THE WARNER AIRCRAFT CORPORATION
20263 Hoover Avenue
Detroit, Michigan

January 1, 1943

SERVICE LETTER NO. A-12.

Subject: Valve - Carburetor Heat Control Assembly No. 8290 - Modification of Linkage.

A. Description:

Originally the No. 8290 Heater Valve Assembly was equipped with the linkage as shown in Figure 1 below. Part No. 8645 has been assigned to this linkage. This part number includes all parts shown in full, namely the two shafts with the levers and retainers attached to them and the link assembly.

The latest No. 8290 Heater Valve, No. 8290, Ch. "E", is equipped with the linkage as shown below in Figure 2. Assembly No. 8646 has been assigned to the linkage shown in Figure 2 which includes the shafts to which the levers shown are attached, the link assembly, and also the spring and spring anchor screw.

The following are the main differences between the old and new linkage:

(a) The link assembly between the two levers in the old linkage was assembled from the bottom. Whenever the cotter pins retaining this rod would wear through due to vibration, the rod would drop off which may result in both the hot and cold valves closing causing a forced stop of the engine.

(b) In the old linkage, the two levers were a reamed fit on the shafts and were retained by two taper pins. Vibrations had a tendency to permit the levers to become loose on the shaft. To eliminate this condition, on the latest linkage the shafts are silver soldered into the levers in addition to being pinned.

(c) A spring has been added to the linkage which serves two purposes. In case of a failure of the control between the heater valve and the cockpit, the spring moves both the cold and hot butterfly valves into a half-open position so that such a failure does not cause a forced stop of the engine. Secondly, this spring maintains a constant load on the lever and connecting link, thereby eliminating wear due to vibration.

The design of the old and new linkage are such that the new linkage can be installed in lieu of the old linkage in any heater valve in service.

B. Repair of Old Linkage:

Due to the present system of priorities, it will be difficult in many cases to replace the old linkage with a new linkage. It is, therefore, recommended that whenever the levers are found loose on the respective shafts, the shafts and levers be removed from the valve assembly after making an inspection to find out whether the bushings which are pressed into the housing have worn excessively and need to be replaced.

B. Continued.

To Disassemble, Proceed as Follows:

(a) Remove the four screws which hold the hot and cold air valve to the shaft and remove these valves.

(b) Remove the two screws at the retainer plate of each shaft and lever assembly at the bottom side of the heater valve. Also, remove the link between the two shafts and lever assemblies.

(c) Both shafts can now be pulled out.

(d) If it has previously been determined that the bushings in the casting need replacement, they can be driven or pressed out and replaced by new bushings. The bushing at the upper end of each shaft is Warner part No. 8322 and at the lower end is No. 8311. If all bushings are to be replaced on the hot and cold air valve, two each of these bushings must be ordered.

(e) If the actuating levers are found loose on the respective shafts, they should be silver soldered to the shaft.

NOTE: It is imperitive that for this operation the retainer and plain washer be on the shaft. Care must be taken when silver soldering the lever to the shaft that the washer and retainer plate are not soldered either to the shaft or the lever, due ot the application of too much silver solder.

(f) If the holes in the outer end of the levers should have worn excessively, due to the link vibrating in them, they can probably be salvaged by drilling them out oversize and by making from some cold rolled steel a new link similar to the one of smaller diameter which is being removed. The length of the link must be 3" as indicated in Figure 1 below. It is advisable that cotter pins of the largest possible diameter be used in the new link, in order to eliminate the possibility of the pin wearing through in a short period of time due to vibration. It is recommended that steel cotter pins be used.

C. Installation of New Replacement Linkage:

(a) If it should be desired to install the new 8646 linkage in lieu of the old linkage, the entire new linkage assembly, as shown in Figure 2 in solid lines, including the spring and spring anchor bolt, can be ordered from The Warner Aircraft Corporation under the part No. 8646. This assembly number does not include the 8322 and 8311 bushings described above under "Repair of Old Linkage". These bushings must be ordered separately if their replacement is found necessary.

(b) After the old linkage has been removed, as described above under "Repair of Old Linkage", the 13/64" diameter hole for the spring anchor bolt, as shown in Figures 2 and 2A, must be drilled and the anchor bolt installed as shown in Figure 2A.

C. Continued.

(c) The new linkage should then be installed in the heater valve housing after the bronze bushings have been replaced if found necessary. The installation procedure is in reverse to the disassembly operation. Please note that with the new linkage the link assembly between the two lever assemblies is installed on the top side of the levers so that in case of the cotter pin wearing, the linkage cannot drop out.

(d) After the screws holding the hot and cold butterfly valves have been installed, they must either be lock-wired, if screws with drilled heads are used, or the opposite end of the screw must be peened to deform the thread sufficiently to eliminate the possibility of the screw coming loose in operation. A screw which comes loose in operation may cause serious damage to the engine intake or exhaust valve or to the piston and cylinder. Therefore, the greatest care is necessary.

L. A. Majneri
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LAM:CP

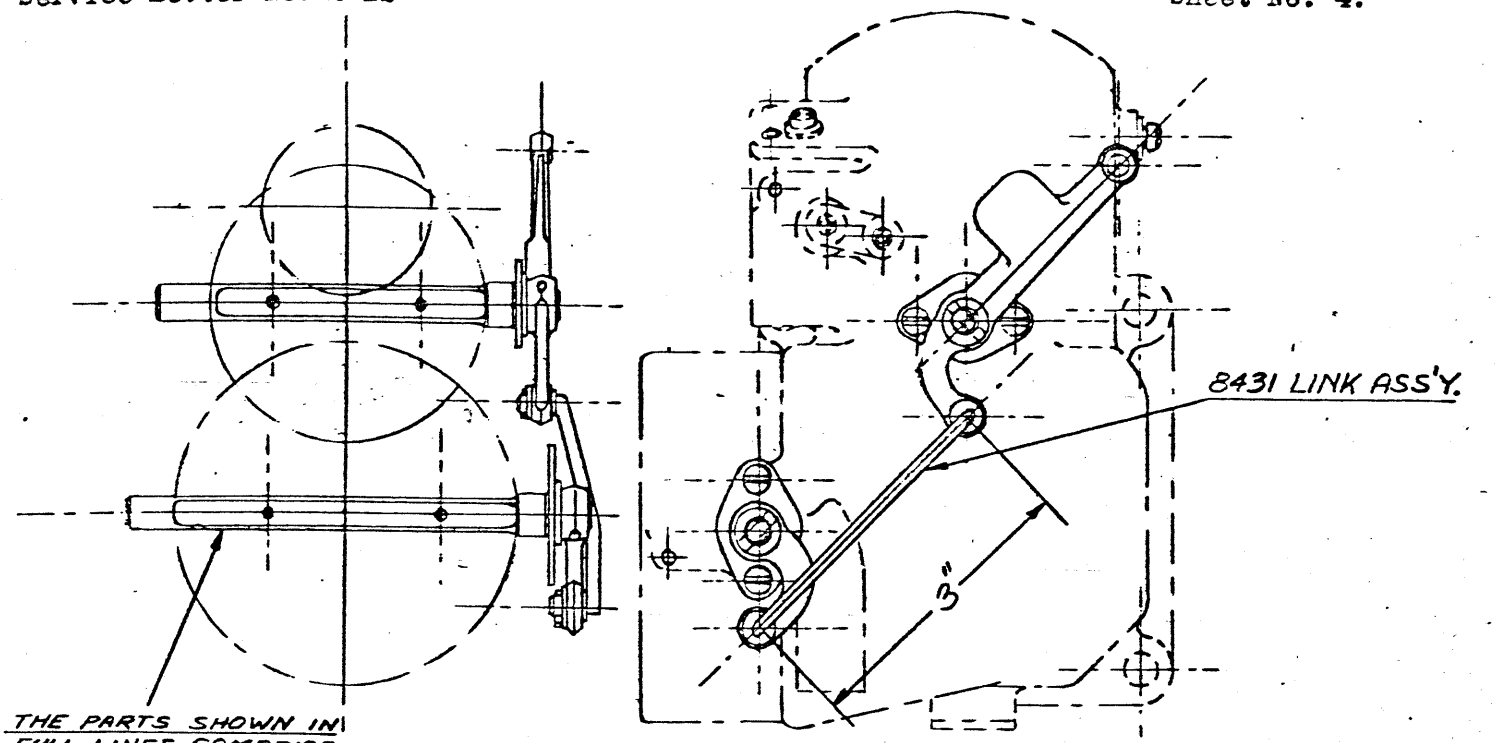

Figure -1-

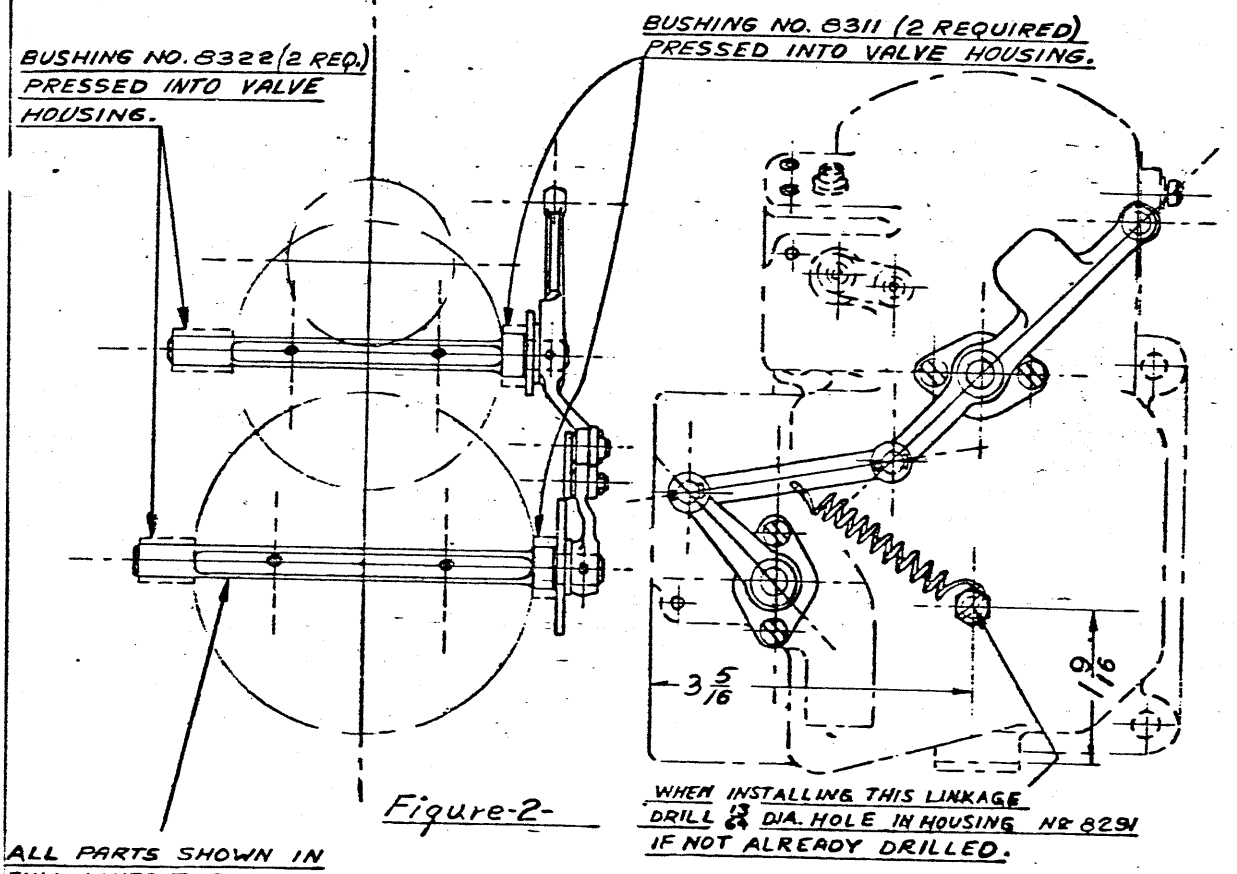

Figure-2-

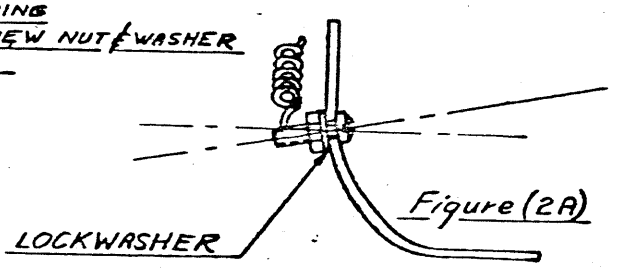

Figure (2A)