TO: ALL HOLDERS OF WASTE WATER DRAIN MAST ASSEMBLY COMPONENT MAINTENANCE MANUAL 38-31-01

REVISION NO. 10 DATED NOV 01/02

HIGHLIGHTS

Pages which have been added or revised are outlined below together with the highlights of the revision. Remove and insert the affected pages as listed and enter Revision No. and date on the Record of Revision Sheet.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
701	Added clarifications and updated callouts.
1004-1005,1011,1017	Changed part number callouts of adaptor plates.

WASTE WATER DRAIN MAST ASSEMBLY

PART NUMBERS 417T2093-1,-2,-8,-10,-11,-14
417N2117-1,-2,-4 THRU -9
478W1610-4,-6,-7

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

REVISION RECORD

- Retain this record in front of manual. On receipt of revision, insert revised pages in the manual, and enter revision number, date inserted and initial.

REVISION NUMBER	REVISION DATE	DATE FILED	BY	REVISION NUMBER	REVISION DATE	DATE FILED	BY

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
		PRR B10814	JAN 10/84
		PRR N52875	JAN 10/84
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		PRR 61552	NOV 01/00

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*[1] Special instructions not required. Use standard industry practices.

INTRODUCTION

The instructions that are specified in this manual give the data necessary to do the maintenance functions that range from simple maintenance checks and part replacement to complete shop-type repair procedures.

This manual is divided into separate sections:

1. Title Page
2. Record of Revisions
3. Temporary Revision & Service Bulletin Record
4. List of Effective Pages
5. Table of Contents
6. Introduction
7. Procedures & IPL Sections

Refer to the Table of Contents for the page location of applicable sections. An asterisked flagnote *[ ] in place of the page number indicates that no special instructions are provided since the function can be performed using standard industry practices.

The beginning of the REPAIR section includes a list of the separate repairs and a list of applicable standard Boeing practices.

An explanation of the use of the Illustrated Parts List is provided in the Introduction to that section.

All weights and measurements used in the manual are in English units, unless otherwise stated. When metric equivalents are given they will be in parentheses following the English units.

Design changes, optional parts, configuration differences and Service Bulletin modifications create alternate part numbers. These are identified in the Illustrated Parts List (IPL) by adding an alphabetical character to the basic item number. The resulting item number is called an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless otherwise indicated.

Verification:

Assembly

WASTE WATER DRAIN MAST ASSEMBLY

DESCRIPTION AND OPERATION

1. Description

A. The Wastewater Drain Mast Assembly is a drainage system that removes wastewater from the airplane.

B. The drain mast assembly consists of the major components that follow:

(1) Two assembly halves

(2) Heater assembly with drainage system

(3) Extension adapter (478W1610-6 only)

(4) Silicone rubber seal

C. The two assembly halves maintain aerodynamic smoothness around the heater assembly.

D. The heater assembly will make sure that the wastewater does not freeze while the airplane is in flight.

2. Operation

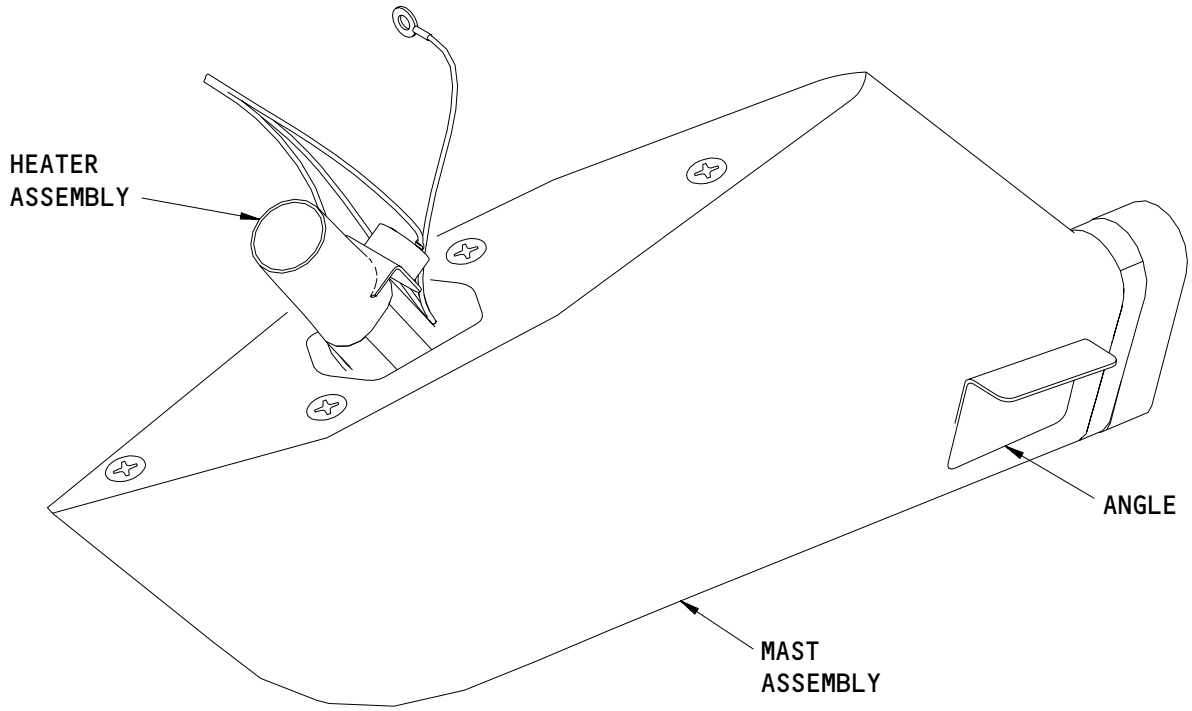
A. The drain mast assembly drains the wastewater from the airplane during normal flight operations.

B. The heater assembly will heat the wastewater as the water flows through the drain mast assembly.

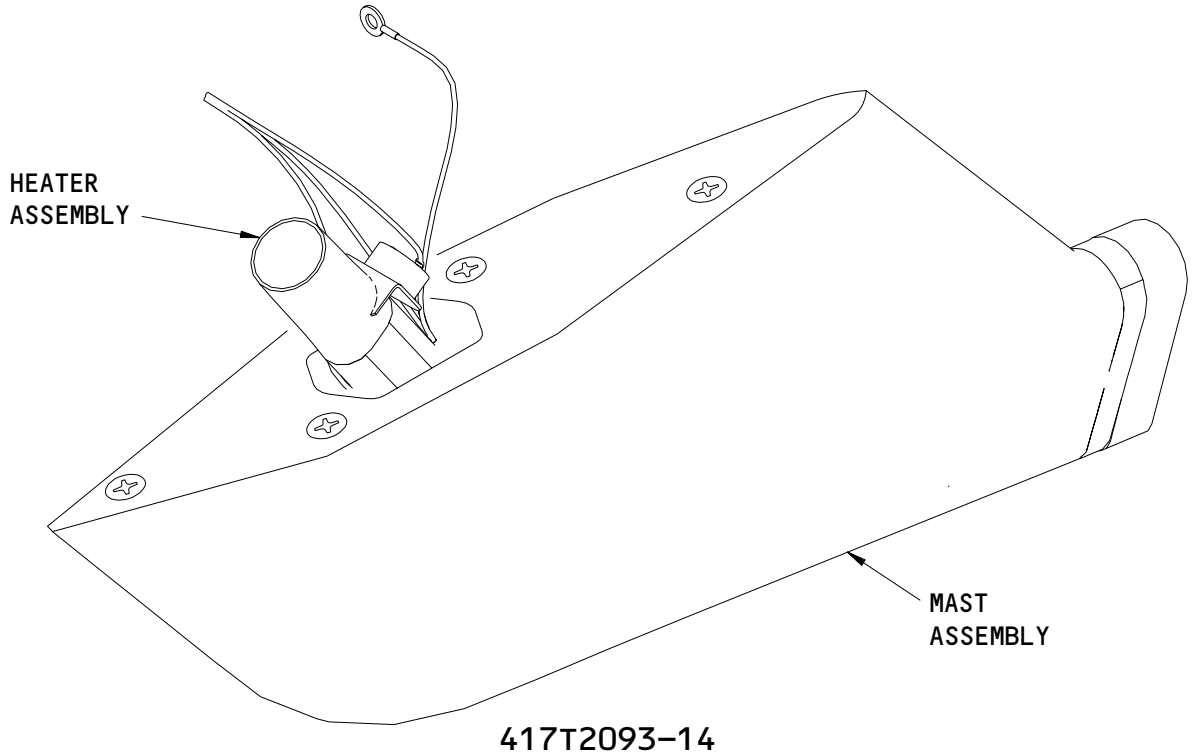
C. The heated wastewater is then drained out into the air stream and away from the airplane.

3. Leading Particulars (Approximate)

Length -- 19 inches
Width -- 2 inches
Height -- 11 inches
Weight -- 2 pounds



417T2093-1,-2,-8,-10,-11



417T2093-14

Waste Water Drain Mast Assembly
Figure 1 (Sheet 1)

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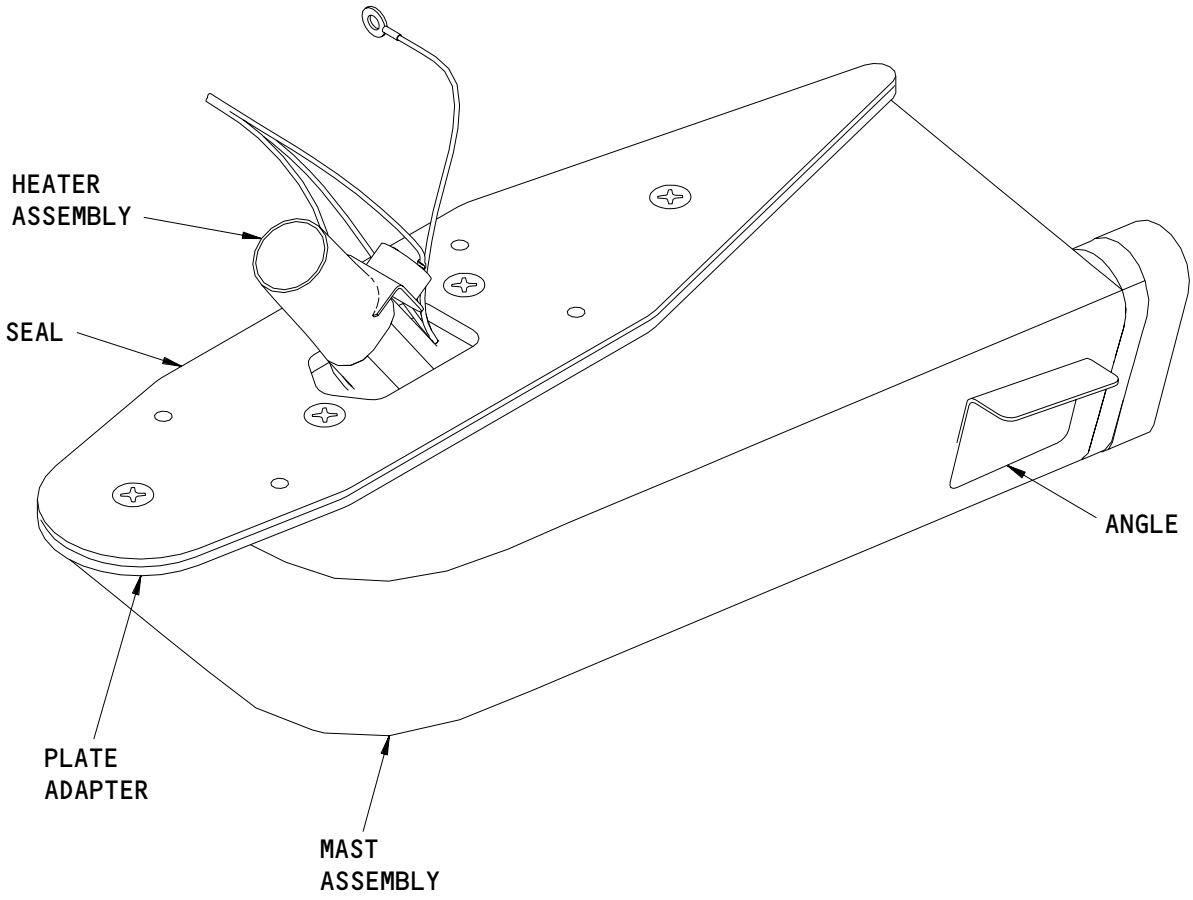
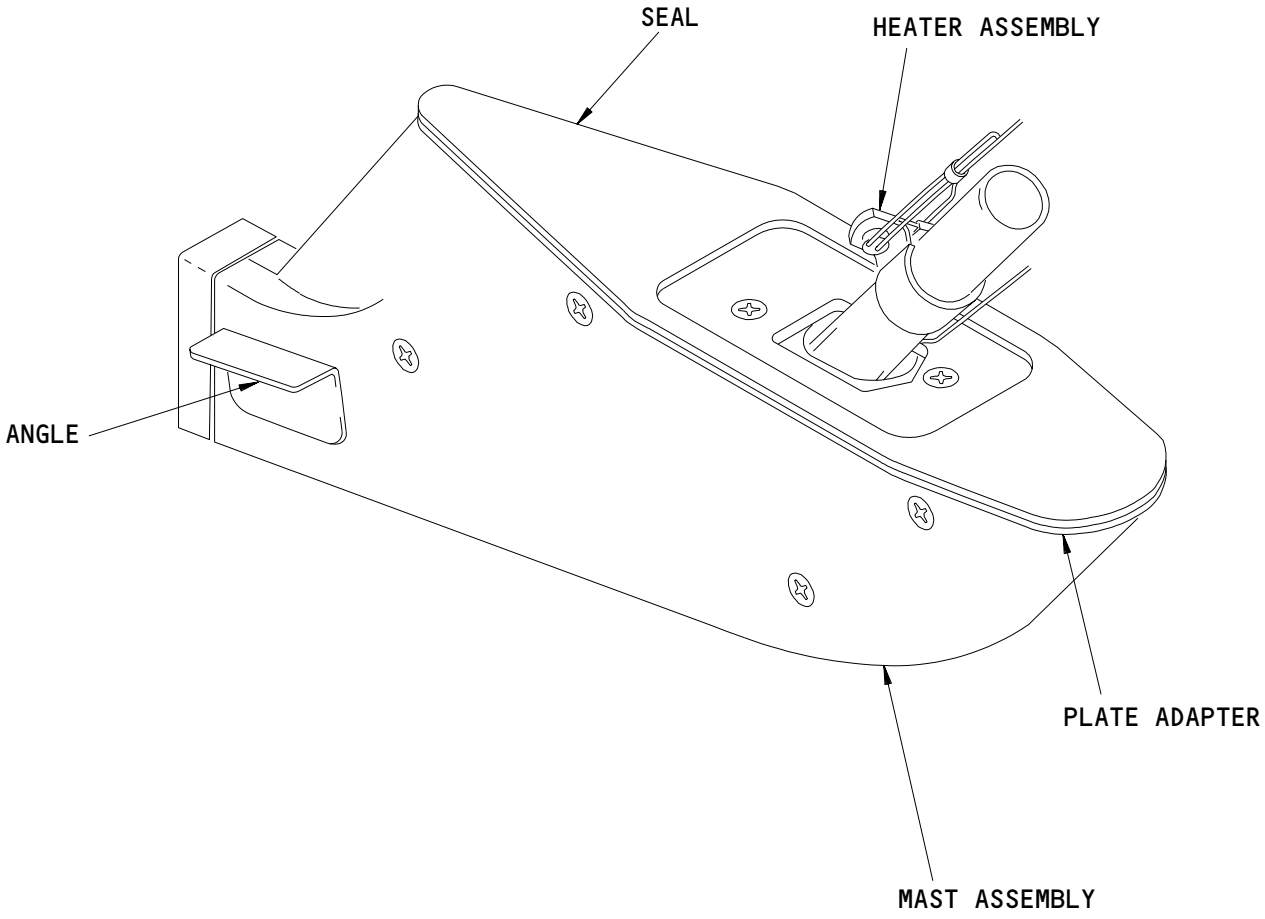


417N2117-1,-2,-4 THRU -9

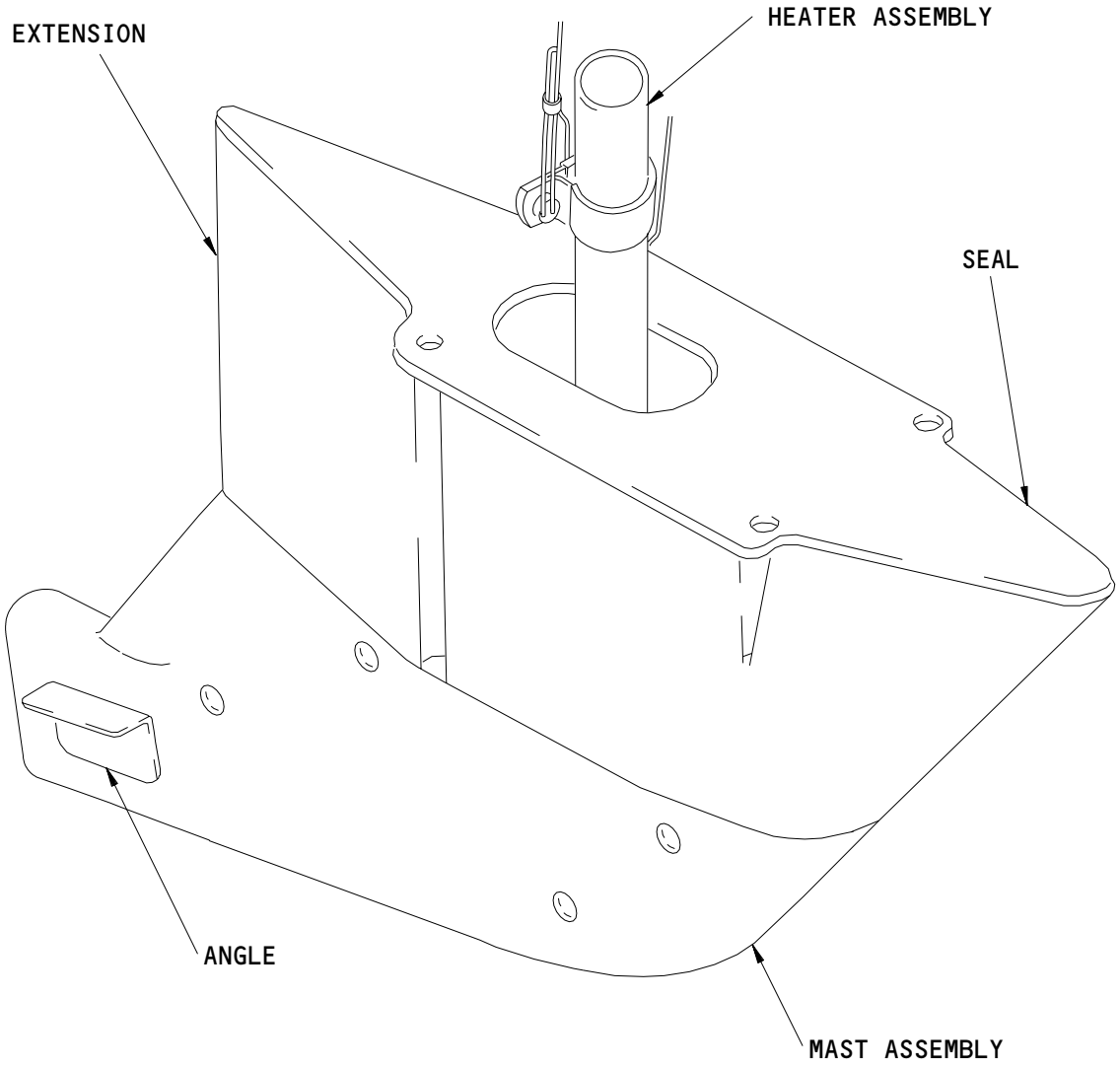
Waste Water Drain Mast Assembly
Figure 1 (Sheet 2)



478W1610-4

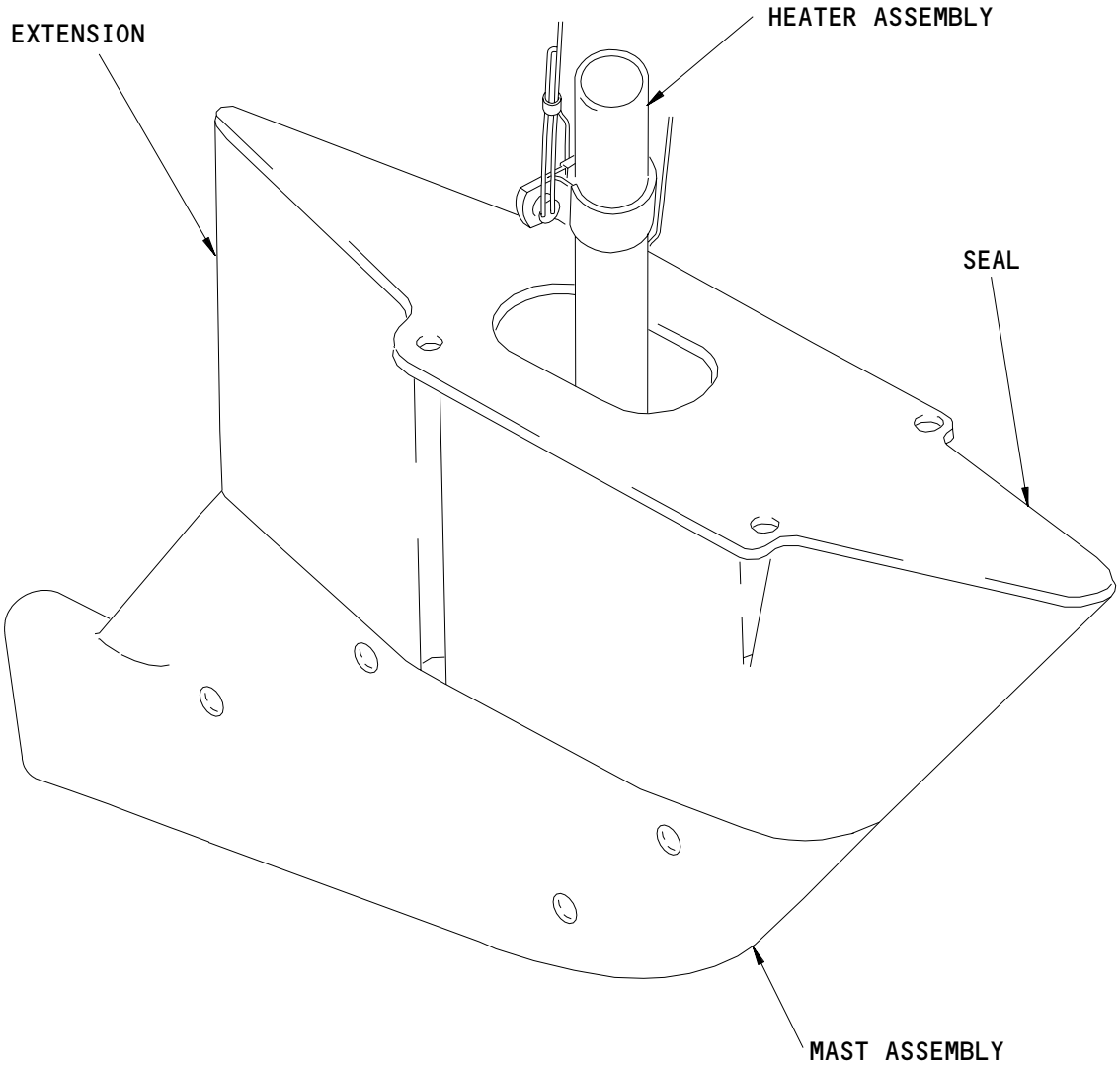
Waste Water Drain Mast Assembly
Figure 1 (Sheet 3)

M20124



478W1610-6

Waste Water Drain Mast Assembly
Figure 1 (Sheet 4)



478W1610-7

Waste Water Drain Mast Assembly
Figure 1 (Sheet 5)

DISASSEMBLY

1. The Boeing Company recommends that you disassemble the drain mast only when necessary to do the specified procedures that follow:

   - to complete any type of fault isolation
   - to find out if the parts are in a serviceable condition
   - to make any necessary repairs to the drain mast
   - or to put the drain mast back into a serviceable condition

2. When a disassembly is necessary, then use standard industry practices to disassemble the drain mast assembly.

   NOTE: Do not disassemble the heater assembly (IPL Fig. 1, 25 and IPL Fig. 2 and 3, 100) unless a repair or replacement of the complete assembly is necessary.

3. The data that follows is for the drain mast assemblies, 417T2093-1, -2, -8, -10, -11, -14 (IPL Fig. 1) and 417N2117-1, -2, -4 thru -9 (IPL Fig. 1):

   A. The four bolts (90) that attach the adapter plates (95, 100, 102) to the drain mast assembly (110) are installed with BMS 5-95 sealant. See Fig. 702 for the correct bolt locations.

      NOTE: For drain mast assemblies (P/N 417N2117-1, -2, -4 thru -9 only), the four bolts (105) are installed with BMS 5-95 sealant. See Fig. 702 for the correct bolt locations.

   B. The four screws (5, 10, 15) that fasten the two drain mast halves (45, 70, 150, 175) together are installed with BMS 5-95 sealant. See Fig. 701 for the correct screw locations.

4. The data that follows is for the drain mast assembly 478W1610-4 (IPL Fig. 2):

   A. The four screws (25, 30, 35) that fasten the two drain mast halves (40, 65) together are installed with BMS 5-95 sealant.

5. The data that follows is for the drain mast assembly 478W1610-6, -7 (IPL Fig. 3):

   A. The four screws (35) that fasten the two drain mast halves (40, 65) together are installed with BMS 5-95 sealant.

   B. See Fig. 701 for the correct screw locations.

CHECK

1. Use standard industry practices to do an inspection on all the component parts of the water drain mast assembly.

2. Do a penetrant inspection (SOPM 20-20-02) of the parts that follow:

   A. Drain half (IPL Fig. 1, 45, 70, 150, 175; IPL Fig. 2 and 3, 60, 95)

   B. Angle (IPL Fig. 1, 40, 65A, 145, 170; IPL Fig. 2 and 3, 50, 75)

WARNING: THE HEATER ASSEMBLY OPERATES AT HIGH TEMPERATURES. THUS, YOU MUST KEEP ALL PERSONNEL AND COMBUSTIBLE MATERIALS AWAY FROM THE HEATER ASSEMBLY DURING TESTING. AFTER THE TESTS ARE COMPLETED, MAKE SURE THAT THE HEATER ASSEMBLY IS FULLY COOLED BEFORE TOUCHING THE UNIT.

3. Do an electrical operational test of the drain mast heater assemblies (IPL Fig. 1, 25, 30; IPL Fig. 2 and 3, 100).

   A. Make sure that the electrical components of the heater assembly are thoroughly dry and are kept at ambient temperature and pressure before and during the specified testing procedures.

   B. Put the heater assembly on the metal mounting stand.

      (1) During the wattage test, the heater assembly must be supported in the vertical position with the outlet end of hte drain tube in the "UP" or "DOWN" position.

      (2) Refer to Fig. 501 for the correct test setup.

   C. Connect the heater assembly to a single-phase alternating current voltage supply source with 112-118 volts, RMS at 375-425 Hertz.

   D. Use a Wattmeter that has a capacity of 200-500 watts.

E. Use the data that follows to test the heater assembly.

(1) Only apply the voltage during the time period given in Table 501.

(2) Check the wattage during the time period given in Table 501.

(3) The wattage must be in the limits given in Table 501.

F. After you measure the wattage; use an Ampmeter with a maximum capacity of at least 10 milliamperes to measure the amperage loss of the heater assembly insulation.

(1) Immediately after the power leads are removed, make sure that the assembly is still at test temperature.

(2) Apply a potential of 500 volts, RMS at 60 Hertz between one of the two leads and the bonding strap for approximately 1 minute.

(3) Refer to Table 501 for the maximum amperage loss permitted.

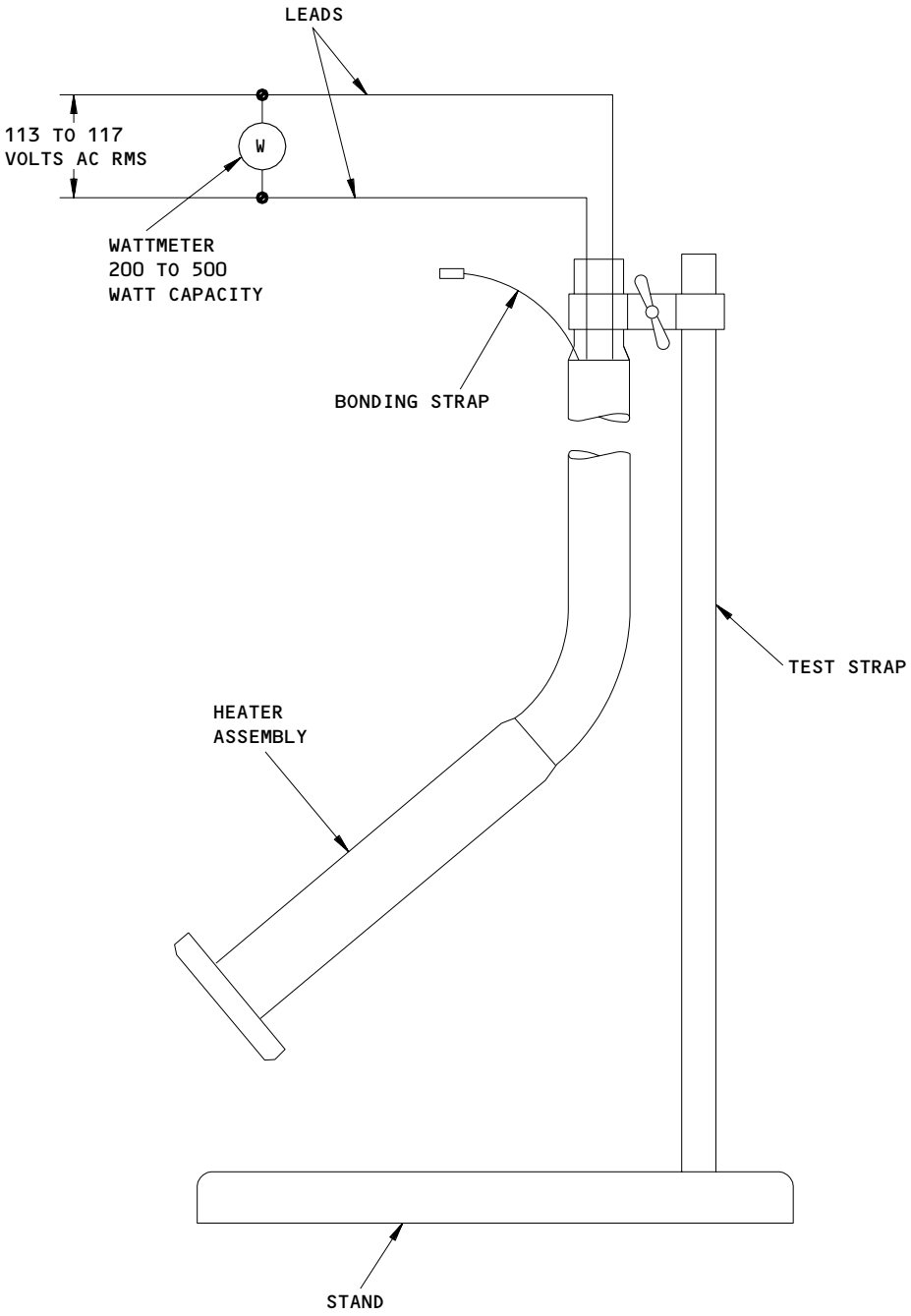
G. If necessary, you can also use standard industry practices along with an Ohmmeter to measure the insulation resistance of the heater assembly.

(1) Calculate the resistance from the measured wattage and the input voltage.

(2) Use the Ohmmeter to test the heater assembly and the insulation for heater problems, which can cause the assembly to fail in service.

DRAIN MAST HEATER ASSEMBLY ITEM NUMBER	WATTAGE		AMPERAGE
	TIME PERIOD TO MEASURE WATTAGE (MINUTES)	MEASURED WATTAGE LIMIT (WATTS)	PERMITTED LOSS OF AMPERAGE (MILLIAMPS)
IPL Fig. 1, 25D, 25G, 130B, 130C; IPL Fig. 2, 100	3.0 - 3.5	259 - 311	2
IPL Fig. 1, 25A, 25C, 25E, 25F; IPL Fig. 3, 100	3.0 - 3.5	259 - 311	2

Wattage Table
Table 501



Electrical Operational Test Setup
Figure 501

REPAIR - GENERAL

1. Content

A. Repair, refinish, and replacement procedures are included in separate repair sections as follows:

P/N	NAME	REPAIRS
417T2093, 417N2117	MAST ASSEMBLY	1-1
478W1610,	MAST ASSEMBLY	1-2
- -	MISCELLANEOUS PARTS REFINISH	2-1

2. Standard Practices

A. Refer to the following standard practices as applicable for details of procedures in individual repairs.

SOPM 20-20-02 Penetrant Methods of Inspection
SOPM 20-30-02 Stripping of Protective Finishes
SOPM 20-41-01 Decoding Table for Boeing Finish Codes
SOPM 20-41-02 Application of Chemical and Solvent Resistant Finishes

3. Materials

NOTE: If necessary, you can use an equivalent substitute.

A. Enamel -- BMS 10-60 type 2 red gloss (SOPM 20-60-02)

B. Enamel -- BMS 10-60 type 2 gray gloss (SOPM 20-60-02)

C. Primer -- BMS 10-11 type 1 (SOPM 20-60-02)

D. Deleted

E. Primer -- BMS 10-79 type 2 (SOPM 20-60-02)

MAST ASSEMBLY - REPAIR 1-1

417T2093-1, -2, -8, -10, -11, -14
417N2117-1, -2, -4 THRU -9

1. Refinish

   A. Refer to REPAIR-GENERAL section for a list of the applicable standard practices.

   B. Also refer to the Refinish instructions shown in Fig. 601.

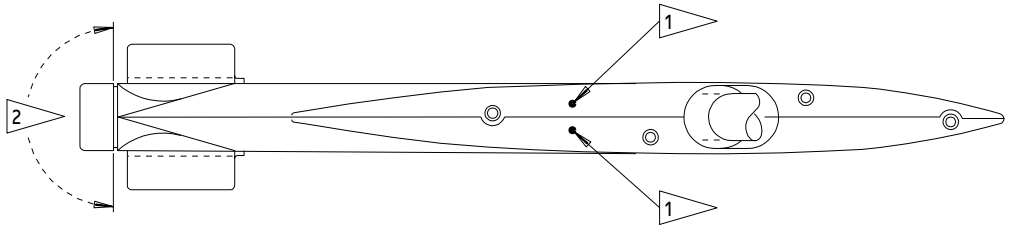
2. Insert and Sleeve Replacement (IPL Fig. 1)

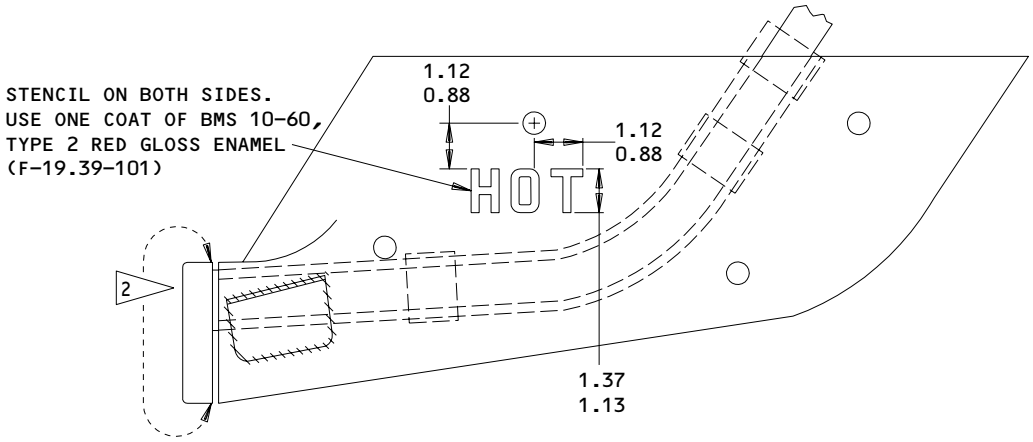
   A. Remove inserts (50, 75, 80, 155, 180, 185) and sleeves (85, 190).

   B. Coat all of the areas of the hole along with the countersink. Use BMS 10-11, type 1 primer (SRF-12.40).

   C. After the holes are coated, immediately install the new inserts (50, 75, 80, 155, 180, 185) and sleeves (85, 190) into the mast half (45, 70, 150, 175).

      NOTE: Make sure that replacement parts are installed with one-quarter to one-half turn below the countersink of the hole. Also remove the tang.





REFINISH

APPLY ONE COAT BMS 10-60, TYPE 2 GRAY GLOSS ENAMEL (F-19.39-707) ON THE OUTSIDE SURFACES EXCEPT THE SURFACES NOTED IN 1 2

1 APPLY A COLORED CHEMICAL COATING (F-17.10) MANUALLY TO THE NOTED SURFACES

2 NO FINISH (F-25.01)

ALL DIMENSIONS ARE IN INCHES

417T2093
Drain Mast Assembly Refinish
Figure 601

MAST ASSEMBLY - REPAIR 1-2

478W1610-4, -6, -7

1. Refinish

   A. Refer to REPAIR - GENERAL section for a list of the applicable standard practices.

   B. Also refer to the Refinish instructions shown in Fig. 601.

2. Insert and Sleeve Replacement (IPL Fig. 2 and 3)

   A. Remove inserts (55, 85, 90) and sleeve (80).

   B. Coat all of the areas of the hole along with the countersink. Use BMS 10-11, type 1 primer (SRF-12.40).

   C. After the holes are coated, immediately install the new inserts (55, 80, 90) and sleeve (80) into the drain mast half (60, 95).

      (1) Make sure that replacement parts are installed with one-quarter to one-half turn below the countersink of the hole.

      (2) Remove the tang.

MISCELLANEOUS PARTS REFINISH - REPAIR 2-1

1. Repair of parts listed in Fig. 601 consists of restoration of the original finish.

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Angle (40,145,65A, 170)	Al alloy	Chromic acid anodize (F-2.26) and apply one coat of BMS 10-79, type 2 primer (F-19.47).
Drain half (45,70, 150,175)	Al alloy	Sulfuric acid anodize (F-17.03) and apply one coat of BMS 10-79, type 2 primer (F-19.47) all over, except mounting surfaces common to fuselage.
Fig. 2 and 3		
Angle (50,75)	Al alloy	Chromic acid anodize (F-2.26) and apply one coat of BMS 10-79, type 2 primer (F-19.47).
Drain main half (60,95)	Al alloy	Sulfuric acid anodize (F-17.03) and apply one coat of BMS 10-79, type 2 primer (F-19.47) all over, except mounting surfaces common to fuselage.

Refinish Details
Figure 601

ASSEMBLY

1. Materials

NOTE: Equivalent substitutes may be used.

A. Filler Metal -- Easy-Flo per QQ-S-561, class 4, AWS BAG-1A optional: Tin-Lead solder per QQ-S-571

B. Tape, Flame Resistant -- Scotch 474 (SOPM 20-60-04)

C. Tape, Silicone -- Permacel 2650, 0.06 inch maximum thickness X 1.00 inch wide (SOPM 20-60-04)

D. Sealant -- BMS 5-95 (SOPM 20-60-04)

E. Adhesive -- Type 79 (SOPM 20-50-12)

2. Assembly (IPL Fig. 1, 2 and 3)

A. To assemble drain mast assemblies (IPL Fig. 1, P/N 417T2093-1, -2, -8, -10, -11), do the steps that follow:

(1) Wrap heater assembly (25) with Permacel 2650 tape, in locations shown in Fig. 701 to clamp heater firmly in place when screws (5, 10, 15) are installed. Tape should not compress more than 0.040 inch when screws are tightened.

(2) Position heater assembly (25) between mast halves (30, 55) and install screws (5, 10, 15).

CAUTION: EXERCISE CARE WHEN TRIMMING TAPE TO AVOID DAMAGE TO HEATER (25) OR TUBE (27).

(3) Trim off tape that extends above upper surface of mast halves.

(4) On mast assemblies 417T2093-1 and -2, trim upper edge of heater assembly (25) to dimension shown in Fig. 701.

(5) On mast assembly 417T2093-2:

NOTE: Heater assembly (25), tube (27) and heater tape (22) may be replaced with heater assembly (25A).

(a) Braze tube (27) onto replacement heater assembly (25) as shown in Fig. 701. Ensure that solder seal is complete over entire circumference of joint.

WARNING: OVERLAPPING TURNS OF HEATER TAPE CAN RESULT IN AN OVERHEAT CONDITION CAPABLE OF CHARRING HEATER INSULATION.

(b) Spirally wrap heater tape (22) around tube (27) as shown in Fig. 701. Ensure that tape does not contact heating elements. Secure tape to tube with a continuous spiral wrap of 3M474 flame-resistant adhesive tape.

(6) Apply aerodynamic smoother as given in SOPM 20-50-11 to both ends of screws (5, 10, 15) to obtain flush surface on both sides of mast.

(7) Apply aerodynamic smoother as given in SOPM 20-50-11 to faying surfaces of mast halves and to edges of angles (40, 65A, 150, 170) as shown in Fig. 701. Drain holes at lower surface of mast assembly must be free of aerodynamic smoother.

B. To assemble drain mast assemblies (IPL Fig. 1, P/N 417N2117-1, -2, -4, -5, -6, -7, -8, -9), do the steps that follow:

(1) If the drain mast (P/N 417T2093- 1, or -10) was disassembled and repaired, then do the steps given in par. 2.A.(1), (2), (3), (4), (6) and (7) to assemble the part.

NOTE: If the drain mast was not disassembled or repaired, then ignore step (1) and begin with step (2).

(2) Prepare the mating surfaces of the adapter plate (95, 100, 102), and the drain mast assembly (110) as given in SOPM 20-11-03, cleaning method number 1.

(3) After the surface has been cleaned, alodize the area as given in SOPM 20-43-03, type 2, class A.

(4) For the drain mast assembly (P/N 417N2117-1 only), place screws (105) into the holes of adapter plate (95, 100, 102). Fillet seal the head of the bolts (105) with BMS 5-95 sealant.

(5) After the adapter plate (95, 100, 102) has been alodized, then attach the adapter plate to the drain mast assembly (110) with bolts (90).

(6) For the drain mast assembly (P/N 417N2117-9 only), bond the seal (195) to the adapter plate (102). Use Type 79 adhesive to bond the seal as given in SOPM 20-50-12.

(7) After the adapter plate (95, 100, 102) has been attached to the drain mast assembly (110), then apply BMS 5-95 sealant to both ends of the bolts (90) as shown in Fig. 702. Also apply sealant to the edges of the mating surfaces of the adapter plate and to the drain mast assembly.

NOTE: The total resistance across each of the sealed surfaces must be maximum of 0.0025 ohms.

C. To assemble drain mast assemblies (IPL Fig. 2, P/N 478W1610-4), do the steps that follow:

(1) If the drain mast (P/N 417T2093-10) was disassembled and repaired, then do the steps given in par. 2.A.(1), (2), (3), (4), (6) and (7) to assemble the part.

NOTE: If the drain mast was not disassembled or repaired, then ignore step (1) and begin with step (2).

(2) Prepare the mating surfaces of the adapter plate (15), and the drain mast assembly (20) as given in SOPM 20-11-03, cleaning method number 1.

(3) After the surface has been cleaned, alodize the area as given in SOPM 20-43-03, type 2, class A.

(4) After the adapter plate (15) has been alodized, then attach the adapter plate to the drain mast assembly (20) with bolts (5).

(5) After the adapter plate (15) has been attached to the drain mast assembly (20), then apply BMS 5-95 sealant to both ends of the bolts (5) as shown in Fig. 702. Also, apply sealant to the edges of the mating surfaces of the adapter plate and to the drain mast assembly.

NOTE: The total resistance across each of the sealed surfaces must be a maximum of 0.0025 ohm.

(6) Bond the seal (10) to the adapter plate (15). Use Type 79 adhesive to bond the seal as given in SOPM 20-50-12.

D. To assemble drain mast assemblies (IPL Fig. 3, P/N 478W1610-6, -7), do the steps that follow:

(1) If the drain mast (P/N 417T2093-11) was disassembled and repaired, then do the steps given in par. 2.A.(1), (2), (3), (4), (6) and (7) to assemble the part.

NOTE: If the drain mast was not disassembled or repaired, then ignore step (1) and begin with step (2).

(2) Prepare the mating surfaces of the extension-adapter (15), and the drain mast assembly (20) as given in SOPM 20-11-03, cleaning method number 1.

(3) After the surface has been cleaned, alodize the area as given in SOPM 20-43-03, type 2, class A.

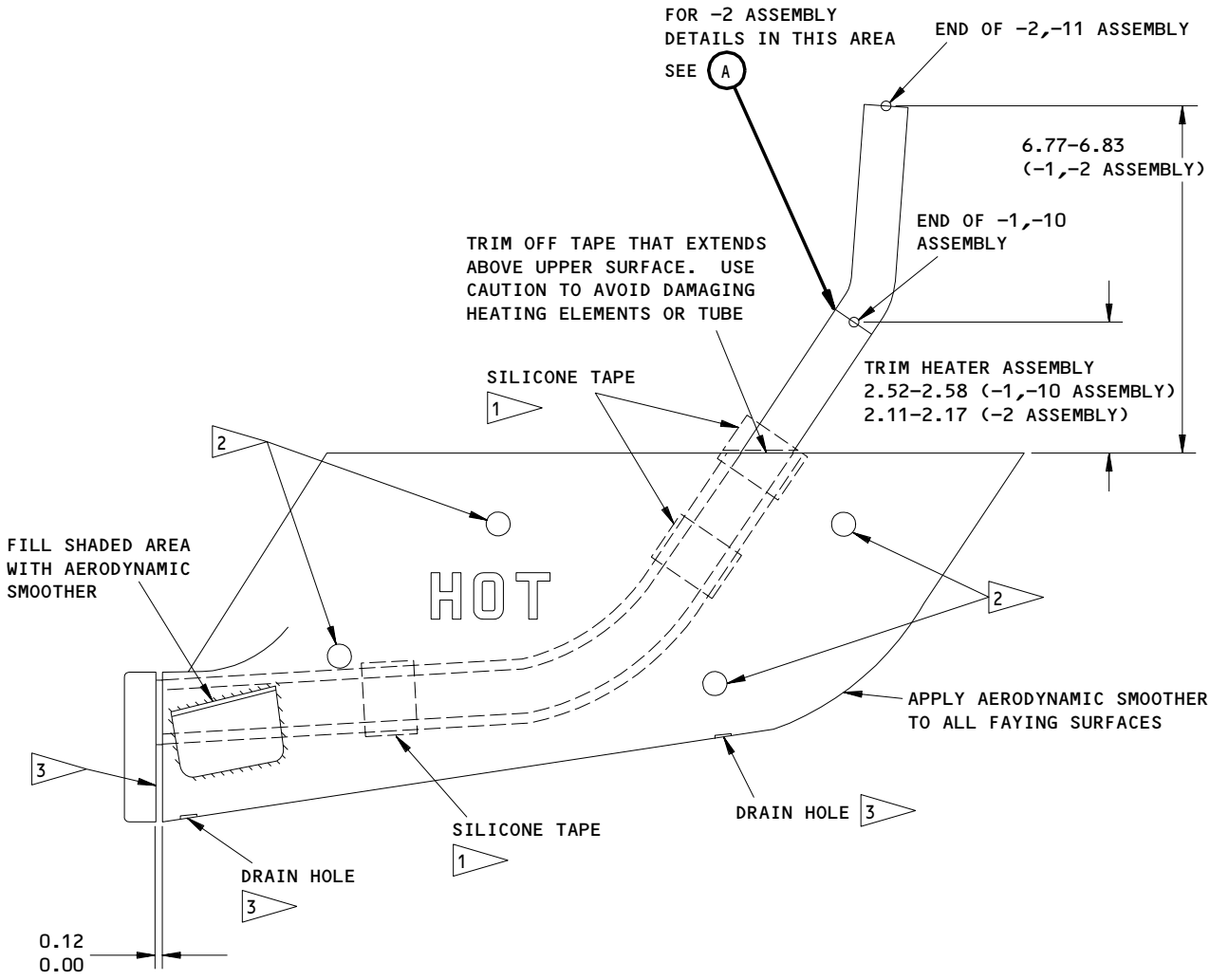
(4) After the extension-adapter (15) has been alodized, then attach the extension-adapter to the drain mast assembly (20) with bolts (10).

(5) After the extension-adapter (15) has been attached to the drain mast assembly (20), then apply BMS 5-95 sealant to both ends of the bolts (10) as shown in Fig. 702.

(a) Apply BMS 5-95 sealant to the edges of the mating surfaces of the extension-adapter and to the drain mast assembly.

(b) The total resistance across each of the sealed surfaces must be a maximum of 0.0025 ohm.

(6) Bond the seal (5) to the extension-adapter (15). Use Type 79 adhesive to bond the seal as given in SOPM 20-50-12.



ASSEMBLIES 471T2093-1,-2,-10,-11,-14

Assembly Details
Figure 701 (Sheet 1)

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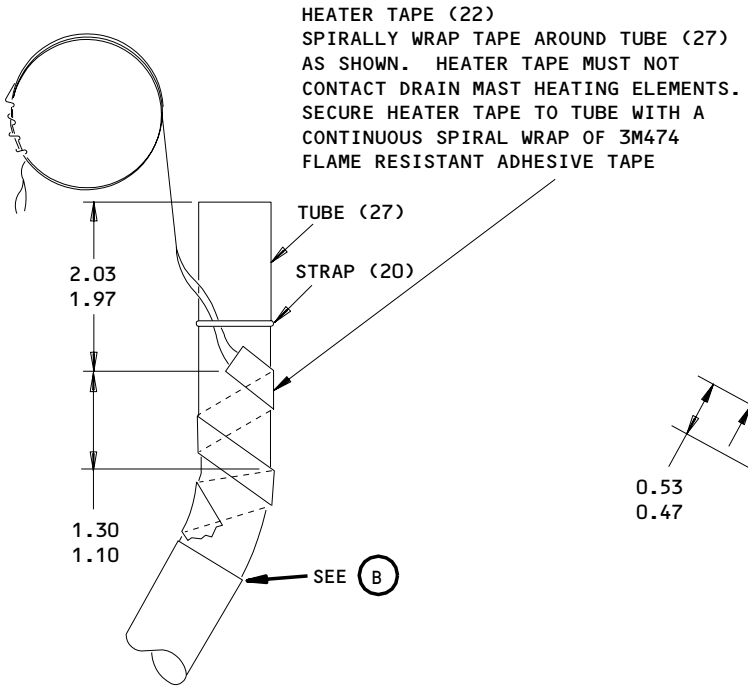
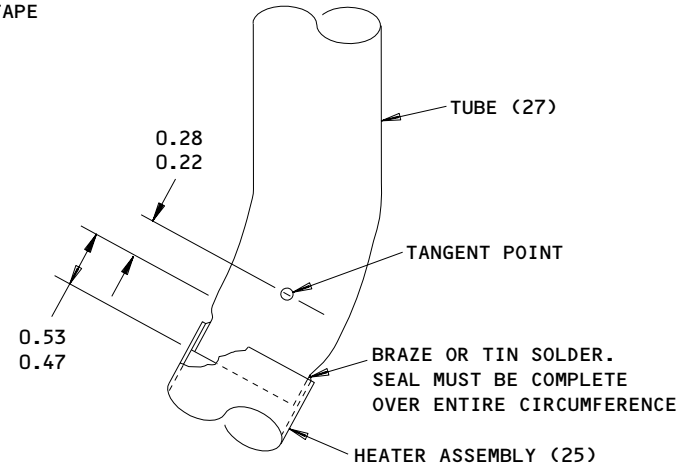


417T2093-2

A



417T2093-2

B

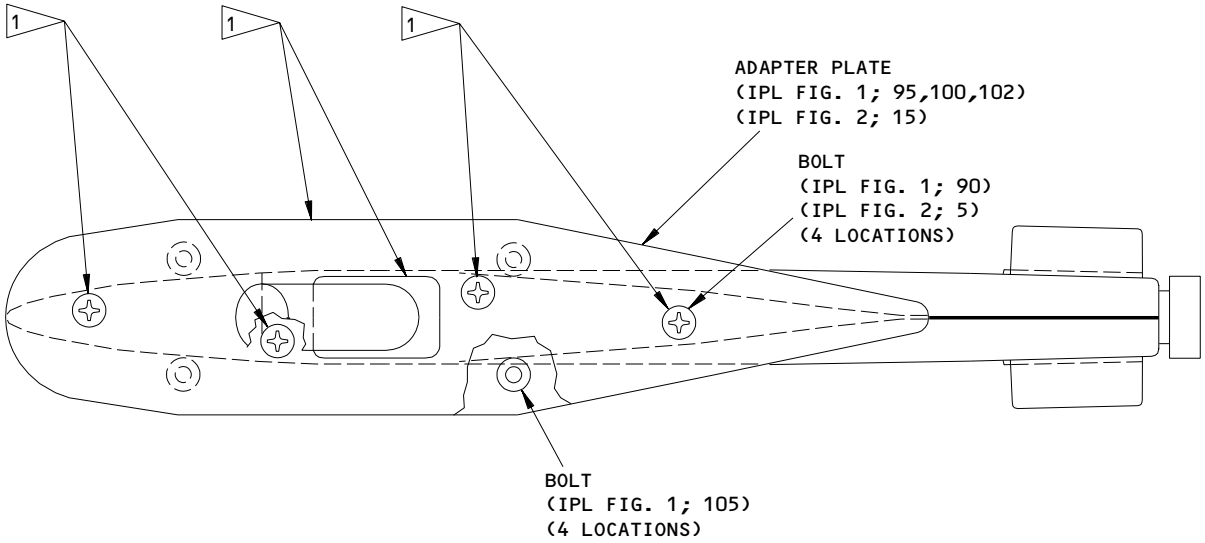
1 WRAP TAPE AROUND HEATER ASSEMBLY TO A THICKNESS THAT CLAMPS HEATER FIRMLY IN PLACE WHEN FASTENERS ARE INSTALLED. DO NOT COMPRESS SILICONE RUBBER TAPE MORE THAN 0.040 INCH WHEN TIGHTENING SCREWS

2 FILL HEAD AND TAIL END OF ALL FASTENERS FLUSH WITH MAST SURFACES WITH AERODYNAMIC SMOOTHER

3 THIS AREA TO BE FREE OF AERODYNAMIC SMOOTHER

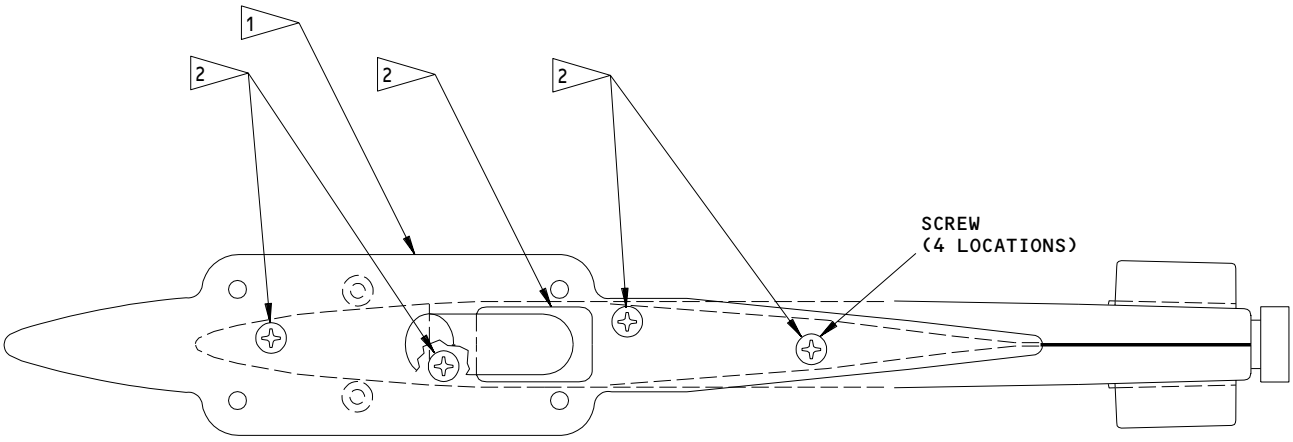
ALL DIMENSIONS ARE IN INCHES

Assembly Details
Figure 701 (Sheet 2)



ASSEMBLIES 417T2093-1,-2,-8,-10,-11,-14
417N2117-1,-2,-4 THRU -9
478W1610-4

Assembly Details
Figure 702 (Sheet 1)



ASSEMBLY 478W1610-6 ONLY

1 APPLY BMS 5-95 SEALANT TO BOTH ENDS OF THE BOLTS AT THE LOCATIONS SHOWN IN THE FIGURE. ALSO APPLY SEALANT TO THE EDGES OF THE MATING SURFACES OF THE ADAPTER PLATE AND TO THE DRAIN MAST ASSEMBLY

2 APPLY BMS 5-95 SEALANT TO BOTH ENDS OF THE BOLTS AT THE LOCATIONS SHOWN IN THE FIGURE. ALSO APPLY SEALANT TO THE EDGES OF THE MATING SURFACES OF THE EXTENSION-ADAPTER AND TO THE DRAIN MAST ASSEMBLY

Assembly Details
Figure 702 (Sheet 2)

L45953

ILLUSTRATED PARTS LIST

1. This section lists and illustrates replaceable or repairable component parts. The Illustrated Parts Catalog contains a complete explanation of the Boeing part numbering system.

2. Indentures show parts relationships as follows:

    Assembly
      Detail Parts for Assembly
      Subassembly
      Attaching Parts for Subassembly
        Detail Parts for Subassembly

    Detail Installation Parts (Included only if installation parts may be returned to shop as part of assembly)

3. One use code letter (A, B, C, etc.) is assigned in the EFF CODE column for each variation of top assembly. All listed parts are used on all top assemblies except when limitations are shown by use code letter opposite individual part entries.

4. Letter suffixes (alpha-variants) are added to item numbers for optional parts, Service Bulletin modification parts, configuration differences (Except left- and right-hand parts), product improvement parts, and parts added between two sequential item numbers. The alpha-variant is not shown on illustrations when appearance and location of all variants of the part is the same.

5. Service Bulletin modifications are shown by the notations PRE SB XXXX and POST SB XXXX.

    A. When a new top assembly part number is assigned by Service Bulletin, the notations appear at the top assembly level only. The configuration differences at detail part level are then shown by use code letter.

    B. When the top assembly part number is not changed by the Service Bulletin, the notations appear at the detail part level.

6. Parts Interchangeability

Optional (OPT)	The parts are optional to and interchangeable with other parts having the same item number.
Supersedes, Superseded By (SUPSDS, SUPSD BY)	The part supersedes and is not interchangeable with the original part.
Replaces, Replaced By (REPLS, REPLD BY)	The part replaces and is interchangeable with, or is an alternate to, the original part.

VENDORS

04849 ARI INDUSTRIES INC
381 ARI COURT
ADDISON, ILLINOIS 60101-4329
FORMERLY AERO RESEARCH INST CO V04849 AND VB0003
FORMERLY AMERICAN-STANDARD AERO RESEARCH INST DEPT
FORMERLY IN FRANKLIN PARK, ILLINOIS

13545 GENERAL ELECTRIC CO SEE B.F. GOODRICH DE-ICING SYS V0AJJ0

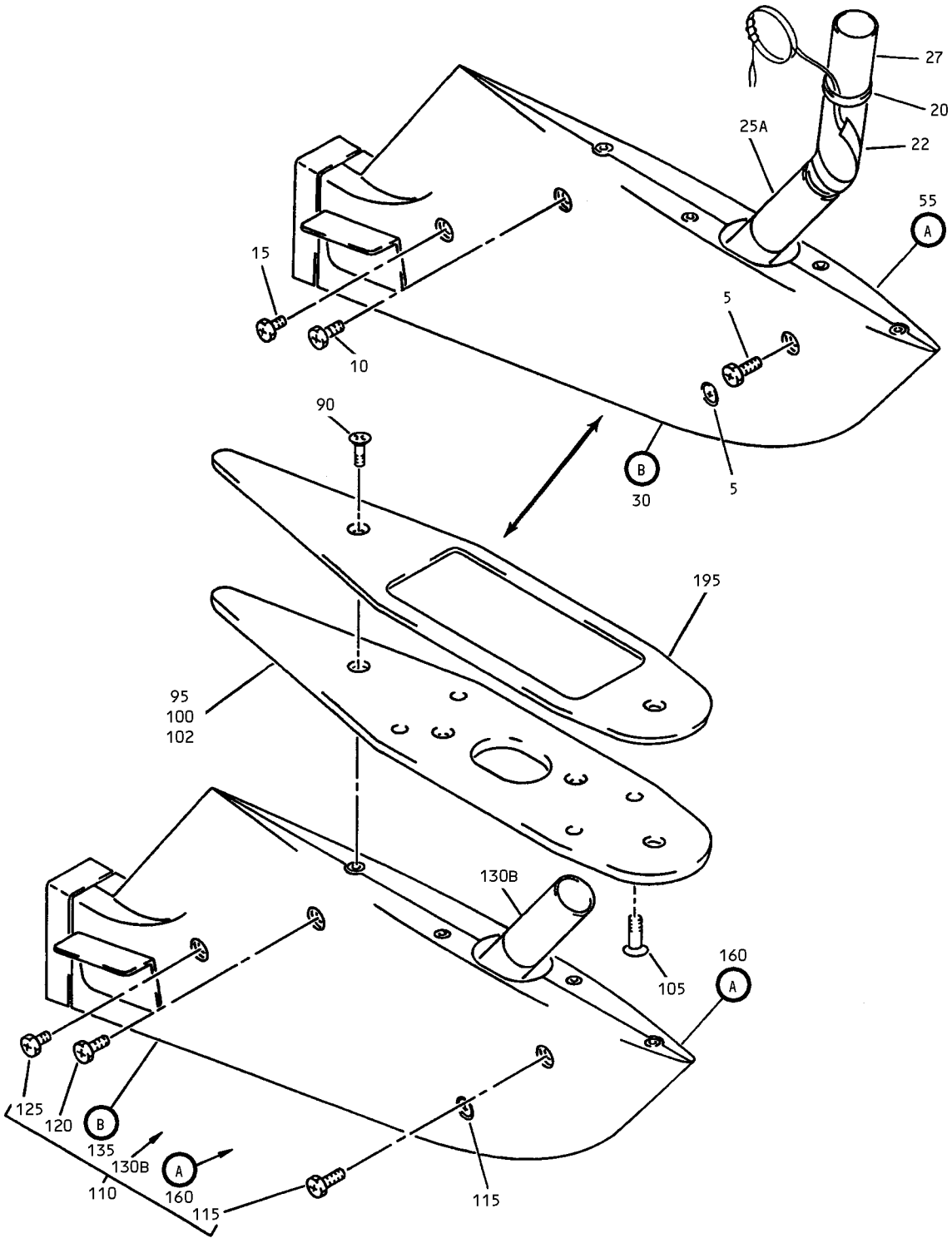
26344 NEW HAVEN MFG CORP
446 BLAKE STREET
NEW HAVEN, CONNECTICUT 06515-1238
FORMERLY HELI-COIL CORP V91767, FORMERLY MITE CORPORATION

98085 COX AND COMPANY, INCORPORATED
200 VARICK STREET
NEW YORK, NEW YORK 10014-4810

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
BACB30LU4P4		1	90	4
		2	5	4
BACB30LU5-8		1	105	4
BACR15BA6D		1	35	2
		1	60	2
		1	140	2
		1	165	2
		2	45	2
		2	70	2
		3	45	2
		3	70	2
MS21209F1-20		1	80	3
		1	185	3
		2	85	3
		3	85	3
MS21209F4-20		1	50	2
		1	75	2
		1	155	2
		1	180	2
		2	55	2
		2	90	2
		3	55	2
		3	90	2
MS3367-1-9		1	20	1
NAS1351-4-12P		3	10	4
NAS1351N4-12P		3	10A	4
NAS1801-3-10		1	10	1
		1	120	1
		2	30	1
		3	30	1
NAS1801-3-14		1	5	2
		1	115	2
		2	35	2
		3	35	2
NAS1801-3-5		1	15	1
		1	125	1
		2	25	1
		3	25	1
10-61434-2		1	25G	1
		1	130B	1
10-61434-4		1	25A	1
		1	130C	1
		2	100	1

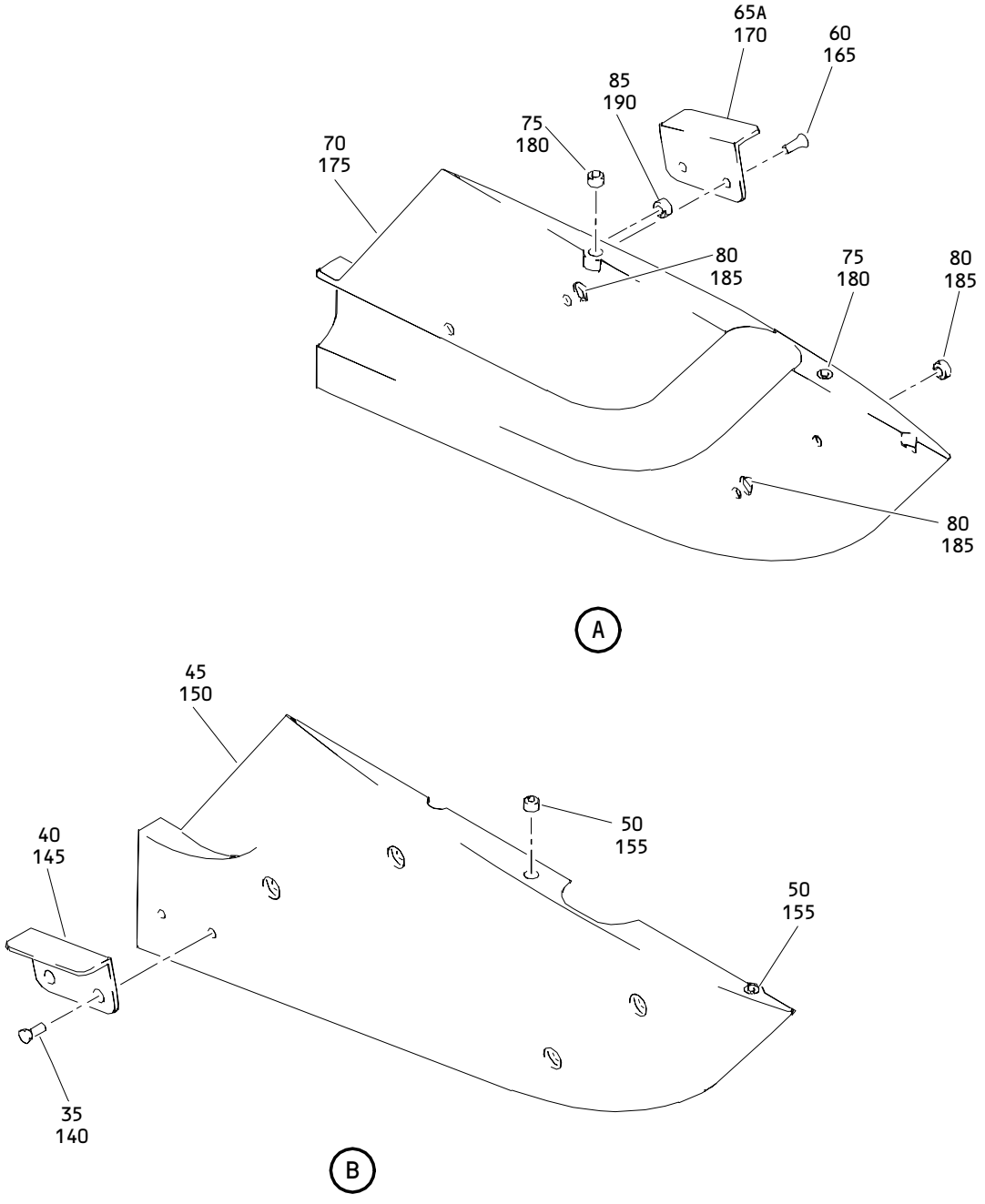
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
10-61434-6		1	25E	1
		3	100	1
2372-24		1	22	1
3591-3CN0190		1	85	1
		1	190	1
		2	80	1
		3	80	1
417N2117-1		1	2	RF
417N2117-3		1	95	1
417N2117-4		1	2B	RF
417N2117-5		1	2C	RF
417N2117-6		1	2D	RF
417N2117-7		1	2E	RF
417N2117-8		1	2F	RF
417N2117-9		1	2G	RF
417N2118-1		1	100A	1
417N2118-2		1	100	1
417N2118-3		1	102A	1
		2	15	1
417N2118-4		1	102	1
417N2119-1		2	10	1
417N2119-3		1	195	1
417T2093-1		1	1	RF
		1	110	1
417T2093-10		1	1D	RF
		1	110A	1
		2	20	1
417T2093-11		1	1E	RF
		3	20	1
417T2093-12		1	30A	1
		3	42	1
417T2093-13		1	55A	1
		3	67	1
417T2093-14		1	1F	RF
		3	22	1
417T2093-2		1	1A	RF
417T2093-4		1	30	1
		1	135	1
		2	40	1
		3	40	1
417T2093-5		1	55	1
		1	160	1
		2	65	1
		3	65	1
417T2093-7		1	27	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
417T2093-8		1	1C	RF
417T2111-3		1	95A	1
417T2111-8		3	15	1
478W1610-4		1	3C	RF
		2	1A	RF
478W1610-6		1	3D	RF
		3	1A	RF
478W1610-7		1	3E	RF
		3	1B	RF
478W1612-2		3	5A	1
65-14036-12		1	45	1
		1	150	1
		2	60	1
		3	60	1
65-14036-13		1	70	1
		1	175	1
		2	95	1
		3	95	1
69-56298-1		1	65A	1
		1	170	1
		2	75	1
		3	75	1
69-56298-2		1	40	1
		1	145	1
		2	50	1
		3	50	1
8921536G2		1	130B	1
8921536G4		1	25A	1
8921536G5		1	130C	1
		2	100	1
8921536G6		1	25F	1
		3	100	1
90234-2		1	25G	1
		1	130B	1
90234-4		1	25C	1
		1	130C	1
		2	100	1
90234-6		1	25E	1
		3	100	1



Waste Water Drain Mast Assembly
Figure 1 (Sheet 1)

T83417



Waste Water Drain Mast Assembly
Figure 1 (Sheet 2)

265761

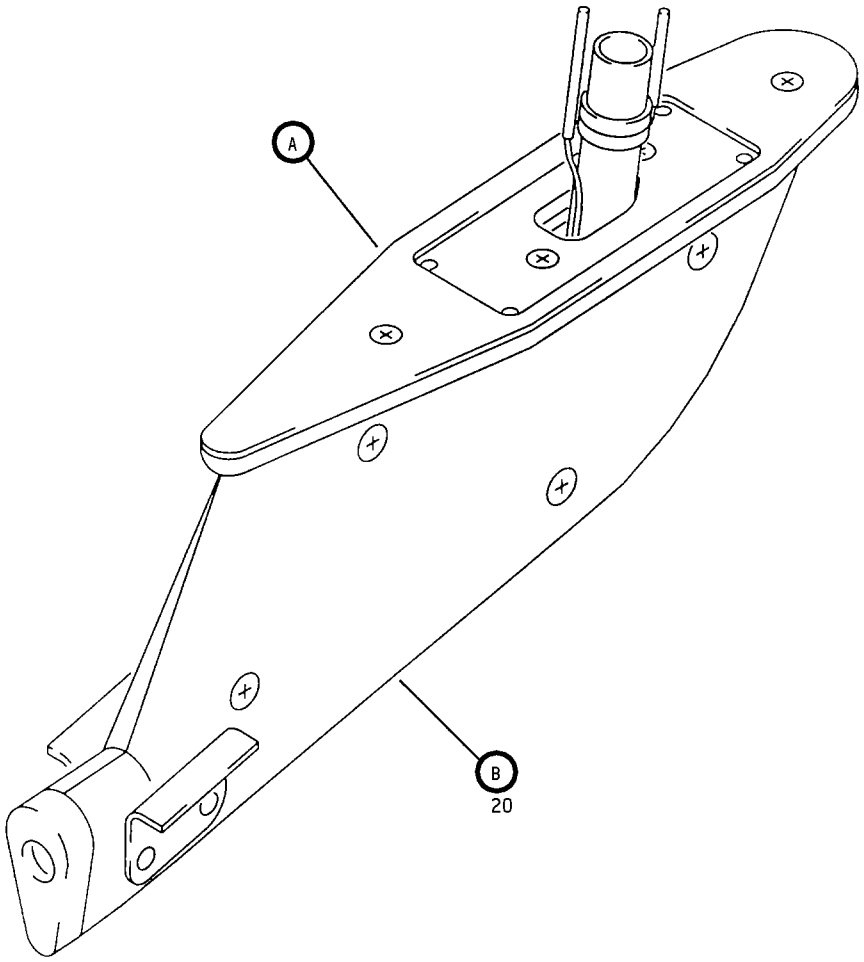
	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	-1	417T2093-1		MAST ASSY-WASTE WATER DRAIN	A	RF
	-1A	417T2093-2		MAST ASSY-WASTE WATER DRAIN	B	RF
	-1B	417T2093-3		DELETED		
	-1C	417T2093-8		MAST ASSY-WASTE WATER DRAIN	C	RF
	-1D	417T2093-10		MAST ASSY-WASTE WATER DRAIN	P	RF
	-1E	417T2093-11		MAST ASSY-WASTE WATER DRAIN	Q	RF
	-1F	417T2093-14		MAST ASSY-WASTE WATER DRAIN	M	RF
	-2	417N2117-1		MAST ASSY-WASTE WATER DRAIN	D	RF
	-2A	417N2117-2		MAST ASSY-WASTE WATER DRAIN	E	RF
	-2B	417N2117-4		MAST ASSY-WASTE WATER DRAIN	F	RF
	-2C	417N2117-5		MAST ASSY-WASTE WATER DRAIN	G	RF
	-2D	417N2117-6		MAST ASSY-WASTE WATER DRAIN	H	RF
	-2E	417N2117-7		MAST ASSY-WASTE WATER DRAIN	J	RF
	-2F	417N2117-8		MAST ASSY-WASTE WATER DRAIN	K	RF
	-2G	417N2117-9		MAST ASSY-WASTE WATER DRAIN	L	RF
	-3	478W1610-1		DELETED		
	-3A	478W1610-2		DELETED		
	-3B	478W1610-3		DELETED		
	-3C	478W1610-4		MAST ASSY-WASTE WATER DRAIN (FOR DETAILS SEE FIG. 2)	N	RF
	-3D	478W1610-6		MAST ASSY-WASTE WATER DRAIN (PRE SB 777-38-0013) (FOR DETAILS SEE FIG. 3)	R	RF
R	-3E	478W1610-7		MAST ASSY-WASTE WATER DRAIN (POST SB 777-38-0013) (FOR DETAILS SEE FIG. 3)	S	RF
	5	NAS1801-3-14		.SCREW	A-C,M,P,Q	2
	10	NAS1801-3-10		.SCREW	A-C,M,P,Q	1
	15	NAS1801-3-5		.SCREW	A-C,M,P,Q	1
	20	MS3367-1-9		.STRAP	B	1
	22	2372-24		.TAPE-HEATER (V98085)	B	1
	25	8921536G2		DELETED		
	25A	8921536G4		.HEATER ASSY- (V13545) (SPEC 10-61434-4) (OPT 90234-4 (V04849))	C	1
	-25B	10-61434-4		DELETED		

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-25C	90234-4		.HEATER ASSY- (V04849) (SPEC 10-61434-4) (OPT 8921536G4 (V13545))	C	1
-25D	90234-5		.HEATER ASSY- (V04849) (SPEC 10-61434-5) (OPT 8921536G5 (V13545))	M,P	1
-25E	90234-6		.HEATER ASSY- (V04849) (SPEC 10-61434-6) (OPT 8921536G6 (V13545))	Q	1
-25F	8921536G6		.HEATER ASSY- (V13535) (SPEC 10-61434-6) (OPT 90234-6 (V04849))	Q	1
-25G	90234-2		.HEATER ASSY- (V04849) (SPEC 10-61434-2) (OPT 8921536G2 (V13545))	A,B	1
27	417T2093-7		.TUBE	B	1
30	417T2093-4		.MAST ASSY-HALF	A-C,P ,Q	1
-30A	417T2093-12		.MAST ASSY-HALF	M	1
35	BACR15BA6D		..RIVET- (SIZE DETERMINE ON INST)	A-C,M ,P,Q	2
40	69-56298-2		..ANGLE	A-C,P ,Q	1
45	65-14036-12		..DRAIN HALF	A-C,M ,P,Q	1
50	MS21209F4-20		..INSERT	A-C,M ,P,Q	2
55	417T2093-5		.MAST ASSY-HALF	A-C,P ,Q	1
-55A	417T2093-13		.MAST ASSY-HALF	M	1
60	BACR15BA6D		..RIVET- (SIZE DETERMINE ON INST)	A-C,M ,P,Q	2
65	69-56298-2		DELETED		
65A	69-56298-1		..ANGLE	A-C,P ,Q	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
70	65-14036-13		..DRAIN HALF	A-C,M,P,Q	1
75	MS21209F4-20		..INSERT	A-C,M,P,Q	2
80	MS21209F1-20		..INSERT	A-C,M,P,Q	3
85	3591-3CN0190		..SLEEVE- (V26344)	A-C,M,P,Q	1
90	BACB30LU4P4		.SCREW	D-L	4
-90A	BACB30LR4-4		DELETED		
95	417N2117-3		.PLATE-ADAPTER (OPT ITEM 95A)	D	1
-95A	417T2111-3		.PLATE-ADAPTER (OPT ITEM 95)	D	1
100	417N2118-2		.PLATE-ADAPTER	F,G	1
-100A	417N2118-1		.PLATE-ADAPTER	E,H	1
-100B	478W1611-1		DELETED		
-100C	417N2118-3		DELETED		
102	417N2118-4		.PLATE-ADAPTER	J,L	1
-102A	417N2118-3		.PLATE-ADAPTER	K	1
105	BACB30LU5-8		.BOLT	D	4
110	417T2093-1		.MAST ASSY-WASTE WATER DRAIN	D-K	1
-110A	417T2093-10		.MAST ASSY-WASTE WATER DRAIN	L	1
115	NAS1801-3-14		..SCREW	D-L	2
120	NAS1801-3-10		..SCREW	D-L	1
125	NAS1801-3-5		..SCREW	D-L	1
130	8921536G2		DELETED		
-130A	8921536G5		DELETED		
130B	90234-2		..HEATER ASSY- (V04849) (SPEC 10-61434-2) (OPT 8921536G2 (V13545))	D-K	1
-130C	90234-5		..HEATER ASSY- (V04849) (SPEC 10-61434-5) (OPT 8921536G5 (V13545))	L	1

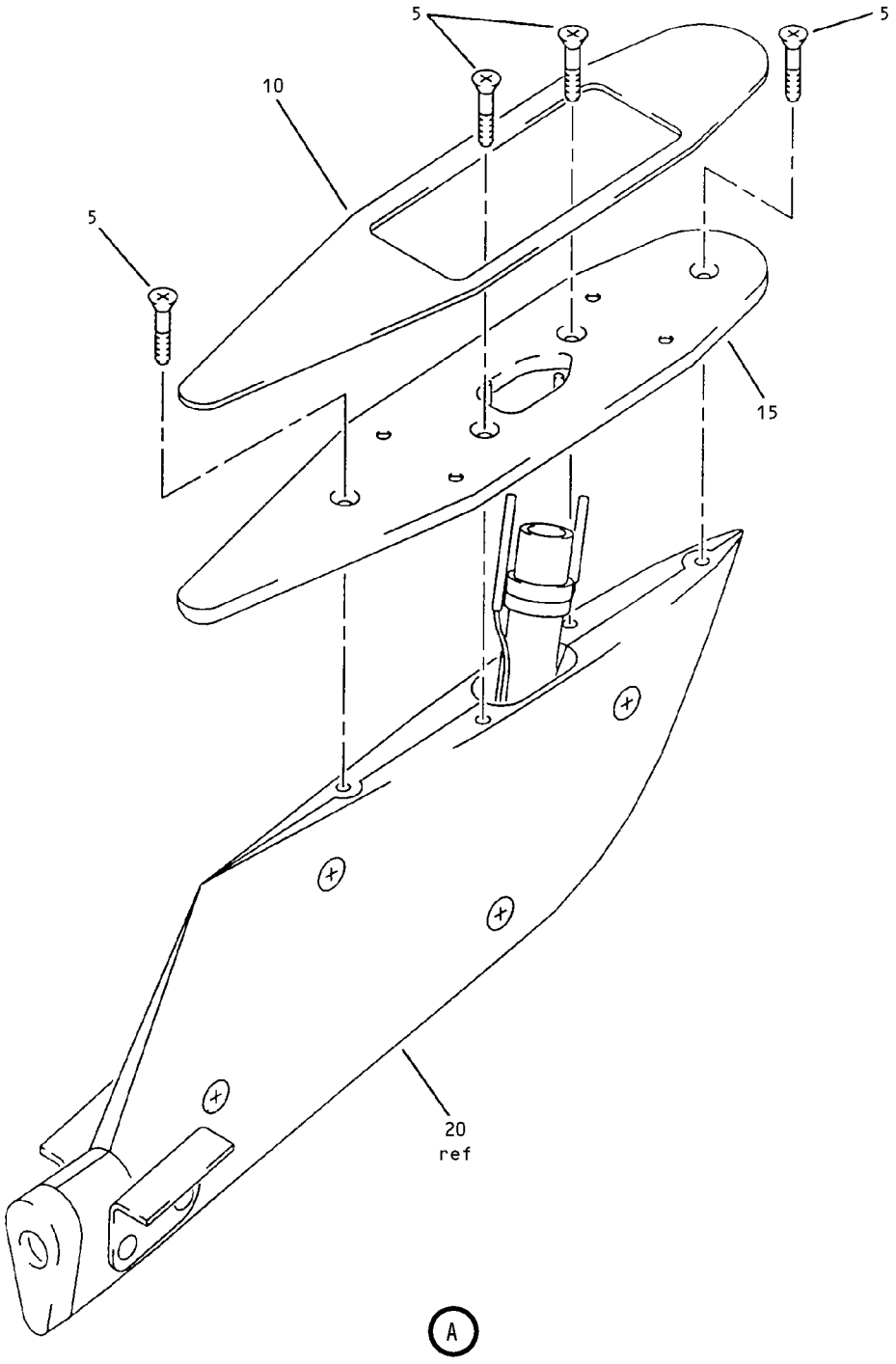
	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	135	417T2093-4		..MAST ASSY-HALF	D-L	1
	140	BACR15BA6D		...RIVET- (SIZE DETERMINE ON INST)	D-L	2
	145	69-56298-2		...ANGLE	D-L	1
	150	65-14036-12		...DRAIN HALF	D-L	1
	155	MS21209F4-20		...INSERT	D-L	2
	160	417T2093-5		..MAST ASSY-HALF	D-L	1
	165	BACR15BA6D		...RIVET- (SIZE DETERMINE ON INST)	D-L	2
	170	69-56298-1		...ANGLE	D-L	1
	175	65-14036-13		...DRAIN HALF	D-L	1
	180	MS21209F4-20		...INSERT	D-L	2
	185	MS21209F1-20		...INSERT	D-L	3
	190	3591-3CN0190		...SLEEVE- (V26344)	D-L	1
	195	417N2119-3		.SEAL	L	1
R				BOEING LETTER HISTORY		

- Item Not Illustrated



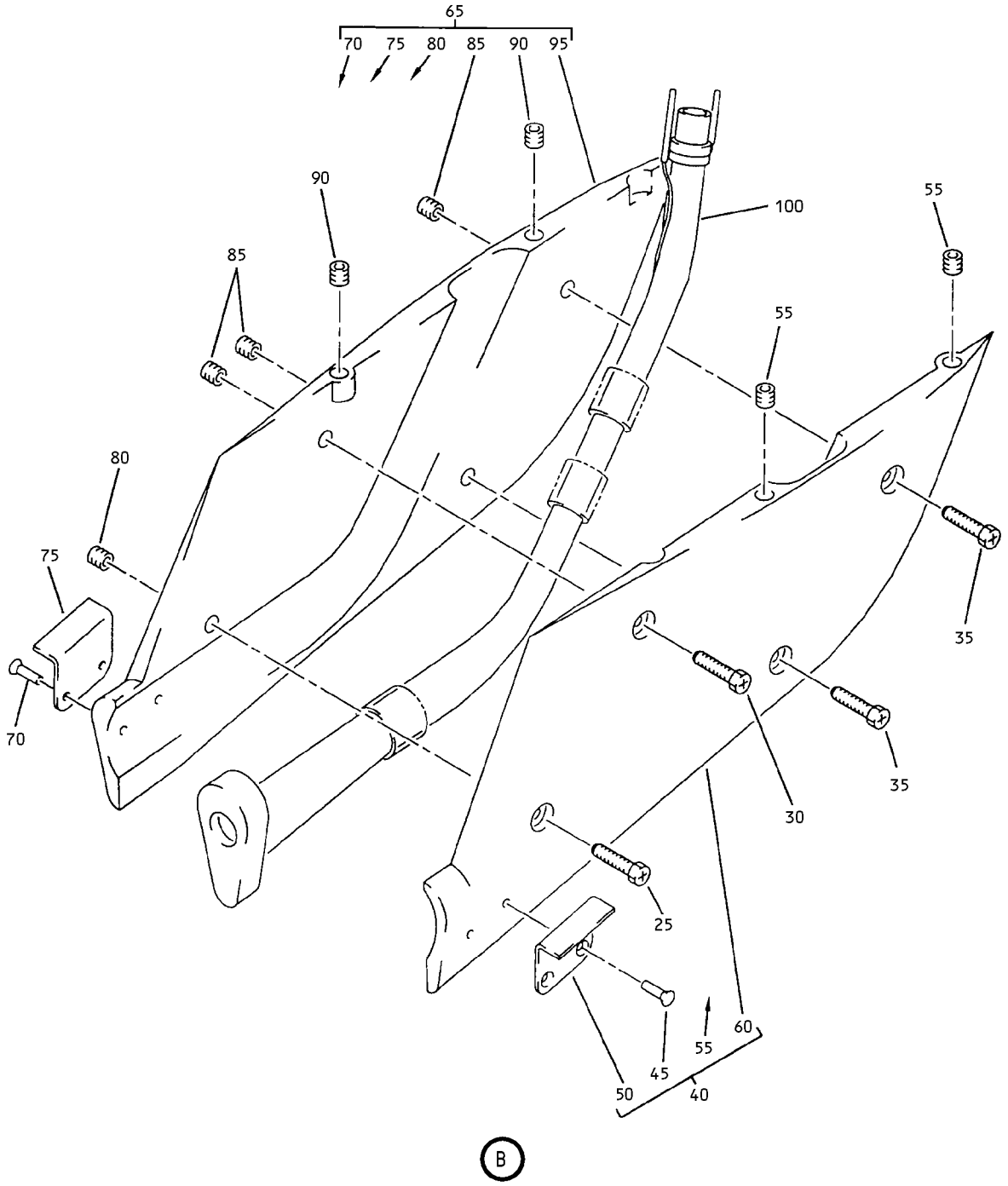
Waste Water Drain Mast Assembly
Figure 2 (Sheet 1)

L45958



Waste Water Drain Mast Assembly
Figure 2 (Sheet 2)

L45965

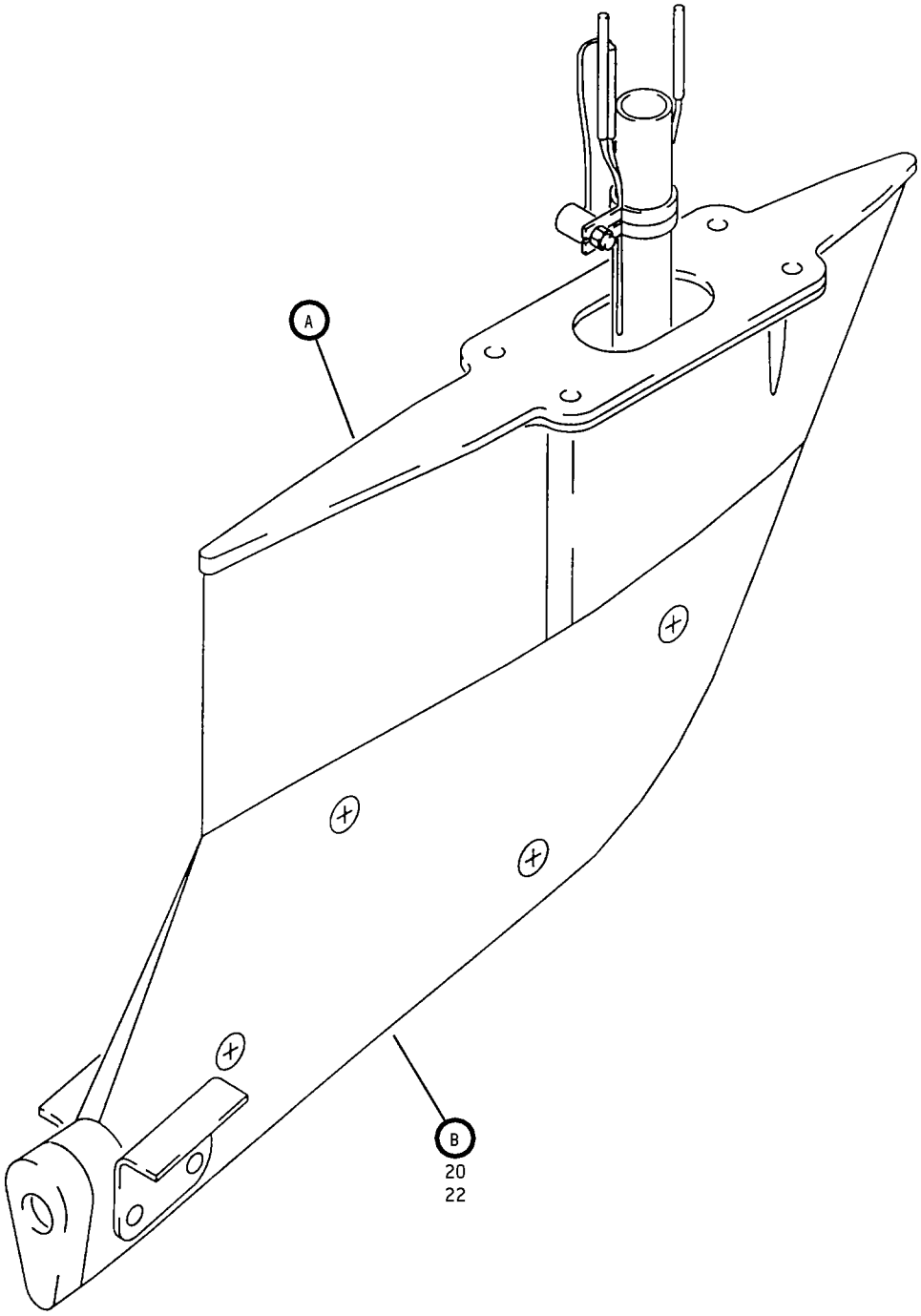


Waste Water Drain Mast Assembly
Figure 2 (Sheet 3)

L45971

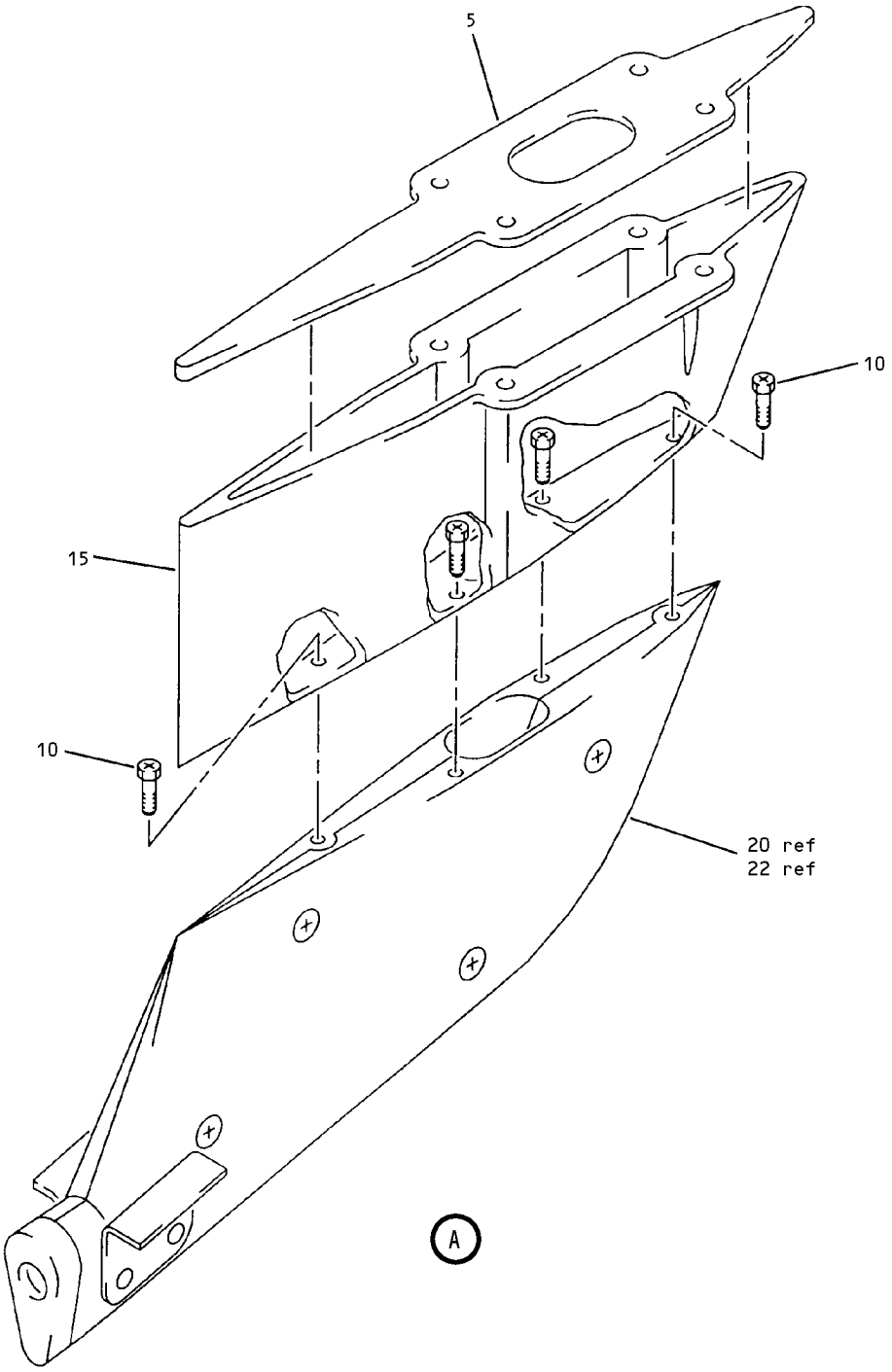
FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
02-					
-1A	478W1610-4		MAST ASSY-WASTE WATER DRAIN	N	RF
5	BACB30LU4P4		.BOLT	N	4
10	417N2119-1		.SEAL	N	1
15	417N2118-3		.PLATE-ADPTR	N	1
20	417T2093-10		.MAST ASSY-	N	1
25	NAS1801-3-5		..SCREW	N	1
30	NAS1801-3-10		..SCREW	N	1
35	NAS1801-3-14		..SCREW	N	2
40	417T2093-4		..MAST ASSY-HALF	N	1
45	BACR15BA6D		...RIVET- (SIZE DETERMINE ON INST)	N	2
50	69-56298-2		...ANGLE	N	1
55	MS21209F4-20		...INSERT	N	2
60	65-14036-12		...HALF-DRAIN	N	1
65	417T2093-5		..MAST ASSY-HALF	N	1
70	BACR15BA6D		...RIVET- (SIZE DETERMINE ON INST)	N	2
75	69-56298-1		...ANGLE	N	1
80	3591-3CN0190		...SLEEVE- (V26344)	N	1
85	MS21209F1-20		...INSERT	N	3
90	MS21209F4-20		...INSERT	N	2
95	65-14036-13		...HALF-DRAIN	N	1
100	90234-5		..HEATER ASSY- (V04849) (SPEC 10-61434-5) (OPT 8921536G5 (V13545))	N	1

- Item Not Illustrated



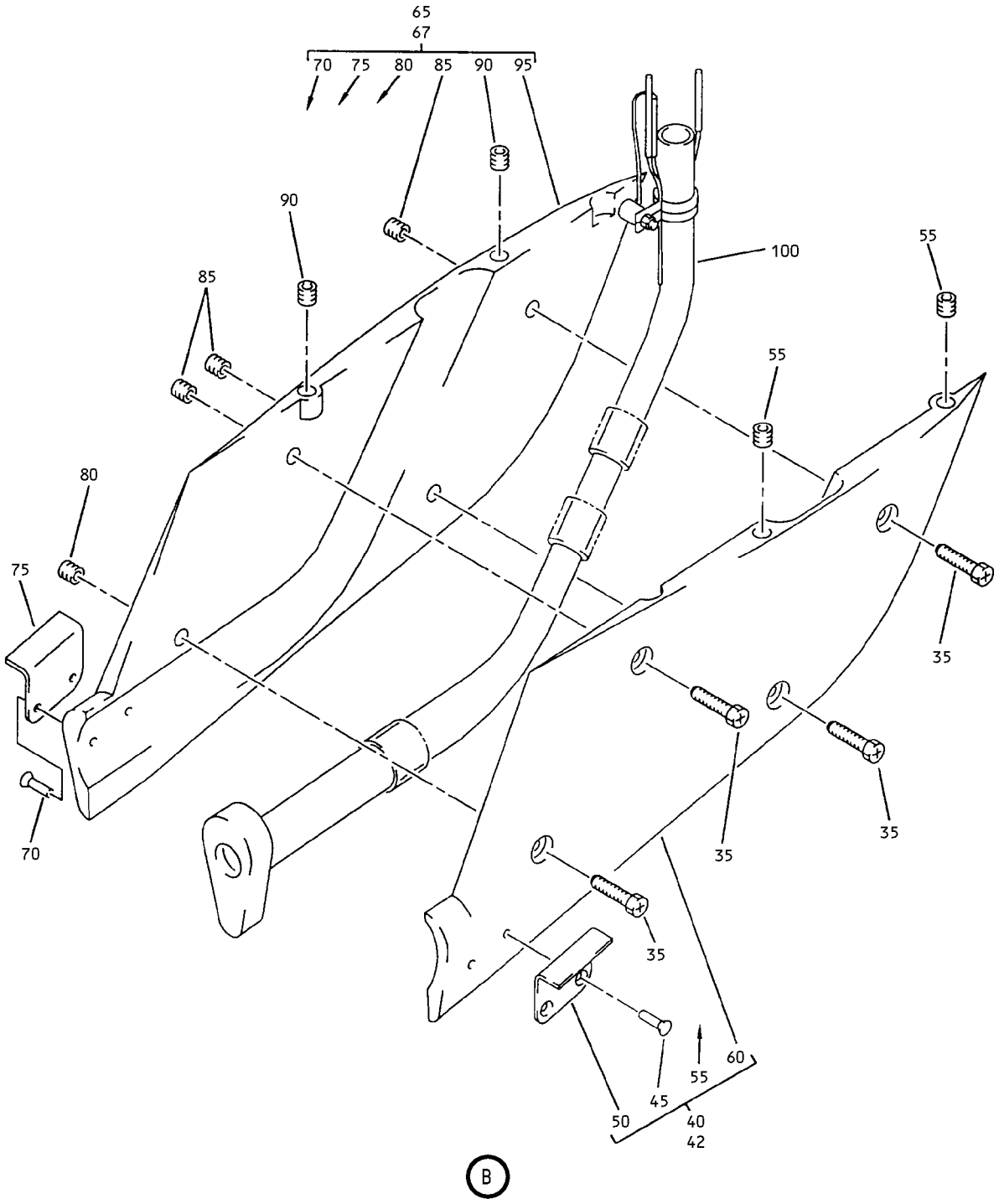
Waste Water Drain Mast Assembly
Figure 3 (Sheet 1)

L45984



Waste Water Drain Mast Assembly
Figure 3 (Sheet 2)

L46090



Waste Water Drain Mast Assembly
Figure 3 (Sheet 3)

L46317

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	03-					
	-1A	478W1610-6		MAST ASSY-WASTE WATER DRAIN (PRE SB 777-38-0013)	R	RF
R	-1B	478W1610-7		MAST ASSY-WASTE WATER DRAIN (POST SB 777-38-0013)	S	RF
	5	478W1612-3		.SEAL- (OPT ITEM 5A)	R,S	1
	-5A	478W1612-2		.SEAL- (OPT ITEM 5)	R,S	1
	10	NAS1351-4-12P		.SCREW- (OPT ITEM 10A)	R,S	4
	-10A	NAS1351N4-12P		.SCREW- (OPT ITEM 10)	R,S	4
	15	417T2111-8		.EXTENSION-ADAPTOR	R,S	1
	20	417T2093-11		.MAST ASSY-	R	1
R	22	417T2093-14		.MAST ASSY	S	1
	25	NAS1801-3-5		..SCREW	R,S	1
	30	NAS1801-3-10		..SCREW	R,S	1
	35	NAS1801-3-14		..SCREW	R,S	2
	40	417T2093-4		..MAST ASSY-HALF	R	1
R	42	417T2093-12		..MAST ASSY-HALF	S	1
	45	BACR15BA6D		...RIVET- (SIZE DETERMINE ON INST)	R	2
	50	69-56298-2		...ANGLE	R	1
	55	MS21209F4-20		...INSERT	R,S	2
	60	65-14036-12		...HALF-DRAIN	R,S	1
	65	417T2093-5		..MAST ASSY-HALF	R	1
R	67	417T2093-13		..MAST ASSY-HALF	S	1
	70	BACR15BA6D		...RIVET- (SIZE DETERMINE ON INST)	R	2
	75	69-56298-1		...ANGLE	R	1
	80	3591-3CN0190		...SLEEVE- (V26344)	R,S	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
03-					
85	MS21209F1-20		...INSERT	R,S	3
90	MS21209F4-20		...INSERT	R,S	2
95	65-14036-13		...HALF-DRAIN	R,S	1
100	90234-6		..HEATER ASSY- (V04849) (SPEC 10-61434-6) (OPT 892153 6G6 (V13545))	R,S	1

- Item Not Illustrated