DAMAGE LIMITS AND REPAIR MANUAL

FOR

ULD CONTAINER

CMM Compiled By: Roger Beard
Regional Quality Manager

Eng. Technical Checks By: Audun Rør
ADOA Manager

Nordisk Aviation Products a.s,
P.O. Box 173, N-3081
Holmestrand, Norway
Phone: +47 3306 6100
Telefax: +47 3306 6101
e-mail: customerservice@nordisk-aviation.com
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A	02 Dec 2021	Initial release	02 Dec 2021	RB
B	01 Feb 2022	Added further details for Twintex Panel repairs, general spelling updates all sections.	01 Feb 2022	RB
C	28 Aug 2023	Added EZY door Chapter 8 and moved Non-Cert ULD to chapter 9. Added damage limit on FRC panels Chapter 3.	28 Aug 2023	BT

List of Effective Pages

Table of Contents

Introduction

General

A. For each individual CMM IPL where this “Damage Limits and Repair” manual is referenced, the information kept within the check and repair chapters will be removed and the following statement will be inserted:

B. “Refer to manual no. 25-54-14. For detailed information on the check and repair procedures applicable to this ULD refer to Nordisk manual 25-54-14 – Damage Limits and Repair for Nordisk Containers.”

C. This “Damage Limits and Repair” manual will replace both check and repair Chapters in the component maintenance manuals (CMM). It will function as a general check and repair document for all Nordisk ULDs where it is referenced in the CMM IPL.

D. Use this “Damage Limits and Repair” manual in conjunction with the ULDs CMM IPL.

E. Page numbering system in Parts 1 to 7 are 100 pages per Part this is to allow for future changes to the text or procedures.

Abbreviations and Acronyms

ATA	Air Transport Association
CMM	Component Maintenance Manual
DL & RM	Damage Limits and Repair Manual
EASA	European Aviation Safety Agency
EASA Part 145	European Maintenance Approval Regulation
ETSO	European Technical Standards Order
FAR Part 145	American Maintenance Approval Regulation
FAA	Federal Aviation Administration
IPL	Illustrated Parts List
LEP	List of Effective Pages
MOA	Maintenance Organisation Approval
MRO	Maintenance Repair Organisation
ODL	Operational Damage Limits
OEM	Original Equipment Manufacturer
P/N	Part Number
PC Sheet	Polycarbonate Sheet
RFMS	Request for Manufacturers Sign
S/N	Nordisk OEM Serial Number
TOC	Table of Contents
TSO	Technical Standards Order
ULD	Unit Load Device
ULDR	ULD Regulations Manual
W & B	Weight & Balance Manual

General

Overview

A. The ULD should be checked clearly for visible damage prior to each loading. In addition to this continuous control, it is advised to inspect the container thoroughly for damage each time it is in for repair

B. Operational Damage Limit Notice (ODL-XXXXXX) attached to the container lists the individual containers damage limits.

C. Allowable damage is defined as damage that does not affect the structural integrity of the ULD. All damage should be subject to repair as it may interfere with transfer systems, or other equipment. It is recommended to repair allowable damage to prevent injury to personnel due to sharp edges and to prevent intrusion of water. Please note that the wording “should” indicates the manufacturers recommendation only, and it is left to the ULD owners discretion to follow this recommendation or not.

D. Repairs shall be performed only by workshops holding Maintenance Organisation Approval (MOA) in accordance with FAR 145, EASA 145 or equivalent National Regulations.

E. If damage found exceeds limitations of Allowable damage, the container shall be subject to repair.

General

Overview

Repair materials
All materials used in the repairs shall be identical to materials as given in the customer specific illustrated parts list (IPL).

Caution: **Only parts and materials from or approved by Nordisk Aviation shall be used.**

Weld repair and heat straightening
All major extrusions used in this container are made from high strength alloy inthe 6000- or 7000- series. This alloy is self-hardening after heating and welding. Any broken or cracked extrusion may therefore be repaired by welding, using proper methods and welding wires as described in this chapter. Further, whenstraightening bent extrusions, heat may be applied provided that maximum temperature in the heat affected zone does not exceed 200°C (392°F) and that heat is not applied for more than 10 minutes.

Caution: **If higher temperature is applied over a longer period, mechanical properties will be drastically reduced.**

Brackets, angles or corners / half corners must not be welded under any circumstances. Any bracket, angle or corner / half corner that are cracked, broken / deformed significantly from original shape are to be replaced. Refer to Nordisk Service Bulletin SB201401 for further guidance.

Cleaning
Normally, cleaning of the container is not necessary. If cleaning is required to improve appearance, contaminated surface should be cleaned with a 50 / 50 isopropyl alcohol orother compatible non-oily solvents (test on a small area first).

NOTE: Some solvents may damage or un-stick decals.

Clean polycarbonate surfaces as follows:

(1) Clean PC sheet with mild soap or detergent and lukewarm water (using sponge).
(2) Dry thoroughly with chamois or clean dry cloth.
(3) Do not use brushes on the PC sheets.
(4) Benzene, gasoline, acetone or carbon tetrachloride should never be used on a PC sheet.
(5) Do not use abrasive cleaners on PC sheet.
(6) Never scrape PC panels with razor blades or any other sharp object.

To remove decals, use kerosene, naphtha or petroleum spirits. When sticker penetration is not effective, apply heat to soften the adhesive. (Gasoline is not an option.)

General

Overview

A. Visual Inspection

The container assembly should undergo a General Visual Inspection prior to each use to verify its serviceability and to evaluate the degree of any damage to provide for continued airworthiness.

B. General Visual Inspection

(1) Check the door cover for holes or cuts. Check the entire door assembly for any missing or broken hardware. Inspect the door cables for cut or frayed cables. Check the door bar for bent or broken extrusion.
(2) Check exterior of container assembly for any damage, defective or missing strap handles, sharp edges and loose or missing hardware.
(3) Check interior of container for damage, structural failures, sharp edges, loose or missing hardware.
(4) Check the base edges for any damage that might restrict the movement of the container or its interface with the aircraft restraint system. Check for loose or missing hardware.
(5) Check base sheet for any holes, tears and loose or missing hardware.
(6) Check the net door for any damage / worn out / missing restraint straps ropes or stitching.
(7) Check for deflection outside original contour.

C. TSO / ETSO PLACARDS

TSO / ETSO shall be in place and legible.

D. Final Inspection After Repair

Each maintenance repair organisation (MRO) is responsible for preforming a final inspection after the repair of a Nordisk Container. The container shall be repaired according to the DL & RM / IPL CMMs. Repairs shall be performed only by workshops holding Maintenance Organisation Approval (MOA) in accordance with FAR 145, EASA 145 or equivalent National Regulations.

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1 Part 1 – Base Repair

Inspection & Repair of;

Forkliftable base
Single / reinforced base

1.1 Forkliftable base

1.1.1 Inspection of a forkliftable base

1.1.1.1 **[SB] Sheet Base**

There shall be no cracks or holes (other than drain holes).
Maximum convexed or concaved indentation is 5 mm depth / height, see Figure 100.
Maximum 25 mm convexed or concaved dishing of the entire base plate when unloaded. Maximum repairable damage is defined as holes or cracks in the base sheet less than 300 mm.

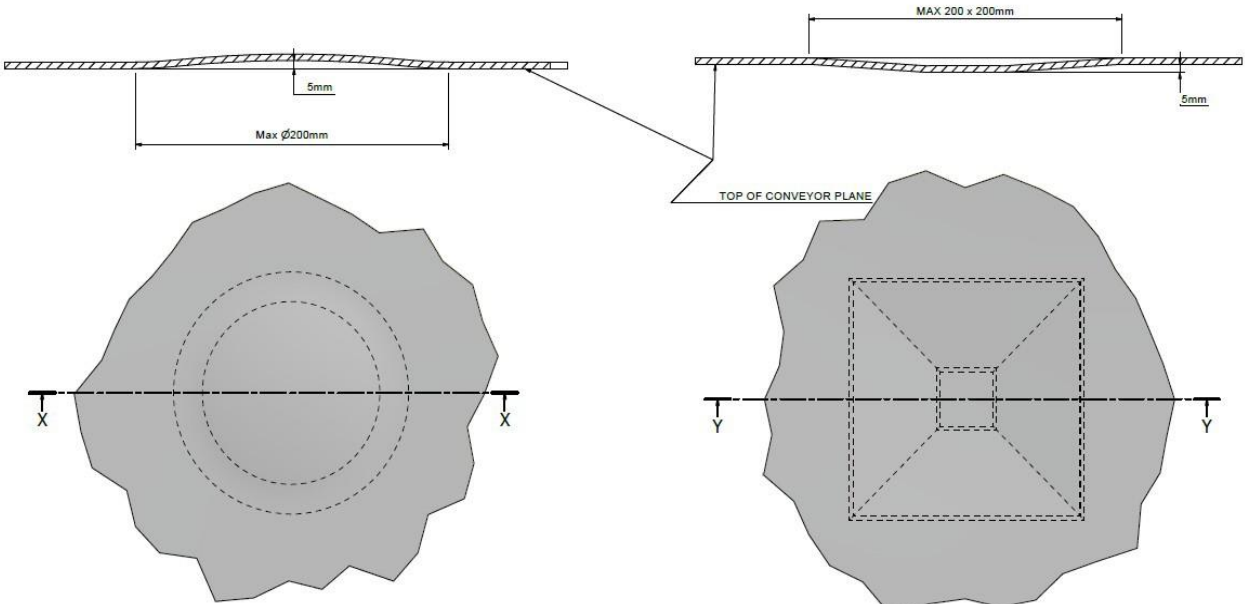


Figure 100

1.1.1.2 **[EB] Extrusion Base**

There shall be no broken or missing parts. Maximum 25 mm sized cracks in any direction, minimum 500 mm apart. Maximum 28 mm sized bowed, warped or deflected extrusion. If these limits are exceeded, interference with aircraft floor locks may occur.

1.1.1.3 **[TB] Tie-down points Base**

There shall be at least 3 undamaged adjacent pairs of seat track lips at each internal attachment point. There shall be no clogging with dirt or other contaminant.

1.1.1.4 **[FB] Fasteners Base**

There shall be no more than 3 broken, loose or missing fasteners per edge rail minimum 300 mm apart.

1.1.1.5 **[CB] Corner Base connection**

There shall be no deformed, broken or missing corner connections.

1.1.1.6 **Damaged base pods**

Holes and cracks in base pods are allowed provided that they will support the load on upper base and that local deformation of the pods will not deform lower base sheet beyond its damage limits. No missing bolts / nuts for base pods. Loose bolts to be tightened.

1.1.2 Repair of a forkliftable base

1.1.2.1 **[SB] Sheet Base**

1.1.2.1.1 Warped plate

When limitation is exceeded, the plate should be flattened either by a big hammer and wooden planks or by roller bending. After flattening, check that external dimensions of base are correct. If the plate cannot be flattened, the base should be replaced.

1.1.2.2 Plate indentation

Holes or cracks in the plate less than 300 mm should be repaired as follows: Cut out a circular or rectangular section around the damaged area. Make a new plate, with the same thickness, in alloy AA 7075-T6 or AA7021-T6, that will fit into the cut out with max. 3 mm clearance. Make a doubler plate, with the same thickness, in alloy AA 7075-T6 or AA 7021-T6, that will overlap hole by 30 mm on each side. Fit pre-made patching plate and attach doubler plate to pallet plate with fasteners P/N 113343-307, using edge distance 15 mm and inter fastener spacing 35 mm. Use 5 mm dia. drill bit and 90 degree countersink drill bit. See Figure 102. Standard precut and predrilled patching sheets in various sizes are available from the manufacturer, see Figure 102, Table 1.

1.1.2.3 **[EB] Extrusion Base**

1.1.2.3.1 Bent edge rails

Straighten by pressing edge rail in opposite direction to bend. Heat may be applied as described in GS-2. If rail needs to be replaced use the following procedure: Remove all fasteners attaching damaged edge rail to base plate. Use 5 mm dia. drill bit and detach rail. Insert corners in ends of new edge rail. It may be necessary to coax the corners into the rails with a nylon / soft faced hammer. Position a new edge rail and check that external dimensions are correct. Drill dia. 5 mm holes through edge rail using the holes in plate as templates. Install new fasteners using suitable tubular fastener forming equipment.

1.1.2.3.2 Broken or cracked edge rails

Broken or cracked edge rails. Broken or cracked edge rails may be replaced as described in 1.1.2.3.1 above, or repaired by welding using TIG or MIG equipment and welding wire in alloy AA5356 (AlMg5) or equivalent.

1.1.2.4 **[TB] Tie -down points**

1.1.2.4.1 Damaged tie down brackets

All damaged internal tie down bracket shall be replaced as follows: Remove damaged bracket by removing 2 fasteners and snap bracket out of base extrusion. Insert a new bracket in base extrusion with 2 new fasteners as per Customer CMM IPL.

1.1.2.5 Damaged continuous seat track

Nordisk pallets and container bases with damage to continuous seat tracks can be made serviceable by removing damaged lip sets. There shall be at least 4 undamaged adjacent pairs of seat track lips at each net attachment point. In order to avoid inadvertent attachment of net fittings, any damaged seat track lip should be removed. Broken or permanently deformed seat track lips should be removed by using a chisel hammer or a 20 mm dia. milling cutter. Note that lip opposite to damaged lip should also be removed. Damaged seat track shall be removed in order to avoid inadvertent use.

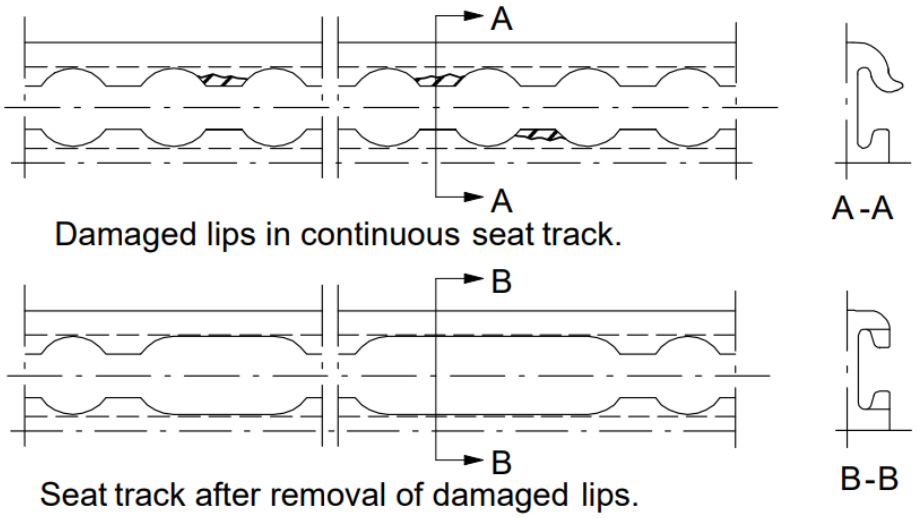


Figure 101 - Removal of damaged seat track lip sets

1.1.2.6 **[FB] Fastener Base**

1.1.2.6.1 Loose or missing fasteners.

See section 1.1.1.4. for limitations. If limitations are exceeded, loose or missing base fasteners shall be replaced according to instructions in section 1.2.1.

1.1.2.6.2 Repair of enlarged fastener holes.

When fastener holes in edge rails or sheets are enlarged (e.g. result from removal of fasteners) to more than 6 mm diameter, new holes should be drilled in 2 staggered rows approx. half way between the old fastener holes.

1.1.2.7 Corner base connection

Broken corners, see Figure 103.

Broken corners shall be replaced as follows:

(1) Remove all fasteners attaching an adjacent edge rail to base plate. Use 5 mm dia. drill bit.
(2) Replace broken corner in end of the loose edge rail.
(3) It may be necessary to coax the corner into the rails with a nylon / soft faced hammer.
(4) Position the edge rail and install new fasteners as per Customer CMM IPL using suitable tubular fastener forming equipment.

1.1.2.8 Replacement of base pod

Base pods exceeding damage limitations should be replaced as follows:

(1) Detach lower base with pods and extrusions from upper base plate by removing bolts with nuts. Lower base with pods is now completely separated from the container.
(2) Detach damaged pods by removing 4 bolts with nuts.
(3) Install a new predrilled pods by fastening the 4 bolts with nuts.
(4) Fix the container body to the base and assemble all bolt and nuts attaching container body to base.

Ref. section 1.1.2.2.

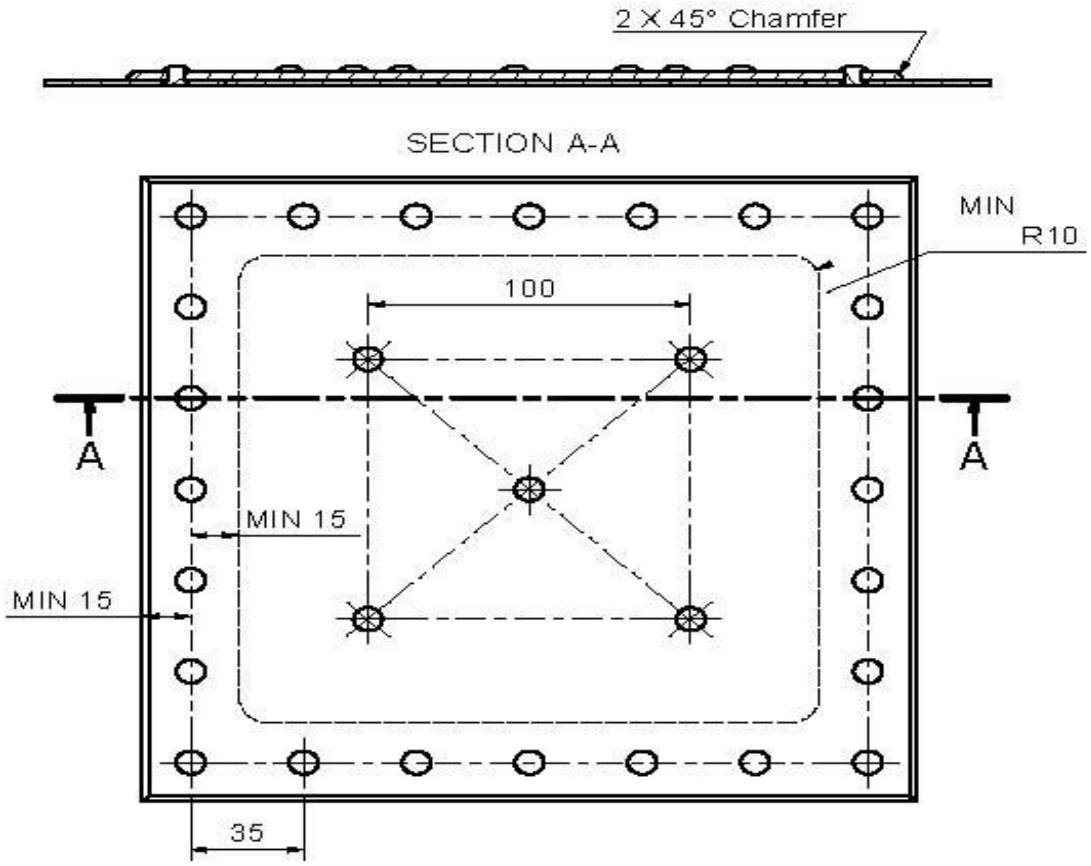
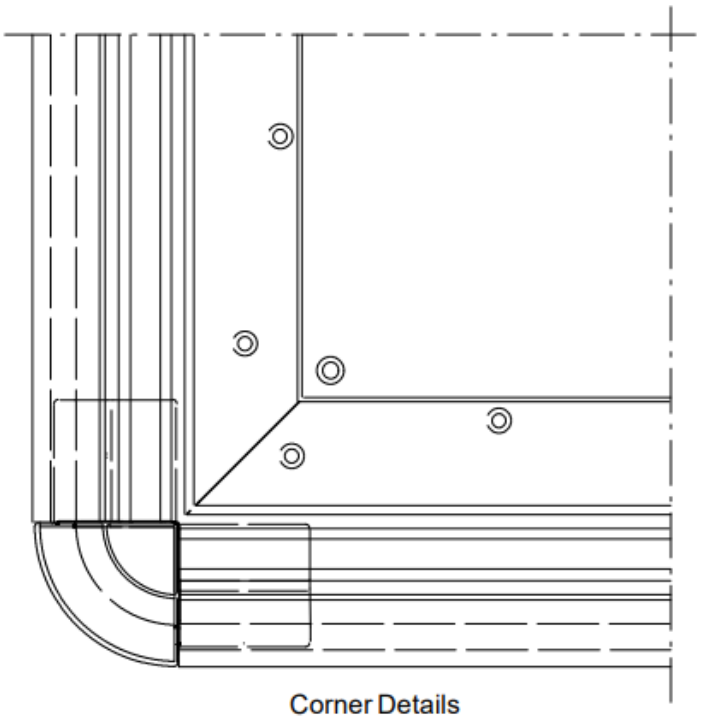


Table 1. Pre-made base doubler patches available - cross reference doubler patch thickness to the base thickness in IPL drawing Fig. 1002.

Part Number	Size [mm]	Thickness [mm]	Number of fastener holes
811935	125 x 125	2.5	12
811939	300 x 300	2.5	32
811944	125 x 125	2.8	12
811947	300 x 300	2.8	32
811950	125 x 125	3.0	12
811954	300 x 300	3.0	32
121650-304	125 x 125	3.8	12
121650-305	300 x 300	3.8	32
812036	125 x 125	4.0	12
812039	300 x 300	4.0	32

Table 1

Ref. section 1.1.2.7



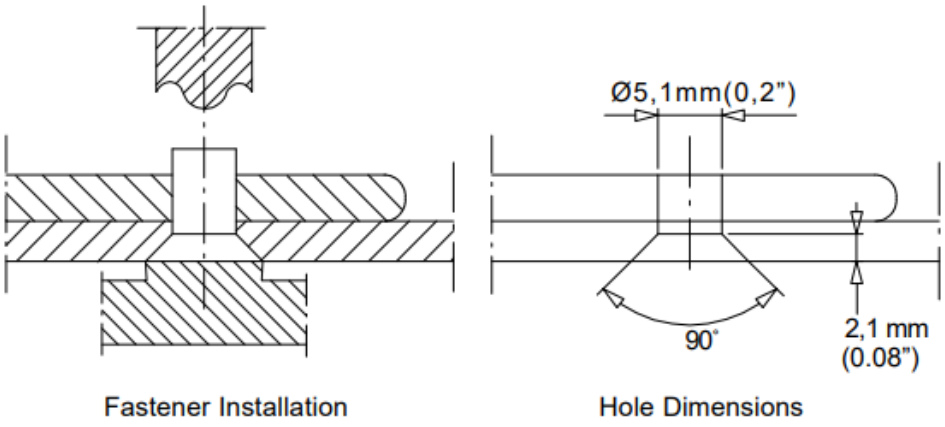


Figure 103

1.2 Single / reinforced base

1.2.1 Inspection of a single / reinforced base

See section 1.1.1.1 - 1.1.1.6 which also applies to a single / reinforced base.

1.2.2 Repair of a single / reinforced base

See section 1.1.2.1 - 1.1.2.7 which also applies to a single / reinforced base.

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2 Part 2 – Frame & Misc. Items

Inspection & Repair of;

Extrusion Panel
Fasteners Panel
Corners Panel / Brackets
Webbing Panel / Pull-straps
OEMs Data Plates
Fire Seals
Plastic Corner Inserts
General Damage Limits

2.1 Inspection of extrusion frame and associated hardware

2.1.1 [EP] Extrusion Panel

There shall be no more than 1 x 25 mm crack per extrusion in any direction, no broken or crushed extrusions or any deflection outside allowable contour.

2.1.2 [FP] Fastener Panel

There shall be no more than 1 broken, loose or missing fastener per extrusion length.
There shall be no missing fasteners on door strap brackets, or tie-down brackets.

2.1.3 [CP] Corner / Brackets Panel

There shall be no broken, cracked, bent, loose or missing corner brackets.

2.1.4 [WP] Webbing Panel / Pull-straps

There shall be no damaged, worn-out or missing pull-straps (min. 1000 lbs pulling capacity for operation, not required for airworthiness). No loose or missing fasteners in hand straps / door retainer straps or strap & hook assemblies.

2.1.5 [TM] ETSO / TSO / OEMs Data Plate

ETSO / TSO or the OEMs data plate shall be in place and legible.

2.1.6 Fire Seal - Top of door opening

There should be no broken, torn, loose or missing for fire resistance performance.

2.1.7 Plastic Corner Inserts

Not required for airworthiness, missing / holes may be temporarily covered with sealant.

2.1.8 General Damage Limitation

There should be no damaged, loose or missing parts that can affect fire resistance performance.
There shall be no damaged, loose or missing parts that can result in ULD or its cargo becoming a hazard to personnel, the aircraft or systems.

2.2 Repair of extrusion frame and associated hardware

Note: Due to lower resistant to heat than aluminium, UltraLite, UltraLite X, TwinLite U and polycarbonate sheets shall be detached where sheets are in contact with extrusions exposed to heat straightening or welding repair.

2.2.1 [EP] Extrusion Panel

Repair of bent or cracked extrusions.

Bent extrusions should be straightened by applying force in the opposite direction, taking care not to introduce additional damage to any parts. Use of some kind of load spreader when force is applied is advised, for example a piece of wood. Heat may be applied as described in General Section, GS-2. A cracked extrusion can be repaired by welding using TIG or MIG equipment and welding wire in alloy AA5356 (AlMg5) or equivalent.

See note above regarding restrictions in relation to UltraLite, UltraLite X, TwinLite U, and Polycarbonate sheets.

For new repairs; there should be maximum one weld per extrusion and the weld should not exceed maximum dimensions of 50 mm in length and 25 mm in cross direction. There shall be no complete section or insert welds. For existing weld repairs in excess of the above specification, parts may be replaced on an attrition basis provided the repairs have been properly performed with no detrimental effects showing on the container, including but not limited to contour being outside maximum allowable dimensions per IATA ULD Regulations.

If damaged extrusion cannot be straightened or repaired by welding, it should be replaced as follows:

(1) Remove all assembly fasteners attaching damaged extrusion and as many assembly fasteners as necessary on adjacent extrusion to bend sheet away from the corners. Use 6.5 mm dia. drill bit to remove fasteners.
(2) Position new precut extrusion, and install new fasteners as per Customer CMM IPL.

2.2.2 [FP] Fastener Panel

Replacement of loose or missing fasteners.
Loose fasteners should be removed with 6.5 mm drill bit. Install new fasteners as per Customer CMM IPL.

2.2.3 [CP] Corner / Bracket Panel

Broken, cracked, bent or missing corner brackets shall be replaced. If loose corner brackets; replace loose or missing fasteners as per Customer CMM IPL.

[WP] Webbing Panel

2.2.3.1 Damaged or missing door retainer hook.

Remove old door retainer hook by removing assembly fastener. Install new hook assembly with new fastener and washer if required as per main drawing.

2.2.3.2 Damaged or missing strap handle.

Remove old strap handle by removing assembly fastener. Install new strap handle with new assembly fastener and washer if required and install new fasteners as per Customer CMM IPL.

2.2.3.3 Damaged or missing door retainer Velcro.

Remove old Velcro strip and clean surface, a heat gun can be used if necessary. Attach new Velcro strip, this may optionally be secured at each end with new fasteners as per Customer CMM IPL.

2.2.4 [TM] ETSO / TSO / OEMs Data Plate

Damaged or missing identification and TSO / ETSO / OEMs marking plate. Remove old identification plate by drilling out fasteners using 6.5 mm drill bit. Position new plate and attach using 4 ea. fasteners with 4 ea. washers as per Customer CMM IPL. For a new or replacement data plate (TSO) please contact the Nordisk Regional Quality Manager for your area who will be able to send you the "Request For Manufacturers Sign (RFMS)".

2.2.5 Fire Seal - Top or bottom of door opening

Damaged, loose or missing fire seal should be replaced. Remove old seal by drilling out fasteners using 6.5 mm drill. bit. Position new seal and attach using fasteners as per Customer CMM IPL.

2.2.6 Damaged or missing plastic insert corners

Remove as many assembly fasteners adjacent to the damaged corner as needed to bend away the extrusions enough to remove the corner. Position new corner and install assembly fasteners.

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3 Part 3 – Panels

Inspection & Repair of;

Aluminium Panels
TwinLite U Panels (previously referred to as Twintex or TwinLite)
UltraLite Panels
UltraLite X Panels
FireShield™ Panels
Polycarbonate Panels

3.1 Inspection of Aluminium Panels

3.1.1 [SP] Sheet Panel

3.1.1.1 There shall be no more than 2 holes / cracks per sheet max. 200 mm in length minimum 100 mm apart. There shall be no holes / cracks within 50 mm of assembly fasteners.

3.1.1.2 In addition to the above, no damage on roof for PN 31950-1( ) and 33600-1( ).

3.1.1.3 For FRC container PN 17000-1 ( ) with aluminum panels 0.8 mm damage limit is allowed. There shall be no more than 1 hole/crack per sheet max 100 mm in length. There shall be no holes/cracks within 50 mm of assembly fasteners.

NOTE: All other FRC containers no damage limit is allowed.

3.2 Repair of Aluminium Panels

3.2.1 [SP] Sheet Panel

3.2.1.1 Holes and cuts in body sheets:

See Figure 104.

If limitations are exceeded, damage should be repaired as follows:

(1) Remove jagged edges of damaged area.
(2) Patching material should be of minimum same thickness as patched sheet in alloy AA5754-H26 or in similar alloy. Use minimum 20 mm overlap from damaged area to edge of sheet. Standard precut and predrilled patching sheets (0.8 / 1.5 mm) in various sizes are available from the manufacturer. See Figure 105, Table 2.
(3) Drill 5 mm dia. holes through both sheets, using edge distance on patching sheet of 10 mm and inter fastener spacing 35 mm.
(4) If necessary, apply a sealing compound between the sheets.
(5) Install fasteners (P/N 113270-307 / 113270-362).

For damage where edge of hole is less than 100 mm from extrusion edge, or for other sheet edge damage (sheet torn in attachment holes etc.):
Patch shall go out to edge of original sheet. Use minimum 20 mm overlap from damaged area in sheet to edge of patching sheet. No precut patch available, so patch have to be cut from raw sheet. Patch may cover full length of any side of original sheet.

For damage where edge of hole is more than 100 mm from extrusion edge:

Use minimum 20 mm overlap from edge of hole in sheet to edge of patching sheet on all sides.

3.2.1.2 Replacement of body sheet

(1) Remove assembly fasteners attaching sheet to extrusions and remove the sheet. Position a new sheet and make sure that it fits within extrusions.
(2) Drill holes through the sheet using existing holes in extrusions as templates. Use 6.5 mm drill bit.
(3) Install new fasteners as per Customer CMM IPL.

Ref. section 3.2.1.1 and 3.12.1.1

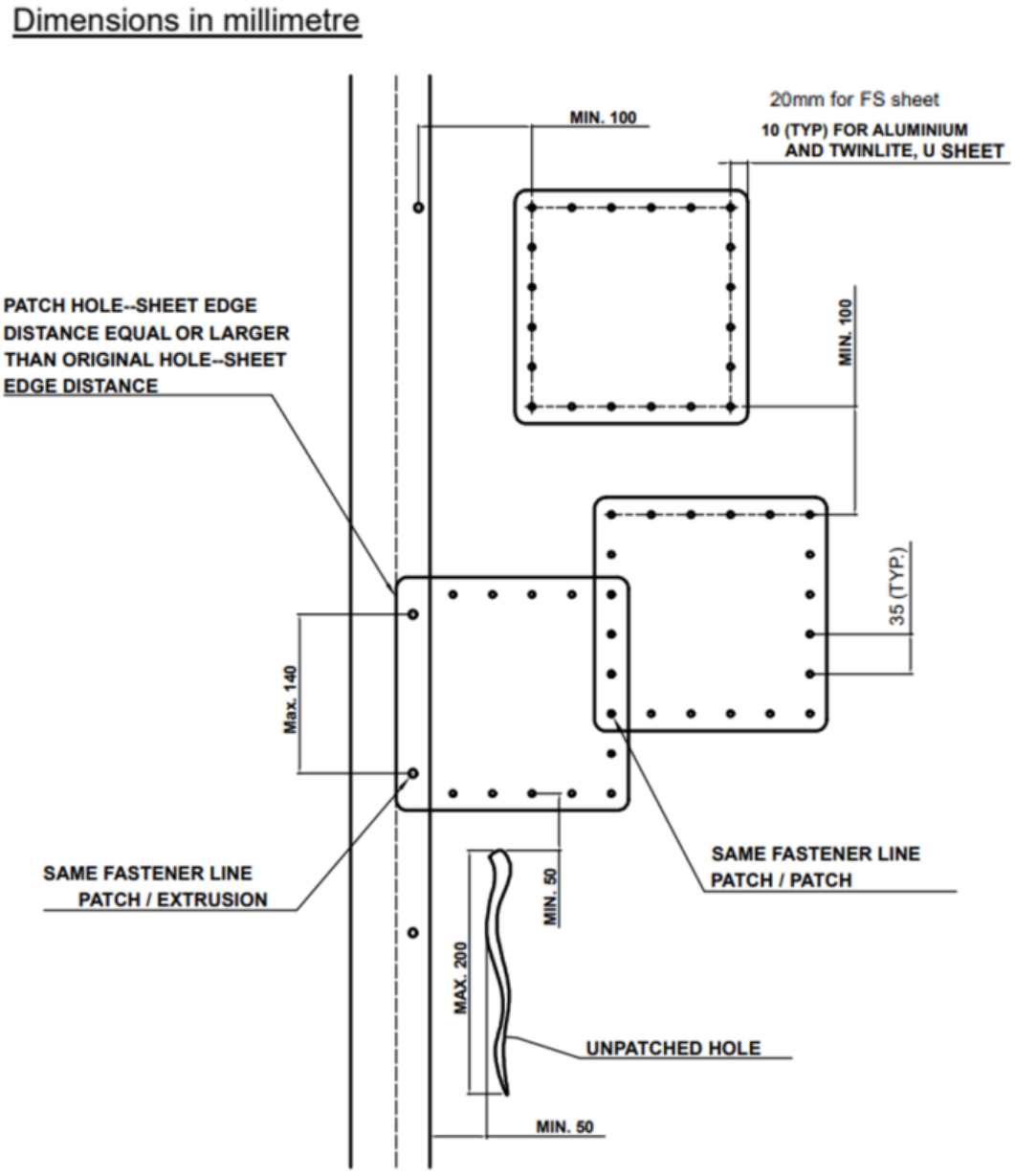

Figure 104

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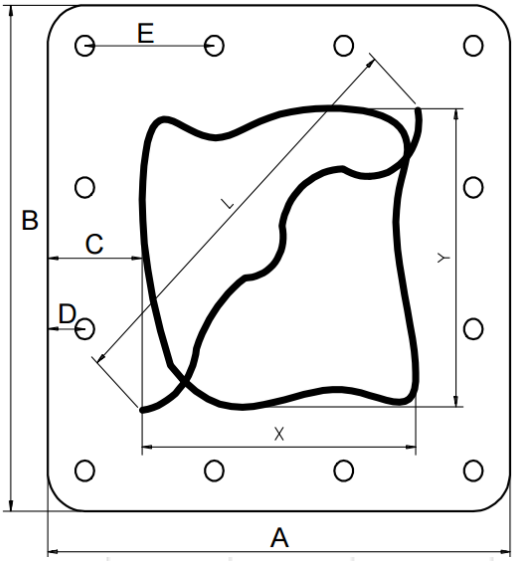

Ref. section 3.2.1.1, 3.10.1.2, 3.10.3.1 and 3.12.1.1

Figure 105

Table 2 - Pre made patches for panel sheets.

Patches used in the repair must be the same material as listed in the main drawing (see Customer IPL) for the panel type. No mixing of patches to panels is allowed unless approved by OEM.

Material	Thickness [mm]	Part Number	A x B (Width x length) [mm]	Number of fastener holes	L – max. length of tear [mm]	X x Y max. hole size [mm]	C - overlap damaged area to edge of sheet [mm]	D - min. patch edge to hole dist [mm]	E - min. fastener pitch [mm]	Fastener hole Ø [mm]	Peel & Seal
Aluminium	0.8	115180-281	125 x 125	12	108	75 x 75	20	10	35	5	No
Aluminium	0.8	115180-282	195 x 195	20	207	145 x 145					
Aluminium	0.8	115180-283	125 x 230	18	193	75 x 180					
Aluminium	0.8	115180-284	300 x 300	32	356	250 x 250					
Aluminium	0.8	115180-285	300 x 615	52	616	565 x 250					
Aluminium	1	807848	125 x 125	12	108	75 x 75					
Aluminium	1	807849	195 x 195	20	207	145 x 145					
Aluminium	1	807850	125 x 230	18	193	75 x 180					
Aluminium	1	807851	300 x 300	32	356	250 x 250					
Aluminium	1	807852	300 x 615	52	616	565 x 250					
Aluminium	1.5	11523-02	300 x 300	32	353	250 x 250					
TwinLite U	0.6	11838-03	300 x 300	32	356	250 x 250					
TwinLite U	1.1	11838-02	300 x 300	32	356	250 x 250					
FireShield	1.4	808600	215 x 215	20	141	100 x 100	50	20			
FireShield	1.4	808601	250 x 250	24	212	150 x 150					
FireShield	1.4	808598	320 x 320	32	282	200 x 200					
UltraLite X	0.7	804981	245 x 245	-	200	145 x 145		25	70	7	Yes
UltraLite X	0.7	805166	295 x 295	16	250	188 x 188					
UltraLite X	0.7	805149	435 x 435	24	450	330 x 330					
UltraLite X	0.7	805169*	264.5 x 295	>16	250	188 x 188					
UltraLite X	0.7	805168*	404.5 x 435	>24	450	330 x 330					
UltraLite	-	18837-02	152.4 x 152.4	8	74.1	52.4 x 52.4	64				
UltraLite	-	18837-03	203.2 x 203.2	12	140	103.2 x 103.2					
UltraLite	-	18837-04	304.8 x 304.8	16	250	204.8 x 204.8					
UltraLite	-	18837-05	457.2 x 457.2	24	450	357.2 x 357.2					

*Structural patch for panel edge

3.3 Inspection of TwinLite and TwinLite U Panels

3.3.1 [SP] Sheet Panel

See section 3.1.1.1.

3.4 Repair of TwinLite and TwinLite U panels

3.4.1 [SP] Sheet Panel – Composite Panel Twintex / TwinLite

3.4.1.1. Holes and cuts in body sheets. See Figure 104

If limitations are exceeded, the damage should be repaired as follows:

Remove jagged edges of damaged area.

3.4.1.2. Patching material should be of minimum same thickness as patched sheet, but minimum 1.1 mm Twintex / TwinLite on lower outboard, alternatively 0.8 mm Aluminium in alloy AA5754-H26 or similar. Patches in 0.6 mm Twintex / TwinLite shall have minimum 15 mm from centre of fastener hole to edge, as opposed to 10 mm for regular aluminium patches.

The same distance is required from the edge of the hole to assembly fastener. Use minimum 20 mm overlap from edge of hole to edge of sheet. Standard pre-cut and predrilled patching sheets (0.8 / 1.5 mm aluminium and 0.6 / 1.1 mm Twintex / TwinLite) are available from the manufacturer. See Figure. 105

3.4.1.3. Sheets in 1.1 mm Twintex / TwinLite *excluding* Lower Outboard:

Remove jagged edges of damaged area, and flatten the sheet.

Patching material shall be 1.1 mm Twintex / TwinLite, alternatively minimum 0.8 mm in aluminium alloy AA5754-H26 (or equivalent).

Use minimum 20 mm overlap from edge of hole in sheet to edge of patching sheet.

Centre the Twintex / TwinLite patch over the hole / cut in sheet.

Drill 5 mm dia. holes through both sheets, minimum 10 mm distance between centre of hole to edge of patching sheet and hole edge, and maximum 35 mm inter fastener spacing, apply a sealing compound between the sheets if necessary.

Install fasteners (P/N 113270-307 / 113270-362). Use one washer (P/N 113270-352) per fastener on the inside of the sheet.

3.4.1.4. Sheets in 0.6 mm Twintex / TwinLite *including* Lower Outboard in 1.1 mm Twintex / TwinLite.
Remove jagged edges of damaged area, and flatten the sheet.

Drill 5 mm dia. holes through both sheets, minimum 10 mm distance between centre of hole to edge of patching sheet and hole edge, and maximum 35 mm inter fastener spacing. Drill 6.5 mm dia. holes in patch using extrusion as template where patch is located between the extrusions, apply a sealing compound between the sheets if necessary.

Fasteners in sheet area: Install fasteners (P/N 113270-307 / 113270-362). Use one washer (P/N 113270-352) per fastener on the inside of the sheet.

3.4.1.5. For damage where edge of hole is more than 100 mm from extrusion edge*:*
Use minimum 20 mm overlap from edge of hole in sheet to edge of patching sheet on all sides.

Centre the Twintex / TwinLite patch over the hole / cut in sheet.

Drill 5 mm dia. holes through both sheets, minimum 10 mm distance between centre of hole to edge of patching sheet and hole edge, and maximum 35 mm inter fastener spacing.

Apply a sealing compound between the sheets if necessary.

Install fasteners (P/N 113270-307 / 113270-362). Use one washer (P/N 113270-352) per rivet on the inside of the sheet.

3.4.1.6. For damage where edge of hole is less than 100 mm from extrusion edge, or for other sheet edge damage (sheet torn in attachment holes etc.)*:*
Patch shall go out to edge of original sheet between the extrusions on extrusion side. Use minimum 30 mm overlap from edge of hole in sheet to edge of patching sheet. No pre-cut patch available, so patch have to be cut from raw sheet. Patch may cover full length of any side of original sheet.

Centre the Twintex / TwinLite patch over the hole / cut in sheet.

Drill 5 mm dia. holes through both sheets, minimum 10 mm distance between centre of hole to edge of patching sheet and hole edge, and maximum 35 mm inter fastener spacing.

Drill 6.5 mm dia. holes in patch using extrusion as template where patch is located between the extrusions, apply a sealing compound between the sheets if necessary.

Fasteners in sheet area: Install fasteners (P/N 113270-307 / 113270-362). Use one washer (P/N 113270-352) per rivet on the inside of the sheet.
Fasteners in extrusion area: Install fasteners P/N 126200-658 unless otherwise specified in IPL drawing.

3.4.1.7. For all types of sheet.

Alternatively, the whole sheet may be replaced by either a new Twintex / TwinLite sheet (see IPL for P/N) or a minimum 0.8 mm (1.0 for Lower Outboard) thick aluminium sheet (alloy AA5754-H26 or equivalent) with the same hole pattern as existing sheet. 0.6 mm Twintex / TwinLite sheets may be replaced with 1.1 mm Twintex / TwinLite sheets, 1.1 mm ***shall not*** be replaced with 0.6 mm unless extra modifications are performed (modification procedure as per SB 4/2005), 0.6 mm is under no circumstance allowed on Lower Outboard. Patches may be cut from raw sheet material, P/N 72096 for 0.6 mm Twintex / TwinLite, P/N 72074 for 1.1 mm Twintex / TwinLite, both are approx. 1500 x 3030 mm in size. Patches shall be cut with main edges parallel to fibre direction.

3.4.1.8. Punctures, cuts or holes in Twintex / TwinLite sheets that are within the allowable damage limits may be non-structurally repaired in order to seal the sheet against water etc. Such a repair may be carried out using approx. 50 mm wide aluminium ”speed tape” on outer, inner or both sides of the hole. Such a patching can be accomplished quickly and effectively since a typical hole in Twintex / TwinLite has no rough edges, thereby allowing the container to remain in service until additional damage requires a repair shop visit at which time the damage should be repaired as per above.

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3.4.2 [SP] Sheet Panel - Composite Panel Twinite U

3.4.2.1 Punctures, cuts or holes in TwinLite U sheets that are within the allowable damage limits may be non-structurally repaired in order to seal the sheet against water etc. Such a repair may be carried out using approx. 50 mm wide aluminum" speed tape" on outer, inner or both sides of the hole. Such a patching can be accomplished quickly and effectively since a typical hole in these panels has no rough edges, thereby allowing the container to remain in service until additional damage requires a repair shop visit - at which time the damage should be repaired as per above.

3.4.2.2 Due to lower resistance to heat than aluminum, TwinLite U sheets shall be detached from extrusions when heat straightening or welding extrusions, see section 2.2, where extrusion is in contact with the sheet.

3.4.2.3 Replacement of body sheet:

(1) Remove assembly fasteners attaching sheet to extrusions and remove the sheet.
(2) Position a new sheet and make sure that it fits within extrusions.
(3) Drill holes through the sheet using existing holes in extrusions as templates.
(4) Use 6.5 mm drill bit. Install new fasteners as per Customer CMM IPL.

3.5 Inspection of UltraLite Panels

3.5.1 [SP] UltraLite Sheet Panel

Main panels:
There shall be no more than 1 hole / per sheet max. 200 mm size. The following additional damage is permitted: 3 holes / tears per sheet edge max. 38 mm size within any distance of one fastener, provided location is minimum 50 mm from any other serviceable fastener and minimum 250 mm from any other holes or tears and other damage.

3.5.2 [SP] Sheet Panel

Lower outboard; TwinLite or aluminium:
See section 3.1.1.1.

3.6 Repair of UltraLite Panel

3.6.1 [SP] UltraLite Sheet Panel

Overview:

- UltraLite panels used in construction of Nordisk “UltraLite” series containers are made of a considerably strong material, and are in general not subjected to tearing, even when damaged.
- Any repair of damage less than 200 mm can be considered as non-structural and has no bearing on the structural performance of the ULD.
- Any repair of damage greater than 200 mm but less than 450 mm in length, can be structurally repaired in accordance with SB2014-02.
- Any damage exceeding 450 mm in length render the panel unsuitable for further use and the panel shall be replaced.
- The UltraLite material is sensitive to high temperatures and can easily be damaged if heat is directly applied to a panel. Therefore, when applying heat to any extrusion adjacent to an UltraLite panel, see note in GS2, either the panel or the extrusion shall be removed beforehand.

3.6.2 Replacement of complete panel:

(1) Remove all fasteners attaching the damaged panel to the surrounding frames. Use 6.5 mm size drill bit to drill out fasteners, unscrew any bolt / nut connection.
(2) Attach new panel to extrusions using fasteners as shown in IPL. Sealant may be used to reduce water ingress.
(3) Attach new decals. Note that due to the nature of the surface of UltraLite panels, certain types of decal glue may not be effective.

3.6.3 Repair of panels with holes or tears:

See Figure 106.

(1) Repair of any damage less than 200 mm size in length and not within 50 mm of a fastener may be repaired using “Peel & Seal” pre glued patches (available as a part from Nordisk). Alternately, patches may be cut from undamaged UltraLite material with similar or better appearance than repaired panel, with the application of a commercially available glue that’s suitably strong for long term adhesion or double sided tape to the UltraLite panels.
(2) Patches may be placed externally, internally or both.
(3) Before applying the patch, the surface shall be thoroughly cleaned using Isopropyl Alcohol.
(4) Prior to applying the patch, use either a thin uniform coating of 3M 94 primer to the bonding surface, or lightly roughen the surface using fine glass paper.
(5) Ensure that the applied patch overlap is at least 64 mm on all sides, and that all corners are rounded.
(6) Ensure that the patch area is completely dry. Apply glue evenly to the mating surfaces of the panel and the patch (not required for pre glued “Peel & Seal” patches). Apply an even pressure using a hard flat object or roller to eliminate air pockets and provide a good bond.

3.6.4 Damage to UltraLite panels

3.6.4.1 Damage to the panels may also be reinforced by using fasteners to attach a patch by using the following procedure:

(1) Apply a patch that has a 64 mm overlap following procedure 3.6.3.
(2) Drill 5 mm diameter holes around edge of the patch, with hole centres 10 mm from patch edge and 35 mm pitch.
(3) Install fasteners P/N 113270-307 / 113270-362, placing washer's P/N 113270-352 between the head of the fastener and the sheet, and under the tail of the fastener. Seal patch edges with silicone sealant to avoid possible water entry.

3.6.4.2 If an UltraLite panel is damaged for less than 200 mm in length along a panel edge, leading to tear out at the fastener holes, the damage should be repaired as follows:

(1) Remove fasteners attaching damaged sheet to extrusion. Use 6.5 mm size drill bit to drill out fastener, unscrew any bolt / nut connection.
(2) Flatten damaged sheet edge area with hammer against a firm background.
(3) Patch shall be as specified in 3.6.3 (1). It shall be large enough to extend across the full length of the damage and to fold around the edge of the panel extending beyond the damage area on inside and outside. Also, size shall be minimum up to the original overlap section at the inside (back) of the panel.
(4) New holes shall be drilled mid-way between any damaged or torn out edge holes by using a 6.5 mm drill bit. Any existing unused pre-drilled holes in frame extrusion may be used for this purpose, in which case matching holes need to be drilled in panel edge only.
(5) Install new fasteners as per Customer CMM IPL.
(6) Optional: For maximum strength, both existing (including damaged) and new holes maybe be drilled and used for attaching panel.

3.6.5 Repair of abraded coating:

- Where required, and subject to the following limits, the coating on either inner and outer panel surface maybe repainted with coating (see 3.7.2 (1)-(3)) in order to prevent further damage to the sheets through UV, chemical and mechanical degradation.
- All abrasions on panel outside with abraded areas less than 2000 mm² and size less than 200 mm in longest dimension is not considered structural, but should be repainted when unit is repaired for other damage.
- All abrasions on panel outside with abraded areas between 2000 mm² and 4500 mm² and / or longest dimension between 200 mm and 250 mm shall be repainted when unit is repaired for other damage.
- If panel has abraded areas in excess of 4500 mm² or longest dimension more than 250 mm, panel shall be replaced with a new panel.
- Abrasion on the inside of the container panels does not require repair, but painting is recommended to prevent further damage to the panel.

To repair any abrasion:

(1) Trim off any loose coating material, and clean the exposed panel core (yellow colour) and the surrounding coated area with Isopropyl alcohol. Allow to fully dry.
(2) Prepare the coating material, which should be of type Lord Corporation adhesive 7150 (grey) for external side of panel, or 7550 (clear) for internal side of panel.
(3) Use a spatula or brush to apply an evenly thin layer of the coating material over the exposed panel core, extending onto the coated area. Allow to dry as per instructions supplied with the coating material before unit is returned to service.

3.7 [SP] Sheet Panel

3.7.1 Repair of lower outboard; Twintex / TwinLite or Aluminum

Patching material should be minimum 1.1 mm TwinLite on lower outboard, alternatively 0.8 mm aluminum in alloy AA5754-H26 or similar. See procedure in section 3.2.1 which also applies to LOB.

Ref. section 3.6.3.

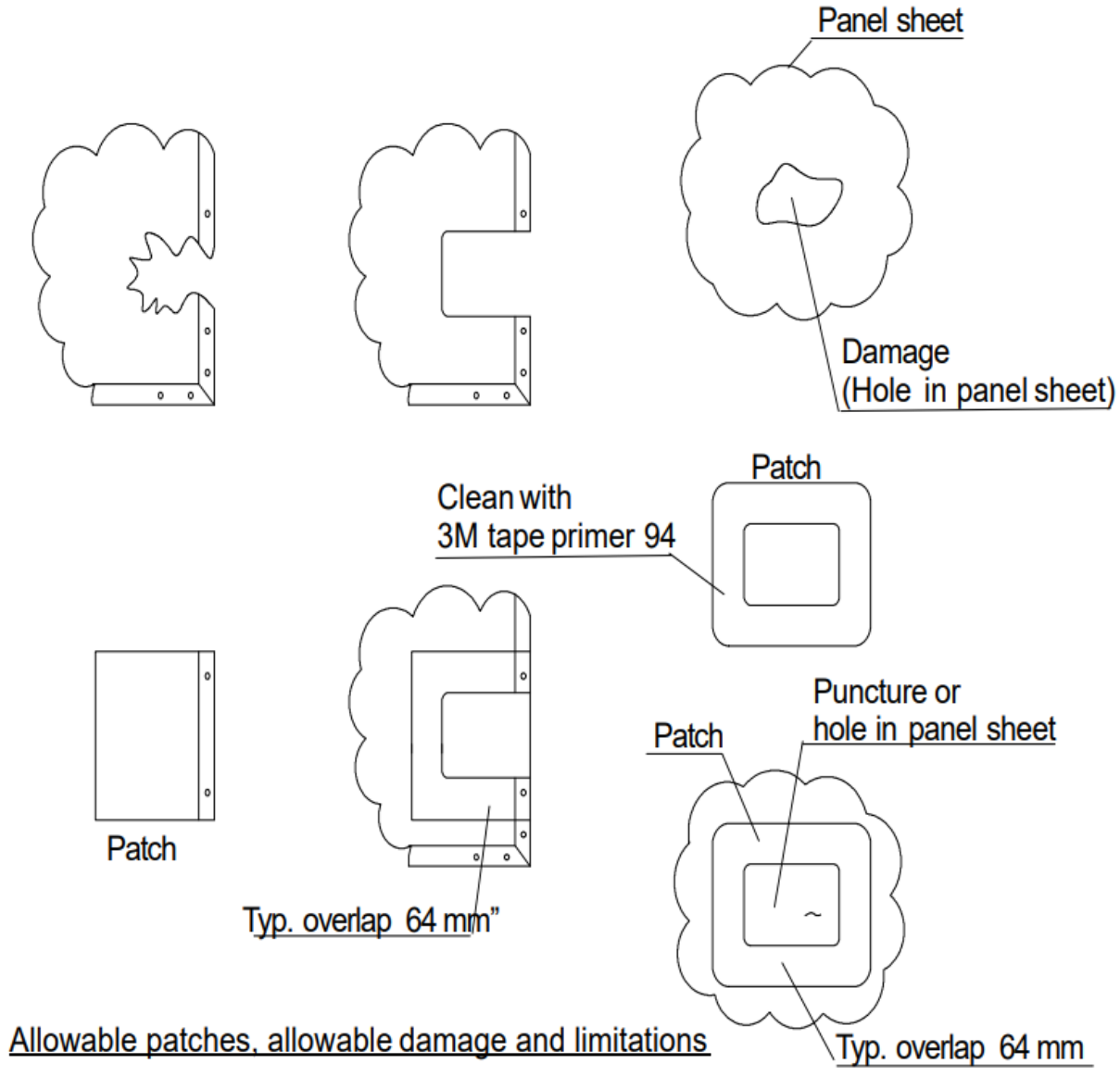

Figure 106

3.8 Inspection of UltraLite X Panel

3.8.1 [SP] UltraLite X Sheet Panels

There shall be no more than 2 holes / tears per sheet max 200 mm in length minimum 100 mm apart and not within 50 mm of assembly fasteners on edge of panel.

3.9 Repair of UltraLite X Panels

3.9.1 [SP] UltraLite X Sheet Panels

3.9.1.1 Overview:

UltraLite X panels used in construction of Nordisk UltraLite X series. Containers are made of high strength, high abrasion resistant material, and in general demonstrate high tear strength, even when damaged. The material is not degraded by exposure to moisture / water.

- Any repair of damage less than 200 mm and more than 50 mm from panel edge can be considered as non-structural and has no bearing on the structural performance of the ULD. Maximum 2 ea. 200 mm damage limits is permitted per panel.

- Any repair of damage greater than 200 mm but less than 450 mm in length or within 50 mm of panel edge shall be structurally repaired. Maximum 4 repairs allowable per panel.
  Any damage exceeding 450 mm in length render the panel unsuitable for further use and panel shall be replaced.

UltraLite X is sensitive to high temperatures: UltraLite X sheet shall be detached from aluminum extrusions when heat straightening or welding extrusions where extrusion is in contact with the sheet. See General Section, GS-2.

3.9.1.2 Replacement of body sheet:

(1) Remove all fasteners attaching the damaged panel to the surrounding frames. Use 6.5 mm size drill bit to drill out fasteners, unscrew any bolt / nut connection.
(2) Attach new panel to extrusions using new fasteners as per Customer IPL. Sealant may be used to reduce water ingress.

3.10 Repair of UltraLite X Panels

3.10.1 Repair of panels with puncture, cuts or tears:

Provided limitations are not exceeded, the damage can be repaired as follows:
See Figure 107.

Repair of punctures, cuts or holes less than 200 mm size in length and not within 50 mm of a fastener, max. 2 ea. per panel.

In order to seal the sheet against water etc. a repair may be carried out using approx. 50 mm wide aluminum speed tape on outer, inner or both sides of the hole. Such a patching can be accomplished quickly and thereby allowing the container to remain in service until additional damage requires a repair shop visit at which time the damage should be repaired as per below:

3.10.1.1 The damage may be non-structurally repaired using “Peel & Seal” patch (available as a part from Nordisk). The patches may be placed on one or both sides of the hole. For P/N of precut patches, see Figure 107.

(1) Patching material shall be of same type as the patched sheet.
(2) Use minimum 50 mm overlap from damaged area to edge of sheet.
(3) Remove any frayed edges from damaged area.
(4) Clean the area around the patch with Isopropyl alcohol. Allow to dry.
(5) Centre the patch over the hole / cut in sheet. Press the patch firmly on to the sheet.

3.10.1.2 The “Peel & Seal” patch may also be reinforced by using fasteners to attach a patch by using the following procedure, for P/N of precut patches with holes, see Figure 105.

(1) Drill 6.5 mm dia. holes through both sheets, with 50 mm overlap all round from edge of patch to edge of damage, hole spacing maximum 70 mm.
(2) Apply sealing compound between sheets if necessary.
(3) Install fastener P/N 126200-658 using one washer P/N 115816-347 on inside and outside patch.

3.10.2 Repair of missing grey coating film (exposed white fabric):

Where required, and subject to the following limits, the grey film on panel surface may be repaired with grey repair tape, Nordisk P/N 804968 or aluminum Speed tape in order to prevent further abrasion degradation to the core material. Such repairs can be accomplished quickly and thereby avoiding any further deterioration in that area.

Missing coating film less than 200 mm in length should be covered with a repair tape as required or when the ULD is in for other repair. Missing coating film above 200 mm in length shall be covered with an aluminum repair tape / Nordisk Repair tape within 3 months of damage occurring. To repair any area with missing film. Trim off any loose film and clean the exposed panel and the surrounding area Isopropyl alcohol. Allow to dry. Apply the repair tape with minimum 50 mm overlap and press firmly to the panel.

3.10.3 Structural repair

3.10.3.1 Structural Repair of damage greater than 200 mm but less than 450 mm in length, maximum 4 structural repairs are allowed per panel.

Follow the same cleaning and preparation instructions as per section 3.10.1.1, the part numbers for structural patches are listed under Figure 105.

(1) The overlap between patch edge and edge of damage shall be 50 mm.
(2) Drill holes in original panel using 6.5 mm drill bit using the holes in the structural patch as template, holes shall have maximum 70 mm pitch.
(3) Fasten the patch with fasteners P/N 126200-658, using a washer P/N 115816-347 on the inside and outside of the patch.
(4) For repairs less than 50 mm from edge where the panel edge must be repaired, follow instructions in (1)-(3) above for fastening the patch overlap to the panel.
(5) For panel edge attachment to extrusion ensure the hem fold face same direction as original panel.
(6) The panel edge fastening shall have minimum one overlapping fastener attachment point shared between patch and original panel, drill extra holes using 6.5 mm drill bit in extrusion if necessary.
(7) Install new fasteners as per Customer IPL with one washer P/N 115816-347 for each edge fastener point.

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Ref. section 3.10.1

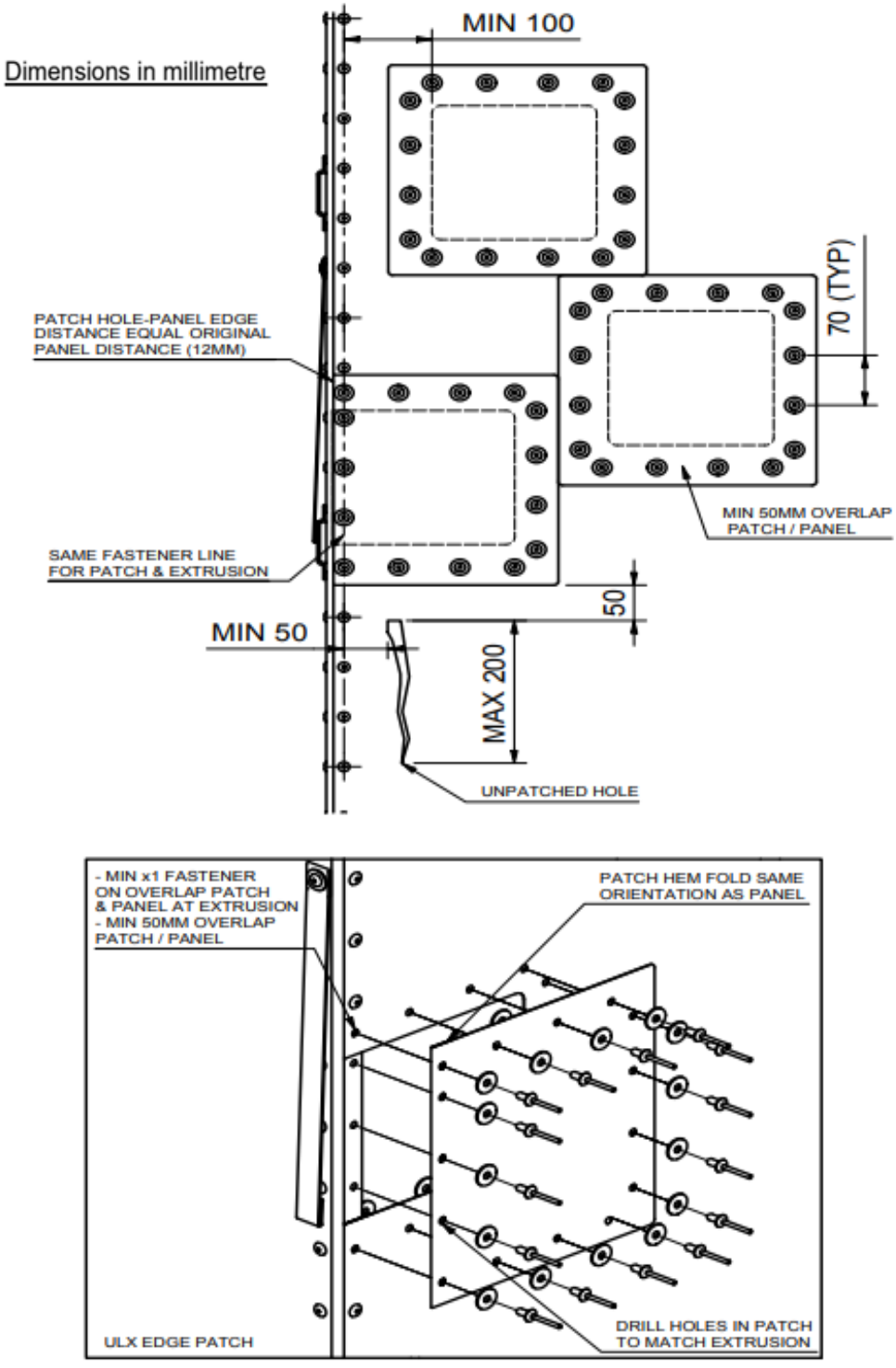

Figure 107

3.11 Inspection of FireShield™ Panels

3.11.1 **[SP] Sheet Panel**

See section 3.1.1.1, 3.1.1.2. and 3.1.1.3.

3.11.1.1 Fire Resistance performance.

No cuts, tears or holes.

NOTE: When the panels fire performance limits are exceeded (up to limits defined in part 3.12.1.1) the container can be used as ordinary ULD and not as fire resistant container.

3.12 Repair of FireShield™ panels

3.12.1 [SP] Sheet Panel

3.12.1.1 Holes and cuts in body sheets. See Figure 104.

If limitations are exceeded, the damage should be repaired as follows:

(1) Remove jagged edges of damaged area.

(2) Patching material should be minimum same thickness as patched sheet. It can be completed with two patches (inner and outer), or with a single outer patch. Cut patches from material stock (can be cut out from replaced sheet panel).

(3) The patches shall be large enough to extend a minimum 50 mm beyond the damage on all sides of the damaged area. Assure patch edges are rounded.

(4) Patches shall have minimum 20 mm from center of fastener hole to edge.

(5) The same distance is required from the damaged area to assembly fastener.

(6) Use minimum 50 mm overlap from damaged area to edge of sheet.

(7) Standard precut and predrilled patching sheets in various sizes are available from the manufacturer. See Figure 105.

3.12.1.2 For damage where edge of hole is more than 100 mm from extrusion edge:

Use minimum 50 mm overlap from edge of hole in sheet to edge of patching sheet on all sides.

3.12.1.3 For damage where damaged area is less than 100 mm from extrusion edge, or for other sheet edge damage (sheet torn in attachment holes etc.):

(1) Patch shall go out to edge of original sheet on extrusion side.
(2) Use minimum 50 mm overlap from edge of hole in sheet to edge of patching sheet.
(3) Centre the patch over the hole / cut in sheet.
(4) Apply sealant between patch and sheet. If necessary, use double side tape to keep the patch(s) in position.
(5) Drill 5 mm holes through both sheets, minimum 20 mm distance between center of hole to edge of patching sheet and damaged area, and maximum 35 mm inter fastener spacing.
(6) Drill 5 mm holes in patch using extrusion as template. For best result, recommended to use brad-point drill bit.
(7) Fastener in the sheet area: Install fasteners (P/N 115169-326 / 115180-417 depend on fastener grip length).
(8) Use one washer P/N 113270-352 per fastener on inside of the sheet (container).
(9) Apply sealant around patches. It is recommended to use sealant between the patch and patched sheet.

3.12.1.4 Replacement of body sheet:

(1) Remove assembly fasteners attaching sheet to extrusions and remove the sheet.
(2) Position a new sheet and make sure that it fits within extrusions.
(3) Drill holes through the sheet using existing holes in extrusions as templates.
(4) Use 6.5 mm drill bit. Install new fasteners as per Customer CMM IPL.

3.13 Inspection of Polycarbonate Panels

3.13.1 [SP] Sheet Panel

- Maximum 2 holes / cracks per panel and max. 200 mm in size.
- There shall be no less than 500 mm between holes / cracks in polycarbonate sheets.
- No tears / holes within 100 mm of assembly fasteners in polycarbonate sheets.

3.14 Repair of Polycarbonate Panels

3.14.1 [SP] Sheet Panel

See Figure 108. If limitations given in Inspection 3.13.1 above are exceeded, the damage should be repaired as follows:

(1) Remove jagged edges of damaged area. Do not leave sharp corners.
(2) Radius in the cut out shall not be less than 6 mm. The cut out does not have to be rectangular.
(3) Do not use a die grinder or similar equipment that might over heat and melt the polycarbonate.
(4) The patching material shall be Makro Life (Arla Plast AB, Sweden) and be minimum same thickness as the panel being patched.
(5) Cut two identical patching plates large enough for a minimum 40 mm overlap.
(6) Patching plates shall be rectangular or square.
(7) Lay out fastener pattern around one of the patching plates with a fastener to edge distance of 20 mm and with 35 mm spacing.
(8) Put both plates on top of each other and pre-drill the corner holes (4 ea.) using a 5 mm drill bit.
(9) Position one of the patching plates centered on the hole to be patched and verify that there are minimum 40 mm overlap on all sides.
(10) Drill through the holes that were previously drilled in the corners of the patch.
(11) Attach both outer and inner patch using temporary fasteners (nuts and bolts or Clecos).
(12) Drill the rest of the hole pattern, as previously laid out, through all three layers.
(13) Remove plates and deburr all holes and edges.
(14) Apply a layer of clear silicone sealant to inside and outside of the panel, around and between the fastener holes. Install patches using fasteners (P/N 113270-362) from the outside and load spreading washers on the inside.
(15) Clean away any excess sealant and apply a small fillet of clear silicone sealant around the edge of the outside patch.

3.15 Replacement of body sheet

(1) Remove assembly fasteners attaching sheet to extrusions and remove the sheet.
(2) Position a new sheet and make sure that it fits within extrusions.
(3) Drill holes through the sheet using existing holes in extrusions as templates.
(4) Use 6.5 mm drill bit. Install new fasteners as per Customer CMM IPL.

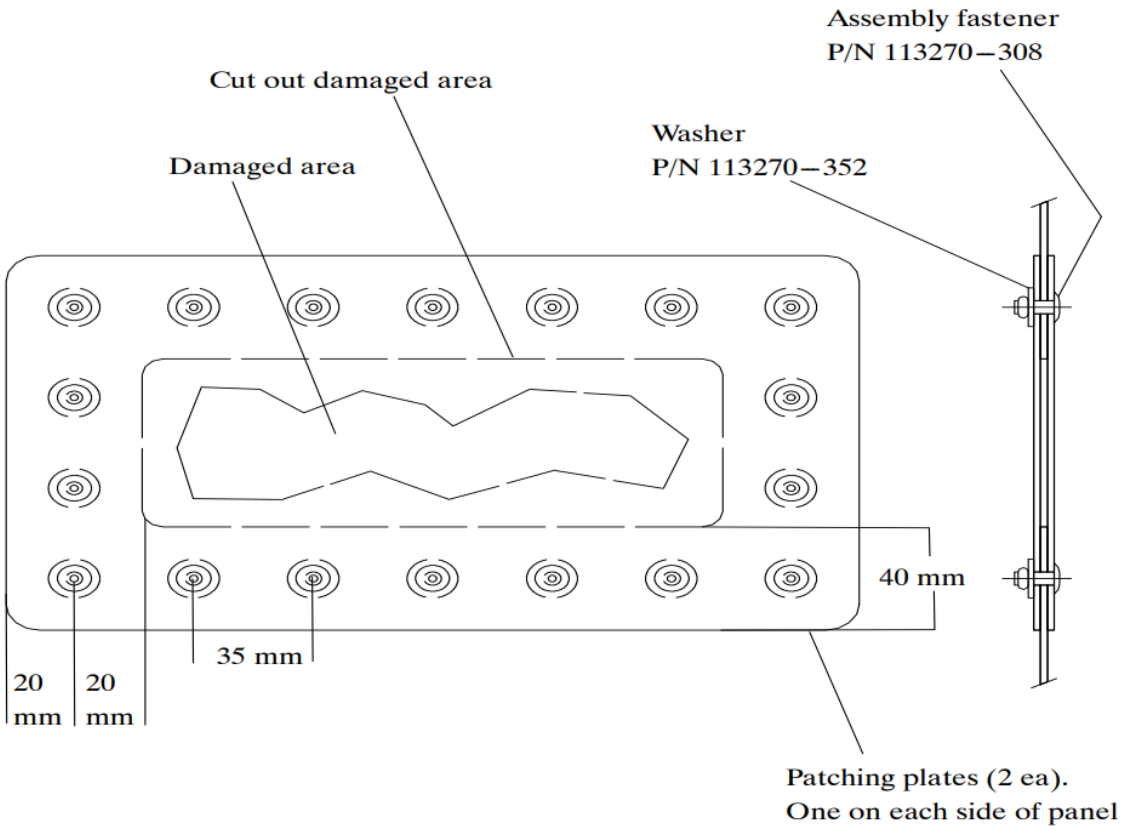

Figure 108

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4 Part 4 – Standard Doors

Inspection & Repair of;

Doors with Velcro Straps
Doors with Lower Lock Bars

4.1 Inspection of Fabric doors and associated Hardware

The following inspection text covers various different types of Nordisk door assembly;

1) Doors with Velcro straps
2) Doors with a lower lock bar assembly
3) D4000 doors with Velcro straps

4.1.1 [CD] Curtain Door

- There shall be no more than 2 ea. cuts / holes / scuffed areas measuring maximum 50 mm in size located minimum 100 mm in from edge of curtain / webbing / straps and any hardware.
- Damage that may affect the internal safety and security of the cargo, allow ingression of weather elements such as rain, snow etc then refer to the airlines internal operation manual for further guidance.
- **Curtain Door D4000**
  Maximum 250 mm sized cuts / holes / scuffed areas (up to 4 ea.), located minimum 100 mm apart from curtain edges, webbing, straps and any hardware.

  Note: Doors used for FRC are not allowed to have any damages.

4.1.2 [LD] Lock Door

There shall be no broken, loose or missing hardware / locks, Velcro shall function properly.

4.1.3 [WD] Webbing / Net Door

There shall be no damaged or missing straps, ropes, stitching or miscellaneous hardware.

4.2 Repair of Fabric doors and associated Hardware

The following repair text covers various different types of Nordisk door assembly;

1) Doors with Velcro straps
2) Doors with a lower lock bar assembly
3) D4000 doors with Velcro straps

4.2.1 [CD] Curtain Door

4.2.1.1 Repair of Fabric Doors.

Refer to Nordisk Technical Document TD-810880 for sewing instructions, for material specifications refer to Nordisk Service Bulletin SB 200501, these two documents replace drawing 14700-02 as referenced in IPL drawings.

(1) Cuts and holes in the door fabric should be patched by using identical or equivalent material. Door fabric materials from or approved by Nordisk Aviation Products shall be used.
(2) Place a precut patch large enough to overlap the hole with minimum 40 mm.
(3) Sew a double seam around the hole.
(4) Minimum edge distance from seam to hole is 10 mm.
(5) Use thread from or approved by Nordisk Aviation Products.

Note: Where the door cover material is consisting of 2 different type of fabrics (Outside and inside of container), it is important to use the correct type of fabric material for patching purpose.

As an alternative method to sewing, damaged areas less than the limit prescribed in the inspection section above, a patch may be welded to the door fabric.
(1) The same minimum overlap of 40 mm should be used.
(2) Temperature in weld must be minimum 170°C and maximum 200°C.
(3) Apply firm pressure during welding.

Note: Weld patch on fabric doors on Fireshield or FRC containers is not allowed.

4.2.1.2 Repair of D4000 cover.

Cuts and holes in the door fabric should be patched by using identical or equivalent material. Door fabric materials from or approved by Nordisk Aviation Products shall be used.

Place a pre-cut patch large enough to overlap the hole minimum 40 mm.
Sew a double seam around the hole. Minimum edge distance from seam to hole is 10 mm. Use thread from or approved by Nordisk Aviation Products.

Note: Weld patch on D4000 doors is not allowed.

To repair the Velcro straps, refer to 4.2.3.1.

4.2.2 [LD] Lock Door

- Damaged door lock hardware shall be repaired or replaced.
- Cracked, disabled or missing stud fittings shall be replaced.

4.2.3 Velcro Straps

Refer to TD-810880 for sewing instructions, for material specifications refer to SB 200501.

Note: Repair of lower straps is not permitted, whole door strap needs replacement if damaged.

4.2.3.1 Repair of door cover Velcro strap assemblies.

(1) Remove seam on the damaged or missing Velcro strap assembly, detaching Velcro strap assembly from door cover.
(2) Sew a new Velcro strap assembly on to door cover.

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5 Part 5 – Solid Doors

Inspection & Repair of;

Horizontal Metal Bi Fold Doors
Vertical Metal Hinged Doors
Adaptable / Side Panel Doors

5.1 Inspection of Solid doors and associated hardware

The following inspection text covers various different types of Nordisk solid door assembly;

(1) Horizontal Metal Bi Fold Door
(2) Vertical Metal Hinged Door
(3) Adaptable / Side Panel Door

5.1.1 [PD] Panel Door

No deflections outside original contour.

5.1.2 [LD] Lock Door

- There shall be no broken, loose or missing parts.
- No broken, cracked, bent, loose or missing restraints and easy to lock.

5.1.3 [HD] Hinge Door

There shall be no broken, cracked, bent, loose or missing parts.

5.2 Repair of Solid doors and associated hardware

5.2.1 Repair of Horizontal Metal Door

5.2.1.1 **[PD] Panel Door**

Any deflection outside the original contour shall be repaired.

5.2.1.1.1 Repair / replacement of bottom door stops:

(1) Remove M6 bolts and nuts.
(2) Position a new bottom door stop and attach it with M6 bolts and nuts.

5.2.1.1.2 Replacement of door seal:

(1) Pull out the damaged seal.
(2) Install new seal. The seal fits into the frame extrusion of the door, to ease the installation apply a thin film of liquid soap to seal.

5.2.2 [LD] Lock Door

Disassembly and assembly of door locks:

(1) Detach spring cover by removing the two fasteners. Use 5 mm dia. drill bit.
(2) Remove the fasteners attaching the door lock cup to the door panel. The whole door lock assembly can now be removed from the the door.
(3) Remove fasteners attaching door lock pin to the door lock spring. Use 5 mm dia. drill bit.
(4) Remove fasteners attaching door lock spring to the door lock cup. Use 5 mm dia. drill bit.
(5) Remove the 3 fasteners attaching pin stop with plate to the door lock cup. Use 5 mm dia. drill bit.
(6) To assemble the door lock, follow the instructions, starting with paragraph 5 and working backwards and install new fasteners as per Customer CMM IPL.

5.2.3 [HD] Hinge Door

Replacement of door hinge:

(1) Detach door hinge from door assembly by removing the fasteners.
(2) Position a new door hinge.
(3) Install new fasteners as per Customer CMM IPL.

5.2.4 Repair of Vertical Metal Door

5.2.4.1 **[PD] Panel Door**

Repair of Sheet Panel. If repair of door panel is necessary, follow the procedure described in Part 3, 3.2 Repair of aluminium panels.

5.2.5 [LD] Lock Door

5.2.5.1 Disassembly of cams w / bolts:

(1) Remove the two bolts attaching cam w / bolt to handle hub.
(2) Use hammer and 4 mm dia. punch.
(3) Pull out damaged cam w / bolt.

5.2.5.2 Disassembly of handle hub:

(1) Remove the four bolts attaching upper and lower cams w / bolts to handle hub.
(2) Use hammer and 4 mm dia. punch.
(3) Handle hub is detached by removing the upper and lower cams w / bolts.

5.2.5.3 Disassembly of handle box:

(1) Remove cams w / bolts and handle hub as described above.
(2) Remove the assembly fasteners attaching handle box to door panel. Use 5 mm dia. drill bit.

5.2.6 [HD] Hinge Door

Replacement of door hinge:

(1) Detach door hinge from door assembly by removing fasteners.
(2) Position a new door hinge.
(3) Install new fasteners as per Customer CMM IPL.
(4) Cracked, disabled or missing stud fittings shall be replaced.

5.2.7 Repair of Adaptable / Side Panel Door

Repair of Vertical Metal Doors

5.2.7.1 **[PD] Panel Door**

If repair of door panel is necessary, follow the procedure described in Part 3 - Panel repair. Make sure you are following the correct repair procedure for the type of panel fitted to the adaptable / side door.

5.2.7.2 **[LD] Lock Door**

Replacement of damaged door lock:

(1) The Lock and Rod Assembly is one inseparable unit and must be replaced as a whole.
(2) Remove the brackets that holds the lock rods in place at the top and bottom of the door panel by drilling out the 6.3 mm fasteners. Use a 6.7 mm drill bit.
(3) Alternatively the fastener heads can be ground off if hard to remove by drilling.
(4) Detach the handle cup from the door panel by drilling out the eight 5.0 mm aluminum fasteners holding the cup to the door panel. Use a 5.0 mm drill bit.
(5) The Lock and Rod Assembly can now be removed from the door panel.
(6) Place a new Lock and Rod Assembly in the door panel.
(7) Attach the lock cup to the door panel using new fasteners as per Customer CMM IPL.
(8) Reinstall the brackets holding the lock rods at the top and bottom of the door panel.

5.2.7.3 **[HD] Hinge Door**

5.2.7.3.1 Replacement of hinge blade - **Door panel**:

(1) Detach door hinge from door panel by drilling out the fasteners.
(2) Remove the hinge pin bolt by unscrewing the nut and pulling out the bolt.
(3) Replace the damaged hinge blade with a new one and attach to the door panel using new fasteners as per Customer CMM IPL.
(4) Reinstall hinge pin bolt or replace with new one if damaged.
(5) Reinstall the nut. **Do not overtighten** or the hinge will bind.

5.2.7.3.2 Replacement of hinge blade – **Container**:

(1) Detach door hinge from the container corner post by drilling out the countersunk fasteners.
(2) Remove the hinge pin bolt by unscrewing the nut and pulling out the bolt.
(3) Replace the damaged hinge blade with a new one and attach to the door panel using new fasteners as per Customer CMM IPL.
(4) Reinstall hinge pin bolt or replace with new one if damaged.
(5) Reinstall the nut. **Do not overtighten** or the hinge will bind.

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6 Part 6 – Roll-Up Doors

Inspection & Repair of;

Roll-up door assembly

6.1 Inspection of Roll-Up Door Assembly

6.1.1 [RU] Roll-Up Door

6.1.1.1 Damaged door bar

- Permanent deformed door bar shall not protrude outside maximum container contour.
- Any damage to the door bar must not prevent proper door closure and engagement of door latches.
- There shall be no damage distortion and / or indentation greater than 12.7 mm over the length of the extrusion

6.1.1.2 Door Lock

- Door lock must be fully functional with the door handle turning smoothly and both cam latches moving in and out of the door bar ends.
- When turning the lock handle to the locked position the cam latches in each end of the door bar shall protrude 24 mm out from the door bar end.
- When turning the handle to the unlocked position the tip of the cam latches shall not protrude outside the door bar end.

  Any deviation from this indicates faulty parts and will require repair.

6.1.1.3 Door Cables

There shall be no frayed, broken or missing cables. Cables shall be attached at both ends.

6.1.1.4 Door Roll-up Mechanism

- There shall be no broken, loose or missing fasteners in the roll-up mechanism, nor shall there be any damage to brackets, shaft or tube.
- The door should roll upwards by itself when the door bar is released at the bottom, however failure to do so does not affect the airworthiness of the container. Still, it is recommended that the fault is repaired.

6.1.1.5 Door Cover

No cuts, tears or holes in the door fabric.

6.2 Repair of Roll-Up Door Assembly

6.2.1 [RU] Roll-Up Door

6.2.1.1 Detaching the roll-up door for repair:

Before doing repairs on the roll-up door assembly it is advisable to detach the whole assembly from the container and lay it on a suitable work table.

(1) Remove the two screws securing the hinged cover inside the container (one at each end of the cover).
(2) The cover is hinged and can now be opened to gain access to the roll-up door assembly.
(3) At each end of the roll-up door assembly is a pin that retains the tension of the torsion spring inside the assembly. Pull out both pins to release the spring tension.
(4) The shaft of the roll-up door assembly can now be lifted out of the brackets and the whole door assembly removed from the container.

6.2.1.2 Re-attaching the roll-up door after repair:

(1) To re-attach the roll-up door, thread the door bar over the lower door header and seat the roll assembly shaft into the brackets.
(2) At this point the torsion spring inside the roll-up mechanism needs to be re-tensioned. This is done through access holes located in the end plates which gives access to the hexagonal hole inside the shaft. Tensioning can be done at either end of the roll assembly. It is advisable to use an 8 mm Allen key in a low rpm cordless drill or a right angle cordless nut-runner.
(3) With the door fully unwound and hanging down, apply 11-12 full turns in the correct direction.
(4) Line up the pin hole and insert a pin to secure the spring tension before removing the Allen key.
(5) Test the spring tension by releasing the door bar from its lower position.
(6) The door should roll all the way up without smashing excessively hard at the upper stop. Add or subtract “half turns” on the spring until desired spring tension is obtained.
(7) Install the second pin when finished.
(8) Close the cover and reinstall the two bolts securing the cover.

The tension of the door (cables and cover) is set by adjusting the door lock receptacles on the door posts up or down. Use the following procedure:

(1) Lock the door by turning the door handle all the way to the left.
(2) Measure the door tension using a weight scale with a blunt hook.
(3) Place the hook behind the door cover half way between top and bottom and pull outwards until flush with the panel. The weight scale should read 6 – 7 kg (13 – 15 lbs).
(4) If outside this range; Loosen the door lock receptacle and adjust up or down in order to decrease or increase door tension. Retighten the lock receptacle, close the door, and measure door tension again. Repeat until within range.
(5) Repeat the whole process on the opposite side of the door.

6.2.1.3 Replacement of Door Bar

- Bent door bars may be straightened if no local buckling of extrusion walls and no cracks occur before or after straightening.
- Heat may be applied as described in “Weld repair and heat straightening” in General Section GS-2 otherwise the door bar shall be replaced.
- The door bar can be replaced by a new complete assembly, or alternatively all serviceable parts can be removed from damaged door bar and reused in a new door bar extrusion.

6.2.1.4 Detaching the door bar assembly

(1) Door bar assembly is detached from the door cover by removing the cable attachment blocks at both ends.
(2) Unscrew the countersunk screws holding the blocks using a 4 mm Allen key.
(3) Slide the blocks off the door cable pins, unhook the cables from the pins and remove the pins.
(4) The door bar can now be detached from the door cover by sliding it off sideways.

6.2.1.5 Repairing / replacing door lock components

Refer to 6.2.1.7 for information on door lock repair.

6.2.1.6 Re-attaching the door bar assembly

(1) Slide the door bar onto the door cover. Insert the cable pins in each end of the door cover track and hook the cable eyes onto the pins.

(2) Slide the cable attachment blocks onto the pins and reinstall the countersunk screws.

6.2.1.7 Detaching push rods with cam latches

(1) The ball end of the push rods can be accessed through the oblong access holes on the back of the door bar.

(2) Slide the ball joint clips towards the middle until the ball joints can be pried off the ball studs.

(3) The cam latches with push rods can now be pulled out of the door bar ends.

6.2.1.8 Replacing ball studs

(1) The ball studs can be replaced through the access holes on the back of the door bar.

(2) Use Loctite 243 or similar medium strength thread locker when installing the ball studs.

6.2.1.9 Replacing lock handle or center hub

(1) To replace handle and / or hub unscrew the two bolts on the front center of the handle.

(2) Lubricate the hub and the hole in the door bar at re-assembly using a commercially available PTFE grease, Super Lube or similar.

(3) Use Loctite 243 or similar medium strength thread locker when re-installing the bolts.

6.2.1.10 Replacing the cam latch guides

The cam latches slides in U-shaped plastic guides, two in each end of the door bar.

(1) To replace a guide undo the two screws holding it and slide the guides out of the door bar.

(2) When re-installing the self-tapping screws, do not over-tighten. Use a low torque setting on a screw drill or use a regular screw driver to avoid stripping the threads in the plastic guides.

6.2.1.11 Push rods

It is advisable to replace damaged push rods as a complete assembly as it will already be set to correct length.

(1) Undo the clevis pin that attaches the cam latch and remove cam latch from the push rod.

(2) If the cam latch is undamaged it can be reused on a new rod.

(3) If replacing individual parts of the push rods it is important to set the rod to correct length.

(4) Refer to applicable drawing for correct length.

(5) Bent push rods, if no visible cracks then the push rod may be straightened, apply heat as described in GS-2.

(6) If cracks are present then the push rod shall be replaced as described above.

6.2.1.12 Re-attaching the push rods with cam latches

(1) Make sure the ball joint clip on the push rod assembly is in place and tight.

(2) Slide the push rod with cam latch into the end of the door bar.

(3) Using the access holes on the back of the door bar, locate the ball joint fitting on top of the ball stud and apply pressure to snap the parts together.

6.2.1.13 Replacing damaged or worn door cables

Broken or frayed door cables shall be replaced with new ones.

Detach the door cable from the door bar

(1) Remove the countersunk screws holding the cable attachment blocks to the door bar using a 4 mm Allen key.
(2) Slide the blocks off the door cable pins and unhook the cable eye from the pin.

Detach the door cable from the roll-up tube

(3) Detach the upper end of the cable from the roll-up tube end hub by lifting the cable fitting out of the slot.
(4) The door cable can now be pulled out of the door cover hem.

Threading in a new cable

(5) A steel or aluminum wire (piano wire, welding wire or similar), approx. 1.6 mm diameter and 2.5 meters long, is useful for inserting a new cable into the door cover hem.
(6) Make a small hook in the end of the wire and thread it up through the hem of the door cover.
(7) Hook the door cable eye onto the wire hook and pull cable back through the hem.

Re-attach the upper end

(8) Reattach the upper end of the door cable by inserting the cable end fitting into the slot in the roll-up tube end hub.

Re-attach the lower end

(9) Hook the cable eyes onto the cable pins in the door cover slot. Slide the cable attachment block onto the pin and reinstall the countersunk screws.

6.2.2 Inspection / Repair of Door Roll-up Mechanism

6.2.2.1 Disassemble the roll-up tube

(1) Detach the door cables from the roll-up tube end hub by lifting the cable end fitting out of the slot.
(2) Pull the end hubs out of the tube and slide them off the shaft.
(3) The shaft with torsion spring can now be pulled out of the tube.

6.2.2.2 Roll-up tube

(4) Inspect the roll-up tube and replace if bent or severely dented. Smaller dents that will not affect assembly or function is acceptable.

6.2.2.3 Shaft

(5) Inspect the shaft for straightness and for wear at the end hub bearing surfaces.
(6) Replace or straighten shaft if bent.
(7) Replace shaft if bearing surface diameters has worn down below 16.5 mm.

6.2.2.4 Torsion spring

(8) Inspect torsion spring and replace if broken or deformed.
(9) Make sure the fixed end is securely fastened with spring end winding perpendicular to the shaft.

6.2.2.5 Drive plate

(10) Make sure the drive plate in the floating end slides and rotates freely on the shaft.
(11) Replace drive plate if damaged.
(12) Lubricate if necessary using a commercially available commercially available PTFE grease, Super Lube or similar.

6.2.2.6 End hubs

(13) Inspect the end hubs and replace if inside diameter has worn beyond 18 mm or if cable slot is damaged.

6.2.2.7 Re-assembly

(14) Re-assemble in reverse order of disassembly.

(15) Lubricate the bearings surfaces in the end hubs using a commercially available PTFE grease, Super Lube or similar.

(16) Hook the door cables back into the slots in the end hubs.

6.2.3 Door Cover

6.2.3.1 Re-assembly

(1) Re-assemble in reverse order disassembly.

(2) Lubricate the bearings surfaces in the end hubs using a commercially available PTFE grease, Super Lube or similar.

(3) Hook the door cables back into the slots in the end hubs.

6.2.3.2 Repair of door cover

Damage including but not limited to cuts, holes and scuffed areas in the door fabric should be patched by using identical or equivalent materials approved by Nordisk Aviation Products.

Maximum extent of a single damage that can be patched is 150 mm horizontal by 500 mm vertical.

- Maximum 3 patch repairs per door cover.
- Patches should be 100 mm apart and must not overlap.

If extent of damage exceeds these limitations, the cover shall be replaced.

When patching damage closer than 50 mm from the top or bottom edge, the patch shall wrap tightly around the edge.

When patching close to the sides make sure the cable pockets are not sewn together.

Place a precut patch large enough to overlap the hole by minimum 40 mm.

Patches should be rectangular or square.

Sew a double seam around the perimeter of the patch and another double seam around the perimeter of the damage.

Distance from seam to patch edge, and from seam to damage, shall be within 5 - 10 mm.

Refer to TD-810880 for sewing instructions, for material specifications refer to SB 200501.

Note: Weld patch on fabric doors on Fireshield or FRC containers is not allowed.

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7 Part 7 – Sliding Net / Door Cover

Inspection & Repair of;

Sliding net / door cover

Webbing & QZ door net

7.1 Inspection of Sliding Net / Door Cover

7.1.1 [CD] Curtain Door

See section 4.1.1.

For fire resistance performance

There shall be no cut, holes for fire resistance performance.

NOTE: When the fabric door fire performance damage limits are exceeded (up to limits defined in part 4.1.1) the container can used as ordinary ULD and not as fire resistance container. The fire resistance symbol decal (F) should be crossed out with Black adhesive tape to indicate that container does not meet fire protection damage limits

7.1.2 [LD] Lock Door

There shall be no broken, loose or missing hardware / locks, Velcro shall function properly.

7.1.3 [WD] Webbing / Net Door

There shall be no damaged or missing straps, ropes, stitching or miscellaneous hardware.

7.2 Repair of Sliding Net / Door Cover

7.2.1 [CD] Curtain Door

Repair of Fabric Doors:
Refer to Nordisk Technical Document TD-810880 for sewing instructions, for material specifications refer to Nordisk Service Bulletin SB 200501, these two documents replace drawing 14700-02 as referenced in IPL drawings.

(1) Cuts and holes in the door fabric should be patched by using identical or equivalent material.
(2) Door fabric materials from or approved by Nordisk Aviation Products shall be used.
(3) Place a precut patch large enough to overlap the hole with minimum 40 mm.
(4) Sew a double seam around the hole.
(5) Minimum edge distance from seam to hole is 10 mm.
(6) Use thread from or approved by Nordisk Aviation Products.

Note: Weld patch on curtain doors on Fireshield™ or FRC containers is not allowed.

7.2.2 [LD] Lock Door

- Damaged door lock hardware shall be repaired or replaced.
- Cracked, disabled or missing stud fittings shall be replaced.

7.2.3 Sliding Webbing Door Net

Repair of webbing net:

Broken or excessively worn nets and their attached hardware shall be repaired, the damage should be repaired as follows:

(1) Cut away damaged area and heat webbing ends. (Heat is used to melt webbing to prevent further tearing.) See Figure 109.
(2) Remove seam on the damaged or missing strap assembly, detaching strap assembly from door net.
(3) Sew a new strap assembly on to door net.
(4) See Figure 121 and refer to TD-810880 for sewing instructions, for material specifications refer to SB 200501.

7.3 Inspection of Webbing & QZ Door Net

7.3.1 [CD] Curtain Door

Damaged curtain does not affect airworthiness.

Damage that may affect the internal safety and security of the cargo, allow ingression of weather elements such as rain, snow etc. then refer to the airlines internal operation manual for further guidance.

7.4 Repair of Webbing & QZ Door Net

7.4.1 Repair of webbing net

Broken or excessively worn nets and their attached hardware shall be repaired, the damage should be repaired as follows:

(1) Cut away damaged area and heat webbing ends. (Heat is used to melt webbing to prevent further tearing.)
(2) Remove seam on the damaged or missing strap assembly, detaching strap assembly from door net.
(3) Sew a new strap assembly on to door net. See Fig. 109 and refer to TD-810880 for sewing instructions, for material specifications refer to SB 200501.

7.4.2 Repair of QZ Rope net

Broken or excessively worn rope-nets and their attached hardware shall be repaired in accordance with the net manufacturer's instructions.
Ref. CMM QZ55-0265505 (BG0260) from Amsafe Bridport Ltd.

Ref. section 7.2.3 and 7.4.1.

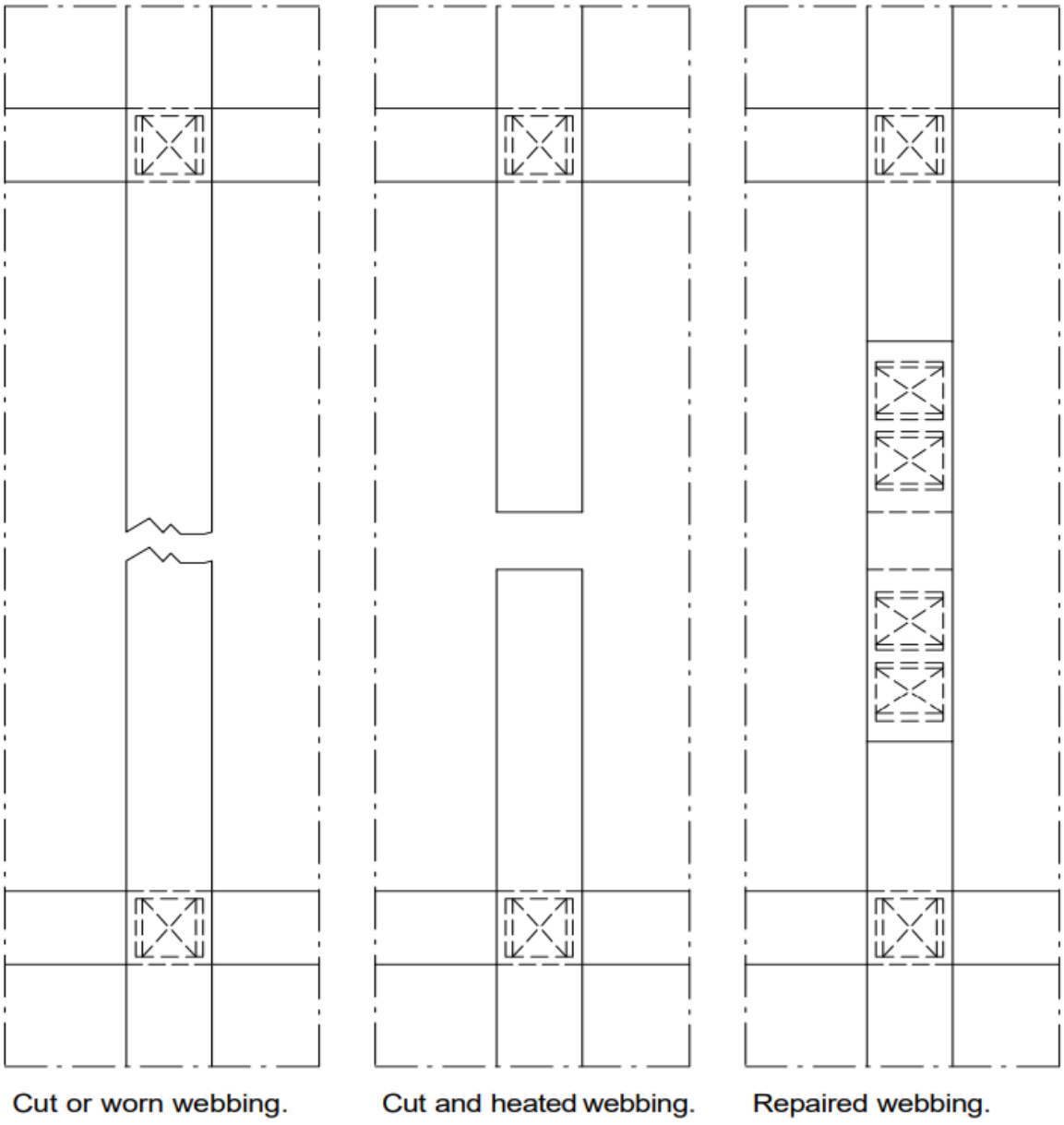

Figure 109

8 Part 8 – EZY Door

Inspection & Repair of;

EZY door assembly

8.1 Inspection of EZY Door Assembly

8.1.1 [EZY] EZY Door

8.1.1.1 Tension Mechanism and handle

- The open- and close-function shall be easy to handle
- Closing force shall not overseed 6-7 kg
- Check all visible moving parts for damage
- Check for dust, sand or other obstacles that could conflict with the moving parts.
- There shall not be big indents on the door post where the door handle is moving.

8.1.1.2 Door Lock

- Door lock must be fully functional with the door handle moving easily.
- Door lock shall not easily open without pulling the lock pin.

  Any deviation from this indicates faulty parts and will require repair.

8.1.1.3 Door Cables

There shall be no frayed, broken or missing cables. Cables shall be attached at both ends.

8.1.1.4 EZY all parts

There shall be no broken, loose or missing fasteners, nor shall there be any damage to brackets, extrusion or bearings.

8.1.1.5 Door Cover

No cuts, tears, or holes in the door fabric.

8.2 Repair of EZY Door Assembly

8.2.1 [EZY] EZY Door

8.2.1.1 Replace the EZY door cover:

(1) Detach the door cable from the right door post by removing the cotter pin and the clevis pin.
(2) Open the tension mechanism bracket and detach the door cable.
(3) Remove the door cover from container.
(4) Door cable can be re-used if not broken.
(5) Disassemble the corner bracket in the door to remove the door cable.
(6) Remove door cable if to be re-used.
(7) Retrofit the door cable in the door with corner bracket.

Repeat the points above to mount the door cover. Do a test after and check the tension of the door cable. Adjust cable tension by moving bracket for the wire upward at the right door post.

Note: Damage limit on door cover is not allowed.

8.2.1.2 Tension Mechanism:

If there is any suspicion that the Tension Mechanism is broken or not working properly. Replace the whole unit or change parts by parts. Bearings, cable, studs, bolts and so on.

8.2.1.3 Replacement left door post with door handle and locks if anything is damaged.

- Drill out rivets and remove bolt, nuts for dis-mount the door post.
- Change and replace broken parts.
- Before mounting everything check that all parts are moving and do not feel hard to operate.

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9 Part 9 – Non Certified Containers

Inspection & Repair

9.1 Inspection of non-certified containers

9.1.1 General

The ULD should be checked for clearly visible damage prior to each loading. In addition to this continuous control, it is advised to inspect the container thoroughly for damage each time the container is in for repair. If damage found exceeds limitations as described in this chapter, the container shall be subject to repair. Please note that the wording " should" indicates the manufacturers recommendation only, and it is left to the ULD owners discretion to follow this recommendation or not.

Operational Damage Limit Notice: **ODL-Non Certified-001.**

ULD may not be used if any of the conditions below are exceeded:

- There shall be no damage, loose or missing parts that result in:
- ULD or cargo becoming a hazard to the aircraft structure or system.
- ULD not matching the contour as approved in the aircraft W & B manual.
- ULD being unable to be restrained in the cargo loading system.

9.1.2 [TM] Manufacturer Data

The manufacturer's sign shall be in place and legible.

9.1.3 [WP] Webbing Panel

The container shall not have any damaged, worn-out or missing pull-straps (1000 LBS capacity for operation, not required for airworthiness).

9.2 Repair of non-certified containers

See applicable sections in this manual for repair recommendations as these also applies to non-certified containers.