COCKPIT WINDSHIELD - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

1. General

A. This section gives the procedures for the removal/installation and deactivation/reactivation of the windshield.

B. The procedures are applicable to the removal and installation of Sierracin and PPG windshields. If it is necessary to replace one windshield (refer to S.B. 145-56-0007), also replace the other transparency if its manufacturer is different from the one that you have available. A mix of them is not permitted to prevent uncomfortable optical effects.

C. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	*DESCRIPTION*	*EFFECTIVITY*
56-10-01-000-801-A	COCKPIT WINDSHIELD - REMOVAL	PRE-MOD. S.B. 145-56-0006
56-10-01-400-801-A	COCKPIT WINDSHIELD - INSTALLATION	PRE-MOD. S.B. 145-56-0006
56-10-01-000-802-A	COCKPIT WINDSHIELD - REMOVAL	POST-MOD. S.B. 145-56-0006
56-10-01-400-802-A	COCKPIT WINDSHIELD - INSTALLATION	POST-MOD. S.B. 145-56-0006
56-10-01-040-801-A	WINDSHIELD HEATING SYSTEM - DEACTIVATION PROCEDURE	ALL
56-10-01-440-801-A	WINDSHIELD HEATING SYSTEM - REACTIVATION PROCEDURE	ALL

TASK 56-10-01-000-801-A
EFFECTIVITY: PRE-MOD. S.B. 145-56-0006

2. COCKPIT WINDSHIELD - REMOVAL

A. General

(1) This procedure gives the instructions to remove the windshield.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 25-12-01-000-801-A/400	COCKPIT LINING - REMOVAL
AMM TASK 25-12-07-000-801-A/400	GLARESHIELD COVERAGE - REMOVAL
AMM TASK 25-12-09-000-801-A/400	LH/RH COCKPIT LINING - REMOVAL
AMM TASK 30-41-03-000-801-A/400	ARM/BLADE ASSEMBLY - REMOVAL
AMM TASK 30-42-04-000-801-A/400	WINDSHIELD HEATING SENSORS - REMOVAL

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
223	223AZ	Forward Fuselage Section I
223	223BLW	Forward Fuselage Section I
224	224BRW	Forward Fuselage Section I
225	225FTC	Forward Fuselage Section I
225	225GTC	Forward Fuselage Section I

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Torque wrench	To remove the screws	
Commercially available	Acrylic spatula	To remove sealant	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Protective Gloves	For protection of technician's hands	1
Commercially available	Safety Goggles	For protection of technician's eyes	1

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
Commercially available	Latex-Base paper or equivalent	AR

(Continued)

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
ASTM-D-740	Methyl Ethyl Ketone - MEK	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
2	Do the task	Forward fuselage

I. Preparation

SUBTASK 841-002-A

(1) Make sure that the aircraft is safe for maintenance.

CAUTION: BE CAREFUL NOT TO SCRATCH THE WINDSHIELD TRANSPARENCY.

(2) Remove the glareshield panel (223AZ) from the instrument panel (AMM TASK 25-12-07-000-801-A/400).

(3) Remove the ceiling linings (225FTC and 225GTC) (AMM TASK 25-12-01-000-801-A/400).

(4) Remove the LH/RH cockpit linings (223BLW and 224BRW) (AMM TASK 25-12-09-000-801-A/400).

(5) Remove the windshield wiper arm/blade assembly (AMM TASK 30-41-03-000-801-A/400).

J. Removal (Figure 401) (Figure 402) (Figure 403)

SUBTASK 020-002-A

CAUTION: BE CAREFUL NOT TO SCRATCH THE WINDSHIELD TRANSPARENCY.

(1) Remove the nuts (2), screws (3), and washers (4) that attach the windshield wiper stop. Refer Figure 401, DET. D.

(2) Remove the windshield wiper stop.

(3) Mark the rubber trim (1) face which touches the windshield frame.

(4) Protect the inner and outer surfaces of the transparency with latex-base paper or equivalent.

(5) Remove the P (positive) and G (ground) terminals of the windshield heating system (AMM TASK 30-42-04-000-801-A/400).

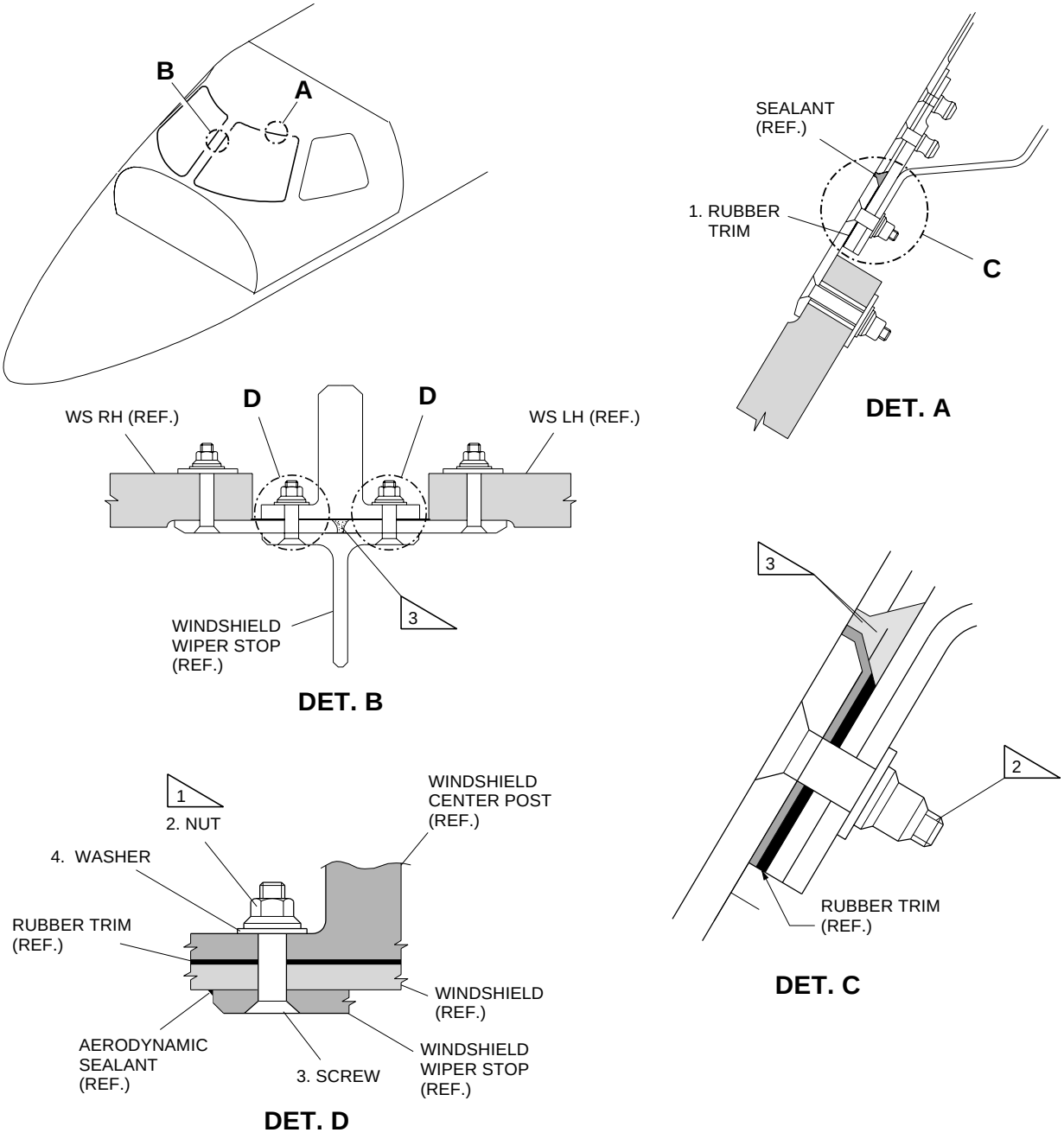
(6) Remove the nuts (2), screws (3), and washers (4) that attach the transparency frame to the airframe, in an opposite sequence to that shown in Figure 402.

NOTE:
- Screws of different lengths are used for attachment to the frame. Use adhesive tape for the identification of the screws with the sequence of numbers shown in Figure 402.
- Nutplates are used in the lower and outer edges of the windshield.

CAUTION: THE STEP BELOW MUST BE DONE CAREFULLY TO PREVENT DAMAGE TO THE SEALANT APPLIED TO THE WINDSHIELD FRAME CORNERS AND TO PREVENT SCRATCHES ON THE WINDSHIELD TRANSPARENCY. REFER TO FIGURE 403.

(7) Remove the windshield.

EFFECTIVITY: PRE-MOD. S.B. 145-56-0006
Windshield - Removal/Installation
Figure 401



1 TORQUE:
2.26 TO 2.82 N.m (20 TO 25 lb.in) PLUS DRAG TORQUE OF 0.23 TO 2.04 N.m (2 TO 18 lb.in) FOR PRE−MOD SB 145−56−0002
4.52 TO 5.08 N.m (40 TO 45 lb.in) PLUS DRAG TORQUE OF 0.23 TO 2.04 N.m (2 TO 18 lb.in) FOR POST−MOD SB 145−56−0002

2 IF THE NUMBER OF THREAD FILLETS OF SCREWS IS MORE THAN 5, REPLACE THE WASHER WITH A THICKER ONE.

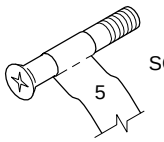
3 SEALANT PR2050 B−1/2 .

EM145AMM560009H.DGN

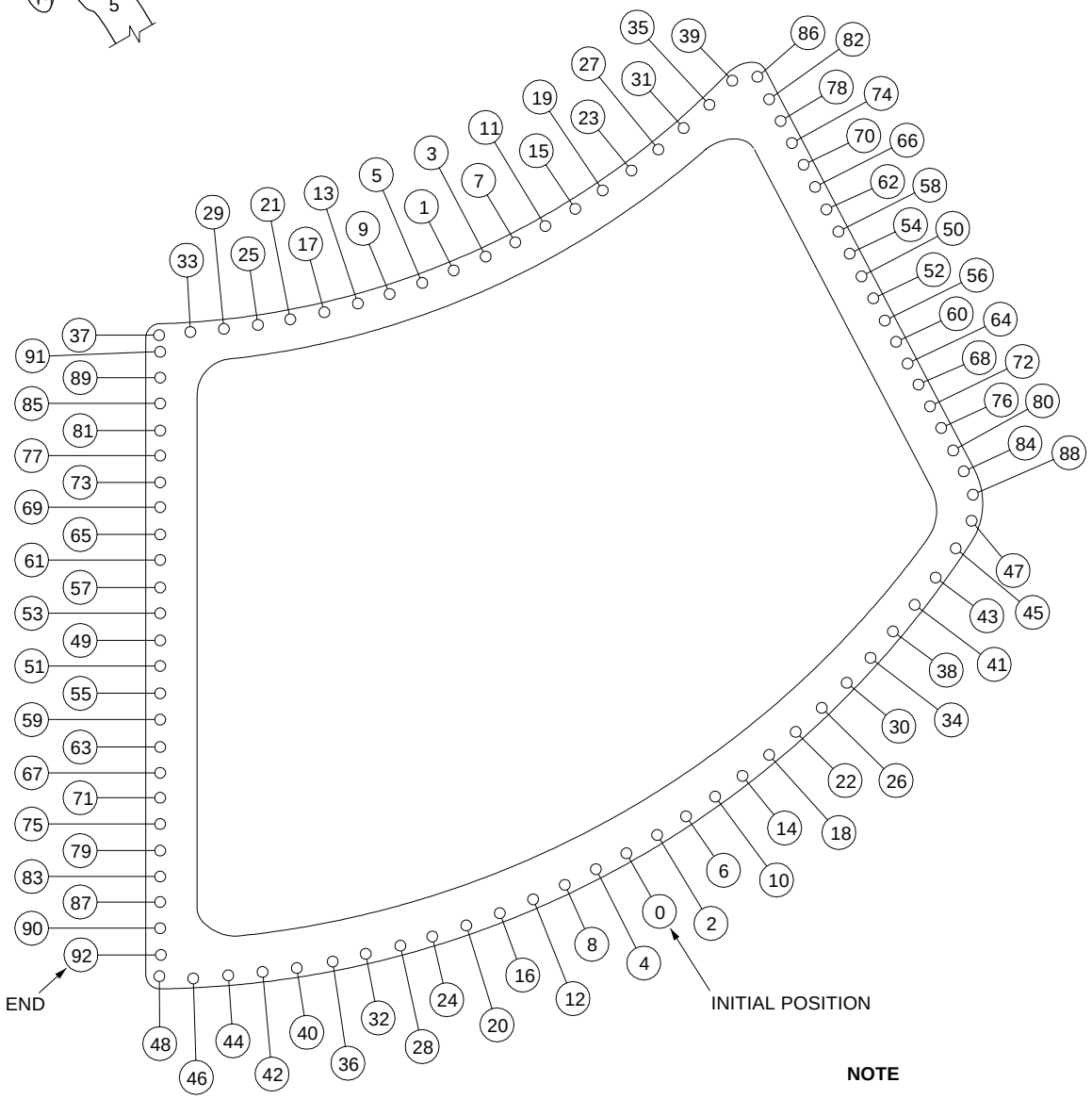
EFFECTIVITY: PRE-MOD. S.B. 145-56-0006

Sequence of Tightening of Windshield Attaching Screws
Figure 402

EXAMPLE OF IDENTIFICATION
OF SCREWS REMOVED, WITH THE
TIGHTENING SEQUENCE NUMBER



SCREWS No. 5

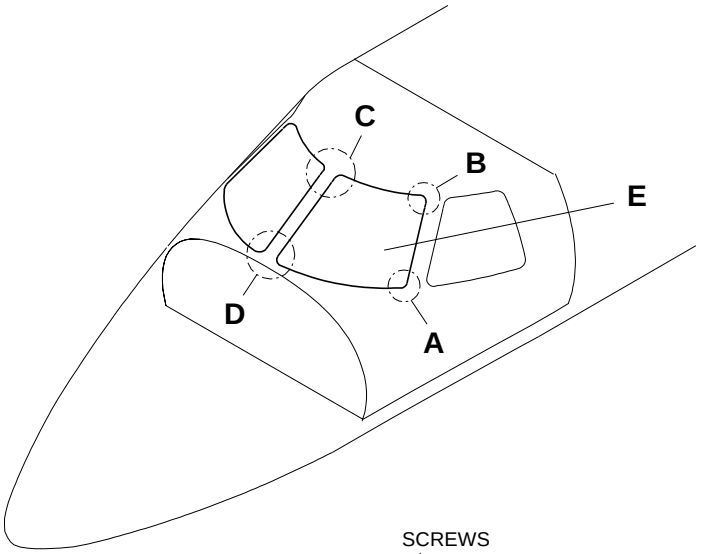


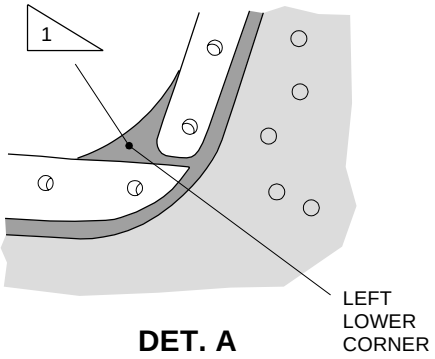
NOTE

IF A SCREW IS DAMAGED DURING
THE REMOVAL, REPLACE IT.

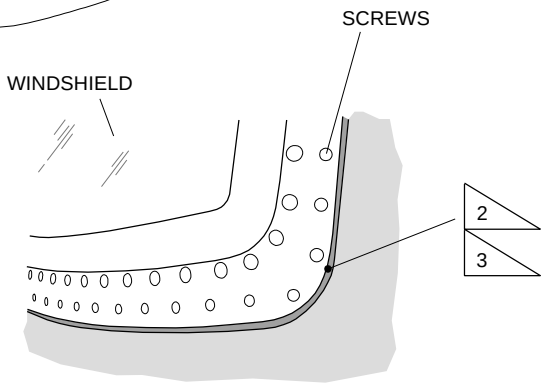
EM145AMM560007B.DGN

EFFECTIVITY: PRE-MOD. S.B. 145-56-0006
Windshield Corners
Figure 403

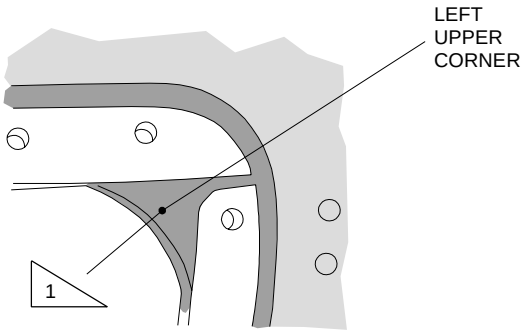




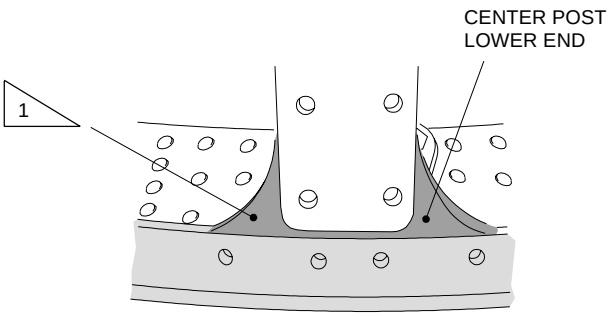
DET. A



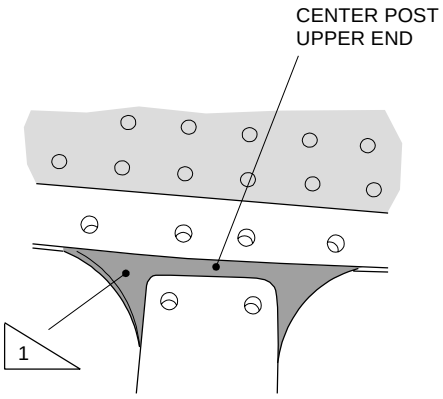
DET. E



DET. B



DET. D



DET. C

1 SEALANT PR1440 B2 OR B1/2.

2 APPLY SEALANT PR−2050 B−1/2.

3 ALONG THE WHOLE FRAME PERIMETER.

EM145AMM560065B.DGN

TASK 56-10-01-400-801-A
EFFECTIVITY: PRE-MOD. S.B. 145-56-0006

3. COCKPIT WINDSHIELD - INSTALLATION

A. General

(1) This procedure gives the instructions to install the windshield.

(2) If it is necessary to replace one windshield (refer to S.B. 145-56-0007), also replace the other transparency if its manufacturer is different from the one that you have available. A mix of them is not permitted to prevent uncomfortable optical effects.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 21-31-00-860-801-A/200	PROCEDURE TO PRESSURIZE THE AIRCRAFT FOR MAINTENANCE
AMM TASK 21-31-00-860-802-A/200	PROCEDURE TO DEPRESSURIZE THE AIRCRAFT FOR MAINTENANCE
AMM TASK 25-12-01-400-801-A/400	COCKPIT LINING - INSTALLATION
AMM TASK 25-12-07-400-801-A/400	GLARESHIELD COVERAGE - INSTALLATION
AMM TASK 25-12-09-400-801-A/400	LH/RH COCKPIT LINING - INSTALLATION
AMM TASK 30-41-00-700-801-A/500	WINDSHIELD WIPER SYSTEM - OPERATIONAL TEST
AMM TASK 30-41-03-400-801-A/400	ARM/BLADE ASSEMBLY - INSTALLATION
AMM TASK 30-41-04-200-801-A/600	COCKPIT WINDSHIELD RAIN REPELLENT COATING - INSPECTION
AMM TASK 30-42-00-700-801-A/500	WINDSHIELD HEATING - OPERATIONAL CHECK
AMM TASK 30-42-04-400-801-A/400	WINDSHIELD HEATING SENSORS - INSTALLATION
AMM TASK 56-10-01-100-801-A/700	COCKPIT WINDSHIELD - CLEANING
AMM TASK 56-10-01-200-801-A/600	COCKPIT WINDSHIELD - INSPECTION/CHECK
AMM TASK 56-10-02-300-801-A/800	RUBBER TRIM - REPAIR
AMM TASK 56-10-02-400-801-A/400	RUBBER TRIM - INSTALLATION
IPC 56-10-00	FLIGHT COMPARTMENT
S.B. 145-56-0007	-
S.B.145-56-0002	-
S.B.145-56-0008	-
SMRD 56-10-01-720-001-A00	-
SRM 51-20-01-PR	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Torque wrench	To tighten the screws	

(Continued)

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Acrylic spatula	To install sealant	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Protective Gloves	For protection of technician's hands	1
Commercially available	Safety Goggles	For protection of technician's eyes	1

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
MIL-S-8802, type II, class B2	Sealant PR1440 B2	AR
MIL-S-8802, type II, class B1/2	Sealant PR1440 B1/2	AR
MIL-PRF-81733, Type II - CLASS 1/2	Sealant PR-2050 B-1/2	AR
Commercially available	Adhesive Tape	AR
Commercially available	Aluminum Tape (AL Tape 425)	AR
ASTM D 2103	Polyethylene Film	AR
MEP 09-075	Corrosion-Inhibiting Compound (COR-BAN 27L)	AR

G. Expendable Parts

ITEM	*IPC REFERENCE (VENDOR REFERENCE)*	*QTY*
Windshield Parts	IPC 56-10-00	AR

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
2	Do the task	Forward fuselage

I. Preparation

SUBTASK 841-003-A

(1) Use an acrylic spatula and remove the old aerodynamic sealant content from the frame.

WARNING: BE CAREFUL WHEN YOU USE SOLVENTS BECAUSE THEY ARE A HEALTH AND FIRE HAZARD. USE SAFETY GOGGLES AND PROTECTIVE CLOTHING WHEN YOU HANDLE THEM. DO NOT BREATHE THEIR GASES AND WORK IN A WELL VENTILATED AREA.

(2) With a cloth soaked in MEK, clean the frame surface.

NOTE: Do not use MEK in the windshield transparency.

(3) Inspect the holes and the screws (3) for corrosion and general condition.

NOTE:
- If corrosion is detected on screws (3), they must be replaced.
- If corrosion is detected in the frame, contact Embraer Technical Support Department for limits and rework process.

(4) Refer to S.B.145-56-0008 and if necessary, inspect the anti-static drain coating (AMM TASK 56-10-01-200-801-A/600).

(5) Inspect the rubber trim (1) for general conditions.

NOTE: If it is damaged, repair it (AMM TASK 56-10-02-300-801-A/800) or replace it (AMM TASK 56-10-02-400-801-A/400).

(6) Clean the windshield (AMM TASK 56-10-01-100-801-A/700).

J. Installation (Figure 401) (Figure 402) (Figure 403)

SUBTASK 420-002-A

WARNING: BE CAREFUL WHEN YOU USE SEALANTS. FOR HAZARD, PROTECTION, AND HANDLING OF MATERIAL, REFER TO ITS MATERIAL SAFETY DATA SHEET.

(1) Make sure that there is no damage in the sealant applied to the windshield frame corners. Refer to (Figure 403).

NOTE: If the sealant is dry and shrunk, fill in with sealant PR1440 B2 or B1/2, in order to make it flush with the windshield attaching frame. If necessary, apply the sealant PR1440 B2 or B1/2 again (SRM 51-20-01-PR).

CAUTION: BE VERY CAREFUL TO PREVENT DAMAGE TO THE INTERNAL AND EXTERNAL SURFACES OF THE WINDSHIELD TRANSPARENCY.

(2) Put the windshield in the vertical position, held by the structure recess.

(3) Install the windshield heating sensors and P (positive) and G (ground) terminals from the terminal block of the windshield heating system (AMM TASK 30-42-04-400-801-A/400).

(4) Put the windshield on the aircraft structure. Be careful not to move the rubber trim out of position.

NOTE: Make sure that the transparency frame and aircraft structure holes are aligned. Guide pins can be used to make easier the positioning of the transparency/frame assembly on the aircraft structure.

WARNING: COR-BAN 27L IS TOXIC TO SKIN, EYES, AND RESPIRATORY INHALATION. USE PVC GLOVES AND EYE PROTECTION GOGGLES. USE ONLY IN WELL VENTILATED AREAS. OBEY THE MANUFACTURER'S HEALTH AND SAFETY INSTRUCTIONS.

(5) Install the screws (3), washers (4), and nuts (2) on the positions 37, 39, 46 and 47 to guarantee the perfect alignment of the transparency/frame assembly on the aircraft structure. The screws must be wet with COR-BAN 27L.

NOTE: Make sure of the correct screw part number related to its position as shown in IPC 56-10-00.

NOTE: Make sure that you correctly follow the tightening sequence of the windshield attaching screws. Refer to their identification you made with adhesive tape, during the removal operation.

(6) Make sure that the threads of the nuts (2) and screws (3) are fully engaged. The base of the screws head should not touch the surface.

(7) Use a torque wrench and turn the screws (3) to measure the drag torque.

(8) Make sure that the drag torque value is 0.23 to 2.04 N.m (2 to 18 lb.in). If the drag torque value is out of the limits, replace the nut (2) and repeat these steps.

(9) Add the drag torque value measured in the steps above to the standard torque to get the final torque.

NOTE:
- For aircraft PRE-MOD. S.B.145-56-0002, the standard torque is 2.26 to 2.82 N.m (20 to 25 lb.in).
- For aircraft POST-MOD. S.B.145-56-0002, the standard torque is 4.52 to 5.08 N.m (40 to 45 lb.in).

(10) Use a torque wrench to apply the final torque to the screws (3).

(11) Install the other screws (3), washers (4), and nuts (2). The screws must be wet with COR-BAN 27L.

NOTE: Make sure of the correct screw part number related to its position as shown in IPC 56-10-00.

NOTE: Make sure that you correctly follow the tightening sequence of the windshield attaching screws. Refer to their identification you made with adhesive tape, during the removal operation.

NOTE: The screws of the positions 49 and 51, on both sides, should only be installed during the windshield wiper stop installation.

(12) Make sure that the threads of the nuts (2) and screws (3) are fully engaged. The base of the screws head should not touch the surface.

(13) Use a torque wrench and turn the screws (3) to measure the drag torque.

(14) Make sure that the drag torque value is 0.23 to 2.04 N.m (2 to 18 lb.in). If the drag torque value is out of the limits, replace the nut (2) and repeat these steps.

(15) Add the drag torque value measured in the steps above to the standard torque to get the final torque.

NOTE:
- For aircraft PRE-MOD. S.B.145-56-0002, the standard torque is 2.26 to 2.82 N.m (20 to 25 lb.in).

- For aircraft POST-MOD. S.B.145-56-0002, the standard torque is 4.52 to 5.08 N.m (40 to 45 lb.in).

CAUTION: OBEY THE SCREWS TIGHTENING SEQUENCE SHOWN IN FIGURE 402.

(16) Use a torque wrench to apply the final torque to the screws (3).

(17) To install the windshield wiper stop (Figure 401), follow the steps below:

(a) If necessary, remove the old aerodynamic sealant and prepare the surface (SRM 51-20-01-PR).

WARNING: BE CAREFUL WHEN YOU USE SEALANTS. FOR HAZARD, PROTECTION, AND HANDLING OF MATERIAL, REFER TO ITS MATERIAL SAFETY DATA SHEET.

(b) It is necessary to apply sealant PR 2050 B-1/2 between the windshields, below the windshield wiper stop.

NOTE: The sealant curing time changes with the environmental conditions. Refer to (SRM 51-20-01-PR).

(c) Put the windshield wiper stop in position.

(d) Install the nuts (2), screws (3) and washers (4), and tighten them alternately.

(e) Make sure that the threads of the nuts (2) and screws (3) are fully engaged. The base of the screws head should not touch the surface.

(f) Use a torque wrench and turn the screws (3) to measure the drag torque.

(g) Make sure that the drag torque value is 0.23 to 2.04 N.m (2 to 18 lb.in). If the drag torque value is out of the limits, replace the nut (2) and repeat these steps.

(h) Add the drag torque value measured above to the standard torque to get the final torque.

NOTE:
- For aircraft PRE-MOD. S.B.145-56-0002, the standard torque is 2.26 to 2.82 N.m (20 to 25 lb.in).
- For aircraft POST-MOD. S.B.145-56-0002, the standard torque is 4.52 to 5.08 N.m (40 to 45 lb.in).

(i) Use a torque wrench to apply the final torque to the screws (3).

CAUTION: OBEY THE SCREWS TIGHTENING SEQUENCE SHOWN IN FIGURE 402.

(18) Obey the same tightening order in (Figure 402) and apply the final torque to the windshield attaching screws again.

(19) Apply the aerodynamic sealant PR 2050 B-1/2 between the transparency and the aircraft structure. Refer to SRM 51-20-01-PR. There are different methods to accelerate the sealant curing time, as shown below. Use the applicable procedure as necessary.

(a) Acceleration of sealant curing time with heating:

1 Allow the sealant to cure for one hour.

CAUTION: THE TEMPERATURE MUST NOT BE HIGHER THAN 55°C (131°F).

2 Heat the area which received the sealant.

(b) Application of aluminum tape after the tack-free time.

NOTE: This procedure must only be done when a faster aircraft clearance is necessary.

1 You can accelerate the sealant curing time as indicated in paragraph (b).

2 After the sealant is tack-free, apply the aluminum tape.

NOTE: You can operate the aircraft immediately after the aluminum tape application.

3 Remove the aluminum tape after 150 hours.

(c) Application of polyethylene film and aluminum tape.

1 Apply a polyethylene film over the sealant.

2 Apply the aluminum tape.

NOTE: You can operate the aircraft immediately after the aluminum tape application.

3 Remove the aluminum tape after 10 days.

(d) Alternative procedure (application of hand cream and aluminum tape).

1 Allow the sealant to cure for 30 minutes.

2 Apply 50% of hand cream with 50% of water to the surface of the newly applied sealant.

3 Apply speed tape (aluminum tape/polyethylene film combination) directly on the sealant. The inner edge of the speed tape must be located from 6.35 mm to 12.7 mm (0.25 to 0.50 in) on the glass faceply surface.

4 You can remove the speed tape after 150 hours of additional cure time.

NOTE:
- After you applied the speed tape, the aircraft can go back to usual operations.
- The speed tape must stay on the repaired sealant for a period of 150 hours before you remove it.

K. Follow-on

SUBTASK 842-002-A

CAUTION: AFTER THE AIRCRAFT CABIN PRESSURIZATION, DO A RETORQUE ON THE WINDSHIELD. THIS RETORQUE NEED TO BE ACCOMPLISHED AFTER THE AIRCRAFT CABIN PRESSURIZATION OR BEFORE 100FH.

(1) Pressurize the aircraft cabin (AMM TASK 21-31-00-860-801-A/200).

(2) Make sure that there is no air leakage through the windshield sealed contour.

(3) Depressurize the aircraft cabin (AMM TASK 21-31-00-860-802-A/200).

(4) Obey the same tightening order in (Figure 402) and tighten the windshield attaching screws (3) with the torque values shown below.

NOTE:
- For aircraft PRE-MOD. S.B.145-56-0002, tighten the screws to 4.29 N.m (38 lb.in).
- For aircraft POST-MOD. S.B.145-56-0002, tighten the screws to 6.55 N.m (58 lb.in).
- The windshield attaching screws must be inspected according to SMRD 56-10-01-720-001-A00.

(5) Do a test of the windshield heating system (AMM TASK 30-42-00-700-801-A/500).

(6) For AIRCRAFT WITH REPELLENT COATING INSTALLED, do an inspection/check of the windshield rain repellent coating (RRC) (AMM TASK 30-41-04-200-801-A/600).

(7) Install the windshield wiper arm/blade assembly (AMM TASK 30-41-03-400-801-A/400).

(8) Do an adjustment/test of the windshield wiper system (AMM TASK 30-41-00-700-801-A/500).

(9) Install the LH/RH cockpit linings (223BLW and 224BRW) (AMM TASK 25-12-09-400-801-A/400).

(10) Install the ceiling linings (225FTC and 225GTC) (AMM TASK 25-12-01-400-801-A/400).

(11) Install the glareshield panel (223AZ) to the instrument panel (AMM TASK 25-12-07-400-801-A/400).

(12) Clean the cockpit windshield (AMM TASK 56-10-01-100-801-A/700).

(13) Put the aircraft back to its initial condition.

TASK 56-10-01-000-802-A
EFFECTIVITY: POST-MOD. S.B. 145-56-0006

4. COCKPIT WINDSHIELD - REMOVAL

A. General

(1) This procedure gives the instructions to remove the windshield.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 30-41-03-000-801-A/400	ARM/BLADE ASSEMBLY - REMOVAL
AMM TASK 30-42-04-000-801-A/400	WINDSHIELD HEATING SENSORS - REMOVAL

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Torque wrench	To remove the screws	
Commercially available	Acrylic spatula	To remove sealant	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Protective Gloves	For protection of technician's hands	1
Commercially available	Safety Goggles	For protection of technician's eyes	1

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
Commercially available	Latex-Base paper or equivalent	AR
ASTM-D-740	Methyl Ethyl Ketone - MEK	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Forward fuselage

I. Preparation

SUBTASK 841-004-A

(1) Make sure that the aircraft is safe for maintenance.

(2) Remove the windshield wiper arm/blade assembly (AMM TASK 30-41-03-000-801-A/400).

J. Removal (Figure 404) (Figure 405) (Figure 406)

SUBTASK 020-003-A

CAUTION: BE CAREFUL NOT TO SCRATCH THE WINDSHIELD TRANSPARENCY.

(1) Remove the screws (2) that attach the windshield wiper stop. Refer Figure 404, DET. D.

(2) Remove the windshield wiper stop.

(3) Mark the rubber trim face (1) which touches the windshield frame.

(4) Protect the inner and outer surfaces of the transparency with latex-base paper or equivalent.

(5) Remove the P (positive) and G (ground) terminals of the windshield heating system (AMM TASK 30-42-04-000-801-A/400).

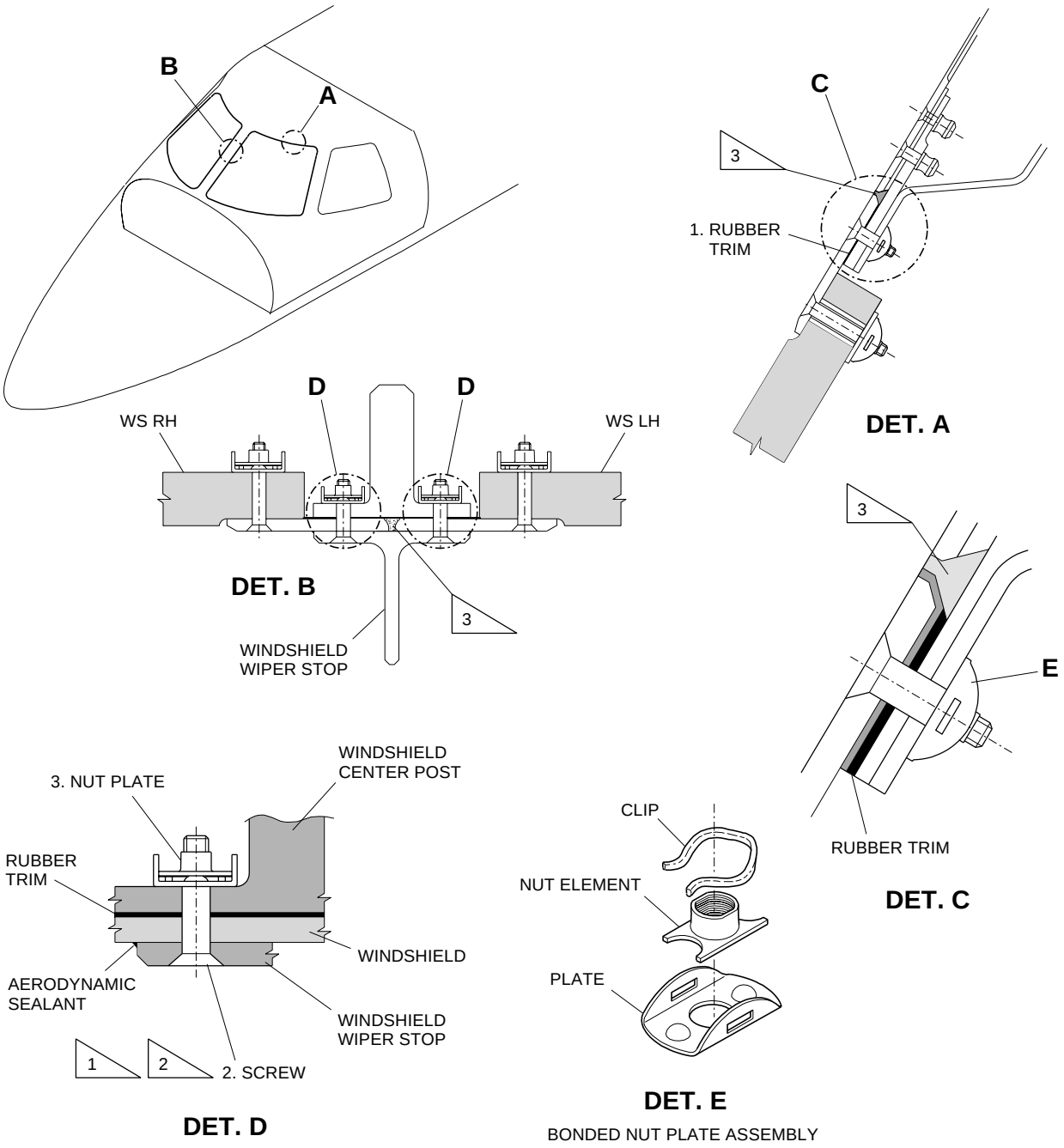
(6) Remove the screw (2) that attach the transparency frame to the airframe, in an opposite sequence to that shown in Figure 405.

NOTE:
- Screws of different lengths are used for attachment to the frame. Use adhesive tape for the identification of the screws with the sequence of numbers shown in Figure 405.
- Nutplates are used in the lower and outer edges of the windshield.

CAUTION: THE STEP BELOW MUST BE DONE CAREFULLY TO PREVENT DAMAGE TO THE SEALANT APPLIED TO THE WINDSHIELD FRAME CORNERS AND TO PREVENT SCRATCHES ON THE WINDSHIELD TRANSPARENCY. REFER TO FIGURE 406.

(7) Remove the windshield.

EFFECTIVITY: POST-MOD. S.B. 145-56-0006
Windshield - Removal/Installation
Figure 404



1 APPLY INITIAL TORQUE OF TORQUE: 5.08 − 5.65 N.m (45 − 50 lb.in) TO ALL THE SCREWS ANDTHEN APPLY THE FINAL TORQUE

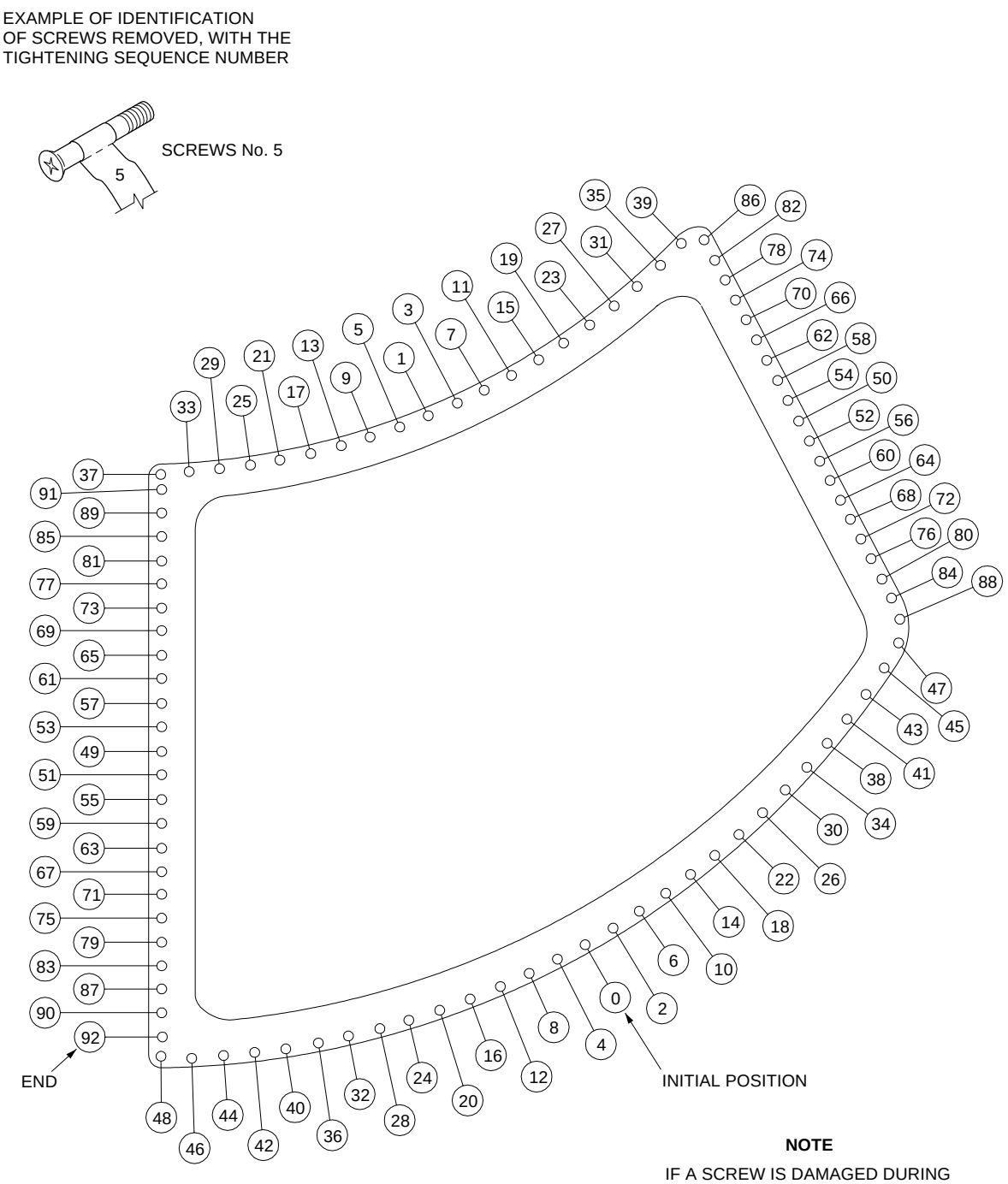
2 APPLY FINAL TORQUE OF 6.78 − 7.34 N.m (60 − 65 lb.in) TO THE SCREWS.

3 SEALANT PR−2050 B−1/2.

EM145AMM560036H.DGN

EFFECTIVITY: POST-MOD. S.B. 145-56-0006

Sequence of Tightening of Windshield Attaching Screws
Figure 405

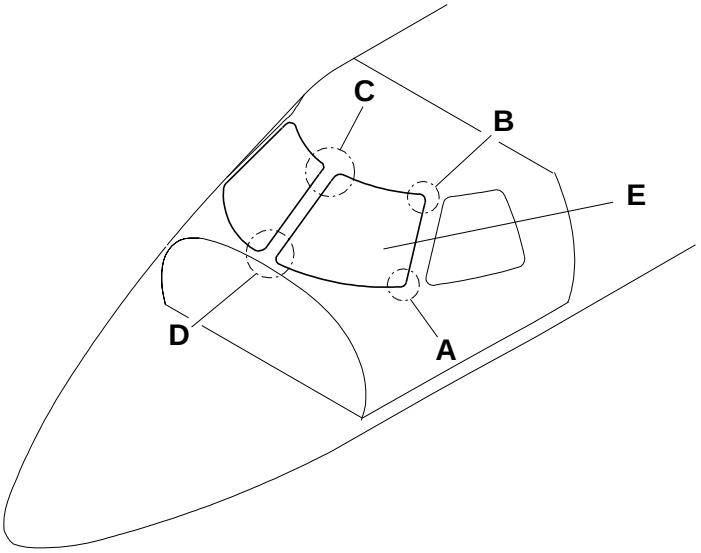


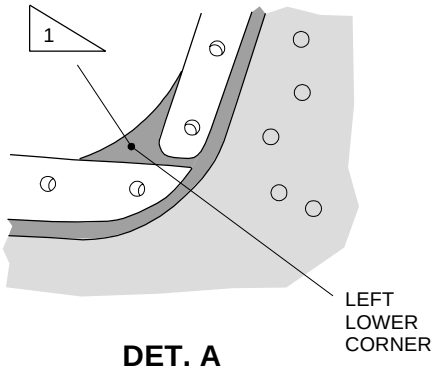
NOTE

IF A SCREW IS DAMAGED DURING
THE REMOVAL, REPLACE IT.

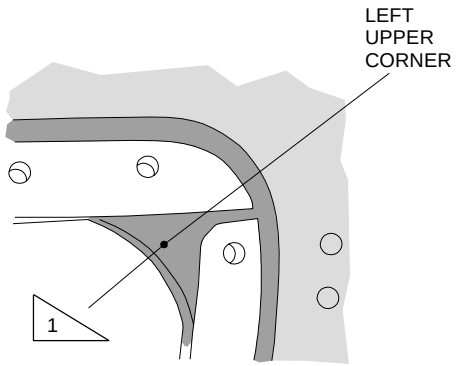
EM145AMM560037B.DGN

EFFECTIVITY: POST-MOD. S.B. 145-56-0006
Windshield Corners
Figure 406

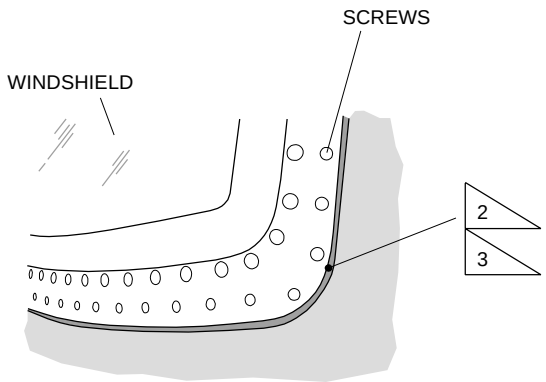




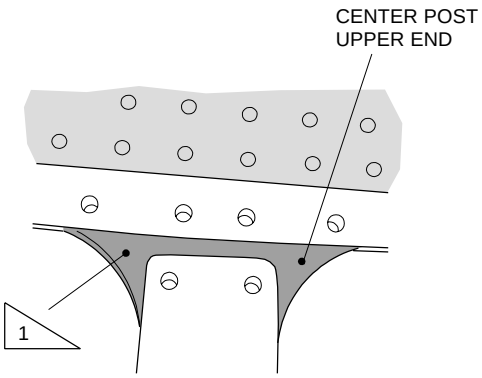
DET. A



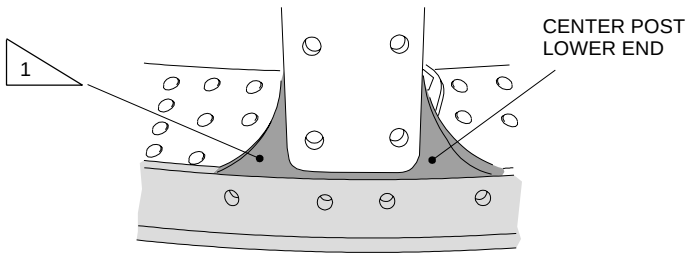
DET. B



DET. E



DET. C



DET. D

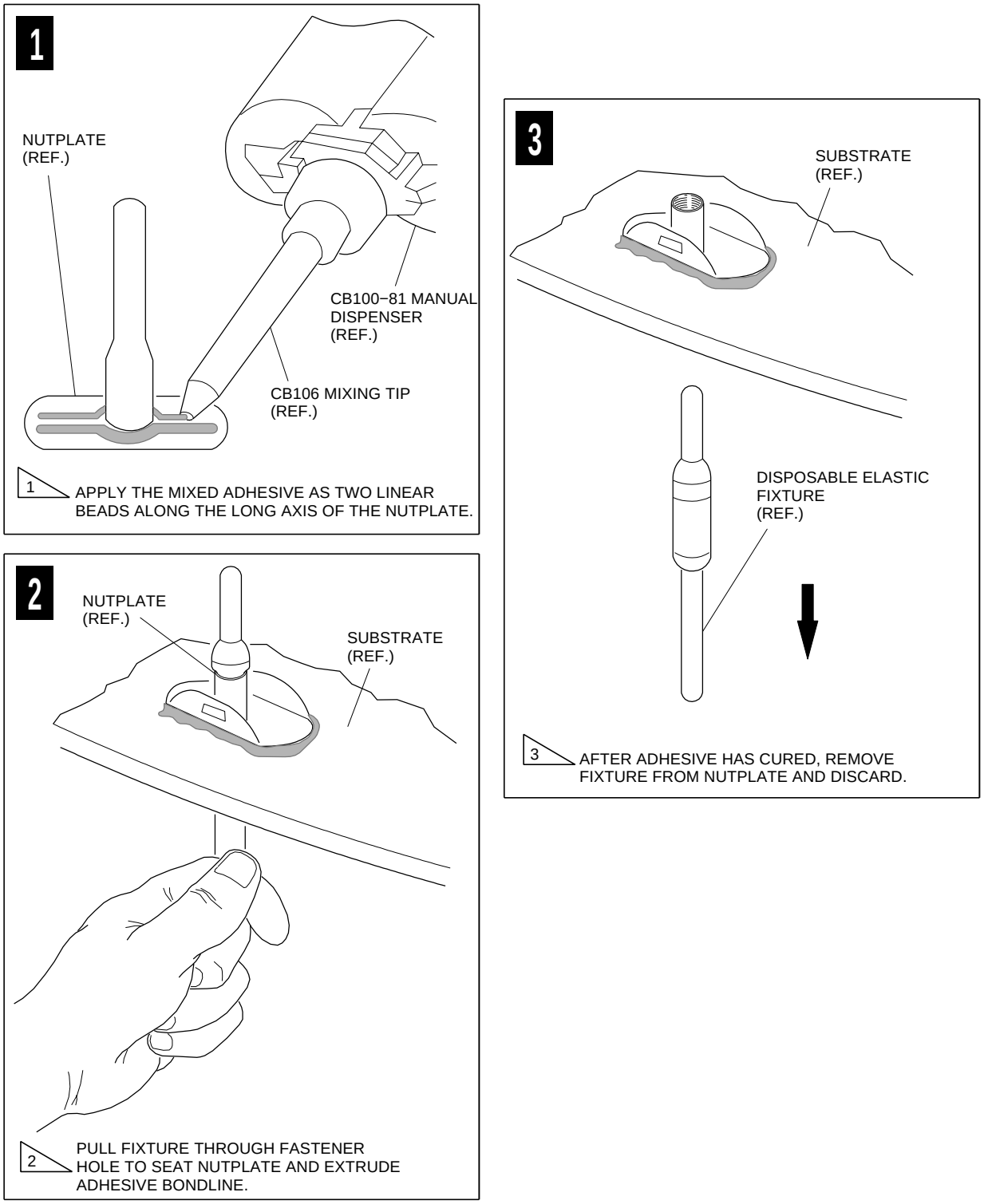
1 SEALANT PR1440 B2 OR B1/2.

2 APPLY SEALANT PR−2050 B−1/2.

3 ALONG THE WHOLE FRAME PERIMETER.

EM145AMM560067B.DGN

EFFECTIVITY: POST-MOD. S.B. 145-56-0006
Bonded Nutplate Installation
Figure 407



EM145AMM560087B.DGN

TASK 56-10-01-400-802-A
EFFECTIVITY: POST-MOD. S.B. 145-56-0006

5. COCKPIT WINDSHIELD - INSTALLATION

A. General

(1) This procedure gives the instructions to install the windshield.

(2) If it is necessary that you replace the windshields, replace both the LH/RH Sierracin and PPG windshields. Do not mix them in order to prevent uncomfortable optical effects.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 21-31-00-860-801-A/200	PROCEDURE TO PRESSURIZE THE AIRCRAFT FOR MAINTENANCE
AMM TASK 21-31-00-860-802-A/200	PROCEDURE TO DEPRESSURIZE THE AIRCRAFT FOR MAINTENANCE
AMM TASK 30-41-00-700-801-A/500	WINDSHIELD WIPER SYSTEM - OPERATIONAL TEST
AMM TASK 30-41-03-400-801-A/400	ARM/BLADE ASSEMBLY - INSTALLATION
AMM TASK 30-41-04-200-801-A/600	COCKPIT WINDSHIELD RAIN REPELLENT COATING - INSPECTION
AMM TASK 30-42-00-700-801-A/500	WINDSHIELD HEATING - OPERATIONAL CHECK
AMM TASK 30-42-04-400-801-A/400	WINDSHIELD HEATING SENSORS - INSTALLATION
AMM TASK 56-10-01-100-801-A/700	COCKPIT WINDSHIELD - CLEANING
AMM TASK 56-10-01-200-801-A/600	COCKPIT WINDSHIELD - INSPECTION/CHECK
AMM TASK 56-10-02-300-801-A/800	RUBBER TRIM - REPAIR
AMM TASK 56-10-02-400-801-A/400	RUBBER TRIM - INSTALLATION
IPC 56-10-00	FLIGHT COMPARTMENT
S.B.145-56-0008	-
SMRD 56-10-01-720-001-A01	-
SRM 51-20-01-PR	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Torque wrench	To tighten the screws	
Commercially available	Acrylic spatula	To install sealant	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Click Bond CB100-81 Manual Dispenser	To apply adhesive components	1
Commercially available	Click Bond CB106 Mixing Tip	To apply adhesive components	1
Commercially available	Protective Gloves	For protection of technicians hands	1
Commercially available	Safety Goggles	For protection of technicians eyes	1

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
MIL-S-8802, type II, class B2	Sealant PR1440 B2	AR
MIL-S-8802, type II, class B1/2	Sealant PR1440 B1/2	AR
MIL-PRF-81733, Type II - CLASS 1/2	Sealant PR-2050 B-1/2	AR
Commercially available	Adhesive Tape	AR
Commercially available	Aluminum Tape (AL Tape 425)	AR
ASTM D 2103	Polyethylene Film	AR
MEP 09-075	Corrosion-Inhibiting Compound (COR-BAN 27L)	AR
CB200-40	Click Bond CB200 Acrylic Structural Adhesive	AR

G. Expendable Parts

ITEM	*IPC REFERENCE (VENDOR REFERENCE)*	*QTY*
Windshield Parts	IPC 56-10-00	AR

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Forward fuselage

I. Preparation

SUBTASK 841-005-A

(1) Use an acrylic spatula and remove the old aerodynamic sealant content from the frame.

(2) If it is necessary to remove a bonded nutplate (3), use an acrylic spatula. Refer to Figure 404, DET. E.

WARNING: BE CAREFUL WHEN YOU USE SOLVENTS BECAUSE THEY ARE A HEALTH AND FIRE HAZARD. USE SAFETY GOGGLES AND PROTECTIVE CLOTHING WHEN YOU HANDLE THEM. DO NOT BREATHE THEIR GASES AND WORK IN A WELL VENTILATED AREA.

(3) With a cloth soaked in MEK, clean the frame surface.

NOTE: Do not use MEK in the windshield transparency.

(4) Inspect the holes and the screws (2) for corrosion and general condition.

NOTE:
- If corrosion is detected on screws (2) , they must be replaced.
- If corrosion is detected in the frame, contact Embraer Technical Support Department for limits and rework process.

(5) Refer to S.B.145-56-0008 and if necessary, inspect the anti-static drain coating (AMM TASK 56-10-01-200-801-A/600).

(6) Inspect the rubber trim (1) for general condition.

NOTE: If it is damaged, repair it (AMM TASK 56-10-02-300-801-A/800) or replace it (AMM TASK 56-10-02-400-801-A/400).

(7) Clean the windshield (AMM TASK 56-10-01-100-801-A/700).

J. Installation Figure 404 (Figure 405) (Figure 406) (Figure 407)

SUBTASK 420-003-A

WARNING: BE CAREFUL WHEN YOU USE SEALANTS. FOR HAZARD, PROTECTION, AND HANDLING OF MATERIAL, REFER TO ITS MATERIAL SAFETY DATA SHEET.

(1) Make sure that there is no damage in the sealant applied to the windshield frame corners. Refer to (Figure 406).

NOTE: If the sealant is dry and shrunk, fill in with sealant PR1440 B2 or B1/2, in order to make it flush with the windshield attaching frame. If necessary, apply the sealant PR1440 B2 or B1/2 again (SRM 51-20-01-PR).

(2) If it is necessary to install a new bonded nutplate (3), do as follows:

NOTE: Make sure of the correct nutplate part number as shown in the IPC 56-10-00.

(a) Apply the mixed adhesive as two linear beads along the long axis of the nutplate base as shown in the (Figure 407), step 1.

NOTE:
- One bead must be put around each side of the installation fixture. The amount of material in the beads must be controlled so that a small and equal amount of material will come out when the nutplate is pulled into position against the structure as shown in (Figure 407), step 2.

- After the application of the adhesive on nutplate immediately pull the nutplate into position against the structure. The nutplate must be put in position in 2 minutes maximum.

(b) Carefully pull the disposable elastic fixture to hold the nutplate while the adhesive cures. Refer to (Figure 407), step 2.

NOTE: The CB200 Adhesive total curing time is 24 hours at 22 °C (72 °F). After 2 hours the adhesive achieves 90% of ultimate strength.

(c) After 2 hours of curing time, pull the disposable elastic fixture to remove it from the nutplate. Refer to Figure 407, step 3.

(d) Touch up the existing epoxy primer on the adjacent region of the nutplates.

CAUTION: BE VERY CAREFUL TO PREVENT DAMAGE TO THE INTERNAL AND EXTERNAL SURFACES OF THE WINDSHIELD TRANSPARENCY.

(3) Put the windshield in the vertical position, held by the structure recess.

(4) Install the P (positive) and G (ground) terminals of the windshield heating system (AMM TASK 30-42-04-400-801-A/400).

(5) Put the windshield on the aircraft structure. Be careful not to move the rubber trim out of position.

NOTE: Make sure that the transparency frame and aircraft structure holes are aligned. Guide pins can be used to make easier the positioning of the transparency/ frame assembly on the aircraft structure.

WARNING: COR-BAN 27L IS TOXIC TO SKIN, EYES, AND RESPIRATORY INHALATION. USE PVC GLOVES AND EYE PROTECTION GOGGLES. USE ONLY IN WELL VENTILATED AREAS. OBEY THE MANUFACTURER'S HEALTH AND SAFETY INSTRUCTIONS.

(6) Install the screws (2) on the positions 37, 39, 46 and 47 to guarantee the perfect alignment of the transparency/frame assembly on the aircraft structure. The screws must be wet with COR-BAN 27 L.

NOTE: Make sure of the correct screw part number related to its position as shown in IPC 56-10-00.

NOTE: Make sure that you correctly follow the tightening sequence of the windshield attaching screws. Refer to their identification you made with adhesive tape, during the removal operation.

(7) Make sure that the threads of the nutplates (3) and screws (2) are fully engaged. The base of the screws head should not touch the surface.

(8) Use a torque wrench and turn the screws (2) to measure the drag torque.

(9) Make sure that the drag torque value is 0.23 to 2.04 N.m (2 to 18 lb.in). If the drag torque value is out of the limits, replace the nutplate (3) and repeat these steps.

NOTE: This value will be used to get the final torque value.

(10) Use a torque wrench to apply the initial torque of 4.52 to 5.08 N.m (40 to 45 lbf.in) to the screws (2).

(11) Install the other screws (2). The screws must be wet with COR-BAN 27L.

NOTE: Make sure of the correct screw part number related to its position as shown in IPC 56-10-00.

NOTE: Make sure that you correctly follow the tightening sequence of the windshield attaching screws. Refer to their identification you made with adhesive tape, during the removal operation.

NOTE: The screws of the positions 49 and 51, on both sides, should only be installed during the windshield wiper stop installation.

(12) Make sure that the threads of the nutplates (3) and screws (2) are fully engaged. The base of the screws head should not touch the surface.

(13) Use a torque wrench and turn the screws (2) to measure the drag torque.

(14) Make sure that the drag torque value is 0.23 to 2.04 N.m (2 to 18 lb.in). If the drag torque value is out of the limits, replace the nutplate (3) and repeat these steps.

NOTE: This value will be used to get the final torque value.

(15) Use a torque wrench to apply the initial torque of 4.52 to 5.08 N.m (40 to 45 lbf.in) to the screws (2).

(16) To install the windshield wiper stop (Figure 404), follow the steps below:

(a) If necessary, remove the old aerodynamic sealant and prepare the surface (SRM 51-20-01-PR).

WARNING: BE CAREFUL WHEN YOU USE SEALANTS. FOR HAZARD, PROTECTION, AND HANDLING OF MATERIAL, REFER TO ITS MATERIAL SAFETY DATA SHEET.

(b) It is necessary to apply sealant PR 2050 B-1/2 between the windshields, below the windshield wiper stop.

NOTE: The sealant curing time changes with the environmental conditions. Refer to (SRM 51-20-01-PR).

(c) Put the windshield wiper stop in position.

(d) Install the screws (2), and tighten them alternately.

(e) Make sure that the threads of the nutplates (3) and screws (2) are fully engaged. The base of the screws head should not touch the surface.

(f) Use a torque wrench and turn the screws (2) to measure the drag torque.

(g) Make sure that the drag torque value is 0.23 to 2.04 N.m (2 to 18 lb.in). If the drag torque value is out of the limits, replace the nutplate (3) and repeat these steps.

NOTE: This value will be used to get the final torque value.

(h) Use a torque wrench to apply the initial torque of 4.52 to 5.08 N.m (40 to 45 lbf.in) to the screws (2).

(17) Add the drag torque value measured in the steps above to the standard torque of 6.78 to 7.34 N.m (60 to 65 lbf.in) to get the final torque.

CAUTION: OBEY THE SCREWS TIGHTENING SEQUENCE SHOWN IN FIGURE 405.

(18) Obey the same tightening order in (Figure 405) and apply the final torque to the windshield attaching screws (2).

(19) Apply the aerodynamic sealant PR 2050 B-1/2 between the transparency and the aircraft structure. Refer to SRM 51-20-01-PR. There are different methods to accelerate the sealant curing time, as shown below. Use the applicable procedure as necessary.

(a) Acceleration of sealant curing time with heating:

1 Allow the sealant to cure for one hour.

CAUTION: THE TEMPERATURE MUST NOT BE HIGHER THAN 55°C (131°F).

2 Heat the area which received the sealant.

(b) Application of aluminum tape after the tack-free time.

NOTE: This procedure must only be done when a faster aircraft clearance is necessary.

1 You can accelerate the sealant curing time as indicated in paragraph (b).

2 After the sealant is tack-free, apply the aluminum tape.

NOTE: You can operate the aircraft immediately after the aluminum tape application.

3 Remove the aluminum tape after 150 hours.

(c) Application of polyethylene film and aluminum tape.

1 Apply a polyethylene film over the sealant.

2 Apply the aluminum tape.

NOTE: You can operate the aircraft immediately after the aluminum tape application.

3 Remove the aluminum tape after 10 days.

(d) Alternative procedure (application of hand cream and aluminum tape).

1 Allow the sealant to cure for 30 minutes.

2 Apply 50% of hand cream with 50% of water to the surface of the newly applied sealant.

3 Apply speed tape (aluminum tape/polyethylene film combination) directly on the sealant. The inner edge of the speed tape must be located from 6.35 mm to 12.7 mm (0.25 to 0.50 in) on the glass faceply surface.

4 You can remove the speed tape after 150 hours of additional cure time.

NOTE:
- After you applied the speed tape, the aircraft can go back to ussual operations.
- The speed tape must stay on the repaired sealant for a period of 150 hours before you remove it.

K. Follow-on

SUBTASK 842-003-A

CAUTION: AFTER THE AIRCRAFT CABIN PRESSURIZATION , APPLY TORQUE AGAIN TO THE WINDSHIELD. DO THIS ACTION AFTER THE AIRCRAFT CABIN PRESSURIZATION OR BEFORE 100FH.

(1) Pressurize the aircraft cabin (AMM TASK 21-31-00-860-801-A/200).

(2) Make sure that there is no air leakage through the windshield sealed contour.

(3) Depressurize the aircraft cabin (AMM TASK 21-31-00-860-802-A/200).

(4) Obey the same tightening order in (Figure 405) and tighten the windshield attaching screws (2) to 8.81 N.m (78 lb.in).

NOTE: The windshield attaching screws must be inspected according to SMRD 56-10-01-720-001-A01. The first inspection of the windshield attaching screws after installation must be done at 500 FH.

(5) Do a test of the windshield heating system (AMM TASK 30-42-00-700-801-A/500).

(6) For AIRCRAFT WITH REPELLENT COATING INSTALLED, do an inspection/check of the windshield rain repellent coating (RRC) (AMM TASK 30-41-04-200-801-A/600).

(7) Install the windshield wiper arm/blade assembly (AMM TASK 30-41-03-400-801-A/400).

(8) Do an adjustment/test of the windshield wiper system (AMM TASK 30-41-00-700-801-A/500).

(9) Clean the cockpit windshield (AMM TASK 56-10-01-100-801-A/700).

(10) Put the aircraft back to its initial condition.

TASK 56-10-01-040-801-A
EFFECTIVITY: ALL

6. WINDSHIELD HEATING SYSTEM - DEACTIVATION PROCEDURE

A. General

(1) This task is applicable to item 56-10-01 Windshields of the DDPM.

(2) This task gives the procedure to deactivate the windshield heating system.

B. Zones and Accesses

Not Applicable

C. Tools and Equipment

Not Applicable

D. Auxiliary Items

Not Applicable

E. Consumable Materials

Not Applicable

F. Expandable Parts

Not Applicable

G. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	On the windshields

H. Deactivation Procedure

SUBTASK 040-002-A

(1) It is permitted to dispatch the aircraft with one windshield-window outer glass ply cracked if:

- Visibility through related window is acceptable,
- Vision is not impaired through remaining windows,
- Heat to related window is deactivated,
- Aircraft does not operate in known or forecast icing conditions,
- Repairs are made in one flight day.

(2) On the overhead circuit-breaker panel, pull and safety the WSHLD TEMP circuit breaker related to the cracked windshield and attach a DO-NOT-CLOSE tag to it.

(3) Write in the aircraft technical logbook that you did the Deactivation Procedure for the windshield heating system.

TASK 56-10-01-440-801-A
EFFECTIVITY: ALL

7. WINDSHIELD HEATING SYSTEM - REACTIVATION PROCEDURE

A. General

(1) This task is applicable to item 56-10-01 Windshields of the DDPM.

(2) This task gives the procedure to reactivate the windshield heating system.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 56-10-01-000-801-A/400	COCKPIT WINDSHIELD - REMOVAL
AMM TASK 56-10-01-000-802-A/400	COCKPIT WINDSHIELD - REMOVAL
AMM TASK 56-10-01-400-801-A/400	COCKPIT WINDSHIELD - INSTALLATION
AMM TASK 56-10-01-400-802-A/400	COCKPIT WINDSHIELD - INSTALLATION

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	On the windshields

I. Reactivation Procedure

SUBTASK 440-002-A

(1) Replace the cracked windshield by a new one (AMM TASK 56-10-01-000-801-A/400 and AMM TASK 56-10-01-400-801-A/400 or AMM TASK 56-10-01-000-802-A/400 and AMM TASK 56-10-01-400-802-A/400).

(2) On the overhead circuit breaker panel, remove the DO-NOT-CLOSE tag and push the WSHLD TEMP circuit breaker related to the replaced windshield.

(3) Write in the aircraft technical logbook that you did the Reactivation Procedure for the windshield heating system.