P U B L I C A T I O N T R A N S M I T T A L

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DATE: Aug.17/01

V2500-A1/A5 PROPULSION SYSTEMS SERVICE BULLETIN

This document transmits the Initial Issue of Service Bulletin EV2500-72-0407

Bulletin Initial Issue

Remove	Incorporate	Reason for change
	Pages 1 to 9 of the Service Bulletin	Initial Issue

V2500-ENG-72-0407

CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED
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LIST OF EFFECTIVE PAGES

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ENGINE - MAIN GEARBOX ASSEMBLY - MAINTENANCE SHOP INSPECTION OF THE OIL SCAVENGE DRIVE GEARS FOR MICRO-PITTING AND WEAR - NON-MODIFICATION SERVICE BULLETIN

1. Planning Information

A. Effectivity

(1) V2500-A1/A5 engines

(2) ATA Locators

72-60-00, 79-22-41

B. Concurrent Requirements

None

C. Reason

Examination of high time gears has determined that during operation, wear and micro-pitting may be induced on the oil scavenge drive gear (Z16). The purpose of this NMSB is to introduce an inspection of these gears at specified life.

This Non-Modification Service Bulletin (NMSB) is written for the reasons that follow:

(1) To determine an acceptable condition of the subject gears for micro-pitting and wear.

(2) To provide inspections to align with engine Maintenance Management Planning (eMMP) requirements.

(3) To provide more information to support engineering understanding of micro-pitting and wear, found on the gear teeth identified in this NMSB.

NOTE: Micro-pitting gives the gear tooth a frosted, matt or grey stained appearance; under magnification, the surface appears to be covered by very fine pitting. It can occur in large or small amounts anywhere on the contact area of the tooth.

D. Compliance

Category 4

Accomplish at the first visit of an engine or module to a maintenance centre capable of compliance with the accomplishment instructions, regardless of the planned maintenance action or the reason for engine removal.

(1) The inspections are intended to coincide with the shop visit requirements that follow, as given in the eMMP. Refer to simplified inspection process flow chart on page 7.

NOTE: The gears are exposed during application of the shop visit requirements. This NMSB is to be applied at these intervals. Refer to the simplified inspection process flow chart on page 7.

(2) Initial inspection: IAE eMMP soft time requirement for the gearbox at approximately 20,000 hours.

NOTE: Engines in excess of 20,000 hours

(a) If 20,000 hour gearbox inspection has already been carried out: Plan to perform inspections in this NMSB at the next shop visit.

(b) If no 20,000 hour gearbox inspection has been carried out: Plan to perform full gearbox inspection, including the inspections in this NMSB at the next shop visit.

E. Approval

The Compliance at 1.D. and the procedures outlined in section 3 of this Non-Modification Service Bulletin comply with the Federal Aviation Regulations and are FAA approved for the engine models listed.

F. Manpower

Estimated man-hours:

In service	Not applicable
At overhaul Access/ Inspect/ Replace/Install/Assemble	50 hours

G. Tooling Price and Availability

The tools that follow are required to accomplish this Service Bulletin (suitable alternatives are acceptable).

Tool number	Qty	Description	Function	Availability
6F10408	1	Borescope equipment	Inspect	1)
-	1	Ball end scriber (1,5mm dia)	Wear indication	-

1) Indicates that the tool design aperture cards are currently available from IAE.

NOTE: A ball end or radius tip scriber is used to check for stepped surface on gear teeth as an indication of wear. Lightly hold the scriber perpendicular to the base of the area. Only the weight of the scriber must be used on the surface. Standard scribers can be made with AISI-01 or AISI-W1 (grade 4) steel. The tolerance on the highly polished nose radii must be plus or minus 0.001in. (0,025mm). The hardness must be Rockwell C55 or 60. This type of tool is used for bearing inspections as defined in the IAE Standard Practices Manual.

NOTE: Additional tooling is required, as identified in the referenced TASKS in 3. Accomplishment Instructions.

H. References

(1) Internal reference 01VR773

(2) IAE Engine Manual

(3) IAE Component Maintenance Manual

I. Other Publications Affected

None

2. Material Information

None

3. Accomplishment Instructions

A. Pre-requisite Instructions

Remove the oil scavenge pump. Refer to Engine Manual (EM) TASK 72-00-60-050-007.

B. Inspection Procedure

(1) Examine the condition of the drive gear (79-22-41, 01300) of the oil scavenge pump. Refer to Figs 1 and 2

(a) If required, use a 5X magnifying lens and inspect the contact area of the gear teeth.

(i) If micro-pitting is less than 10 percent of the contact area, accept the gear.

(ii) if micro-pitting is greater than 10 percent of the contact area, reject the gear.

(iii) Use a 1,5mm scriber to inspect the gear for wear. If wear is detected, reject the gear.

NOTE: Calibrate the feel of the scriber by gently using against the non contact side of the gear teeth. When checking for wear on the contact surfaces, if wear is present, there will be a slight change in surface flatness.

(b) Inspect the drive gear in accordance with IAE Component Maintenance Manual (CMM), TASK 79-22-41-200-407.

(c) If gear replacement is required, accomplish as defined in CMM TASK 79-22-41-060-401.

(2) Examine the condition of the oil scavenge drive gear (72-60-26, 01140) of the main gearbox. Refer to Figs 1 and 2

(a) Use a 5X magnifying lens (if required) and the IAE 6F10408 borescope equipment (if required) to inspect the Z16 teeth spur gear and the Z61 teeth spur gear.

(i) If micro-pitting is less than 10 percent of the contact area, accept the gear.

(ii) If micro-pitting is greater than 10 percent of the contact area, reject the gear.

(iii) Use a 1,5mm ball diameter scriber to inspect the Z16 gear for wear. If wear is detected, reject the gear assembly.

NOTE: Calibrate the feel of the scriber by gently using against the non contact side of the gear teeth. When checking for wear on the contact surfaces, if wear is present, there will be a slight change in surface flatness.

(b) inspect the gear assembly in accordance with IAE Engine Manual, TASK 72-60-26-200-001.

(c) If oil scavenge drive gear assembly replacement is required, accomplish as defined in part (3).

(3) Replace the scavenge drive gear assembly (72-60-26, 01140)

(a) Remove the external gearbox module, as detailed in EM TASK 72-00-60-050-007.

(b) Remove the angle gearbox, as detailed in EM TASK 72-60-00, SUBTASK 72-60-00-030-060.

(c) Remove the angle gearbox support housing, EM TASK 72-60-00, SUBTASK 72-60-10-040-058.

(d) Remove the scavenge drive gear assembly, EM TASK 72-60-00, SUBTASK 72-60-10-040-061

(e) Before installation of a replacement scavenge drive gear assembly, perform the necessary fits and clearance checks, EM TASK 72-60-00.

(f) Install the replacement scavenge drive gear assembly as detailed in SUBTASK 72-60-10-440-054.

(4) Install the external gearbox module, EM TASK 72-00-60-420-000.

(5) Install the oil scavenge pump, EM TASK 72-00-60-450-007.

C. A record of accomplishment of this Non-Modification Service Bulletin is required.

D. Feedback of Findings

Report all findings to IAE Technical Services (Derby) through the local IAE representative. The feed back will support the understanding of micro-pitting and wear observed on the gears inspected by this NMSB.

E. Rejected Gears Disposition

Rejected gears should be returned to the address that follows:

FIAT AVIO Spa.
312 Via Nizza
10127 TORINO
ITALY
Attn: Roberto Vigitello (Product Support)

F. Spare Parts Provision Requirements

External gearbox module, EIPC 72-60-00, Fig 1, sheet 1 and 2

Item	Part number	Qty	Description
240	AS3209-162	1	packing, pref.
845	AS3209-165	2	packing
850	AS3209-151	1	packing

If gearbox removed, packing to be replaced

Scavenge oil pump drive gear assembly, EIPC 72-60-26, Fig 1

Item	Part number	Qty	Description
100	4T0070(*)	1	Bearing, roller IC
140	4P0010	1	Gear, drive
180	4T0120(**)	1	Bearing, roller IC
200	4W0002(***)	6	Nut

Parts may need to be replaced, depends on findings

(*) Alternative part numbers - 4T0071, 4T0073

(**) Alternative part numbers - 4T0121, 4T0123

(***) Alternative part number - AS20625

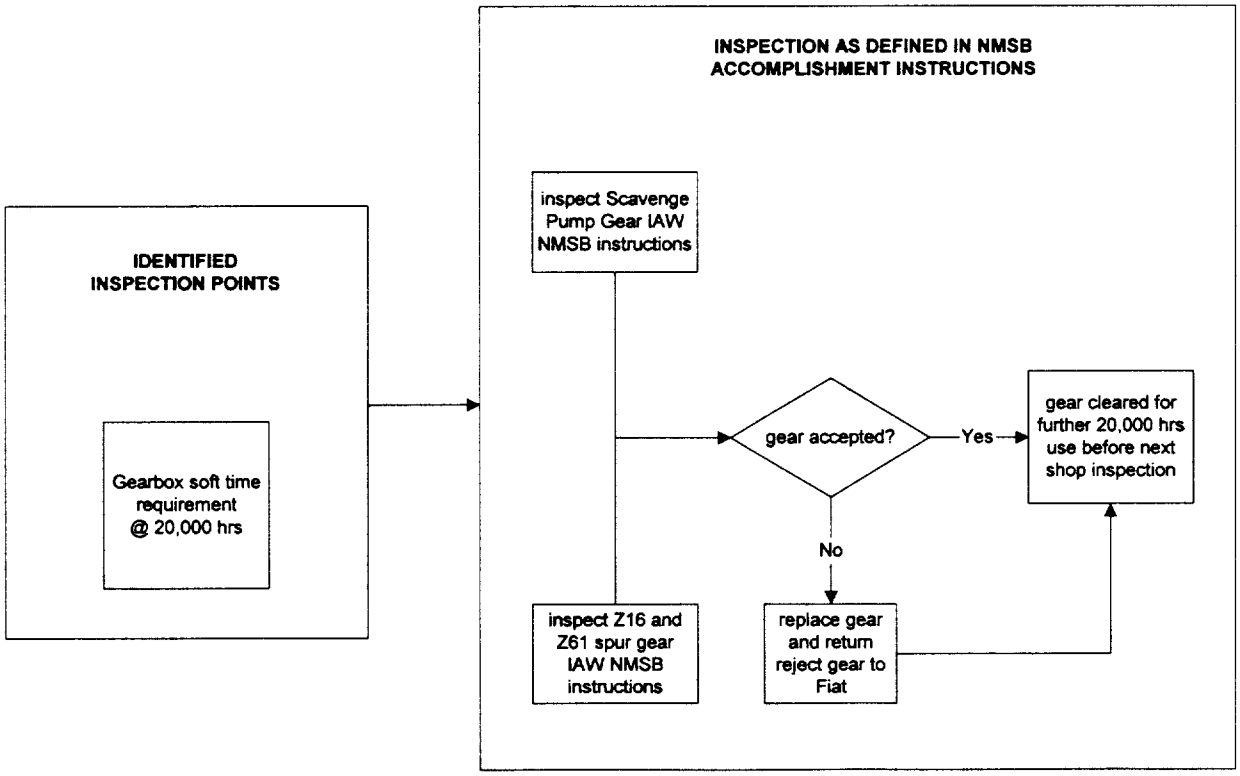
Scavenge oil pump, EIPC 79-22-41, Fig 1

Item	Part number	Qty	Description
300	4P7316	1	Gear, drive

Parts may need to be replaced, depends on findings

G. Close Up Actions

None



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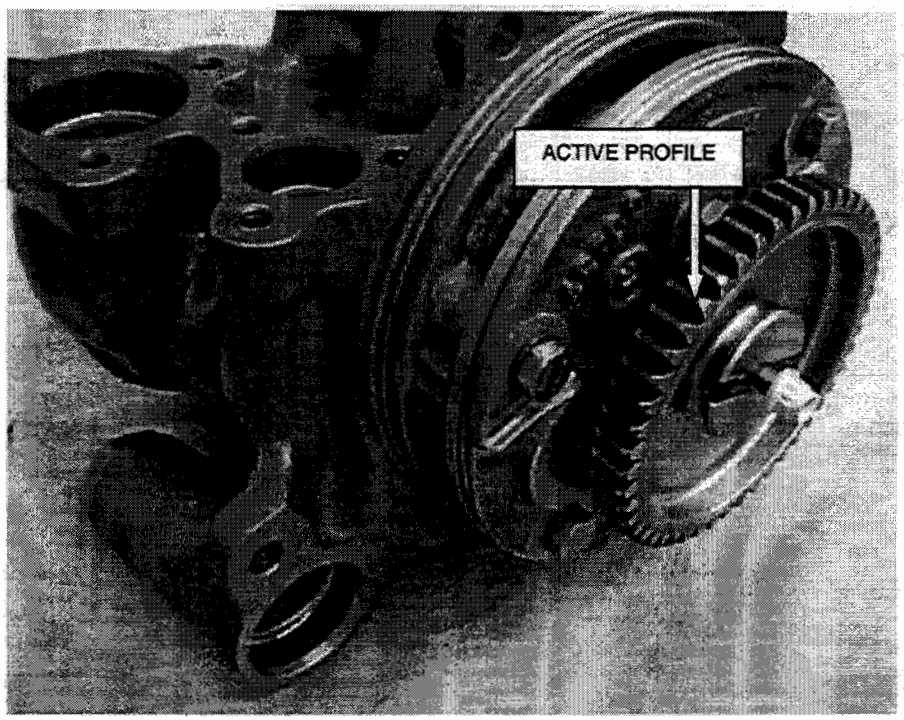
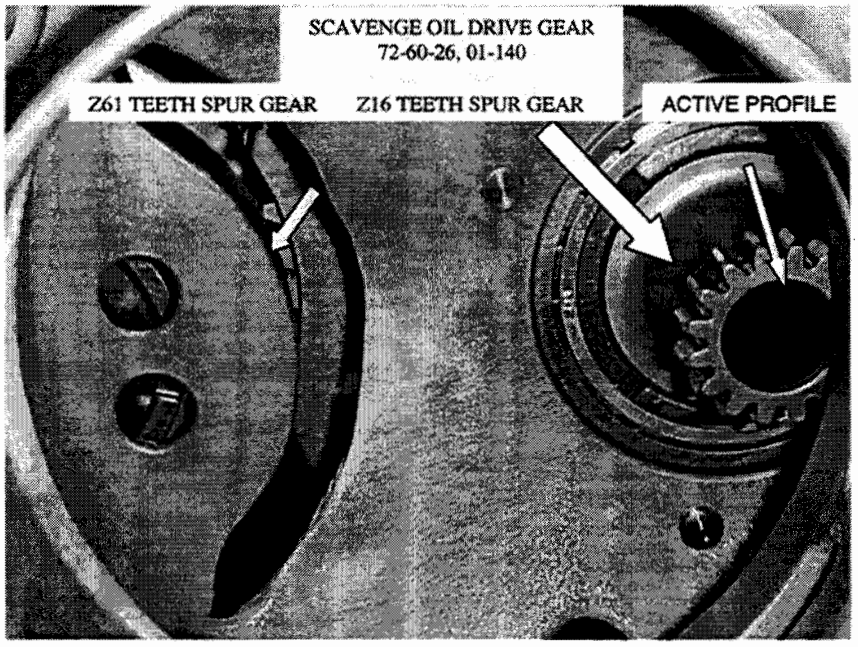
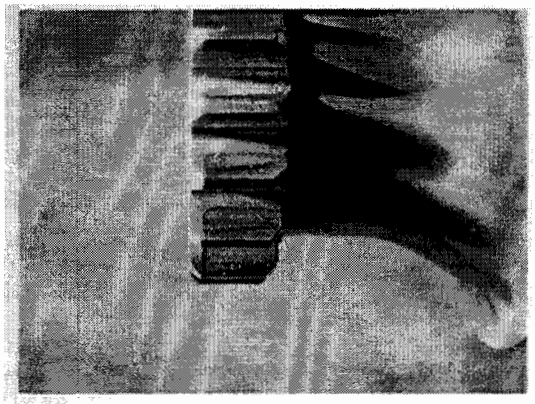
Inspection process flow diagram

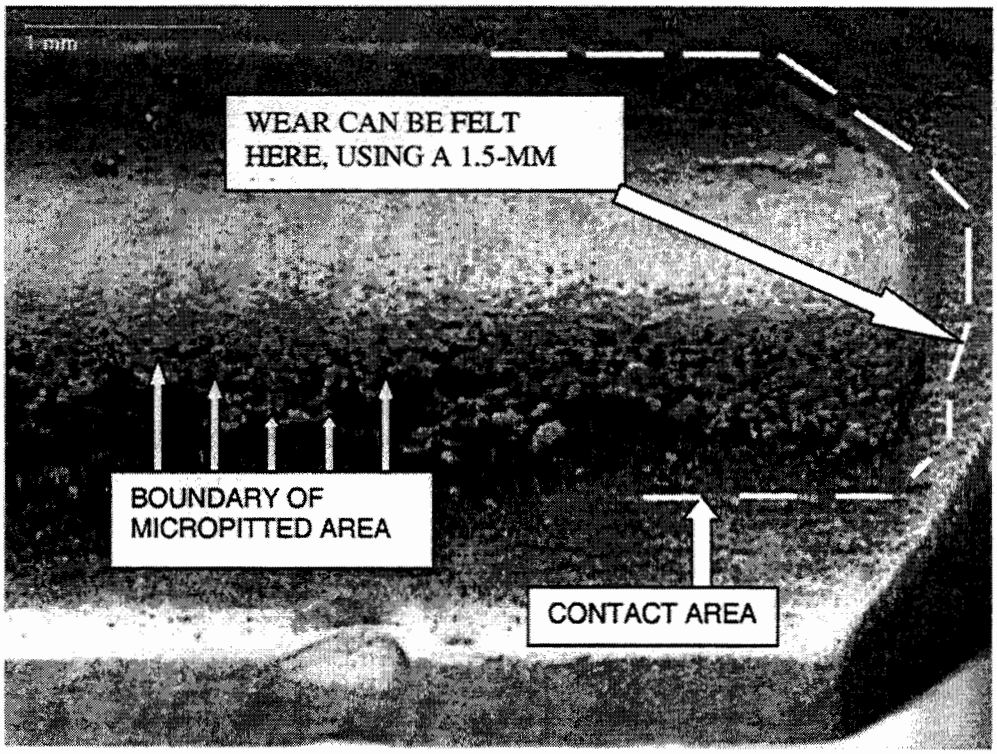
Scavenge Pump Gear (79-22-41, 01-300)





Gear locations
Fig 1





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Example of micro-pitting and wear condition found on Z16 spur gear
Fig 2