

Application: Nene 2VH Engines

PRESSURIZING VALVE PLUNGERS - PARTIAL SEIZURE

1. Cases have occurred where pressurizing valve plungers featuring carbon sleeves to Nene Modification 286 (Lucas Modification CP.308) have partially seized in their respective guide bushes, resulting in the engines becoming unresponsive to throttle movement.
2. Investigation has revealed that there is a tendency for the carbon sleeves to grow slightly in service, but the reason for this growth is not yet known.
3. The existing drawing limits are such that units may be built with a minimum diametrical clearance between the plunger and its bush of .0001 inch, and in view of the tendency of the carbon sleeves to grow, this is now considered inadequate.
4. Modification action is being taken to alter the drawing limits to ensure a minimum clearance of .0003 inch, but it is obvious that action must also be taken to ensure a safe working clearance of engines in service.
5. When a plunger is suspected to be partially seized, proceed as follows:-
 - Note:- Extreme care is to be taken at all stages of this work to prevent ingress of dust or grit into the pressurizing valve and fuel system.
 - (a) Remove engine cowlings to gain access to the pressurizing valve.
 - (b) Remove the seven 1/4 inch nuts, spring washers and plain washers securing the plunger spring cover.
 - (c) Remove the cover, the plunger spring and two spring seatings. Withdraw the plunger.
 - (d) Where the plunger is a plain alum. bronze type, then Modification 286 is not featured, and any high spots or signs of stiction are to be removed by lightly polishing with crocus paper, followed by polish with metal polish, and wash in kerosene.
 - (e) Plungers featuring carbon sleeves to Modification 286 are to be treated as follows:-
 - (i) One operator holds the plunger at the extreme ends with his finger tips and rotates it slowly, while another operator, with a strip of crocus paper approximately 1 inch wide looped around the plunger, polishes the carbon sleeve by first pulling one end of the strip and then by the other in rapid succession. This operation continues for four (4) minutes, during which time a moderate pressure is to be applied to the crocus paper. Under these conditions, the

diameter of the sleeve should be reduced by .0002 inch. A fresh piece of paper is to be used for each plunger treated, and care is to be taken to ensure a parallel finish.

- (ii) The plunger is then to be thoroughly scoured in kerosene, using a small stiff bristled brush to remove any particles of crocus powder that may be embedded in the surface of the carbon.
- (iii) Polish the carbon sleeve for approximately thirty seconds with a piece of clean rag soaked in metal polish and then thoroughly wash in kerosene.
- (f) Replace the plunger in the pressurizing valve and check that it is a free sliding fit in its guide bush.
- (g) Replace the spring seatings and the plunger spring.
- (h) Examine the two cover sealing rings and renew, if there are any signs of stretching or damage.
- (j) Fit the top cover.
- (k) Bleed the fuel system.
- (l) Ground run the engine and check for leaks and satisfactory operation.

References : File Department of Air 150/8/566 Nene Service
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