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SCDR 10-60

CHARACTERISTICS AND DEVELOPMENT REPORT FOR THE MC-976 BALLISTIC TAIL CASE SECTION

[redacted]

R. G. Tackett - 8162

6/23/97
6/24/97
W.C. Layne

ABSTRACT

This report describes the characteristics and development history of the MC-976 ballistic tail case section of the Mk 41 bomb. Early manufacturing history is also described, and the numerical index and inspection method instructions are included as appendices.

Approved by: E A Aas
Division Supervisor

Date: September 8, 1960

[redacted]

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Introduction

This document records the characteristics, design intent, and development history of the MC-976 ballistic tail case section (Figure 1) for the 41-B-02 bomb. NX-310703 lists the product definition, drawings, and specifications which are the basis for production contracts. Figures 2 through 10, pages 14 through 22, show stages in the manufacture of the MC-976.

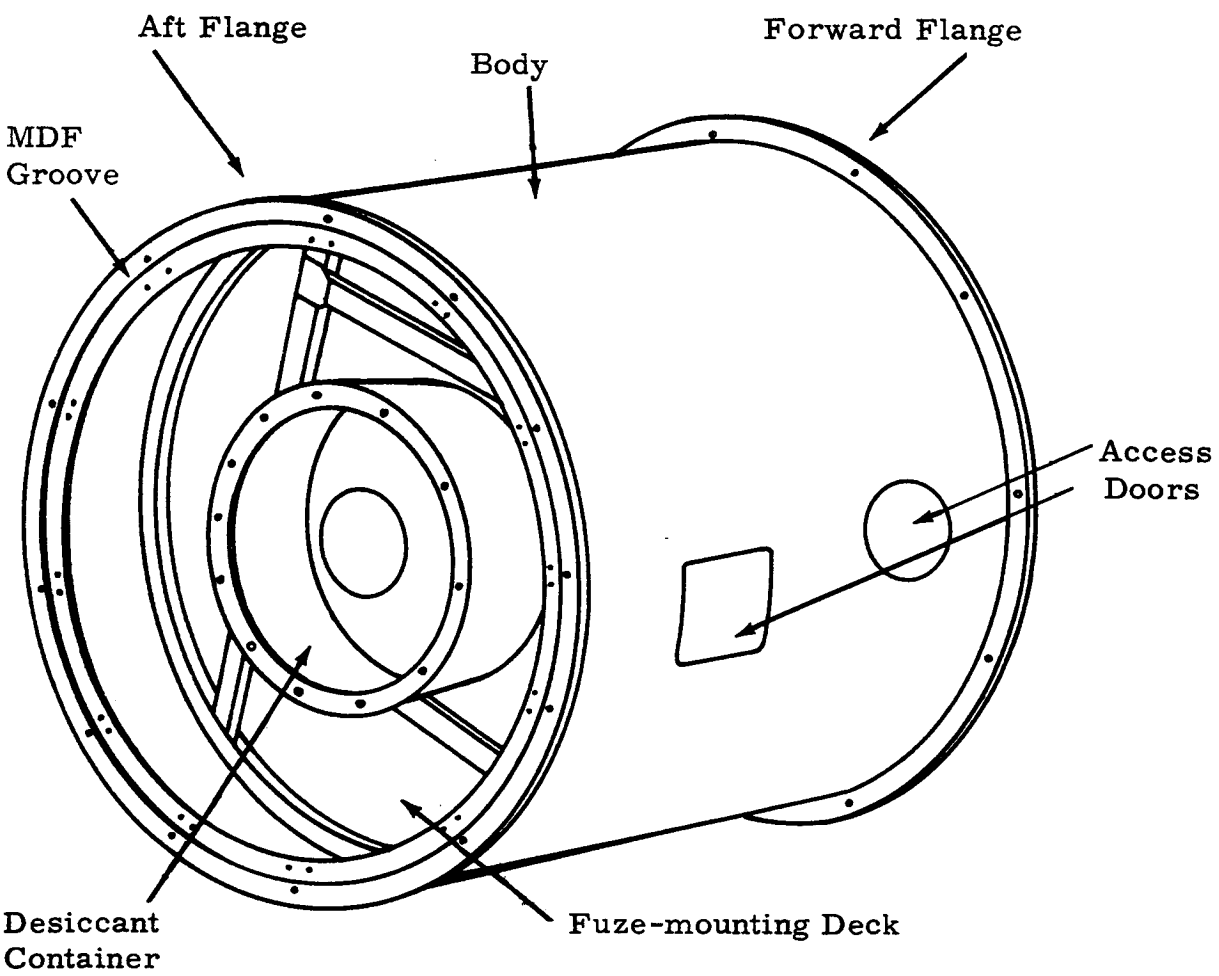

Figure 1. MC-976

[redacted]

Description

Purpose

The MC-976, a component of the MC-1073 rear bomb subassembly, serves the following purposes:

(1) Completes the ballistic shape of the 41-B-02 bomb tail assembly.

(2) Houses and provides mounting surfaces for the fuzing and firing components, and provides external access to those components which require it.

(3) Houses the desiccant container, and permits only desiccated air to enter the bomb afterbody, thereby providing part of the environmental protection for the fuzing and firing components.

(4) Houses the MC-1071 parachute assembly and its automatic deployment system in a way that permits ease of attachment and/or replacement.

(5) Provides the structural mounting surface for the MC-978 bomb fin.

Mechanical Characteristics

The MC-976 consists of a cylindrical aluminum body, with a forged aluminum flange at each end, and inside the body, an aluminum bulkhead, aluminum doublers for component mounting, and two annular stiffening rings. It is about 37.5 inches long, 50 inches in diameter, and weighs about 325 pounds.

The cylindrical body is rolled in one piece from 0.090-inch-thick sheet and riveted at the seam. The forged flanges are riveted to the ends of the cylinder. The forward flange provides for attaching the MC-976 to the MC-1028 bomb subassembly, the aft flange for attaching the parachute deployment ring to the MC-976. The aluminum bulkhead, attached to one of the annular stiffening rings near the aft end of the cylinder, is a mounting deck for some of the fuzing and firing components and for the desiccant container (which is attached at a later stage of assembly); it also stiffens the cylinder. The aluminum doublers, riveted to the inside of the cylinder,

provide flat mounting surfaces for components. The other annular stiffening ring is riveted inside the cylinder near the forward end.

With the fuzing and firing components, desiccant container, and fins installed, the MC-976 becomes the MC-1073 rear bomb subassembly. The MC-1071 parachute fits around the desiccant container which protrudes from the aft end of the bulkhead; it is installed during weapon assembly.

Electrical Characteristics

The MC-976 has no integral electrical parts; however, it serves as a protective covering for the electrical components of the fuzing system.

Design Intent

Functional Requirements

Dynamic Effects

Dynamic load amplification or vibratory loads encountered during transportation, handling, and flight were considered in the structural design.

Inertial Loads

Inertial loads resulting from load conditions are considered induced by limit applied loads.

Release and Separation[1]

The MC-976 was designed to withstand loads imposed by a minimum release altitude of 20,000 feet, a maximum speed of Mach 0.9, and a combined angle of attack in pitch and yaw of 24 degrees.

Free Fall[2]

The unit was designed to withstand loads at sea level imposed by a speed of Mach 1.1 and an angle of attack of ± 5 degrees.

Retarded Fall[3]

The unit was designed to withstand the following loads:

---

[1] Same criteria as for the TX-41. See Proposed Ordnance Characteristics of the TX-41 Bomb, Sandia Corporation, Department 8160, SC-4802(TR), SRD, September 1958.

[2] Ibid

[3] Ibid

(1) A parachute load of 44,000 pounds acting directly aft and parallel to the longitudinal axis of the unit.

(2) A parachute load of 44,000 pounds acting aft and parallel to the velocity vector of the unit. Air loads and a speed of Mach 0.9, angle of attack of 15 degrees, and an altitude of 18,400 feet were considered in this condition.

Handling and Transportation[4]

The MC-976 was designed to withstand the following inertial loads imposed by transportation, hoisting, and emergency air transportation:

(1) Transportation: A longitudinal load of 5.0 g, a vertical (pitching) load of 2.0 g, and a lateral (yaw) load of from +3.5 to -4.5 g.

(2) Hoisting: A longitudinal load of -4.0 g.

(3) Air Transport, Emergency (ultimate); A longitudinal load of 8.0 g and a lateral load of -6.7 g.

Environmental Conditions[5]

In calculating the loads the units will withstand, the effects of temperature differentials between -65°F and +160°F were considered.

Reliability Requirements

The MC-976 was designed to meet the structural requirements outlined above. It must not amplify any induced loads to levels beyond that which MC-1073 subcomponents are required to withstand.

Product Characteristics

Capabilities

General

The MC-976 was designed structurally to house the parachute system and the electrical components of the MC-1073, and aerodynamically to complete the ballistic shape of the 41-B-02. The drop-test program and structural load testing indicate that these objectives have been met. The component was designed with an ultimate safety factor of 1.5 for handling loads.

[4] Ibid.

[5] Ibid.

Dynamic Effects

(1) TRM's 1 and 2 were subjected to 24-foot drop-tower tests at an attitude of 15 degrees, both nose up and nose down.[6] Loads of 2.3 g longitudinal and 8.0 g vertical were induced. There was no visible damage, and the simulated drop following these tests was satisfactory.

(2) TRM 2 was not visibly damaged by a maximum acceleration of 7.5 g induced during railroad humping tests. The unit successfully passed the simulated drop test following humping.[7]

(3) No adverse vibration was noted during B-52 flyaround tests of TRM's 3 and 4.[8]

(4) One MC-976 was vibrated between 10 and 44 cps at an acceleration of 2.0 g and between 75 and 500 cps at an acceleration of 6 g. The vibratory loads were applied parallel to each of the three major axes.[9] There was no visible damage to the structure.

Inertial Loads

No structural damage resulted from inertial loads applied to the TRM units through rail humping, B-52 flyaround, and drop-tower tests.

Release and Separation:

No structural damage resulted from simulated aircraft-induced loads and static pull tests.

Retard and Free Fall

No structural damage resulted from parachute and free-fall loads imposed during the drop-test program and parachute pull tests.

Handling and Transportation

No structural damage resulted from railroad humping loads imposed during the TRM program, or from aircraft-induced loads imposed during flyaround tests.

---

[6] Ref. Sym. 1612(782) and Ref. Sym. 1613 (20)

[7] Ref. Sym. 1613(21)

[8] Ref. Sym. 5253(56) and Ref. Sym. 5253(119)

[9] Ref. Sym. 1613 (56)

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Static Loading

Pull Test Loads: TRM 3 passed static tests under the four following conditions[10]:

(a) A simulated straight-pull parachute load of 67,400 pounds.

(b) A simulated 15-degree-angle pull parachute load of 68,750 pounds.

(c) A dolly load of 33,000 pounds, imposed in a transverse direction.

(d) A load of 165 percent of limit load, applied through the McLean suspension system.

Environmental Conditions

No structural damage resulted from subjecting the MC-976 to high temperature (+ 165°F), low temperature (-60°F), or temperature shock during the drop tower tests, rail humping, and simulated drop tests performed as part of the TRM program.

Limitations

Within the limits of the tests performed, there are no special limitations imposed on the MC-976.

Test and Quality Requirements

Acceptance and Information Tests

See IMI-310703 in the Appendix for acceptance and information tests. These instructions require that each MC-976 be leak tested for sealing to 4 ± 0.5 inches of water differential pressure; the leak rate must be less than 1 inch of water per 12 minutes. This requirement makes it imperative that the MC-976 breath through the desiccant which controls the moisture content of the air within the MC-976 cavity.

---

[10] Ref. Sym. 1612(785)

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The MC-976 was originally designed by Org. 1218 to complete the ballistic shape of the 41-B-02 and to mount and house the fuzing and firing components. No problems were encountered with the basic structural design, but a few subsequent problems developed.

The component-access doors were designed with no provision for replacement. The Joint Training Group (JTG) later recommended that these doors be redesigned to permit easy replacement. Since the MC-976 was designed as an integral unit, the replacement posed a problem. The rivet pattern for the door hinges was removed, and screws accessible from the outside were inserted. To maintain the warhead seal, nuts for the screws were made from an aluminum block with helicoil inserts and were welded to the interior of the MC-976. The necessity for redesigning the doors could have been obviated by designing them to be replaceable originally.

The MC-976 was designed to be disassembled from the bomb, if necessary, at modification centers. Field removal was prevented by placing four prison bolts in the forward mounting flange. The military later requested that the MC-976 be made field removable. This was made possible by eliminating the prison bolts. Eliminating the bolts posed no design problem, but necessitated a change to the tooling, gages, and gaging procedures. If the prison bolts had been designed as integral units, they could have been replaced by standard MC-976 mounting bolts without changing the mounting-hole pattern.

The MC-978 mounting-hole pattern was used to align the MC-978, necessitating very close tolerance in machining the mounting-hole pattern. Since these holes are on a cylindrical surface, the pattern was quite difficult to inspect by open setup methods. To solve the inspection problem, the MC-978 mounting-hole pattern gage was modified to insure that the hole pattern was proper, and the gage was used as an acceptance criteria. The need to use the hole pattern as an alignment device could have been eliminated by placing two alignment pins in the MC-978. This would have made it possible to allow more float in the mounting-hole pattern, and would have cut the number of holes needing close inspection from five to two.

Tooling and Fixtures

The two flanges are machined to shape from the forgings, and the mounting holes are drilled. The 0.090-inch-thick skin is cut to shape and rolled to the proper diameter. The formed skin is then mounted on a routing fixture and the door openings are routed to shape. The skin is then mounted on a drill fixture and pilot holes are drilled for the rivet patterns. When the flanges and skin are ready for assembly, they are mounted in a rivet fixture and riveted together. The component mounting doublers, fabricated as individual parts with tooling holes pierced, are then riveted to the skin, using the tooling holes for positioning. The strengthening channels and the fuze-mounting deck are then assembled and riveted in place. While the parts are being assembled, sealing compound is applied to all points of attachment. When the riveting is finished, the MC-976 shell is returned to a holding fixture and the MC-978 mounting hole pattern is marked and drilled. This method of assembly allows all the major mounting areas to be drilled with the proper alignment.

Gages and Inspection

The L40143 hole relation gage is used for checking the forward mounting flange. It consists of two basic parts, a rounding fixture and the hole relation gage. The rounding fixture is placed inside the forward mounting ring; the flange must be round within 0.008-inch TIR, measured as four diameters. The hole relation gage is then placed over the flange and a shot pin is placed through the gage and into the tooling hole of the flange. Twenty-four shot pins are then used to check the mounting-hole pattern.

L 40145 and L 40146 are used for checking the mounting-hole pattern for the MC-1071 in the aft flange. The method is similar to that used for the L 40143, except that no rounding fixture is used.

L 40123, L 40124, L40127, L40128, L40129, L40130, L40131, L40134, L40132, L40133, L40136, L40137, L40142, L40141, and L40135 are hole-relation gages used to check component mounting patterns.

The L40144 hole-relation and squareness gage is used to check the MC-978 mounting pattern for correctness, squareness, and hole size. The gage is built in the form of a T. The cross bar of the T is placed on the leveling ring to which the MC-976 has been mounted and clamped.

The body of the T extends upward along the MC-976, and is used to check the location of alignment pins and the location and size of mounting holes.

The L40140 hole-relation gage is used to check the mounting-hole pattern of the mounting bracket for the desiccant container.

Critical Deviation Areas

Counterbore depth of the forward mounting pattern has been checked against hardware length and the possibility of deviation in mating components. It has been found that the counterbore depth can exceed the dimension specified by 0.060 inch. This 0.060-inch tolerance has been divided equally between Bendix and ACF, making it imperative that the counterbore never be deviated above 0.030 inch.

Depth of the MDF groove is critical in all areas, except for one or two inches in either direction from the detonators. The width of this groove is not as critical. The depth must not be deviated; if the groove is cut too deep, it should be reworked by taking a cut off the face of the rear flange, reducing the overall length of the MC-976.

The MC-978 mounting-hole pattern, which controls alignment of the MC-978, is critical.

All component mounting-hole patterns are critical.

Major diameter of the near mounting flange is critical in relation to the ring cover.

Forward and aft 0-ring grooves are critical.

Improvement Areas

If the original design of the MC-976 had been detailed and dimensioned on separate drawings, several small redesign problems would have been simplified, and reading and interpretation of the drawings would have been much easier.

Closer liaison between the design group and the production group early in the program would have made it possible to use more multi-use gages for inspection.

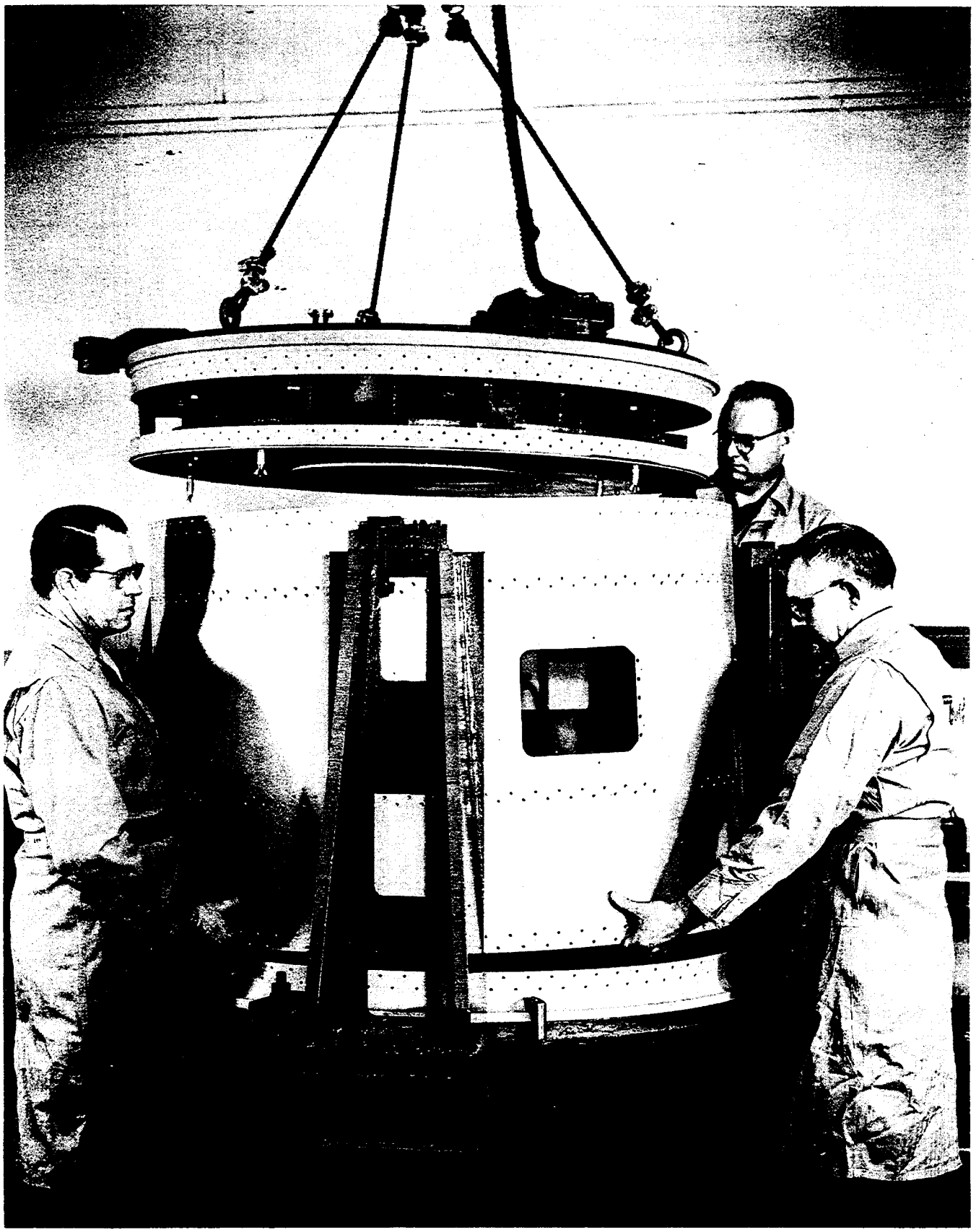

Figure 2. Assembling flanges and fuze deck to cylinder.

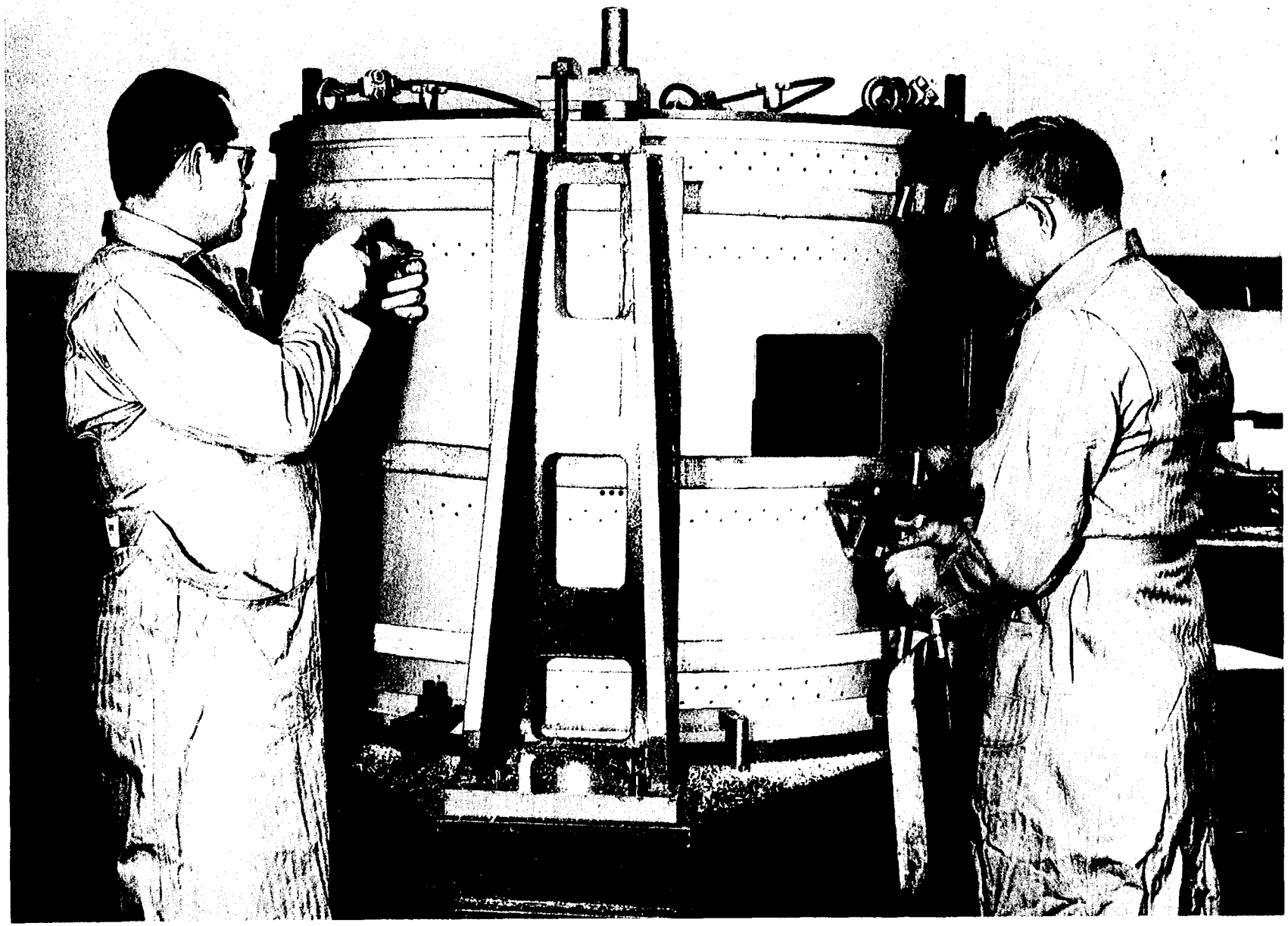

Figure 3. Cylinder, with flanges and stiffening rings, in drill and assembly fixture.

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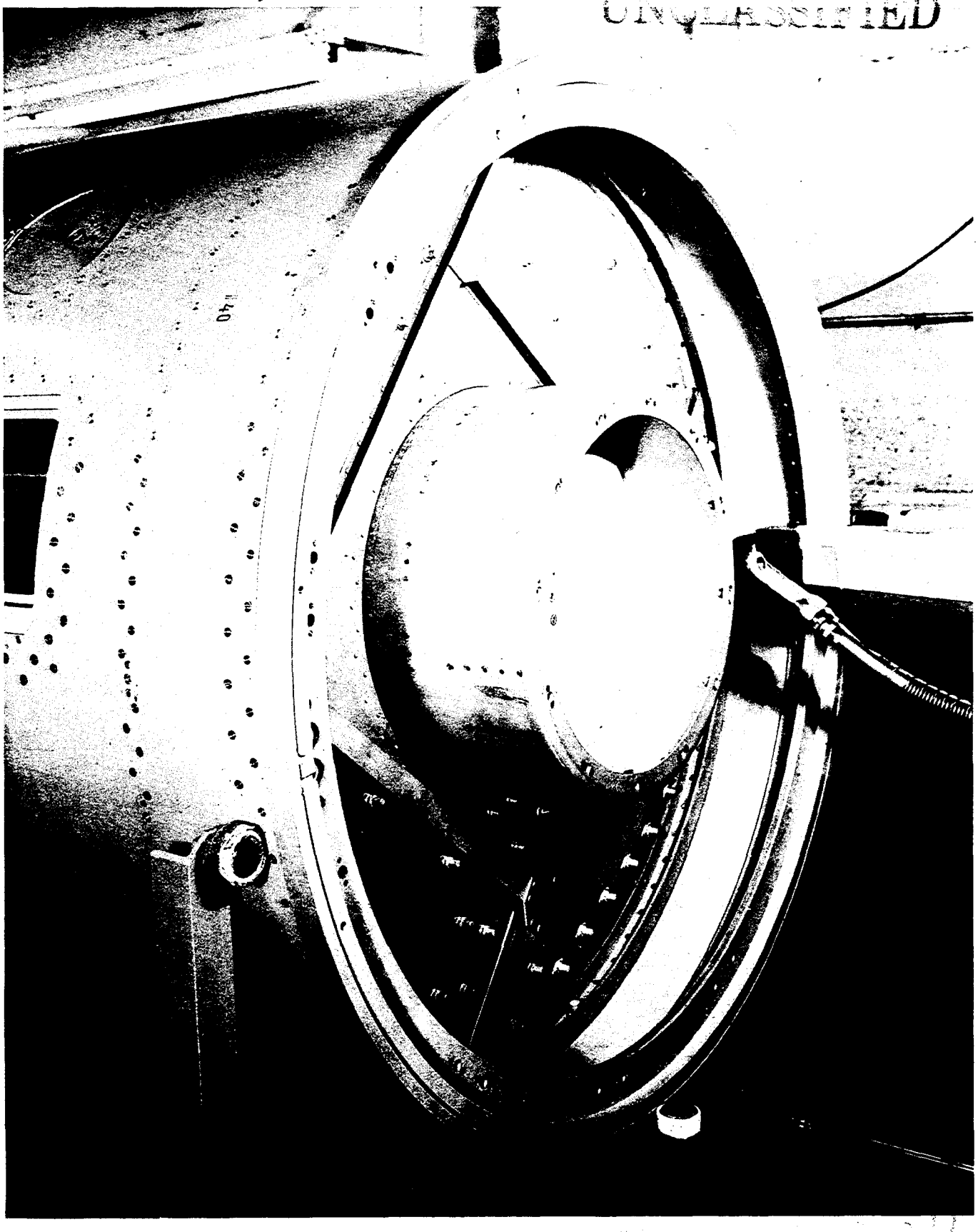

Figure 4. Dressing rivet heads after riveting rear mounting flange.

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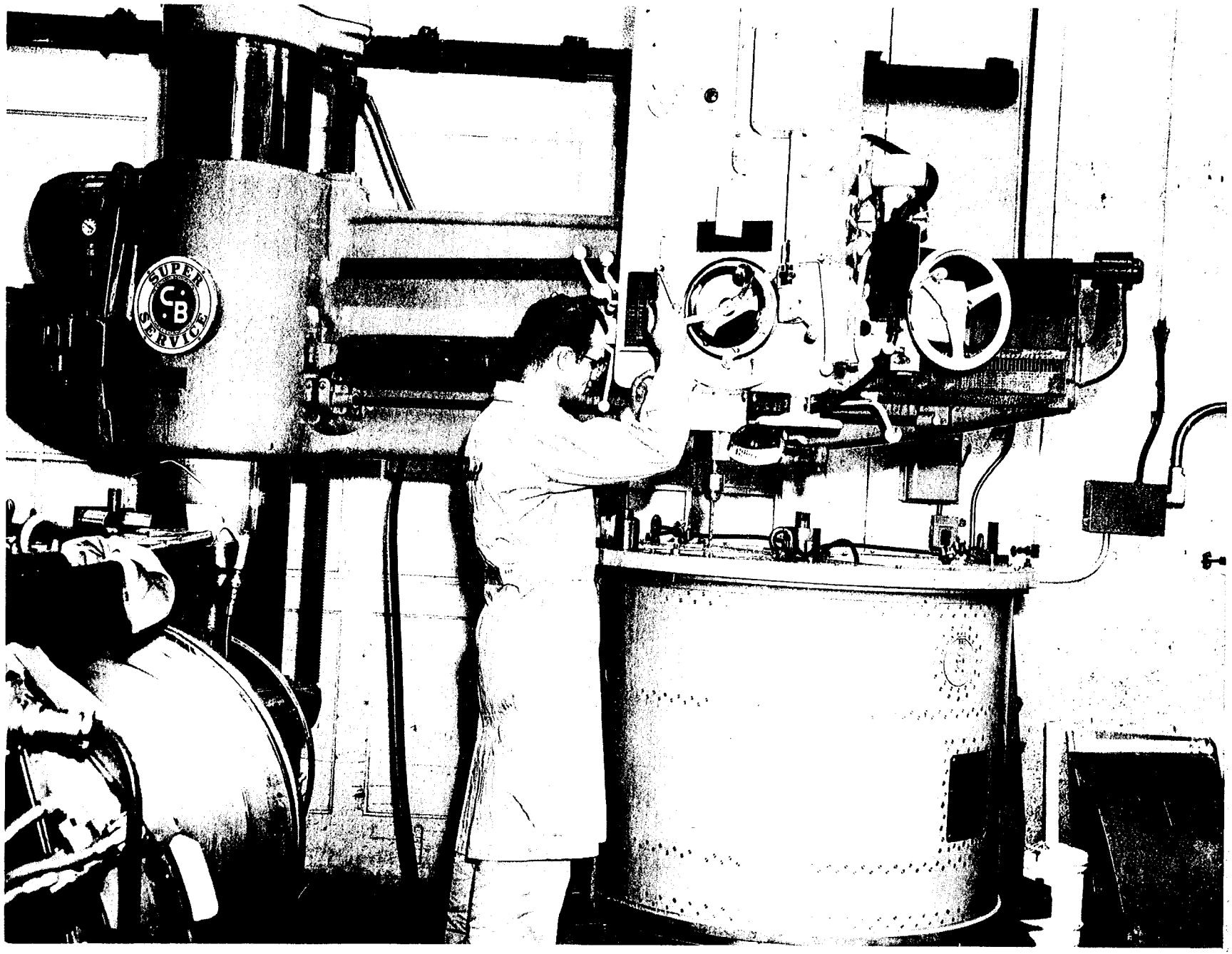

Figure 5. Drilling mounting holes into the forward mounting flange.

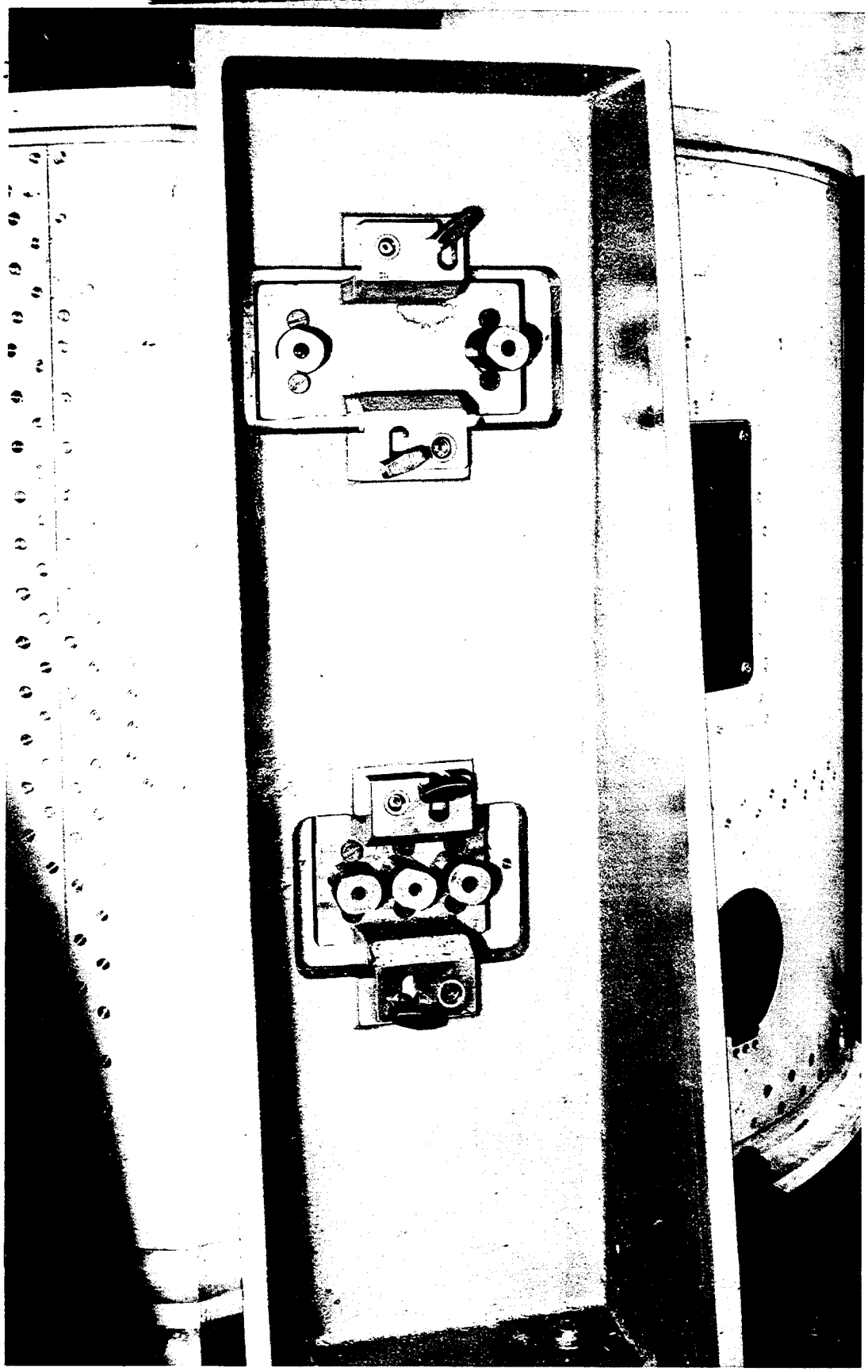

Figure 6. Mounting-hole fixture for the MC-978 bomb fin.

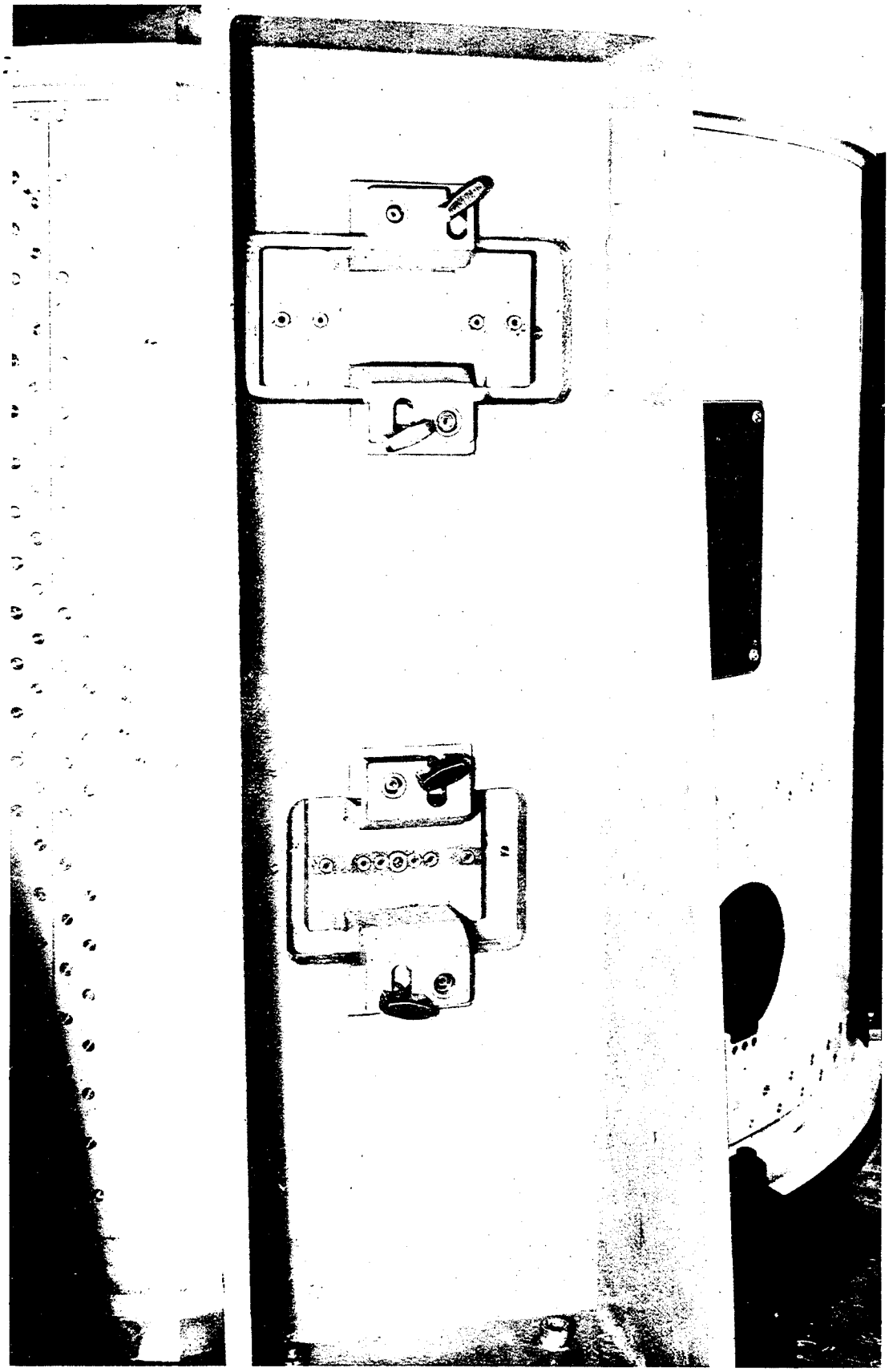

Figure 7. Mounting-hole fixture for the nut plate used to bolt the MC-978 to the surface of the MC-976.

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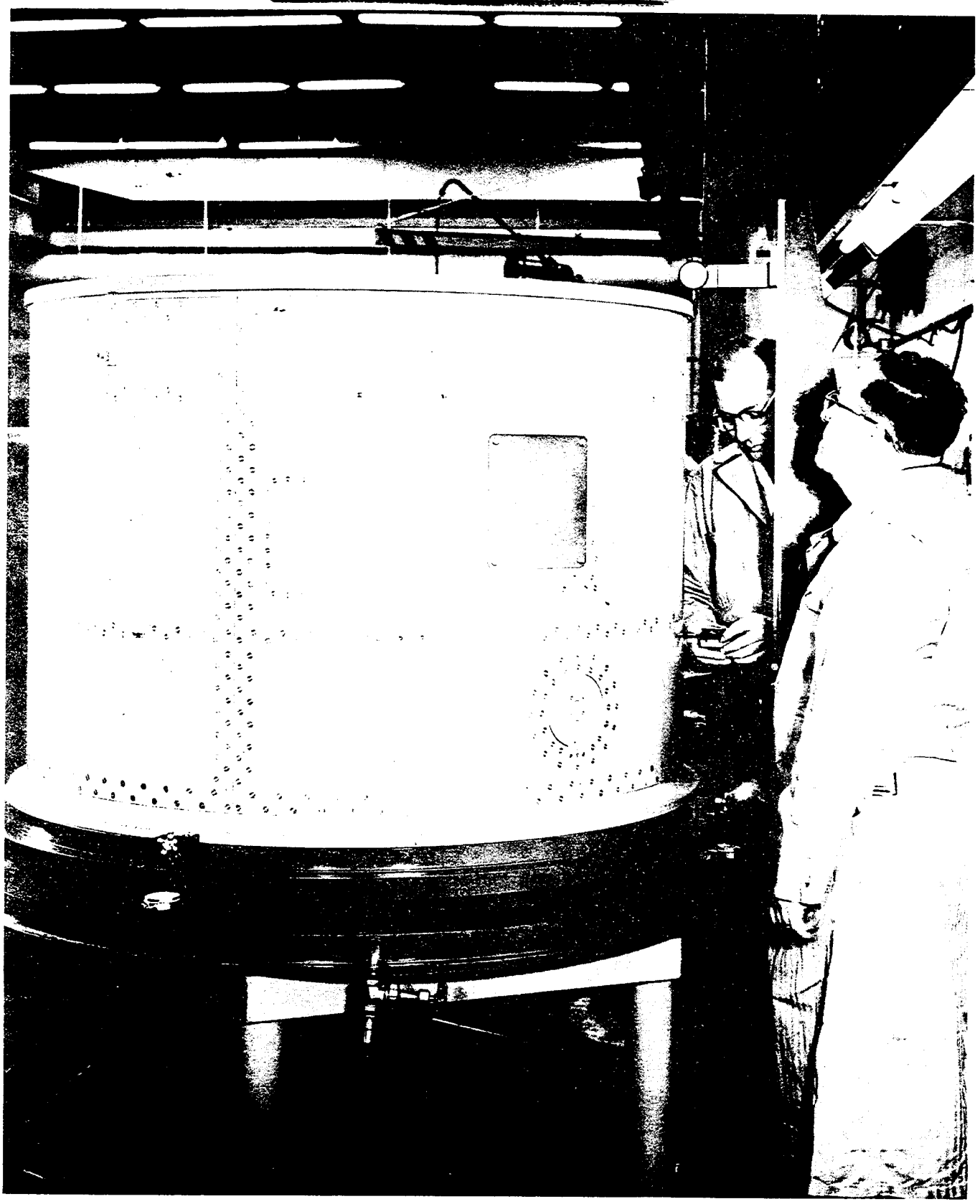

Figure 8. Inspecting the assembled MC-976 for roundness and proper height.

[redacted]

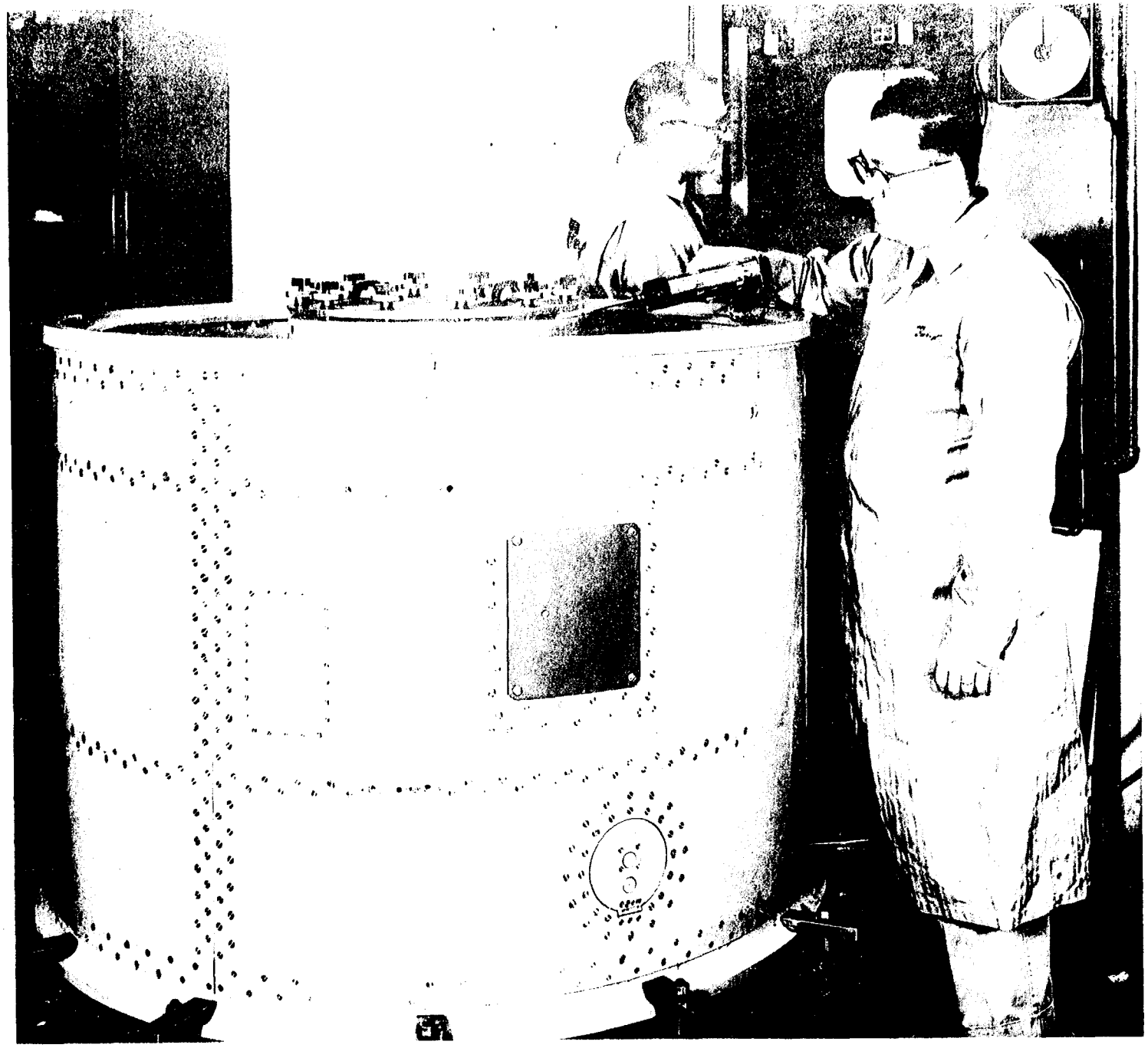

Figure 9. Pressure check.

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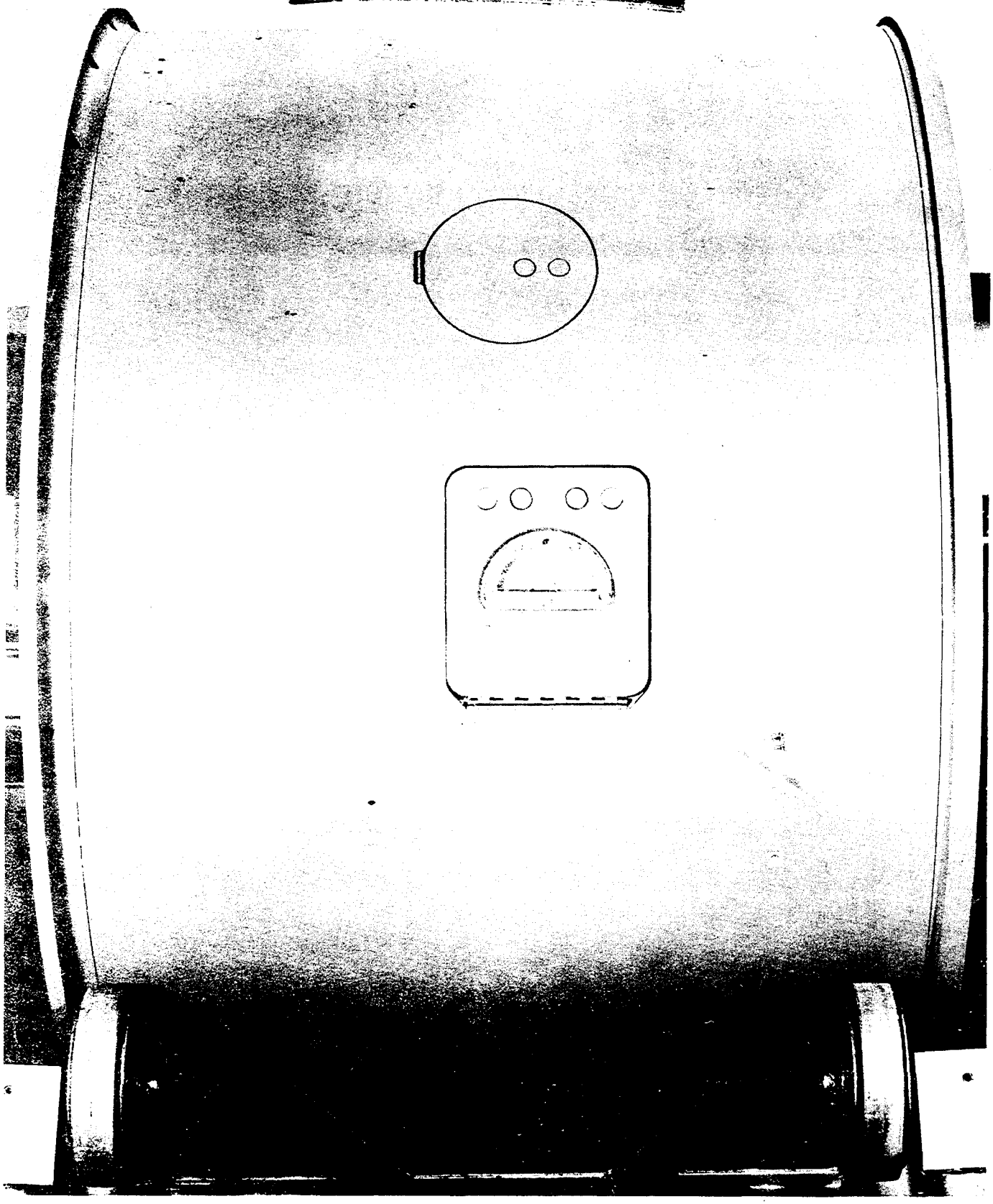

Figure 10. Completely assembled MC-976.

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NUMERICAL INDEX

DRAWINGS AFFECTED BY THIS ISSUE

310703 F

NOTES:

1. Information which will be authorized later.
2. Drawings previously design released on other projects.
3. Specification issues and/or amendments in effect on bid invitation date shall apply. Later revisions may be used. Procurement system for specifications are contained in 400,180.
4. Listed for reference only, supplied only on special request.
5. Listed for reference only, not supplied to contractors.
6. A duplicate of this master shall be supplied for manufacturing only.
7. Any issue furnished may be used instead of the issue specified.

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						NUMERICAL INDEX FOR: MC-976	
				DATE		RELEASE AUTHORITY	
				10-14-59		MC-976-18-A, 13-C3	
	ORGAN.	INITIALS	DATE	5 Y	Size: A	SHEET 1 OF 3	Issue: F
PREPARED	8161-3	cig	10-14-59				
APPROVED	8162-1	[illegible]	10-28-59	NX- 310703			
APPROVED							

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NO NX 310703 F SHEET NO. 2 OF 3 10-14-59

TYPE REPR	NUMBER	TITLE	ISSUE	SIZE	CLASS	NOTE	NO REQD
		NUMERICAL INDEXES					
T	NX 310703	MC-976		A	UNC		
		SPARE PARTS LIST					
	220933	DOOR,ACCESS,BALLISTIC CASE	A	D	UNC		
	220934	DOOR,ACCESS,BALLISTICS CASE	A	D	UNC		
	220935	DOOR,ACCESS,BALLISTIC CASE	A	J	UNC		
	220936	DOOR,ACCESS,BALLISTIC CASE	A	A	UNC		
		PRINCIPAL DRAWINGS					
T	310703	MC-976	1	F	UNC		
		PART ASSEMBLY AND DETAIL					
S	125767	SEAL,RUBBER SPECIAL SHAPED SECTION	D	C	UNC		
T	131996	GASKET	A	D	UNC		
T	138071	GASKET	A	D	UNC		
T	143719	HOUSING,CONNECTOR	A	F	UNC		
T	144678	GASKET	A	C	UNC		
T	145208	BRACKET,MOUNTING	B	F	UNC		
T	146419	ADAPTER,PULLOUT/CASTING/	B	E	UNC		
T	146524	ADAPTER,PULLOUT	B	J	UNC		
T	147709	WINDOW,OBSERVATION	A	C	UNC		
T	147711	BACKUP PLATE	B	C	UNC		
T	147742	ACTUATOR,INDICATOR	A	D	UNC		
T	147769	SPRING,FLAT	A	C	UNC		
T	147940	INDICATOR,SWITCH	A	D	UNC		
		COMMERCIAL PARTS					
	800034	WASHER,FLAT	B	A	UNC	7	
	807551	AN 6227-5 PACKING,PREFORMED	B	A	UNC	7	
	809951	NUT,SELF-LOCKING,HEXAGON	B	A	UNC	7	
	816914	NUT SELF-LOCKING PLATE	B	A	UNC	7	
	825696	PIN,SPRING	A	A	UNC	7	
	827131	RETAINER,NUT AND BOLT	C	A	UNC	7	
	828576	CHAIN ASS,Y,SINGLE LEG	D	A	UNC	7	
	828647	STUD ASS,Y,CAM ACTION FASTENER	A	A	UNC	7	
	828609	WASHER,SPLIT	A	A	UNC	7	
	828966	LATCH,RIM	D	B	UNC	7	
	829232	INSERT,SCREW THREAD	A	A	UNC	7	
	830468	WASHER,NONMETALLIC	A	A	UNC	7	
	831089	NUT,SELF-LOCKING,PLATE	A	A	UNC	7	
	834056	NUT,SELF-LOCKING,PLATE	B	A	UNC	7	
S	834301	RECEPTICAL,TURNLOCK FASTENER	A	A	UNC	7	
	834429	NUT,SELF-LOCKING,PLATE	A	A	UNC	7	
	834913	NUT,SELF-LOCKING,PLATE	A	A	UNC	7	
	834960	NUT,BLIND RIVET	A	A	UNC	7	
	835217	NUT,SELF-LOCKING,PLATE	C	A	UNC	7	
	836726	WASHER,SPRING TENSION	A	A	UNC	7	
	851654	LEAF,BUTT HINGE	A	A	UNC	7	
	851670	WASHER,LOCK	A	A	UNC	7	
	852190	SCREW,CAP,SOCKET HEAD	A	A	UNC	7	
	852661	SCREW,MACHINE	A	A	UNC	7	
	853001	RING,RETAINING	A	A	UNC	7	
	854477	MS20001P4-625	A	A	UNC	7	

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TYPE REPR	NUMBER	TITLE	ISSUE	SIDE	CLASS	NOTE	NO REQD
	890170	AN252-2-150 PIN,STRAIGHT,HEADLESS	D	A	UNC	7	
		SANDIA CORP. SPECIFICATIONS					
	400004	BONDING PROCESS,GEN PURP,RUBBER ADHE	B	A	UNC	7	
	400034	SPEC FOR CARBON STEELS	C	D	UNC	7	
	400062	ALUMINUM ALLOY,SHEET,PLATE,ALT MTLS	D	A	UNC	7	
	400063	ALUMINUM BASE BARS ETC	C	D	UNC	7	
	400067	SEALING,WX FAYING SURFACE AND JOINTS	B	A	UNC	7	
	400069	SURFACE SMOOTHING AND FAIRING	B	A	UNC	7	
	400071	ALUMINUM BASE SAND CAST	A	C	UNC	7	
	400079	MARKING GENERAL PURPOSE	E	A	UNC	7	
	400088	DESIGN REQUIREMENTS INTERPRETATION	C	A	UNC	7	
	400105	APPLICATION ORGANIC COATINGS	B	A	UNC	7	
	400126	INSTALLATION RIVET	C	A	UNC	7	
	400137	PROCESS SPEC.ID,MC[illegible] & ANCILLARY EQUIP	F	A	UNC	7	
	400182	AL ALY ROLLED-RING FORG HEAT-TREATED	A	A	UNC	7	
SCS	13	INSPECTION OF CASTINGS		A	UNC		
SC	7012SP	GEN MANUFACTURING INFO FOR SUPPLIERS		A	UNC		
SC	7016SP	TOLERANCE OF POSITION AND FORM MMC		A	UNC		
		GOVERNMENT SPECS AND DRAWINGS					
AN 470		RIVET,UNIVERSAL HEAD,ALUMINUM ALLOY				3	
FED STD 595		COLORS				3	
MIL-E-74		ENAMEL,LUSTERLESS,QUICK DRYING				3	
MIL-L-003891		LUM-MATL & EQUIP,NONRADIOACTIVE				3	
MIL-A-5092		ADHESIVE,RUBBER				3	
MIL-P-5425		PLASTIC,SHEET,ACRYLIC,HEAT RESISTANT				3	
MIL-C-5541		FILMS,CHEMICAL,FOR ALUMINUM				3	
MIL-H-6088		ALUMINUM ALLOYS,HEAT TREAT				3	
MIL-R-6130		RUBBER,CELLULAR,CHEMICALLY BLOWN				3	
MIL-H-6875		HEAT TREATMENT OF STEELS PROCESS				3	
MIL-P-6889		PRIMER,ZINC-CHROMATE				8	
MIL-S-7947		STEEL,1095,SHEET & STRIP				3	
MIL-A-8625		ANODIC COAT FOR ALUMINUM & AL ALLOYS				3	
MIL-I-8660		INSULATING & SEALING COM,ELEC				3	
MS 20426		RIVET,100 C,SUNK,ALUMINUM ALY				3	
QQ A-267		AL ALY 24S,BAR,ROD, & SHAPE EXTRUDED				3	
QQ A-268		AL ALY 24S BAR,ROD,WIRE ROLL,DRAW				3	
QQ A-270		AL ALY BAR,ROD,SHAPE EXTRUDED				3	
QQ A-325		ALUMINUM ALLOY BARS,RODS,SHAPES,ROLL				3	
QQ A-327		ALUMINUM ALLOY 61S PLATE / SHEET				3	
QQ A-355		ALUMINUM ALLOY,PLATE & SHEET				3	
QQ A-601		ALUMINUM ALLOY SAND CASTINGS				3	
QQ P-416		PLATING CADMIUM ELECTRODEPOSITED				3	
QQ S-633		STEEL,BAR,CARBON,COLD FINISH & HOT R				3	
QQ S-636		STEEL,CARBON,SHEETS AND STRIPS				3	
QQ Z-325		ZINC PLATING,ELECTRODEPOSITED				3	
		SOCIETY SPECIFICATIONS					
AMS 2468		HARD COATING TREATMENT OF AL ALLOYS					
ASTM-B221		ALUMINUM ALY EXTRUDED BARS,RODS & SH					
ASTM D 1056		BUTADIENE IN HYDROCARBON MIX,TEST					
NAS 523		RIVET CODE					

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LB 5420-C (7-58)

UNCLASSIFIED

GENERAL INSTRUCTIONS:

1. Entries in the 'REQ'D INSP' column.
   1.1 An 'A' indicates 100% inspection and the completion of a Test Record (on Form SC 6897-F).
   1.2 A 'B' indicates 100% inspection without recording.
   1.3 A 'C' indicates that the amount of inspection is at the discretion of the Inspecting Agency.
   1.4 A 'D' indicates that the material will be inspected to a sampling plan detailed in the 'SPECIFICATION AND METHOD' column.
2. An asterisk in the 'OPER NO.' column indicates a change from the previous issue. A reissued IMI supersedes all previous issues.
3. The order of inspection shown in this IMI is mandatory only when specifically stated.
4. Use latest issue of drawings indicated in the 'SPECIFICATION AND METHOD' column, and effective ECO's and/or ER's.
5. This IMI does not relieve the manufacturer from complying with any and all Purchase Order and drawing requirements, even though they are not listed herein.

EQUIPMENT LIST AND INSTRUCTIONS:

1. An (E) preceding the equipment number makes mandatory the use of the specified equipment.
2. An (EC) preceding the equipment number requires the use of the equipment if available. If unavailable, an open set-up may be used and the inspecting agency shall prepare a certificate stating that the specified characteristic has been verified in an alternate manner, to an accuracy equivalent to the specifications, and shall detail the exact alternate method employed (i.e., open or machine set-up, etc). The certificate shall be attached to Form SC 5735-J, 'Certificate of Inspection'.
3. A '(C)' preceding the equipment number will indicate that other means of inspection may be used (i.e., open or machine set-up, etc.). When an alternate method is employed, a certificate will be required (prepared as delineated in (EC) above).
4. In the absence of any of the above three (3) symbols, the use of the equipment or an open set-up is optional.

ISS	AUTHORIZATION	CHK ENG.	DATE	ACTION	ORG.	INIT.	DATE
C	PX-310703-31-C3	[illegible]	12-18-59	TYPE	8116-2	bac	12-18-59
D	PX-310703-33C3	[illegible] BEM	3-10-60 8-17-60	APPD.			
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DWG. CLASSIFICATION

UNCLASSIFIED

TITLE INSPECTION METHOD INSTRUCTIONS FOR MC-976

5Y	DWG. SIZE A	DRAWING NO. IMI 310703
		SHEET 1 OF 14

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UNCLASSIFIED

EQUIPMENT NUMBER	DESCRIPTION
L40018	Plug Gage
L40123	Hole Relation Gage
L40124	Hole Relation Gage
L40127	Hole Relation Gage
L40128	Hole Relation Gage
L40129	Hole Relation Gage
L40130	Hole Relation Gage
L40131	Hole Relation Gage
L40132	Hole Relation Gage
L40133	Hole Relation Gage
L40134	Hole Relation Gage
L40135	Hole Relation Gage
L40136	Hole Relation Gage
L40137	Hole Relation Gage
L40140	Hole Relation Gage
L40141	Hole Relation Gage
L40142	Hole Relation Gage
L40143	Hole Relation Gage
L40144	Hole Relation and Squareness Gage
L40145	Hole Relation Gage
L40146	Hole Relation Gage
310266-G2	Plug Gage
	Counter Balance

SPECIAL INSTRUCTIONS:

Note: Heli-coil midgrip type gages are to be used prior to installation of any hardware or any other gages.

Note: Operation 100 is to be performed prior to assembly of the mounting deck in the afterbody. These tests are to be made on a sampling basis consisting of 15 random units out of 70 units to be checked.

Drawings Required:

310703, Sheets 1, 2, 3, 4
145208, sheet 1
143719, sheet 1
146524, sheet 1

ISS	AUTHORIZATION	CHK ENG.	DATE	ACTION	ORG	INIT.	DATE
C	PX-310703-31-C3		12.18.59	TYPE	8116-2	bac	12.18.59
D	PX-310703-33C3		3.10.60	APPD			
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DWG. CLASSIFICATION

UNCLASSIFIED

TITLE INSPECTION METHOD INSTRUCTIONS FOR MC-976

5Y	DWG. SIZE A	DRAWING NO. IMI 310703
		SHEET 2 OF 14

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UNCLASSIFIED

REQ INSP	OPER NO.	SPECIFICATION AND METHOD
B	30	Visually inspect MC-976 for the following per dwg 310703.
	30.1	General appearance, workmanship, and finish.
	30.2	Impression stamp per note 3.
	30.3	Rivet installation per note 15.
	30.4	Fairing of hinges per note 17.
	30.5	Strike-safe indicator per notes 29, 30, 32, 33 and 34.
	30.6	Seal, item 42, and gaskets, items 43, 46 and 50 per notes 12, 13, 14 and 37.
	30.7	Installation and operation of all doors per note 28.
B	40	Forward ring. (Item 1, zone A-7). (Zone references are to sheet 1 of dwg 310703).
	40.1	Check the .436 dia (D9) hole size, 20 places.
	40.2	Check the .88 dia (D9) counterbore size, 20 places.
	40.3	Check the .53 thickness (See EE, D10) thickness left after counterbore, 20 places.
	40.4	Check the .312 dia (D9) hole size.
	40.5	Check Heli-coil Inserts, item 71, (D8) per note 26 and for thread size (Use Gage L40018 and thread size gage).
	40.6	Check diameter 'T' (C7) per note 1.
	40.7	Check the .225 depth (See EE, D10) at 4 places approx. 90° apart around the circumference of the ring.
B	50	L40143 Hole Relation Gage. (Zone references are to sheet 1 of dwg 310703)
	50.1	Place the rounding mechanism subassembly, detail 2 of L40143, on the forward ring (item 1, Zone A-7) and expand to round the ring per note 2 of dwg 310703.
	50.2	Place the hole relation ring subassembly, detail 1 of L40143, on the forward ring, piloting over dia T (C7) and resting on surface 'R' (A7). NOTE: Use a counter balance which weighs approximately the same as the gage in steps 50.1 and 50.2.
	50.3	Insert gage pin, detail 15 of L40143 thru bushing, detail 3 of L40143 marked 'V', into hole 'V' (D9) of forward ring Use finger force only.
	50.4	Insert gage pins, detail 8 of L40143, thru bushings, detail 4 of L40143, into .436 dia (D9) holes, 24 places. Use finger force only.
	50.5	Remove gage pins and return gage pins and gage to the storage container.
B	60	L40123 Hole Relation Gage. (For checking item 51, Zone B10, sheet 2 of dwg 310703).
	60.1	Check 'No Paint' zone per dwg 145208.
	60.2	Check the .219 dia hole size, 4 places, per dwg 145208.
	60.3	Place gage on the part with rectangular plug piloting in the 3.00 x 3.88 cutout.

	AUTHORIZATION	CHK ENG	DATE	ACTION	ORG.	INIT	DATE
C (1)	PX-310703-31-C3		12.18.59	TYPE	816-2	bac	12.18.59
			3.10.60	APPD.			
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DWG. CLASSIFICATION

TITLE INSPECTION METHOD INSTRUCTIONS FOR MC-976

5Y	DWG SIZE A	DRAWING NO. IMI 310703
		SHEET 3 OF 14

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REQ INSP	OPER NO.	SPECIFICATION AND METHOD
	60.4	Insert gage pins, detail 4 of L40123, thru bushings, detail 3 of L40123, into the .219 dia holes, 4 places. Use finger force only.
	60.5	Remove gage pins and return pins and gage to the storage container.
B	70	L40124 Hole Relation Gage (For checking item 49, Zone D7, sheet 2 of dwg 310703).
	70.1	Check the 1.203 dia thru hole size, 2 places per dwg 143719, Zone B3.
	70.2	Check the tapped holes, 8 places, per dwg 143719, Zone C4.
	70.3	Place gage on the part with locator, detail 2, L40124, piloting into hole 'M'.
	70.4	Insert 'Red' threaded plug gage, detail 4 of L40124, thru 'Red' bushing, detail 3 of L40124, and screw into hole 'S' per dwg 143719. Use finger force only.
	70.5	Insert threaded plug gages, detail 5 of L40124, thru bushings, detail 3 of L40124, and screw into part, 3 places. Use finger force only.
	70.6	Remove threaded plug gages and move gage to hole 'L'.
	70.7	Insert 'Red' threaded plug gage, detail 4 of L40124, thru 'Red' bushing, detail 3 of L40124, and screw into hole 'R' per dwg 143719. Use finger force only.
	70.8	Insert threaded plug gages, detail 5 of L40124, thru bushings, detail 3 of L40124, and screw into part, 3 places. Use finger force only.
	70.9	Remove threaded plug gages and return plugs and gage to the storage container.
B	80	Visually inspect the mounting deck (item 9, Zone B6, sheet 1 of dwg 310703) for the following:
	80.1	General appearance and workmanship.
	80.2	Burrs and sharp edges.
B	90	Mounting deck (Item 9, zone B6, sheet 1 of dwg 310703)
	90.1	Check the size of reference holes 'M' and 'O' per sheet 1 of dwg 310703.
	90.2	Check size of 6 holes, 64-69, per table IV (sheet 3 of dwg 310703).
	90.3	Check size of 4 holes, 70-73, per table IV.
	90.4	Check size of 8 holes, 80-87, per table IV.
	90.5	Check size of 4 holes, 90-93, per table IV.
	90.6	Check size of 9 holes, 100-108, per table IV.
	90.7	Check size of 4 holes, 110-113, per table IV.
	90.8	Check size of 4 holes, 130-133, per table IV.

REV	AUTHORIZATION	CHK ENG	DATE	ACTION	ORG.	INIT.	DATE
C	PX-310703-31-C3		12.18.59	TYPE	8116-2	bac	12.18.59
D			3.10.60	APPD.			
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DWG. CLASSIFICATION: UNCLASSIFIED

TITLE: INSPECTION METHOD INSTRUCTIONS FOR MC-976

5Y	DWG. SIZE A	DRAWING NO. IMI 310703
		SHEET 4 OF 14

REQ INSP	OPER NO.	SPECIFICATION AND METHOD
	90.9	Check size of 6 holes, 201-206, per table IV.
	90.10	Check size of 1 hole, 207, per table IV.
	90.11	Check size of 4 holes, 208-211, per table IV.
	90.12	Check size of 11 holes, 212-222, per table IV.
D	100	Make the following checks of the mounting deck, on open setup, prior to assembly in the afterbody.
	100.1	Position of datum hole number 64 per table IV (sheet 3 of dwg 310703) and the angularity of the respective hole pattern.
	100.2	Position of datum hole number 70 per table IV and the angularity of the respective hole pattern.
	100.3	Position of datum hole number 80 per table IV and the angularity of the respective hole pattern.
	100.4	Position of datum hole number 90 per table IV and the angularity of the respective hole pattern.
	100.5	Position of datum hole number 100 per table IV and the angularity of the respective hole pattern.
	100.6	Position of datum hole number 110 per table IV and the angularity of the respective hole pattern.
	100.7	Position of datum hole number 130 per table IV and the angularity of the respective hole pattern.
	100.8	Position of datum hole number 201 per table IV and the angularity of the respective hole pattern.
	100.9	Position of datum hole number 204 per table IV and the angularity of the respective hole pattern.
	100.10	Position of datum hole number 207 per table IV and the angularity of the respective hole pattern.
	100.11	Position of holes 212, 214, 216, 218, 220, 221 and 222 per table IV.
B	110	Mounting deck, (sheet 3 of dwg 310703).
	110.1	Check nutplates (items 76, 77 and 78) for correct size.
	110.2	Check .150 dimension (Zone A7).
B	120	L40127 Hole Relation Gage. (For checking holes 64-69, sheet 3 of dwg 310703).
	120.1	Place gage on part with hole marked '64' oriented to hole number 64 on part.
	120.2	Insert gage pins, detail 4 of L40127, thru bushings, detail 2 of L40127 into the .337 dia holes, 6 places. Use finger force only.
	120.3	Remove gage pins and return pins and gage to the storage container.

ISS	AUTHORIZATION	CHK ENG	DATE	ACTION	ORG	INIT.	DATE
C D	PX-310703-31-03		12.18.59 3.10.60	TYPE	8116-2	bac	12.18.59
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DWG. CLASSIFICATION

UNCLASSIFIED

TITLE INSPECTION METHOD INSTRUCTIONS FOR NC-976

5Y	DWG. SIZE A	DRAWING NO. IMI 310703
		SHEET 5 OF 14

REQ INSP	OPER NO.	SPECIFICATION AND METHOD
B	130	L40128 Hole Relation Gage. (For checking holes 70-73 and 130-133, sheet 3 of dwg 310703).
	130.1	Place gage on part to check holes 70 thru 73
	130.2	Insert gage pins, detail 4 of L40128, thru bushings, detail 2 of L40128, into the .275 dia holes, 4 places. Use finger force only.
	130.3	Remove gage pins and gage.
	130.4	Place gage on part to check holes 130 thru 133.
	130.5	Insert gage pins, detail 4, thru bushings, detail 2 into the .275 dia holes, 4 places. Use finger force only.
	130.6	Remove gage pins and return pins and gage to the storage container.
B	240	L40129 Hole Relation Gage. (For checking holes 80-87, sheet 3 of dwg 310703).
	140.1	Place gage on part.
	140.2	Insert gage pins, detail 4 of L40129, thru bushings, detail 2 of L40129, into the .275 dia holes, 8 places. Use finger force only.
	140.3	Remove gage pins and return pins and gage to the storage container.
B	150	L40130 Hole Relation Gage. (For checking holes 90-93, sheet 3 of dwg 310703).
	150.1	Place gage on part.
	150.2	Insert gage pins, detail 4 of L40130, thru bushings, detail 2 of L40130, into the .275 dia holes, 4 places. Use finger force only.
	150.3	Remove gage pins and return pins and gage to the storage container.
B	160	L40131 Hole Relation Gage. (For checking holes 100-108, sheet 3 of dwg 310703).
	160.1	Place gage on part.
	160.2	Insert gage pins, detail 4 of L40131, thru bushings, detail 2 of L40131, into the .275 dia holes, 9 places. Use finger force only.
	160.3	Remove gage pins and return pins and gage to the storage container.
B	170	L40134 Hole Relation Gage. (For checking holes 110-113, sheet 3 of dwg 310703).
	170.1	Place gage on part.
	170.2	Insert gage pins, detail 4 of L40134, thru bushings, detail 2 of L40134, into the .275 dia holes, 4 places. Use finger force only.

ISS	AUTHORIZATION	CHK ENG.	DATE	ACTION	ORG.	INIT.	DATE
C	PX-310703-3103		12-8-59	TYPE	K. G.	bac	
D			3-10-60	APPD.			
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DWG. CLASSIFICATION: UNCLASSIFIED

TITLE: INSPECTION METHOD INSTRUCTIONS PER TC-976

5Y	DWG. SIZE A	DRAWING NO. 310703
		SHEET 6 OF 14

REQ INSP	OPER NO.	SPECIFICATION AND METHOD
	170.3	Remove gage pins and return pins and gage to the storage container.
B	180	L40132 Hole Relation Gage. (For checking holes 201-206, sheet 3 of dwg 310703).
	180.1	Place gage on part to check holes 201 thru 203.
	180.2	Insert gage pins, detail 1 of L40132, thru bushings, detail 3 of L40132, into .275 dia holes, 3 places. Use finger force only.
	180.3	Remove the gage pins.
	180.4	Place gage on part to check holes 204 thru 206.
	180.5	Insert gage pins, detail 1, thru bushings, detail 3, into .275 dia holes, 3 places. Use finger force only.
	180.6	Remove the gage pins and return pins and gage to the storage container.
B	190	L40133 Hole Relation Gage. (For checking holes 208-211 sheet 3 of dwg 310703).
	190.1	Place gage on part, piloting in hole number 207.
	190.2	Gage .212 dia plug must fit in 1.060R counterbore.
	190.3	Insert gage pins, detail 3 of L40133, thru bushings, detail 2 of L40133 into .164 dia holes, 4 places. Use finger force only.
	190.4	Remove gage pins and return the pins and gage to the storage container.
B	200	Pullout adapter. (Item 52, Zone D3, sheet 2 of dwg 310703). (Zone references are to sheet 2 of dwg 310703 except as noted).
	200.1	Check the .337 dia hole size (Zone C4 of dwg 146524), 3 places.
	200.2	Check the .257 dia hole size (Zone C4 of dwg 146524), one place.
	200.3	Check the .277 dia hole size (Zone C6 of dwg 146524), one place.
	200.4	Check the Heli-coil inserts per note 9 of dwg 146524.
	200.5	Check installation of Heli-Coil. (Use gage 310266-G2).
	200.6	Check the .38 dim (Zone B4 of dwg 146524).
	200.7	Check the 22.75 dim. (Zone D2).
	200.8	Check the 2.12 dia hole size in item 8 (Zone C2), 2 places.
	200.9	Check the 2.14 dia hole size in item 8 (Zone C2), one place.
B	210	L40136 Hole Relation Gage. (For checking item 52, Zone D3, sheet 2 of dwg 310703). (Zone references are to dwg 146524 except as noted.)

ISS	AUTHORIZATION	CHK ENG	DATE	ACTION	ORG.	INIT.	DATE
C D	PX-310703-31-C3		12.18.59 3.10.60	TYPE	8116-2	bac	12.18.59
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DWG. CLASSIFICATION

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TITLE INSPECTION METHOD INSTRUCTIONS FOR MC-976

5Y	DWG. SIZE A	DRAWING NO. IMI 310703
		SHEET 7 OF 14

REV INSP	OPER NO.	DESCRIPTION AND METHOD
	210.1	Place-assembly 'A' of L40136 over item 52. Orient gage by piloting detail 7 of L40136 into the connector hole of the adapter with pin, detail 6 of L40136, into hole 'Z' (C4) and pin, detail 8 of L40136, into hole 'Y'(C6).
	210.2	Insert gage pins detail 21 of L40136, thru bushings, detail 22 of L40136, one place and thru bushings, detail 23 of L40136, two places. Use finger force only.
	210.3	Remove gage pins, detail 21 of L40136.
	210.4	From inside the unit, check the position of the .096 key slot (C4) by inserting the slot bar, detail 13 of L40136, into the slot in detail 7 of L40136.
	210.5	Remove the slot bar, detail 13, and return to the storage container.
	210.6	Place slide bushing, detail 25 of L40136, on detail 9 of L40136 to check location of 2.14 dia hole (C2 of sheet 2 of dwg 310703)in item 8.
	210.7	Remove slide bushing, detail 25, and return to storage container.
	210.8	From inside the unit, place assembly 'B' of L40136 over the two guide pins, detail 7 of L40136, thru aft bushing, detail 12 of L40136, and guide pin, detail 9 of L40136, thru forward bushing, detail 12 of L40136 assembly 'A'. Move in until surface of assembly 'B' is against datum 'P' (C7).
	210.9	Insert threaded gage pins, detail 14 of L40136, thru bushings, detail 11 of L40136 and screw into inserts, 4 places. Use finger force only.
	210.10	Remove gage pins and return pins and gage to storage container.
B	220	L40137 Hole Relation Gage. (For checking item 26, (Zone A9). (Zone references are to sheet 3 of dwg 310703).
	220.1	Check the .265 dia (B10) hole size, 2 places.
	220.2	Place gage on part, align bushings in gage with .265 dia holes in part.
	220.3	Insert gage pins, detail 3 of L40137, thru bushings, detail 2 of L40137 into the .265 dia holes, 2 places. Use finger force only.
	220.4	Check thread size of nut plates, item 81 (B10).
	220.5	Remove gage pins and return pins and gage to the storage container.
B	230	Check item 21 (C10) for the following: (Zone references are to sheet 4 of dwg 310703).
	230.1	Check the .217 dia (B, C10) hole size, 4 places.

ISS	AUTHORIZATION	CHK ENG.	DATE	ACTION	ORG.	INIT.	DATE
C D	PX-310703-31C3		[illegible]	TYPE	[illegible]	[illegible]	
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DWG. CLASSIFICATION: [redacted]

TITLE INSPECTION METHODS INSPECTION FOR MC-976

5Y | DWG. SIZE A | DRAWING NO. INI 310703

SHEET 8 OF 14

REQ INSP	OPER NO.	SPECIFICATION AND METHOD
	239.2	Check the .195 dia (D9) hole size and location.
B	240	L40142 Hole Relation Gage. (For checking item 21, Zone C10) (Zone references are to sheet 4 of dwg 310703).
	240.1	Place gage on the part with the 4.09 dia plug piloting into the 4.12 dia (B10) hole, datum X (C9).
	240.2	Insert gage pins, detail 3 of L40142, thru bushings, detail 2 of L40142, into .217 dia (B10) holes, 4 places Use finger force only.
	240.3	Remove gage pins and return gage and pins to the storage container.
B	250	MC-1017 Mounting Bracket (Item 25, Zone B3) (Position reference of item 25 is zone B8, sheet 1 of dwg 310703). (Detail zone references are to sheet 4 of dwg 310703).
	250.1	Check 'no paint' area per dwg (Zone C5-6).
	250.2	Check 2.984 dim (C7).
	250.3	Check 2.531 dim (B6)
	250.4	Check parallelism tolerance (B7) between ℄ FFF-GGG (B, D6) and ℄ T-U (C, D6).
	250.5	Check the .275 dia (B6) hole size, 4 places.
	250.6	Check orientation of item 59 (B7) per dwg.
	250.7	Check operation of detent, item 60 (C5).
B	260	L40141 Hole Relation Gage. (For checking item 25, Zone B3). (Zone references are to sheet 4 of dwg 310703).
	260.1	From inside the assembly, MC-976, place the gage on the back side of item 25 (B3).
	260.2	Insert gage pins, detail 4 of L40141, thru bushings, detail 5 of L40141, into .275 dia (B6) holes, 4 places. Use finger force only.
	260.3	Remove gage pins, and return pins and gage to storage container.
B	270	L40135 Hole Relation Gage.(For checking item 92, Zone D7 sheet 1 and Zone D6 sheet 3 of dwg 310703.)
	270.1	Check the 2 Rivnuts for proper installation per note 20.
	270.2	Place gage on part and align bushing, detail 7 of L40135 with one rivnut.
	270.3	Insert threaded gage pin, detail 8 of L40135, with red handle, thru bushing, detail 7 of L40135, and screw into Rivnut. Use finger force only.

ISS	AUTHORIZATION	CHK ENG	DATE	ACTION	ORG.	INIT.	DATE
C	PX-310703-31-C3		12-18-59	TYPE	8116-2	bac	12-18-59
D			3-10-60	APPD.			
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DWG. CLASSIFICATION

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TITLE INSPECTION METHOD INSTRUCTIONS FOR MC-976

5Y	DWG. SIZE A	DRAWING NO. IMI 310703 SHEET 9 OF 14

REQ INSP	OPER NO.	SPECIFICATION AND METHOD
	270.4	Insert threaded gage pin, detail 9 of L40135 thru slot of detail 2 of L40135, and screw into second Rivnut. Use finger force only.
	270.5	Remove threaded gage pins and return pins and gage to storage container.
B	280	L40144 Hole Relation and Squareness Gage. (For checking fin mounting pattern, zone D8, 10, sheet 1 of dwg 310703 and view AA, zone A2, sheet 2 of dwg 310703. (Zone references are to sheets 1 and 2 of dwg 310703).
	280.1	Check .397 hole (2A2) size, 2 places on each pattern.
	280.2	Check .438 (2A2) size, 2 places on each pattern.
	280.3	Check orientation of hole 'S' (2B2) per sheet 1 of 310703 (1D8, 1D10), 4 places.
	280.4*	Set the MC-976 on detail 31 of L40144 with dia 'T' (1C7) piloting into the 49-5/8 dia of detail 31 and resting on surface 'R' (1A7) of the forward ring. Set clamps to restrain surface 'R' to detail 31.
	280.5	Insert 'set pin', detail 9 of L40144, thru bushing, detail 29 of L40144, into bushing, detail 8 of L40144. Alignment of bushings is accomplished by turning knob, detail 12 of L40144. With set pin installed, adjust to zero the dial indicator, directly below hole 'S'. Remove the set pin and return to the storage container.
	280.6	Delete
	280.7	Place the gage on the part with details 11 of L40144 resting on detail 31, and insert gage pin, detail 5 of L40144, thru bushing marked 'S', detail 4 of L40144. Adjust up or down by turning knob, detail 12 of L40144. Dial indicator, item 10, must read within plus or minus .010.
	280.8	Delete
	280.9	Insert gage pins, detail 16 of L40144, thru bushings, detail 3 of L40144, into the .397 dia (2A2) holes, 2 places. Use finger force only.
	280.10	Insert gage pins, detail 15 of L40144, thru bushings, detail 2 of L40144, into the .438 dia (2A2) holes, 2 places. Use finger force only.

ISS	AUTHORIZATION	CHK ENG	DATE	ACTION	ORG.	INIT	DATE	DWG CLASSIFICATION
	DPX-310703-33C3	Jnw	3.10.60		8116-2	bac	3.10.60	

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REQ INSP	OPER NO.	SPECIFICATION AND METHOD
	280.11	Remove gage pins.
	280.12	Repeat operations 280.6 - 280.11 on the other three fin mounting patterns.
	280.13	Return the gage pins and gage to the storage container.
B	290	Desiccant mounting container (Item 10, Zone A8). (Zone references are to sheet 2 of dwg 310703).
	290.1	Check the .436 dia (A7) hole size, 12 places.

SI	AUTHORIZATION	OPER NO.	DATE	ACTION	ORG.	INIT.	DATE	DWG. CLASSIFICATION
D	PX-310703-33C3	JMW	3.10.60		8116-2	bac	3.10.60	UNCLASSIFIED
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SY	DWG. SIZE	DRAWING NO.
	*	IMI 310703

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REV INSP	OPER NO.	SPECIFICATION AND METHOD
		290.2 Check for correct Camlock (A7) installation and alignment.
		290.3 Check the 16.92 dia (B8) cutout size.
		290.4 Check flatness tolerance of surface 'H' (B3)
		290.5 Check the 9.00 dimension (B8).
		290.6 Check the 3.29 dimension (B8).
		290.7 Check the organic surface finish per note (A8).
B	300	Item 27 (Zone A9). (Zone references are to sheet 2 of dwg 310703).
		300.1 Check the 6.000 dia (A9) hole.
		300.2 Check the 6.180 dia (A9) hole.
		300.3 Check the .064 dimension (A9).
		300.4 Check the .220 dimension (A9).
		300.5 Check both .062 dimensions (A9).
B	310	L40140 Hole Relation Gage. (For checking item 10, Zone A8). (Zone references are to sheet 2 of dwg 310703).
		310.1 With the centering mechanism in the retracted position, place the gage on the part. Orient the gage so that the two slides, detail 8 of L40140, align with the two hat sections, item 23 (A9).
		310.2 Expand the centering mechanism until the three shoes are in contact with the 16.92 dia (B8) hole.
		310.3 Insert gage pins, detail 33 of L40140, thru bushings, detail 2 of L40140 into .436 dia (A7) holes, 12 places. Use finger force only.
		310.4 Check the 8.31 radius (A9) by sliding down the two slides, detail 8 of L40140. Go-No Go check must not pass step in slide.
		310.5 Remove the gage pins, retract the slides to top position and retract the centering mechanism. Return pins and gage to the storage container.
B	320	Aft Ring (Item 2, Zone A5) (Zone references are to sheet 1 of dwg 310703 except as noted).
		320.1 Check the 48.00 dia, datum 'Z' (C5), 6 places.
		320.2 Check the 1.93 dim. (D5).
		320.3 Check the 1.41 dim. (D5).
		320.4 Check the .78 dim. (D5), 8 places.
		320.5 Check the .50 flange thickness (D5), 8 places.
		320.6 Check the surface 'F' (D5) flat tolerance.
		320.7 Check the .155 (D5) depth of cutout, 8 places.
		320.8 Check the .155 (D5) width of cutout, 8 places.

ISS	AUTHORIZATION	CHK ENG	DATE	ACTION	ORG.	INIT.	DATE
C	PX-310703-31-C3		12-18-59	TYPE	8116-2	bac	12-18-59
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DWG. CLASSIFICATION: UNCLASSIFIED

TITLE: INSPECTION METHOD INSTRUCTIONS FOR MC-976

5Y	DWG. SIZE A	DRAWING NO. IMI 310703
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REQ INSP	OPER NO.	SPECIFICATION AND METHOD
	320.9	Check the .71 dimension (D5).
	320.10	Check the .436 dia (A3) hole size, 24 places.
	320.11	Check Heli-Coils, item 75 (A4), per note 26 and gage with 310266-G2.
	320.12	Check the .312 dia (D4) hole 'W'.
	320.13	Check the .561 dia (Zone A4, sheet 2) holes, 2 places.
	320.14	Check the .764 dia (Zone B4, sheet 2) holes, 2 places.
	320.15	Check the .25 ±.02 dim. (Zone A4, sheet 2), 2 places.
	320.16	Check the 1.00 dia and .25 depth (Zone B4, sheet 2), counterbore, 2 places.
	320.17	Check the .25 x .157 dims. (Zone B5, sheet 2), 2 places.
	320.18	Check the .25 ±.06 radius (Zone A5, sheet 2), 4 places.
	320.19	Check the .04 min radius (Zone B4, sheet 2), 2 places.
B	330	L40145 Hole Relation Gage. (For checking item 2, Zone A5) (Zone references are to sheet 1 of dwg 310703 except as noted.)
	330.1	Place the gage on the aft ring with the 'OD' of the gage piloting in the 48.00 dia 'Z' (C5) and resting on surface 'A' (C5). Orient so that hole marked '.' on the gage aligns with the hole 'W' (D4) of the aft ring. NOTE: Use counter balance to render gage essentially weightless on part.
	330.2	Insert gage pin marked 'W', detail 7 of L40145, thru bushing marked 'W', into hole 'W' (D4). Use finger force only.
	330.3	Insert gage pins marked 'B', detail 8 of L40145, thru bushings marked 'B', detail 2 of L40145, into .436 dia (A3) holes, 24 places.
	330.4	Insert gage pins marked 'C', detail 9 of L40145, thru bushings marked 'C', detail 6 of L40145, into .561 dia (Zone A4), sheet 2) holes, 2 places. Use finger force only.
	330.5	Insert gage pins marked 'D', detail 10 of L40145, thru bushing, marked 'D', detail 5 of L40145, into .764 dia (Zone B4 , sheet 2) holes, 2 places. Use finger force only.
	330.6	Remove gage pins and return gage and pins to the storage container.
B	340	L40146 Hole Relation Gage. (For checking item 2, Zone A5). (Zone references are to sheet 1 of dwg 310703).
	340.1	Place gage on aft ring with the centering shoes piloting in the 48.00 dia 'Z' (C5) and resting on surface 'F' (D5).

ISS	AUTHORIZATION	CHK ENG	DATE	ACTION	ORG.	INIT.	DATE
C D	PX-310703-31-C3		12.18.59 3.10.60	TYPE	8116-2	bac	12.18.59
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DWG. CLASSIFICATION

UNCLASSIFIED

TITLE INSPECTION METHOD INSTRUCTIONS FOR MC-976

5Y	DWG SIZE A	DRAWING NO. IMI 310703
		SHEET 13 OF 14

REQ INSP	OPER NO.	SPECIFICATION AND METHOD
		Orient so that hole marked 'W' on the gage aligns with the hole 'W' (D4) of the aft ring.
	340.2	Expand fixture until at least 3 nonadjacent shoes are in contact with diameter 'Z' (C5, D5). Two adjacent shoes are sufficient when two others directly opposite are in contact. Any 5 are also sufficient. This step requires centering only and not rounding. NOTE: Use counter balance to keep weight of gage off of the part.
	340.3	Insert gage pin marked 'W', detail 3 of L40146, into bushing marked 'W', detail 5 of L40146, into hole 'W' (D4) of aft ring. Use finger force only.
	340.4	Insert threaded gage pins, detail 16 of L40146, thru bushings, detail 2 of L40146, and screw into Heli-coil inserts item 75 (A4), 12 places. Use finger force only.
	340.5	Remove gage pins and return pins and gage to storage container.
B	350	Check the MC-976 per notes 4 and 5.
B	360	Perform leakage test per note 38.
B	370	Check markings per note 19.

ISS	AUTHORIZATION	CHK ENG.	DATE	ACTION	ORG.	INIT.	DATE
C D	PX-310703-31-C3		12-18-59 3-10-60	TYPE	8116-2	bac	12-18-59
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DWG. CLASSIFICATION

UNCLASSIFIED

TITLE INSPECTION METHOD INSTRUCTIONS FOR MC-976

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