrical operation.



DO NOT OPERATE THE DOOR IN WINDS MORE THAN 40 KNOTS. DO NOT LET THE DOOR STAY OPEN IN WINDS MORE THAN 65 KNOTS. INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.



DO NOT OPEN THE DOOR WHEN THE AIRPLANE IS PRESSURIZED. INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

### Controls

There are door operation switches on the P44 and in the ceiling of the cargo compartment. There are two switches at each location. One is the door control arming switch. The other is the door control open/close switch. The internal switches have priority over the external switches.

### Unlatch and Open Operation

The green door latched light is on when the door is latched.



DO NOT OPERATE THE DOOR ELECTRICALLY MORE THAN 2 FULL OPEN/CLOSE CYCLES WITHIN 5 MINUTES. DAMAGE TO THE LIFT MECHANISM CAN OCCUR.

At either the external or internal switch location, hold the arming switch in the arm position and the control switch in the open position. The vent door opens. The cargo door moves up out of its latched (plug) position. The green light goes off.

Continue to hold the switches in the arm and open position. The door moves to the full up position and stops. The amber door up light on the P44 comes on.

### Close and Latch Operation



**CAUTION**

MAKE SURE THE E/E EQUIPMENT DOORS ARE CLOSED ON THE SIDES OF THE DOOR CUTOUT BEFORE YOU CLOSE THE DOOR. THE CARGO DOOR CAN CAUSE DAMAGE TO OPEN E/E EQUIPMENT DOORS WHEN IT CLOSSES.

At either location, hold the arming switch in the arm position and the control switch in the close position. The amber light on the P44 goes off when the door leaves the full up position.

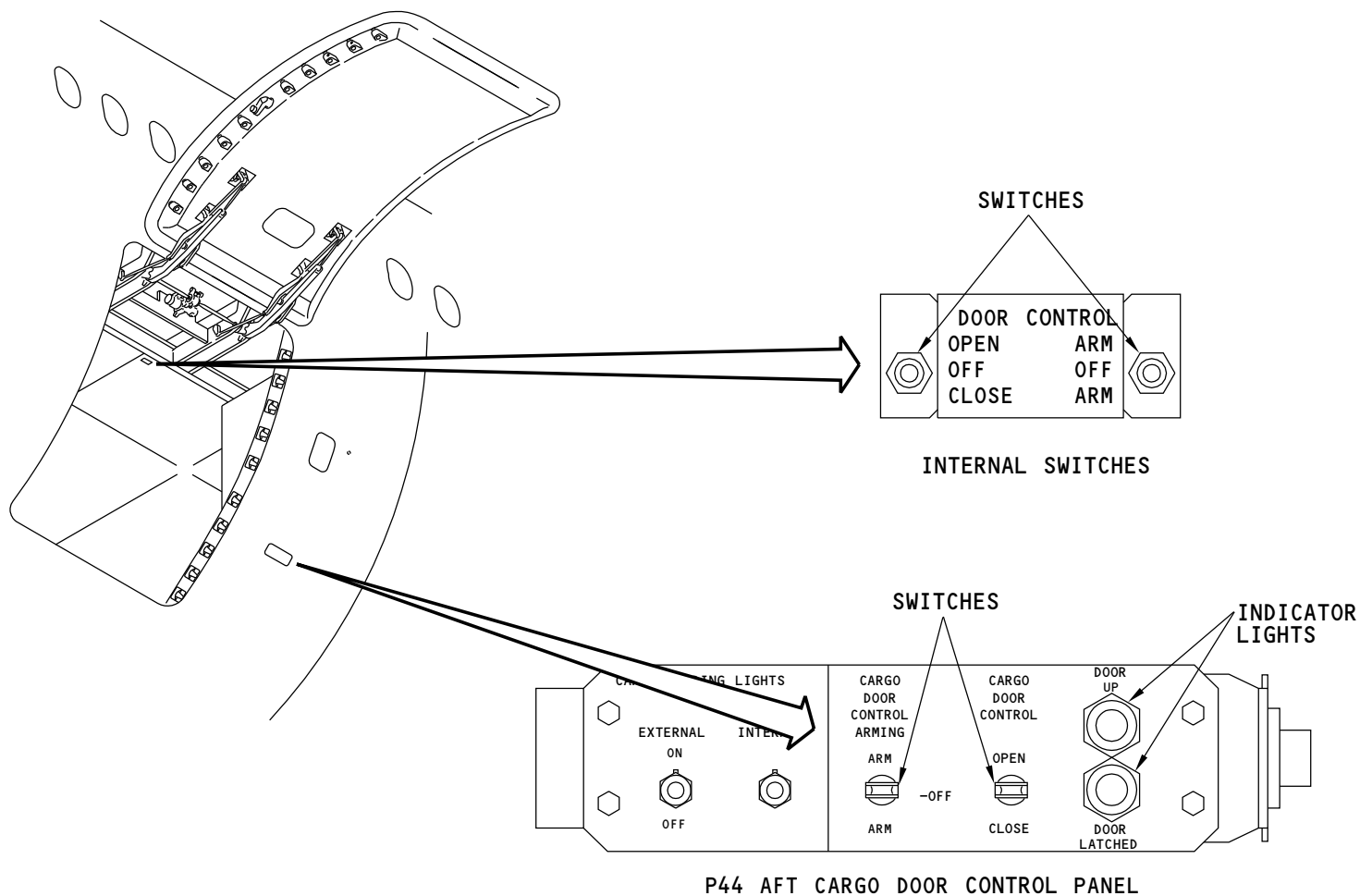
Continue to hold the switches in the arm and close positions. The door closes and moves down into the latched (plug) position. The vent door closes. The green door latched light comes on.

# 52-35-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43349 S000620969\_V1

**AFT SMALL CARGO DOOR SYSTEM - ELECTRICAL OPERATION**

**52-35-00**

52-35-00-015

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-35-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

## AFT SMALL CARGO DOOR SYSTEM - MANUAL OPERATION

### General

Use a 3/8 inch drive tool for manual door operations.



DO NOT OPERATE THE DOOR IN WINDS MORE THAN 40 KNOTS. DO NOT LET THE DOOR STAY OPEN IN WINDS MORE THAN 65 KNOTS. INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.



DO NOT OPEN THE DOOR WHEN THE AIRPLANE IS PRESSURIZED. INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

### Controls

The socket for the manual unlatch/latch operation is on the upper, center part of the door.

The socket for the manual open/close operation is forward of the door, near the cargo handling control panel.

### Unlatch Operation



DO NOT LET THE POWER DRIVE UNIT OPERATE WITH TORQUE LIMITER SLIPPAGE FOR MORE THAN 5 SECONDS. DAMAGE TO THE POWER DRIVE UNIT CAN OCCUR. DO NOT OPERATE THE LIFT/LATCH MANUAL DRIVE AT A SPEED FASTER THAN 500 RPM OR A TORQUE OF MORE THAN 50 POUNDS-INCHES. DAMAGE TO THE LIFT/LATCH POWER DRIVE UNIT CAN OCCUR.

Put the drive tool into the latch manual drive socket. Turn it in the unlatch direction. The vent door opens. The door moves up out of the latch (plug) position.

**NOTE:** The door is in the lifted position when it is lifted vertically two inches (5 cm) from the latched position. It takes approximately 60 full turns of the manual drive to move the door from the latched position to the lifted position.

### Open Operation



DO NOT LET THE POWER DRIVE UNIT OPERATE WITH TORQUE LIMITER SLIPPAGE FOR MORE THAN 5 SECONDS. DAMAGE TO THE POWER DRIVE UNIT CAN OCCUR. DO NOT OPERATE THE HINGE MANUAL DRIVE AT A SPEED FASTER THAN 500 RPM OR A TORQUE OF MORE THAN 110 POUNDS-INCHES. DAMAGE TO THE HINGE POWER DRIVE UNIT CAN OCCUR.

Put the drive tool into the hinge manual drive socket. Turn it in the open direction until the door is in the full open position.

**NOTE:** It takes approximately 1360 full turns of the manual drive to move the door from the lifted position to the fully open position.

## AFT SMALL CARGO DOOR SYSTEM - MANUAL OPERATION

Close Operation



**CAUTION** MAKE SURE THE E/E EQUIPMENT DOORS ARE CLOSED ON THE SIDES OF THE DOOR CUTOUT BEFORE YOU CLOSE THE DOOR. THE CARGO DOOR CAN CAUSE DAMAGE TO OPEN E/E EQUIPMENT DOORS WHEN IT CLOSSES.

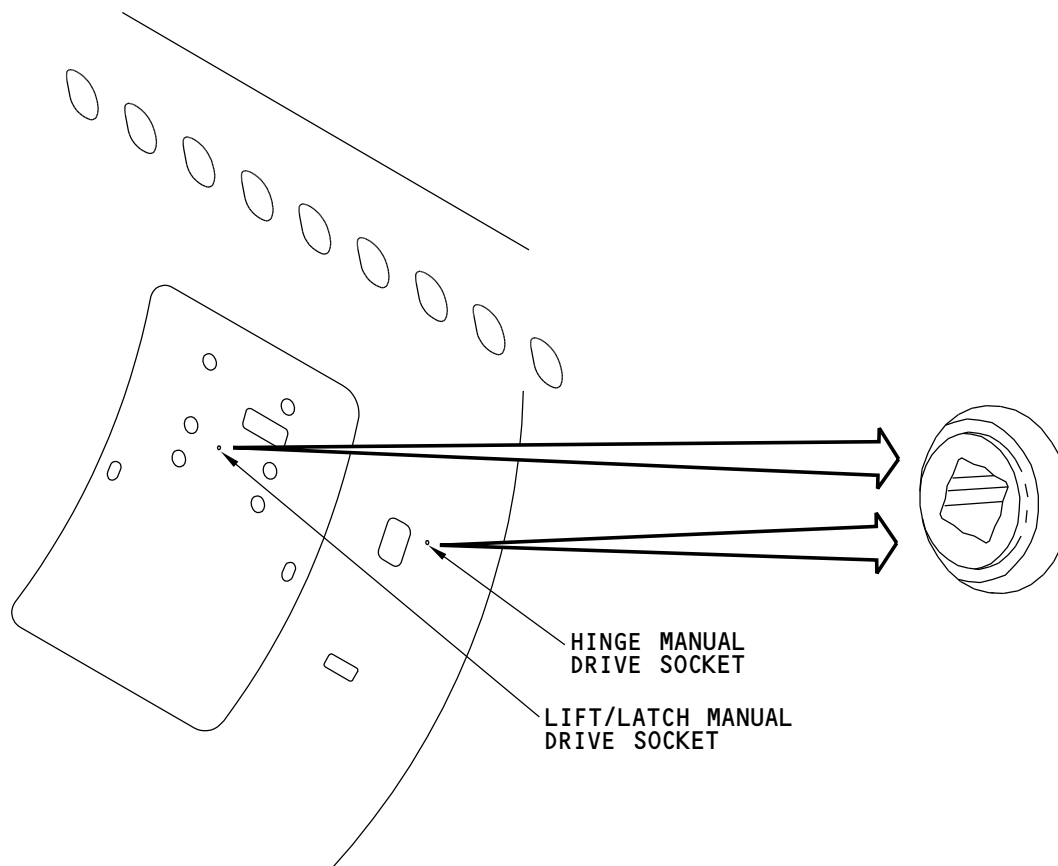
Put the drive tool into the hinge manual drive socket. Turn it in the close direction until the door is in the closed position.

**NOTE:** It takes approximately 1360 full turns of the manual drive to move the door from the fully open position to the closed (lifted) position.

Latch Operation

Put the drive tool into the latch manual drive socket. Turn it in the latch direction. The door moves down to the latch (plug) position. The vent door closes.

**NOTE:** It takes approximately 60 full turns of the manual drive to move the door from the closed (lifted) position to the latch (plug) position. You can make sure that the door is in the latched position by an additional two (2) more turns after the vent door closes.



**AFT SMALL CARGO DOOR SYSTEM - MANUAL OPERATION**

M43350 S000620970\_V2

**52-35-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**AFT SMALL CARGO DOOR SYSTEM - MECHANICAL FUNCTIONAL DESCRIPTION****Unlatch**

Either the lift/latch power drive unit (PDU) motor or the lift/latch manual drive can supply power to lift the door out of the latch (plug) position. Linear movement of the actuator goes through linkage to turn the lift/latch torque tube.

A cam on the torque tube releases the vent door crank. The crank releases pressure on the vent door push rod. The vent door springs open the vent door. As the vent door opens, the rod moves the crank to release the cam so the torque tube can rotate completely. The latch bungee helps complete the rotation of the torque tube.

Cranks on the ends of the torque tube push against latch tracks (not shown) to lift the door out of the latched position. Linkage that attaches the hinge arm to the door, lets the door move up out of the latch (plug) position without hinge arm movement.

Linkage transmits movement of the lift/latch torque tube to the lockout torque tube. The lockout cams on the torque tube move against the lift pins (not shown) on the hinge linkage. This locks the hinge linkage in the door lifted position so the hinge arms can open the door.

**Open/Close**

Either the hinge power drive unit (PDU) or the hinge manual drive can open the door. Rotary movement goes through the hinge torque tubes to rotary actuators. The rotary actuators move the hinge arms.

The hinge arms push against the linkage that attaches the arms to the doors. The door moves out and rotates up.

**Close**

Close movements are the reverse of open movements.

**Latch**

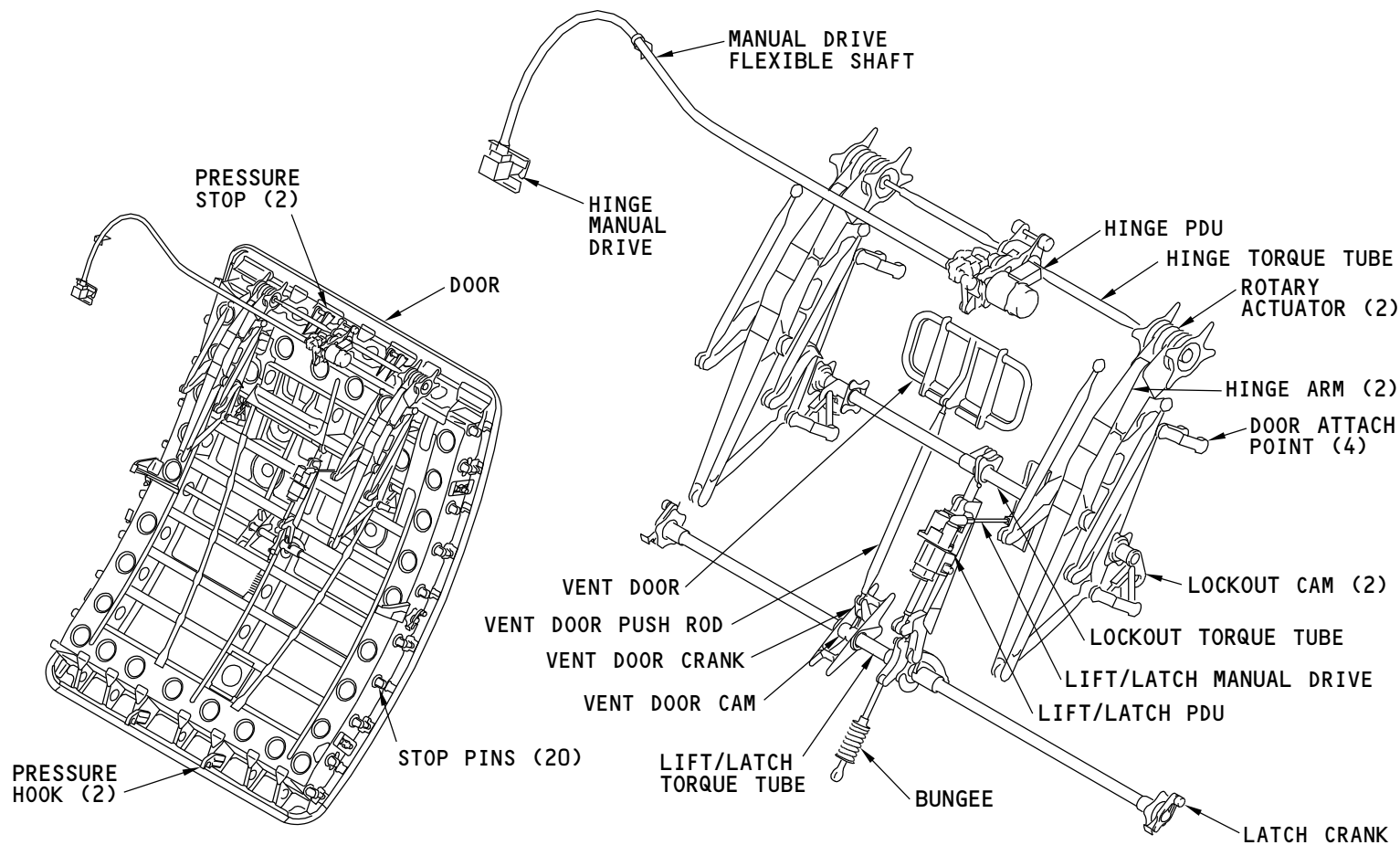
latch movements are the reverse of unlatch movements. At the bottom of the latch movement, the hooks and stops along the top and bottom of the door, and the stop pins along the sides of the door transmit the pressurization load on the door to the door cutout.

**52-35-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



M43351 S000620971\_V1

### AFT SMALL CARGO DOOR SYSTEM - MECHANICAL FUNCTIONAL DESCRIPTION

52-35-00

52-35-00-017

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



## AFT SMALL CARGO DOOR SYSTEM - ELECTRICAL FUNCTIONAL DESCRIPTION

General

Sensors on the door give inputs to the proximity sensor electronics unit (PSEU). The PSEU uses the inputs to turn on door position indication lights, and enable door control relays.

The system uses ground handling power. Relays supply the three phase power in specified configurations to the hinge and the lift/latch power drive units (PDU). The phase configuration controls whether a PDU opens or closes the door.

There are internal and external control switches. The internal switch has priority over the external switch.

Arm

Movement of an arming switch to either ARM position energizes the arming relay. This supplies power to the hinge and lift/latch relays.

Unlatch

The PSEU uses an input from the door lifted sensor to enable the lift/latch up relay. Either control switch in the OPEN position energizes the relay. The relay puts the power phases in the correct configuration so the lift/latch power unit lifts the door out of the latch (plug) position.

The PSEU uses inputs from the door down and door latched sensors to make the door latched light go off.

Open

The PSEU uses inputs from the door lifted and door up sensors to enable the up relay. Either control switch in the OPEN position energizes the relay. The relay puts the power phases in the correct configuration so the hinge PDU opens the door to the full up position.

The PSEU uses inputs from the door up sensor to make the door up light come on.

Close

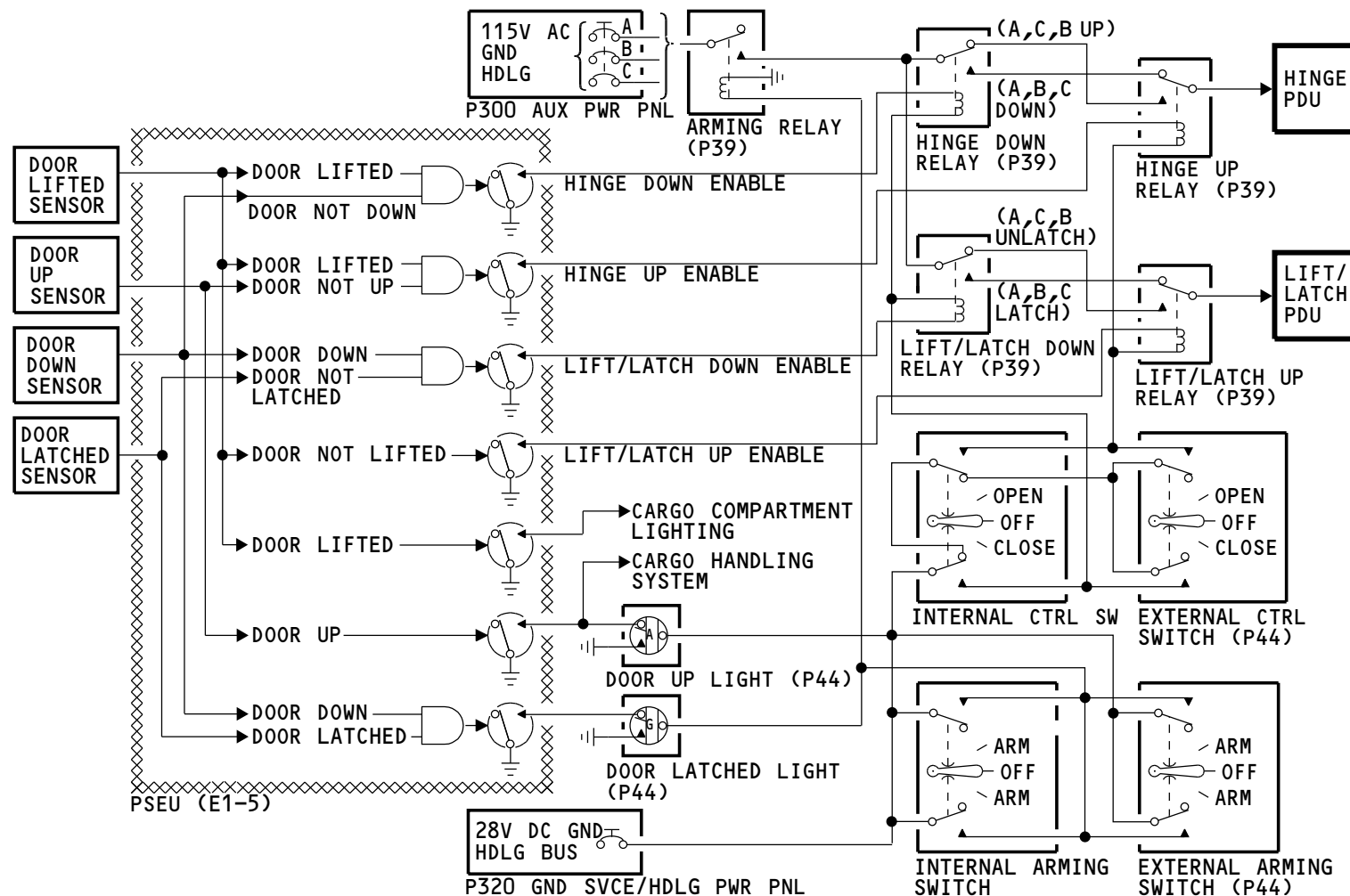
The PSEU uses inputs from the door lifted and door down sensors to enable the hinge down relay. Either control switch in the CLOSE position energizes the relay. The relay puts the power phases in the correct configuration so the hinge PDU closes the door to the full down position.

Latch

The PSEU uses inputs from the door down and door latched sensors to enable the lift/latch down relay. Either control switch in the CLOSE position energizes the relay. The relay puts the power phases in the correct configuration so the lift/latch power unit lowers the door to the latch (plug) position.

The PSEU uses inputs from the door down and door latched sensors to make the door latched light come on.

| EFFECTIVITY |  |
|-------------|--|
| ARO ALL     |  |



M43352 S000620972\_V1

### AFT SMALL CARGO DOOR SYSTEM - ELECTRICAL FUNCTIONAL DESCRIPTION

52-35-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details





THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-36-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**BULK CARGO DOOR SYSTEM - INTRODUCTION****Purpose**

The bulk cargo door system gives access to the bulk cargo compartment.

**Location**

The bulk cargo door is on the right side of the airplane, aft of the aft cargo door.

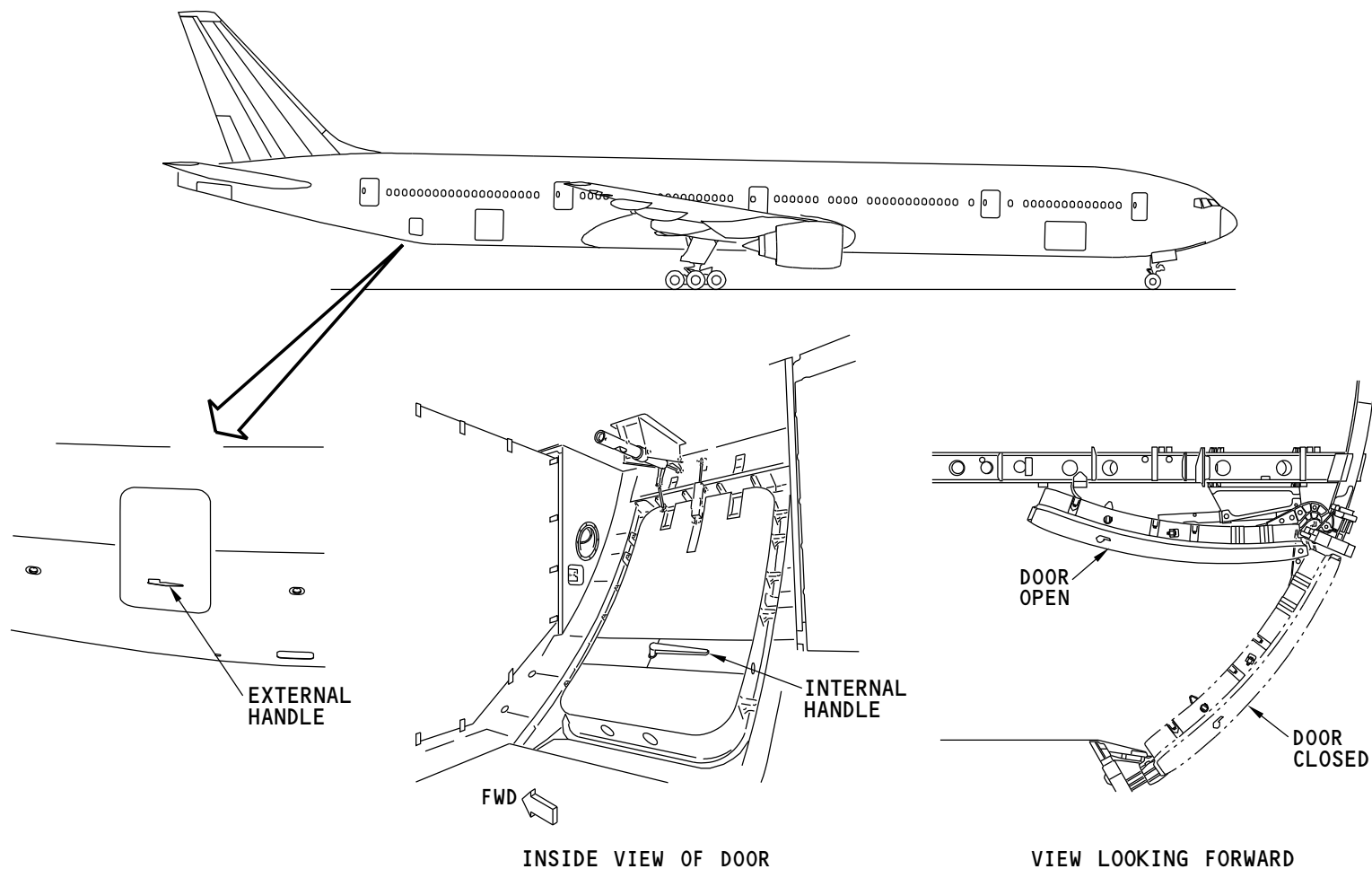
**General Description**

The bulk cargo door supplies a clear opening of 36 inches (91.4 cm) wide and 45 inches (114.3 cm) high. Door dimensions let cargo handlers load and unload cargo that is not on pallets or in containers.

The door is a plug type. To open, it hinges along the top and moves into the bulk cargo compartment area.

You operate it manually from outside or inside the bulk cargo compartment.

|         |             |
|---------|-------------|
| ARO ALL | EFFECTIVITY |
|---------|-------------|



M43361 S000620981\_V1

**BULK CARGO DOOR SYSTEM - INTRODUCTION**

**52-36-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**BULK CARGO DOOR SYSTEM - COMPONENT LOCATIONS****Component Locations**

The counterbalance mechanism is on the cargo compartment ceiling structure, inboard of the bulk cargo door.

The snubber is at the top, center of the cargo door.

The two hinge arms are at the top of the cargo door.

The latch mechanism is across the door, near the bottom.

**General Description**

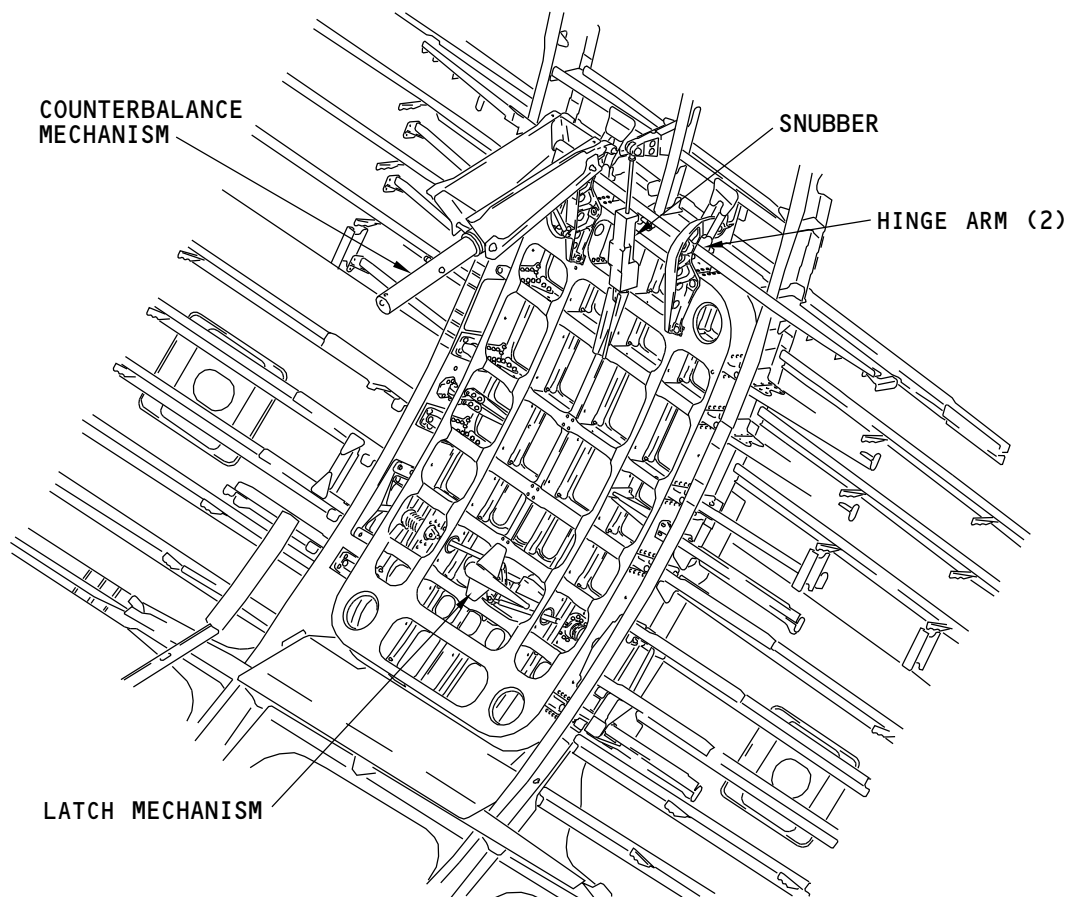
The latch mechanism lets you open and close the door. It also holds the door closed.

The hinge arms let the door rotate open and closed.

The counterbalance lifts the door open.

The snubber controls the movement rate of the door.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



**BULK CARGO DOOR SYSTEM - COMPONENT LOCATIONS**

M43363 S000620983\_V1

52-36-00-002

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**52-36-00**



**BULK CARGO DOOR SYSTEM - DOOR AND SEAL****Purpose**

The door and seal close and seal the external access to the bulk cargo compartment.

**Physical Description**

The door is a plug-type. It has a skin, frames, beams, guide rollers, and stops.

The seal is a blade-type that goes completely around the edge of the door.

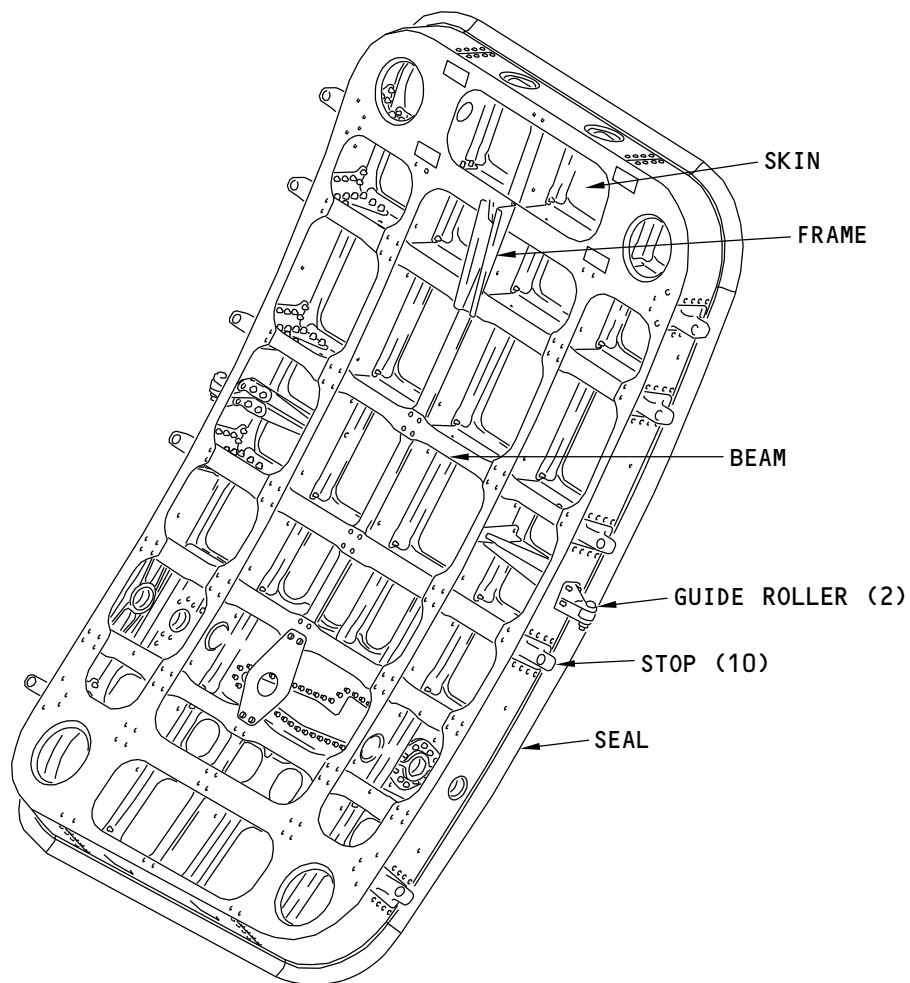
**Functional Description**

The five stops on each side of the door pass the pressurization load on the door to stops on the door cutout.

The guide rollers put the door in the correct position as it goes into the cutout.

**Training Information Point**

The door seal prevents air flow from the cargo compartment to the outside.



**BULK CARGO DOOR SYSTEM - DOOR AND SEAL**

M43364 S000620984\_V2

52-36-00-003

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**52-36-00**

**BULK CARGO DOOR SYSTEM - COUNTERBALANCE MECHANISM****Purpose**

The counterbalance mechanism lifts the bulk cargo door to the open position.

**Physical Description**

The counterbalance mechanism has these components:

- Tube that contains four springs
- Saddle fitting
- Piston rod
- Bellcrank
- Control rod.

**Location**

The tube has a pin in the middle that attaches to the saddle fitting. The saddle fitting attaches to airplane structure at the top of the bulk cargo compartment. The control rod attaches to the door.

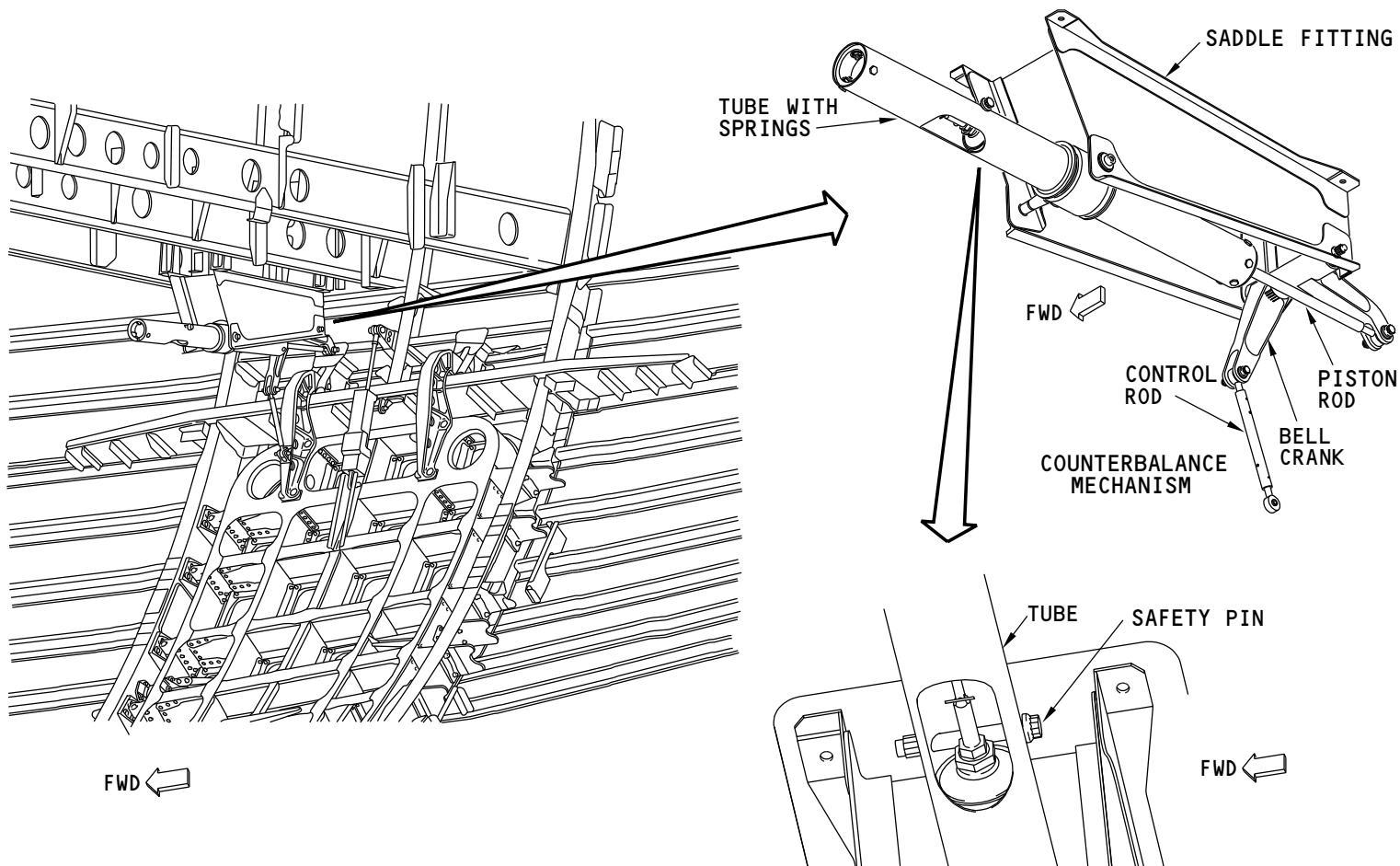
**Functional Description**

The springs in the tube supply the force that opens the door. The piston rod, bellcrank, and control rod transmit the force that lifts the door.

**Training Information Point**

You can put a safety pin through the tube to keep the springs compressed when you disconnect linkage or remove the tube from the saddle fitting.

|         |             |
|---------|-------------|
| ARO ALL | EFFECTIVITY |
|---------|-------------|



M43365 S000620985\_V1

**BULK CARGO DOOR SYSTEM - COUNTERBALANCE MECHANISM**

**52-36-00**

52-36-00-004

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**BULK CARGO DOOR SYSTEM - SNUBBER****Purpose**

The snubber controls the rate at which:

- The counterbalance opens the door
- You can close the door
- The door closes if the counterbalance fails.

**Physical Description**

The snubber is a piston rod in a fluid-filled tube.

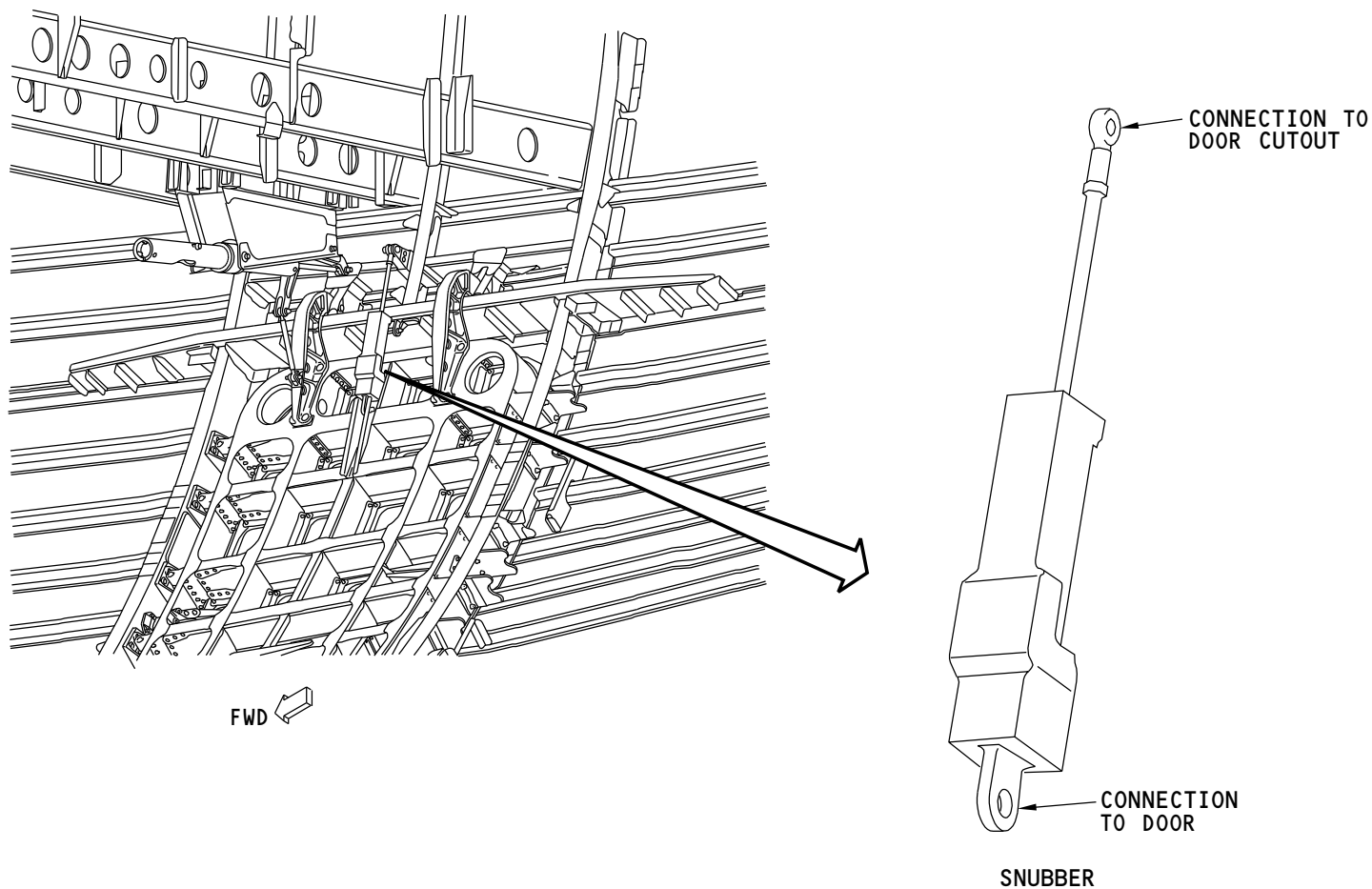
**Location**

The tube end of the snubber attaches to the airplane structure above the door cutout. The rod end attaches to the door.

**Functional Description**

Movement of the piston rod makes fluid flow through an orifice in the piston. This controls the rate at which the door moves.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43366 S000620986\_V1

**BULK CARGO DOOR SYSTEM - SNUBBER**

**52-36-00**

52-36-00-005

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



## BULK CARGO DOOR SYSTEM - HINGE ARM

### Purpose

The two hinge arms connect the bulk cargo door to the airplane.

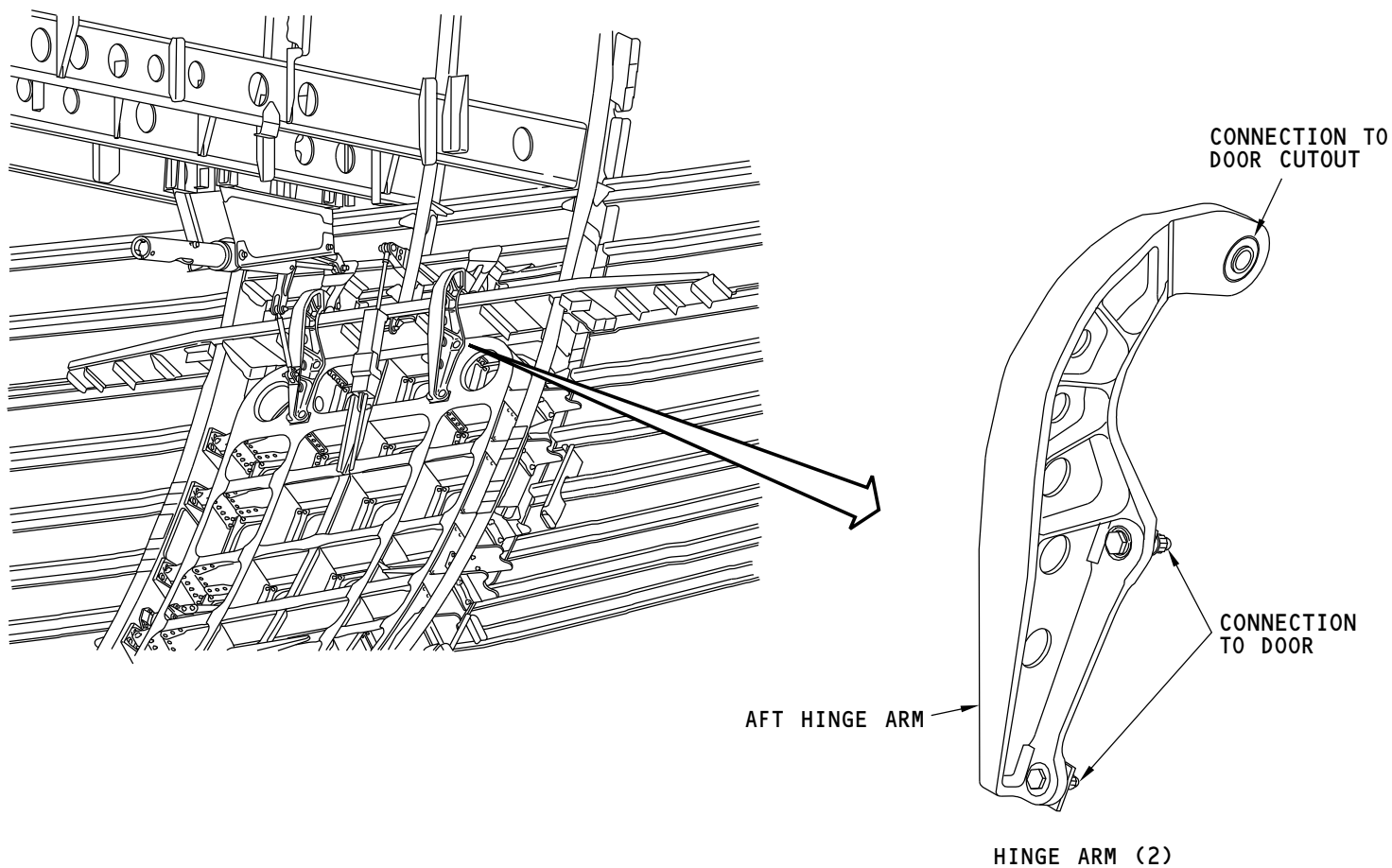
### Location

One end of the hinge arm connects to the top of the door cutout. The other end connects to the door.

### Functional Description

The hinge arms let the door open and close.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43367 S000620987\_V1

**BULK CARGO DOOR SYSTEM - HINGE ARM**

**52-36-00**

52-36-00-006

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



**BULK CARGO DOOR SYSTEM - LATCH MECHANISM****Purpose**

The latch mechanism lets you latch and unlatch the door.

**Physical Description**

The mechanism is made up of these components:

- External handle
- Latch probes
- Springs
- Push/pull rods
- Internal handle.

**Location**

The latch mechanism goes across the door, near the bottom. The latches are on the door cutout.

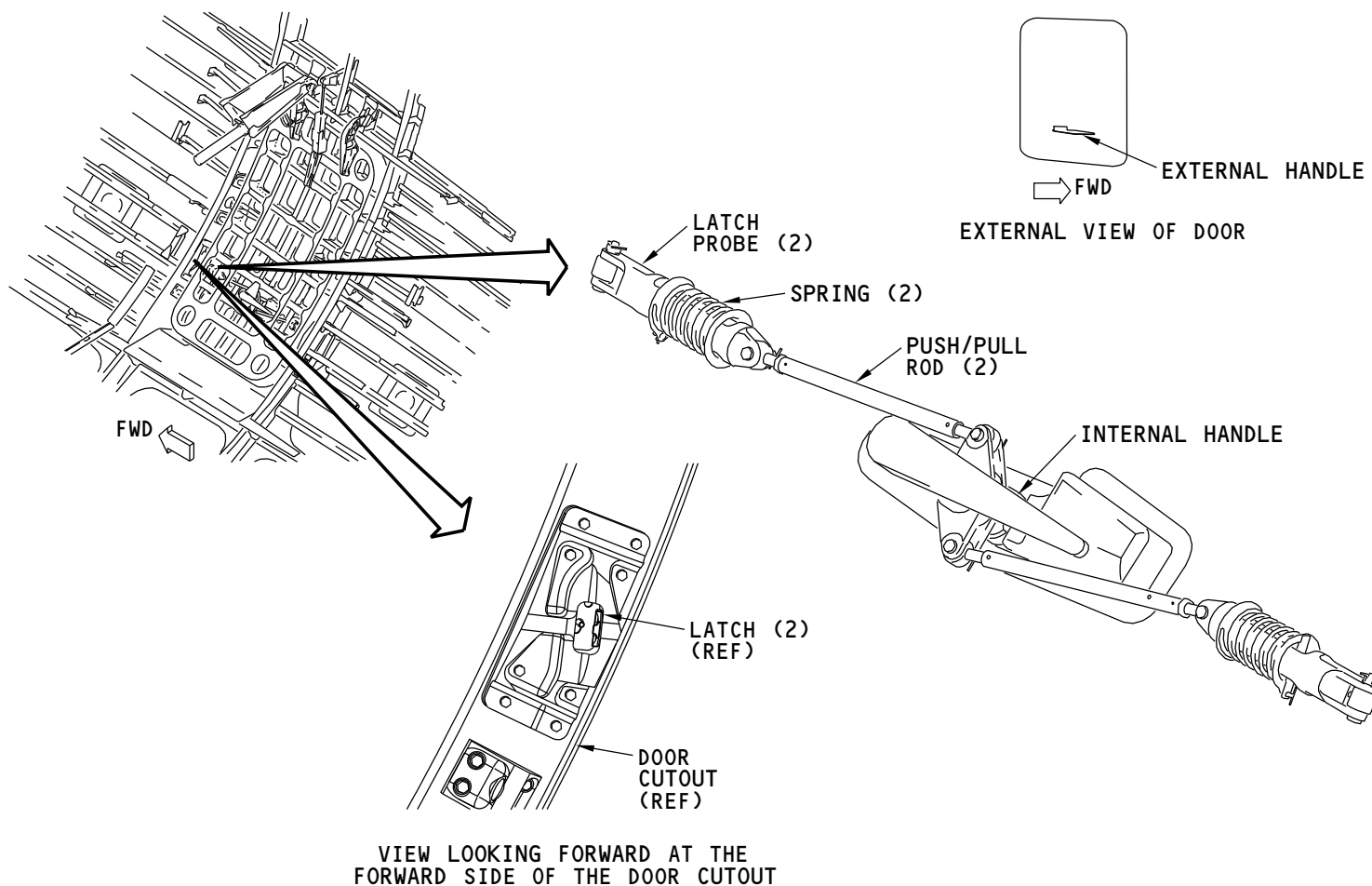
**Functional Description**

When you pull outboard on the external handle, it connects to the internal handle. The internal handle connects to the push/pull rods.

When you turn either handle, the push/pull rods compress the springs and pull the probes out of the latches. When you release the handle, the springs push the latch probes outward.

A spring on the external handle pulls it inboard to the fair position when the door is latched.

|         |             |
|---------|-------------|
| ARO ALL | EFFECTIVITY |
|---------|-------------|



M43368 S000620988\_V1

### BULK CARGO DOOR SYSTEM - LATCH MECHANISM

**52-36-00**

52-36-00-007

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**BULK CARGO DOOR SYSTEM - OPERATION****Operation - Door Open**

You can use either the internal or the external handle to unlatch door. To use the external handle, pull the handle outboard until you can turn it. To use the internal handle, you only need to turn it.

When the door is unlatched, the counterbalance supplies the force to open the door. The snubber controls the rate at which the door opens. The door rotates inward and upward on the hinge arms.

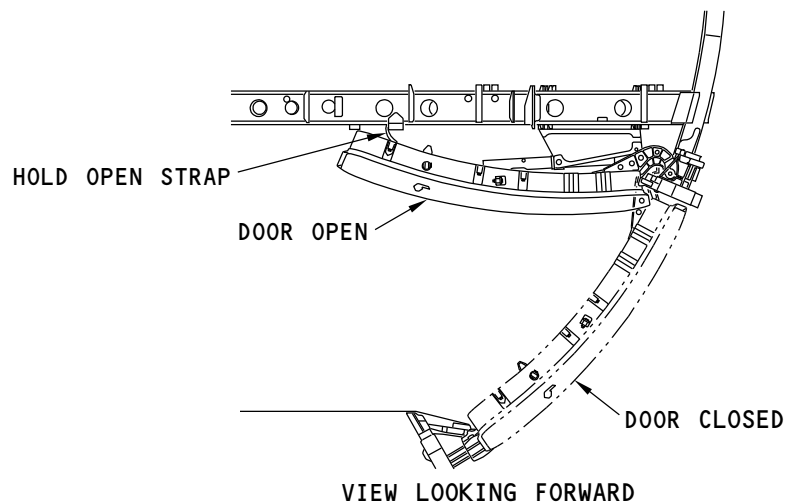
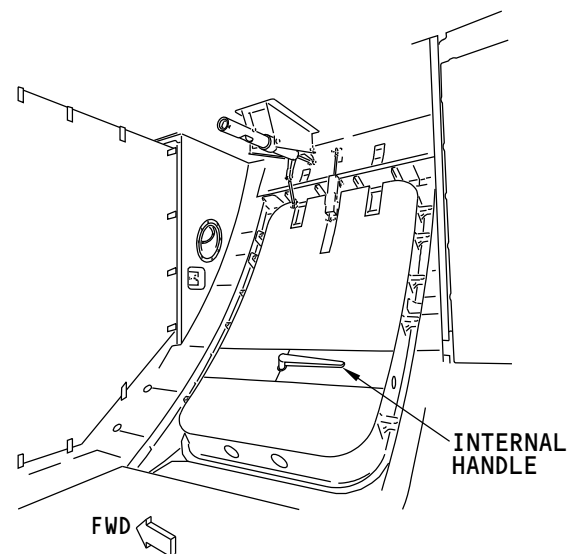
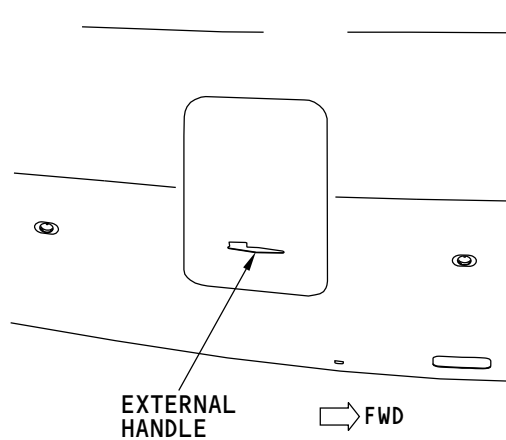
When the door is fully open, put the hold-open strap around the lower, aft door stop.

**Operation - Door Close**

To close the door, release the hold open strap. Pull or push the door down. Rotate the handle to the unlatch position. Close the door. Turn the handle to the latch position. The door is latched and locked.

When the door is full open, use the hold open strap. It gives protection in case the counterbalance and snubber fail.

If you use the external handle, make sure the handle goes inboard to the fair position when you close the door.



INSIDE VIEW OF DOOR

**BULK CARGO DOOR SYSTEM - OPERATION**

M43369 S000620989\_V1

52-36-00-008

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**52-36-00**





THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-40-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



## EQUIPMENT COMPARTMENT AND EQUIPMENT SERVICE DOORS - LEFT SIDE OF AIRPLANE

**Purpose**

Equipment compartment doors give access to equipment on the airplane.

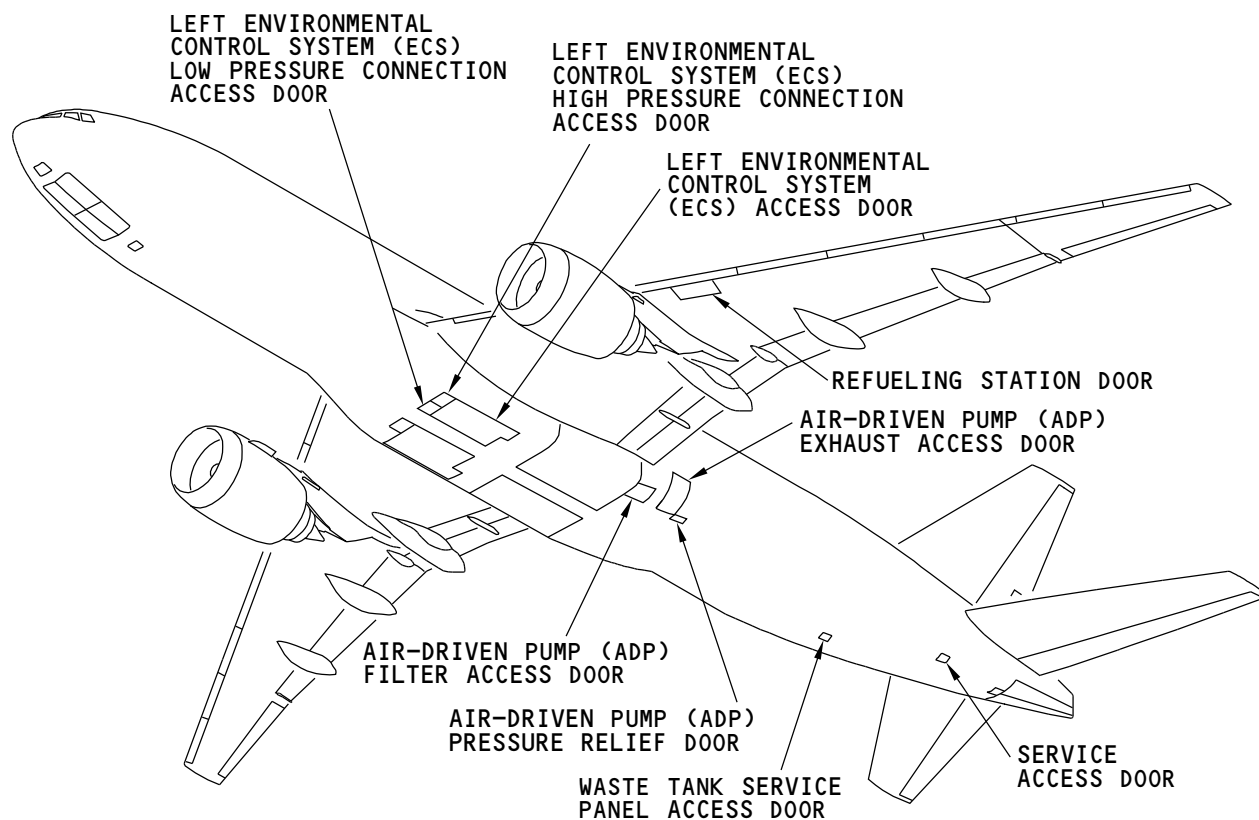
Equipment service doors give access to service airplane systems.

**Location**

These equipment compartment and equipment service doors are on the left side of the airplane:

- Left environmental control system (ECS) low pressure connection access door
- Left environmental control system (ECS) high pressure connection access door
- Left environmental control system (ECS) access door
- Refueling station door
- Air driven pump (ADP) exhaust door
- Service access door
- Waste tank service access door
- Air-driven pump (ADP) pressure relief door
- Air-driven pump (ADP) filter access door.

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |



M43371 S000620991\_V1

EQUIPMENT COMPARTMENT AND EQUIPMENT SERVICE DOORS - LEFT SIDE OF AIRPLANE

52-40-00

52-40-00-001

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |





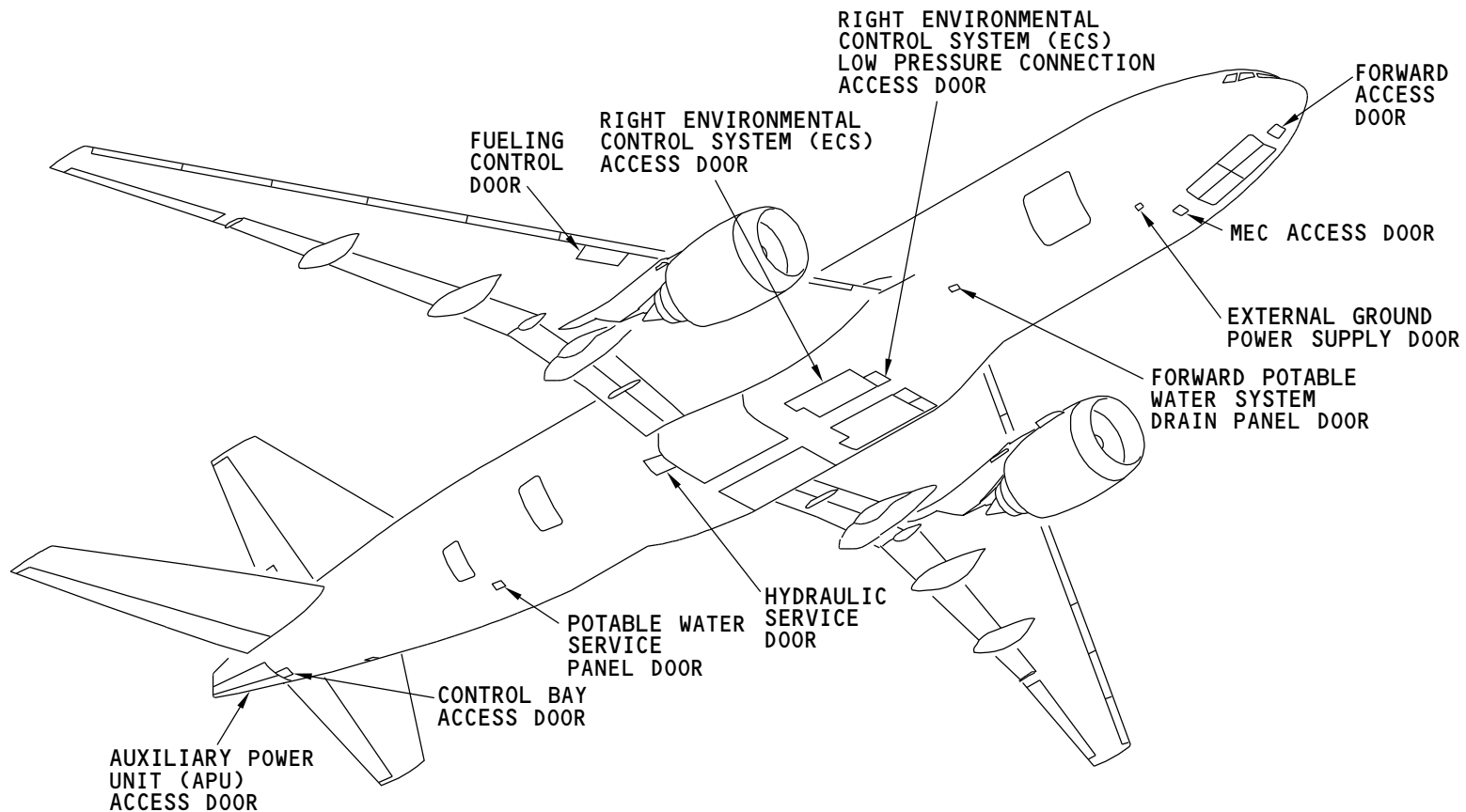
## EQUIPMENT COMPARTMENT AND EQUIPMENT SERVICE DOORS - RIGHT SIDE AND BOTTOM OF AIRPLANE

### Location

These equipment compartment doors and equipment service doors are on the right side and bottom of the airplane:

- Fueling control door
- Right environmental control system (ECS) access door
- Right environmental control system (ECS) low pressure connection access door
- MEC access door
- Forward access door
- External ground power supply access door
- Forward potable water system drain panel door
- Hydraulic service door
- Potable water service panel door
- Control bay access door
- Auxiliary power unit (APU) access door.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43373 S000620993\_V1

EQUIPMENT COMPARTMENT AND EQUIPMENT SERVICE DOORS - RIGHT SIDE AND BOTTOM OF AIRPLANE

52-40-00-002

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

52-40-00

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



## EQUIPMENT COMPARTMENT AND EQUIPMENT SERVICE DOORS - MEC AND FORWARD EQUIPMENT ACCESS DOORS

Operation

You use the same procedure to latch and unlatch these doors:

- Main equipment center (MEC) access door
- Forward equipment access door.

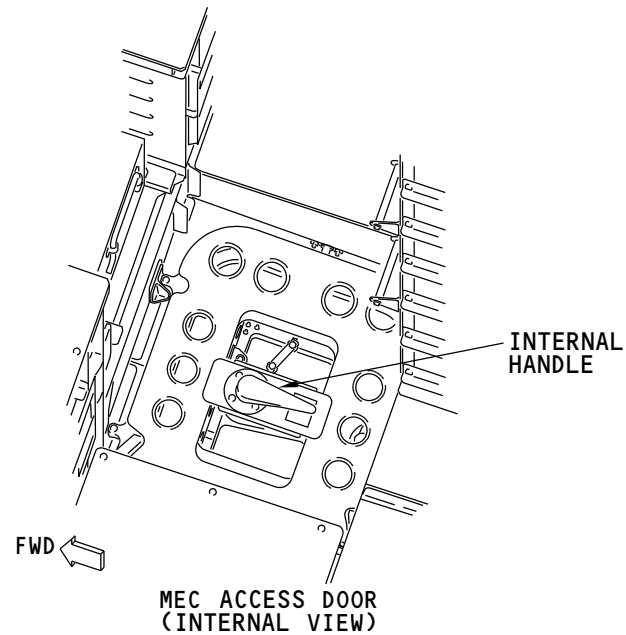
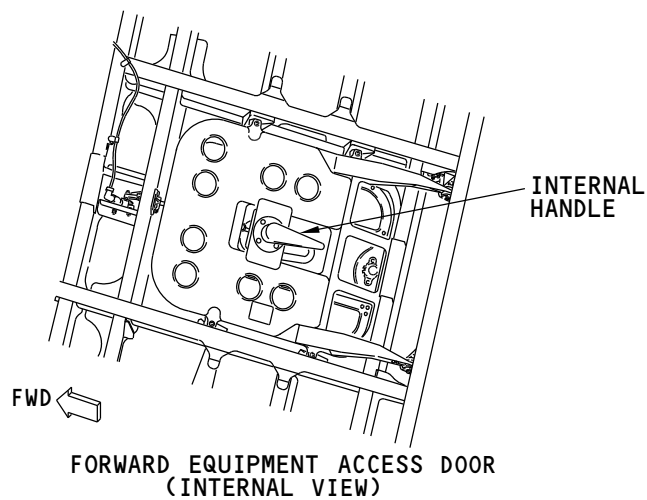
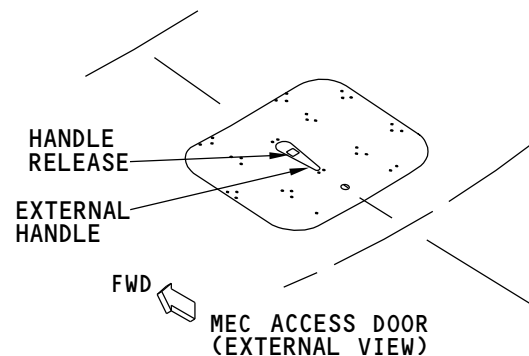
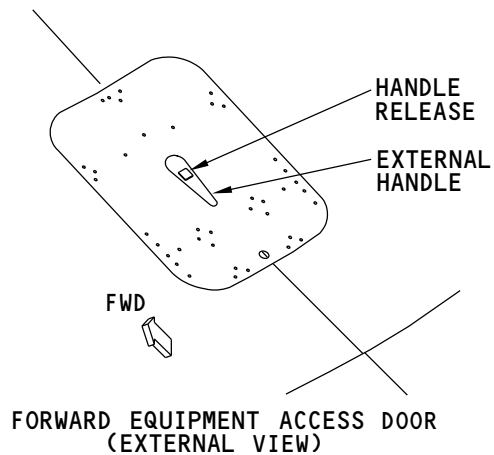
From the external side, push the handle release to make the external handle come out. Turn the external handle to unlatch the door. From the internal side, turn the internal handle to unlatch the door. When the external handle is in the out position, the external handle and the internal handle work together.

In the closed position, turn the external handle to latch the door. Push the external handle in to make it flush with the external surface of the airplane.

The forward equipment access door moves on a hinge. In the full open position, you must turn the handle to engage a hold open latch.

The MEC access door moves up and to the right on tracks. The door is in the full open position when it is fully to the right.

|         |             |
|---------|-------------|
| ARO ALL | EFFECTIVITY |
|---------|-------------|



M43375 S000620995\_V2

**EQUIPMENT COMPARTMENT AND EQUIPMENT SERVICE DOORS - MEC AND FORWARD EQUIPMENT ACCESS DOORS**

**52-40-00**

52-40-00-003

ARO ALL

EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details





THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-50-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FIXED INTERIOR DOORS - INTRODUCTION****Purpose**

Fixed interior doors give access from one compartment to another inside the airplane.

**Location**

These are the fixed interior doors:

- Flight compartment door
- Main equipment center (MEC) access hatch
- Vertical stabilizer access panel.

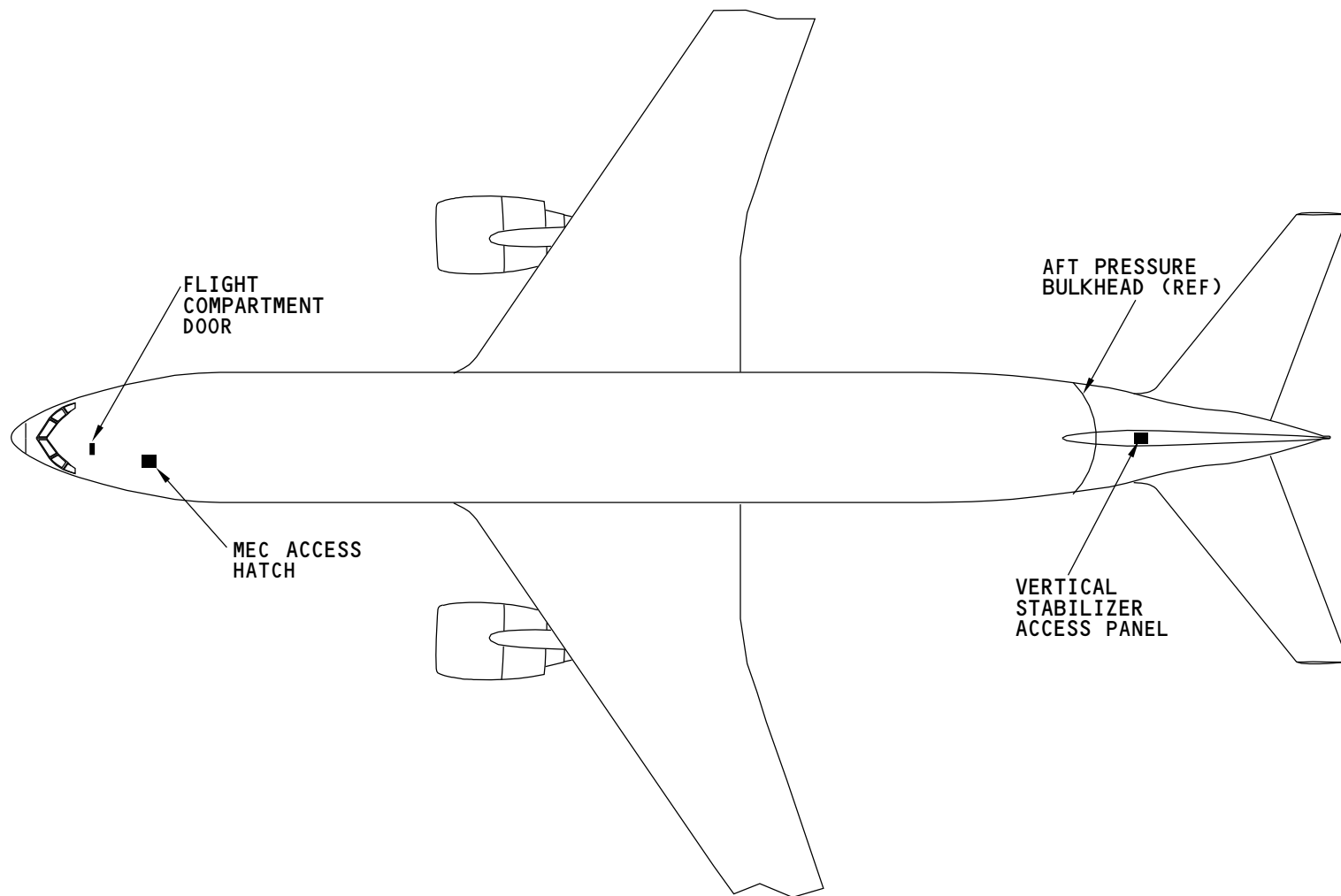
The flight compartment door is on the left side of flight compartment aft bulkhead.

The main equipment center access hatch is in the forward end of the passenger compartment left aisle near the passenger entry door.

The vertical stabilizer access panel is in the top of the fuselage tail section. Access to the tail section is through the service access door.

See the equipment compartment and equipment service doors section for more information (SECTION 52-40).

|         |             |
|---------|-------------|
| ARO ALL | EFFECTIVITY |
|---------|-------------|



**FIXED INTERIOR DOORS - INTRODUCTION**

M43377 S000620997\_V1

52-50-00-001

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

**52-50-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details





## FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - FUNCTIONAL DESCRIPTION

Door System

The flight compartment door provides selective entry to the flight compartment.

Access is provided by the use of a Keypad Access System which consists of a numeric keypad outside the flight compartment area and a chime module and electric strike that is not accessible from outside the flight compartment.

The chime module provides an audible alert to the flight crew that the correct code has been entered into the keypad. There is also an indicator light in the flight compartment and an LED on the keypad that indicates that the correct code has been entered.

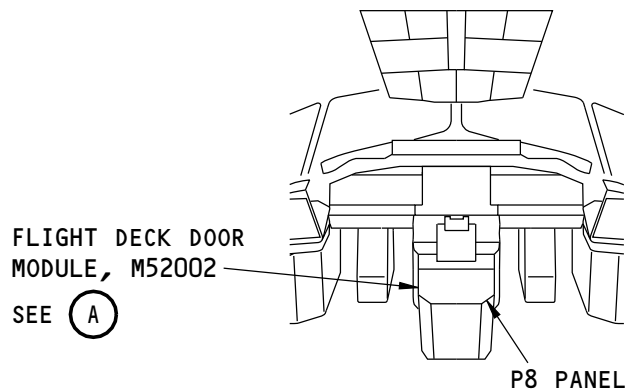
The flight crew has a 3-position switch by which they can open the door lock, close the door lock, or permanently lock the door for a specified amount of time to prevent access by anyone regardless if the correct code is entered into the keypad.

The door has blowout panels that will open in the event of a rapid decompression of the passenger compartment.

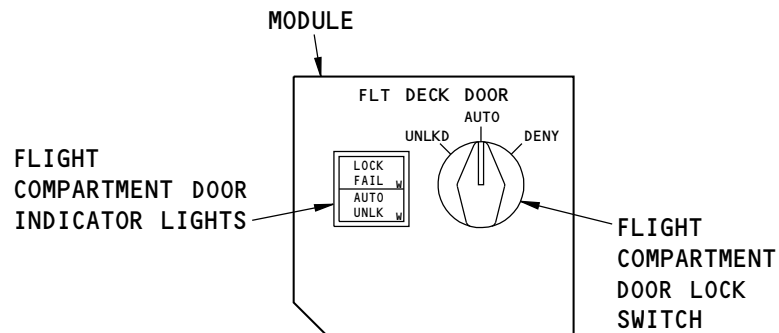
A pressure sensor controls the electric strike and allows the door to open inward in the event of a rapid decompression in the flight compartment.

All access to system door control/wiring is protected such that they cannot be reached from outside the flight deck area, even after forced removal of the numeric keypad.

The door latch solenoid controls the electric strike.

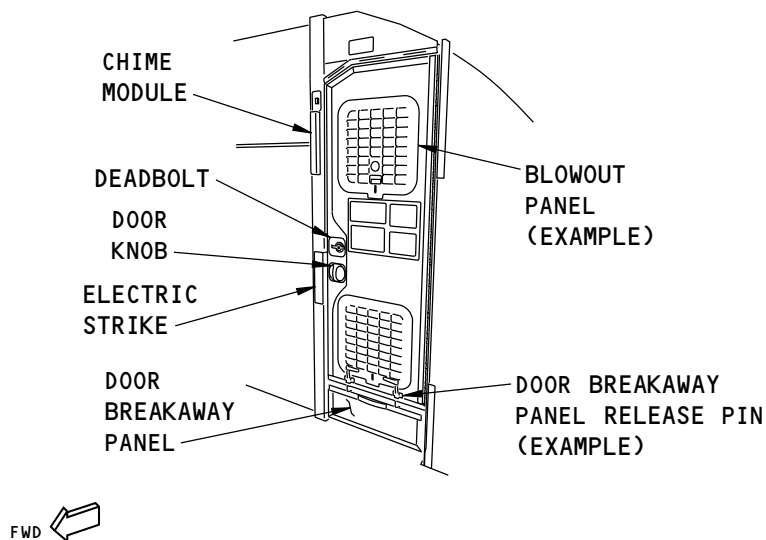


FLIGHT COMPARTMENT

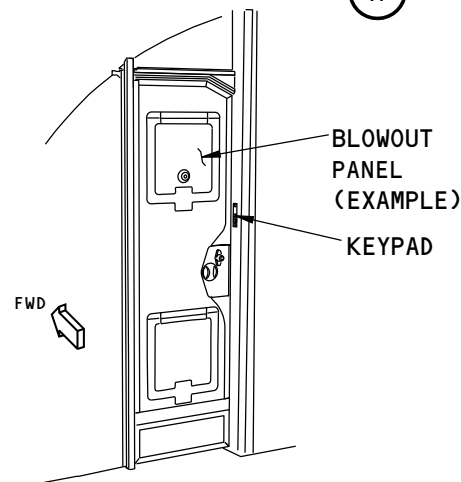


FLIGHT DECK DOOR MODULE, M52002

(A)



FLIGHT COMPARTMENT DOOR



FLIGHT COMPARTMENT DOOR

FLIGHT COMPARTMENT DOOR - COMPONENT LOCATION

N00945 S0000104969\_V1

**FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - DOOR AND ELECTRIC STRIKE****Flight Compartment Door**

The flight compartment door consists of an upper section with a lower breakaway panel, two decompression blowout panels, a lock assembly, and a deadbolt.

The door opens about a piano hinge mounted on the flight compartment partition. The hinge is attached to the partition with screws.

A light shield on the bottom edge of the door prevents incidental light from entering the flight compartment. This is to allow low level lighting on instrument panels.

An Observ-O-Scope in the door allows flight crew members to see into the passenger compartment.

The door has blowout panels installed that will open aft in the event of a decompression in the passenger cabin.

The deadbolt secures the flight compartment when the airplane is on the ground. A key operates the deadbolt from the passenger cabin side. If the deadbolt is locked from the flight compartment side, the key will not unlock the door from the passenger cabin side.

The door has a breakaway panel installed that will release in a hard landing. A hard landing can cause the floor to bend, and jam the door closed. If the breakaway panel does not fully release, the flight crew can manually release the breakaway panel pins on the flight compartment side.

**Electric Strike**

The electric strike consists of a solenoid, a spring mounted strike, and a pin which prevents the strike from rotating.

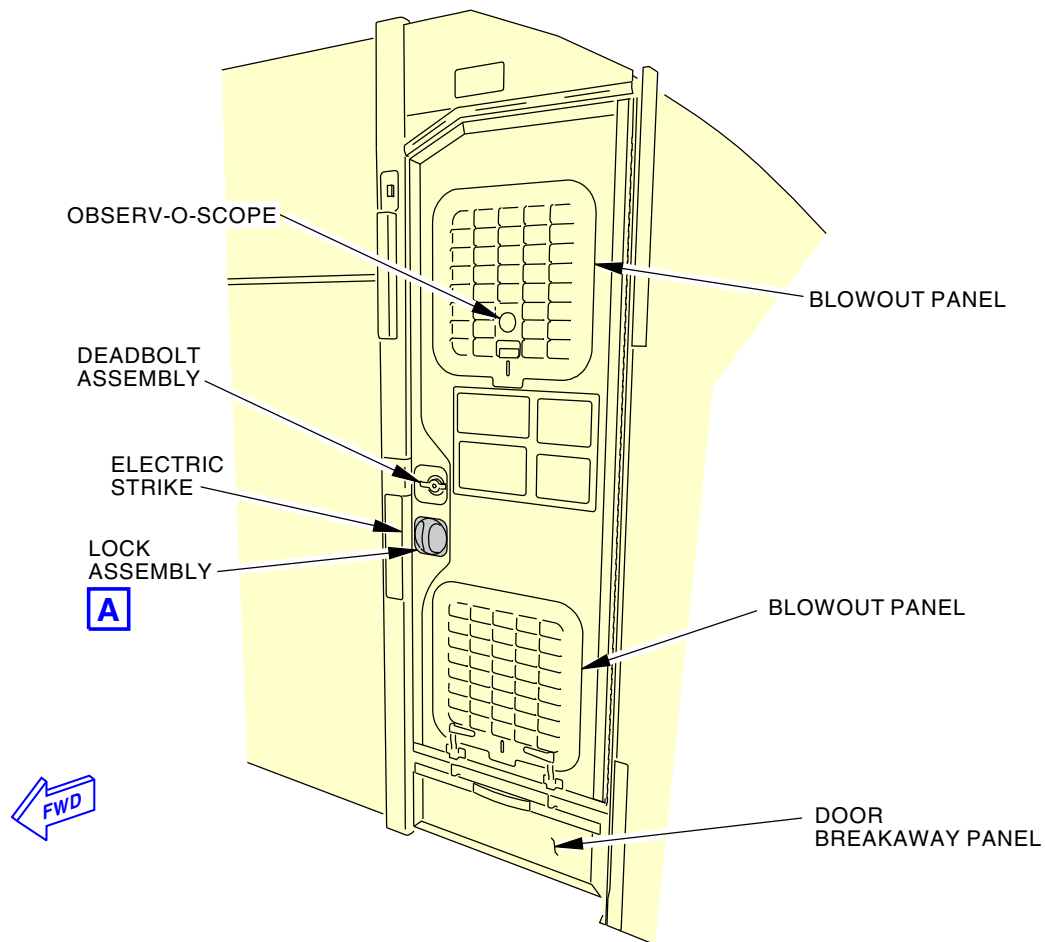
The solenoid acts to lock the flight compartment door. When 28VDC is applied to the solenoid it closes, extending a pin to prevent the strike from rotating. This prevents the door from being opened from the aft (passenger) side.

When the solenoid is de-energized, the pin retracts and allows the strike to rotate when sufficient force is applied to the door to overcome the spring pressure.

**52-50-00****ARO ALL EFFECTIVITY**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



**FLIGHT COMPARTMENT DOOR**

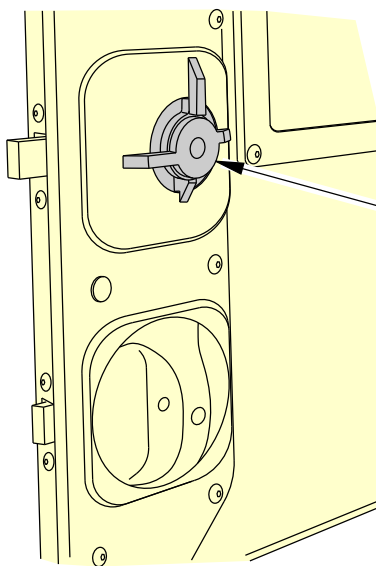
N00978 S0000105001\_V2

**FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - DOOR AND ELECTRIC STRIKE**

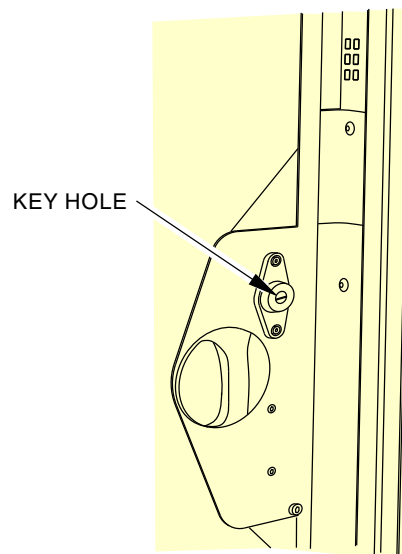
**52-50-00**

52-50-00-009

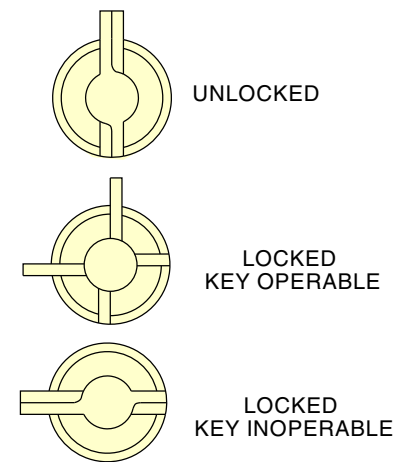
| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



FLIGHT COMPARTMENT VIEW



PASSENGER CABIN VIEW



DEADBOLT POSITIONS



FLIGHT COMPARTMENT DOOR DEADBOLT

2570065 S0000616022\_V1

**52-50-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-50-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



## FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - KEYPAD

**Keypad**

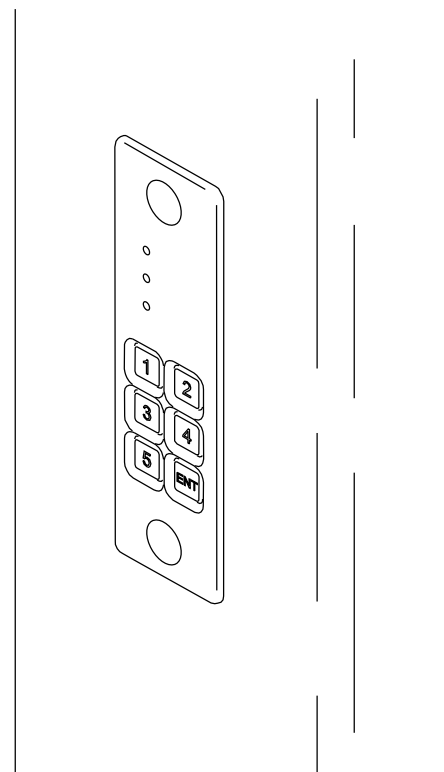
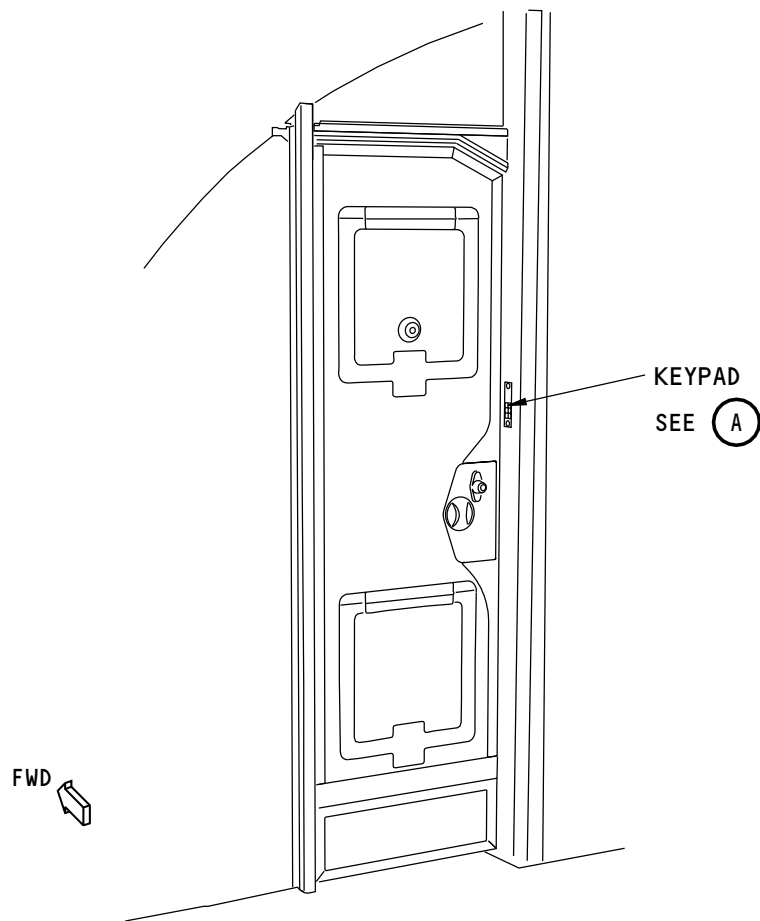
The keypad is mounted on the passenger side of the right hand door post.

The keypad contains numbers one through five, an ENTER button, and 3 LED's.

The numbers are used by the crew to enter a preprogrammed code to allow entry to the flight compartment.

The LED's are amber, red, and green, and indicate whether a correct code has been entered, and whether the door strike is in the locked or unlocked position, respectively.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



FLIGHT COMPARTMENT DOOR

KEYPAD

(A)

FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - KEYPAD

N01005 S0000105013\_V1

52-50-00

52-50-00-010

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details





## FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - CHIME MODULE

**Chime Module**

The chime module is mounted on the right hand door post inside the flight compartment.

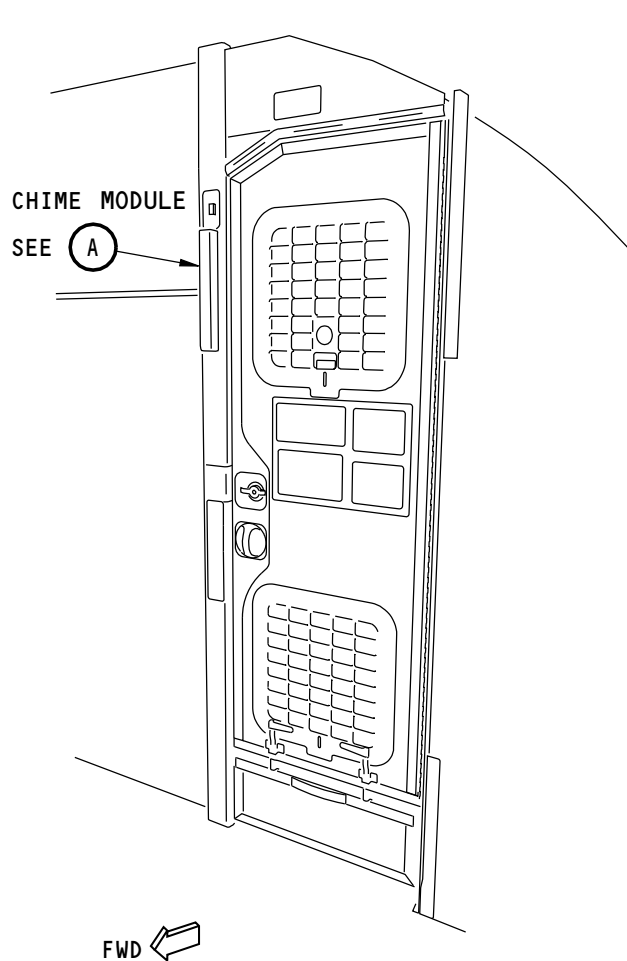
The chime module controls the functions of the access system.

A removable cover on the chime module allows access to two switches that must be pressed to program the various time delays and items of the access system.

The programmable items are the Access Time Delay, the Deny Time Delay, Time of Continuous Chime, and Access Code, and the Chime/Doorbell function.

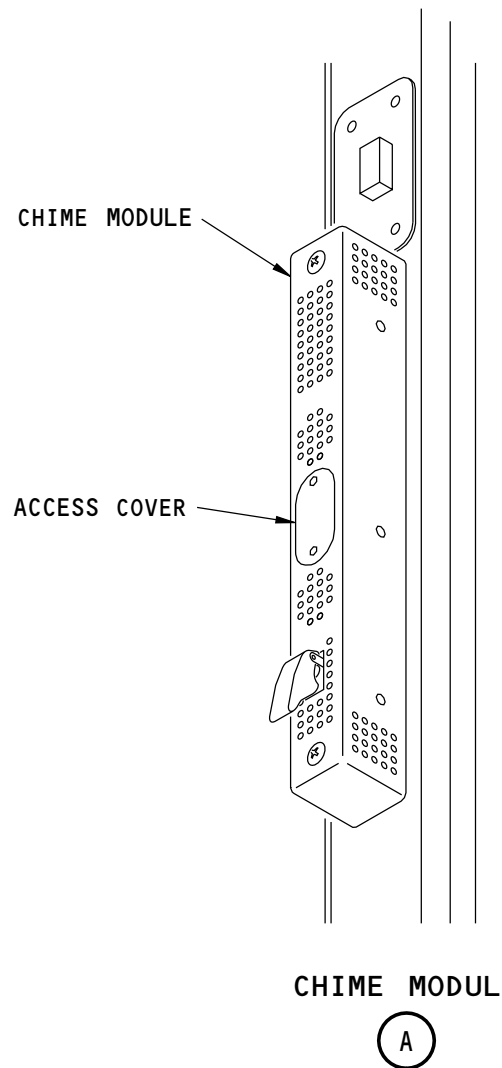
A guarded power cut off switch is installed on the chime module to allow normal maintenance and preflight access to the flight compartment when the airplane has electrical power.

When the switch is in the Up (guard extended) position, power is removed from the chime module and strike solenoid, which unlocks the door.



**FLIGHT COMPARTMENT DOOR**

**FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - CHIME MODULE**



N01029 S0000104977\_V1

**52-50-00**

52-50-00-006

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



## FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - PRESSURE SENSOR

**Pressure Sensor**

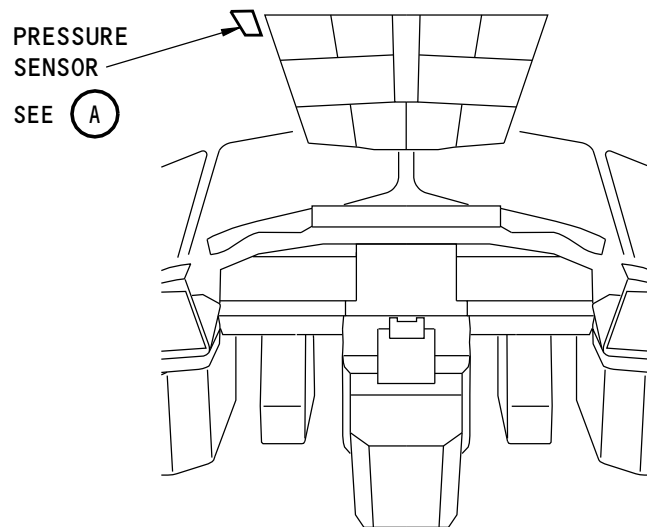
A pressure sensor is mounted on the ceiling forward of the flight compartment door.

The pressure sensor contains an internal dual channel solid state pressure sensor.

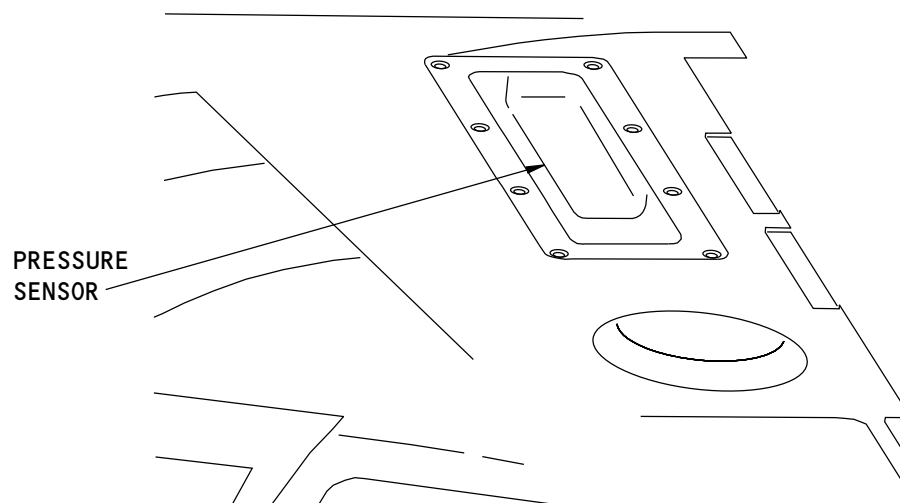
Either redundant channel in the pressure sensor will open a switch that removes the ground path to the electric strike and allows the door to open.

The pressure sensor is a normally closed switch that will open when a rapid decompression event in the flight compartment occurs.

When a rapid decompression event occurs, the pressure switch senses the change and causes the power to the solenoid to be removed which will release the door latch, allowing the door to open inward.



FLIGHT COMPARTMENT



PRESSURE SENSOR



N01034 S0000104985\_V1

FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - PRESSURE SENSOR

**52-50-00**

52-50-00-007

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - SWITCH MODULE****Three Position Rotary Switch**

The three position rotary switch is located on the M52002 Flight Deck Door Module which is on the overhead P8 Aisle Stand panel.

The switch has three positions: UNLKD, AUTO, and DENY.

The UNLKD position is a push-to-rotate, momentary switch position that unlocks the door.

The door will only be unlocked while the switch is held in the UNLKD position.

The UNLKD position resets the DENY function.

The AUTO position locks the door and enables the door to be unlocked after a correct code is entered in the keypad after a programmed time delay.

The DENY position is a momentary switch position that rejects a correct door entry request and prevents further keypad entry for a programmed time period (Deny Time Delay).

**Flight Compartment Door Indicator Lights**

The Flight Compartment Indicator lights are located on the M52002 Flight Deck Door Module which is on the overhead P8 Aisle Stand panel.

The lights consist of AUTO UNLK and LOCK FAIL

The AUTO UNLK light indicates that a correct keypad code has been entered and that the door will unlock automatically after a programmed period of time unless the crew takes action.

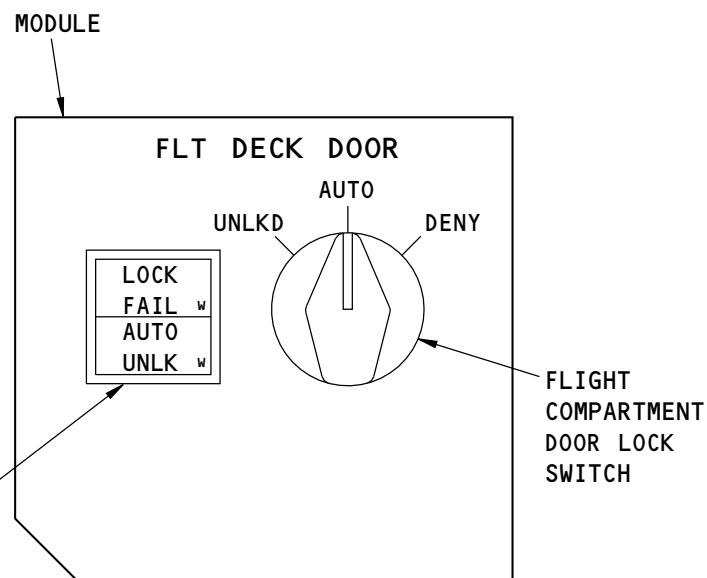
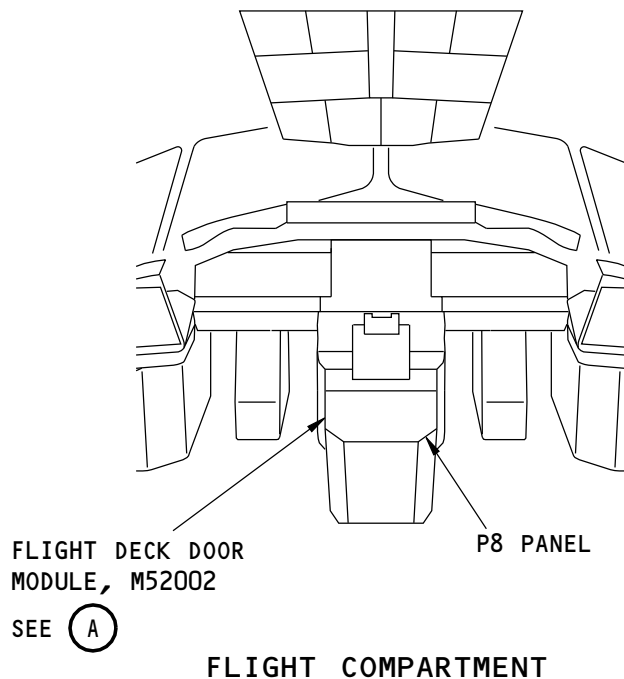
The LOCK FAIL light indicates that the three position switch is in the AUTO position and the solenoid is not in the locked position.

**52-50-00**

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



FLIGHT DECK DOOR MODULE, M52002

(A)

N01014 S0000104963\_V1

FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - SWITCH MODULE

**52-50-00**

52-50-00-005

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



## FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - OPERATION

Operation

When personnel wish to enter the flight compartment they must first enter the correct code in the keypad.

If the correct code is entered, the system will immediately indicate correct code entry with an amber LED on the numeric keypad.

The chime module will sound and the AUTO UNLK light in the flight compartment will come on to notify the flight crew of a requested entry.

If the flight crew takes no action, the door entry system will unlock the door after the Access Time Delay expires.

Before the Access Time Delay expires, the flight crew has the option of manually unlocking the door overriding the automatic unlock by placing the three position rotary switch in the UNLKD position.

The flight crew can also choose to deny access and any further keypad entry request by selecting DENY on the three position switch.

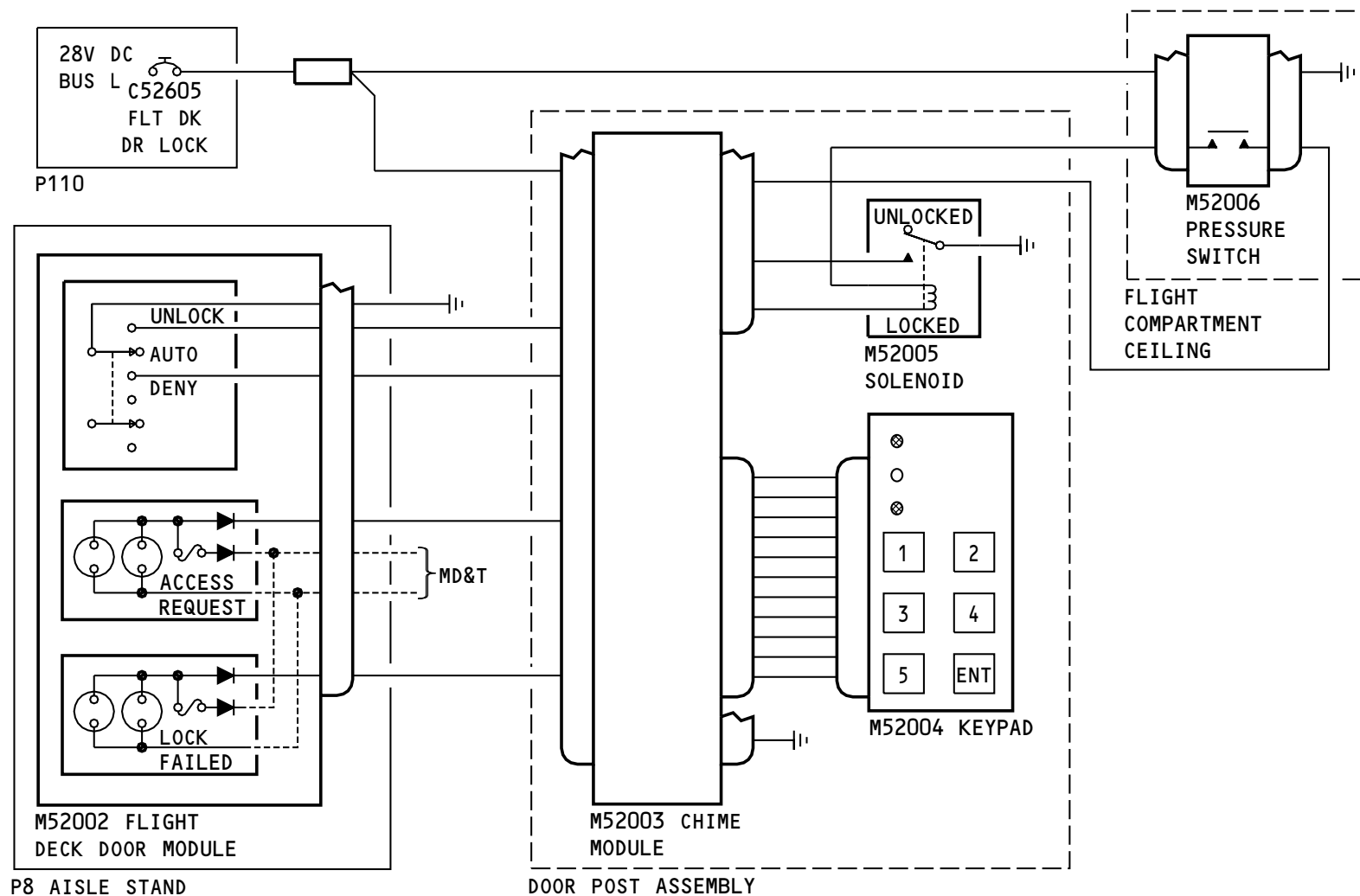
Selecting DENY will prevent unlocking of the door and further keypad entry for the duration of the Deny Time Delay.

When the Deny Time Delay has expired, the system will reset and return to the normal automatic mode.

The Access system can be set to Doorbell Mode.

In the doorbell mode, "1" and "ENT" is entered in the keypad.

The chime module will sound but the door will not unlock and there will not be any other flight deck effects



N01090 S0000104991\_V2

# FIXED INTERIOR DOORS - FLIGHT COMPARTMENT DOOR - OPERATION

52-50-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 19  
May 05/2017



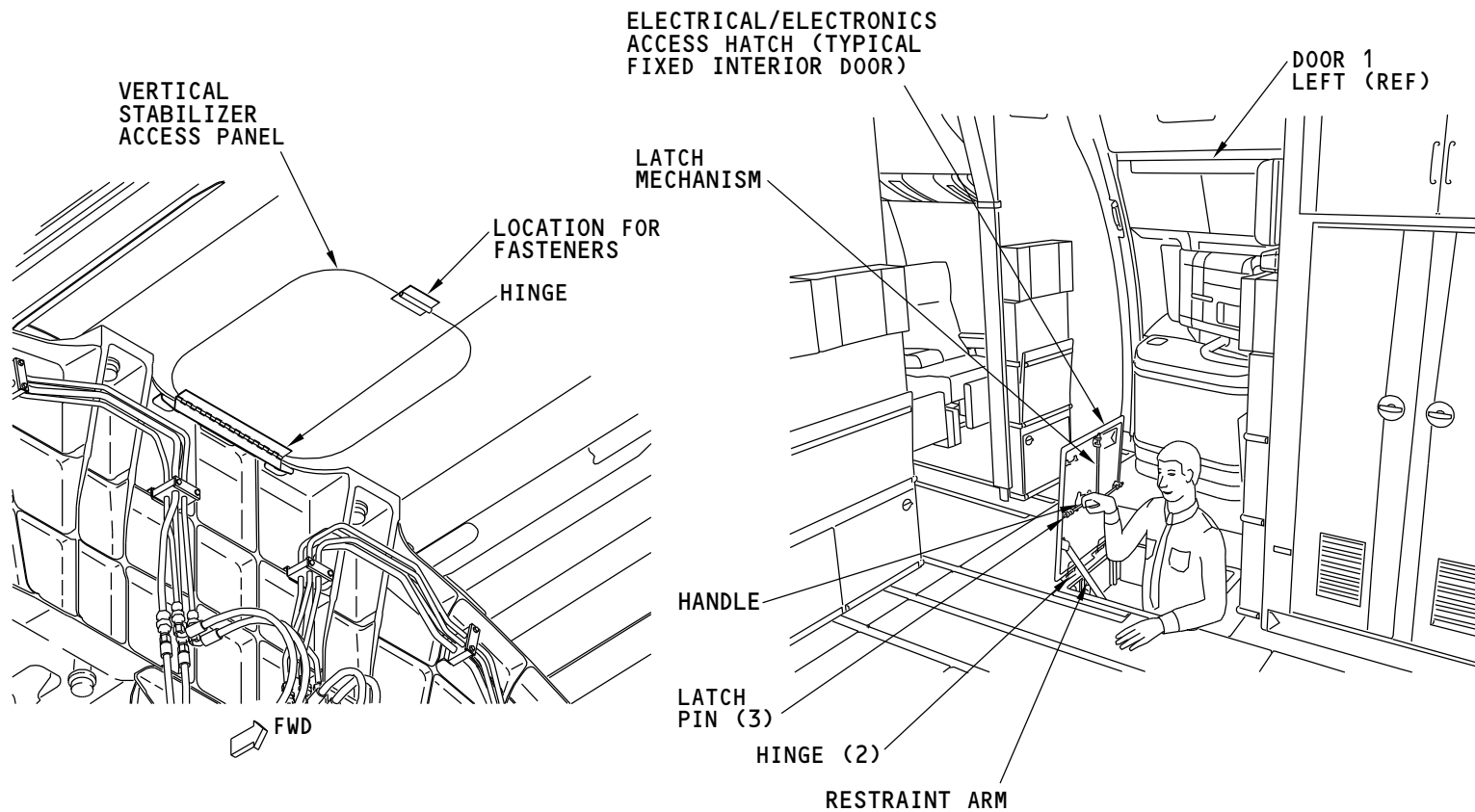
**FIXED INTERIOR DOORS - ELECTRICAL/ELECTRONICS ACCESS HATCH & VERTICAL STABILIZER ACCESS PANEL****Vertical Stabilizer Access Panel Functional Description**

The vertical stabilizer access panel is held closed by quarter turn fasteners (not shown) on the forward side of the panel. The panel opens downward on a hinge on the aft side of the panel.

**Electrical/Electronic Access Hatch Functional Description**

The electrical/electronics access hatch has handles on both sides that move the three pins of the latch mechanism. Hinges on the aft side of the hatch let it open upward. The restraint arm will not permit you to open the door past the vertical position.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43380 S000621000\_V1

**FIXED INTERIOR DOORS - ELECTRICAL/ELECTRONICS ACCESS HATCH & VERTICAL STABILIZER ACCESS PANEL**

52-50-00-003

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

**52-50-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details





THIS PAGE IS INTENTIONALLY LEFT BLANK

**52-71-00**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**DOOR WARNING SYSTEM - INTRODUCTION****Purpose**

The door warning system supplies door status information to the flight crew and maintenance personnel.

**Location**

Sensors supply status information on these doors:

- Passenger/Crew entry
- Off-wing slide compartment
- Forward access
- MEC access
- Forward cargo
- Aft cargo.

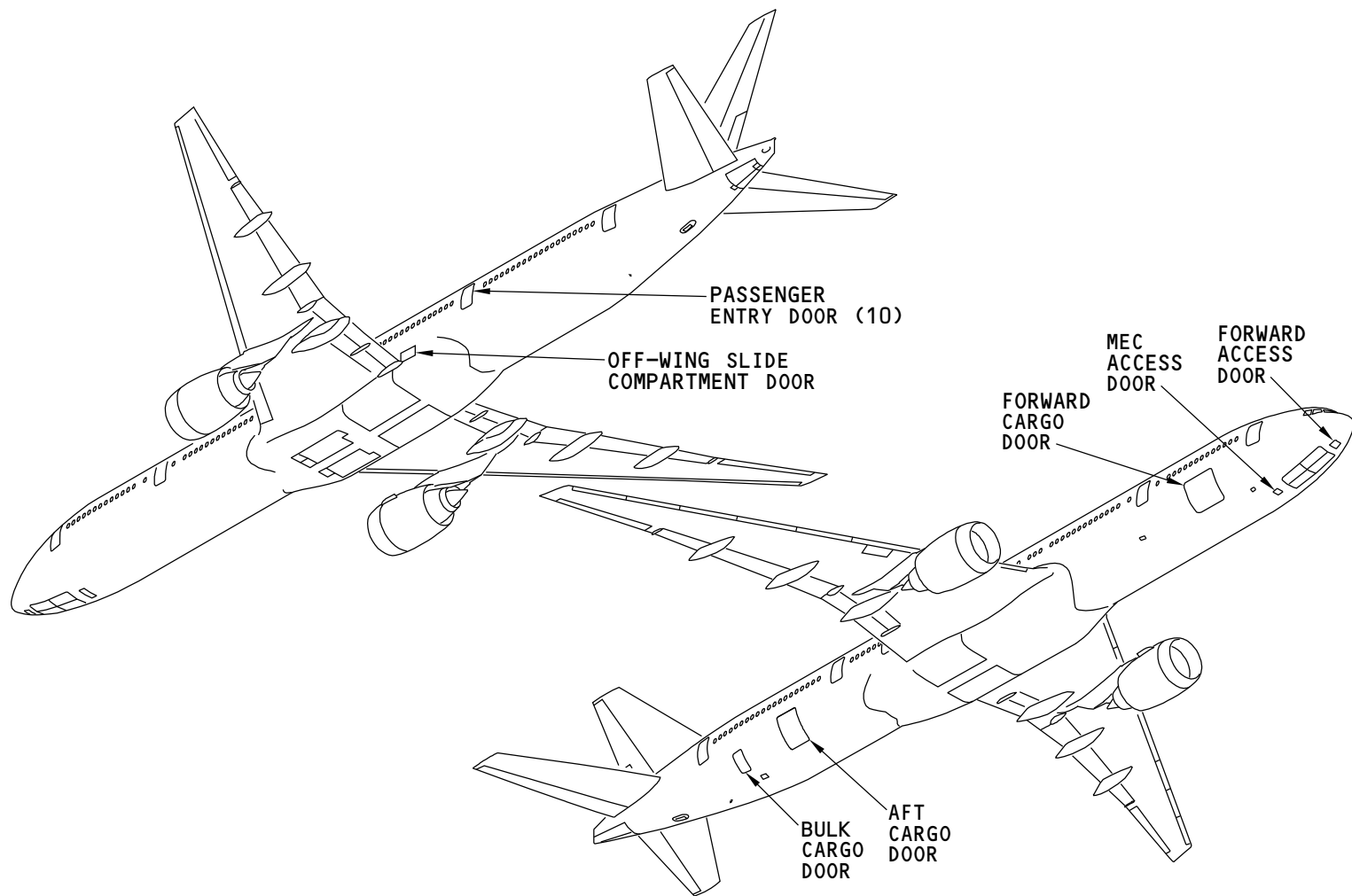
Switches supply status information on the:

- Bulk cargo door
- Off-wing slide actuator.

**Physical Description**

The sensors are electronic devices that works with targets.

The switches are mechanical devices that close an electrical circuit.



M43383 S000621003\_V1

## DOOR WARNING SYSTEM - INTRODUCTION

**52-71-00**

52-71-00-001

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

**DOOR WARNING SYSTEM - PASSENGER ENTRY DOOR SENSORS****Location**

Each passenger entry door has two proximity sensors that are components of the door warning system. The door closed and latched sensor is on the aft latch track. The door locked sensor is on the vent door.

The mode select switch on the mode select handle is a door component. It is part of the emergency power assist system (EPAS). It also gives door warning information.

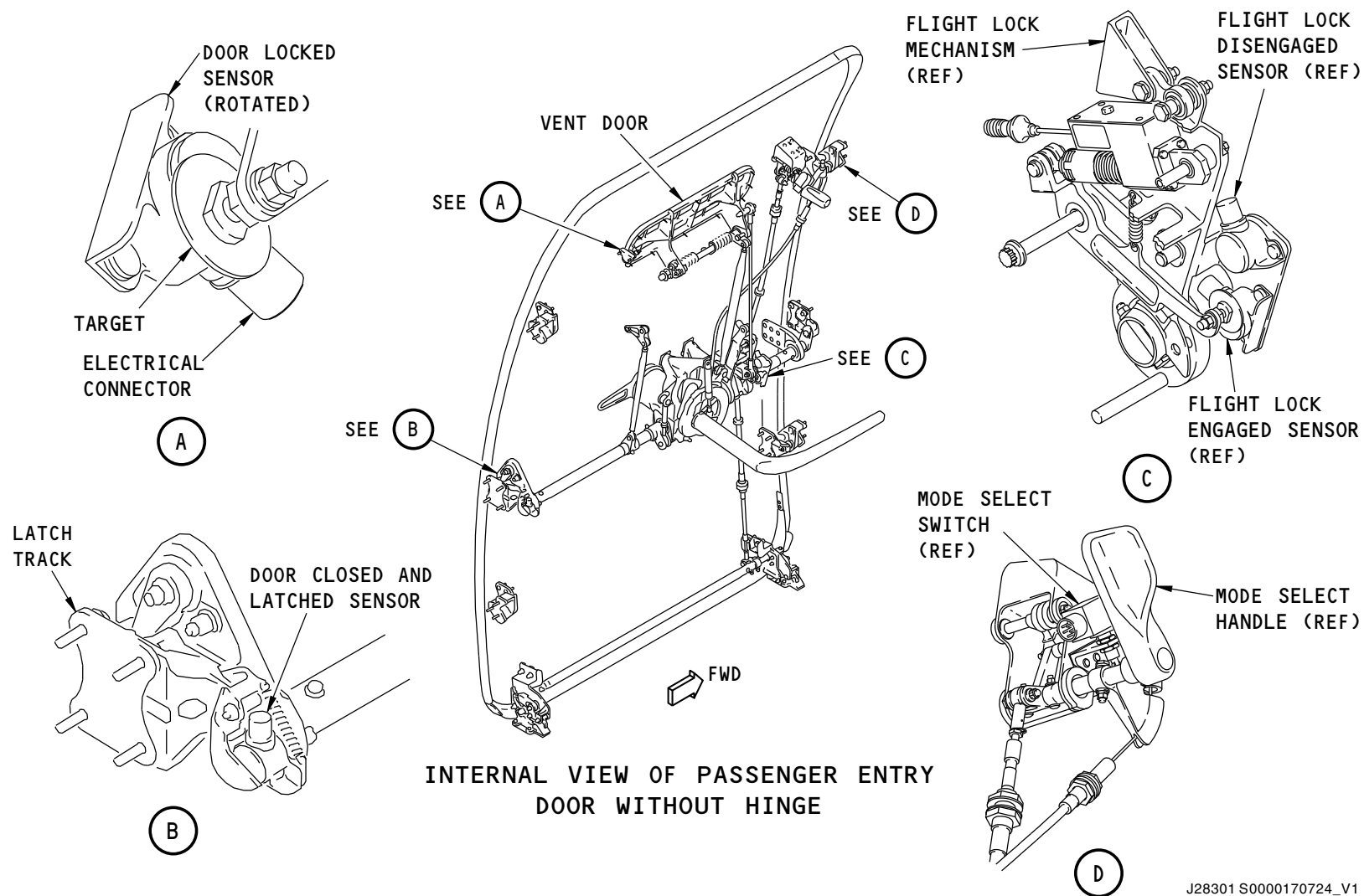
See passenger entry door section for more information on the mode select switch (SECTION 52-11).

The flight lock engaged and disengaged sensors are flight lock components. They give information for status and maintenance messages.

See passenger entry door section for more information on the flight lock sensors (SECTION 52-11).

| ARO ALL      | EFFECTIVITY |
|--------------|-------------|
| D633W101-ARO |             |

**52-71-00**



DOOR WARNING SYSTEM-PASSENGER ENTRY DOOR SENSORS

52-71-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

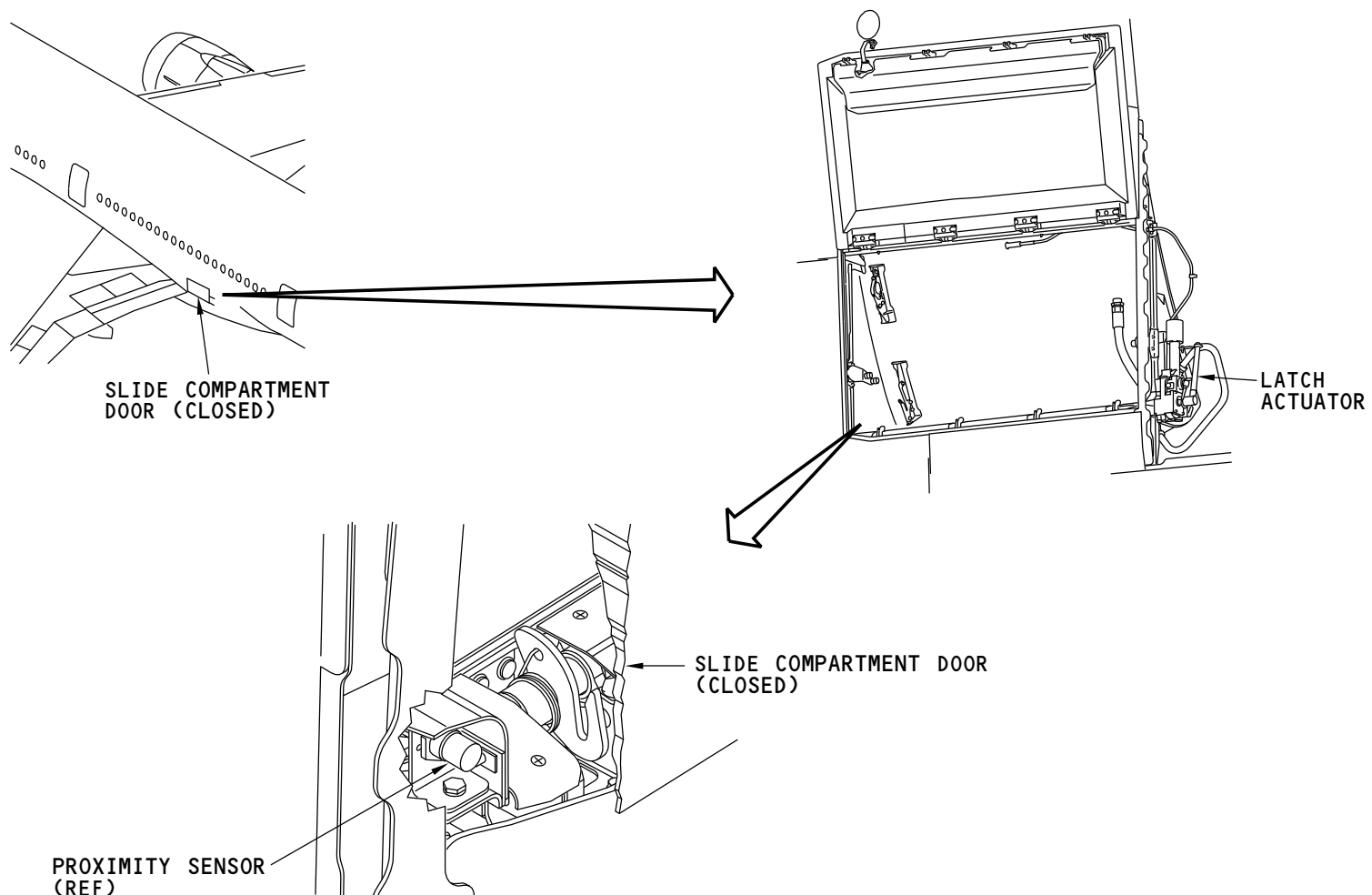


**DOOR WARNING SYSTEM - OFF-WING SLIDE COMPARTMENT DOOR SENSOR AND LATCH ACTUATOR SWITCH****General**

The proximity sensor is at the forward, outboard end of the slide compartment. The target is on the door. The sensor tells if the slide compartment door is not closed.

The latch actuator is aft of the slide compartment. The switch is inside the actuator. It tells if the acutator is not locked.

See the off-wing escape system for more information about the sensor and switch (SECTION 25-65).



M43420 S000621061\_V1

**DOOR WARNING SYSTEM - OFF-WING SLIDE COMPARTMENT DOOR SENSOR AND LATCH ACTUATOR SWITCH**

52-71-00-010

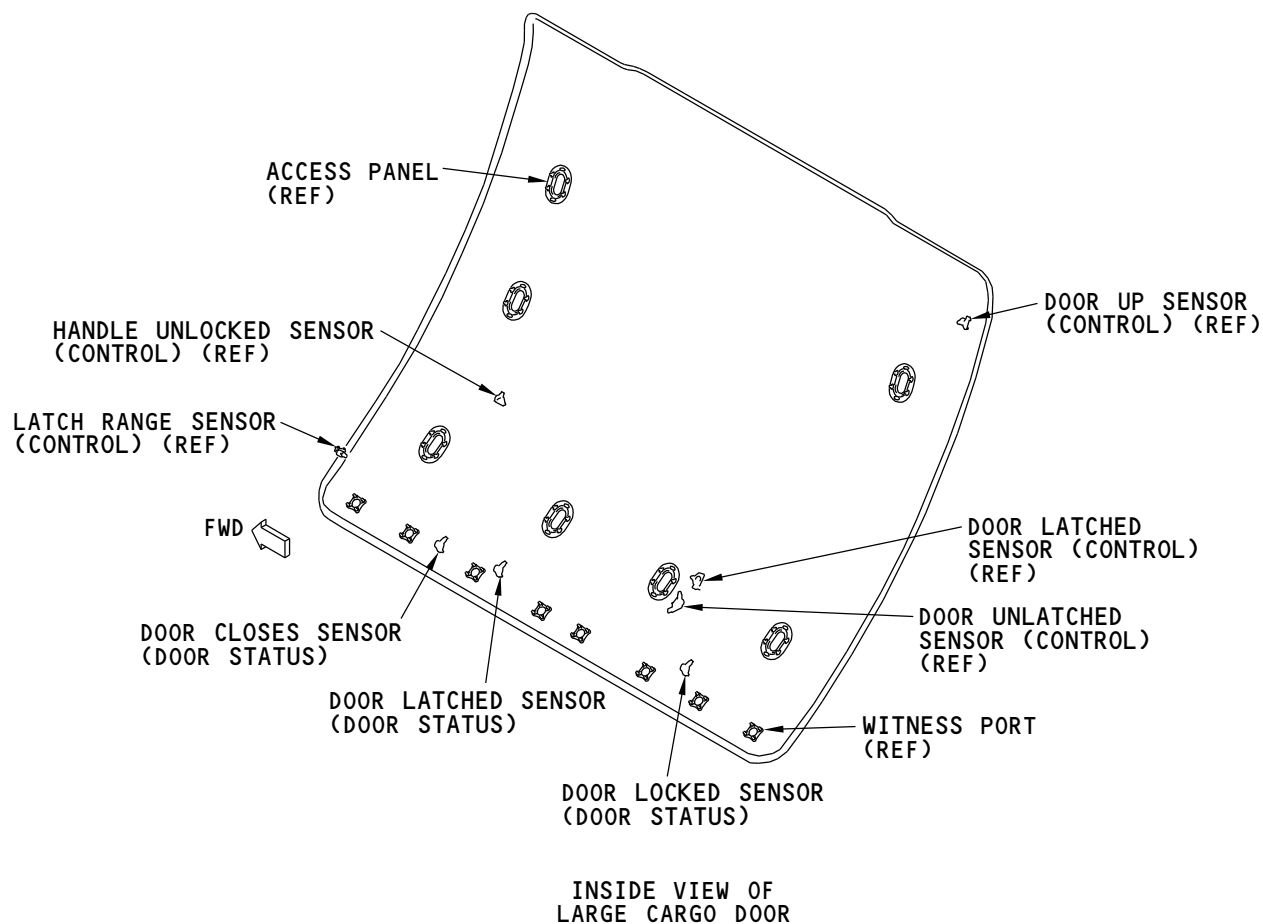
| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**52-71-00**

**DOOR WARNING SYSTEM - LARGE CARGO DOOR SENSORS****Location of Large Cargo Door Sensors**

There are three proximity sensors on the large cargo door that supply information for door status indications along the bottom of the door. These are the large cargo door status sensors:

- Closed sensor
- Latched sensor
- Locked sensor.



M43389 S000621009\_V1

### DOOR WARNING SYSTEM - LARGE CARGO DOOR SENSORS

52-71-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



## DOOR WARNING SYSTEM - SMALL CARGO DOOR SENSORS

### Purpose

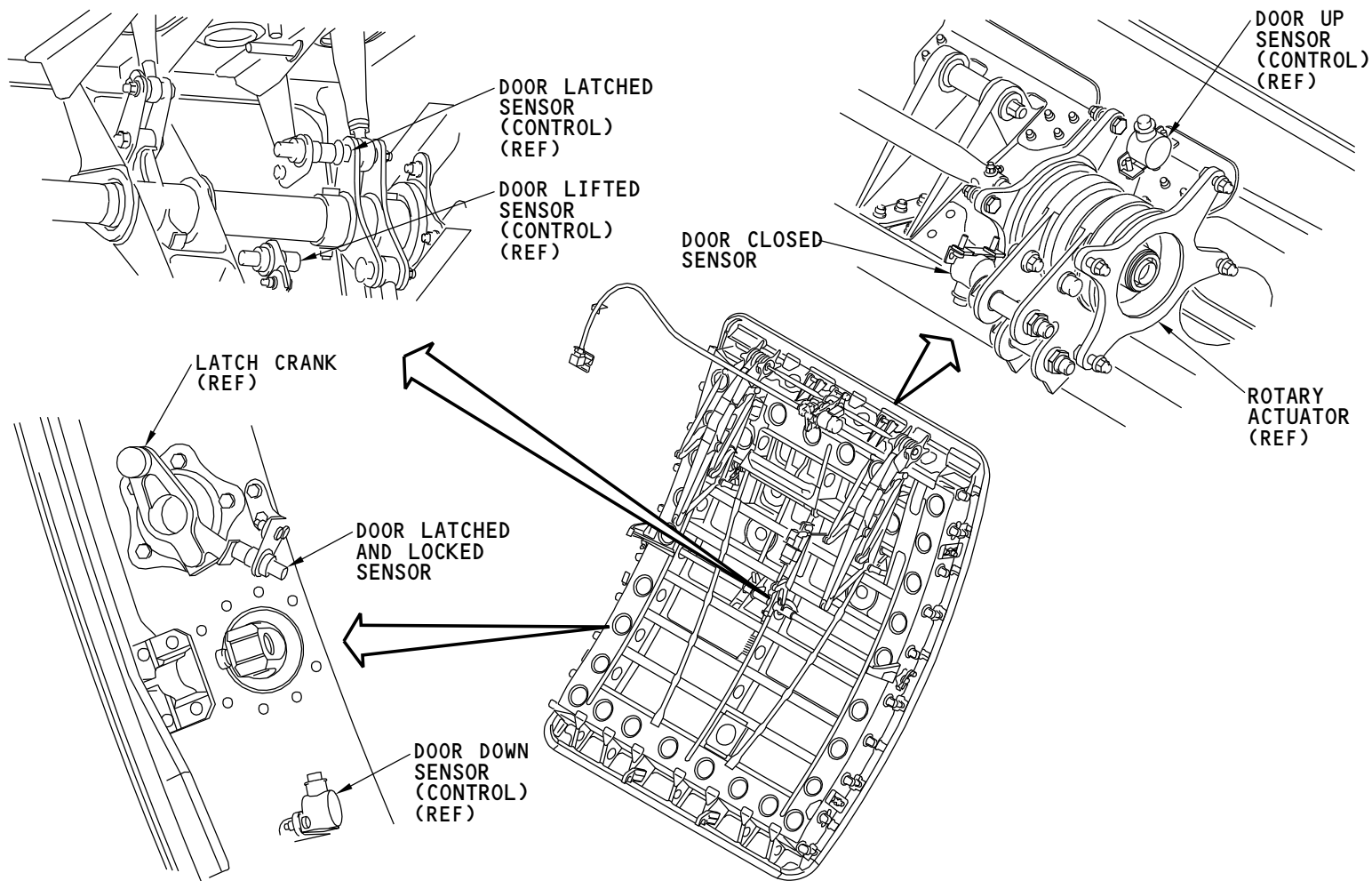
Two of the sensors on the door are for indication.

### Location

The door closed sensor is near the inboard side of the aft rotary actuator.

The door latched and locked sensor is near the forward latch crank.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43421 S000621062\_V2

### DOOR WARNING SYSTEM - SMALL CARGO DOOR SENSORS

# 52-71-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 11  
May 05/2015

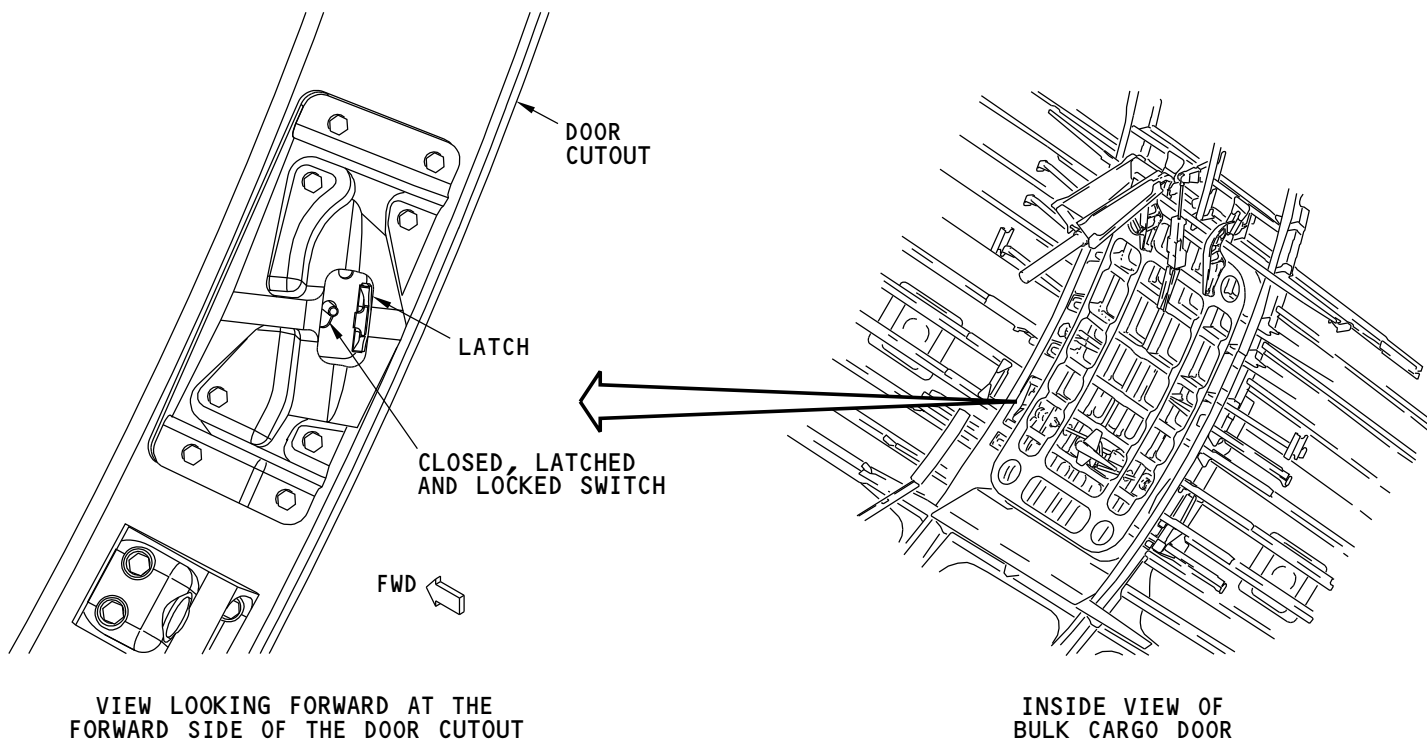


## DOOR WARNING SYSTEM - BULK CARGO DOOR SWITCH

### Location

The bulk cargo door closed, latched and locked switch is in the latch on the forward side of the door cutout.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



**DOOR WARNING SYSTEM - BULK CARGO DOOR SWITCH**

M43390 S000621010\_V1

52-71-00-004

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

**52-71-00**



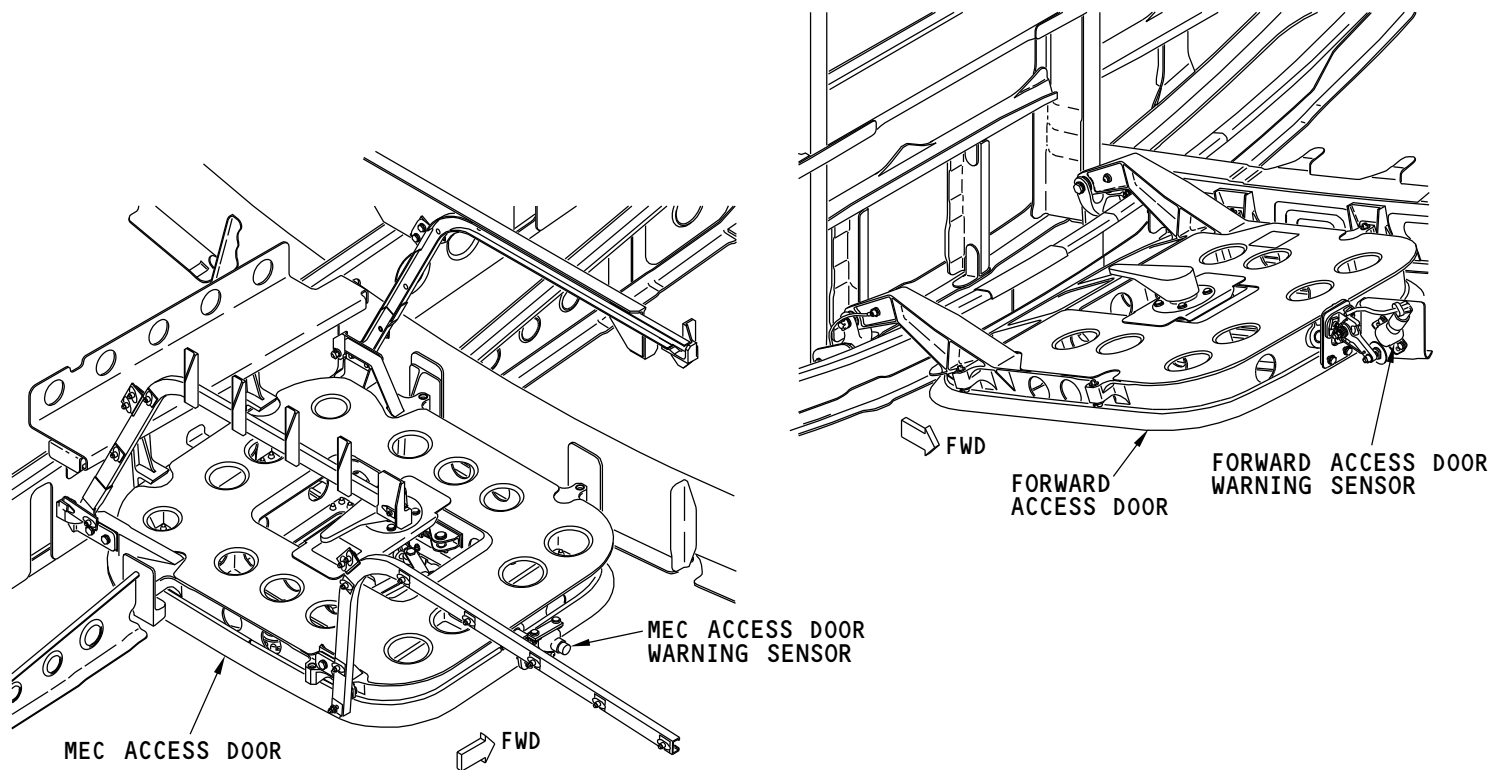
**DOOR WARNING SYSTEM - ACCESS DOOR SENSORS****Location of Forward Access Door Warning Sensors**

The forward access door proximity sensor that supplies door status information is adjacent to the door latch in the cutout.

**Location of Main Equipment Center (MEC) Access Door Warning Sensors**

The electrical/electronics access door proximity sensor that supplies door status information is adjacent to the door latch in the cutout.

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |



M43391 S000621011\_V2

**DOOR WARNING SYSTEM - ACCESS DOOR SENSORS**

**52-71-00**

52-71-00-005

| ARO ALL | EFFECTIVITY  |
|---------|--------------|
|         | D633W101-ARO |

**DOOR WARNING SYSTEM - FUNCTIONAL DESCRIPTION****Functional Description**

These components give door status information to the PSEU:

- A proximity sensor on the off-wing slide compartment door
- A switch on the off-wing slide compartment door latch actuator
- A switch on the bulk cargo door
- Proximity sensors on all of the other doors that go through the pressurized structure of the airplane.

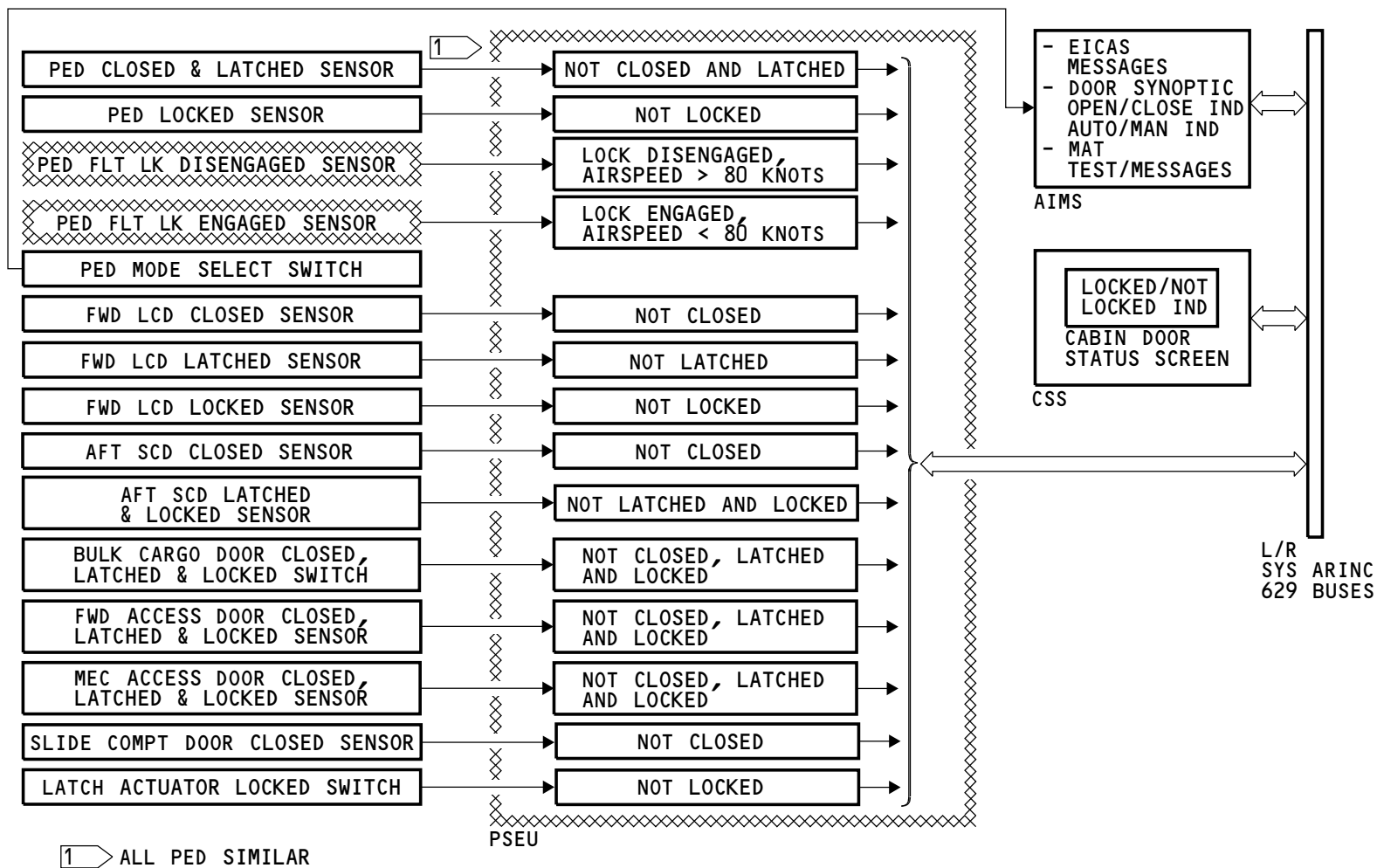
The PSEU monitors information about door positions and about the sensors/switches used to monitor door positions. The PSEU sends the information to the AIMS through the left and right ARINC 629 buses.

AIMS shows the information on these displays:

- EICAS
- STATUS
- DOOR SYNOPTIC
- MAT.

The AIMS supplies passenger entry door information from the PSEU to the cabin services system (CSS). The CSS shows door LOCKED/NOT LOCKED information on the cabin door status screen.

The passenger entry door mode select switch sends auto/manual position information directly to the AIMS. AIMS shows the position information on the door synoptic display.



# DOOR WARNING SYSTEM - FUNCTIONAL DESCRIPTION

M43399 S000621019\_V1

52-71-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

## DOOR WARNING SYSTEM - INDICATIONS

### General

The following displays show door indications:

- EICAS
- Door synoptic
- Status
- MAT.

### EICAS Display

The following door information shows on the EICAS display:

- Configuration warning
- Caution
- Advisory
- Memo.

A configuration warning shows if an engine is put at takeoff power with one or more of these doors not in the closed, latched, and locked position.:

- Passenger/Crew entry
- Forward cargo
- Aft cargo.

Caution or advisory messages show for each door that is not in the closed, latched, and locked position. The forward large cargo door has a caution message. The other doors have advisory messages. For any of the doors, a single message will show when these conditions are true:

- The airplane is on the ground
- One or both engines are off
- More than one of the doors are not closed, latched and locked.

The doors EICAS message is generated if these conditions are true:

- The bulk cargo door input of the PSEU cannot sense the ground
- Both engines are on

- More than one of the doors are not closed, latched and locked.

Memo messages show this passenger entry door mode information:

- AUTO when all of the doors are in the auto mode
- MANUAL when all of the doors are in the manual mode
- AUTO/MANUAL when some of the doors are in the auto mode and some are in the manual mode.

These memo messages do not show from the time takeoff power is applied to one minute after landing.

### Door Synoptic Display

The door synoptic display shows the status of these doors:

- Equipment center access doors
- Passenger/Crew entry doors
- Cargo compartment doors.

The names of the doors always show. An amber door symbol shows when a door is not closed, latched, and locked. The symbol does not show when a door is closed, latched, and locked. Invalid sensor information shows as a white door symbol outline.

When a passenger/crew entry door is closed, latched, and locked, these letters (in color) show the position of the mode select handle:

- A - auto (green)
- M - manual (white).

### Status and MAT Displays

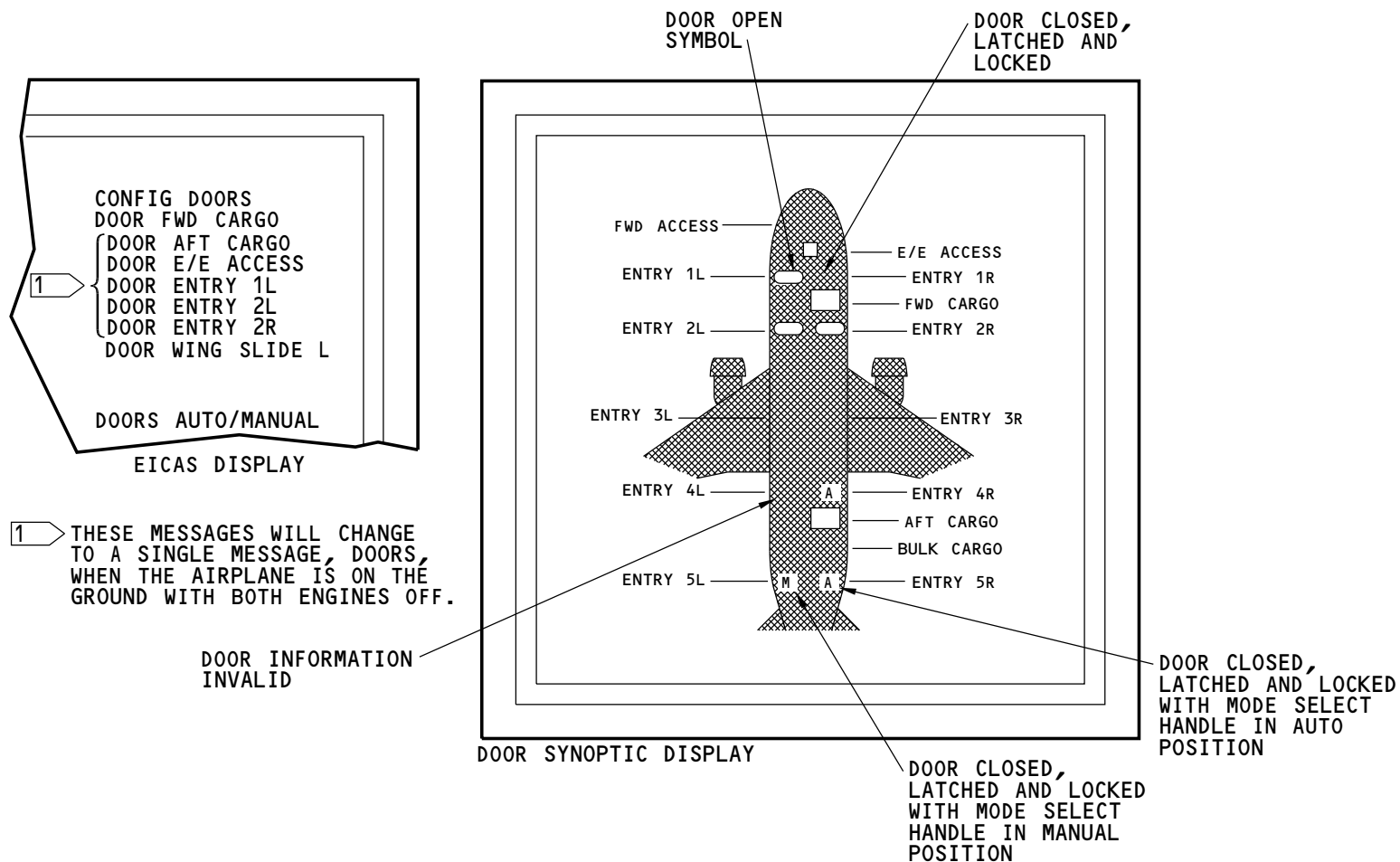
Door fault information shows on the status display and the MAT.

# 52-71-00

EFFECTIVITY  
ARO ALL

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



**DOOR WARNING SYSTEM - INDICATIONS**

M43435 S000621049\_V1

**52-71-00**

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |

D633W101-ARO

**DOOR WARNING SYSTEM - INDICATIONS - CSCP/CACP - CABIN DOOR STATUS SCREEN****General**

Attendants use the cabin door status screen to see if the doors are locked or not locked.

**Access**

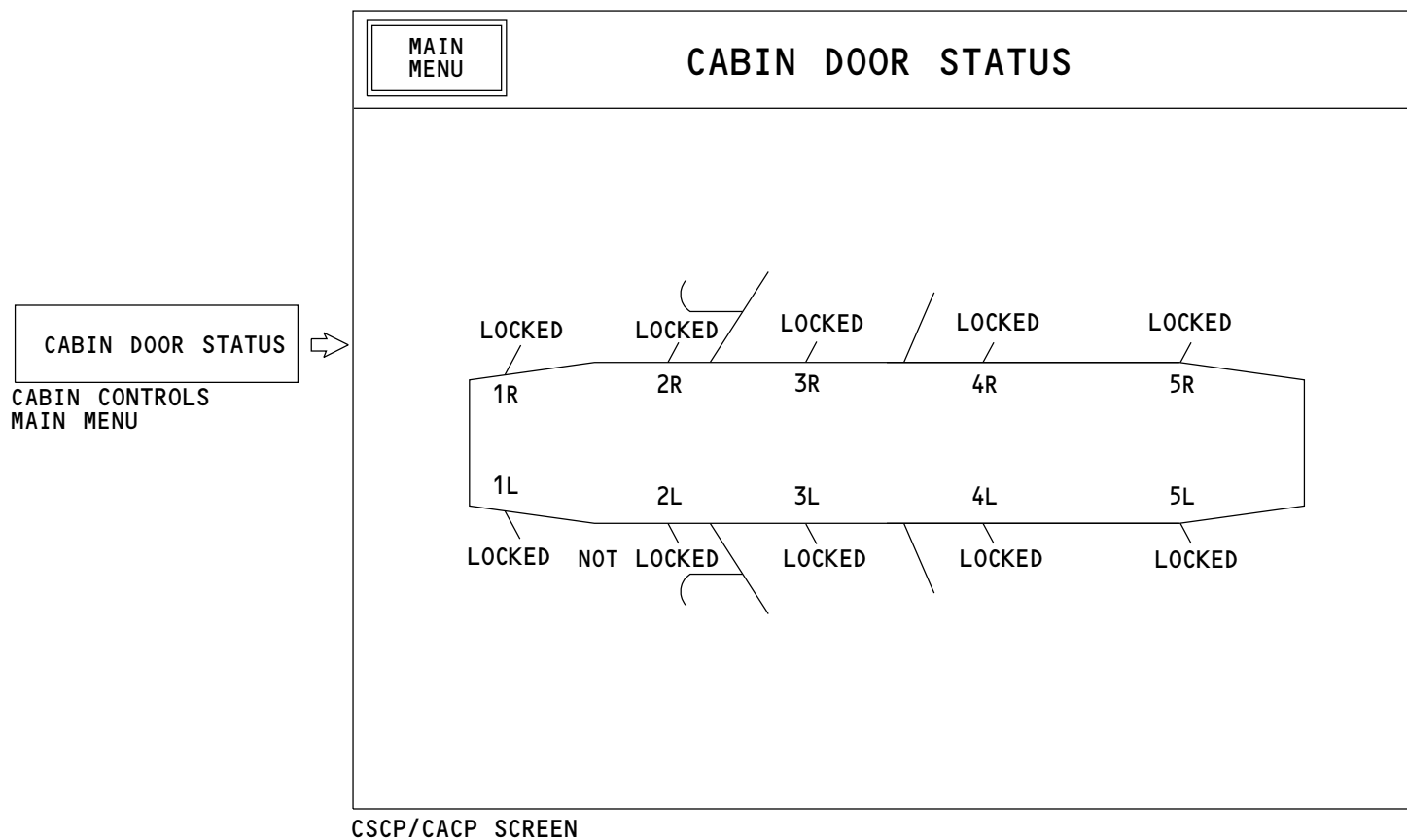
You use the cabin system control panel (CSCP) or cabin area control panels (CACP) to get the status of the cabin doors. Touch CABIN DOOR STATUS on the cabin controls main menu to show this screen.

**Indications**

The cabin door status screen shows (in color) the status of the cabin doors:

- LOCKED (green)
- NOT LOCKED (red).

| ARO ALL | EFFECTIVITY |
|---------|-------------|
|         |             |



M43419 S000621056\_V1

# DOOR WARNING SYSTEM - INDICATIONS - CSCP/CACP - CABIN DOOR STATUS SCREEN

52-71-00

ARO ALL EFFECTIVITY

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details



