

**DIRECTORATE GENERAL BORDER ROADS**

**GENERAL MAINTENANCE INSTRUCTION NO 53**

**ON**

**EFFECT OF DESERT ON THE FUEL SYSTEM OF VEHICLES AND EQUIPMENTS**

1. **Aim.** This instruction enumerates the effect of desert on various assemblies/components of the fuel system of vehicles and equipment operating in desert areas. Suggested remedial measures and recommendations to overcome the same have also been explained.

2. **Characteristics of desert.** The effects of desert condition on the fuel system of vehicles and equipment have been summarized under the following principal characteristics of desert :-

- (a) Sand, dust and storms.
- (b) Excessive heat.

3. **Details of effects of desert on fuel system.** These have been tabulated in Appendix "A" to this **GENERAL MAINTENANCE INSTRUCTION** for necessary action.

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**HQ DGBR GMI NO 53 DATED 15 NOV 71**



**EFFECTS OF DESERT ON THE FUEL SYSTEM OF VEHICLES AND EQUIPMENT**

<b>Affected Assy or Component</b>	<b>Sand, dust and storms</b>	<b>Excessive Heat</b>	<b>Remedy/Recommendation</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
(a) Fuel tank (and its strainer ) and cap	Gets dirty and needs its frequent cleaning i.e. once every six months.	Fuel tank's cap washer gets perished soon. Replace immediately to prevent ingress of dust into fuel tank and spilling or rapid evaporation of fuel.	Always use strainer while filling fuel tank. Repair or Replace punctured strainer promptly.
(b) Fuel Filter	Gets clogged early.	-	(a) Clean fuel filters and its element minimum at half the normal periodicities. (b) Change Fuel filters for slightest damage. For that, provide Fuel filter cartridge (elements) to drivers or operators as part of their VKL. (c) Enforce replacement of Fuel filters at half of the normal periodicity, or even earlier . Also before and after every exercise in desert. *(d) Fit extra Fuel filter in veh for better filtration particularly in Truck 1 Ton NSN/ Nissan/ Jeep CJ3B.
(c) Fuel pump	Gets dirty and blocked whereby it pumps less or no fuel. Clean frequently and replace gasket every time.	(a) Diaphragm, inlet and outlet valves get perished and need frequent replacement. (b) 'Vapour lock' occurs so starvation is caused during peak hours of summer days.	*(a) Provision Fuel Filter Repair Kits as well as AC Fuel Pump diaphragm, inlet and outlet valves at liberal scale for Field Repairs.  (b) Put wet cloth on the fuel line to overcome 'Vapour lock'.

**(d) Carburetor**

**(i) Float Needle**

(a) Its seat gets worn by deposition of sand underneath and thus needle needs to be achieved.

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\*(a) Overall carburetor once every six months by Field Wksps.

(b) Causes frequent over flooding of carburetor

\*(b) Provision adequate carburetor Repair Kits including Metering Rod and jets for replacement of worn out parts and its gaskets, as and when carburetor is stripped.

\*© Fit extra Fuel filter assy to ensure desired fuel filtration under dusty conditions.

**(ii) Metering rod & jets**

Its tapered steps which are finely metered get worn out and hence needs replacement early.

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**(e) Air Cleaner**

Gets dirty often. If 'oil bath type' needs to check its oils condition frequently and change whenever found dirty. If 'Paper type' clean it by pressured air, and change at half the normal periodicity.

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\*(a) Clean paper filter element at half the normal periodicity due to excessive dusty conditions.

\*(b) Change air cleaner oil minimum at half the normal periodicity .

**(f) Rubber Air insulating ring (fitted on top of carburetor but below Air cleaner assy)**

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Insulating ring gets perished and thus dirty air gets into carburetor by passing air filter, thus wears out cylinder liners quickly by grinding action of sand. Reduces engine's pulling power and life.

\*(a) Check condition of 'Air Insulating Ring' every three months or whenever condition of oil in the Air Cleaner is checked. Replace whenever found cut or perished.

\*(b) Field Wksps to provision 'Air Insulating Ring' at liberal scale.

**FIP**

Despite dual fuel filters, dust Heat causes perishing of rubber seals of FIP

\*(a) Field Wksps to provision FIP rubber

and sand do get inside its mating – fit parts and wears these prematurely. Leads to engine smoking, reducing engine pulling power and increasing fuel consumption. Needs frequent replacement of FIP components.

and its delivery valves resulting into fuel leakage and mixing of diesel with sump oil. Replace seals.

seals, FIP elements and delivery valves at an increased scale of 1.5 to 2 times.

\*(b) Calibrate FIPs at half the normal periodicity.

(c) Adequate pool of FIPs to be maintained for replacement.

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Legend : - Items \*marked will be attended to by the maintaining Field Workshops.