

ROYAL CANADIAN AIR FORCE



**REPAIR & OVERHAUL
INSTRUCTIONS
STROMBERG FLOAT TYPE
CARBURETTORS**

(This EO replaces TO 03-10BB-1)

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

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LIST OF RCAF REVISIONS

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STROMBERG FLOAT TYPE CARBURETTORS**GENERAL**

1 Repair and overhaul of Stromberg Float Type Carburetors is discussed generally in this Engineering Order. The Engineering Orders pertaining to the individual carburetors will contain specific information.

DISASSEMBLY, CLEANING, REASSEMBLY

2 All parts of the carburettor except the main and throttle bodies, and parts that are carbon coated, are to be placed in a container tagged with the carburettor serial number and washed in fluid conforming to Specification 3-GP-8. The parts are then to be dried with compressed air.

3 For the removal of carbon and flaked enamel, the remaining parts of the carburettor are to be placed in a carbon removal solution, conforming to USAF Specification 20043A, for a period of time sufficient to loosen the carbon. After removing the parts from this solution wash them off with hot water.

4 There should be no attempt made to remove enamel that is in satisfactory condition. In cases where the main and throttle bodies are to be enameled, first use the primer to Specification MIL-P-6889A Type 1. Either of two specifications for black enamel can be used, (1) air drying, Specification 1-GP-88P Type 1 or (2) baking enamel, Specification 1-GP-88P Type 2.

5 All parts are now to be assembled in the carburettor main and throttle bodies from which they were removed.

6 After assembly the carburettor should be checked for leakage and flooding. If the carburettor is flooding this may be caused by any of the following conditions: -

- (a) Leaky or sticky float.
- (b) Excessive fuel supply pressure.
- (c) Poor setting of the needle valve.
- (d) Wear of the float fulcrum pin.
- (e) Improper float level.

7 In case the carburettor floats are found to be leaking, they may be repaired by remov-

ing the gasoline and then soldering the hole. After the soldering operation the float should be checked for tightness by submerging in hot water. In the cases where the leak in the float was caused by corrosion, no attempt should be made to repair the float, but it should be discarded instead.

8 After assembly, the float chamber shall be filled with oil, lubricating, Specification 3-GP-335a. Invert carburettor to allow the oil to completely cover the internal surfaces. Move the throttle frequently to force the oil through the accelerating system. Remove drain plugs and allow oil to drain out. If the carburettor is to be installed on an engine prepared for immediate installation, it shall be thoroughly cleaned by flushing it out with gasoline. If the carburettor, installed on an engine, is to be returned to stock, no attempt will be made to flush it out. This will be accomplished by the operating activity prior to installation. The serviceable parts tag attached to either the carburettor or the engine shall indicate compliance with these instructions.

INSTALLATION OF SPECIFICATION PLATE

9 Whenever the Army setting number and the part list number are not included in the data shown on the manufacturer's name plate, specification plate, Part P-15431 will be attached to each carburettor, using rivets, Part P-15295. These plates shall be stamped with the current Army setting number and the Stromberg stock list number as shown on the setting part list covering each type of carburettor.

10 Carburetors in service and those requiring overhaul will have the specification plates, when needed, installed at the time of carburettor overhaul. Likewise, carburetors in stock or storage at depots will have this installation made before issue. This includes carburetors installed on, or packed with, engines in depot storage. All other serviceable carburetors in stock or storage at stations, that require specification plates installed, will be forwarded to their respective depots. The specification plates will be attached to carburetors in the positions and locations shown on the applicable assembly drawing.

11 Determination of the existing setting of each carburettor not marked as prescribed

above will be made by a complete disassembly and inspection at the next overhaul, and at that time the necessary changes will be made to provide the respective setting listed on the applicable setting part list. Such work will be performed by overhaul contractors only. At each subsequent overhaul the setting marked on the carburettor will be checked against possible changes in specification.

12 The method of safetying fillister head machine screws used to assemble the throttle body and main body has been standardized. The following changes should be made at carburettor overhaul if necessary:-

(a) Replace lock washer P-6664 with plain washer P-15344.

(b) Use the screw P-6550, which has been drilled for safety wire. Standard screw, AN 500-A-416-10 or AN 500-A-416-12 may be used.

(c) The fillister head screws at the parting surfaces shall be tightened as much as possible and safety wire all screws with lockwire as described in EO 15-10-3A.

FLOAT MECHANISM

13 The float assembly should be carefully inspected to be certain that no excessive wear has taken place in the fulcrum screw bearing and that the float fork or hanger is properly soldered to the float pieces. The assembly should also be tested in hot water to be certain that there are no leaks. If any bubbles appear when the float is submerged, their location should be marked and these leaks soldered, using the minimum amount of solder possible. In case the float has a quantity of gasoline in it, the vent hole provided should be opened and this gasoline allowed to drain out. Inspect float needle valve and seat for excessive wear and replace if necessary. The float level should be checked by placing the main body of the carburettor with the float mechanism assembled in a level position and connecting fuel line to the fuel inlet connection, using a fuel supply system which will give a pressure of three pounds per square inch as measured at the carburettor inlet. Where pressures other than three pounds per square inch are to be used this information is given on the setting part list.

14 The setting part list also gives the correct level of fuel in inches as measured from the parting surface. The level may be changed by removing the float needle valve and seat and changing the thickness of the gasket under the seat. After the correct level has been obtained check the float needle valve travel, the minimum value of which is given on the setting part list. The float assembly must operate freely and have sufficient clearance in all positions so there is no possibility of it touching the casting at any point which might cause faulty float operation. Measure the distance from the parting surface to the top of the float when it is held up so that the needle valve is closed. Measure the distance from the parting surface of the throttle body to the top of the float chamber inside of this body. The difference between the two measurements represents the float clearance in the assembled carburettor and should be 3/32 inch minimum. If the clearance is less than this amount a small quantity of solder may be added to the float fork at point of attachment to the float. Extreme care should be used so that the original solder on the parts of the float assembly is not affected. Reset float level after adding solder.

FITTING THROTTLES AND IDLE DISCHARGE NOZZLES

15 Throttle valves must be fitted in the bore of the throttle body so that practically no clearance is observed when the fitted valves are held between the observer and a bright light. (Refer to EO 15-10BAB-6B for NA-Y9E1-511). In fitting new valves it may be necessary to scrape or file off high spots on the valve. Do not scrape the bore to obtain a fit. The valves are all individually fitted at time of manufacture and if the old valves are to be reassembled in the carburettor they should be marked at disassembly so they can be put back in the same bore and in the same position.

16 Idle discharge nozzles as supplied for replacement purposes have .004 inch stock on the end to allow for fitting at installation. The end of the nozzle should be scraped or filed off with a smooth file so that it just touches the throttle valve when the valve is in the full closed position. A maximum clearance of .004 inch between throttle valve and idle discharge nozzle is allowable.

17 It is necessary in fitting new throttle shaft stops and throttle shafts that the stop be located in the proper position on the shaft. Place the throttle shaft stop on the shaft against the stop in the body with the throttle valve in the wide open position. Check clearance between the throttle stop adjusting screw cage and the stop in the body. This must be 1/32 to 1/16 inch. Drill and pin the stop to the shaft in this position.

PUMP MECHANISM, ECONOMIZER, AND MIXTURE CONTROL PARTS

18 Instructions concerning installation of pump, economizer and mixture control parts vary somewhat for different types of carburetors and are covered in detail under the EO giving instructions concerning each carburetor model.

19 Carburetors will be thoroughly lubricated at overhaul.

20 The variable parts used to control the quantity of accelerating fuel delivered by the accelerating pump are the valve holes, reducer and discharge jet. The valve holes, usually four, are drilled in the angular face of the valve so they are closed by the pump piston.

21 The reducer is a headless plug, with a fixed opening through the center, located in the passage leading from the pump to the main metering system. The discharge jet or jets are pressed into the throttle body slightly below (air intake side) the throttle.

22 The economizer setting indicated on the setting part list is the angle of the throttle opening as measured from the closed position.

23 When replacing back suction mixture control parts it is essential that the mixture control lever or stop be so located on the stem that the valve is in the wide open position when the control is in the full rich position. This may be accomplished by placing a wooden plug in the valve so it is held wide open, assembling the stem and lever or stop in the full rich position and then drilling and pinning in place.

GASKETS

24 When assembling the carburetor after overhaul, the gasket set for the particular model is to be used. All of the old gaskets are to be replaced with new gaskets from the set. Gasket paste will not be applied to either the gasket or carburetor body surfaces.

REWORKING STAINLESS STEEL FLOAT NEEDLES TO ELIMINATE STICKING

25 To eliminate the possibility of the float hanger becoming excessively worn or gouged, which might result in a sticking float, rework all float needles P-13531, P-17692, P-18053 and P-19668. This reworking will be accomplished at the first overhaul of the carburetors and will be accomplished in accordance with Figure 1.

REMOVAL OF VENT CHECK VALVES

26 Vent check valves are no longer required for use in carburetors in the service; therefore, each carburetor will be carefully inspected during overhaul and in the event any are found to contain this valve, the carburetors will be modified by removing the check valve. The marking of carburetors to indicate that check valves have been removed is no longer required.

STORAGE

27 Carburetors that have been in storage will be reconditioned at the period specified in EO 05-1-9.

METERING JET IDENTIFICATION

28 The following list gives all the metering jets and their part numbers used in the Stromberg aircraft float carburetors. This list should be consulted at each overhaul to be sure the correct jets are reinstalled in the carburetor.

TYPE	MAIN JET	ECON. JET
CARBURETTOR		
NA-R9B	393044	393044
NA-Y9E1	* P-10455 & 393044	393044

* Indicate slot end flow. Others flow from thread end.

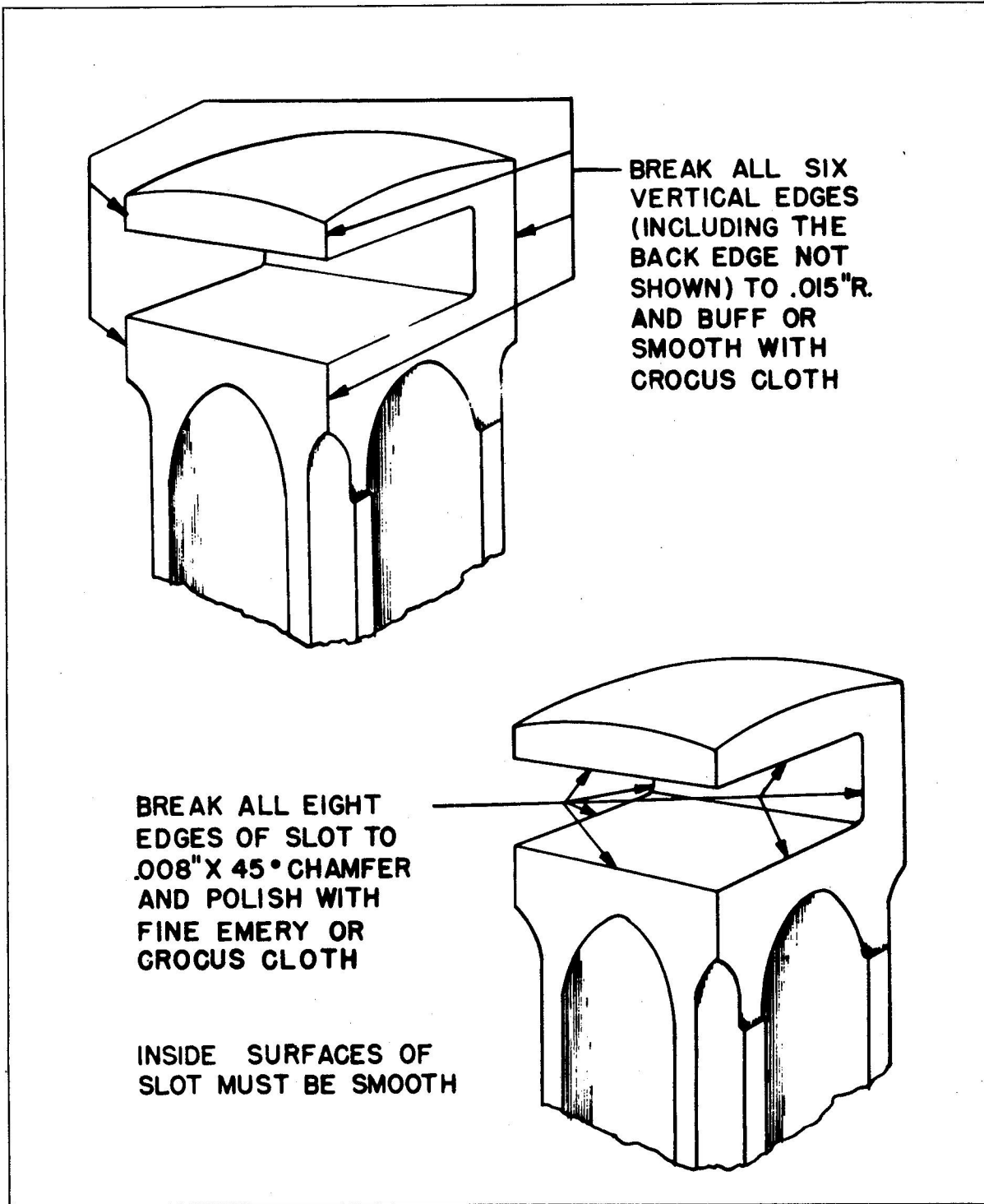


Figure 1 Reworking Stainless Steel Float Needles

OVERHAUL TOOLS REQUIRED

29 Following is a list of special tools generally used in the overhaul of Bendix-Stromberg float-type carburetors:-

TOOL NO.	TOOL NAME
T-12880	Line Reamer - .3768 inch dia. x 11 3/4 inches long
T-16910	Line Reamer - .4395 inch dia. x 15 5/8 inches long
P-18008-T-2	Rough Line Reamer - .5015 inch dia. x 31 1/2 inches long
P-18008-T-3	Finish Line Reamer - .5032 inch dia. x 31 1/2 inches long
P-20503-T-1	Rough Line Reamer - .310 inch dia. x 20 1/2 inches long
P-20503-T-2	Finish Line Reamer - .3158 inch dia. x 20 1/2 inches long
P-21848-T-19	20° Taper Reamer - .7395 inch dia.
P-21848-T-20	Straight Reamer for Idle Cut-off Bushing
T-24954	Reamer for #0 Taper Pin with handle
T-24957	Reamer for #0000 Taper Pin with handle
T-24985	#0000 Taper Reamer
T-25116	Reamer for #000 Taper Pin
T-25117	Rough Line Reamer - .496 inch dia. x 22 inches long
T-25118	Finish Line Reamer - .5025 inch dia. x 22 inches long
T-25125	Pilot Reamer - .4373 dia. x .420 inch pilot
T-25126	Line Reamer - Throttle & Choke - .253 inch dia. x 8 1/2 inches long
P-60556-T-2	Throttle Bushing Line Reamer - .4373 inch dia. x 23 1/4 inches long
T-5164	Socket Screw Driver for accel. well - 3/64 inch x 1/2 inch dia.
A-17949-T-1	Screw Driver - .031 inch x 3/16 inch dia.
T-18170	Screw Driver - .037 inch x 3/8 inch dia.
T-18171	Screw Driver - .047 inch x 5/16 inch dia.
T-18172	Screw Driver - .047 inch x 1/4 inch dia.
T-18174	Screw Driver - Type "B" Metering Jet
A-18472-T-1	Pilot Screw Driver End - for FNV Seats - P-60645, P-60121, and P-60981 - .068 inch dia. with 35/64 inch pilot
F-19272	Socket Screw Driver End - .062 inch x 11/16 inch dia.
T-19276	Pilot Screw Driver End - .068 inch x 3/4 inch dia. with .484 inch Pilot for Float Seat
T-19277	Pilot Screw Driver End - .086 inch x 1 inch dia. with .609 inch Pilot for Float Seat
T-19278	Screw Driver End - .062 inch x .547 inch with 17/64 inch hole in center for Poppet Economizer Valves
T-20199	Screw Driver End - .048 inch x .547 inch
T-19279	8 inches Sliding Offset Handle 3/8 inch Square Driver for Sockets
T-24923	Type "A" & "B" Metering Jet Screw Driver
T-24924	Metering Jet Wrench
T-24950	Handle for Metering Jet Screw Driver
T-24956	Pilot Screw Driver End for Economizer Seat - 1/16 inch x 5/8 inch with 3/8 inch Pilot
T-83962	Type "A" & "C" Metering Jet Screw Driver
T-24980	Socket Screw Driver for Economizer Seat & Needle Assembly 5/64 inch dia.
T-24981	Socket Screw Driver for Removing Economizer Seat & Needle Assembly - 5/64 inch x 43/64 inch dia. with 15/32 inch hole drilled in center.

OVERHAUL TOOLS REQUIRED (cont'd)

TOOL NO.	TOOL NAME
T-24986	1/4 inch Socket Driver - Screw Driver Handle Type
T-25076	Socket Screw Driver for Economizer Seat - .080 inch x 7/8 inch dia. 9/16 inch hole in center.
A-16746-F-1	Stud Wrench - #10-32 Tap
T-20115-F-1	Stud Wrench - 1/4-28 Thread
T-17969	Slotted Wrench - Economizer Body 1/16 inch x 11/16 inch x 6 inch long.
T-18160	Open End Wrench - 7/8 inch x 11/16 inch x 1/8 inch thick
T-20222	End Wrench - 3/4 inch x 13/16 inch x 1/8 inch thick
T-24943	End Wrench - 1/2 inch x 9/16 inch
T-24946	End Wrench - 5/16 inch x 3/8 inch
T-24948	End Wrench - 7/8 inch x 13/16 inch
T-24958	End Wrench - 13/16 inch x 15/16 inch
T-24979	End Wrench - 7/16 inch x 3/16 inch thick, 3/8 inch x 3/32 inch thick for Pump Shaft Nut & Economizer Lever Nut
T-24992	Open End Wrench - 9/32 inch x 1/4 inch x 5/32 inch thick
T-19273	Double Hex. Socket - 5/8 inch with 1/4 inch slot. NOTE: Supersedes T-19269
T-20138	3/8 inch Special Double Hex. Socket - 1 3/4 inches long
T-20198	3/4 inch Double Hex. Socket - 1/4 inch slot
T-21425	11/16 inch Double Hex Socket with 1/4 inch Slot
T-21499	9/16 inch Double Hex. Socket
T-24942	1/2 inch Double Hex. Socket
T-24944	9/16 inch Double Hex. Socket
T-24945	7/16 inch Double Hex. Socket
T-24959	7/8 inch Double Hex. Socket
T-25033	9/16 inch Double Hex. Socket
T-25034	5/8 inch Double Hex. Socket
T-24987	1/4 inch Hex. Socket
T-24988	5/16 inch Hex. Socket
T-24955	Special Hex. Socket for Idle Tube .286 inch
T-24960	Spanner Socket for Inside Pump Stem Bushing
T-24963	Special 1/16 inch Square Socket End
T-24989	Open End Hex. Wrench - Single Head
T-24990	1-1/16 inches x 1/4 inch thick 5/32 inch Hex. Wrench Single Head
T-24991	1/2 inch Hex. Wrench 4 inches long
T-25061	7/16 inch Double Hex Long Socket
T-25064	Open End Wrench, 1/2 x 9/16 x 1/8 inch
T-25075	Special Socket Wrench 1-11/16 inches Pump Check Valve
T-20183	5 inch Extension Bar with 3/8 inch Driver for Sockets NOTE: can be used with all Sockets.
T-20184	7 inch Handle Bar (for use with T-20183)
T-24949	Socket Release Key
T-24977	Spanner Wrench for Automatic Mixture Control Unit 2-1/8 in. dia.
T-24966	No. - Lapping Tool - for lapping Mixture Control Needle
T-24967	Venturi Tube Puller
T-19492	Throttle Bushing Remover 3/8 inch to 9/16 inch
T-19495	Cone Bushing
T-19496	7/16 inch Thrust Bushing - .340 inch
T-19497	1/2 inch Thrust Bushing - .490 inch

OVERHAUL TOOLS REQUIRED (cont'd)

TOOL NO.	TOOL NAME
T-19494	Long Sleeve - .314 inch dia. x 4-1/16 inches long
T-19498	#3 Radius Nut - 1-11/16 inches dia.
T-19493	Draw Bolt (used with T-19493)
T-19499	#4 - 1-15/16 inches Spacer
T-19500	#5 - 2-3/16 inches Spacer
T-19501	#6 - 2-7/16 inches Spacer
T-19502	#7 - 2-11/16 inches Spacer
T-19503	#8 - 2-15/16 inches Spacer
T-19504	#9 - 3-3/16 inches Spacer
T-24951	Venturi Removal Plug 2-7/8 inches dia. x 11 inches long
T-24952	Venturi Removal Plug 2-5/8 inches dia. x 3 1/2 inches long
T-24953	Venturi Removal Plug 3-3/32 inches dia. x 8 1/2 inches long
T-24976	Sleeve for removing Venturi Tube
T-24978	Spring Holder for Assembling Pump Torsion Spring

