COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

WASTE WATER DRAIN MAST ASSEMBLY

PART NUMBER 417A2093–1, –4, –5, –7

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COMPONENT MAINTENANCE MANUAL

Revision No. 13
Jul 01/2009

To: All holders of WASTE WATER DRAIN MAST ASSEMBLY 38-31-04.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

The COMPONENT MAINTENANCE MANUAL is furnished either as a printed manual, on microfilm, or digital products, or any combination of the three. This revision replaces all previous microfilm cartridges or digital products. All microfilm and digital products are reissued with all obsolete data deleted and all updated pages added.

For printed manuals, changes are indicated on the List of Effective Pages (LEP). The pages which are revised will be identified on the LEP by an R (Revised), A (Added), O (Overflow, i.e. changes to the document structure and/or page layout), or D (Deleted). Each page in the LEP is identified by Chapter-Section-Subject number, page number and page date.

Pages replaced or made obsolete by this revision should be removed and destroyed.

ATTENTION

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Location of Change	Description of Change
38-31-04 ASSEMBLY	Changed the data in the Consumable Materials list. Changed consumable from ''DC3145 adhesive, A00281'' to ''Dow Corning 3145 RTV adhesive, A00281''

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A = Added, R = Revised, D = Deleted, O = Overflow

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TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
		PRR 38275-75S	NOV 01/04
	38-1		MAR 01/08

All revisions to this manual will be accompanied by transmittal sheet bearing the revision number. Enter the revision number in numerical order, together with the revision date, the date filed and the initials of the person filing.

Revision		Filed		Revision		Filed	
Number	Date	Date	Initials	Number	Date	Date	Initials

Revision		Filed		Revision		Filed	
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Temporary Revision		Inserted		Removed	
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Temporary Revision		Inserted		Removed	
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INTRODUCTION

1. General

A. The instructions in this manual supply the data necessary to do the maintenance functions together with the test, fault isolation, repair, and replacement of the defective parts.

B. This manual is divided into different parts:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) List of Effective Pages

(5) Table of Contents

(6) Temporary Revision & Service Bulletin Record

(7) Record of Revisions

(8) Record of Temporary Revisions

(9) Introduction

(10) Procedures & IPL Sections

C. Components that can be repaired have a different repair number for each specified repair. To find the repair number location of a component, look in the Repair-General procedure at the beginning of the REPAIR section. The Repair-General procedure also has an explanation of the True Position Dimension symbols used.

D. All dimensions, measures, quantities and weights included are in English units. When metric equivalents are given they will be in the parentheses that follow the English units.

E. The introduction to the Illustrated Parts List (IPL) shows how the IPL data is used.

F. Design changes, optional parts, configuration differences and Service Bulletin modifications may cause different part numbers. These part numbers are identified in the IPL with an alphabetical letter which is added to the end of the basic item number. This new item number is referred to as an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless shown differently.

G. The tool reference numbers found in the individual procedures and in the Special Tools, Fixtures, and Equipment section are used to identify if a tool is a standard tool (STD-XXXX), a commercial tool (COM-XXXX), or a Special Tool (SPL-XXXX). This reference number is also used to distinguish between tools with similar names in the same procedure. These reference numbers are for use in the documentation only. They are not to be used for ordering tools.

WASTE WATER DRAIN MAST ASSEMBLY - DESCRIPTION AND OPERATION

1. **Description**

   A. The waste water drain mast assembly has two mast assembly halves with a heater between them.

2. **Operation**

   A. The waste water drain mast assembly drains waste water from the airplane.

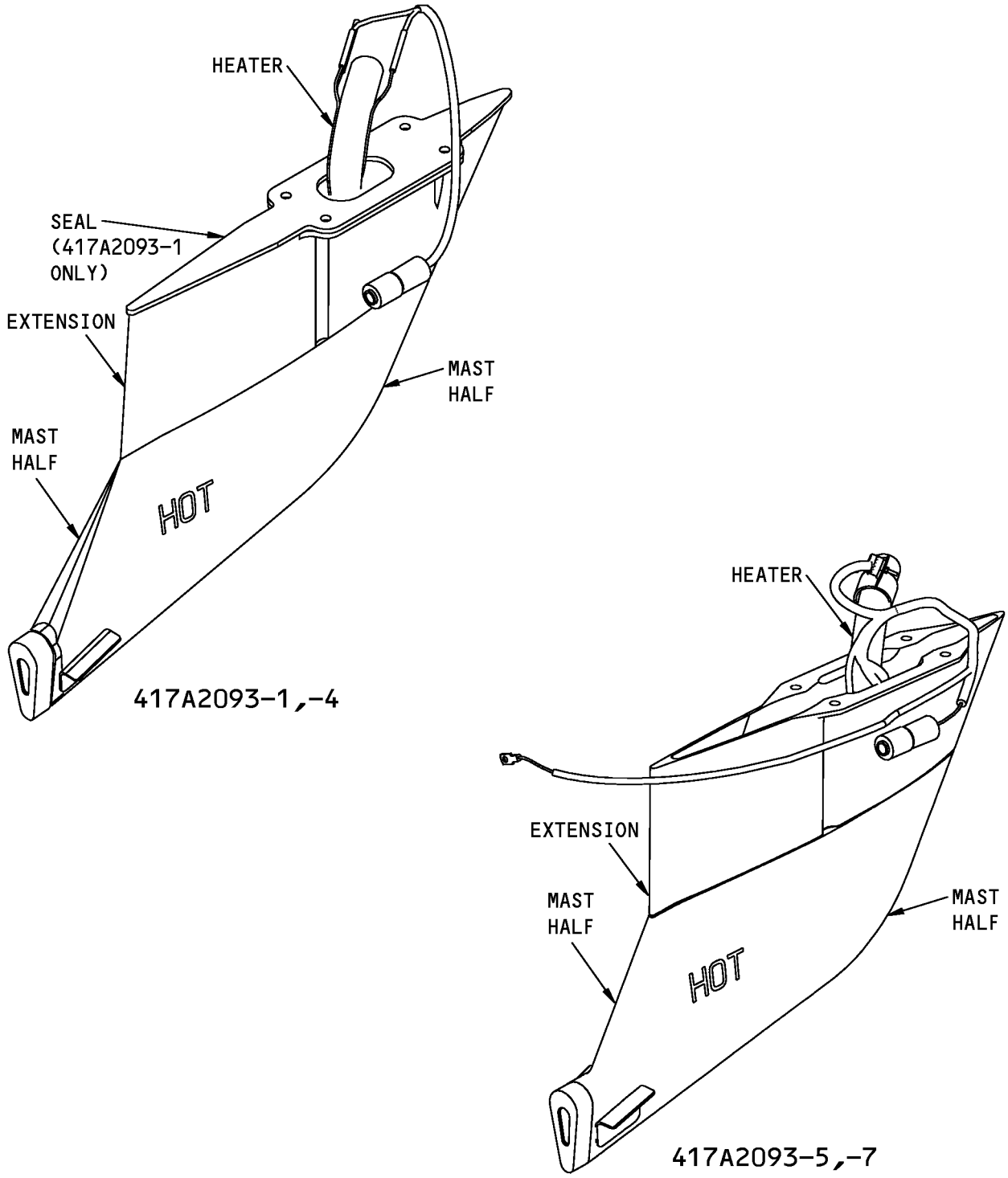
3. **Leading Particulars (Approximate)**

   A. Length – 18.0 inches

   B. Width – 1.5 inches

   C. Height – 10.5 inches

   D. Weight – 5.2 pounds



Waste Water Drain Mast Assembly
Figure 1

TESTING AND FAULT ISOLATION

1. General

A. This procedure contains the data necessary to do an operational test, a dielectric test, and an insulation test.

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the standard practices identified in this procedure.

C. Refers to IPL Figure 1 for item numbers.

2. Heater Tests

A. General

(1) The heater assembly (40A) must be held in a set-up stand to do these tests because the heater gets very hot during the tests.

(2) Do these tests when the heater is fully dry, at ambient room temperature, and at ground level air pressure.

B. Special Tools and Equipment

(1) Set-up stand

(2) High voltage tester, Associated Research Model 404 or equivalent

(3) Wattmeter

C. Operational Test

CAUTION: THE HEATER GETS VERY HOT WHEN CONNECTED TO POWER. KEEP ALL PERSONNEL AND COMBUSTIBLES AWAY FROM THE HEATER WHILE IN OPERATION AND UNTIL THE HEATER HAS COOLED.

(1) Apply 113-117 volts RMS, 375-425 Hz for 3.0-3.5 minutes. Power input to the heater must be 284-336 watts.

D. Dielectric Test

CAUTION: DIELECTRIC TESTING CAUSES A CUMULATIVE DEGRADATION OF THE ELECTRICAL CIRCUIT INSULATION. DO NOT DO THIS TEST UNLESS NECESSARY.

(1) Immediately after the power leads are removed and the heater assembly is at its maximum temperature after the operational test, apply 500 volts RMS, 60 Hz between either of the two leads and bonding strap for 1 minute. The maximum permitted leakage is 2 milliamperes.

E. Insulation Resistance Test

CAUTION: BEFORE YOU USE THE HIGH VOLTAGE TESTER, BE SURE THE TESTER IS TURNED OFF AND THAT NO ONE IS TOUCHING ANY PORTION OF THE CONNECTION POINTS OR PROBE LEAD WIRES. FAILURE TO OBEY THIS WARNING CAN RESULT IN SEVERE ELECTRICAL SHOCK. DO THE INSULATION RESISTANCE TEST AFTER THE DIELECTRIC TEST TO BE SURE THE DIELECTRIC TEST DID NOT DAMAGE THE UNIT.

(1) Apply 500 volts dc between mutually insulated parts for 15 seconds minimum. The resistance must not be less than 100 megohms.

DISASSEMBLY

1. General

A. This procedure tells how to disassemble the waste water drain mast assembly (IPL Figure 1, IPL Figure 2, IPL Figure 3, and IPL Figure 4; 1A).

B. Disassemble this component only to find defects, do the necessary repairs, and put the component back to a serviceable condition.

C. Refer to IPL Figure 1, IPL Figure 2, IPL Figure 3, and IPL Figure 4 for item numbers.

2. Disassembly

A. References

Reference	Title
SOPM 20-50-01	BOLT AND NUT INSTALLATION

B. Procedure

NOTE: For bolt and nut installation, refer to SOPM 20-50-01.

(1) Use standard industry practices and these steps.

(2) Remove bolts (IPL Figure 1; 10) (IPL Figure 2, IPL Figure 3 and IPL Figure 4; 5) and extension (IPL Figure 1; 15)(IPL Figure 2, IPL Figure 3 and IPL Figure 4; 10).

(3) Remove bolts (IPL Figure 1; 25, 30, 35)(IPL Figure 2, IPL Figure 3 and IPL Figure 4; 20, 25, 30) and separate the mast half assemblies (IPL Figure 1; 45, 70)(IPL Figure 2 and IPL Figure 3; 40, 65) (IPL Figure 4; 50, 75)

(4) Remove heater assembly (IPL Figure 1; 40A)(IPL Figure 2, IPL Figure 3 and IPL Figure 4; 35) from the mast half assemblies (IPL Figure 1; 45, 70)(IPL Figure 2 and IPL Figure 3; 40, 65) (IPL Figure 4; 50, 75).

(NOT APPLICABLE)

CHECK

1. General

A. This procedure has the data necessary to find defects in the material of the specified parts.

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

C. Refer to IPL Figure 1, IPL Figure 2, IPL Figure 3 and IPL Figure 4 for item numbers.

2. Check

A. References

Reference	Title
SOPM 20-20-02	PENETRANT METHODS OF INSPECTION

B. Procedure

(1) Examine the component parts for defects by standard industry practices.

(2) Do a penetrant inspection (SOPM 20-20-02) of these parts:

(a) Drain half (IPL Figure 1, 60, 85; IPL Figure 2, 60, 80; IPL Figure 3, 55, 80; IPL Figure 4, 50, 75)

(b) Angle (IPL Figure 1, 55, 80; IPL Figure 2, 55, 75; IPL Figure 3, 50, 75; and IPL Figure 4, 45, 70)

REPAIR

1. General

A. Instructions for repair, refinish, and replacement of the specified subassembly parts are included in each REPAIR when applicable:

Table 601:

PART NUMBER	NAME	REPAIR
—	REFINISH OF OTHER PARTS	1-1
417T2093	HALF MAST ASSEMBLY	2-1
65-14036	DRAIN HALF	2-2
417T2111	ADAPTER-EXTENSION	3-1
417A2093	MAST ASSEMBLY	4-1

2. Dimensioning Symbols

A. Standard True Position Dimensioning Symbols used in the applicable repair procedures are shown in REPAIR-GENERAL, Figure 601.

—	STRAIGHTNESS
▱	FLATNESS
⊥	PERPENDICULARITY (OR SQUARENESS)
//	PARALLELISM
○	ROUNDNESS
⌭	CYLINDRICITY
⌒	PROFILE OF A LINE
⌓	PROFILE OF A SURFACE
◎	CONCENTRICITY
⌯	SYMMETRY
∠	ANGULARITY
↗	RUNOUT
↗↗	TOTAL RUNOUT
⌴	COUNTERBORE OR SPOTFACE
∨	COUNTERSINK
⌖	THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION)
Ø	DIAMETER
S Ø	SPHERICAL DIAMETER
R	RADIUS
SR	SPHERICAL RADIUS
()	REFERENCE
BASIC (BSC) OR [DIM]	A THEORETICALLY EXACT DIMENSION USED TO DESCRIBE SIZE, SHAPE OR LOCATION OF A FEATURE. FROM THIS FEATURE PERMISSIBLE VARIATIONS ARE ESTABLISHED BY TOLERANCES ON OTHER DIMENSIONS OR NOTES.
[-A-]	DATUM
Ⓜ	MAXIMUM MATERIAL CONDITION (MMC)
Ⓛ	LEAST MATERIAL CONDITION (LMC)
Ⓢ	REGARDLESS OF FEATURE SIZE (RFS)
Ⓟ	PROJECTED TOLERANCE ZONE
FIM	FULL INDICATOR MOVEMENT

EXAMPLES

— 0.002	STRAIGHT WITHIN 0.002
⊥ 0.002 B	PERPENDICULAR TO DATUM B WITHIN 0.002
// 0.002 A	PARALLEL TO DATUM A WITHIN 0.002
○ 0.002	ROUND WITHIN 0.002
⌭ 0.010	CYLINDRICAL SURFACE MUST LIE BETWEEN TWO CONCENTRIC CYLINDERS, ONE OF WHICH HAS A RADIUS 0.010 INCH GREATER THAN THE OTHER
⌒ 0.006 A	EACH LINE ELEMENT OF THE SURFACE AT ANY CROSS SECTION MUST LIE BETWEEN TWO PROFILE BOUNDARIES 0.006 INCH APART RELATIVE TO DATUM A
⌓ 0.020 A	SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.020 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE
◎ Ø 0.0005 C	CONCENTRIC TO DATUM C WITHIN 0.0005 DIAMETER
⌯ 0.010 A	SYMMETRICAL WITH DATUM A WITHIN 0.010
∠ 0.005 A	ANGULAR TOLERANCE 0.005 WITH DATUM A
⌖ Ø 0.002 Ⓢ B	LOCATED AT TRUE POSITION WITHIN 0.002 DIA RELATIVE TO DATUM B, REGARDLESS OF FEATURE SIZE
⊥ Ø 0.010 Ⓜ A 0.510 Ⓟ	AXIS IS TOTALLY WITHIN A CYLINDER OF 0.010 INCH DIAMETER, PERPENDICULAR TO DATUM A, AND EXTENDING 0.510 INCH ABOVE DATUM A, MAXIMUM MATERIAL CONDITION
[2.000] OR 2.000 BSC	THEORETICALLY EXACT DIMENSION IS 2.000

True Position Dimensioning Symbols
Figure 601

REFINISH OF OTHER PARTS - REPAIR 1-1

1. General

A. This procedure has the data necessary to refinish the parts which are not given in other repairs.

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

C. Refer to IPL Figure 1, IPL Figure 2, IPL Figure 3, and IPL Figure 4 for item numbers.

2. Refinish of Other Parts

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00175	Primer - Urethane Compatible, Corrosion Resistant (Less Than 1% Aromatic Amines)	BMS10-79, Type III

B. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-30-03	GENERAL CLEANING PROCEDURES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

C. General

(1) Instructions for the repair of the parts listed in REPAIR 1-1, Table 601 is for replacement of the original finish.

D. Procedure

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For general cleaning procedures, refer to SOPM 20-30-03. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

(1) Refer to REPAIR 1-1, Table 601 for refinish details.

Table 601: Refinish Details

IPL FIG. & ITEM	MATERIAL	FINISH
IPL FIG. 1 Angle (55, 80)	Aluminum alloy	Chromic acid anodize (F-2.26). Apply primer, C00175 (F-19.47).
IPL FIG. 2 and 3 Angle (50, 75)	Aluminum alloy	Chromic acid anodize (F-2.26). Apply primer, C00175 (F-19.47).
IPL FIG. 4 Angle (45, 70)	Aluminum alloy	Chromic acid anodize (F-2.26). Apply primer, C00175 (F-19.47).

HALF MAST ASSEMBLY - REPAIR 2-1

417T2093–4, –5

1. General

A. This procedure tells how to replace inserts on the half mast assembly.

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

2. Insert Replacement

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00259	Primer - Chemical And Solvent Resistant Finish, Epoxy Resin	BMS10-11, Type I

B. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-30-03	GENERAL CLEANING PROCEDURES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-50-22	HOW TO INSTALL THREADED INSERTS
SOPM 20-60-02	FINISHING MATERIALS

C. Procedure

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For general cleaning procedures, refer to SOPM 20-30-03. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

(1) Remove the old inserts and clean the holes.

(2) Apply primer, C00259 (SRF-12.20) to the holes and their countersink.

(3) Install replacement inserts (IPL Figure 1; 65, 90, 95) (IPL Figure 2; 55, 85, 90) (IPL Figure 3; 60, 85, 90) (IPL Figure 4; 55, 60) and sleeve (IPL Figure 1; 100) (IPL Figure 2 and IPL Figure 3; 95)(IPL Figure 4; 80) into drain half (IPL Figure 1; 60, 85) (IPL Figure 2; 60, 80) (IPL Figure 3; 55, 80) (IPL Figure 4; 50, 75) and turn the inserts one-quarter to one-half turn below the countersink. Remove the tang. Refer to the SOPM 20-50-22 for installing inserts.

DRAIN HALF - REPAIR 2-2

65-14036–12, –13

1. General

A. This procedure tells how to refinish the drain half (IPL Figure 1; 60, 85)(IPL Figure 2; 60, 80)(IPL Figure 3; 55, 80) and (IPL Figure 4; 50, 75).

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

2. Drain Mast Halves Refinish

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00175	Primer - Urethane Compatible, Corrosion Resistant (Less Than 1% Aromatic Amines)	BMS10-79, Type III

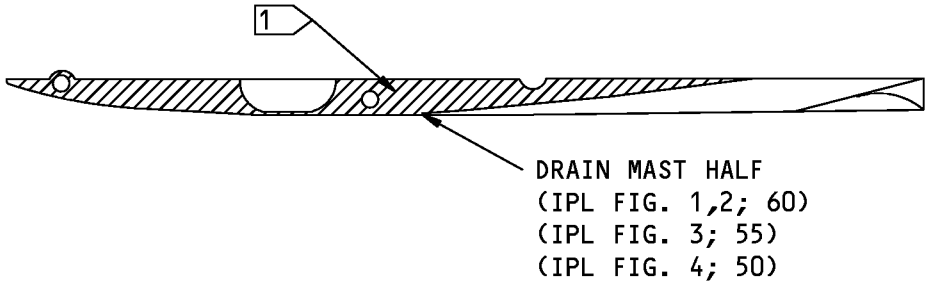
B. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-30-03	GENERAL CLEANING PROCEDURES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

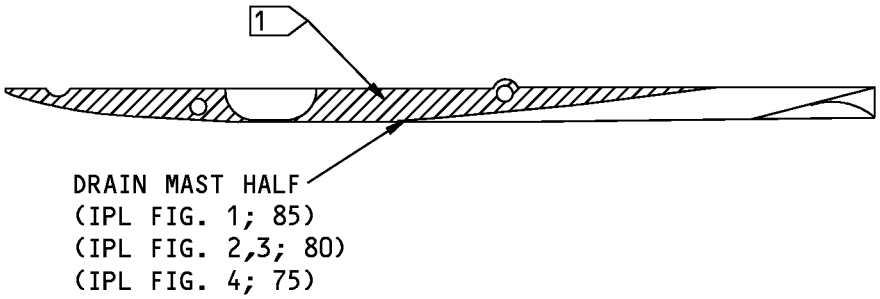
C. Procedure REPAIR 2-2, Figure 601

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For general cleaning procedures, refer to SOPM 20-30-03. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

(1) Sulfuric acid anodize (F-17.03). Then apply primer, C00175 (F-19.47) unless specified differently in REPAIR 2-2, Figure 601.



65-14036-12



65-14036-13

1 NO FINISH ON SHADED MOUNTING SURFACE

Drain Halves Refinish
Figure 601

ADAPTOR-EXTENSION - REPAIR 3-1

417T2111–8, –11

1. General

A. This procedure tells how to refinish the extension (IPL Figure 1; 15) (IPL Figure 2; 10) (IPL Figure 3; 10) (IPL Figure 4; 10A).

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

C. General repair details

(1) Material: Aluminum alloy

2. Drain Mast Extension Refinish

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00033	Coating - Exterior Protective Enamel, Flexibility Use	BMS10-60, Type II
C00175	Primer - Urethane Compatible, Corrosion Resistant (Less Than 1% Aromatic Amines)	BMS10-79, Type III
G50314	Tape - Masking	BAC5043-4, Type VII, Class 2

B. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-30-03	GENERAL CLEANING PROCEDURES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

C. Procedure

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For general cleaning procedures, refer to SOPM 20-30-03. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

(1) If installed or applicable, remove seal (IPL Figure 1; 5).

(2) For the 417T2111-8 extension (REPAIR 3-1, Figure 601):

(a) Apply masking tape, G50314 to the countersunk holes before you refinish the unit.

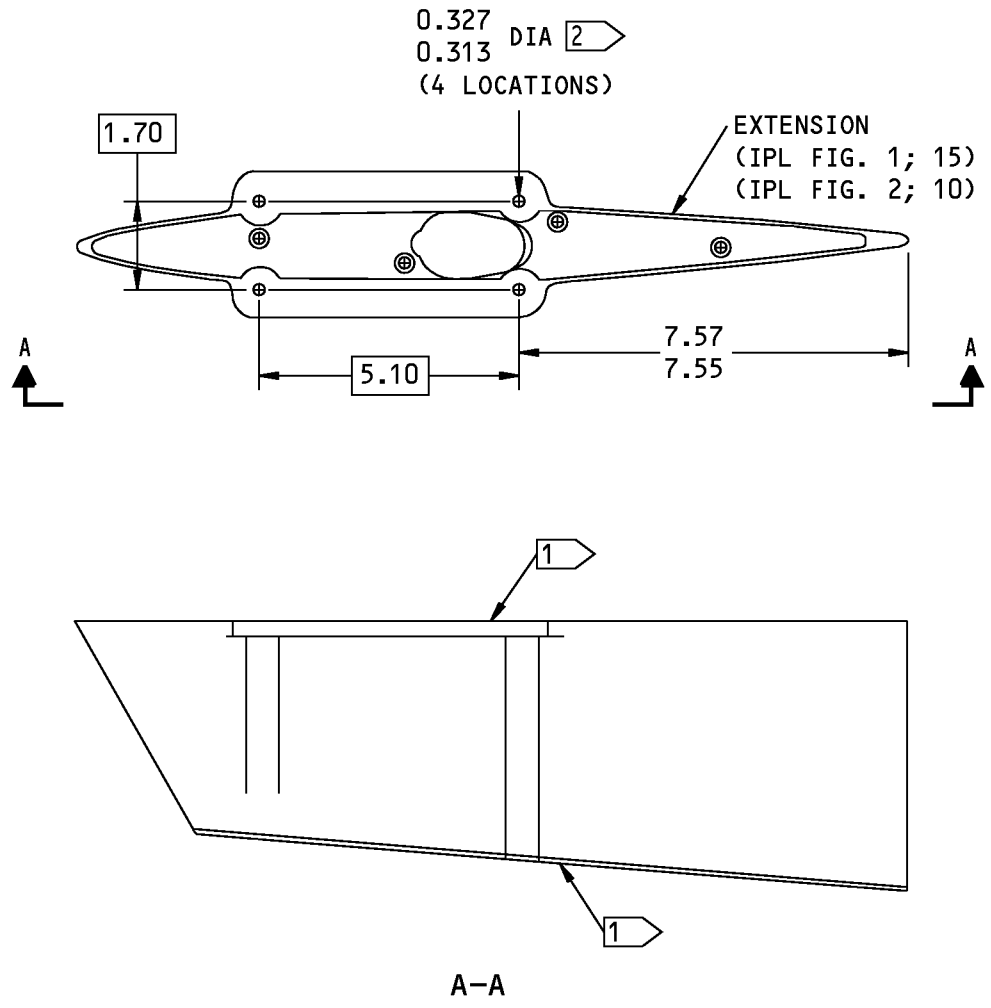
(b) Chromic acid anodize (F-17.19) the surfaces shown.

(3) For the 417T2111-11 extension (REPAIR 3-1, Figure 602:

(a) Boric acid-sulfuric acid anodize (F-17.41) and apply primer, C00175 (F-19.47) and enamel (F-19.39-707) to the surfaces shown.

(b) Chemical treat (F-17.28) the surfaces shown.

(c) Apply enamel coating, C00033 (F-19.39-707) to all but the flag note 1 and 2 exterior surfaces. Overspray is permitted on the interior surface.

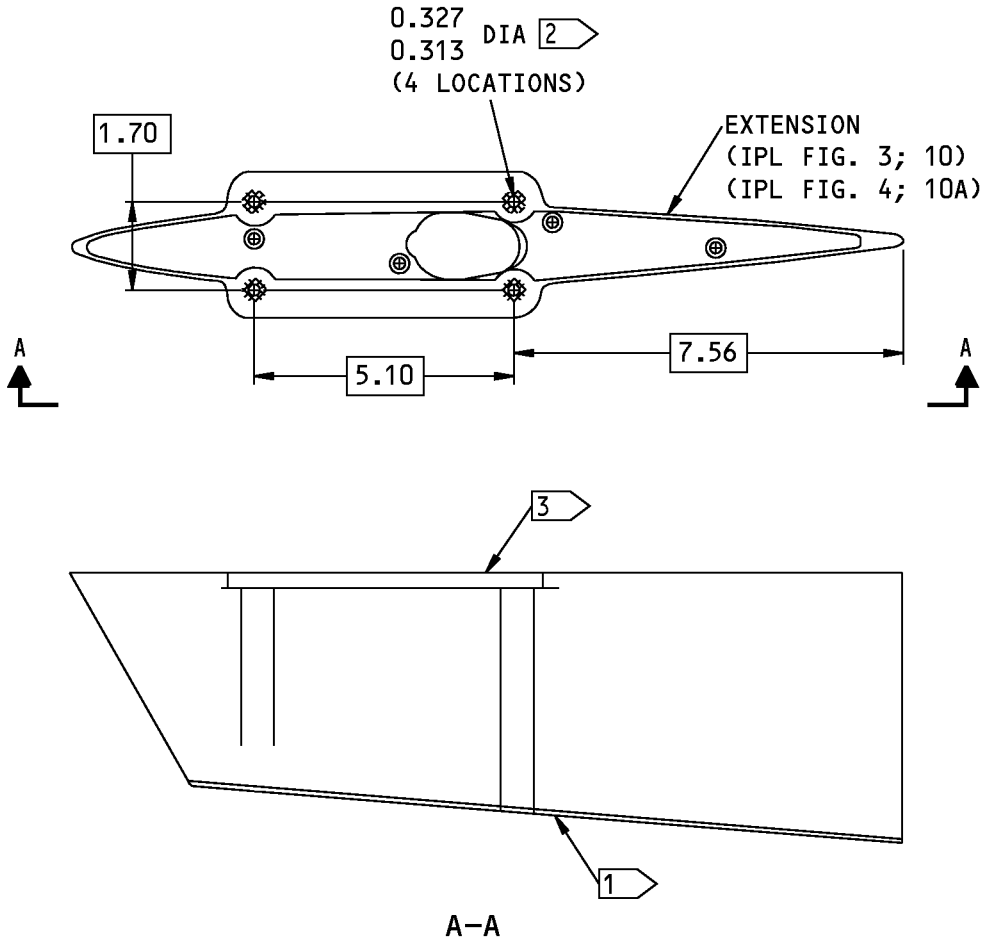


1 CHROMIC ACID ANODIZE (F-17.19)
THIS SURFACE ONLY

2 DO NOT ANODIZE THE COUNTERSINK

ALL DIMENSIONS ARE IN INCHES

417T2111-8 Adaptor-Extension Refinish
Figure 601



1 CHEMICAL TREAT (F-17.28) THIS SURFACE ONLY

2 CHEMICAL TREAT (F-17.28) THIS SURFACE AFTER THE AREAS AROUND THE 0.313-0.327 DIA HOLES HAVE BEEN MASKED TO A DIAMETER OF 0.52 INCH AS SHOWN BY THE CROSS HATCHED AREA. THE MASKED AREA INCLUDES THE COMPLETE DEPTH OF THE HOLE SURFACE

3 BORIC ACID-SULFURIC ACID ANODIZE (F-17.41) AND APPLY BMS 10-79, TYPE 3 PRIMER (F-19.47)

ALL DIMENSIONS ARE IN INCHES

487148 S00041000117_V3

417T2111-11 Adaptor-Extension Refinish
Figure 602

MAST ASSEMBLY - REPAIR 4-1

417A2093–2 , -6

1. General

A. This procedure tells how to refinish the drain mast assembly (IPL Figure 1; 20) (IPL Figure 2; 15) (IPL Figure 3; 15) (IPL Figure 4; 15)

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

C. General repair details:

(1) Material: Aluminum alloy

2. Drain Mast Assembly Refinish

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00033	Coating - Exterior Protective Enamel, Flexibility Use	BMS10-60, Type II

B. References

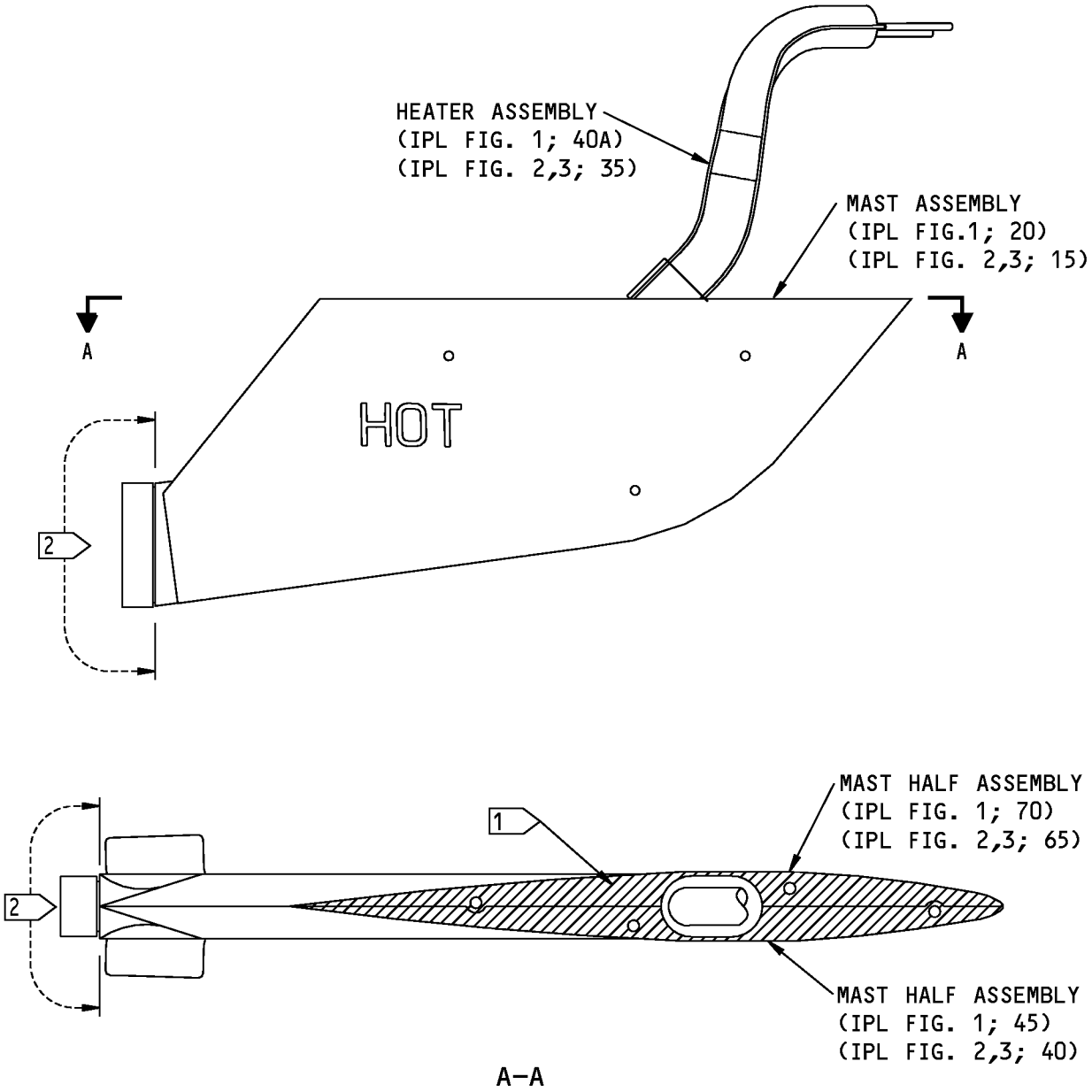
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-30-03	GENERAL CLEANING PROCEDURES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-41-02	APPLICATION OF CHEMICAL AND SOLVENT RESISTANT FINISHES
SOPM 20-60-02	FINISHING MATERIALS

C. Procedure (REPAIR 4-1, Figure 601)

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For general cleaning procedures, refer to SOPM 20-30-03. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For application of chemical and solvent resistant finishes, refer to SOPM 20-41-02. For finishing materials, refer to SOPM 20-60-02.

(1) Manually apply chemical conversion coating (F-17.10).

(2) Apply enamel coating, C00033 (F-19.39-707) on the outside surfaces unless shown differently in REPAIR 4-1, Figure 601.

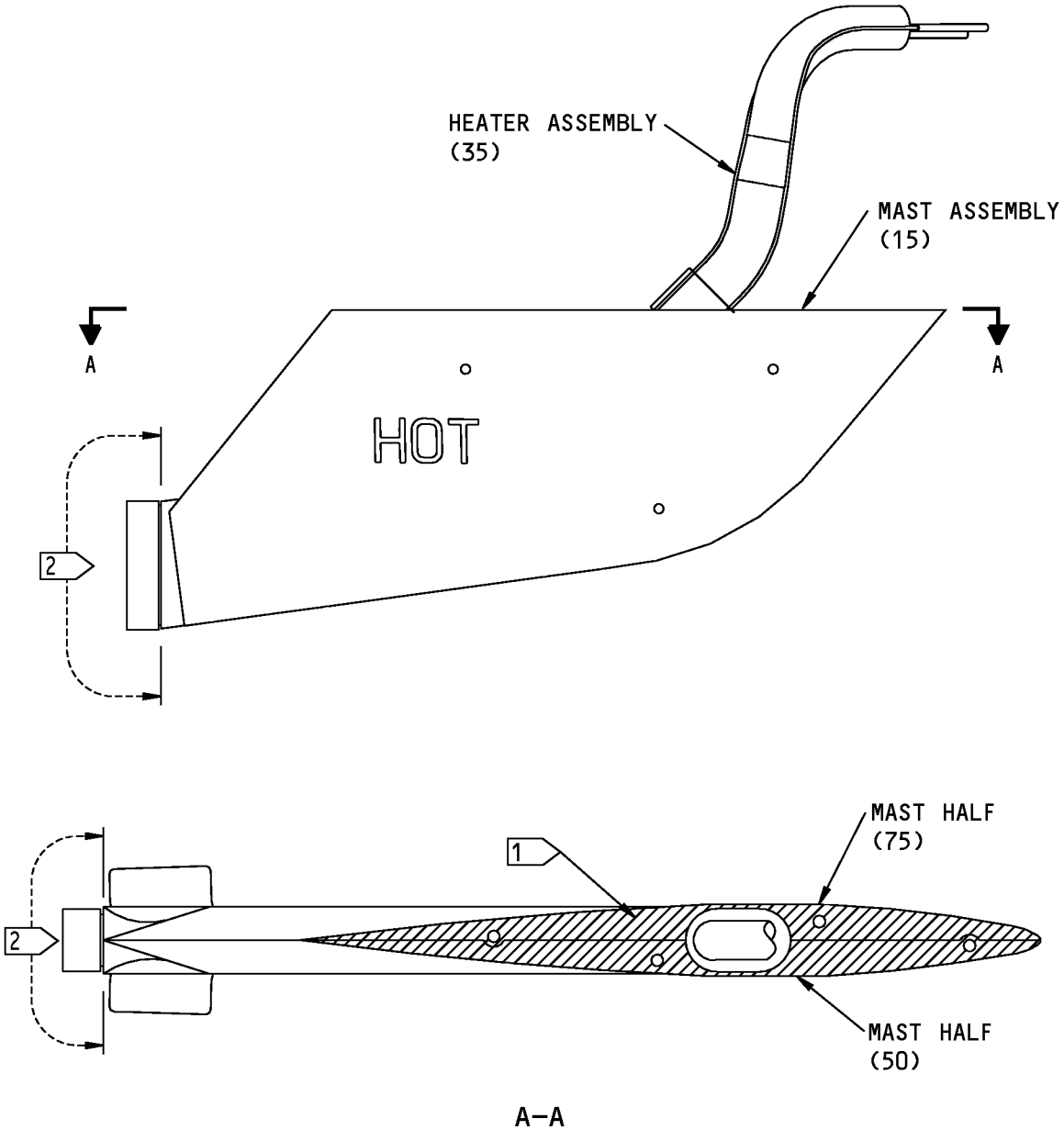


A-A

1 CHEMICAL TREAT (F-17.10) ON THIS SHADED MOUNTING SURFACE

2 NO FINISH (F-25.01) ON THIS SURFACE

417A2093-2, -6 Mast Assembly Refinish
Figure 601 (Sheet 1 of 2)



A–A

1 CHEMICAL TREAT (F-17.10) ON THIS SHADED MOUNTING SURFACE

2 NO FINISH (F-25.01) ON THIS SURFACE

ITEM NUMBERS REFER TO IPL FIG. 4

417A2093-2, -6 Mast Assembly Refinish
Figure 601 (Sheet 2 of 2)

ASSEMBLY

1. General

A. This procedure has the data necessary to assemble the drain mast assembly (1A).

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

2. Assembly

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS 5-95
A00281	Adhesive - Dow Corning 3145 RTV	MIL-A-46146 (BAC5010, Type 79)
C00033	Coating - Exterior Protective Enamel, Flexibility Use	BMS10-60, Type II
G00148	Tape - Silicone - Permacel 2650	

B. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-30-03	GENERAL CLEANING PROCEDURES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-50-01	BOLT AND NUT INSTALLATION
SOPM 20-50-10	APPLICATION OF STENCILS, INSIGNIA, SILK SCREEN, PART NUMBERING AND IDENTIFICATION MARKINGS
SOPM 20-50-11	APPLICATION OF AERODYNAMIC SMOOTHING SEALANT
SOPM 20-50-12	APPLICATION OF ADHESIVES
SOPM 20-60-02	FINISHING MATERIALS
SOPM 20-60-04	MISCELLANEOUS MATERIALS

C. Procedure

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For general cleaning procedures, refer to SOPM 20-30-03. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For bolt and nut installation, refer to SOPM 20-50-01. For application of stencils, refer to SOPM 20-50-10. For application of application of aerodynamic smoothing sealant, refer to SOPM 20-50-11. For application of adhesives, refer to SOPM 20-50-12. For finishing materials, refer to SOPM 20-60-02. For miscellaneous materials, refer to SOPM 20-60-04.

(1) Wrap Permacel 2650 tape, G00148 around the tube of heater assembly (IPL Figure 1; 40A) (IPL Figure 2, IPL Figure 3 and IPL Figure 4; 35) as shown in ASSEMBLY, Figure 701 to a thickness that will hold the heater assembly tightly in position when bolts (IPL Figure 1; 25, 30, 35) (IPL Figure 2, IPL Figure 3 and IPL Figure 4; 20, 25, 30) are installed.

(a) The Permacel 2650 tape, G00148 must be 1.0 inch wide at the three locations.

CAUTION: DO NOT COMPRESS THE SILICON TAPE MORE THAN 0.04 INCH WHEN YOU TIGHTEN THE BOLTS.

(b) If you use a 0.5 inch wide Permacel 2650 tape, G00148, wrap the Permacel 2650 tape, G00148 twice around the tube.

(2) Install heater assy (IPL Figure 1; 40A) (IPL Figure 2, IPL Figure 3 and IPL Figure 4; 35) between mast halves (IPL Figure 1; 45, 70) (IPL Figure 2, IPL Figure 3; 40, 65) (IPL Figure 4; 50, 75) with bolts (IPL Figure 1; 25, 30, 35) (IPL Figure 2, IPL Figure 3, and IPL Figure 4; 20, 25, 30).

(3) Apply aerodynamic smoother sealant, A00247 flush to mast surface bolt heads and tails.

(4) Apply aerodynamic smoother sealant, A00247 to faying surfaces of mast halves as shown in ASSEMBLY, Figure 701. Drain holes on lower surface must be kept free of aerodynamic smoother sealant, A00247.

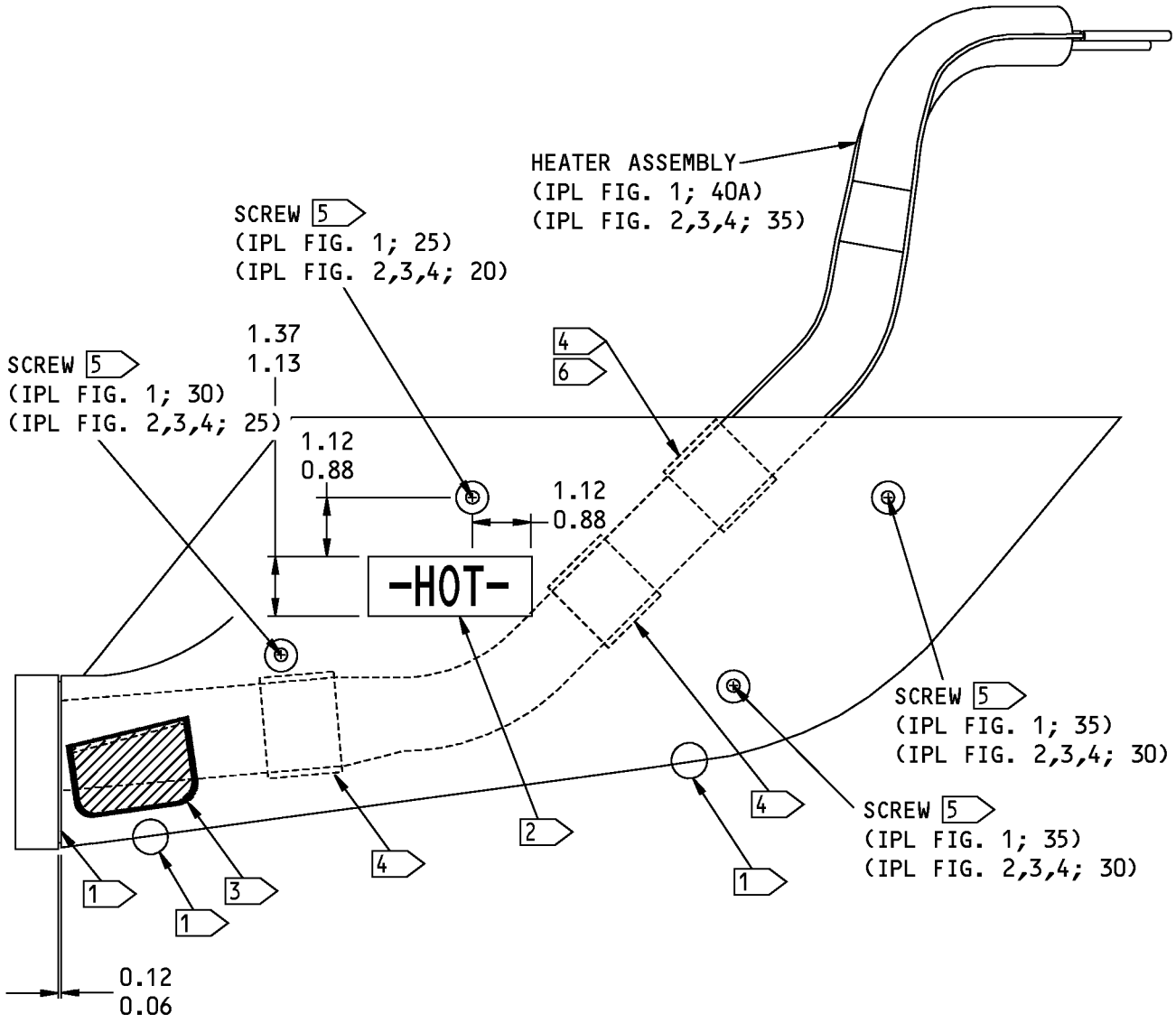
(5) Install extension (IPL Figure 1; 15) (IPL Figure 2, IPL Figure 3 and IPL Figure 4; 10) onto drain mast with bolts (IPL Figure 1; 10)(IPL Figure 2, IPL Figure 3 and IPL Figure 4; 5). With a 3/16 inch ballpoint hex drive, tighten the bolt closest to drain mast first, then tighten the remaining bolts.

(6) On 417A2093-1 units only, bond seal (5) on extension (15) with Dow Corning 3145 RTV adhesive, A00281 to areas shown in ASSEMBLY, Figure 702.

NOTE: Gaps are permitted between the seal (5) and the extension (15) in areas that are not bonded.

(7) Apply red enamel coating, C00033 (F-19.39-101) stencil "HOT" as shown (both sides) ASSEMBLY, Figure 701.

(8) Do a test of the heater assembly (IPL Figure 1; 40A) (IPL Figure 2, IPL Figure 3 and IPL Figure 4; 35) (refer to TESTING AND FAULT ISOLATION).



417A2093-2, -6 Mast Assembly
Figure 701 (Sheet 1 of 2)

1 THIS DRAIN HOLE TO BE FREE OF AERODYNAMIC SMOOTHER

2 STENCIL AS SHOWN (BOTH SIDES) WITH RED BMS 10-60 TYPE 2 ENAMEL (F-19.39-101)

3 SHADED AREA TO BE FILLED WITH AERODYNAMIC SMOOTHER

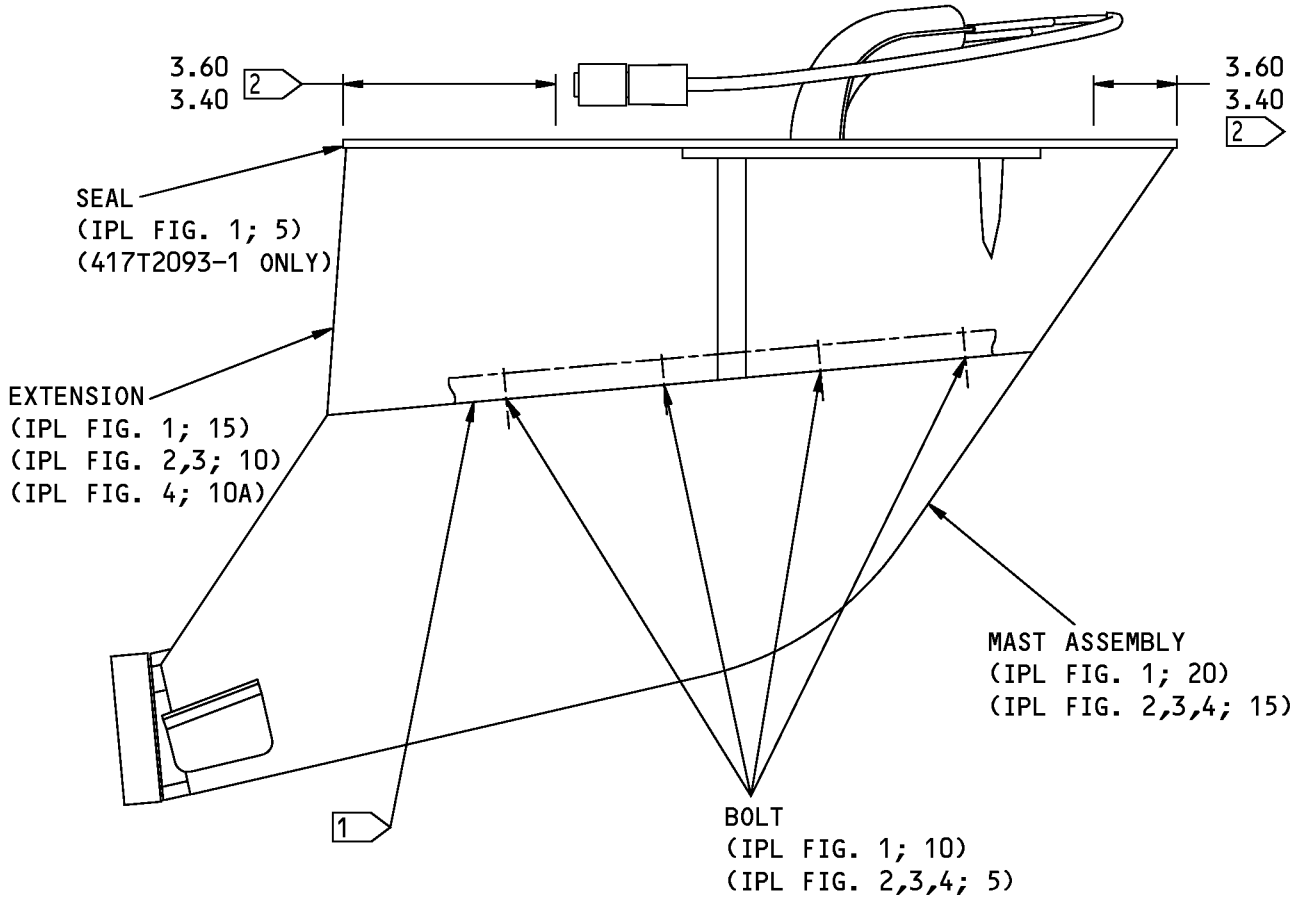
4 WRAP SILICONE TAPE IN THIS AREA

5 APPLY AERODYNAMIC SMOOTHER FLUSH TO MAST SURFACE

6 DO NOT LET THE TAPE BE ABOVE THE TOP SURFACE OF THE MAST ASSEMBLY

ALL DIMENSIONS ARE IN INCHES

417A2093-2, -6 Mast Assembly
Figure 701 (Sheet 2 of 2)



1 APPLY AERODYNAMIC SMOOTHER AFTER ASSEMBLY

2 APPLY TYPE 79 ADHESIVE TO THIS AREA TO BOND SEAL (5) TO EXTENSION (15)

ALL DIMENSIONS ARE IN INCHES

Drain Mast Assembly
Figure 702

(NOT APPLICABLE)

(NOT APPLICABLE)

ILLUSTRATED PARTS LIST

1. Introduction

A. The Illustrated Parts List (IPL) contains an illustration and a list of component parts you can repair or replace. The Illustrated Parts Catalog (IPC) shows how to use the Boeing part number system.

B. This shows how parts are related: The relation of each item to its next higher assembly (NHA) is shown in the NOMENCLATURE column. Use the indenture system that follows:

1 2 3 4 5 6 7

. Assembly

. Attaching parts for assembly

. . Detail parts for assembly

. . Subassembly

. . Attaching parts for subassembly

. . . Detail parts for subassembly

. . . Sub-subassembly

. . . Attaching parts for subassembly

. . . . . Details parts for sub-subassembly

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

C. Each top assembly is given one use code letter (A, B, C, etc.) in the USAGE CODE column. All subsequent component parts in the list can have one or more of the use code letters to show effectivity to top assemblies. A component part without a use code applies to all top assemblies.

D. An alphabetical letter is added after the item number for optional parts, parts changed by a Service Bulletin, configuration differences (except left-handed and right-handed parts), last engineering releases, and parts added between item numbers in a sequence. The alphabetical letter will not be shown on the illustration for equivalent parts of the same part number.

E. Color-coded parts are identified with a single digit alpha following the dash number or with ''SP'' suffix. If the ''SP'' suffix is used, it represents consolidation of all color codes applicable for a given usage which are not separately listed. Orders for color-coded parts should include the registry number of the airplane for which the parts are ordered.

F. If a part number is 15 characters long but will not fit in the part number column, the part number will be displayed with a ''~'' at the end of the line and will be continued on the next line. The ''~'' denotes that the part number continues on the next line.

G. Parts changed by a Service Bulletin are shown by PRE SB XXXX and POST SB XXXX added to the NOMENCLATURE column.

(1) When a new top assembly is added by a Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the top assembly level only. The configuration differences at the detail part level are shown by use code letters.

(2) When the top assembly part number is not changed by the Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the detail level.

H. Interchangeable Parts

Optional (OPT)	The part is optional to and interchangeable with other parts that have the same item number.
Replaces, Replaced by and not interchangeable with (REPLACES, REPLACED BY AND NOT INTCHG/W)	The part replaces and is not interchangeable with the initial part.
Replaces, Replaced by (REPLACES, REPLACED BY)	The part replaces and is interchangeable with, or is an alternative to, the initial part.

VENDOR CODES

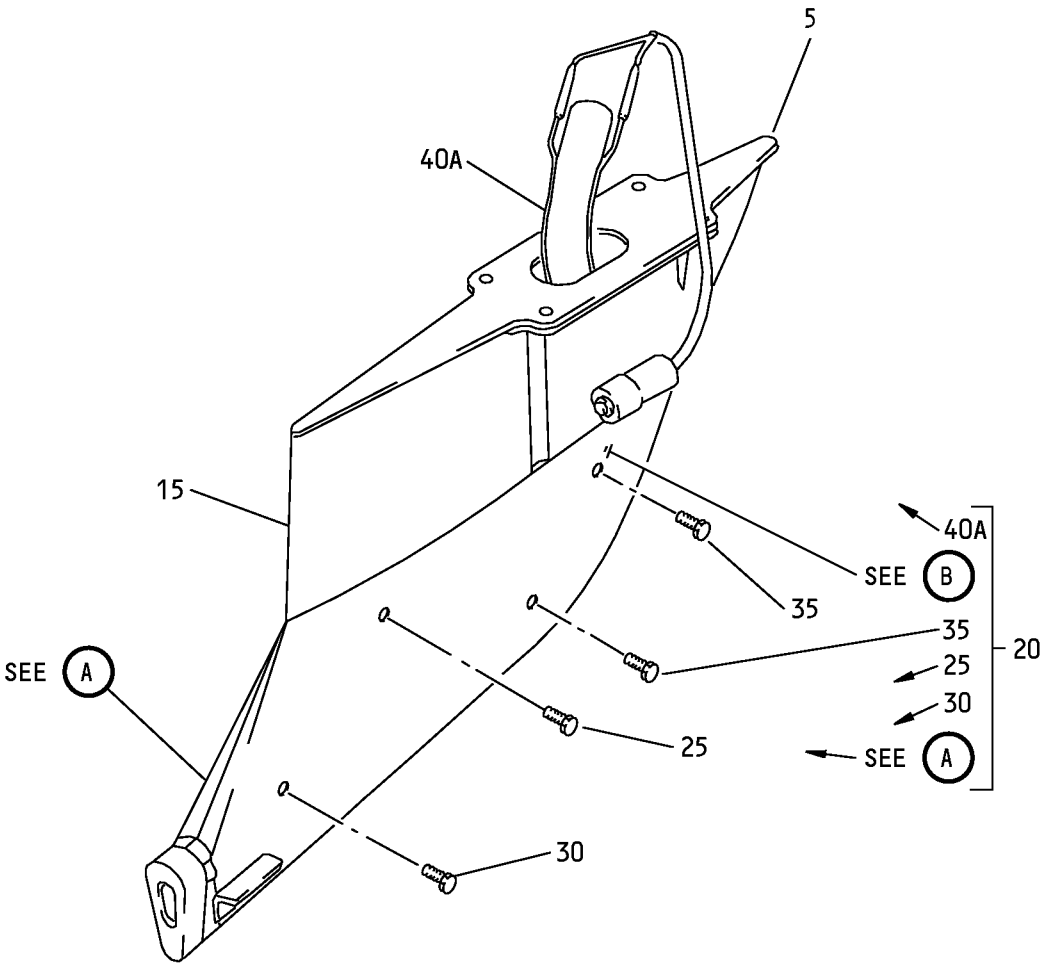
Code	Name
04849	ARI INDUSTRIES INC 381 ARI COURT ADDISON, ILLINOIS 60101-4329 FORMERLY AERO RESEARCH INST CO V04849 AND VB0003 FORMERLY AMERICAN-STANDARD AERO RESEARCH INST DEPT FORMERLY IN FRANKLIN PARK, ILLINOIS
26344	NEW HAVEN MFG CORP 446 BLAKE STREET NEW HAVEN, CONNECTICUT 06515-1238 OBSOLETE RECORD

NUMERICAL INDEX

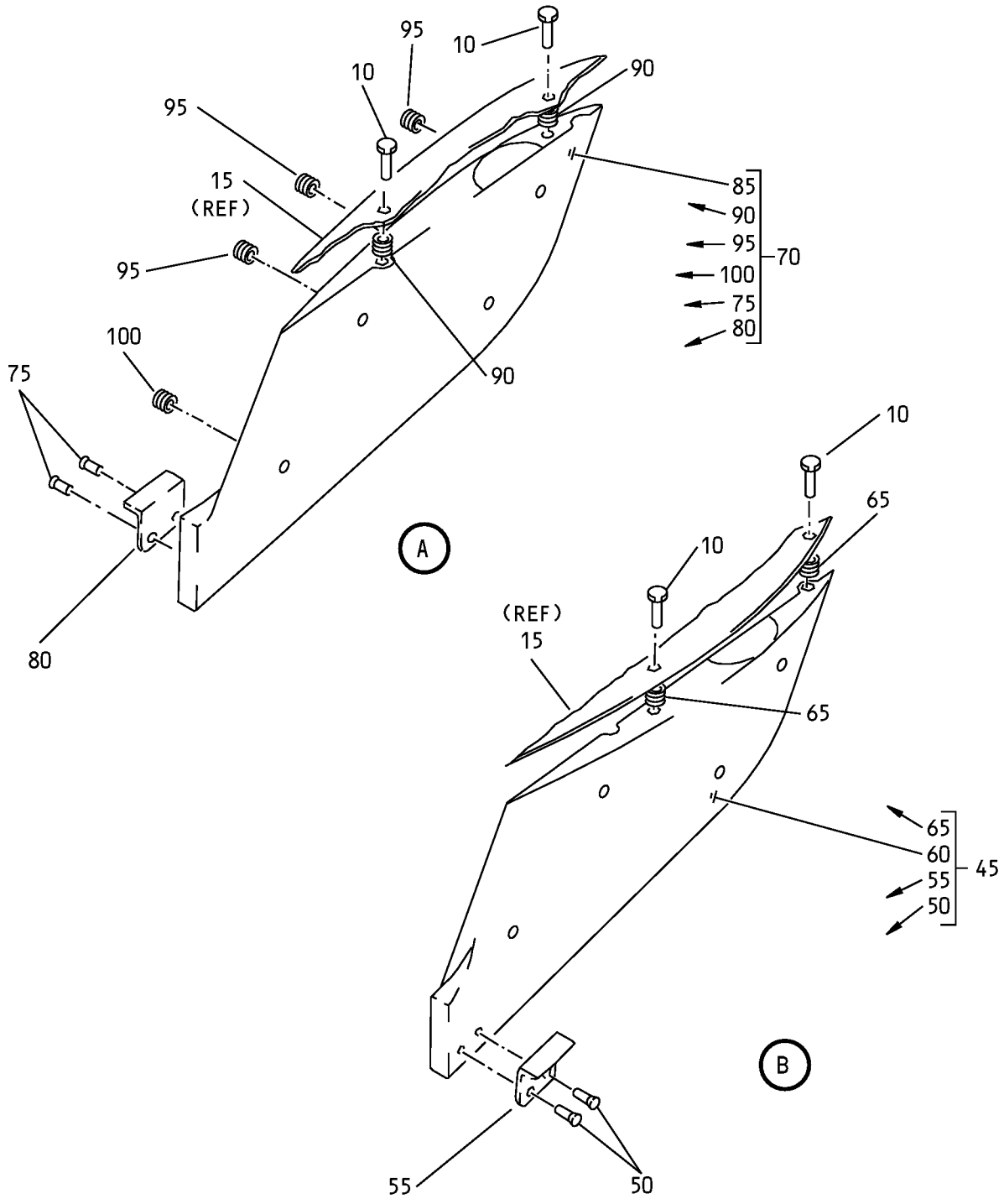
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
10-61434-7		1	40A	1
		2	35	1
		3	35	1
3591-3CN0190		1	100	1
		2	95	1
		3	95	1
		4	80	1
417A2093-1		1	1A	RF
417A2093-2		1	20	1
		2	15	1
		3	15	1
417A2093-4		1	1B	RF
		2	1A	RF
417A2093-5		1	1C	RF
		3	1A	RF
417A2093-6		4	15	1
417A2093-7		1	1D	RF
		4	1A	RF
417T2093-4		1	45	1
		2	40	1
		3	40	1
417T2093-5		1	70	1
		2	65	1
		3	65	1
417T2111-11		3	10	1
		4	10A	1
417T2111-8		1	15	1
		2	10	1
478W1612-4		1	5	1
65-14036-12		1	60	1
		2	60	1
		3	55	1
		4	50	1
65-14036-13		1	85	1

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
		2	80	1
		3	80	1
		4	75	1
69-56298-1		1	80	1
		2	75	1
		3	75	1
		4	70	1
69-56298-2		1	55	1
		2	50	1
		3	50	1
		4	45	1
90234-7		1	40A	1
		2	35	1
		3	35	1
		4	35	1
BACI12AEF1-20		4	55	3
BACI12AEF4-20		4	60	4
BACR15BA6D		1	50	2
		1	75	2
		2	45	2
		2	70	2
		3	45	2
		3	70	2
		4	40	2
		4	65	2
BACS12HL4A14		3	5	4
		4	5	4
BACS12HN3-10		4	20	1
BACS12HN3-14		4	30	2
BACS12HN3-5		4	25	1
MS21209F1-20		1	95	3
		2	90	3
		3	90	3
		4	55A	3
MS21209F4-20		1	65	2

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
		1	90	2
		2	55	2
		2	85	2
		3	60	2
		3	85	2
		4	60A	4
NAS1351N4-14P		1	10	4
		2	5	4
		3	5A	4
		4	5A	4
NAS1801-3-10		1	25	1
		2	20	1
		3	20	1
		4	20A	1
NAS1801-3-14		1	35	2
		2	30	2
		3	30	2
		4	30A	2
NAS1801-3-5		1	30	1
		2	25	1
		3	25	1
		4	25A	1



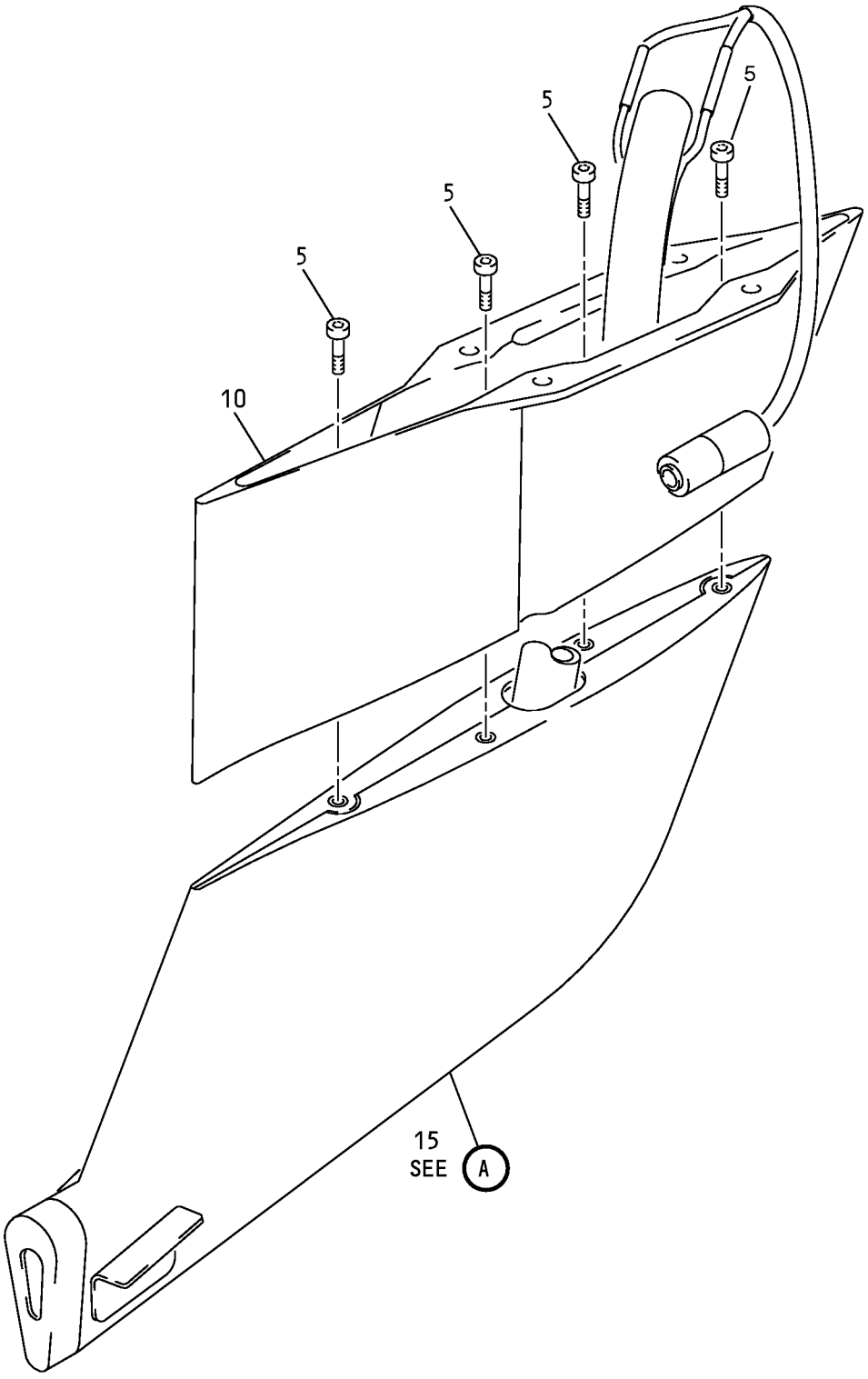
Waste Water Drain Mast Assembly
IPL Figure 1 (Sheet 1 of 2)



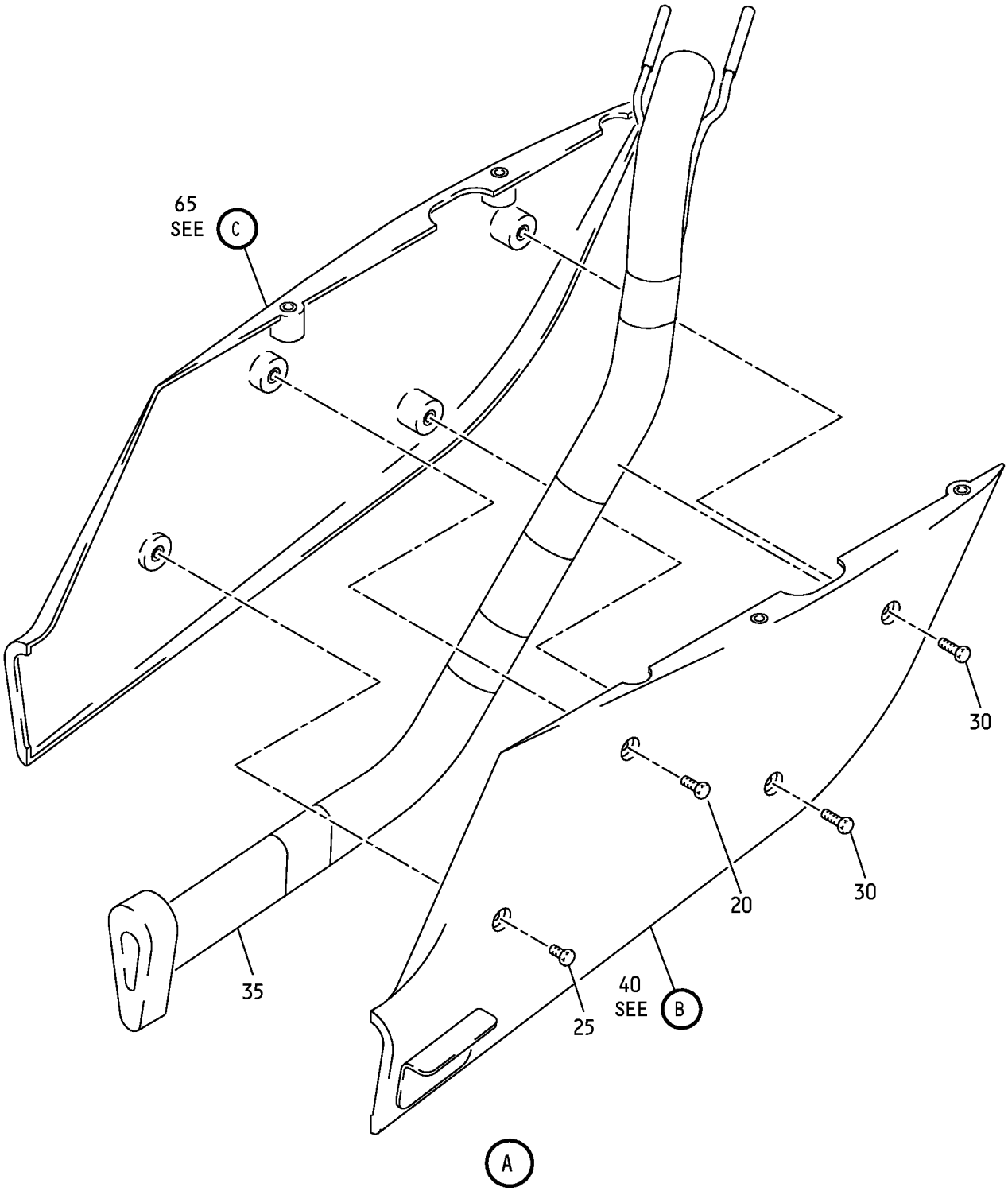
Waste Water Drain Mast Assembly
IPL Figure 1 (Sheet 2 of 2)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–1A	417A2093-1		MAST ASSY-DRAIN WASTE WATER	A	RF
–1B	417A2093-4		MAST ASSY-DRAIN WASTE WATER (FOR DETAILS SEE FIG. 2)	B	RF
–1C	417A2093-5		MAST ASSY-DRAIN WASTE WATER (FOR DETAILS SEE FIG. 3)	C	RF
–1D	417A2093-7		MAST ASSY-DRAIN WASTE WATER (FOR DETAILS SEE FIG. 4)	D	RF
5	478W1612-4		. SEAL	A	1
10	NAS1351N4-14P		. SCREW	A	4
15	417T2111-8		. EXTENSION	A	1
20	417A2093-2		. MAST ASSY	A	1
25	NAS1801-3-10		. . SCREW	A	1
30	NAS1801-3-5		. . SCREW	A	1
35	NAS1801-3-14		. . SCREW	A	2
–40	10-61434-7		DELETED		
40A	90234-7		. . HEATER ASSY (V04849) (SPEC 10-61434-7)	A	1
45	417T2093-4		. . MAST ASSY-HALF	A	1
50	BACR15BA6D		. . . RIVET (SIZE DETERMINED ON INST)	A	2
55	69-56298-2		. . . ANGLE	A	1
60	65-14036-12		. . . HALF	A	1
65	MS21209F4-20		. . . INSERT	A	2
70	417T2093-5		. . MAST ASSY-HALF	A	1
75	BACR15BA6D		. . . RIVET (SIZE DETERMINED ON INST)	A	2
80	69-56298-1		. . . ANGLE	A	1
85	65-14036-13		. . . HALF	A	1
90	MS21209F4-20		. . . INSERT	A	2
95	MS21209F1-20		. . . INSERT	A	3
100	3591-3CN0190		. . . SLEEVE (V26344)	A	1

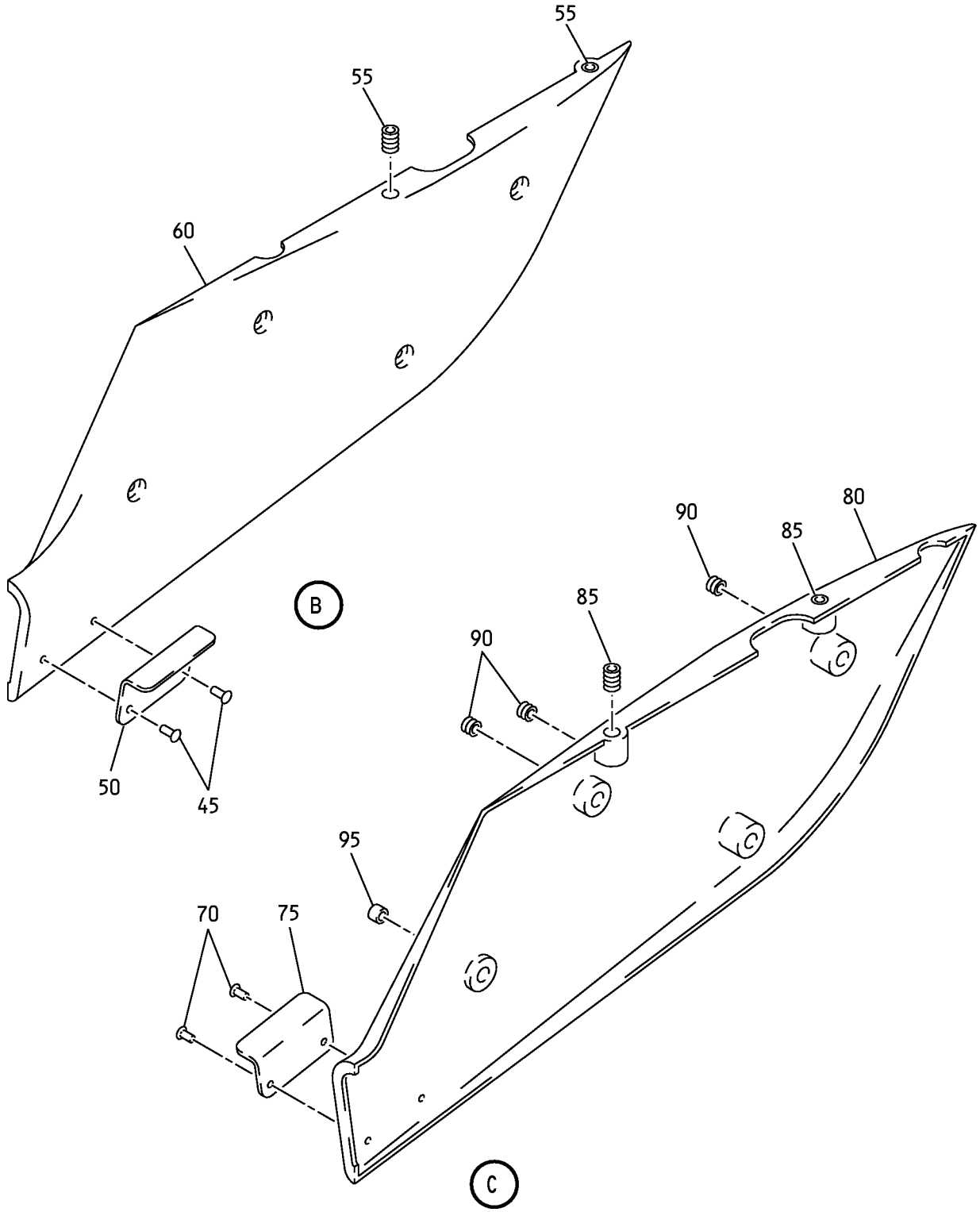
–Item not Illustrated



Waste Water Drain Mast Assembly
IPL Figure 2 (Sheet 1 of 3)



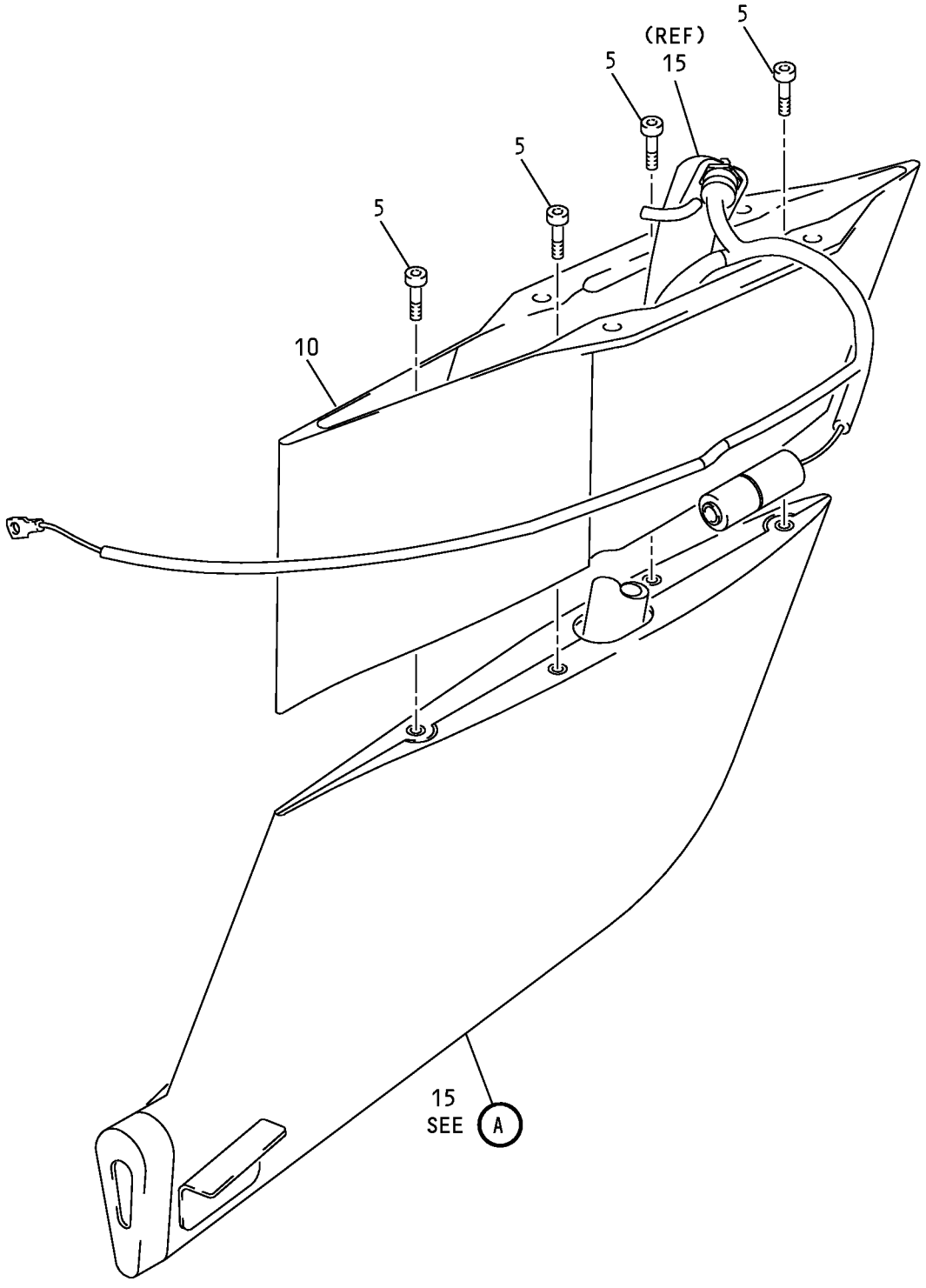
Waste Water Drain Mast Assembly
IPL Figure 2 (Sheet 2 of 3)



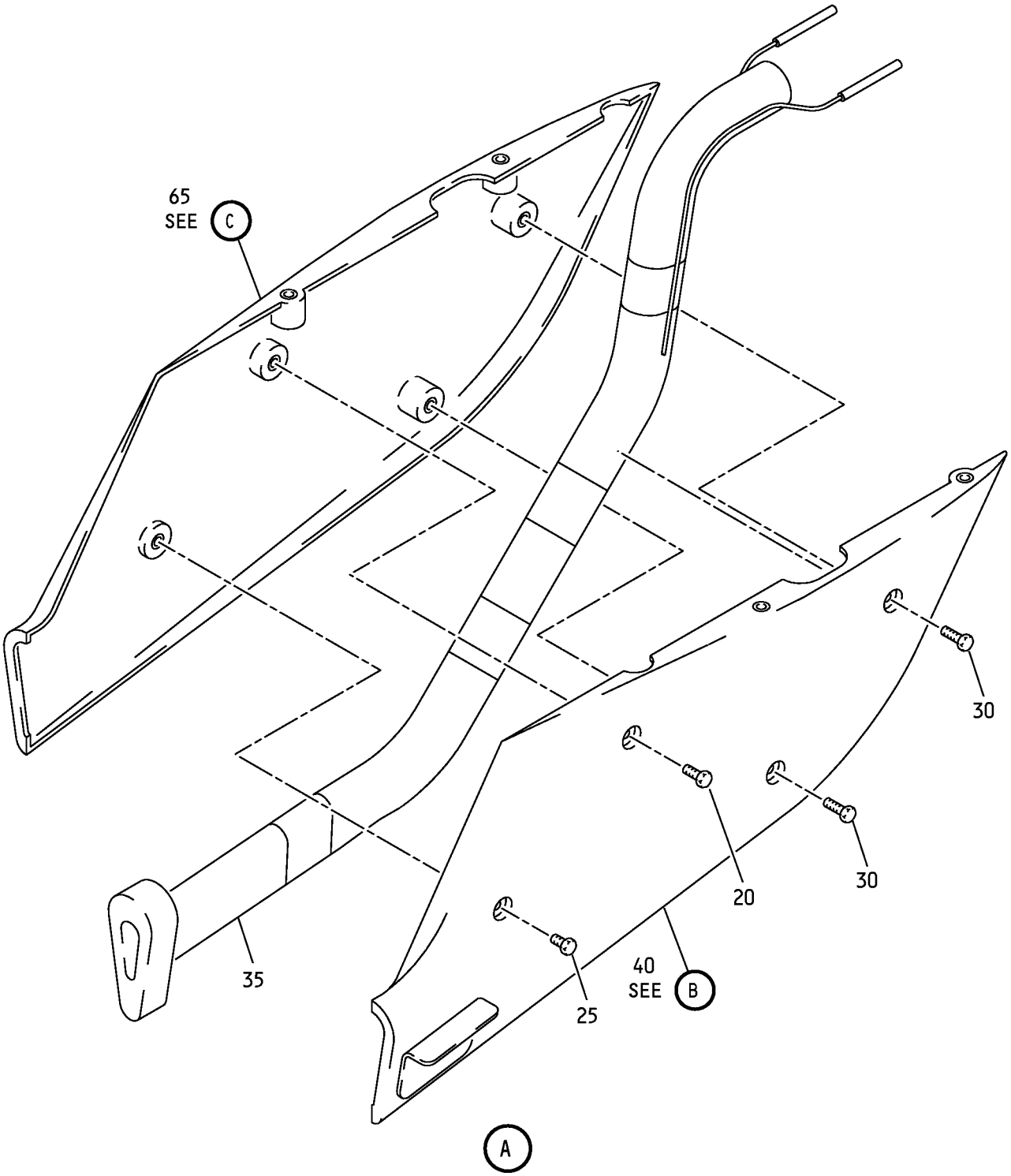
Waste Water Drain Mast Assembly
IPL Figure 2 (Sheet 3 of 3)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
2–					
–1A	417A2093-4		MAST ASSY-DRAIN WASTE WATER	B	RF
5	NAS1351N4-14P		. SCREW	B	4
10	417T2111-8		. EXTENSION	B	1
15	417A2093-2		. MAST ASSY	B	1
20	NAS1801-3-10		. . SCREW	B	1
25	NAS1801-3-5		. . SCREW	B	1
30	NAS1801-3-14		. . SCREW	B	2
35	90234-7		. . HEATER ASSY (V04849) (SPEC 10-61434-7)	B	1
40	417T2093-4		. . MAST ASSY-HALF	B	1
45	BACR15BA6D		. . . RIVET (SIZE DETERMINED ON INST)	B	2
50	69-56298-2		. . . ANGLE	B	1
55	MS21209F4-20		. . . INSERT	B	2
60	65-14036-12		. . . HALF	B	1
65	417T2093-5		. . MAST ASSY-HALF	B	1
70	BACR15BA6D		. . . RIVET (SIZE DETERMINED ON INST)	B	2
75	69-56298-1		. . . ANGLE	B	1
80	65-14036-13		. . . HALF	B	1
85	MS21209F4-20		. . . INSERT	B	2
90	MS21209F1-20		. . . INSERT	B	3
95	3591-3CN0190		. . . SLEEVE (V26344)	B	1

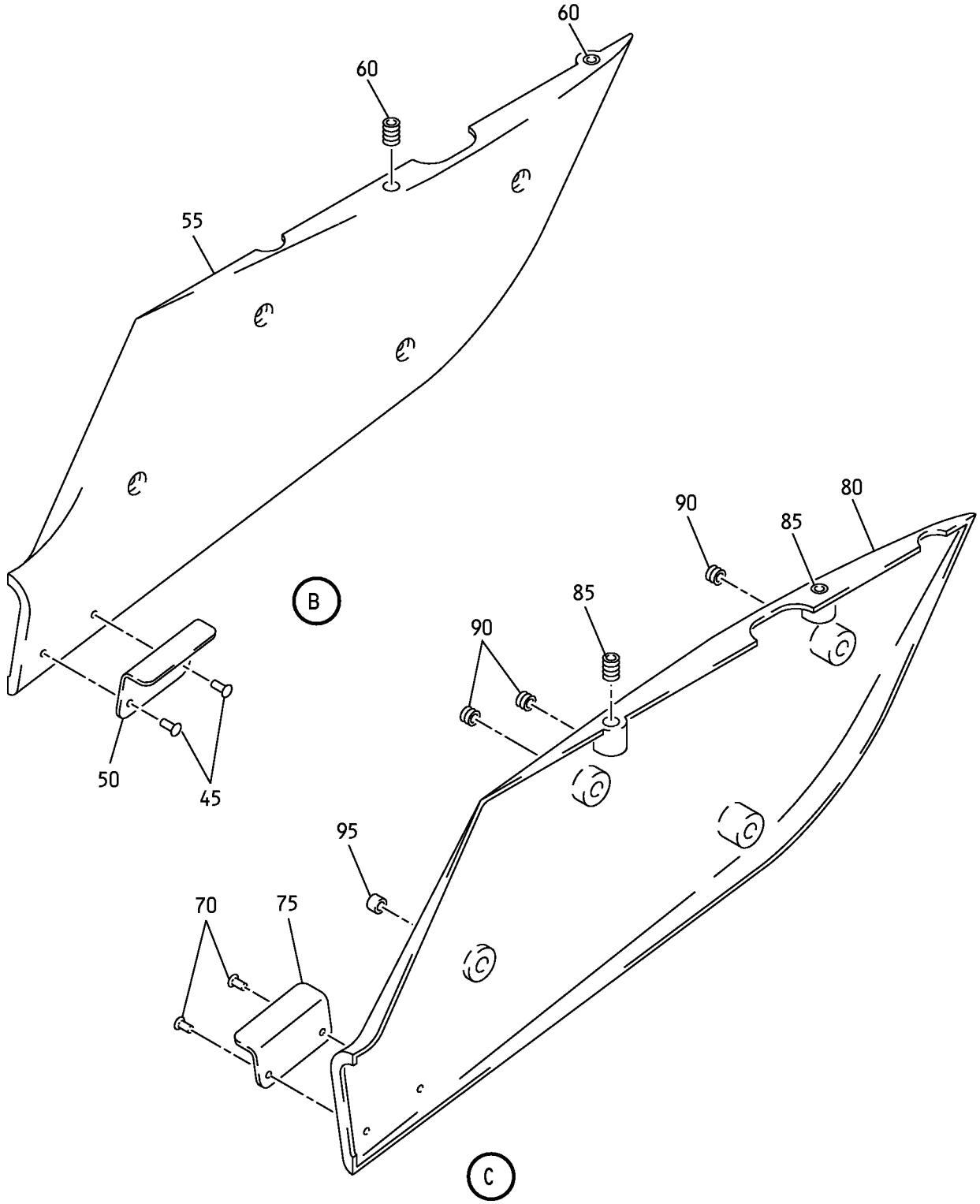
–Item not Illustrated



Waste Water Drain Mast Assembly
IPL Figure 3 (Sheet 1 of 3)



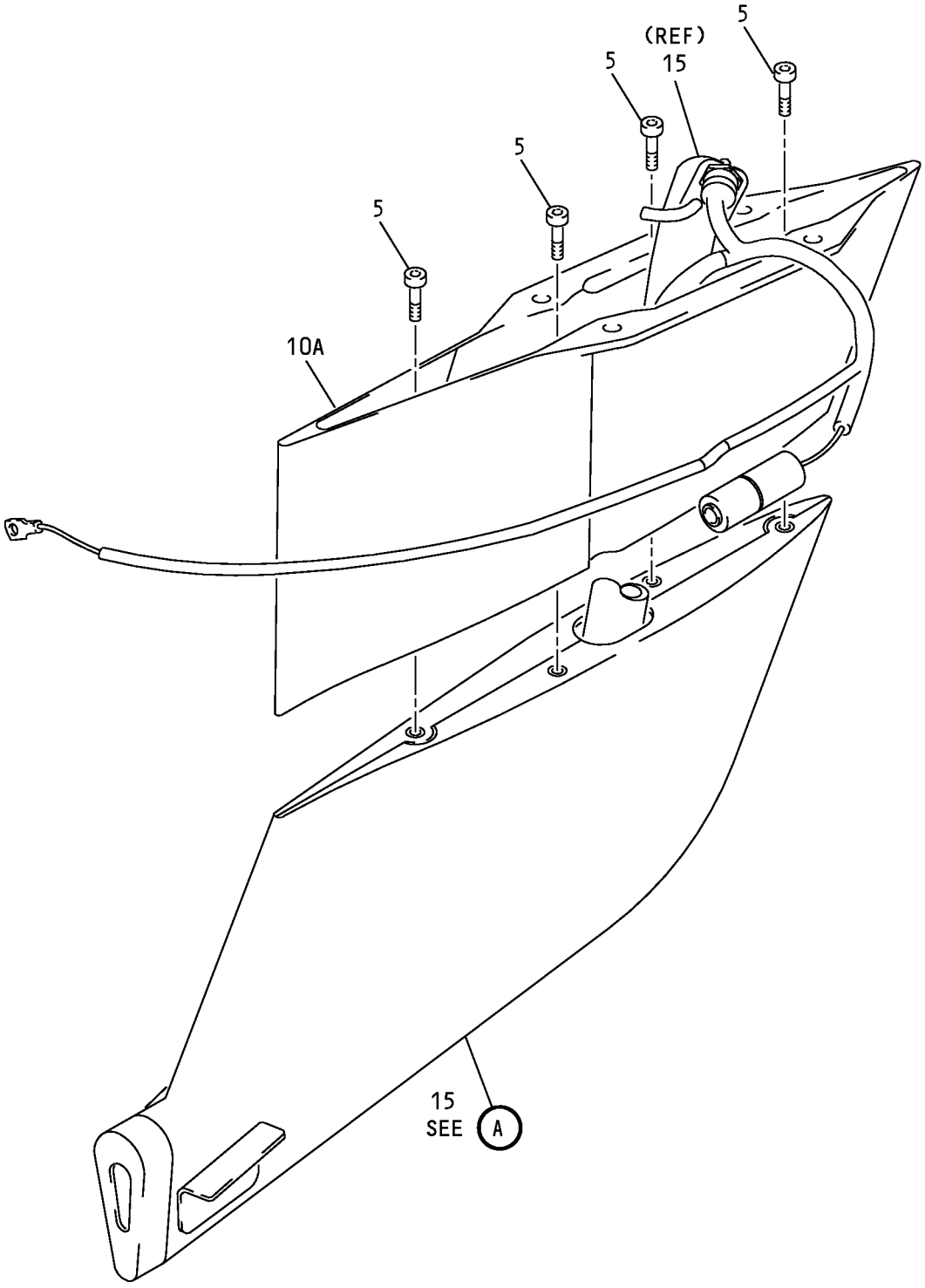
Waste Water Drain Mast Assembly
IPL Figure 3 (Sheet 2 of 3)



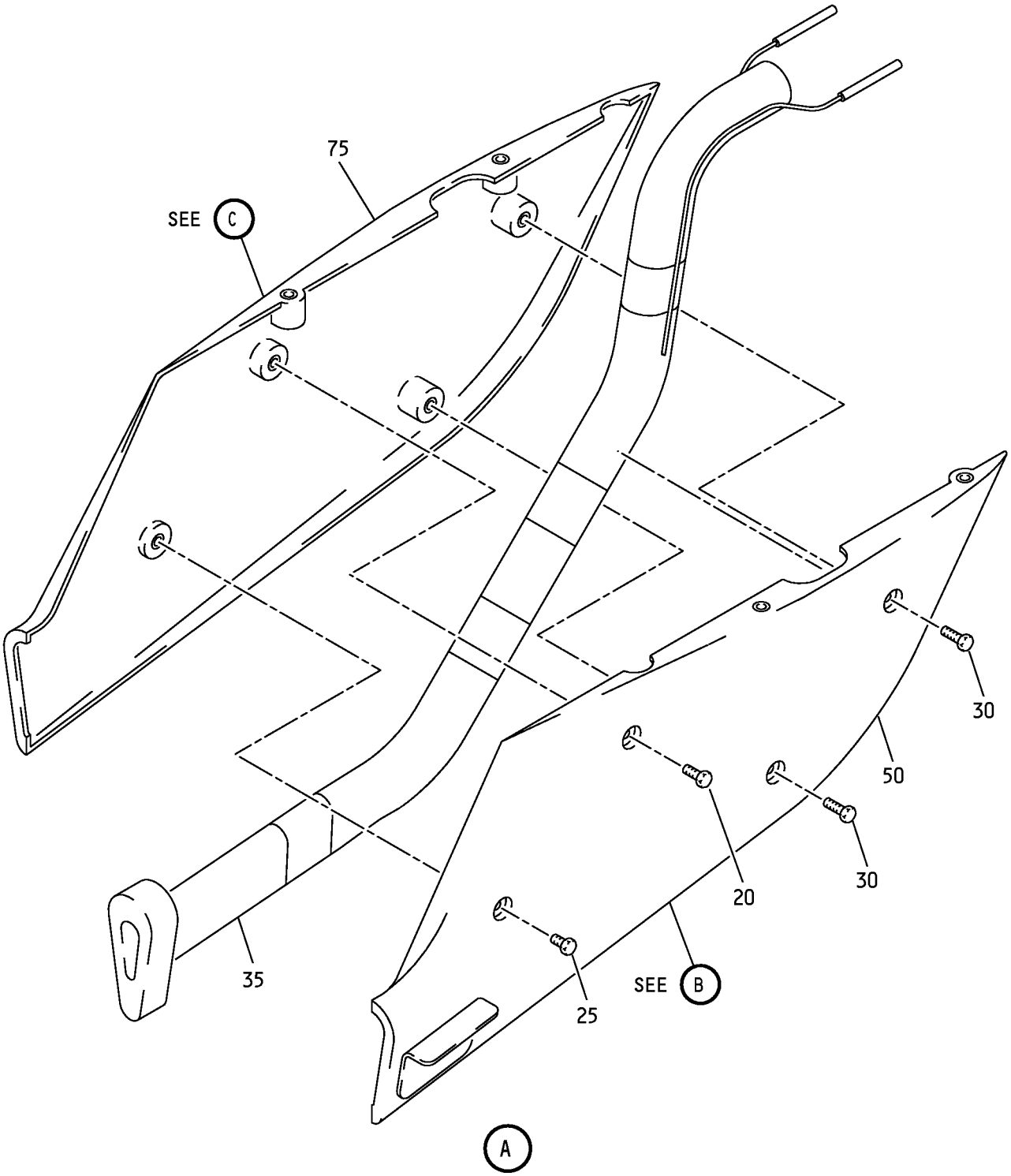
Waste Water Drain Mast Assembly
IPL Figure 3 (Sheet 3 of 3)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
3–					
–1A	417A2093-5		MAST ASSY-DRAIN WASTE WATER	C	RF
5	BACS12HL4A14		. SCREW (OPT ITEM 5A)	C	4
–5A	NAS1351N4-14P		. SCREW (OPT ITEM 5)	C	4
10	417T2111-11		. EXTENSION	C	1
15	417A2093-2		. MAST ASSY	C	1
20	NAS1801-3-10		. . SCREW	C	1
25	NAS1801-3-5		. . SCREW	C	1
30	NAS1801-3-14		. . SCREW	C	2
35	90234-7		. . HEATER ASSY (V04849) (SPEC 10-61434-7)	C	1
40	417T2093-4		. . MAST ASSY-HALF	C	1
45	BACR15BA6D		. . . RIVET (SIZE DETERMINED ON INST)	C	2
50	69-56298-2		. . . ANGLE	C	1
55	65-14036-12		. . . HALF	C	1
60	MS21209F4-20		. . . INSERT	C	2
65	417T2093-5		. . MAST ASSY-HALF	C	1
70	BACR15BA6D		. . . RIVET (SIZE DETERMINED ON INST)	C	2
75	69-56298-1		. . . ANGLE	C	1
80	65-14036-13		. . . HALF	C	1
85	MS21209F4-20		. . . INSERT	C	2
90	MS21209F1-20		. . . INSERT	C	3
95	3591-3CN0190		. . . SLEEVE (V26344)	C	1

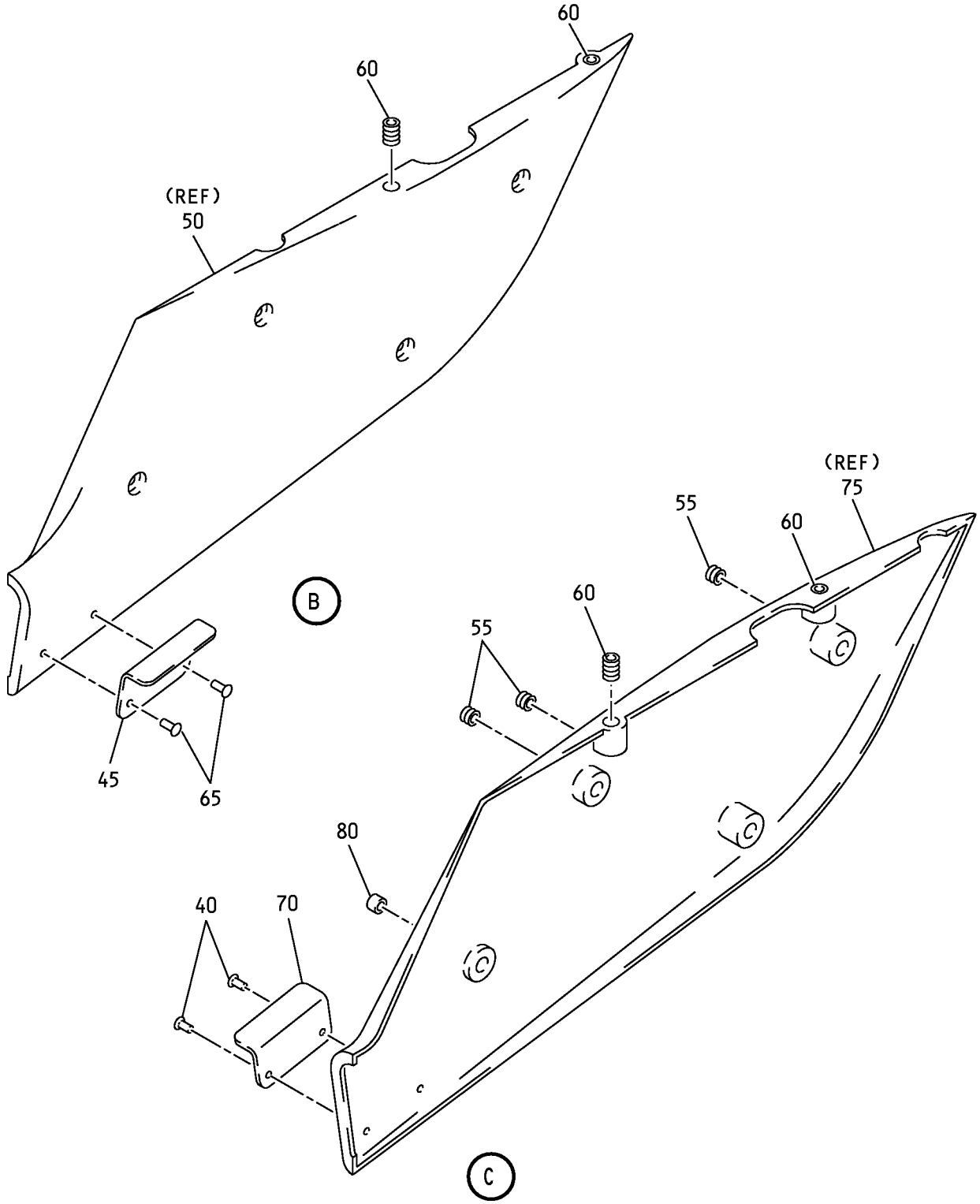
–Item not Illustrated



Waste Water Drain Mast Assembly
IPL Figure 4 (Sheet 1 of 3)



Waste Water Drain Mast Assembly
IPL Figure 4 (Sheet 2 of 3)



Waste Water Drain Mast Assembly
IPL Figure 4 (Sheet 3 of 3)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
4–					
–1A	417A2093-7		MAST ASSY-DRAIN WASTE WATER	D	RF
5	BACS12HL4A14		. SCREW (OPT ITEM 5A)	D	4
–5A	NAS1351N4-14P		. SCREW (OPT ITEM 5)	D	4
–10	417T2111-8		DELETED		
10A	417T2111-11		. EXTENSION	D	1
15	417A2093-6		. MAST ASSY-DRAIN	D	1
20	BACS12HN3-10		. . SCREW (OPT ITEM 20A)	D	1
–20A	NAS1801-3-10		. . SCREW (OPT ITEM 20)	D	1
25	BACS12HN3-5		. . SCREW (OPT ITEM 25A)	D	1
–25A	NAS1801-3-5		. . SCREW (OPT ITEM 25)	D	1
30	BACS12HN3-14		. . SCREW (OPT ITEM 30A)	D	2
–30A	NAS1801-3-14		. . SCREW (OPT ITEM 30)	D	2
35	90234-7		. . HEATER ASSY (V04849)	D	1
40	BACR15BA6D		. . RIVET (SIZE DETERMINED ON INST)	D	2
45	69-56298-2		. . ANGLE	D	1
50	65-14036-12		. . HALF	D	1
55	BACI12AEF1-20		. . INSERT (OPT ITEM 55A)	D	3
–55A	MS21209F1-20		. . INSERT (OPT ITEM 55)	D	3
60	BACI12AEF4-20		. . INSERT (OPT ITEM 60A)	D	4
–60A	MS21209F4-20		. . INSERT (OPT ITEM 60)	D	4
65	BACR15BA6D		. . RIVET (SIZE DETERMINED ON INST)	D	2

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
4–					
70	69-56298-1		. . ANGLE	D	1
75	65-14036-13		. . HALF	D	1
80	3591-3CN0190		. . SLEEVE (V26344)	D	1

–Item not Illustrated