

GORE® SKYFLEX®
Aerospace Materials



F-16 APPLICATION GUIDE

Together, improving life



GORE® SKYFLEX® Aerospace Materials

Technical Orders

GORE® SKYFLEX® Aerospace Materials are approved for use in the following F-16 Technical Orders:

- TO 1-1-691: Aircraft Weapons System Cleaning and Corrosion Control
- 1F-16C-2-00GV-00-1: General Vehicle Organizational Maintenance
- 1F-16CJ-4-28: IPB Fuel Systems
- 6J14-2-39-2: 370-Gallon External Fuel Tank

This document is intended to be used as a guide only. Procedures in the current version of the Technical Orders supersede examples presented in this guide.

Extract from T.O. 1F-16C-2-00GV-00-1 for GORE® SKYFLEX® Aerospace Tapes, 100 and 110 Series

SKYFLEX Sealant Environmental Tape (Non-Fuel, Non-Hydraulic Areas). This material may be used as an alternate to AMS-3276 or AMS-3277 (formerly MIL-S-83430) when installing new access door or panel sealing. SKYFLEX materials give the advantages of easy installation without cure time and cleanup problems. SKYFLEX materials should only be used on access doors and panels that are retained with threaded fasteners. SKYFLEX materials are not authorized on access doors and panels retained with push button latches. SKYFLEX environmental tape is non-curing and self-adhering with a peel and stick adhesive. Use on panels and doors not containing fuel or hydraulic residue.¹

Extract from T.O. 1F-16C-2-00GV-00-1 for GORE® SKYFLEX® Aerospace Tapes, 720 Series

SKYFLEX “OP” Environmental Sealant Tape (Fuel/Hydraulic Areas) is a non-hazardous and reusable alternative to form-in-place Polysulfide sealant. Material consists of a layer of Polytetrafluoroethylene (ePTFE) sealant tape placed between the mating surfaces of an access cover and aircraft sill structure. “OP” sealant tape is designed for use in applications

exposed to fuel and hydraulic fluid. The tape is bonded to the sill or access cover surface and is of sufficient thickness to provide a positive seal. SKYFLEX “OP” sealant tape requires no cure time.²

NOTE: Since the publication of this T.O., “OP” environmental sealant tape has been supplanted by GORE® SKYFLEX® Aerospace Tapes, 720 Series available under part numbers as presented.

Fewer Steps with No Curing Time

GORE® SKYFLEX® Aerospace Materials require only a few steps to apply for easy installation. They do not require any curing or cleanup, significantly reducing installation time (Table 1). Once the material is applied and the panels are fitted, the aircraft is ready for operation.

Figure 1 indicates suggested areas for application. For more information or assistance in selecting the right materials for your specific application, please contact a Gore representative.

Table 1: Installation Time for GORE® SKYFLEX® Aerospace Materials

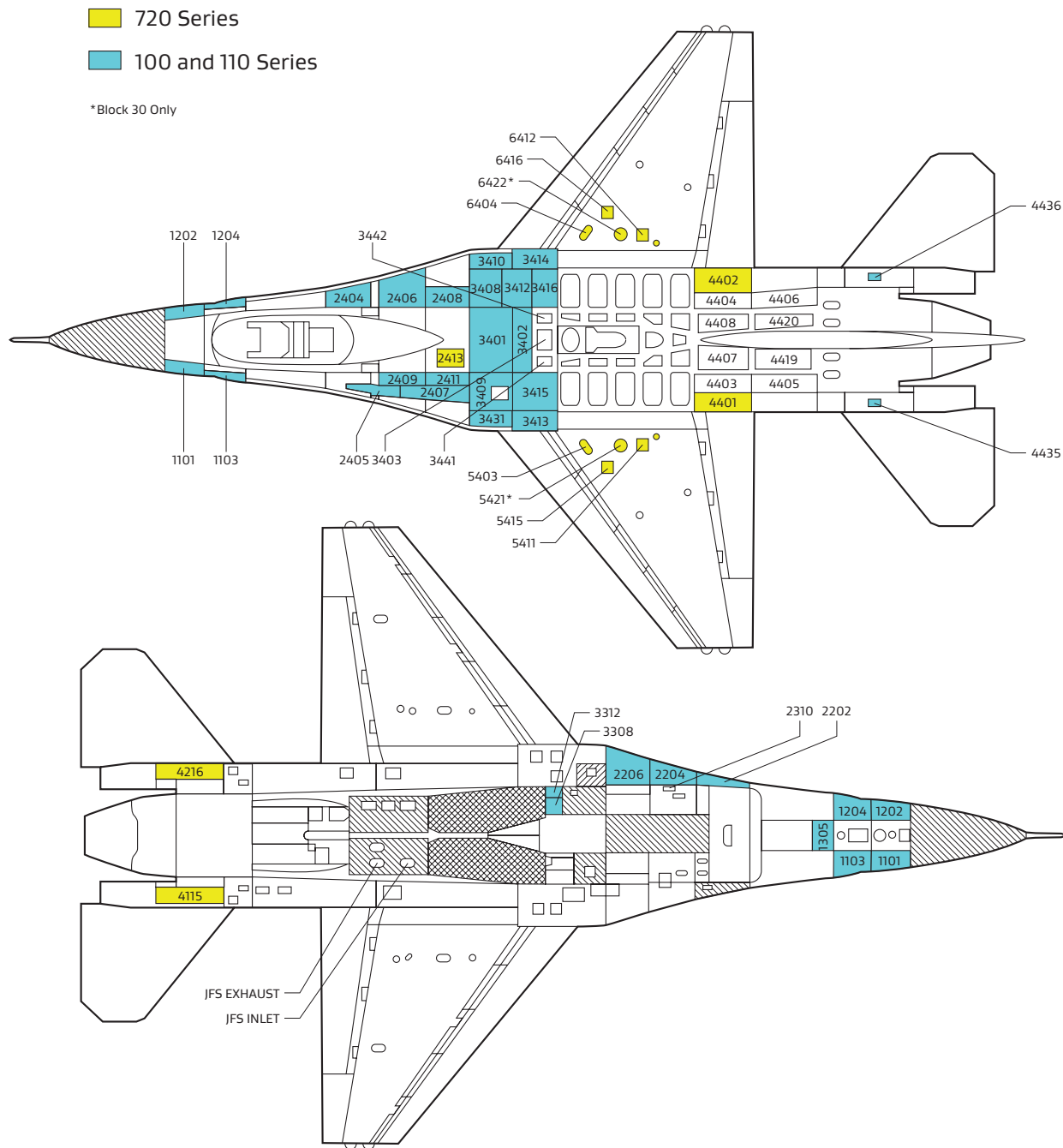
F-16 Panel Number	National/NATO Stock Number	Approximate Installation Time (minutes)
2406, 2408	5330-01-368-7208	10
2407, 2409, 2411	5330-01-368-7208	20
4115	5330- 01-618-9581	45
4216	5330- 01-618-9581	45
4401	5330- 01-557-4114	5
4402	5330- 01-557-4114	5
Total Panels: 9		130

1. Air Force, Technical Order, 1F-16C-2-00GV-00-1, 2006, s. 2.10.2, p. 2-42

2. Air Force, Technical Order, 1F-16C-2-00GV-00-1, s. 2.10.3, p. 2-44

Figure 1: Panel Identification for GORE® SKYFLEX® Aerospace Materials

The 100 and 110 Series of GORE® SKYFLEX® Aerospace Tapes should be used on panels that require environmental sealing. The 720 Series of GORE® SKYFLEX® Aerospace Gaskets should be used on fuel system panels. Due to exposure to hydraulic fluid from control surface actuators, the 720 Series of Gore's tape is also recommended for use on non-fuel system panels.



GORE® SKYFLEX® Aerospace Materials

Examples: 110 Series of Gore's Tapes

Figures 2 and 3 show GORE® SKYFLEX® Aerospace Tapes, part number GSC-21-95241-011 (NSN 5330-01-368-7208) installed on aircraft panels 2406 and 2408. The fastener holes were pre-punched, and the installation was completed. The approximate installation time is 20 minutes, and multiple open/close cycles are possible after installation.

Panels 2407, 2409, and 2411 were cleaned prior to installation. Gore's tapes, part number GSC-21-95241-011 (NSN 5330-01-368-7208) was used to seal the panels (Figure 4). The approximate cleaning and installation time is 20 minutes for all of the panels.

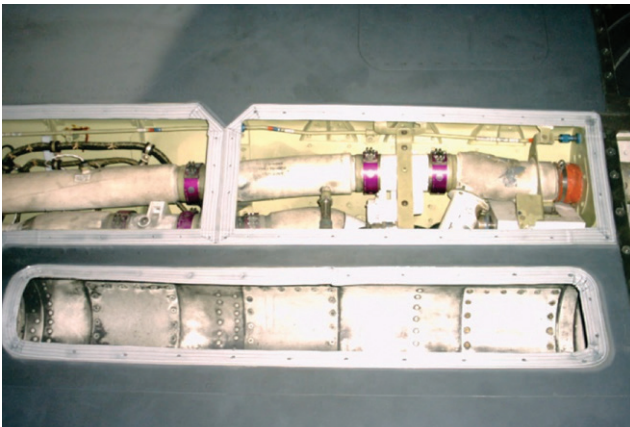
Figure 2: Airframe installation for panel 2406



Figure 3: Airframe installation for panel 2408



Figure 4: Airframe installation for panels 2407, 2409 and 2411



Examples: 720 Series of Gore's Tapes and Gaskets

Please refer to the Technical Orders for installing the 720 Series of GORE® SKYFLEX® Aerospace Gaskets on fuel cell systems.

Gore's gasket, part number GSC-21-96529-04 (NSN 5330-01-532-2248), is a replacement for rubber gaskets on the 370-gallon external tank (Figure 5). The fuel sealants are white gaskets that protect against harsh environmental conditions and eliminate aging and embrittlement (Figures 5–7).

Figure 5: Gore's tape, part number GSC-21-96529-04 (NSN 5330-01-532-2248), replaces the black rubber gasket on the external tank.

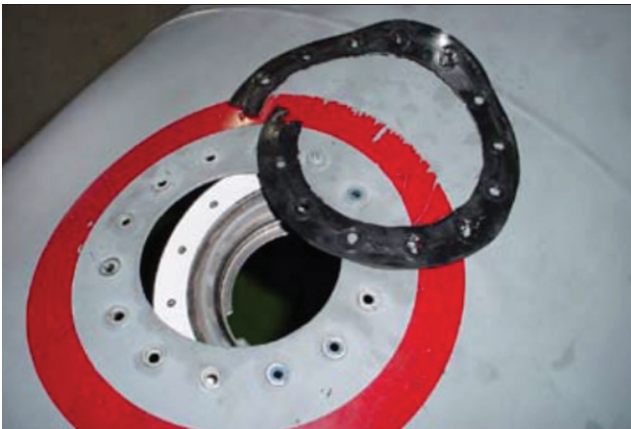
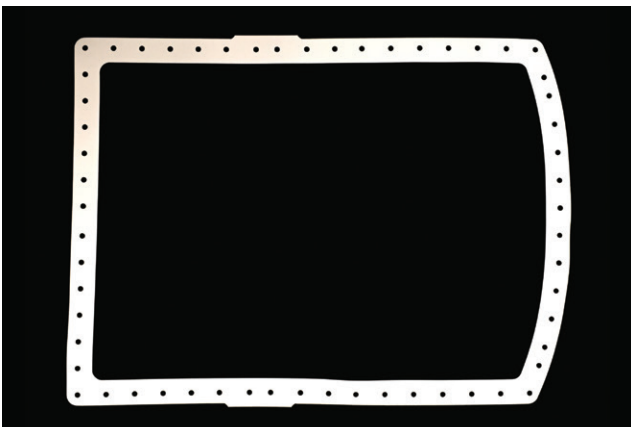


Figure 7: Gore's gasket, part number GSC-21-96515-04 (NSN 5330-01-579-0634, CAGE 1UH12, 17217) for F1 fuel cell access door.



Gore's gasket, part number GSC-21-96515-04 (NSN 5330-01-579-0634, CAGE 17217), is a replacement for the rubber gasket used on the F1 fuel cell door (Figure 7).

Figure 8 shows the 720 Series of GORE® SKYFLEX® Aerospace Tapes, part number GSC-21-96057-027 (NSN 5330-01-557-4114) installed on panels 4115 and 4216. Although these are not fuel panels, fuel sealants were used due to the extensive hydraulic fluid exposure in these areas. The approximate installation time is 45 minutes per panel.

Figure 6: Gore's gasket, part number GSC-21-96552-04 (NSN 5330-01-631-3573) for wing access panels 5415/6416.

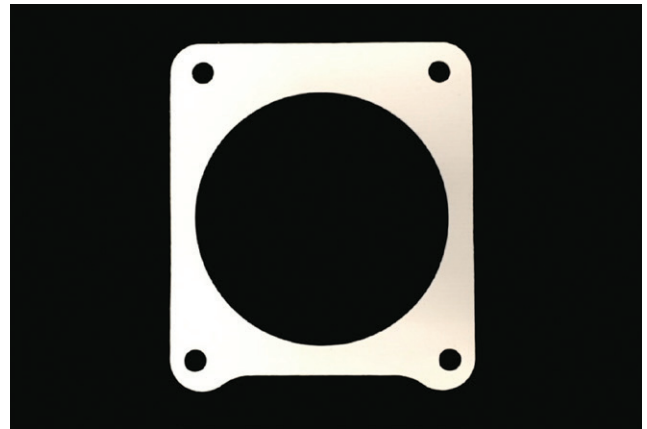
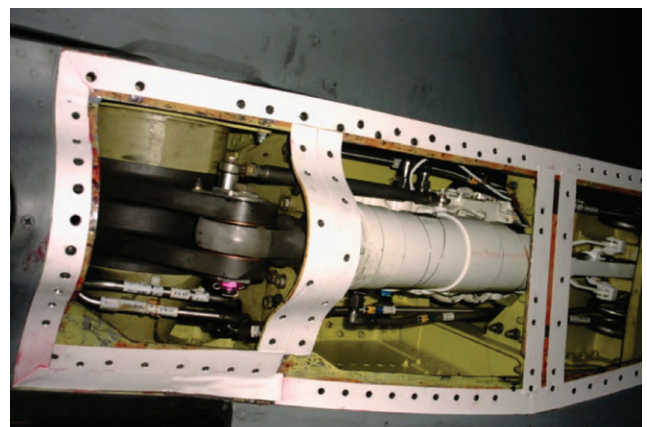


Figure 8: Gore's tape, part number GSC-21-96057-027 (NSN 5330-01-557-4114) installed on aircraft panels 4115 and 4216.



Inspection, Repair & Replacement

The sealant must be inspected whenever the panel is removed. If the sealant has been damaged, sealing ability may be degraded. GORE® SKYFLEX® Aerospace Materials must be inspected for large nicks, cuts, gouges, and delamination/separation prior to reuse. The structure should also be inspected for corrosion before the panel is reinstalled.

Prior to reuse, gently wipe the surface of Gore’s materials with a clean cloth or rag to remove any dust, dirt, or other foreign matter. While wiping, inspect the material for mechanical damage such as large nicks, cuts, and gouges. Also, check the material for delamination/separation from the sealing surface.

For best results, GORE® SKYFLEX® Aerospace Gaskets, 720 Series, in fuel cell applications should be replaced in their entirety if damaged. In the event of any damage to GORE® SKYFLEX® Aerospace Tapes, 720 Series, in non-fuel cell applications, the same inspection and repair criteria apply as presented below.

Refer to Table 2 if problems or irregularities are detected to determine the appropriate action.

When inspecting previously installed GORE® SKYFLEX® Aerospace Tapes, pay close attention to the quality of the installation. Gaps between materials, poor or complete overlap of corners or excessive missing material around fastener holes should be corrected with a reapplication of Gore’s tapes (Figure 9). Please refer to the appropriate technical manual and Gore’s installation guides and videos for examples of proper installation.

Figure 9: Tape installed incorrectly that pulled away at the corner (no overlap), leaving the surface exposed at the faying surface. The 720 Series of Gore’s gaskets is recommended for areas with hydraulic fluid and fuel.

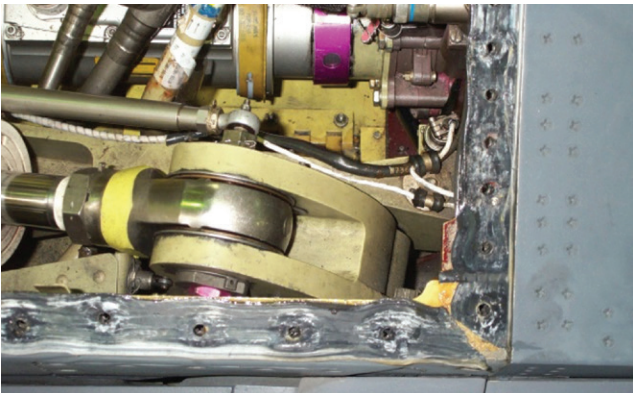


Table 2: Inspection Criteria for GORE® SKYFLEX® Aerospace Materials

Damage	Repair Required	Repair NOT Required
Nicks, cuts gouges	6.4 millimeters (0.25 inches) in size or larger OR any damage at a fastener hole	Less than 6.4 millimeters (0.25 inches) in size
Delamination/Separation	Tape does not stay aligned on sealing surface or corrosion is observed	Adhesive near delamination area still holds tape over required surface
Discoloration	Tape is saturated with fuel/hydraulic oil and will not stay in place	Tape is discolored due to compression stress around fasteners or other areas

Table 3: National / NATO Stock Numbers for GORE® SKYFLEX® Aerospace Materials

National / NATO Number	CAGE Code	Gore Part Number	Description/Dimensions in (mm)		Example of Use
5330-01-532-1885	3GW40	GSC-21-96526-04	3.06 x 1.25		Ground cap gasket for 370-gallon external fuel tank
5330-01-532-2239	3GW40	GSC-21-96527-04	6.13 x 4.75		Filler cap gasket for 370-gallon external fuel tank
5330-01-532-2248	1UH12	GSC-21-96529-04	7.60 x 5.75		Filler cap gasket for 370-gallon external fuel tank
5330-01-532-3612	1UH12	GSC-21-96528-04	7.00 x 5.5		Filler cap gasket for 370-gallon external fuel tank
5330-01-553-7547	1UH12	GSC-21-96513-04	13.80 x 21.48		Gasket for F1 fuel cell access panel 2413, F-16C
5330-01-579-0629	1UH12	GSC-21-96514-04	13.70 x 21.55		Gasket for F1 fuel cell inner /outer door, F-16D
5330-01-579-0634	1UH12	GSC-21-96515-04	17.66 x 24.26		Gasket for F1 fuel tank access door at FS243, F-16D
5330-01-631-3484	1UH12	GSC-21-96551-04	3.83 X 1.88		Probes
5330-01-631-3573	1UH12	GSC-21-96552-04	3.82 x 4.40		Gasket for wing pylon panel 5415 / 6416
5330-01-631-3585	1UH12	GSC-21-96550-04	5.92 x 7.88		Gasket for wing fuel access panel 5403 / 6404
5330-01-631-3600	1UH12	GSC-21-96555-04	5.05 x 7.05		Gasket for wing fuel access panel 5419 / 6420
5330-01-631-3604	1UH12	GSC-21-96554-04	4.25 x 5.90		Gasket for wing access fuel panel 5411 / 6412
5330-01-367-7356	1UH12	GUA-1002-1	0.28 x 0.02 (7.0 x 0.5) Flat tape with adhesive Color: Grey	Tape	Compensation tape used as required to fill gaps / crevices to create a flat sealing surface
5330-01-557-4114	1UH12	GSC-21-96057-027	1.00 x 0.032 (25.4 x 0.81) Flat fuel tape with adhesive Color: White	Tape	Hatches and floor panels, hydraulic fluid areas
5330-01-557-4118	1UH12	GSC-21-96059-027	1.50 x 0.031 (32.0 x 0.8) Flat fuel tape with adhesive Color: White	Tape	Access doors and panels in areas exposed to fuel / hydraulic fluids
5330-01-367-7357	1UH12	GSC-21-95201-0111	1.61 x 0.02 (41.0 x 0.5) 5-ribbed tape with adhesive Adhesive width: 1.00 (25.0) Color: Grey	Tape	Access panels Seal faying surfaces > 1.30 (33) wide
5330-01-368-7207	1UH12	GSC-21-95158-011	0.25 x 0.08 (6.0 x 2.0) Flat tape with adhesive Color: Grey	Tape	Compensation tape used as required to fill gaps / crevices to create a flat sealing surface
5330-01-368-7208	1UH12, 17217, OAMD8	GSC-21-95241-011	1.10 x 0.02 (28.0 x 0.5) 5-ribbed tape with adhesive Color: Grey	Tape	Access panels and windows Seal faying surfaces < 1.30 (33) wide
5330-01-475-1368	1UH12	GSC-21-95201-011	1.61 x 0.02 (41.0 x 0.5) 5-ribbed tape with adhesive Adhesive width: 1.5 (38.0) Color: Grey	Tape	Access panels for sealing surfaces 1.10 (28) to 1.61 (41) wide
5330-01-618-9581	1UH12	GSC-21-96057-04	1.00 x 0.032 (25.4 x 0.81) Fuel tape with no adhesive Color: White	Tape	Access doors and panels in areas exposed to fuel /hydraulic fluids
5330-01-618-9582	1UH12	GSC-21-96059-04	1.50 x 0.031 (38.1 x 0.8) Flat fuel tape no adhesive Color: White	Tape	Access doors and panels in areas exposed to fuel /hydraulic fluids
5330-01-618-9583	1UH12	GSC-21-96062-04	2.00 x 0.031 (50.8 x 0.8) Flat fuel tape no adhesive Color: White	Tape	Access doors and panels in areas exposed to fuel /hydraulic fluids

Reduce installation steps and increase aircraft availability

Proven by more than 20 years of successful applications, GORE® SKYFLEX® Aerospace Materials are dry, lightweight sealants that do not require any curing on panels, fairings, and floorboards. They remain flexible and compliant over multiple open/close cycles, providing durable protection against corrosion and the ingress of water, fuels, and oils. Gore's materials are available in form-in-place (FIP) tapes or die-cut gaskets.

GORE® SKYFLEX® Aerospace Materials, 720 Series, include a proprietary material in their construction — expanded polytetrafluoroethylene (ePTFE) designed specifically for fuel sealing. They are resistant to fuels, oils, and hydraulic fluids while still providing the same benefits as the 100 and 110 Series.

The examples presented in this guide were applied using Gore's best practices for installing GORE® SKYFLEX® Aerospace Materials. Also, instructional videos are available at www.gore.com/skyflex.



Benefits

- Easy-to-use dry sealants with no mess or curing required
- Reduced manufacturing cycles and maintenance downtime from single-component material
- Less replacement and re-work of seals by maintaining performance over multiple open/close cycles
- Improved sealing of irregular surfaces with highly conformable materials
- Durable protection against extreme temperatures, fluids, and other environmental hazards
- Low environmental impact and improved safety with non-hazardous materials

NOTICE — USE RESTRICTIONS APPLY. Not for use in food, drug, cosmetic or medical device manufacturing, processing, or packaging operations.

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