TO: ALL HOLDERS OF HYDRAULIC A AND B SYSTEMS HEAT EXCHANGER COIL ASSEMBLY OVERHAUL MANUAL, 29-09-01

REVISION NO. 4 DATED JUN 5/93

HIGHLIGHTS

DESCRIPTION OF CHANGE	TOPICS AFFECTED												
	D&O	D/Assy	Cleaning	Insp/Chk	Repair	Assy	F/C	Test	T/Shooting	S/Tools	Storage	IPL	L/Overhaul
Changed tubing material specification to 6061-0 aluminum								X					
Added repair procedures to complete heat treatment of braze assembly to T6 condition								X					

HYDRAULIC A AND B SYSTEMS HEAT EXCHANGER COIL ASSEMBLY

29-09-01

BOEING P/N 65-44571-1, -2, -9, -10, -13, -14, -17, -18

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 31790	Nov 10/69
		PRR 31790-1	Sep 10/72
		PRR 32128	Sep 10/72
		PRR 32514	Jul 5/76
29-1031			Jul 5/76

LIST OF EFFECTIVE PAGES

* Indicates pages revised, added or deleted in latest revision
F Indicates foldout pages - print one side only

	PAGE	DATE	PAGE	DATE	PAGE	DATE
	29-09-01					
	T-1	Jul 5/76				
	T-2	BLANK				
*	LEP-1	Jun 5/93				
	LEP-2	BLANK				
	T/C-1	Sep 10/72				
	T/C-2	BLANK				
	1	Jul 5/76				
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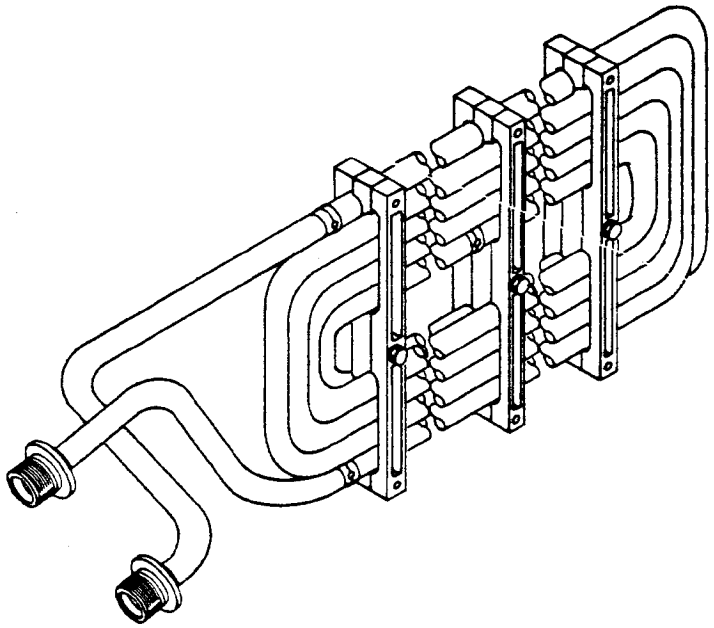


Hydraulic A and B Systems Heat Exchanger Coil Assembly
Figure 1

1. DESCRIPTION AND OPERATION

A. Description

(1) The unit consists of two coils made from seamless aluminum tubing, two tubes and two port fittings brazed together. The coils are held in place by three clamp assemblies.

B. Operation

(1) One heat exchanger coil assembly is installed in each wing fuel tank. The port fittings are mounted in the wing rear spar. The unit lies in the return line of the engine-driven hydraulic pumps. It provides heat transfer from the hydraulic fluid to the surrounding engine fuel.

C. Leading Particulars

Length -- 43 inches
Height -- 4 inches
Width -- 10.5 inches
Weight -- 6 pounds

2. DISASSEMBLY

A. Remove nuts (2, figure 3), washers (3) and bolts (4) to release clamps (5).

B. Carefully pull coils (9 and 10) apart to release clamps (6).

3. CLEANING

A. Clean metal parts with solvent, P-D-680, or equivalent.

B. Use a stiff-bristle brush to remove stubborn accumulations of foreign matter.

C. Rinse and dry thoroughly with dry, compressed air or with clean, lint-free cloth.

D. Dry braze and weld assemblies (7, figure 3) with hot air at 200 to 300°F. Circulate air through the interior and over the exterior of the assembly. After drying, plug ends with NAS814-10D plugs.

E. Wash clamps (5 and 6) with mild soap and water.

F. For further information, refer to 20-30-03, General Cleaning Procedures.

4. INSPECTION/CHECK

A. Visual Checks

(1) Examine all metal parts for pits, scratches, cracks, corrosion, and damage, using strong light and minimum of 10-power magnification. Pay particular attention to welded joints.

(2) Check threads for cross-threading and stripping.

(3) Check alodized and painted surfaces for blisters, flaking, and damage.

B. Special Checks

(1) If visual examination of braze or weld assembly (7) discloses evidence of defects, perform a penetrant check of the assembly.

5. REPAIR

A. Repair (Fig. 3)

(1) Remove corrosion and minor defects from braze assembly (7) by polishing with abrasive cloth, 220 grit or finer. Refinish as necessary for protection against corrosion.

(2) Clean up defects in threads, using a small triangular file or thread chaser.

(3) If brazed joints in braze assembly (7, P/N 65-44571-3 and -4) have sustained leaks, repair as follows:

NOTE: Material is 6061-0 aluminum tubing, heat-treated to T6 condition.

(a) Dip braze, using standard shop practices.

(b) After braze filler has solidified and before braze assembly has cooled to 800°F, quench in water with water temperature at 130-180°F. Optional: After brazing, clean per 20-30-02 and heat-treat to T4 condition.

(c) Clean braze assembly by immersing in nitric acid from 1 to 10 minutes and rinse thoroughly with water.

(d) Perform functional tests per paragraph 7, TESTING.

(e) Complete heat treatment of braze assembly to a T6 condition by precipitation treatment.

(f) Clean braze assembly per 20-30-02 and refinish per paragraph 5.B.

(4) If welded joints in weld assembly (7, P/N 65-44571-11, -12, -15, and -16) have sustained leaks, repair by welding, using standard shop practices and the following procedures:

NOTE: Material is 5052-0 aluminum tubing, 5/8 in. OD X 0.035 in. wall thickness.

(a) Fusion weld joints, using 4043 filler metal. Insert mandrel into tubing when welding joint which attaches fitting (8) to coil (9 or 10), to obtain maximum 0.02 in. underbead. Machining is not allowed on inner surface of tube.

(b) Penetrant check weld zone per 20-20-02.

(c) Perform functional tests per paragraph 7, TESTING.

B. Refinish (Fig. 3)

NOTE: Refer to 20-30-02 for stripping of protective finishes and to 20-41-01 for explanation of F and SRF finish codes.

(1) Braze assembly (7, 65-44571-3 and -4) -- Plug end of fittings (8) with plugs, NAS814-10D, and apply alodize (F-2.21) to exterior surfaces. Material: Alum alloy.

(2) Weld assembly (7, 65-44571-11 and -12) -- Apply alodize (F-2.742) all over. Material: Alum alloy.

(3) Weld assembly (7, 65-44571-15 and -16) -- Apply alodize (F-2.742) all over followed by one coat primer BMS 10-20, type 2 (F-19.22) on exterior surfaces. Omit F-19.22 from threads, flange edge, and front face of flange of fitting (8). Material: Alum alloy.

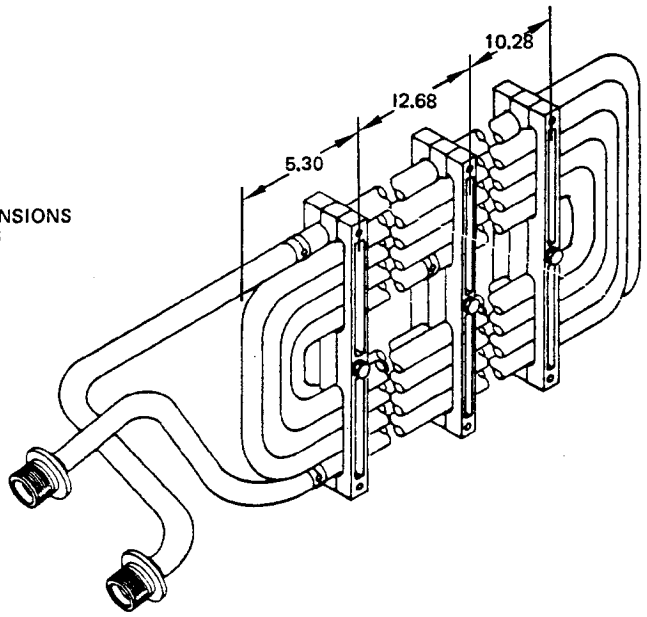
NOTE: The front face of flange is defined as the face on the threaded end of fitting (8).

Application of F-19.22 may be accomplished by plugging the end of fittings (8) with plugs, NAS814-10D, and dipping.

(4) Stiffener (17) -- Alodize (F-2.21) all over. Apply one coat primer BMS 10-20, type 2 (F-19.22) all over.

6. ASSEMBLY (Fig. 3)

A. Position clamps (1 or 13) on braze or weld assembly (7) to match dimensions shown in Fig. 2.



Heat Exchanger Clamp Installation
Figure 2

7. TESTING

A. Test Equipment

(1) Test bench capable of delivering hydraulic pressure up to 1000 psi and air pressure up to 100 psi

(2) Deleted

B. Functional Tests

(1) Proof pressure test

(a) Conduct test at room temperature with water plus 0.02% sodium dichromate by weight.

(b) Connect unit to hydraulic pressure source.

NOTE: Threads of fittings (8) are 1-5/16-12UN-3A per MIL-S-7742.

(c) Apply 1000-psi hydraulic pressure to unit. There shall be no evidence of leakage or permanent set.

(2) Deleted

(3) Pressure drop test (weld assemblies (7, P/N 65-44571-11, -12, -15, -17) only)

(a) Conduct test at room temperature (60-80°F) with water plus 0.02% sodium dichromate by weight. Optional: Use BMS 3-11 hydraulic fluid.

(b) Set flow at 3 gal/min at 100 psi.

(c) Check that pressure drop across heat exchanger is not greater than 10 psi.

C. After test, drain unit completely.

D. If pressure drop test has been conducted with water-sodium dichromate solution, rinse both interior and exterior of unit with clean water. Dry with 200-300°F hot air circulated through both interior and exterior of unit.

Test Phase	Limit
Apply 1000-psi hydraulic pressure to unit.	No leakage or permanent set is allowed.
Check pressure drop across unit.	Pressure drop shall not exceed 10 psi.

8. TROUBLE SHOOTING

A. Trouble shooting is keyed to individual steps of the test procedure. Referenced paragraphs show test procedure step in which the noted trouble would appear.

	Trouble	Possible Cause	Correction
(1)	Leakage in brazed or welded joints, par. 7.B.(1)(c) or (2)(c)	Crack in brazed or welded area	Repair defective joints per REPAIR
(2)	Leakage in coil, par. 7.B.(1)(c) or (2)(c)	Crack in coil wall	Replace coil
(3)	Pressure drop greater than 10 psi, par 7.B.(3)	Obstruction in tube or pinched tube	Remove obstruction or replace coil

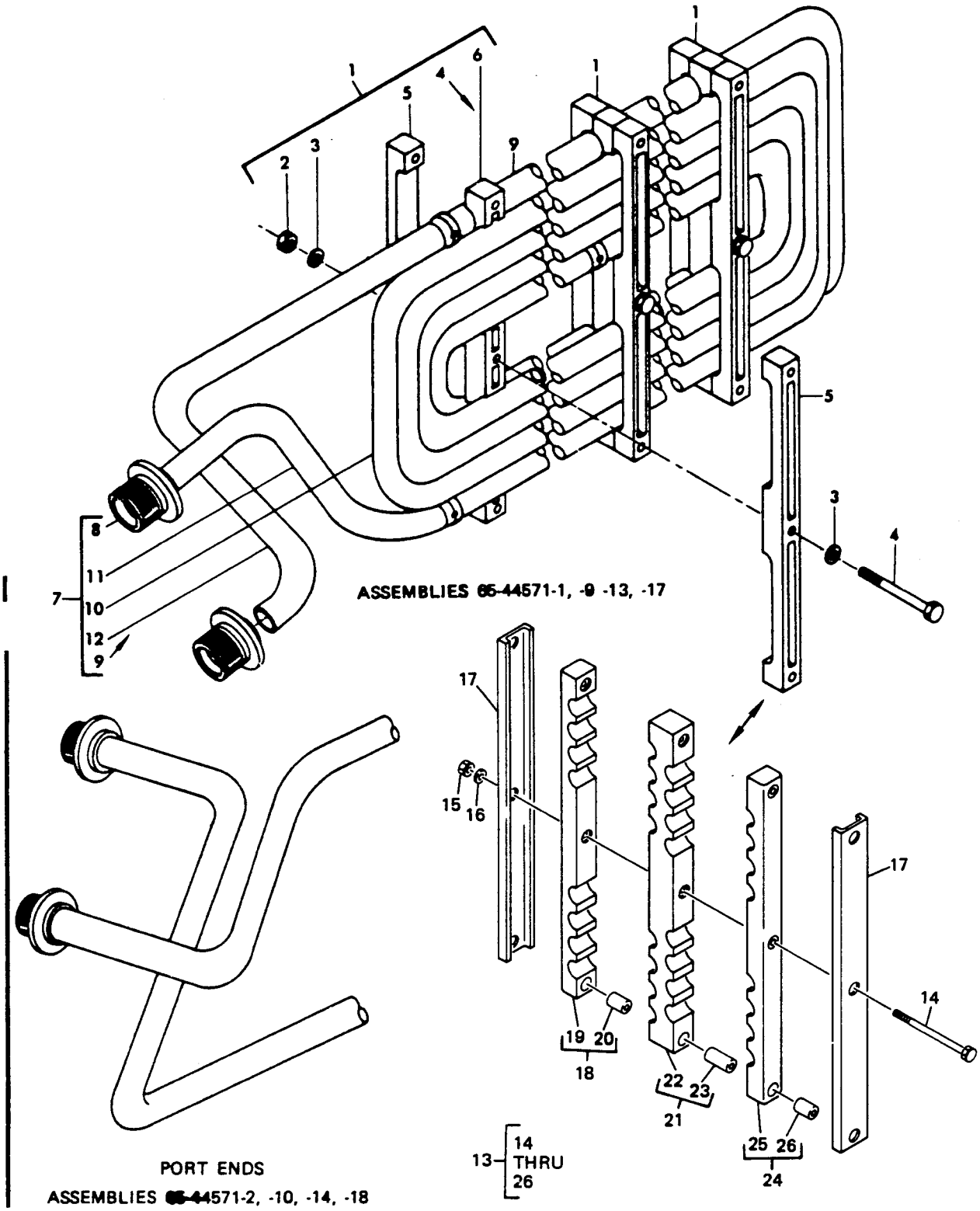
9. STORAGE INSTRUCTIONS

A. Plug ports with NAS814-10D plugs.

B. Wrap unit in vapor barrier paper. Attach tag with test date.

C. For further information, refer to 20-44-02.

10. ILLUSTRATED PARTS LIST



Hydraulic A and B Systems Heat Exchanger Coil Assembly
Figure 3

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
3-					
	65-44571-1		HYDRAULIC A AND B SYSTEMS HEAT EXCHANGER COIL ASSY	A	RF
	65-44571-2		HYDRAULIC A AND B SYSTEMS HEAT EXCHANGER COIL ASSY	B	RF
	65-44571-9		HYDRAULIC A AND B SYSTEMS HEAT EXCHANGER COIL ASSY	C	RF
	65-44571-10		HYDRAULIC A AND B SYSTEMS HEAT EXCHANGER COIL ASSY	D	RF
	65-44571-13		HYDRAULIC A AND B SYSTEMS HEAT EXCHANGER COIL ASSY	E	RF
	65-44571-14		HYDRAULIC A AND B SYSTEMS HEAT EXCHANGER COIL ASSY	F	RF
	65-44571-17		HYDRAULIC A AND B SYSTEMS HEAT EXCHANGER COIL ASSY (SB 29-1031)	G	RF
	65-44571-18		HYDRAULIC A AND B SYSTEMS HEAT EXCHANGER COIL ASSY (SB 29-1031)	H	RF
1	69-35733-1		. CLAMP ASSY	A-F	3
2	NAS679A4W		. . NUT		1
3	AN960D416		. . WASHER		2
4	NAS1304-38		. . BOLT		1
5	69-35733-2		. . CLAMP		2
6	69-35733-3		. . CLAMP		1
7	65-44571-3		. BRAZE ASSY	A	1
7	65-44571-4		. BRAZE ASSY	B	1
7	65-44571-11		. WELD ASSY	C	1
7	65-44571-12		. WELD ASSY	D	1
7	65-44571-15		. WELD ASSY	EG	1
7	65-44571-16		. WELD ASSY	FH	1
8	69-35730-1		. . FITTING	AB	2
8	69-14221-5		. . FITTING	C-H	2
9	65-44572-1		. . COIL	AB	1
9	65-44772-1		. . COIL	CEG	1
9	65-44772-2		. . COIL	DFH	1
10	65-44572-2		. . COIL	AB	1
10	65-44772-4		. . COIL	CEG	1
10	65-44772-3		. . COIL	DFH	1
11	65-44572-3		. . TUBE	A	1
11	65-44572-5		. . TUBE	B	1
12	65-44572-4		. . TUBE	A	1
12	65-44572-6		. . TUBE	B	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
3-					
13	65-44748-1		. CLAMP ASSY (SB 29-1031)	GH	3
14	BACB30NE4-36		. . BOLT		1
15	BACN10JC4		. . NUT		1
16	AN960D416		. . WASHER		1
17	66-22829-1		. . STIFFENER		2
18	65-44748-2		. . CLAMP ASSY		1
19	65-44748-5		. . . CUSHION		1
20	NAS43DD4-38		. . . SPACER		3
21	65-44748-3		. . CLAMP ASSY		1
22	65-44748-6		. . . CUSHION		1
23	NAS43DD4-51		. . . SPACER		3
24	65-44748-4		. . CLAMP ASSY		1
25	65-44748-7		. . . CUSHION		1
26	NAS43DD4-38		. . . SPACER		3