
SERVICE BULLETIN

N° 189-294

DATE: May 31, 2022

REV. : /

TITLE

ATA 56 - GLASS WINDSHIELD RETROMOD

REVISION LOG

First Issue

An appropriate entry should be made in the aircraft log book upon accomplishment.
If ownership of aircraft has changed, please, forward to new owner.

1. PLANNING INFORMATION

A. EFFECTIVITY

AW189 helicopters S/N 49007 to S/N 49088 (S/N's 49024, 49036, 49040 and 49041 excluded), S/N 89001 to S/N 89014 (S/N's 89005 and 89006 excluded) and S/N 92001 thru S/N 92010, equipped with LIPS kit P/N 8G3000F00211 or P/N 8G3000F00212, or FIPS kit P/N 8G3000F00111 or P/N 8G3000F00311, or heated windshield Kit P/N 8G5610F00211 or glass windshield kit P/N 8G5610F00111.

B. COMPLIANCE

Within 400 flight hours or 6 months or at first windshield removal whichever comes first after the issue of this Service Bulletin.

C. CONCURRENT REQUIREMENTS

N.A.

D. REASON

This Service Bulletin is issued in order to provide the necessary instruction on how to perform the installation of windshield retromods P/N 8G5610P00111, or P/N 8G5610P00411 or P/N 8G5610P00911.

E. DESCRIPTION

Leonardo Helicopters received various reports of cracks and damages to the glass windshields installed on AW189 helicopters. To increase the reliability of this installation, LHD issued this SB in order to introduce a set of improvements in the windshields and in the installation procedures.

The improvements are:

- rework of the existing windshields to increase screw holes tolerance and trim the windshield edge to achieve a better clearance;
- introduce Teflon gasket washers under screws in place of Proseal to improve the endurance and vibration resistance at constraint points;
- improve installation procedure and introduce a new torque tighten pattern for the screws in order to minimize their pre-load on the windshields.

The SB reports instruction of three retromods applicable to the following configuration:

- Retromod P/N 8G5610P00111 gives instructions to modify the helicopters equipped with kit FIPS P/N 8G3000F00111 or P/N 8G3000F00311 or kit LIPS P/N 8G3000F00211 or P/N 8G3000F00212.

- Retromod P/N 8G5610P00411 gives instructions to modify the helicopters equipped with kit glass windshield P/N 8G5610F00111.
- Retromod P/N 8G5610P00911 gives instructions to modify the helicopters equipped with kit heated windshield P/N 8G5610F00211.

The missed application of this SB doesn't have effects on the safety of operation but could burden the maintenance activities of the helicopter.

F. APPROVAL

The technical content of this Service Bulletin is approved under the authority of DOA nr. EASA.21.J.005. For helicopters registered under other Aviation Authorities, before applying the Service Bulletin, applicable Aviation Authority approval must be checked within Leonardo Helicopters customer portal.

EASA states mandatory compliance with inspections, modifications or technical directives and related time of compliance by means of relevant Airworthiness Directives. If an aircraft listed in the effectivity embodies a modification or repair not LHD certified and affecting the content of this Service Bulletin, it is responsibility of the Owner/Operator to obtain a formal approval by Aviation Authority having jurisdiction on the aircraft, for any adaptation necessary before incorporation of the present Service Bulletin.

G. MANPOWER

To comply with this Service Bulletin eight (8) MMH are deemed necessary (to modify both windshields).

MMH are based on hands-on time and can change with personnel and facilities available.

H. WEIGHT AND BALANCE

N.A.

I. REFERENCES

1) PUBLICATIONS

Following Data Modules refer to AMP:

<u>DATA MODULE</u>	<u>DESCRIPTION</u>	<u>PART</u>
DM01 89-A-00-20-00-00A-120A-A	Helicopter on ground for a safe maintenance.	-

<u>DATA MODULE</u>	<u>DESCRIPTION</u>	<u>PART</u>
DM02 89-A-30-72-01-00A-520A-A	Left windshield - Remove procedure	-
DM03 89-A-30-72-01-00A-720A-A	Left windshield - Install procedure	-
DM04 89-A-30-72-02-00A-520A-A	Right windshield - Remove procedure	-
DM05 89-A-30-72-02-00A-720A-A	Right windshield - Install procedure	-
DM06 89-A-56-11-01-00A-520A-A	Left windshield - Remove procedure	-
DM07 89-A-56-11-01-00A-720A-A	Left windshield - Install procedure	-
DM08 89-A-56-11-04-00A-520A-A	Right windshield - Remove procedure	-
DM09 89-A-56-11-04-00A-720A-A	Right windshield - Install procedure	-
DM10 89-A-56-12-01-00A-520A-A	Left heated windshield - Remove procedure	-
DM11 89-A-56-12-01-00A-720A-A	Left heated windshield - Install procedure	-
DM12 89-A-56-12-02-00A-520A-A	Right heated windshield - Remove procedure	-
DM13 89-A-56-12-02-00A-720A-A	Right heated windshield - Install procedure	-

2) ACRONYMS & ABBREVIATIONS

AMD	Aircraft Material Data Information
AMP	Aircraft Maintenance Publication
DM	Data Module
DOA	Design Organization Approval
EASA	European Aviation Safety Agency
FIPS	Full Ice Protection System
IPD	Illustrated Parts Data
LH	Leonardo Helicopters
LIPS	Limited Ice Protection System
MMH	Maintenance Man Hours
P/N	Part Number
S/N	Serial Number

3) ANNEX

N.A.

J. PUBLICATIONS AFFECTED

AW189 Aircraft Maintenance Publication (AMP)

AW189 Illustrated Parts Data (IPD)

K. SOFTWARE ACCOMPLISHMENT SUMMARY

N.A.

2. MATERIAL INFORMATION

A. REQUIRED MATERIALS

1) PARTS

PART I

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
1	8G5610P00111		GLASS WINDSHIELD 8G3040A03111 RETROMOD	REF	.	(1)	
2	8G5610P00231		Glass windshield RH	REF	..	(2)	-
3	8G5610P00331		Glass windshield LH	REF	..	(3)	-
4	AN525-10R10		Screw	34	..		189-294L1
5	AN525-10R14		Screw	72	..		189-294L1
6	AW005ME05W051105		Washer	106			189-294L1
7	8G5610P00411		GLASS WINDSHIELD 8G5610F00111 RETROMOD	REF	.	(4)	
8	8G5610P00531		Glass windshield RH	REF	..	(5)	-
9	8G5610P00631		Glass windshield LH	REF	..	(6)	-
10	AN525-10R10		Screw	34	..		189-294L1
11	AN525-10R14		Screw	72	..		189-294L1
12	AW005ME05W051105		Washer	106			189-294L1
13	8G5610P00911		GLASS WINDSHIELD 8G5610A01411 RETROMOD	REF	.	(7)	
14	8G5610P00731		Glass windshield RH	REF	..	(8)	-
15	8G5610P00831		Glass windshield LH	REF	..	(9)	-
16	AN525-10R10		Screw	34	..		189-294L1
17	AN525-10R14		Screw	72	..		189-294L1
18	AW005ME05W051105		Washer	106	..		189-294L1

Refer also to IPD for the spares materials required to comply with the AMP DMs referenced in the accomplishment instructions.

2) CONSUMABLES

The following consumable materials, or equivalent, are necessary to accomplish this Service Bulletin:

#	SPEC./LHD CODE NUMBER	DESCRIPTION	Q.TY	NOTE	PART
19	AWMS05-001 Ty 1, CI B, Grade 2 Code no. 99999999000005965	MC-780 B2 Sealant (C465)	AR	(10)	-
20	MIL-PRF-16173 CL1, GRADE 1 Code No.99999999000000191	TECTYL 891D (C385)	AR	(10)	-
21	MIL-PRF-680, Type II cod. 505405407	Cleaning solvent Ardrex 5503A (C010)	AR	(10)	-

Refer also to AMDI for the consumable materials required to comply with the AMP DM referenced in the accomplishment instructions.

3) LOGISTIC MATRIX

In order to apply this Service Bulletin, the following Logistic P/N can be ordered in accordance with the applicable notes:

LOGISTIC P/N	Q.TY (PER HELO)	NOTE	PART
189-294L1	1	-	-

NOTE

- (1) This retromod is applicable only to helicopters equipped with kit FIPS P/N 8G3000F00111 or P/N 8G3000F00311 or kit LIPS P/N 8G3000F00211 or P/N 8G3000F00212.
- (2) This item will not be supplied. Rework existing P/N 4G5610V00231 in accordance with compliance instructions.
- (3) This item will not be supplied. Rework existing P/N 4G5610V00131 in accordance with compliance instructions.
- (4) This retromod is applicable only to helicopters equipped with kit glass windshield P/N 8G5610F00111.
- (5) This item will not be supplied. Rework existing P/N 3G5610V00451 in accordance with compliance instructions.
- (6) This item will not be supplied. Rework existing P/N 3G5610V00351 in accordance with compliance instructions.
- (7) This retromod is applicable only to helicopters equipped with kit heated windshield P/N 8G5610F00211.
- (8) This item will not be supplied. Rework existing P/N 3G5610V00151 in accordance with compliance instructions.
- (9) This item will not be supplied. Rework existing P/N 3G5610V00251 in accordance with compliance instructions.
- (10) Item to be procured as local supply.

B. SPECIAL TOOLS

The following special tools, or equivalent, are necessary to accomplish this Service Bulletin:

#	P/N	DESCRIPTION	Q.TY	NOTE	PART
22	A05900AAR	Reamer	1	(B1)	-

Refer also to ITEP for the special tools required to comply with the AMP DM referenced in the accomplishment instructions.

SPECIAL TOOLS NOTE

(B1) Commercial tool. Reamer P/N TOOL30128785 or any equivalent reamer of diameter 5.90 can be used as a valid alternative.

C. INDUSTRY SUPPORT INFORMATION

Owners/Operators who comply with the instructions of this Service Bulletin no later than the applicable date in the "Compliance" section will be eligible to receive required materials on free of charge basis, except for Consumable Materials and Special Tools.

NOTE: Customers who fail to comply with the instructions in this Service Bulletin before the compliance date are not eligible for the aforementioned special policy. Please Issue relevant MMIR form to your Warranty Administration Dpt..

3. ACCOMPLISHMENT INSTRUCTIONS

GENERAL NOTES

- a) Place an identification tag on all components that are re-usable, including the attaching hardware that has been removed to gain access to the modification area and adequately protect them until their later re-use.
 - b) Exercise extreme care during drilling operations to prevent damages.
 - c) After drilling, remove all swarf and sharp edges.
 - d) Let adhesive cure at room temperature for at least 24 hours unless otherwise specified.
 - e) All lengths are in mm.
-
1. In accordance with DM 89-A-00-20-00-00A-120A-A, prepare the helicopter on ground for a safe maintenance. Disconnect the battery, all electrical power sources and/or the external power supply.
 2. In accordance with the following AMP DMs, remove the existing LH windshield from the helicopter and put it on an applicable work table:
 - DM 89-A-30-72-01-00A-520A-A for helicopters equipped with kit FIPS or LIPS.
 - DM 89-A-56-11-01-00A-520A-A for helicopters equipped with kit glass windshield.
 - DM 89-A-56-12-01-00A-520A-A for helicopters equipped with kit heated windshield.
 3. Remove remaining material from the canopy surface all around the perimeter. Then clean the canopy surface by means of a cleaning solvent (C010).
 4. With reference to Figures 1 and 2, perform rework of the LH windshield as described in the following procedure:
 - 4.1 With reference to Figure 2 View A, enlarge n°53 screw holes in the windshield to Ø 5.90 - 6.01. Use the special reamer P/N A05900AAR.
 - 4.2 With reference to Figure 2 Section E-E, verify if the LH windshield is in contact with canopy surface.

NOTE

Perform the following step ONLY if the LH windshield is in contact with canopy surface (Ref. step 4.2).

NOTE

The minimum distance from the screw hole centre and the edge of the LH windshield must be 11mm.

- 4.3 With reference to Figure 2 Section E-E, trim the LH windshield in the position where the windshield is in contact with the canopy structure in order to remove the interference. Use abrasive paper (medium grit).

CAUTION

Be careful to not trim the edge radius over 5mm.

- 4.4 With reference to Figure 2 Section B-B, to ensure proper windshield seating against canopy structure fillet trim edge radius of 5mm by means of abrasive paper (medium grit).
- 4.5 With reference to Figure 2 View A, mark on the reworked windshield the following retromod P/N adjacent to the already present P/N. Use an indelible pen.
- P/N 8G5610P00331 on LH windshield P/N 4G5610V00131.
 - P/N 8G5610P00631 on LH windshield P/N 3G5610V00351.
 - P/N 8G5610P00731 on LH windshield P/N 3G5610V00151.
5. In accordance with applicable step of the listed AMP DM and the following procedure, re-install the LH windshield:
- DM 89-A-30-72-01-00A-720A-A for helicopters equipped with kit FIPS or LIPS.
 - DM 89-A-56-11-01-00A-720A-A for helicopters equipped with kit glass windshield.
 - DM 89-A-56-12-01-00A-720A-A for helicopters equipped with kit heated windshield.
- 5.1 In accordance with the applicable AMP procedure, prepare the helicopter for the installation and put the LH windshield in its position.

NOTE

Install screws P/N AN525-10R10 on n°17 insert holes at positions 1 to 14 and 51 to 53. Install washer P/N AW005ME05W051105 under screws head.

Install screws P/N AN525-10R14 on n°36 anchor nut holes at positions 15 to 50. Install washer P/N AW005ME05W051105 under screws head.

NOTE

It is permissible to change the grip length of the screw if the thread is not fully engaged or if the screw bottoms out before contacting the screen.

- 5.2 With reference to Figure 3 View C, pin windshield at positions 2 and 26. Install fasteners loosely at this time. Do not torque.
- 5.3 With reference to Figure 3 View C, pin windshield at positions 13 and 40. Install fasteners loosely at this time. Do not torque.

NOTE

The gap between the windshield and the structure must be checked on all the perimeter of the canopy.

- 5.4 Make sure that the gap between the external contour of the windshield and the structure profile is less than 5 mm. If this condition is not verified, the windshield is not serviceable and must be discarded. Take a picture of the location where this condition is not verified and report to Product Support Engineering (engineering.support.lhd@leonardo.com). Then perform again Step 4 with a new LH windshield.
- 5.5 With reference to Figure 3 View C, hand tighten screws at positions 13 and 40 until the windshield is clamped. Do not fully torque at this time.
- 5.6 With reference to Figure 3 View C, hand tighten screws at positions 2 and 26 until the windshield is clamped. Do not fully torque at this time.
- 5.7 With reference to Figure 3 View C, install all other fasteners loosely, but do not fully torque. Use the following sequence from top to bottom and forward to aft (e.g. 14, 41, 12, 39, 15, 42, 11, 38). Once all screws are in position, tighten them in the same order.
- 5.8 With reference to Figure 3 View C tighten the fasteners to the following final torque values with the same sequence used in the previous step:
 - 1.35 to 1.69 Nm for screws at positions 1 to 14 and 51 to 53;
 - 2.26 to 2.82 Nm for screws at positions 15 to 50.

- 5.9 With reference to Figure 3 View C, apply a bead of sealant MC780 B-2 all around the windshield perimeter.
- 5.10 In accordance with the applicable AMP procedure, conclude the installation of the LH windshield as required.
6. In accordance with the following AMP DMs, remove the existing RH windshield from the helicopter and put it on an applicable work table:
 - DM 89-A-30-72-02-00A-520A-A for helicopters equipped with kit FIPS or LIPS.
 - DM 89-A-56-11-04-00A-520A-A for helicopters equipped with kit glass windshield.
 - DM 89-A-56-12-02-00A-520A-A for helicopters equipped with kit heated windshield.
7. Remove remaining material from the canopy surface all around the perimeter. Then clean the canopy surface.
8. With reference to Figures 1 and 2, perform rework of the RH windshield as described in the following procedure:
 - 8.1 With reference to Figure 2 View A, enlarge n°53 screw holes in the windshield to \varnothing 5.90 - 6.01. Use the special reamer P/N A05900AAR.
 - 8.2 With reference to Figure 2 Section E-E, verify if the RH windshield is in contact with canopy surface.

NOTE

Perform the following step **ONLY** if the RH windshield is in contact with canopy surface (Ref. step 8.3).

NOTE

The minimum distance from the screw hole centre and the edge of the RH windshield must be 11mm.

- 8.3 With reference to Figure 2 Section E-E, trim the RH windshield in the position where the windshield is in contact with the canopy structure in order to remove the interference. Use abrasive paper (medium grit).

CAUTION

Be careful to not trim the edge radius over 5mm.

- 8.4 With reference to Figure 2 Section B-B, to ensure proper windshield seating against canopy structure fillet trim edge radius of 5mm by means of abrasive paper (medium grit).
- 8.5 With reference to Figure 2 View A, mark on the reworked windshield the following retromod P/N adjacent to the already present P/N. Use an indelible pen.
 - P/N 8G5610P00231 on RH windshield P/N 4G5610V00231;
 - P/N 8G5610P00531 on RH windshield P/N 3G5610V00451;
 - P/N 8G5610P00831 on RH windshield P/N 3G5610V00251.

9. In accordance with applicable step of the listed AMP DM and the following procedure, re-install the RH windshield:
- DM 89-A-30-72-02-00A-720A-A for helicopters equipped with kit FIPS or LIPS;
 - DM 89-A-56-11-04-00A-720A-A for helicopters equipped with kit glass windshield;
 - DM 89-A-56-12-02-00A-720A-A for helicopters equipped with kit heated windshield.
- 9.1 In accordance with the applicable AMP procedure, prepare the helicopter for the installation and put the RH windshield in its position.

NOTE

Install screws P/N AN525-10R10 on n°17 insert holes at positions 1 to 14 and 51 to 53. Install washer P/N AW005ME05W051105 under screws head.

Install screws P/N AN525-10R14 on n°36 anchor nut holes at positions 15 to 50. Install washer P/N AW005ME05W051105 under screws head.

NOTE

It is permissible to change the grip length of the screw if the thread is not fully engaged or if the screw bottoms out before contacting the screen.

- 9.2 With reference to Figure 4 View D, pin windshield at positions 2 and 26. Install fasteners loosely at this time. Do not torque.
- 9.3 With reference to Figure 4 View D, pin windshield at positions 13 and 40. Install fasteners loosely at this time. Do not torque.

NOTE

The gap between the windshield and the structure must be checked on all the perimeter of the canopy.

- 9.4 Make sure that the gap between the external contour of the windshield and the structure profile is less than 5 mm. If this condition is not verified, the windshield is not serviceable and must be discarded. Take a picture of the location where this condition is not verified and report to Product Support Engineering (engineering.support.lhd@leonardo.com). Then perform again Step 8 with a new RH windshield.
- 9.5 With reference to Figure 4 View D, hand tighten screws at positions 13 and 40 until the windshield is clamped. Do not fully torque at this time.

- 9.6 With reference to Figure 4 View D, hand tighten screws at positions 2 and 26 until the windshield is clamped. Do not fully torque at this time.
- 9.7 With reference to Figure 4 View D, install all other fasteners loosely, but do not fully torque. Use the following sequence from top to bottom and forward to aft (e.g. 14, 41, 12, 39, 15, 42, 11, 38). Once all screws are in position, tighten them in the same order.
- 9.8 With reference to Figure 4 View D, tighten the fasteners to the following final torque values with the same sequence used in the previous step:
 - 1.35 to 1.69 Nm for screws at positions 1 to 14 and 51 to 53;
 - 2.26 to 2.82 Nm for screws at positions 15 to 50.
- 9.9 With reference to Figure 4 View D, apply a bead of sealant MC780 B-2 all around the windshield perimeter.
- 9.10 In accordance with the applicable AMP procedure, conclude the installation of the RH windshield as required.
10. Return the helicopter to flight configuration and record for compliance with this Service Bulletin on the helicopter logbook.
11. Send the attached compliance form to the following mail box:

engineering.support.lhd@leonardo.com

As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the “Service Bulletin Application Communication”.

- 8G5610P00111 GLASS WINDSHIELD
8G3040A03111 RETROMOD
- 8G5610P00411 GLASS WINDSHIELD
8G5610F00511 RETROMOD
- 8G5610P00911 GLASS WINDSHIELD
8G5610A01411 RETROMOD

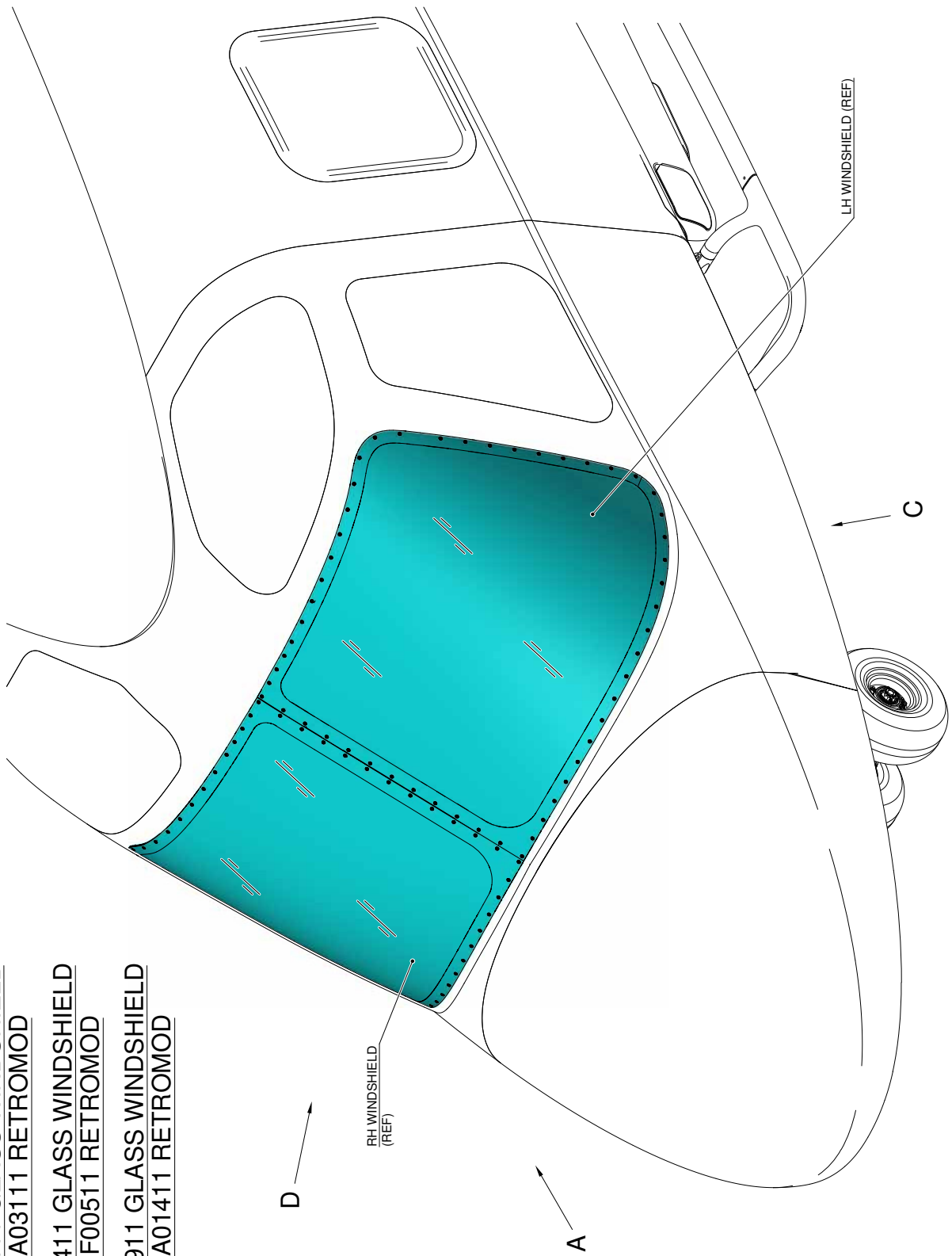
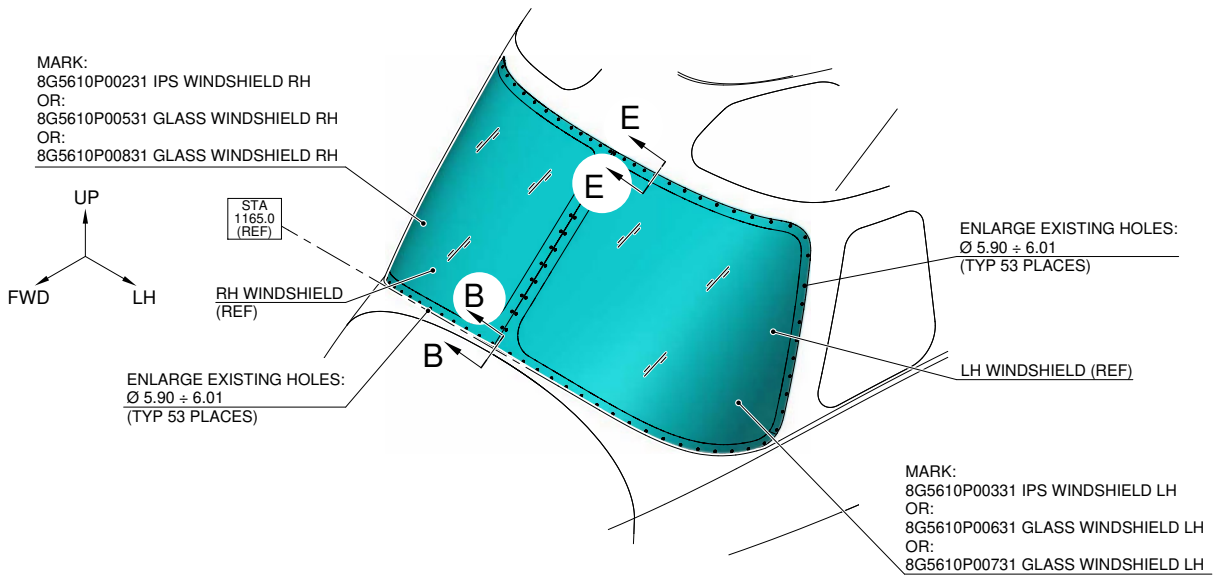
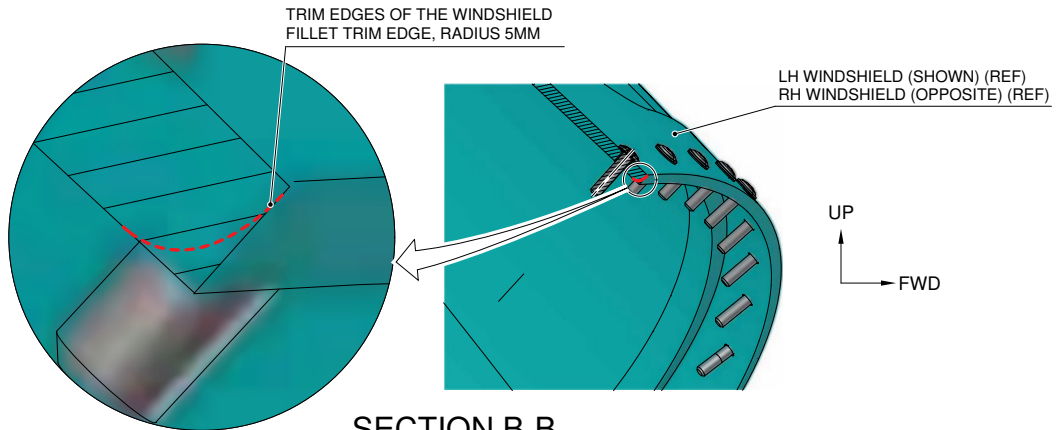


Figure 1



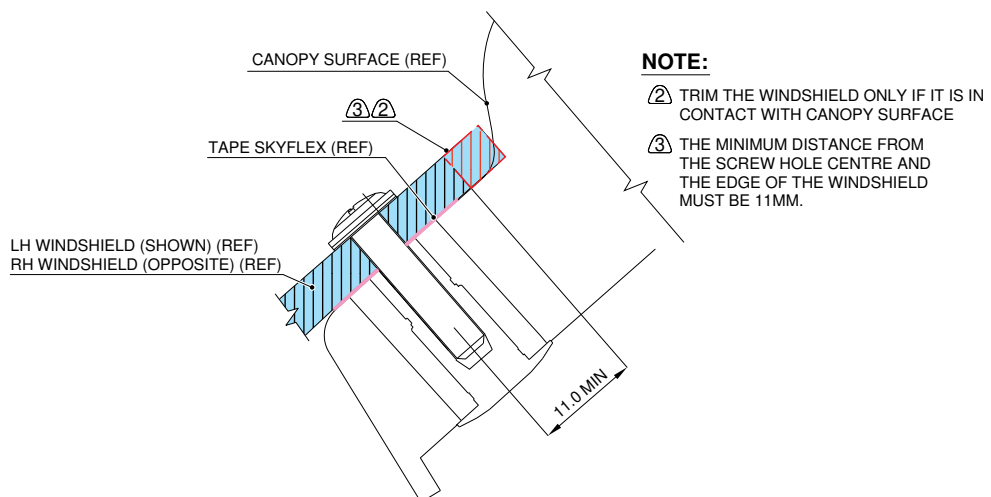
VIEW A

STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE



SECTION B-B

LH SIDE SHOWN RH SIDE TYPICAL
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE



SECTION E-E

LH SIDE SHOWN RH SIDE TYPICAL
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE

Figure 2

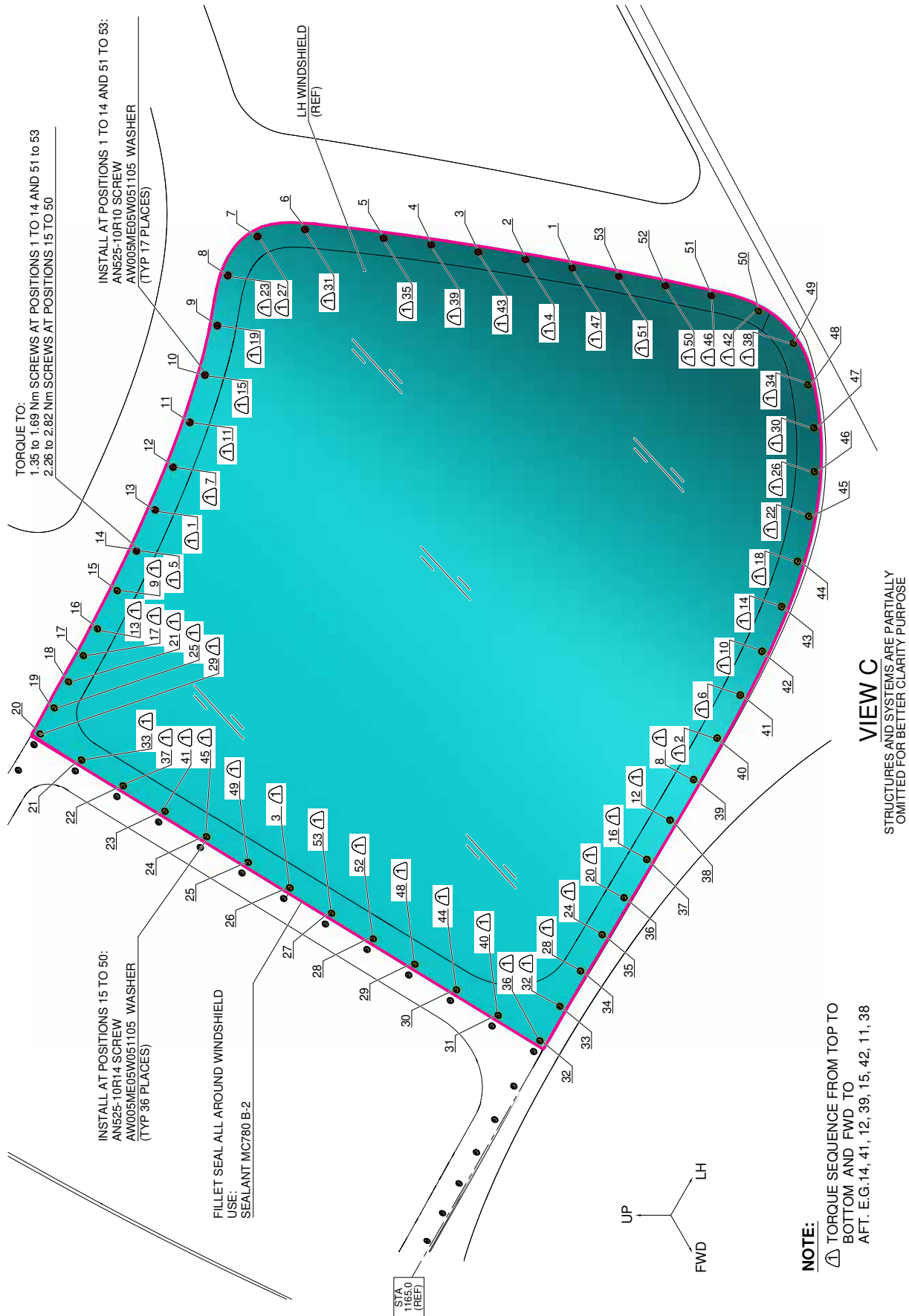


Figure 3

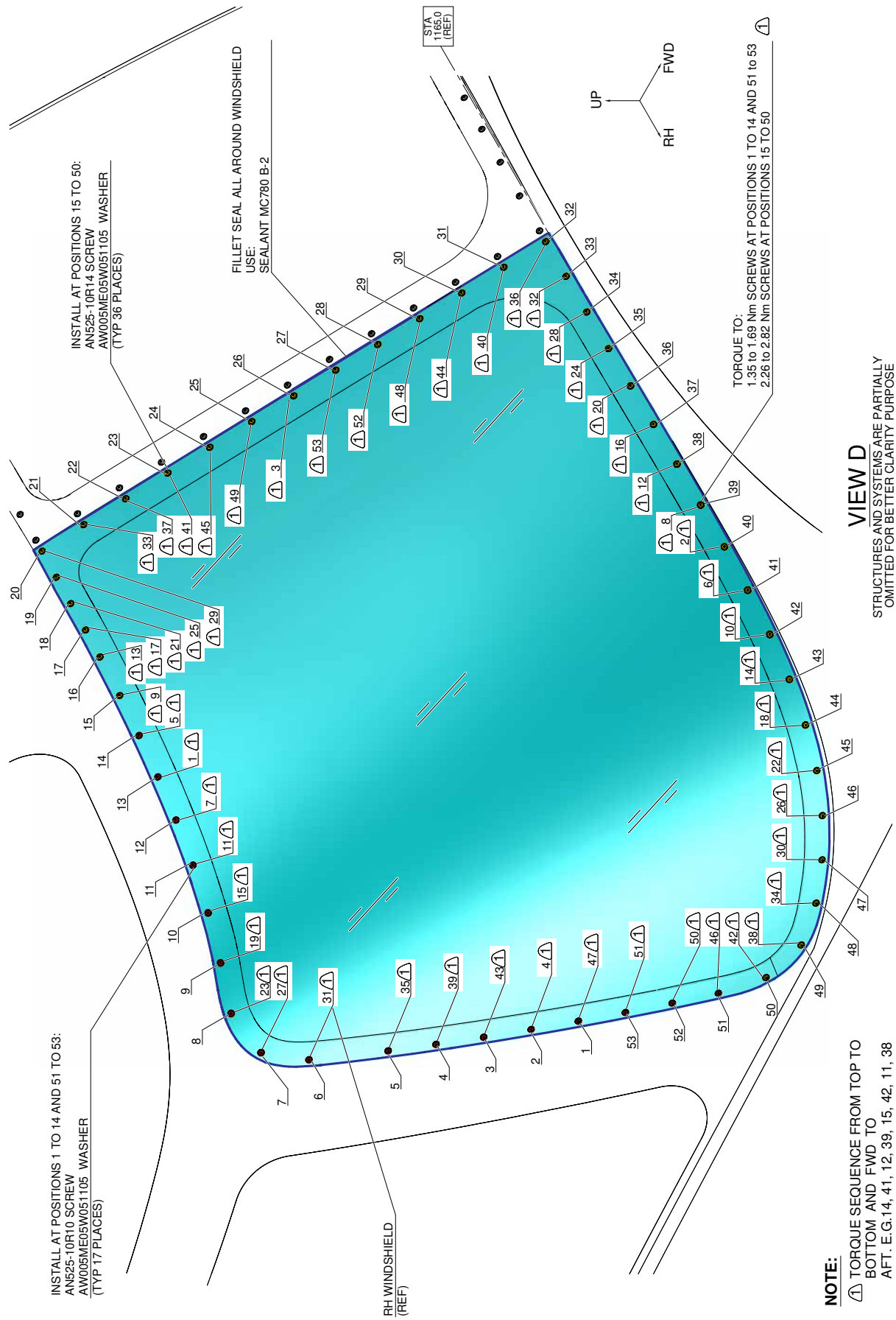


Figure 4

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