

Borch Aircraft Corporation

SPECIFICATION

HEATING AND VENTILATING SYSTEM - MODEL C-450 AND C-45H

Overhaul Specification 5501

ISSUED 2-23-53

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TITLE HEATING AND VENTILATING SYSTEM - MODEL C-45G AND C-45H

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WRITTEN BY T. R. Taylor

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1. SCOPE

1.1 Purpose.- The purpose of this specification is to authorize the use of reconditioned parts and provide reconditioning instructions for the component parts and assemblies of the heating and ventilating systems 84-183950, 804-183950, and 814-183950, as installed in T-7, T-7C, UC-45B, C-45F, and T-11 aircraft and instructions for modifications required to adapt them for installation in C-45G and C-45H aircraft in accordance with Drawing 694-183956.

1.2 Application.- All reconditioning operations and repairs covered by this specification may be accomplished where required without further authorization. Repairs not authorized by this specification cannot be performed without further authorization.

1.3 List of Pages and Revisions.- This specification consists of the pages listed below. An asterisk (*) denotes pages revised at the current revision.

<u>Page</u>	<u>Date</u>	<u>Description of Revision</u>	<u>Serial Effectivity</u>
1*	2-3-54	Record Revision	Record change
2	4-24-53	Incorporate C-45H	Record change
3	4-24-53	Incorporate C-45H	Record change
4	4-24-53	Incorporate C-45H	Record change
5	4-24-53	Incorporate C-45H	Record change
6	4-24-53	Incorporate C-45H	Record change
7	4-24-53	Incorporate C-45H	Record change
8	4-24-53	Incorporate C-45H	Record change
9*	2-3-54	Add Paragraph 3.4.12(d) to authorize repair of castings having unserviceable control nut threads.	Record change

2. **APPLICABLE PUBLICATIONS**

2.1 **Specifications:**

2.1.1 **Federal.-**

QQ-P-416 Cadmium Plating

2.1.2 **Beech.-**

FS 370A Finish Specification for C-45G and C-45H Aircraft
 MP 1111 Acidizing
 MP 2313 Dichromate Treatment for Magnesium Alloys
 OS 7002 Cleaning Procedures for Reconditioned Aircraft
 OS 7010 Removing Corrosion from Aluminum Parts

3. **REQUIREMENTS**

3.1 **Parts Involved:**

3.1.1 **Parts Not Used.-** All parts called out on Drawings 84-183950, 804-183950 and 814-183950 will be disposed of at the direction of the customer except those parts listed in Paragraph 3.1.2 of this specification.

3.1.2 **Parts to be Reconditioned.-** The following parts are to be reconditioned in accordance with the instructions contained herein. "Reconditioned" means the disassembly, cleaning, inspection and correction of discrepancies, repair and/or replacement of components to assure an operationally safe and serviceable aircraft, and modifications to incorporate specific changes in accordance with applicable engineering drawings.

*814-180564 Cabin air duct cover plate
 18393 Cabin vent
 183955L Cold air duct assembly
 183955R Cold air duct assembly
 814-183955 Manifold heater valve adapter
 814-183959 Defroster boot attachment ring
 183966 Cold air duct cap assembly
 183967 Cold air intake valve assembly

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3.1.2 Parts to be Reconditioned.- (Continued)

- 183980 Cabin cold air left hand duct assembly
- 183982 Cabin cold air duct cover assembly
- 183996P Cabin heat diffuser
- *84-183982 Cabin cold air right hand duct assembly
- 183985 Cold air outlet assembly
- 189250 Cabin heat valve assembly
- 189253 Cabin heat valve push rod
- 189255 Cabin heat valve diaphragm
- 189256 Cabin heat valve cover plate
- 189258 Cabin heater valve cap

*Not listed on Drawing 694-183956 but will be used as called for in this specification.

3.1.3 Parts to be Supplied New.- All parts called out on Drawing 694-183956 heating and ventilating installation will be supplied new except those parts listed in Paragraph 3.1.2 of this specification.

3.2 Cause for Rejection.- The specific conditions listed below and damage or wear which cannot be corrected by one or more of the authorized repairs listed in Paragraph 3.4 of this specification is cause for rejection.

3.2.1 Duct Assemblies 183955L, 183955R, 183980 and 84-183982.- Dents and creases more than 1/2-inch deep in areas inaccessible to repair are cause for rejection.

3.2.2 Cabin Heater Valve Assembly 189250.- One or more of the following conditions is cause for rejection of the cabin heater valve assembly:

- (a) Excessive corrosion, especially at the valve seat, the intensifier tube socket, and in the vicinity of the 189257 control shaft bushing.
- (b) Diameters exceeding 2.026 at the valve openings to which the intensifier tube and hot air conduit tubings attach.
- (c) Excessive abrasion due to contact with the edges of the cutout in the tail pipe shroud or other objects. Abrasion is considered excessive if the heater valve casting is worn completely through or to the point of burning through when weld repairs are attempted.

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3.2.2 Cabin Heater Valve Assembly 189250.- (Continued)

- (d) Cracks completely through the casting in the valve actuating area.
- (e) Damage to the 3/8-24NF3 threads which will prevent them from holding the control bowden housing nut.

3.3 Reconditioning Operations:

3.3.1 Cabin Air Duct Cover Plate 814-180564; Cabin Ventilator Assembly 18393; Manifold Heater Valve Adapter 814-183955; Defroster Boot Attachment Ring 814-183959; Cabin Heat Diffuser 183996P; Cabin Heat Valve Cover Plate 189256; and Cabin Heat Valve Cap 189258.-

- (a) Inspect for nonrepairable conditions.
- (b) Clean in accordance with OS 7002.
- (c) Repair as necessary as authorized herein.
- (d) Finish in accordance with FS 370A.

3.3.2 Cold Air Vertical Duct Assembly 183955 Right- and Left-Hand.-

- (a) Inspect for nonrepairable conditions.
- (b) Clean in accordance with OS 7002.
- (c) Repair as necessary as authorized herein.
- (d) Redrill the attaching screw holes to conform to Drawing 183955.
- (e) Finish in accordance with FS 370A.

3.3.3 Cold Air Horizontal Duct Assembly 183980 Left-Hand and 84-183982 Right-Hand.-

- (a) Inspect for nonrepairable conditions.
- (b) Install new 183976 gaskets on the outlet assemblies in accordance with Drawing 183977.
- (c) Modify the right-hand duct assembly 84-183982 to conform to Drawing 894-183957. Cover the hole for the aft map reading light with an 814-180564 plate.
- (d) Repair as necessary as authorized herein.
- (e) Finish in accordance with FS 370A.

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3.3.4 Cold Air Duct Cap Assembly 183966.-

- (a) Inspect for nonrepairable conditions.
- (b) Clean in accordance with OS 7002.
- (c) Replace the 183966-2 and -4 Door-Tite seals.
- (d) Repair as necessary as authorized herein.
- (e) Finish in accordance with FS 370A.

3.3.5 Cold Air Intake Valve Assembly 183967.-

- (a) Inspect for nonrepairable conditions.
- (b) Clean in accordance with OS 7002.
- (c) Scrap all 106333 diaphragms not conforming to the D revision of Drawing 106333.
- (d) Strip and replat the 183970 shaft in accordance with Specification QQ-P-416.
- (e) Repair as necessary as authorized herein.
- (f) Finish in accordance with FS 370A.

3.3.6 Cabin Cold Air Duct Cover Assembly 183982.-

- (a) Inspect for nonrepairable conditions.
- (b) Clean in accordance with OS 7002.
- (c) Install new felt seal 183982-2.
- (d) Repair as necessary as authorized herein.
- (e) Finish in accordance with FS 370A.

3.3.7 Cold Air Outlet Assembly 183985.-

- (a) Inspect for nonrepairable conditions.
- (b) Clean metal assemblies in accordance with OS 7002.
- (c) Install new gasket 183976.
- (d) Repair as necessary as authorized herein.
- (e) Finish in accordance with FS 370A.

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3.3.8 Cabin Heat Valve Push Rod 189253; and Cabin Heat Valve Diaphragm 189255.-

- (a) Inspect for nonrepairable conditions.
- (b) Clean in accordance with OS 7002.
- (c) Repair as necessary as authorized herein.

3.3.9 Cabin Heat Valve Assembly 189250.-

- (a) Inspect for nonrepairable conditions.
- (b) Clean in accordance with OS 7002.
- (c) Remove corrosion from the control bushing by reaming to print dimension.
- (d) Chase 3/8-16 NF3 threads.
- (e) Repair as necessary as authorized herein.
- (f) Finish in accordance with FS 370A.

3.4 Authorized Repairs:

3.4.1 Cabin Air Duct Cover Plate 814-180564.-

- (a) Remove dents and straighten in accordance with shop practice.
- (b) Stop drill cracks with a No. 50 drill.

3.4.2 Cabin Ventilator Assembly 18393.-

- (a) Disassemble, straighten, and clean as necessary assemblies on which the -2 shutter does not operate freely.
- (b) Attaching screw holes may be oversize or elongated as long as the screw head will completely cover them.

3.4.3 Cold Air Vertical Duct Assembly 183955 Right- and Left-Hand; and Cold Air Horizontal Assemblies 183980 Left-Hand and 84-183982 Right-Hand.-

- (a) Plug holes up to and including 5/32-inch diameter with AN470AD Rivets or 106212 cherry rivets.
- (b) Plug holes exceeding 5/32-inch diameter and not over 3/4-inch diameter with a Carr plug. Smooth up and trim the edges of the

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3.4.3 Cold Air Vertical Duct Assembly 183955 Right- and Left-Hand; and Cold Air Horizontal Duct Assemblies 183980 Left-Hand and 84-183982 Right-Hand.- (Continued)

hole to eliminate cracks. Use the following chart to select the proper size Carr plug:

<u>Hole Size</u>	<u>Plug</u>
3/16	United Carr 49338
1/4	United Carr 48151
3/8	United Carr 15076
1/2	United Carr 48152
5/8	United Carr 48172
3/4	United Carr 51026

- (c) Patch holes exceeding 3/4-inch with an external-type patch of .020 24S-T AL alclad installed with AN470AD3 or 1062E2-4 rivets.
- (d) Smooth out dents in accordance with shop practice.
- (e) Stop drill cracks with a No. 50 drill.
- (f) Replace nut plates and Dill Lok Skrus not in a serviceable condition.

3.4.4 Manifold Heater Valve Adapter 814-183955.-

- (a) Remove dents and straighten parts in accordance with shop practice.
- (b) Weld holes and cracks.

3.4.5 Defroster Boot Attachment Ring 814-183959.-

- (a) Remove dents and straighten parts in accordance with shop practice.
- (b) Holes may be double drilled if old holes do not align, provided 1/8-inch minimum edge distance is maintained between holes.
- (c) Holes may be elongated provided an AN960-8 washer used under the screw head will completely cover the hole.

3.4.6 Cold Air Duct Cap Assembly 183966.-

- (a) Remove dents and straighten parts in accordance with shop practice.
- (b) Stop drill cracks with a No. 50 drill. Repair damaged flanges by spotwelding a 3/8-inch strip to the damaged area.

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3.4.7 Cold Air Intake Valve Assembly 183967.-

- (a) Chase damaged 3/8 - 1/4 quadruple threads in 305911 cold air valve body.
- (b) Chase 1/4 - 28 UNF and 3/8 - 1/4 quadruple threads on 183970 shaft.

3.4.8 Cabin Cold Air Cover Assembly 183982; Cabin Heat Diffuser 183996F; Cold Air Outlet Assembly 183985; and Cabin Heat Valve Cap 189258.-

- (a) Remove dents and straighten parts in accordance with shop practice.
- (b) Attaching holes may be elongated provided the screw heads will completely cover them.

3.4.9 Cabin Heat Valve Push Rod 189253.-

- (a) Chase damaged 10/32 NF3 and 8/32 NC3 threads.
- (b) Ream the .076 holes with a No. 48 drill if necessary to remove corrosion or foreign material.

3.4.10 Cabin Heat Valve Diaphragm 189255.-

- (a) Remove dents and straighten parts in accordance with shop practice.

3.4.11 Cabin Heat Valve Cover Plate 189256.-

- (a) Remove dents and straighten parts in accordance with shop practice.
- (b) Attaching holes may be elongated provided the 1/8-inch minimum edge distance is maintained.

3.4.12 Cabin Heat Valve Assembly 189250.-

- (a) Repair bolt holes in aluminum castings that are elongated or cracked by welding closed and re-drilling to print dimensions. Gas weld, using rod conforming to Specification QQ-R-566, Type I, Class RAL-43. Refer magnesium castings with elongated bolt holes to Material Review Board.

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3.4.12 Cabin Heat Valve Assembly 189250.- (Continued)

- (b) Repair wear in aluminum castings, resulting from abrasion, by gas welding to original contour using aluminum welding rod conforming to Specification QQ-R-566, Type I. The weld metal must not extend through the wall of the castings to prevent operation or seating of the valve diaphragm. Refer magnesium castings with worn spots more than 1/16-inch deep to Material Review Board.
- (c) Repair broken safety wire lugs on aluminum castings by building up the lug by gas welding, using rod conforming to Specification QQ-R-566, Type I, Class RAL-43. Redrill the safety wire hole.
- (d) Repair castings having unserviceable control nut threads by installing 1191C-CN916 heli-coil.

4. INSPECTION

4.1 General. - The parts are to be inspected to the general acceptable quality standards in OS 7008 and the following specific conditions:

- (a) The cold air outlet assemblies 183985 with metal cap assemblies 183974 are acceptable for use.
- (b) The following conditions are acceptable in the cabin heat valve assembly 189250:
 - (1) Appearance due to corrosion or damage that in no way affects the operation or serviceability of the part.
 - (2) Damaged 3/8 - 24 NF3 control attachment threads which do not meet drawing requirements but are capable of holding the control attachment fitting.
 - (3) Damaged 10/32 threads that do not meet drawing requirements but are capable of holding the screws.