



AEROSPACE INFORMATION REPORT

AIR1673™**REV. B**

Issued 1986-07
Revised 2014-09
Reaffirmed 2020-11

Superseding AIR1673A

Aircraft Cargo Door Opening/Sill Details for Ground Support Equipment Interface

RATIONALE

Revision B incorporates the aircraft cargo door opening and doorsill details for the A300-600, A310, A320 family, A330F, A350, A380, B737-700C, B747-8F, B757F, B777F, and B787.

1. SCOPE

Manufacturers/designers of all aircraft equipped with a pallet/container capability have provided a means of linking the ground loaders/elevators with the aircraft sill for the smoother transfer of pallets and containers into or out of the aircraft holds.

Use of the aircraft attachment points may be used as a means of averting damage to the aircraft door frames and other important parts. Latch-on guarantees fore and aft and vertical alignment of the loader bed with the aircraft doorway, when used in conjunction with the appropriate ground equipment.

This SAE Aerospace Information Report (AIR) has been prepared by SAE Subcommittee AGE-2A to present a review of the current range of aircraft attachment points on wide body aircraft and those narrow body aircraft with a ULD cargo capability. Airline operators, who utilized these facilities, have been faced with a growing number of adaptor bars necessary to suit each type of aircraft and door position. There is also a stowage problem on the elevator compounded by the increasing number of bars necessary to suit each aircraft. Some measure of standardization is obviously desirable.

The adapter bars which have to be fitted to the forward face of the elevators to suit each different type of sill attachment are very heavy and present some handling problems to operators.

Where the same elevator services different aircraft types, these bars may have to be changed many times each day on the ramp.

Alternatively, elevators have to be restricted to servicing specific aircraft types or to those aircraft where a common attachment point already exists.

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2020 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
http://www.sae.org

SAE WEB ADDRESS:

Full document details: SAE AIR1673B

For more information on this standard, visit
<https://www.sae.org/standards/content/AIR1673B/>

Documents

Document Sharing Hub

1.1 Purpose

The purpose of this document is to provide detailed data of the aircraft attachment points at each door position capable of loading pallets or containers on the current aircraft and on new aircraft, where known.

Aircraft designers may utilize this information to enable future designs to fall into one of these categories with a view to keeping the range of elevator adaptor bars to the present level.

The design of the aircraft attachment points is governed by sill design. Two types of attachment provisions for latch-on fittings are available as follows:

1. Special fittings in the vicinity of door latch fittings.
2. Special door latch fittings (spools) as approved for use by the airframe manufacturers.

Ground equipment design objective should be to attempt to incorporate latch-on capability of two or more sill types on their adaptor bars.

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 IATA Publications

Available from IATA Head Office, 800 Place Victoria, P.O. Box 113, Montreal, Quebec H4Z 1M1, Canada, Tel: 1-514-874-0202, www.iata.org.

IATA AHM 931 Functional Specification for Lower Deck Container/Pallet Loader

IATA AHM 932 Functional Specification for Main-Deck Container/Pallet Loader

2.2 ISO Publications

Available from American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO 6967 Aircraft - Wide body aircraft main deck container/pallet loader - Functional requirements

ISO 6968 Aircraft - Wide body aircraft lower deck container/pallet loader - Functional requirements

2.3 Aircraft Manuals

In the case of contradiction between this AIR and the aircraft manual, the aircraft manual shall preside as the authority.

<http://www.airbus.com/support/maintenance-engineering/technical-data/aircraft-characteristics/>

<https://www.myboeingfleet.com> (limited access)

3. DATA CLASSIFICATION

3.1. Airbus A300/310

Lower deck - Figures 1A through 1E

3.2 Airbus A300/310

Main deck - Figures 2A through 2C

3.3 B707/B727

Main deck - Figures 3A through 3B

3.4 B737

Main deck - Figures 4A through 4D

3.5 B747

Lower deck - Figures 5A through 5D

3.6 B747

Main deck - Figures 6A through 6F

3.7 B767

Lower deck - Figures 7A through 7H

3.8 DC8

Main deck - Figures 8A through 8G

3.9 DC9

Main deck - Figures 9A through 9D

3.10 DC10/MD11

Lower deck - Figures 10A through 10D

3.11 DC10/MD11

Main deck - Figures 11A through 11E

3.12 L1011

Lower deck - Figures 12A through 12H

3.13 L100

Main deck - Figures 13A through 13D

3.14 Airbus A300F/310F

Main deck - Figures 14A through 14C

3.15 Airbus A319/320/321

Lower deck - Figures 15A through 15F

3.16 Airbus A330/A340

Lower deck - Figures 16A through 16G

3.17 B767F

Main deck - Figures 17A through 17C

3.18 B757F

Lower deck – Figure 18A

3.19 B757F

Main deck – Figure 19A

3.20 B777

Lower deck - Figures 20A through 20E

3.21 B777F

Main deck – Figures 21A through 21B

3.22 B787

Lower deck – Figure 22A through 22B

3.23 A330F

Main deck – Figures 23A through 23B

3.24 A350

Lower deck – Figures 24A through 24D

3.25 A380

Lower deck – Figures 25A through 25D

3.1 Airbus A300 and A310 - Lower Deck
Cargo Door Sill Attachment Fitting
Details for Ground Loading Equipment

See Figures 1A through 1E.

A.300

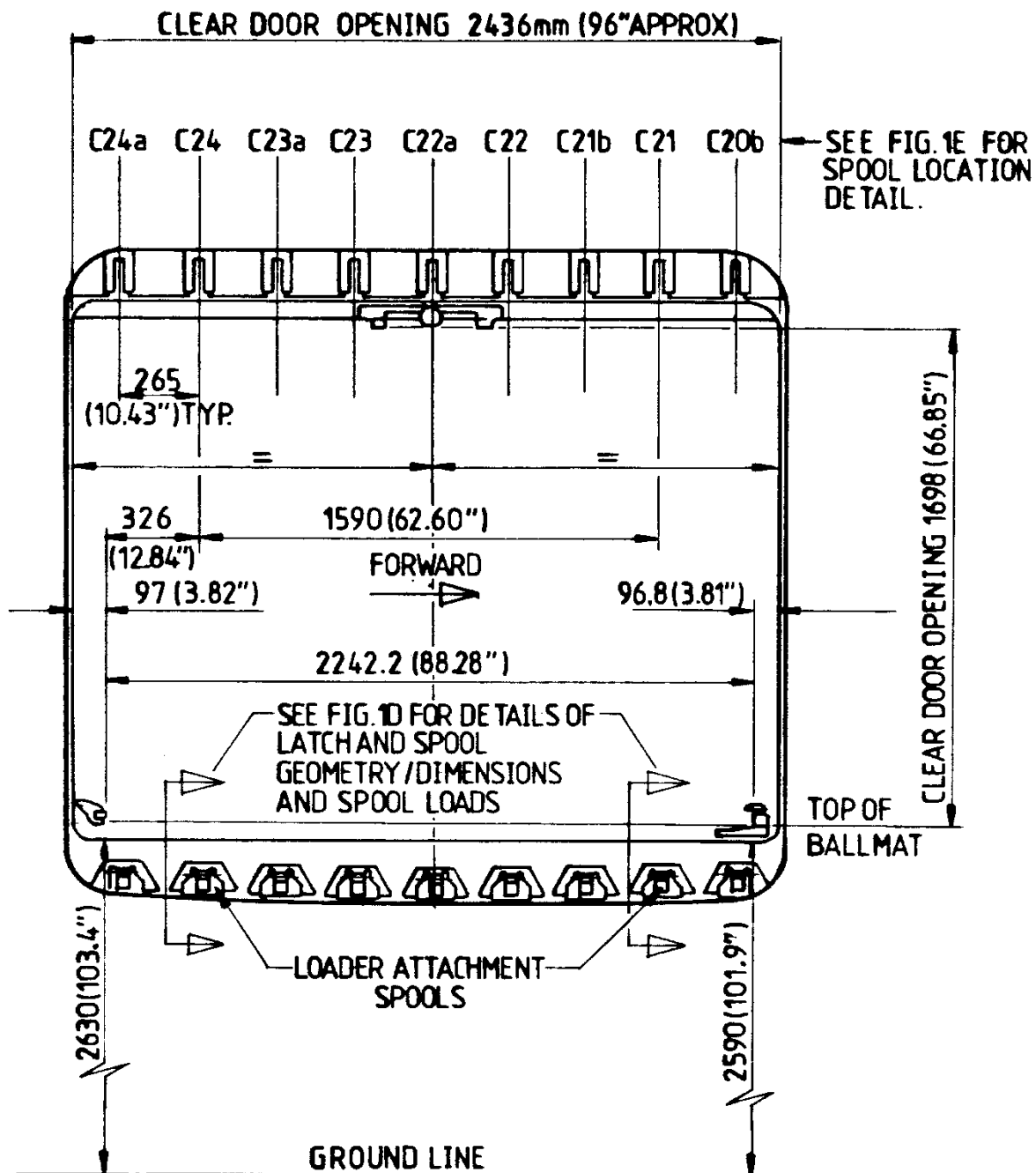


FIGURE 1A - LOWER DECK - HOLD 1 DOOR (PRE. MOD. 2295)
A300 AIRCRAFT

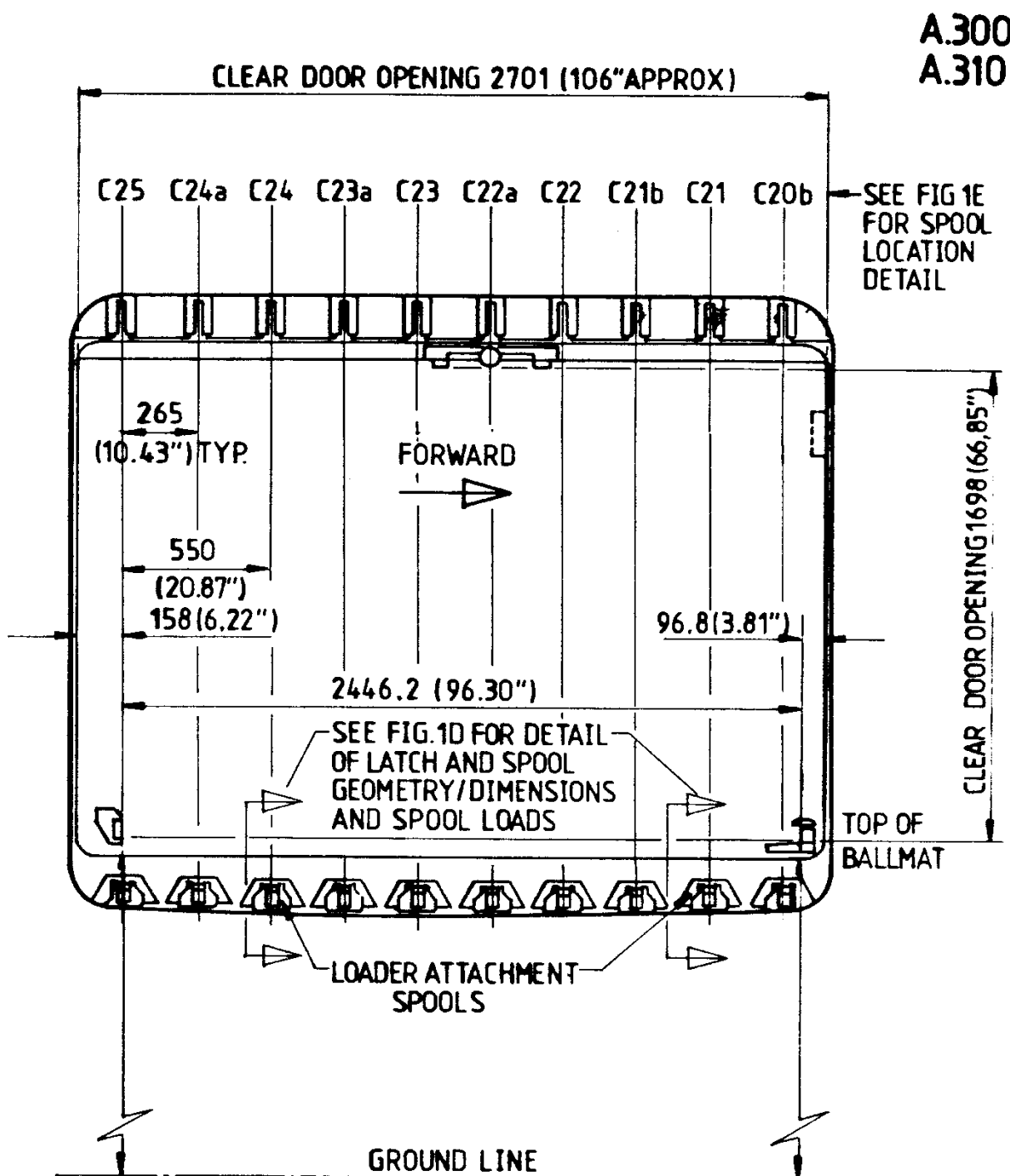


FIGURE 1B - LOWER DECK - HOLD 1 DOOR (POST MOD. 2295)
A300 AIRCRAFT AND A310 AIRCRAFT

A.300
A.310

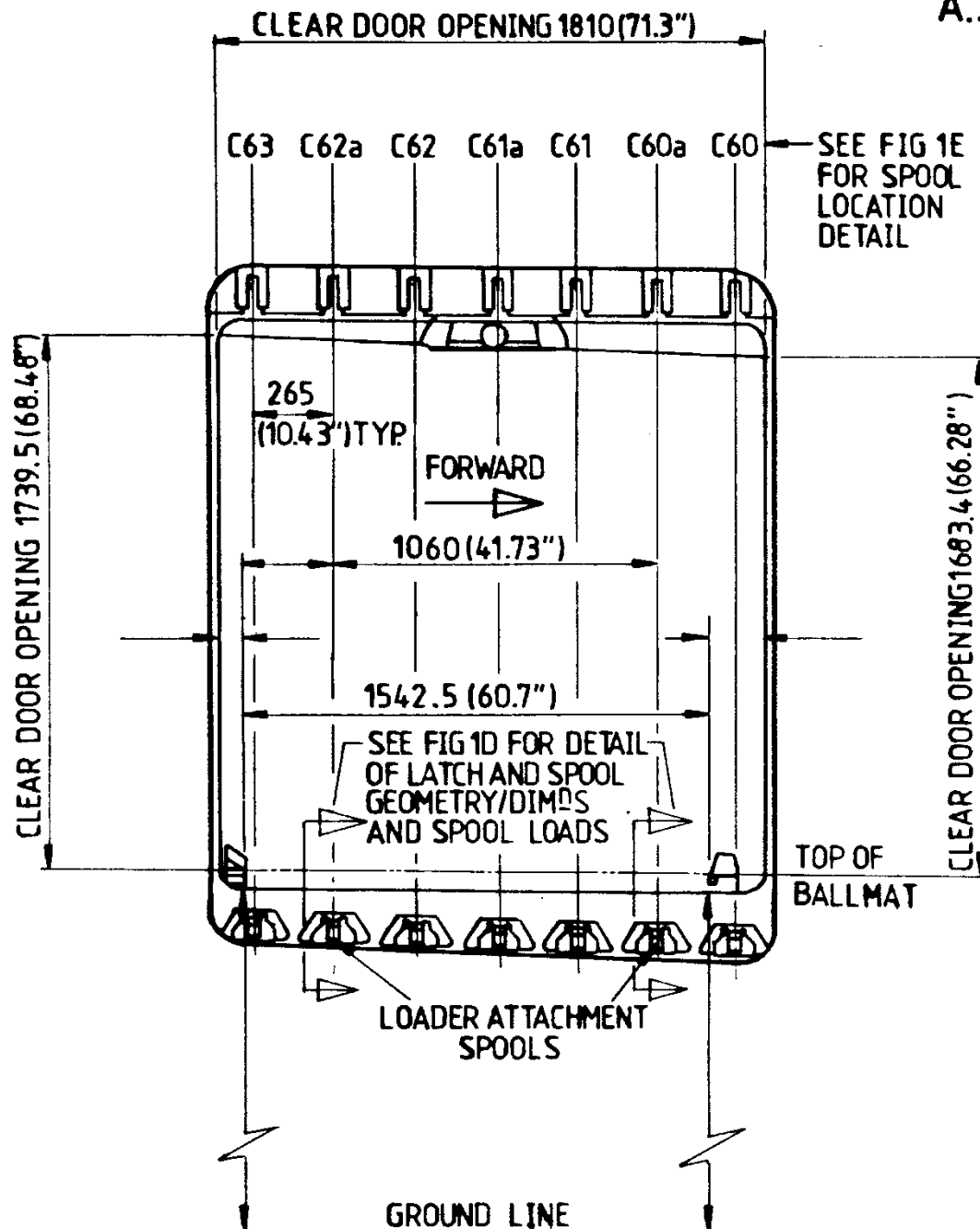


FIGURE 1C - LOWER DECK - HOLD 2 DOOR
A300 AIRCRAFT AND A310 AIRCRAFT

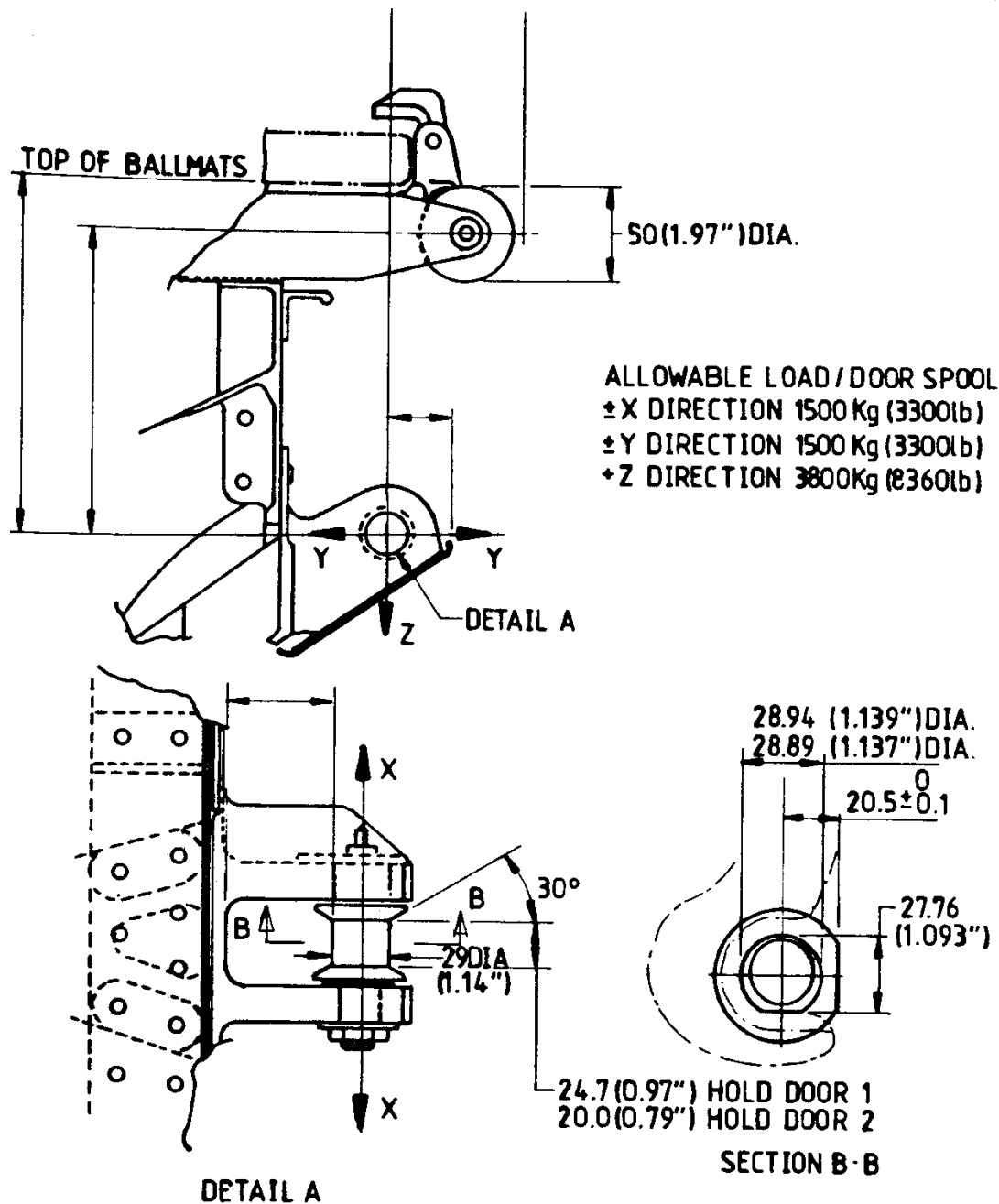
A.300
A.310

FIGURE 1D - LOWER DECK - HOLD 1 AND 2 DOORS
LATCH AND SPOOL GEOMETRY/DIMENSIONS
A300 AIRCRAFT AND A310 AIRCRAFT

A300
A310

HOLD 1 DOOR

DOOR SPOOL POSITIONS

FRAME SPANT	DISTANCE ABSTAND Y (mm)	DISTANCE ABSTAND Z (mm)
C20b	Y20b = - 1543,52	Z20b = - 2288,32
C21	Y21 = - 1554,89	Z21 = - 2295,15
C21a	Y21a = - 1564,57	Z21a = - 2299,57
C22	Y22 = - 1572,48	Z22 = - 2301,48
C22a	Y22a = - 1578,55	Z22a = - 2300,77
C23	Y23 = - 1583,08	Z23 = - 2297,86
C23a	Y23a = - 1587,46	Z23a = - 2294,76
C24	Y24 = - 1591,84	Z24 = - 2291,65
C24a	Y24a = - 1596,22	Z24a = - 2288,53
C25	Y25 = - 1600,57	Z25 = - 2285,40

HOLD 2 DOOR

DOOR SPOOL POSITIONS

FRAME SPANT	DISTANCE ABSTAND Y (mm)	DISTANCE ABSTAND Z (mm)
C60	Y60 = - 1621,56	Z60 = - 2261,52
C60A	Y60A = - 1612,99	Z60A = - 2259,52
C61	Y61 = - 1603,19	Z61 = - 2255,81
C61A	Y61A = - 1592,17	Z61A = - 2250,40
C62	Y62 = - 1579,94	Z62 = - 2243,31
C62A	Y62A = - 1566,51	Z62A = - 2234,55
C63	Y63 = - 1551,91	Z63 = - 2224,16

FIGURE 1E - LOWER DECK - HOLD 1 AND HOLD 2 DOORS
DOOR SPOOLS - POSITIONING DETAILS
A300 AIRCRAFT AND A310 AIRCRAFT

3.2 Airbus A300 and A310 - Main Deck
Cargo Door Sill Attachment Fitting
Details for Ground Loading Equipment

See Figures 2A through 2C.

A.300
A.310

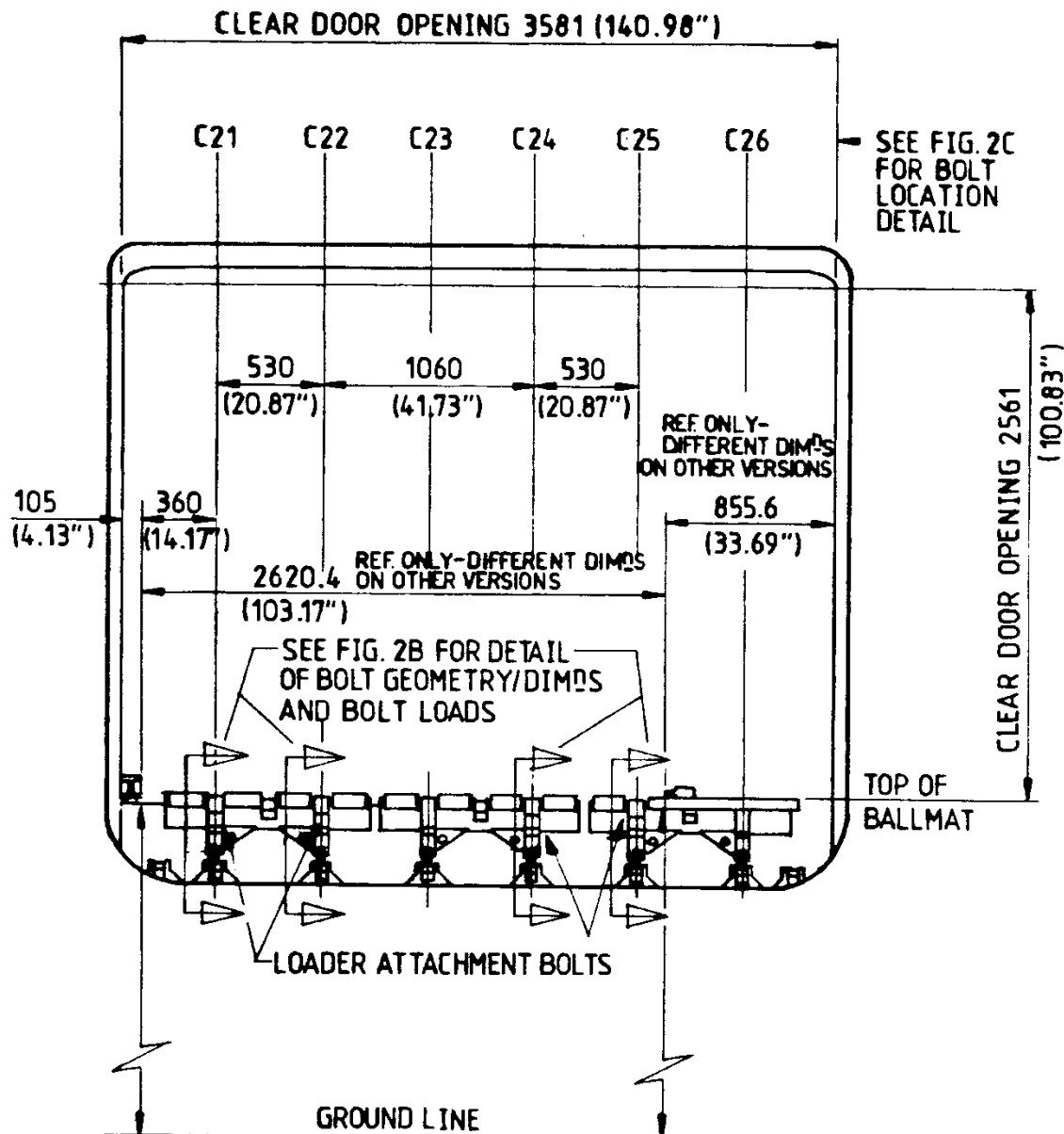
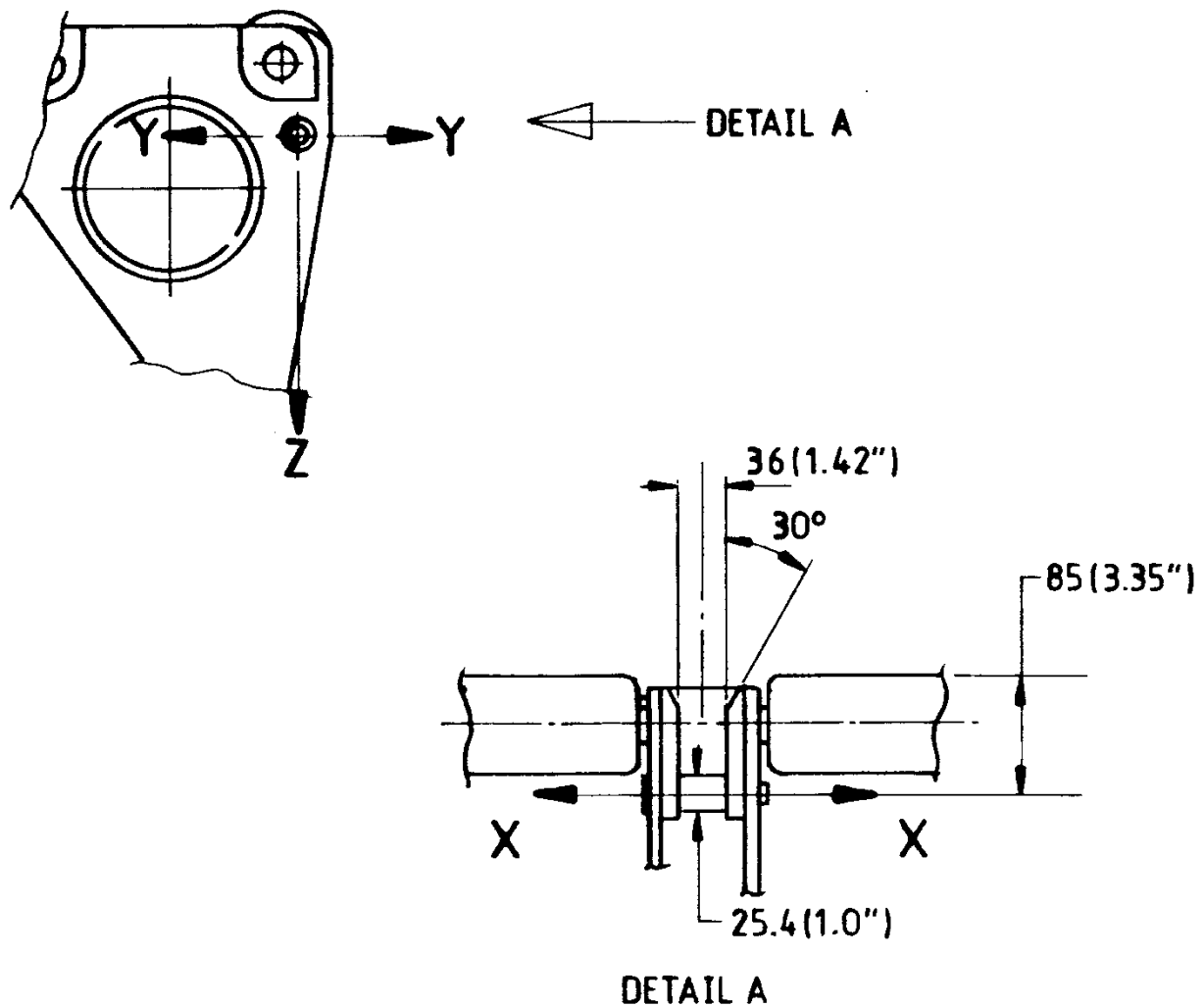


FIGURE 2A - UPPER DECK - CARGO DOOR
A300 - C4 AIRCRAFT AND A310 AIRCRAFT

A.300
A.310



ALLOWABLE LOAD / LOADER ATTACHMENT BOLT

± X DIRECTION — Kg (— lb)

± Y DIRECTION — Kg (— lb)

- Z DIRECTION 2700 Kg (5925 lb)

FIGURE 2B - UPPER DECK - CARGO DOOR
BOLT GEOMETRY AND DIMENSIONS
A300 - C4 AIRCRAFT AND A310 AIRCRAFT

**A300
A310**

FRAME	DISTANCE Y (mm)	DISTANCE Z (mm)
C21	Y21 = 2792	Z21 = 4516,5
C22	Y22 = 2792	Z22 = 4524,6
C23	Y23 = —	Z23 = —
C24	Y24 = 2792	Z24 = 4541
C25	Y25 = 2792	Z25 = 4549
C26	Z26 = —	Z26 = —

(4 POINTS PROVIDED FOR LOADER ATTACHMENT)

FIGURE 2C - UPPER DECK - CARGO DOOR
BOLT - POSITIONING DETAILS
A300 - C4 AIRCRAFT AND A310 AIRCRAFT

3.3 Boeing 707 and 727 - Main Deck
Cargo Door Sill Attachment Fitting
Details for Ground Loading Equipment

See Figures 3A through 3B.

B.707
B.727

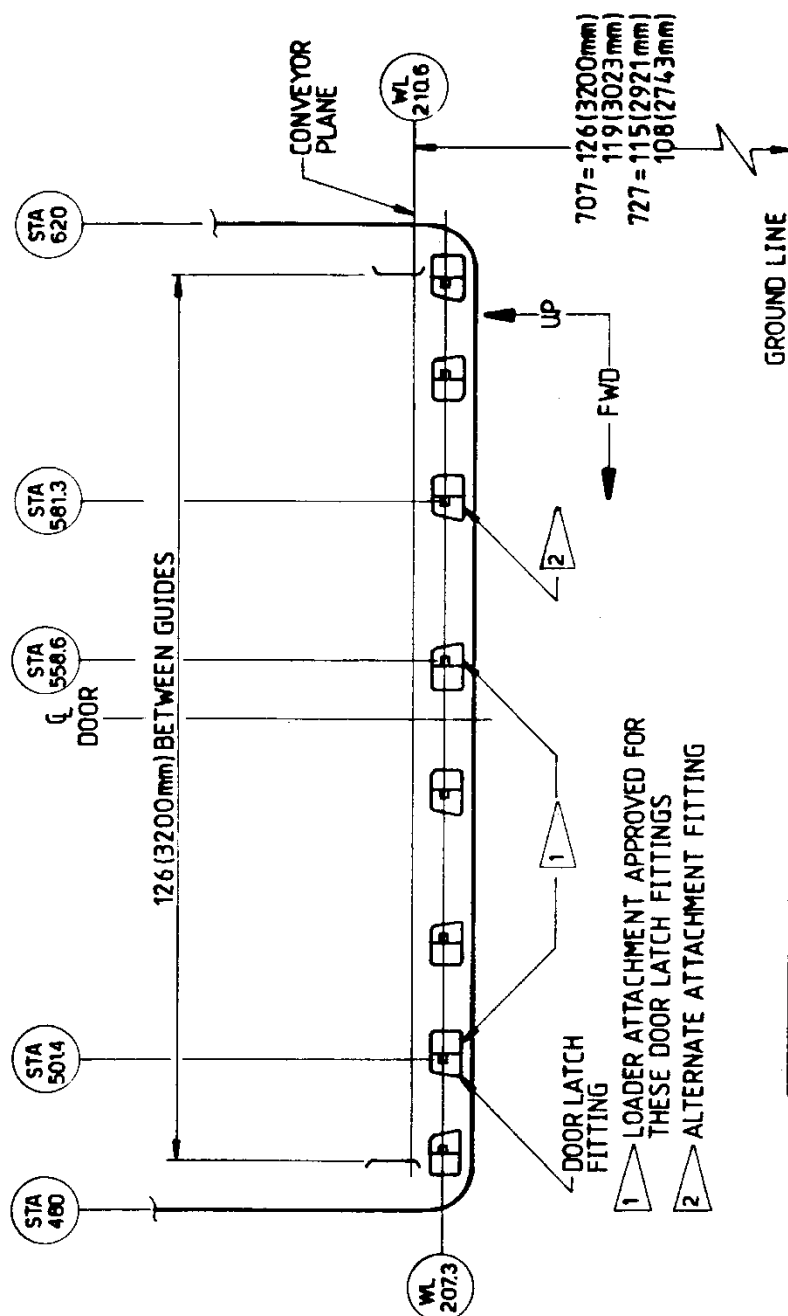


FIGURE 3A - BOEING 707 AND 727 LOADER ATTACHMENT
MAIN DECK CARGO DOOR

B.707
B.727

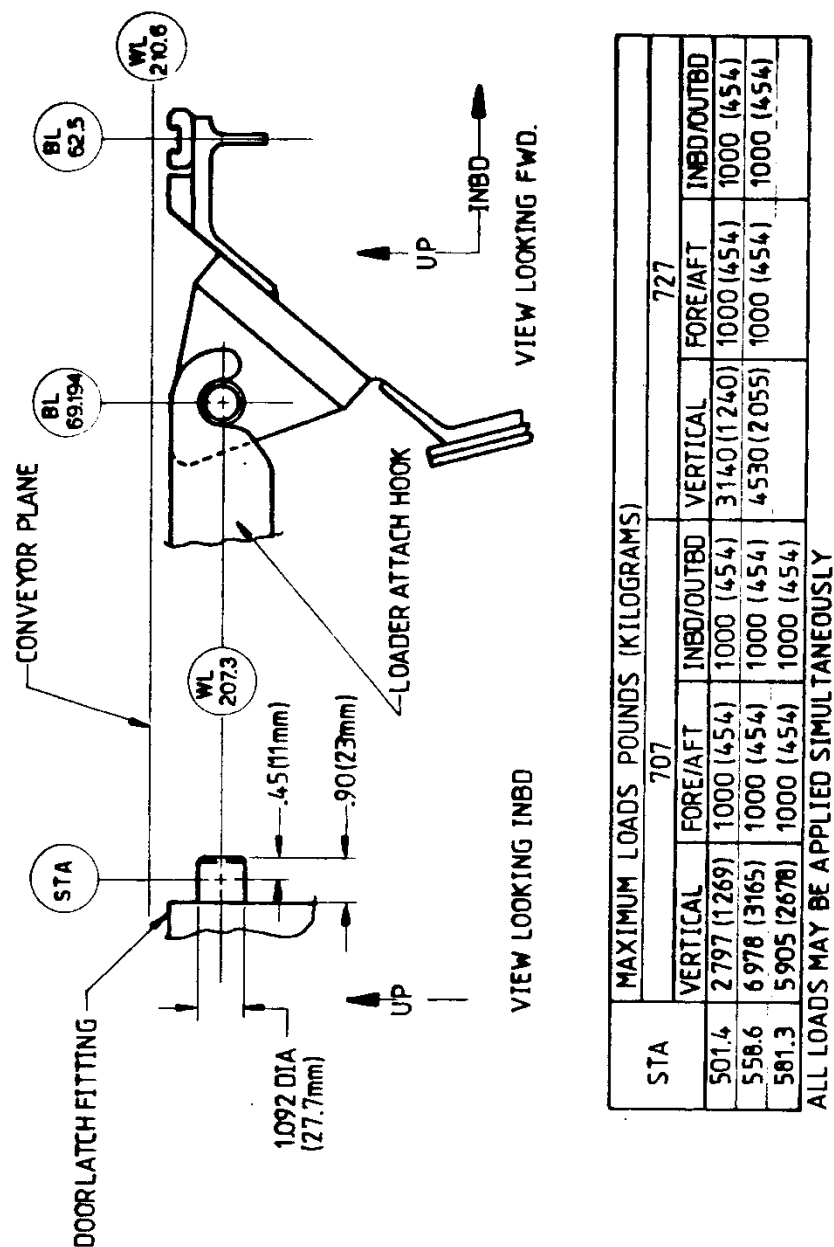


FIGURE 3B - B707 AND B727 LOADER ATTACHMENT

3.4 Boeing 737 - Main Deck
Cargo Door Sill Attachment Fitting
Details for Ground Loading Equipment

See Figures 4A through 4D.

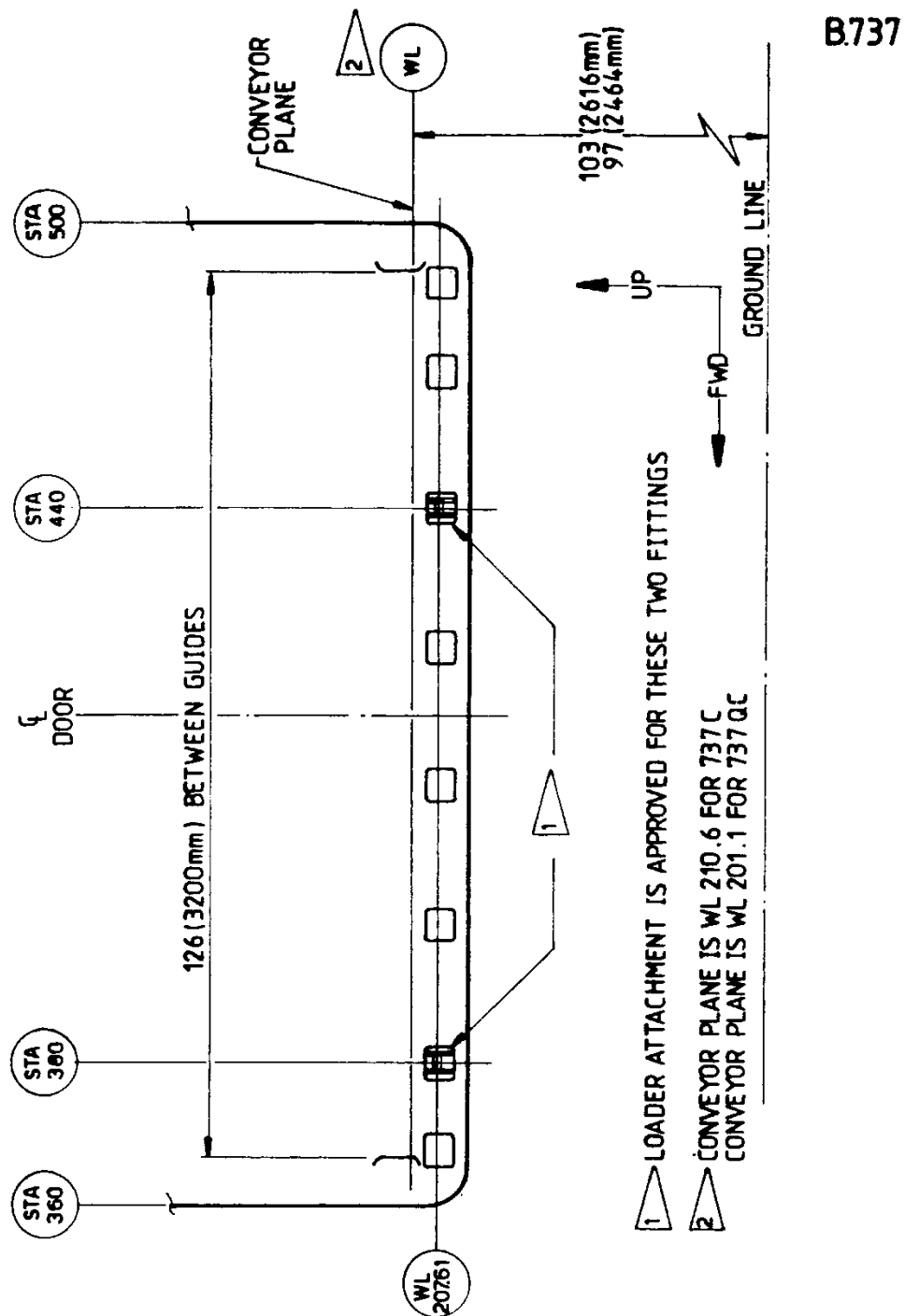


FIGURE 4A - B737-200 - LOADER ATTACHMENT
MAIN DECK CARGO DOOR

B.737

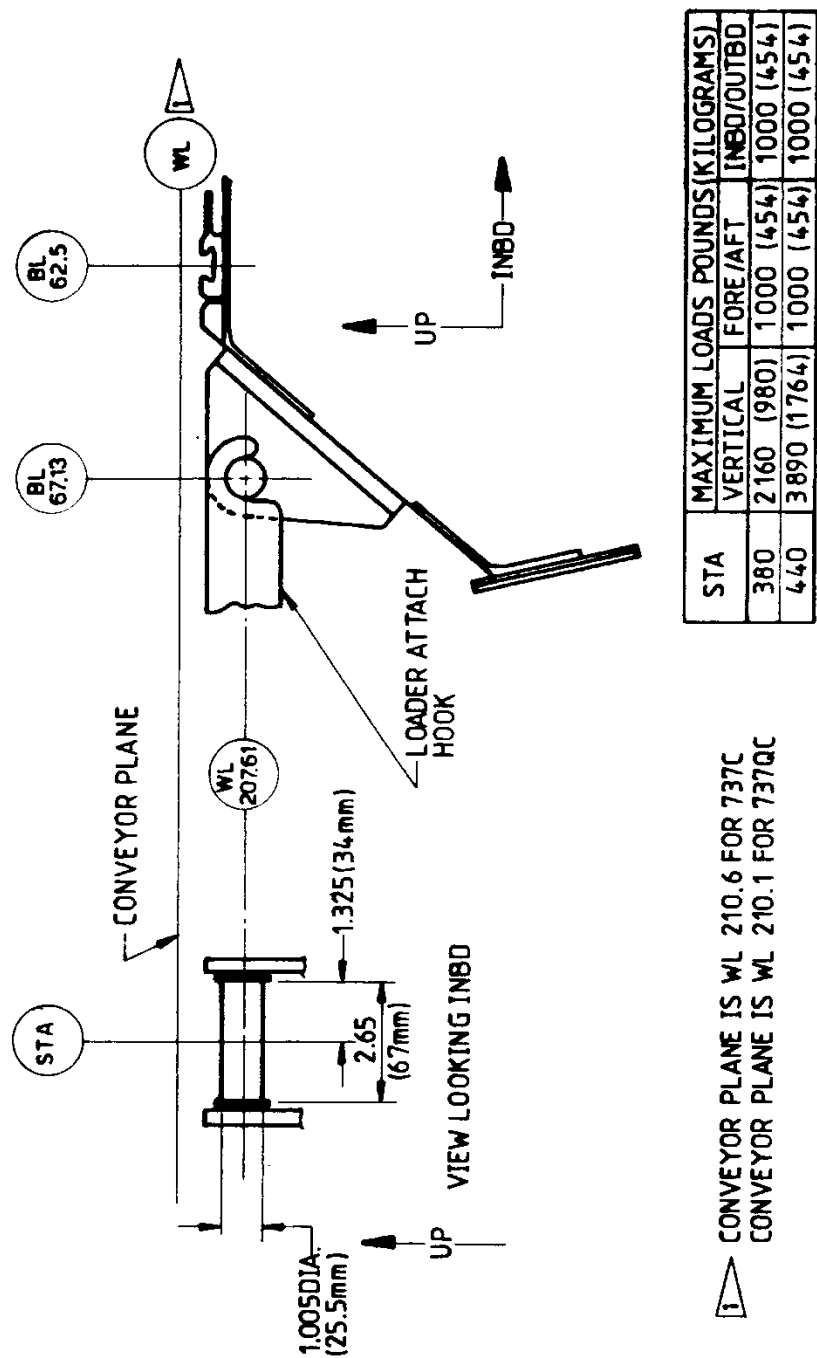


FIGURE 4B - B737-200 LOADER ATTACHMENT

B737

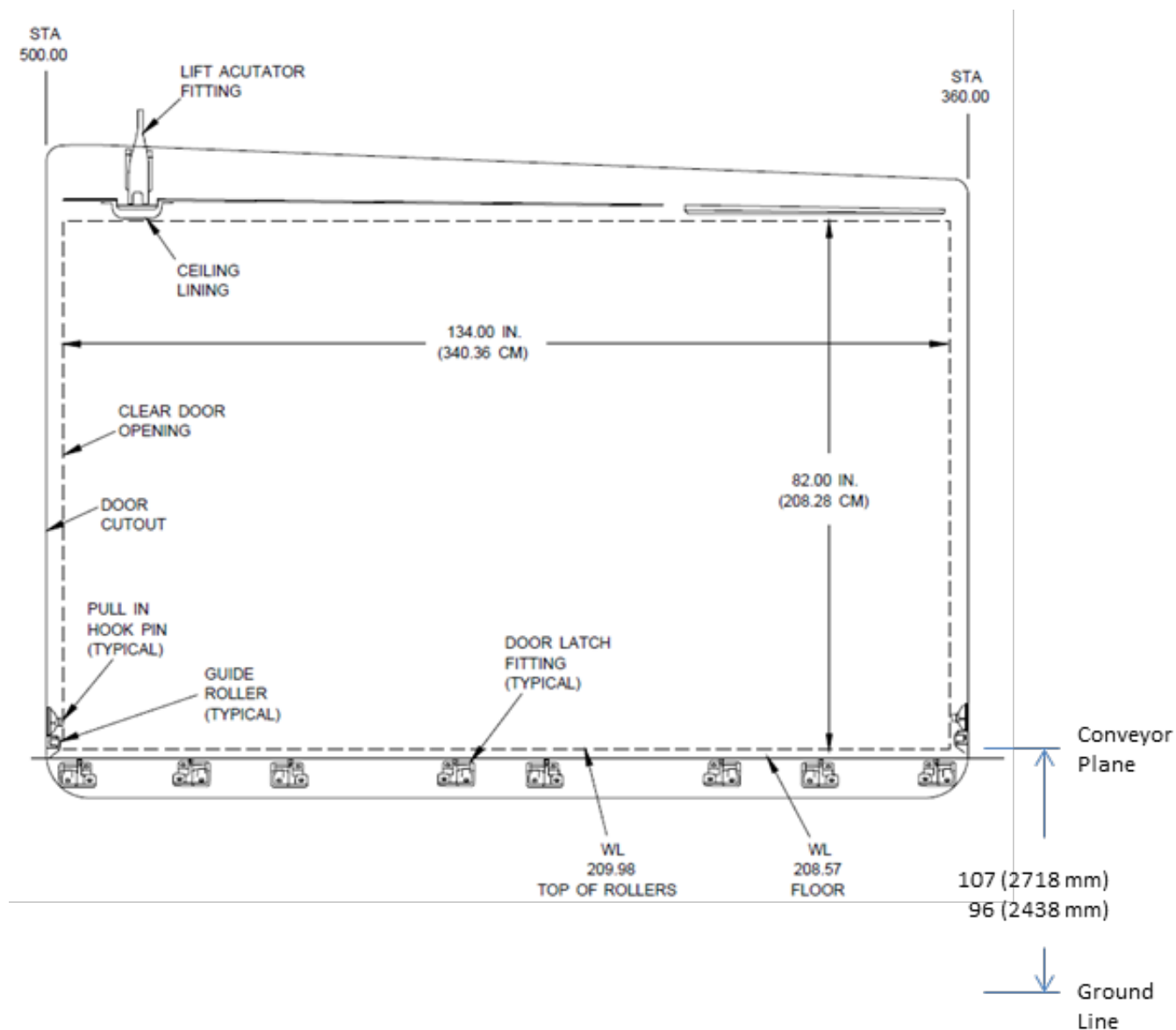


FIGURE 4C - B737-700C - MAIN DECK CARGO DOOR

B737

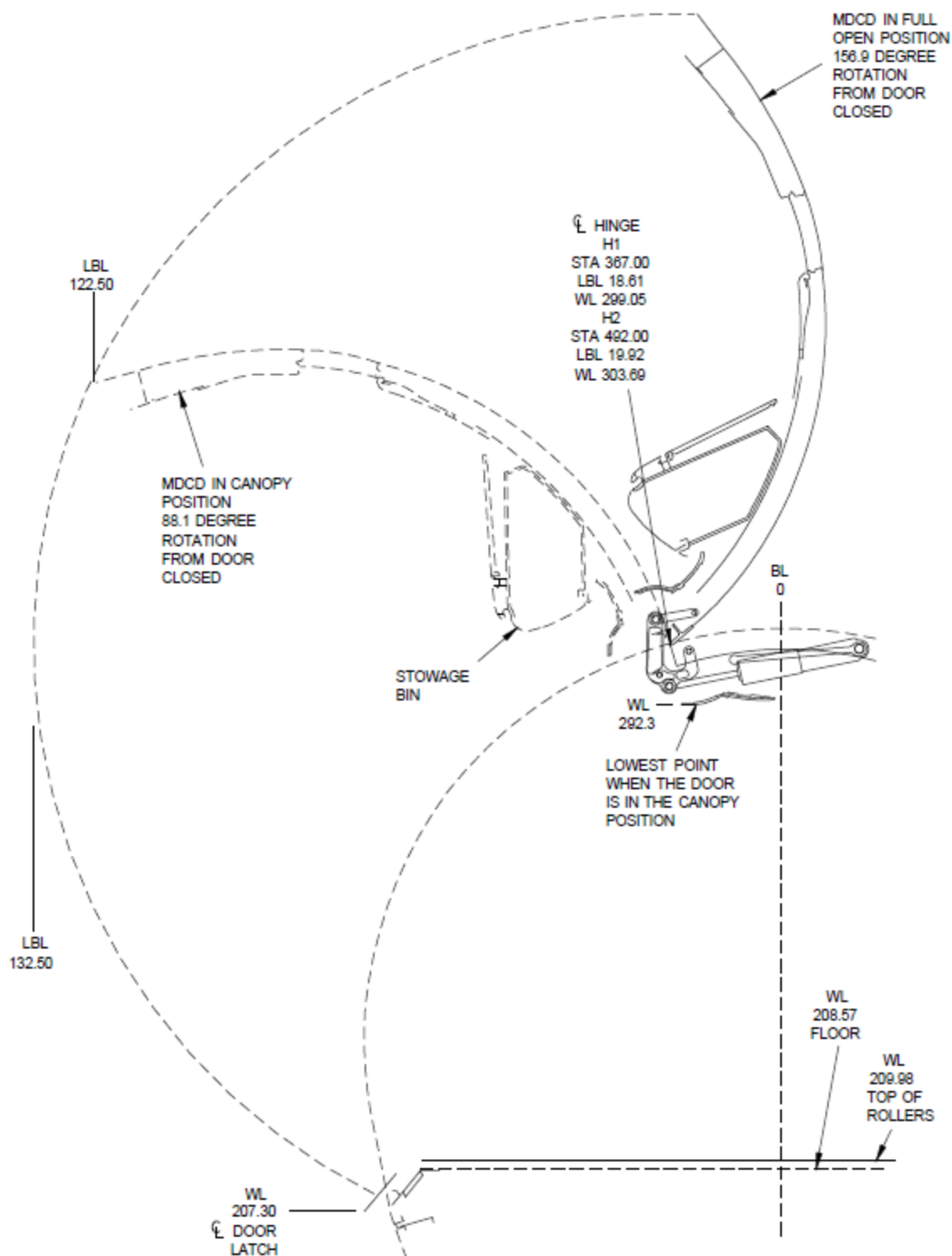


FIGURE 4D - B737-700C - MAIN DECK CARGO DOOR SWING

3.5 Boeing 747 - Lower Deck
Cargo Door Sill Attachment Fitting
Details for Ground Loading Equipment

See Figures 5A through 5D.

B.747

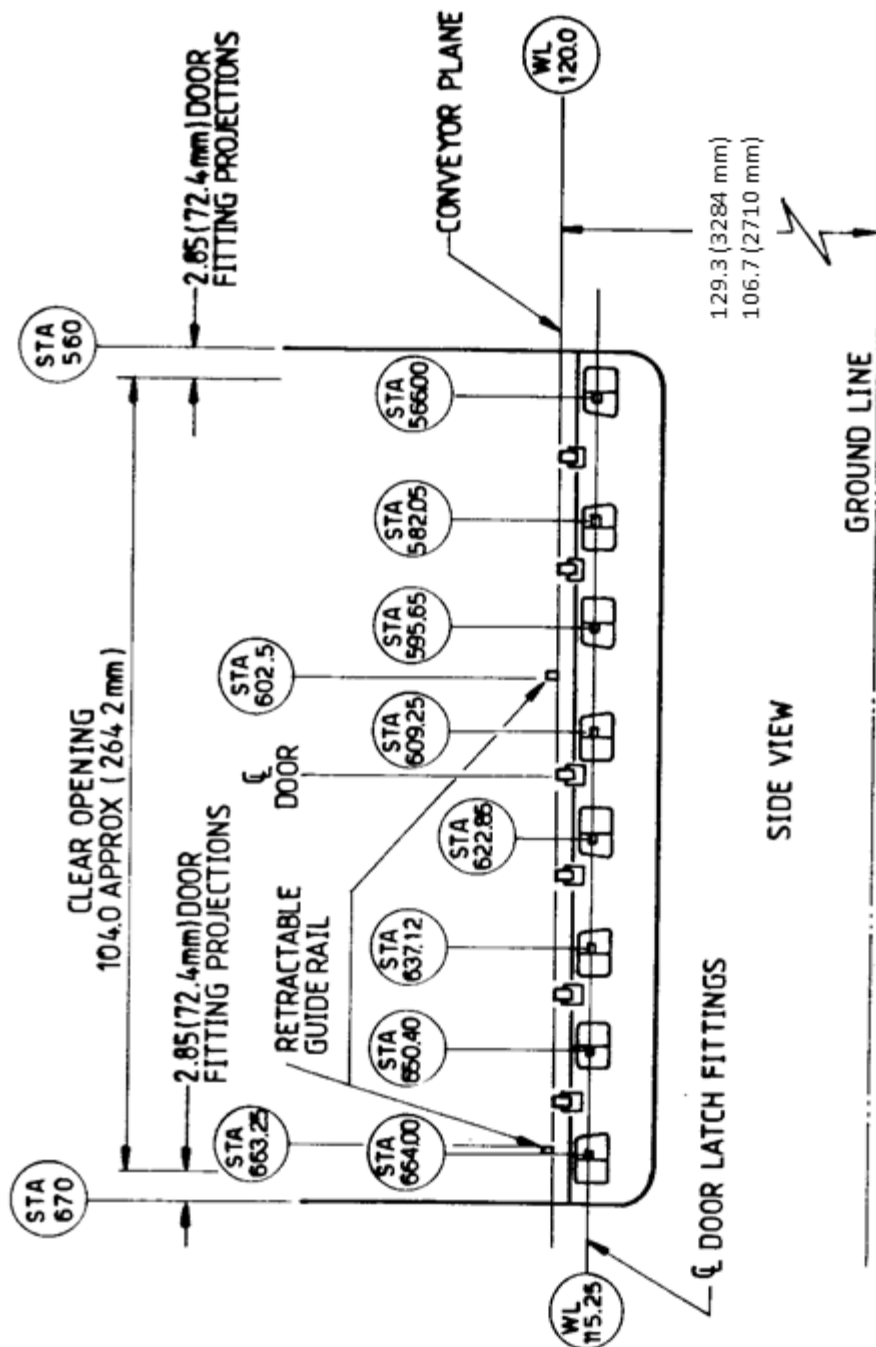


FIGURE 5A - BOEING 747 LOWER LOBE
FORWARD CARGO COMPARTMENT

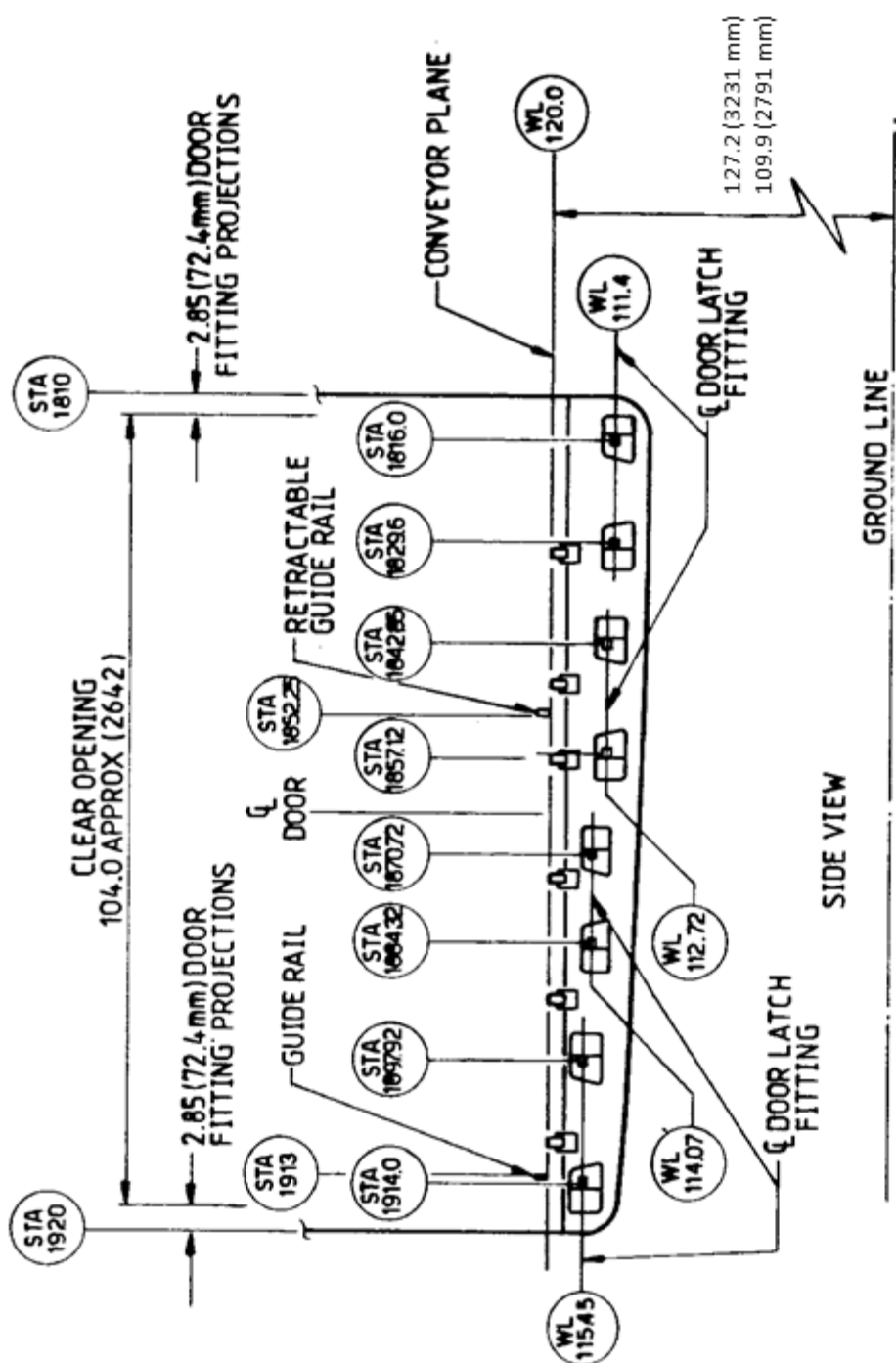


FIGURE 5B - BOEING 747 LOWER LOBE
AFT CARGO COMPARTMENT

B.747

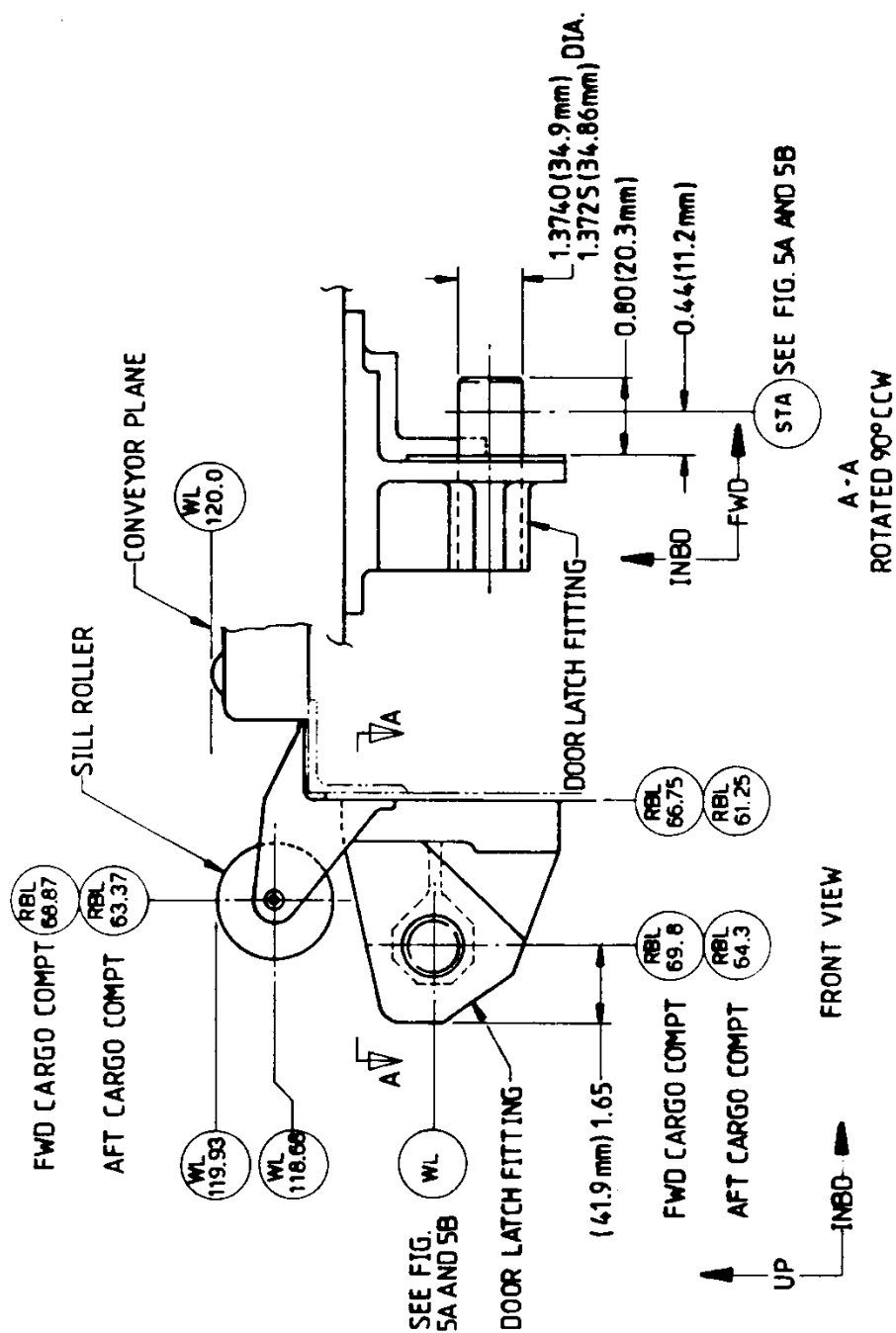
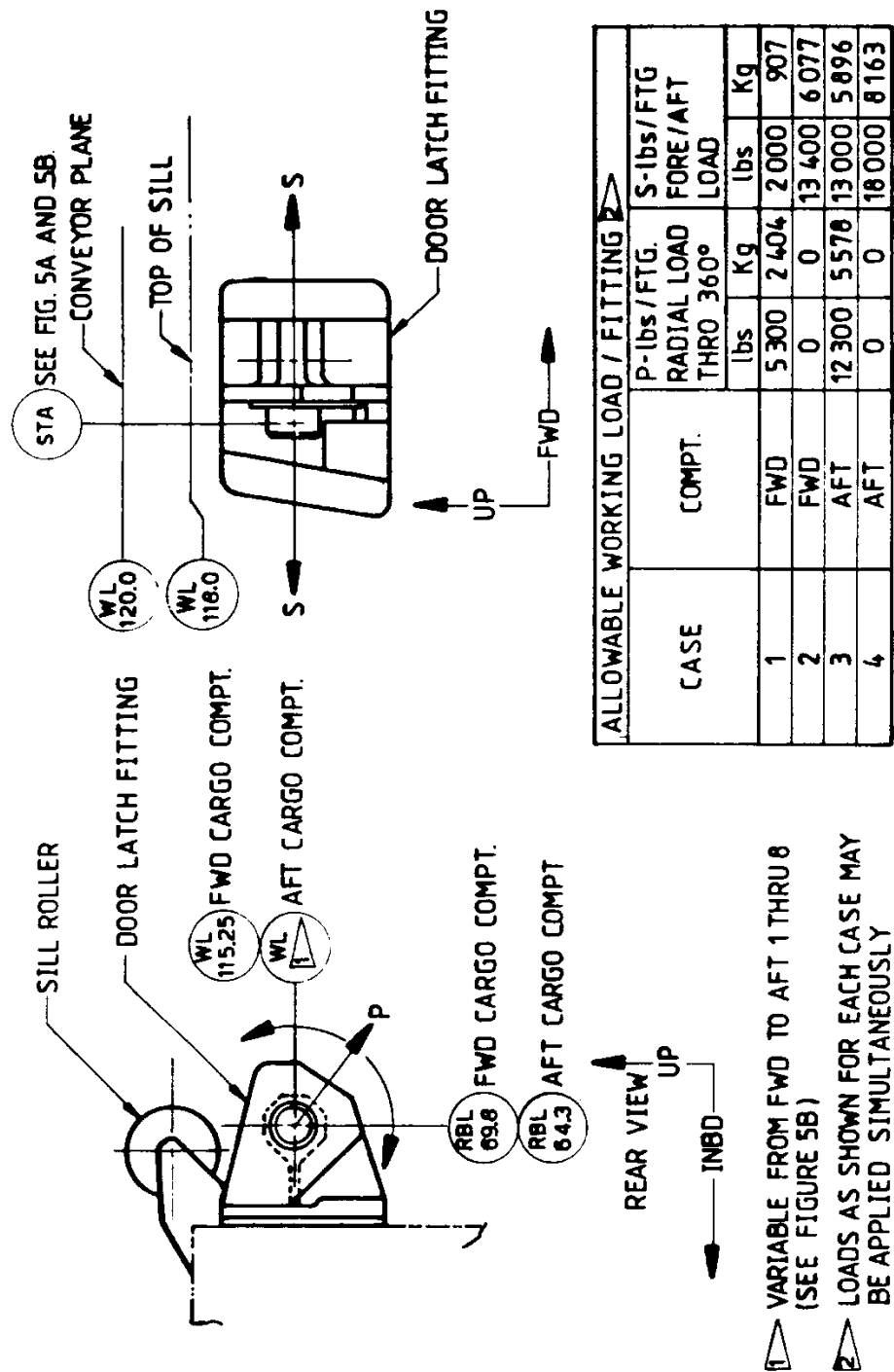


FIGURE 5C - BOEING 747 LOWER LOBE
GENERAL ARRANGEMENT OF DOOR LATCH FITTINGS



B. 747

FIGURE 5D - BOEING 747 LOWER LOBE ALLOWABLE LOADS

3.6 Boeing 747 - Main Deck, Nose and Side
Cargo Door Sill Attachment Fitting
Details for Ground Loading Equipment

See Figures 6A through 6F.

B.747

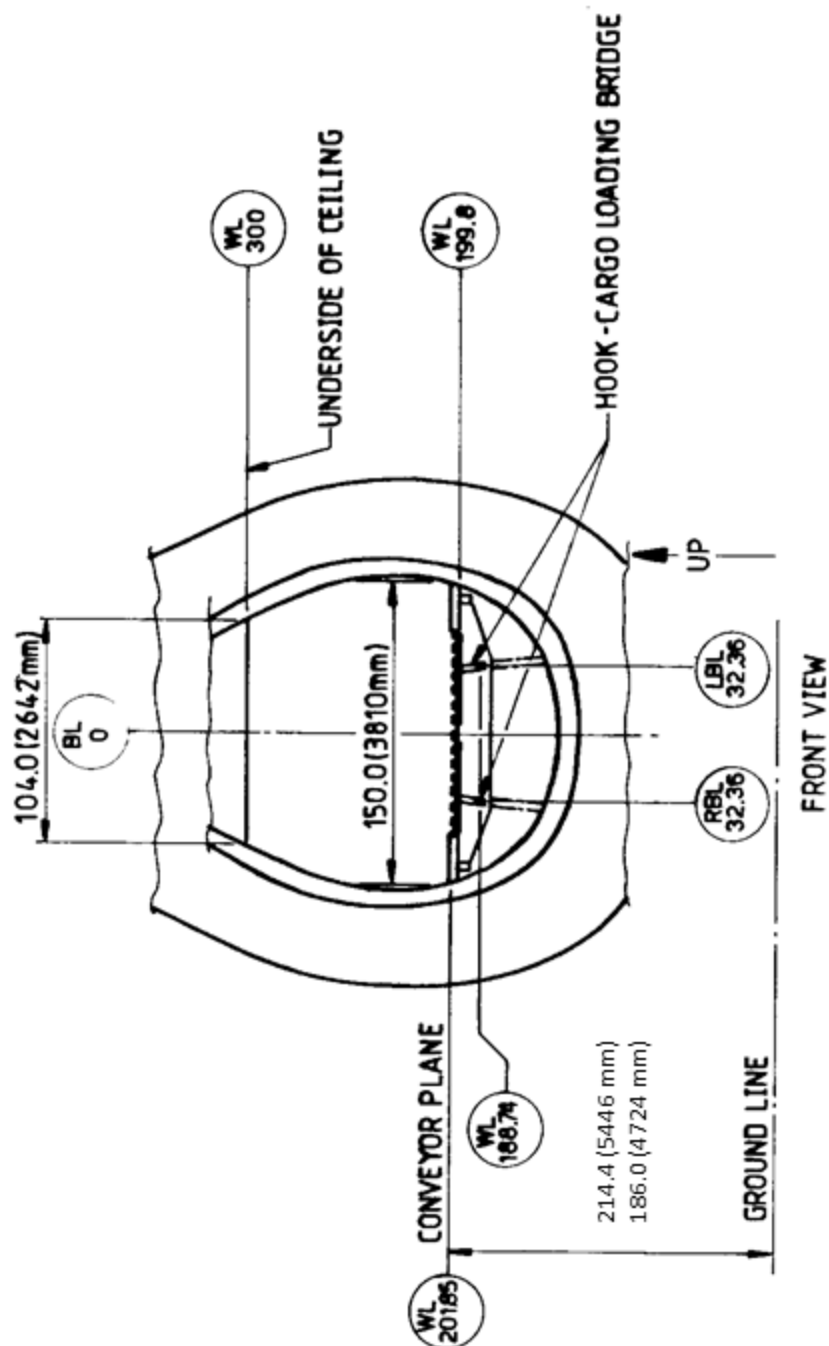


FIGURE 6A - BOEING 747 F AND C MAIN DECK NOSE DOOR
GENERAL ARRANGEMENT DOOR SILL INTERFACE

B.747

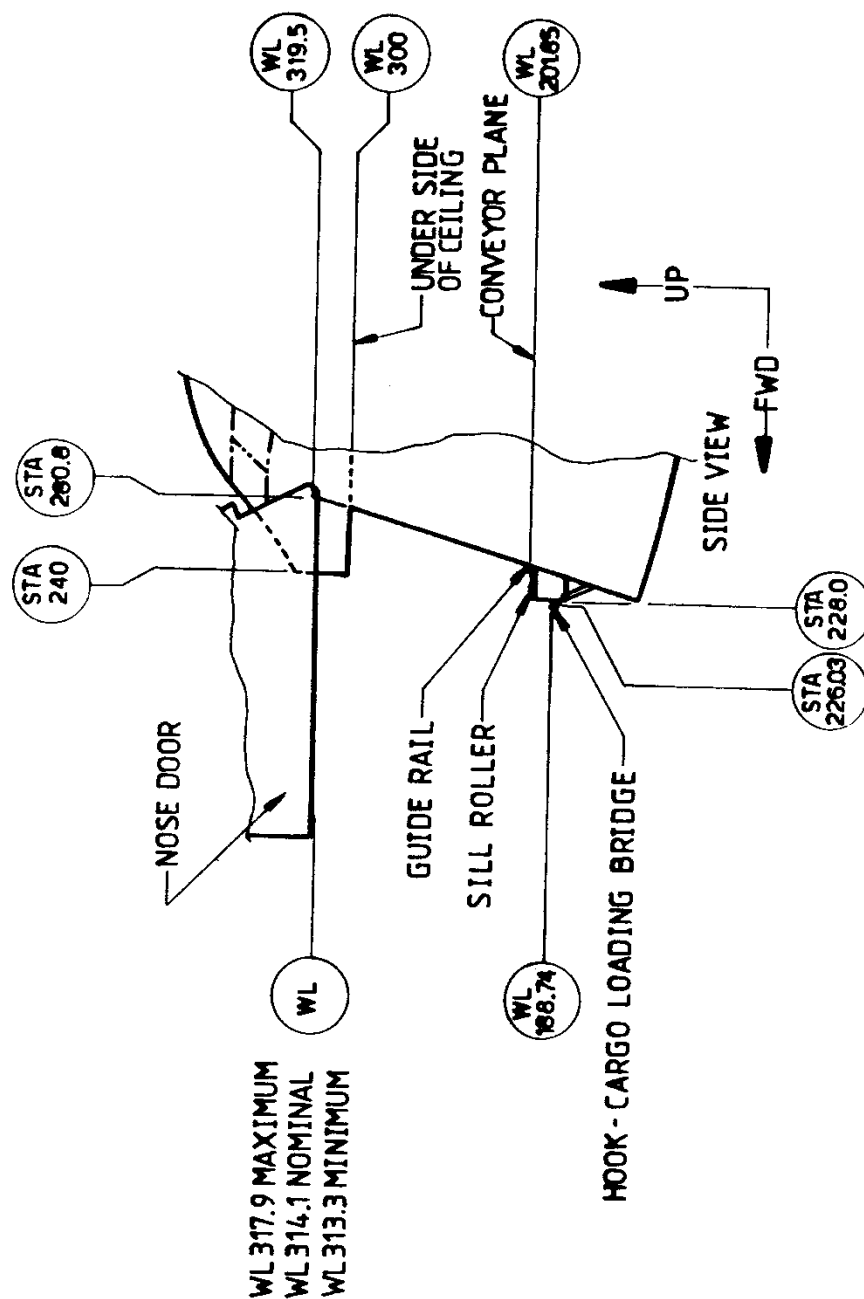
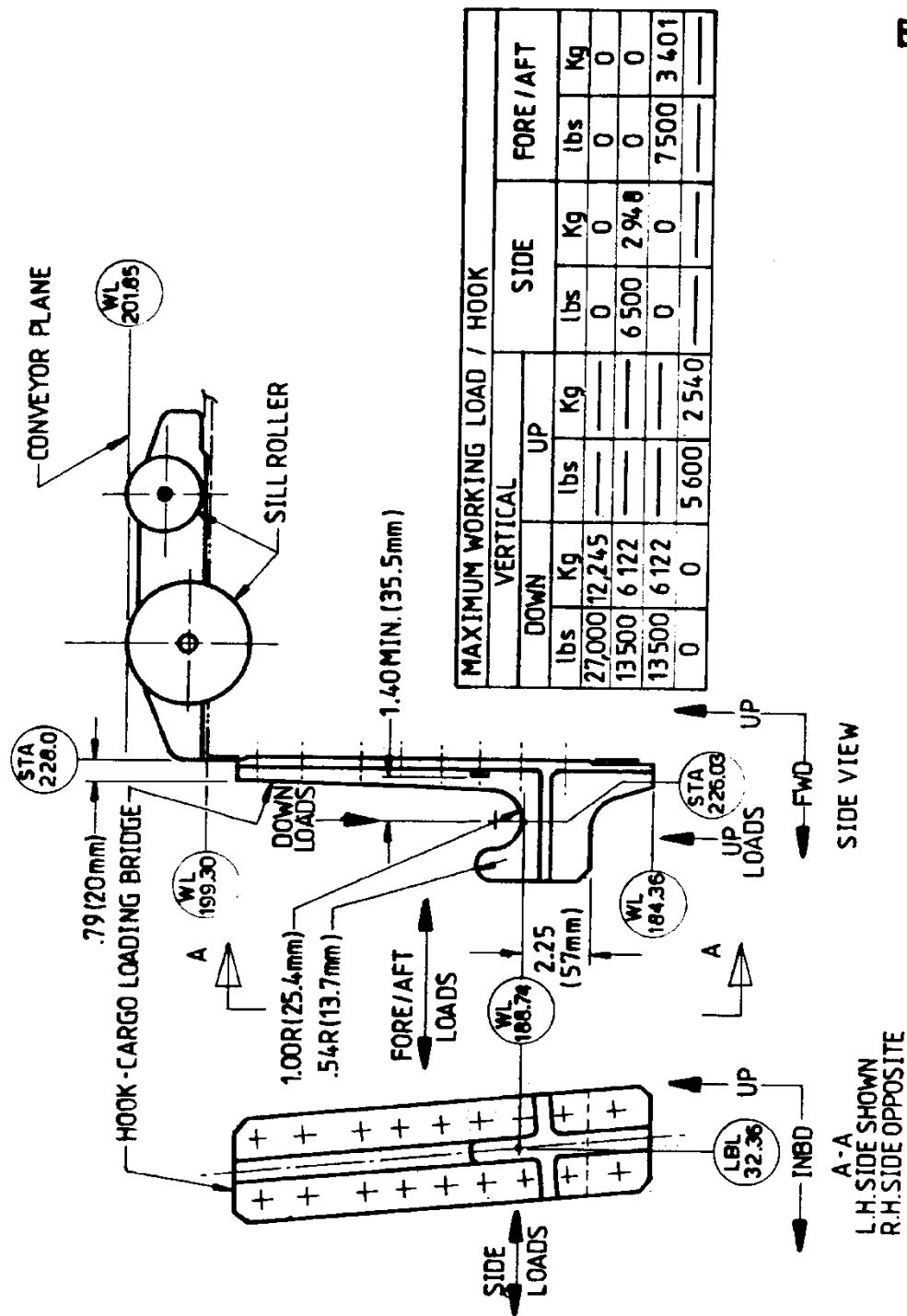
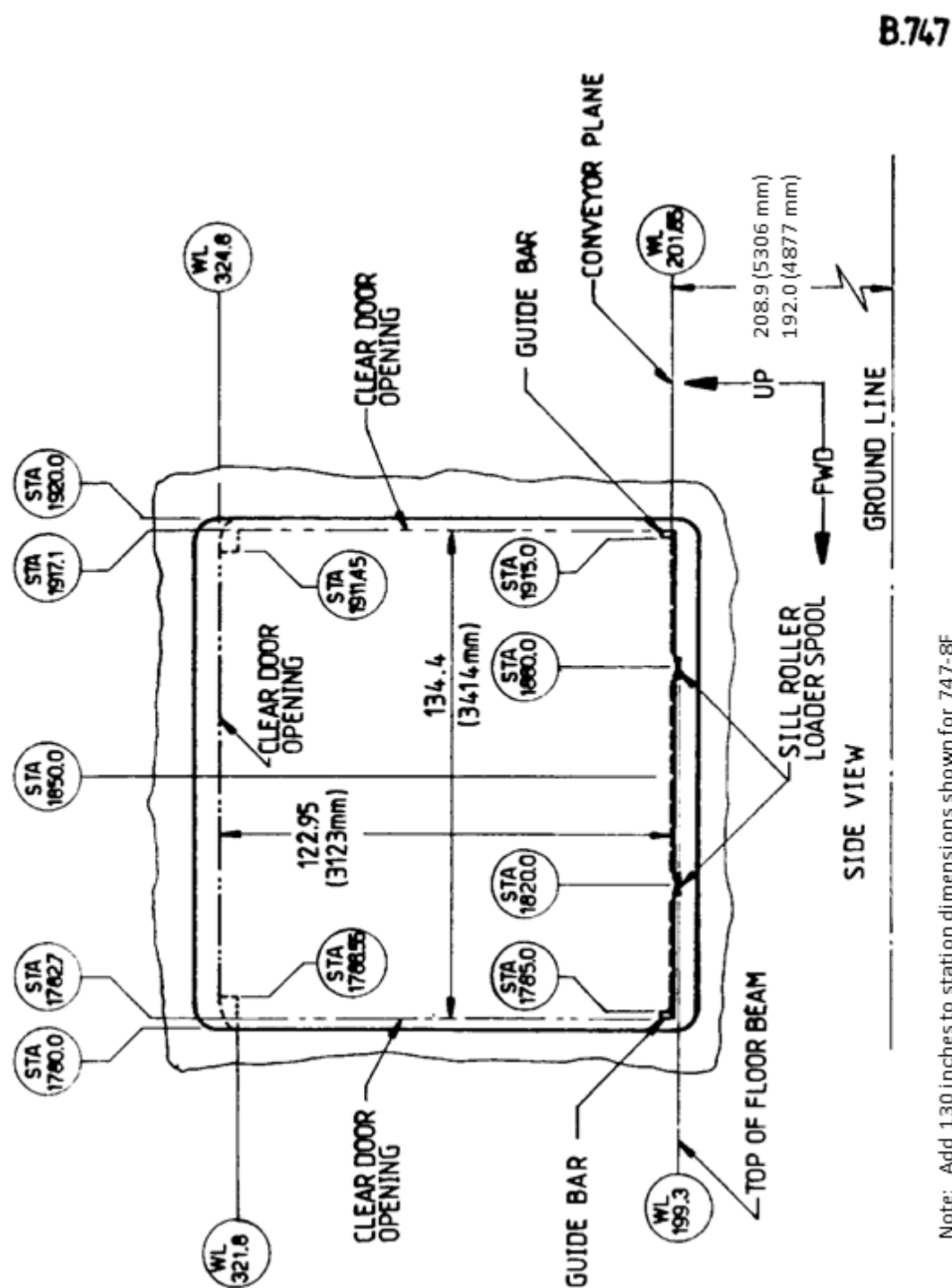


FIGURE 6B - BOEING 747 F AND C MAIN DECK NOSE DOOR
DOOR SILL INTERFACE



B.747

FIGURE 6C - BOEING 747 F AND C MAIN DECK NOSE DOOR CARGO LOADER HOOKS



Note: Add 130 inches to station dimensions shown for 747-8F

FIGURE 6D - BOEING 747, F, C AND COMBI MAIN DECK SIDE DOOR

B.747

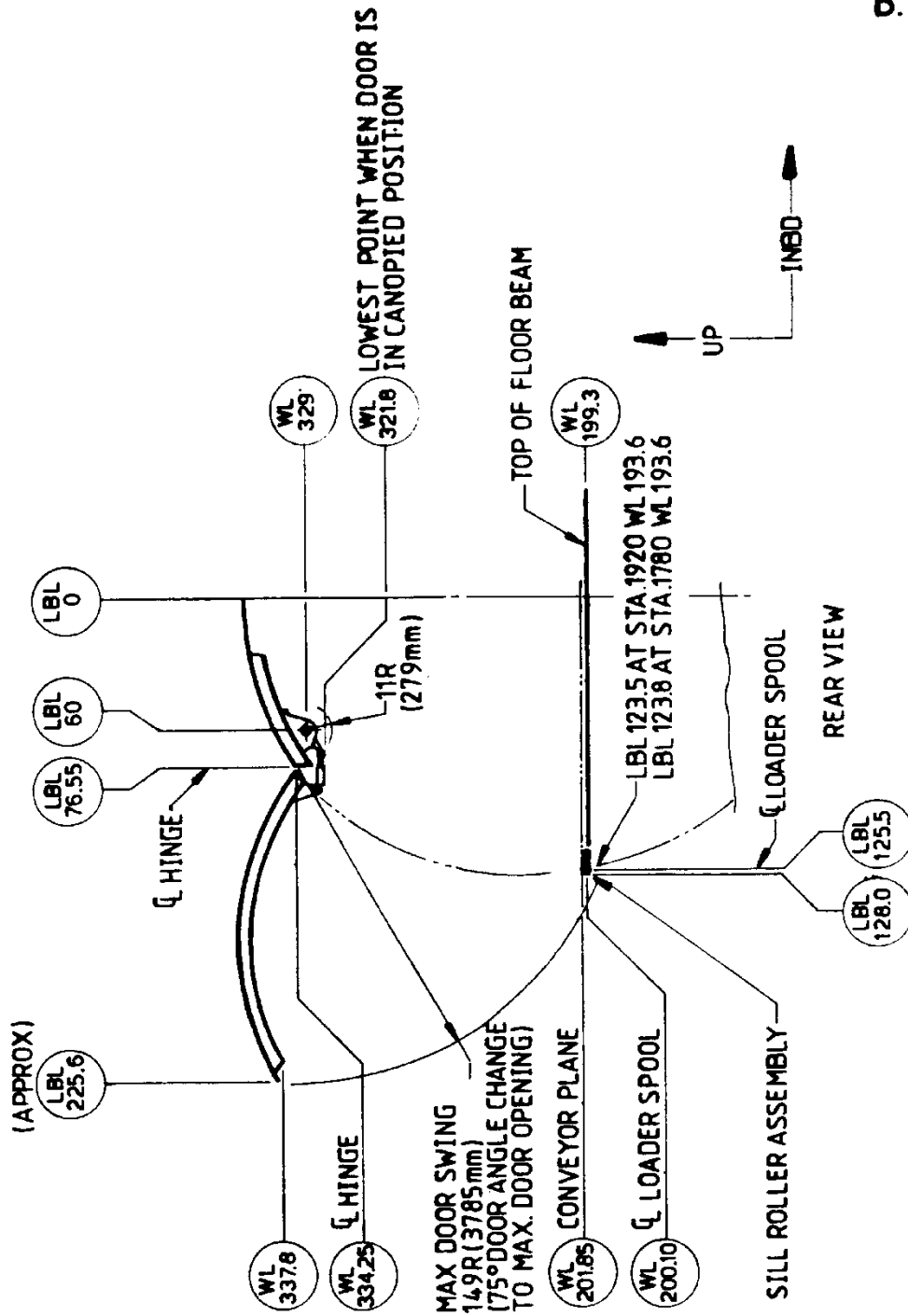


FIGURE 6E - BOEING 747 F, C AND COMBI MAIN DECK SIDE DOOR SILL INTERFACE

B.747

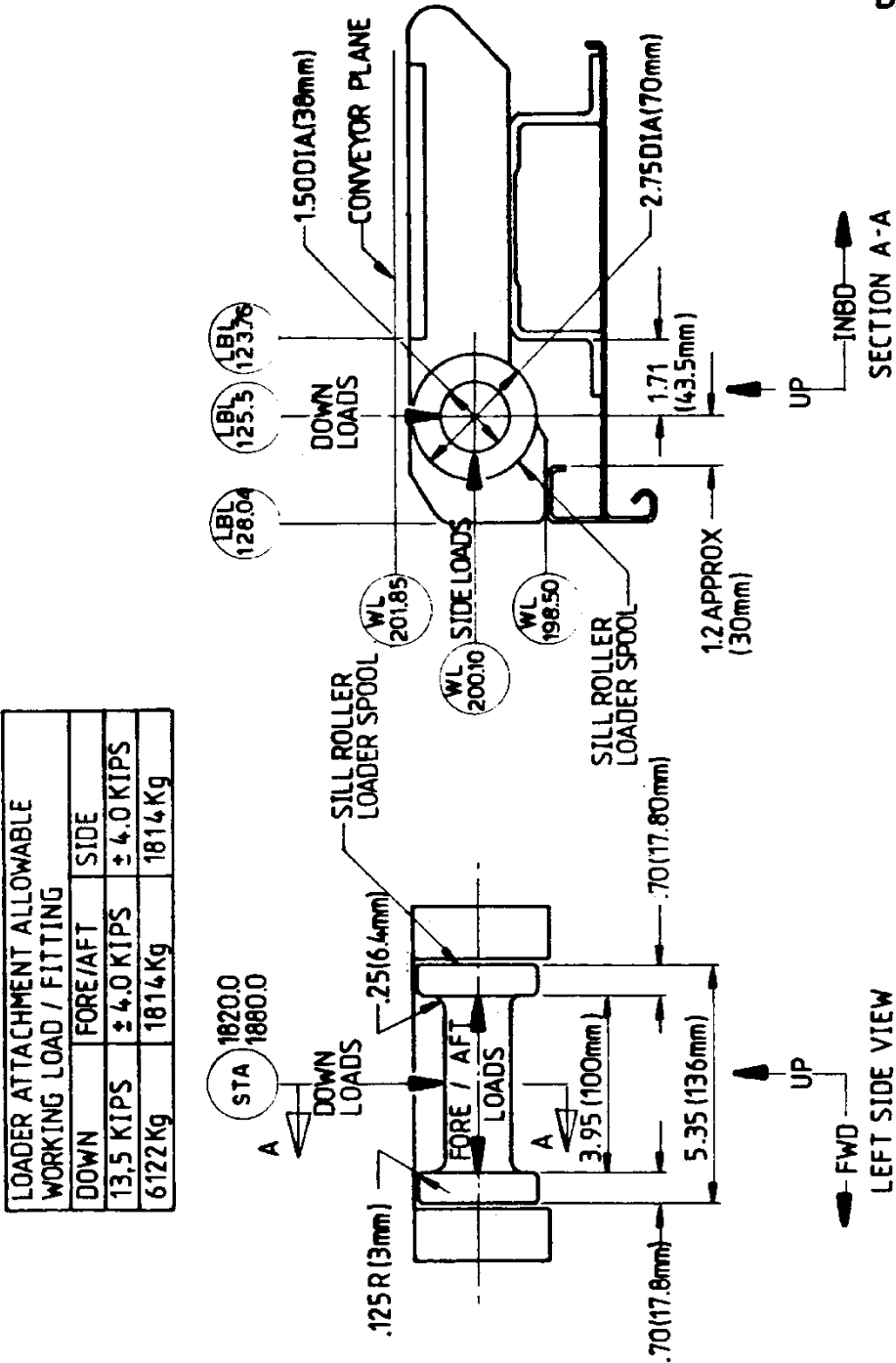


FIGURE 6F - BOEING 747 F, C AND COMBI MAIN DECK SIDE DOOR SILL ROLLER LOADER SPOOL AND ALLOWABLE LOADS

3.7 Boeing 767 - Lower Deck
Cargo Door Sill Attachment Fitting
Details for Ground Loading Equipment

See Figures 7A through 7H.

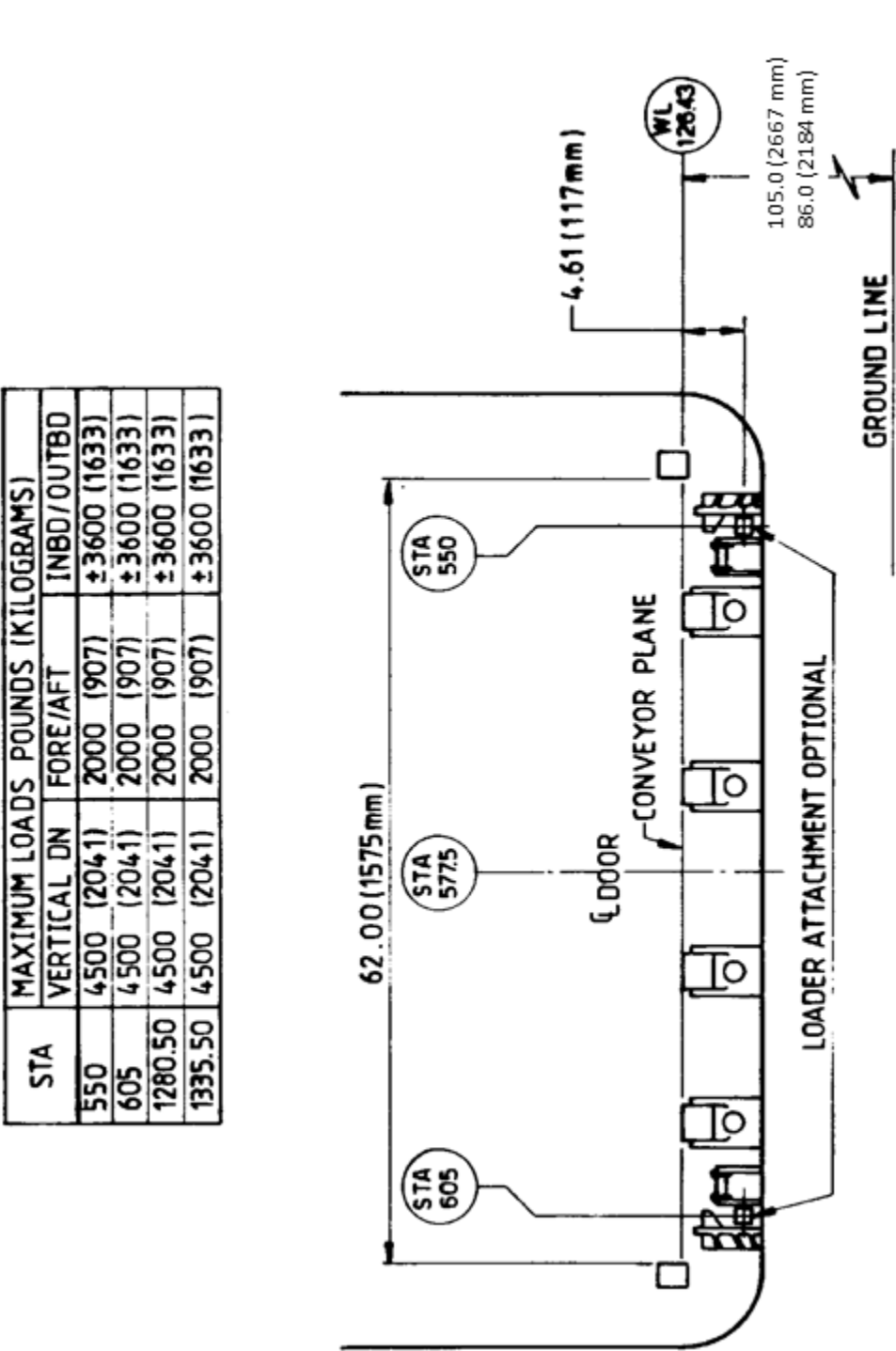


FIGURE 7A - BOEING 767 FORWARD AND AFT LOWER HOLD
OPTION FOR COMPATIBILITY OF LOADERS USED ON DC10

Technical drawing showing two views of a loader hook assembly.

Left View (Side Elevation):

- RBL 47.70
- CONVEYOR PLANE
- 0.50(13mm)
- WL 126.43
- LOADER FTG.
- DOOR LATCH FITTING
- LOADER HOOK
- 4.61(117mm)
- WL 121.82
- DOOR LATCH FITTING
- 0.50(13mm)
- STA
- 1.75(45mm)
- 1.183 DIA. (30mm)
- 0.25(6mm)

Right View (Top-Down Cross Section A-A):

- UP
- INBD
- FWD
- A - A
- MINIMUM CLEARANCE BETWEEN LOADER HOOK AND AIRPLANE

Full document details: [SAE AIR1673B](#)

B.767

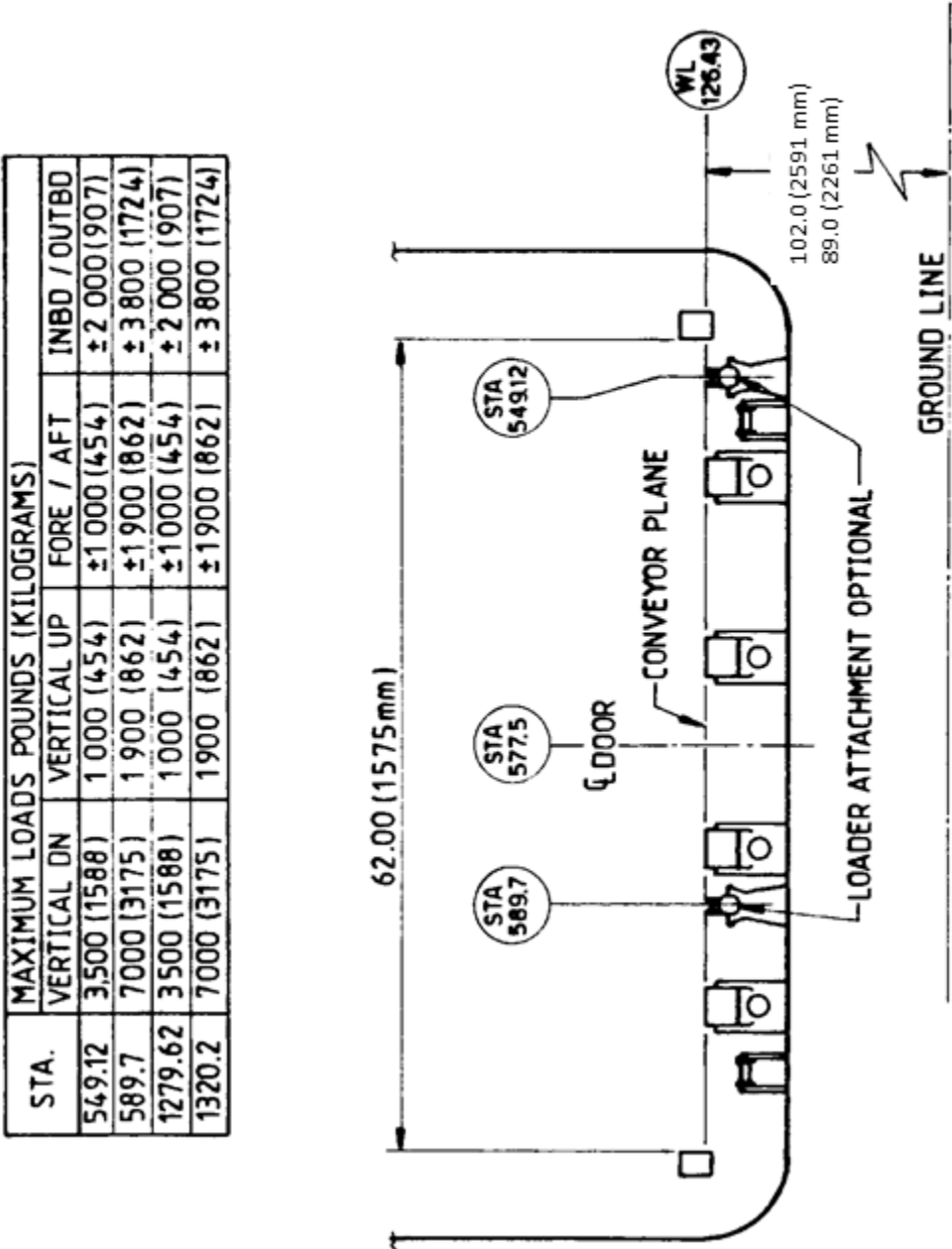


FIGURE 7C - BOEING 767 FORWARD LOWER HOLD
OPTION FOR COMPATIBILITY OF LOADERS USED ON L1011

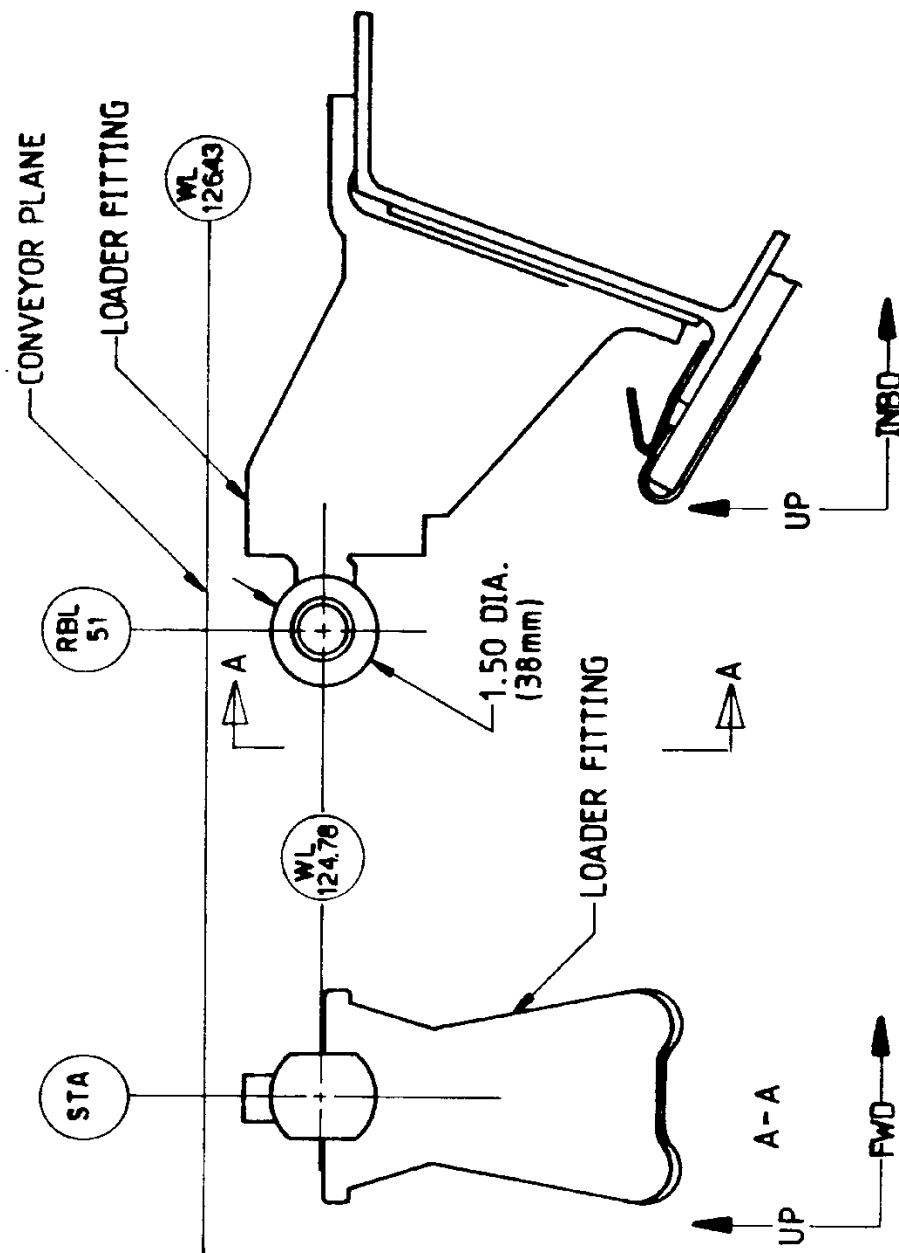
B.767

FIGURE 7D - BOEING 767 FORWARD AND AFT LOWER HOLD
OPTION FOR COMPATIBILITY OF LOADER USED ON L1011

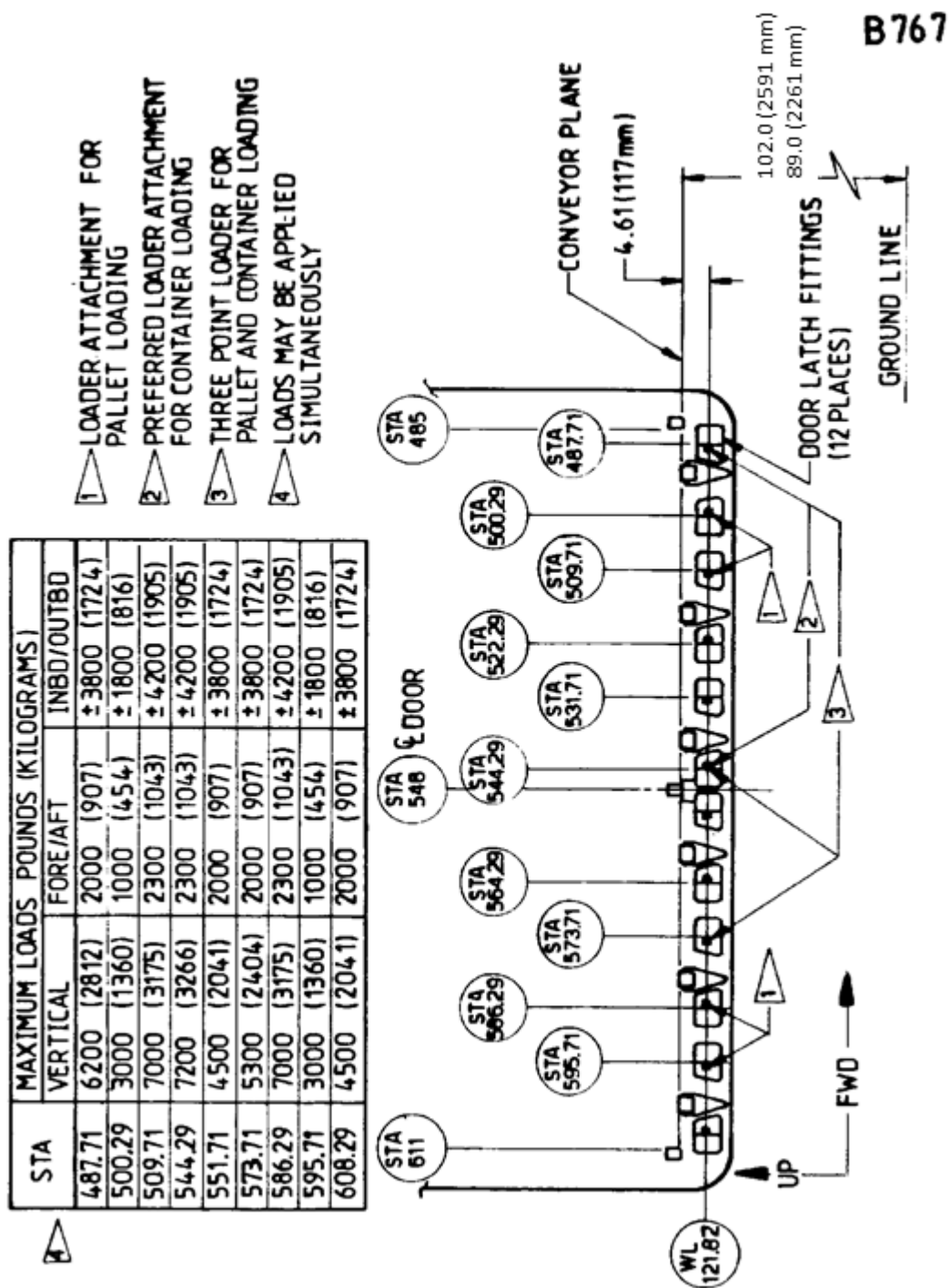


FIGURE 7E - BOEING 767 FORWARD LOWER HOLD WIDE DOOR OPTION

B.767

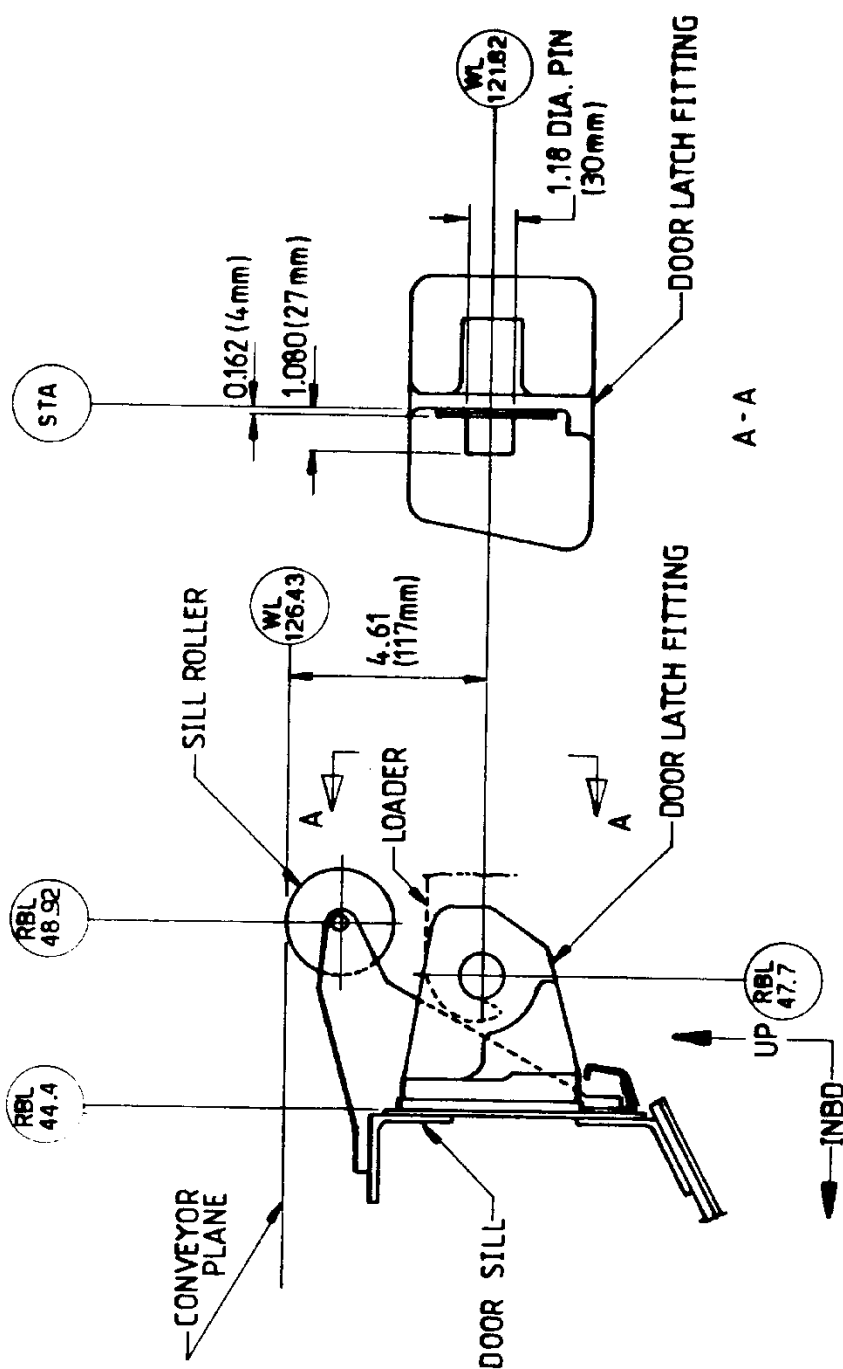


FIGURE 7F - BOEING 767 FORWARD LOWER HOLD - WIDE DOOR OPTION
GENERAL ARRANGEMENT OF GROUND LOADER LATCH ON FITTING