



PROCEDURE FOR THE DEPRESERVATION AND COMMISSIONING OF ENGINES

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DE & S LAND SYSTEMS SAFETY AND ENGINEERING

**Publication Authority:
DES SE LAND-EP-PC1**

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PREFACE

Sponsor: DG S and E
File Ref SE Land WIP\
430\11\Pubs\ Contract\
AESP\227-013

Publication Authority: DES SE LAND-EP-PC1

INTRODUCTION

1 Any comments by service users on this publication should be forwarded through the channels prescribed in Army Equipment Support Publication (AESP) 0100-P-011-013. An AESP Form 10 is provided at the end of this publication; it should be photocopied and used for forwarding comments on this AESP.

2 AESPs are issued under UK MOD authority and where AESPs specify action is to be taken, the AESP will of itself be sufficient authority for such action and also for the demanding of the necessary stores, subject to the provisions of Para 3 below.

3 The subject matter of this publication may be affected by Defence Instructions and Notices (DINs), Standard Operating Procedures (SOPs) or by local regulations. When any such instruction, Order or Regulation contradicts any portion of this publication it is to be taken as the overriding authority.

RELATED AND ASSOCIATED PUBLICATIONS**Related publications**

4 The Octad for the subject equipment consists of the publications shown opposite. All references are prefixed with the first eight digits of this publication. The availability of the publications can be checked by reference to the relevant Group Index (see AESP 0100-A-001-013).

Category/Sub-category			Information Level			
			1 User/Operator	2 Unit Maintenance	3 Field Maintenance	4 Base Maintenance
1	0	Purpose and Planning Information	*	*	*	*
	1	Equipment Support Policy Directive	*	*	*	*
2	0	Operating Information	*	*	*	*
	1	Aide Memoiré	*	*	*	*
	2	Training Aids	*	*	*	*
3		Technical Description	*	*	*	*
4	1	Installation Instructions	*	*	*	*
	2	Preparation for Special Environments	*	*	*	*
5	1	Failure Diagnosis	*	*	*	*
	2	Maintenance Instructions	*	*	*	*
	3	Inspection Standards	*	*	*	*
	4	Calibration Procedures	*	*	*	*
6		Maintenance Schedules	*	*	*	*
7	1	Illustrated Parts Catalogues	*	*	*	*
	2	Commercial Parts Lists	*	*	*	*
	3	Complete Equipment Schedule, Production	*	*	*	*
	4	Complete Equipment Schedule, Service Edition (Simple Equipment)	*	*	*	*
	5	Complete Equipment Schedule, Service Edition (Complex Equipment)	*	*	*	*
8	1	Modification Instructions	*	*	*	*
	2	General Instructions, Special Technical Instructions and Servicing Instructions	*	*	*	*
	3	Service Engineered Modification Instructions (RAF only)	*	*	*	*

*Category/sub-category not published.

Associated publications

5	Reference	Title
	Def Stan 01-5(issue 15)	Fuels, lubricants and associated products
	Def Stan 81-70	Preservation of engines
	AESP 0200-A-209-013	The cleaning, derusting and phosphating of iron and steel

6 The Electronic index of Defence Standards series available on the Defstan website.

7 Def Stan 81-41 Packaging of Defence Material

8 It is the definitive publication regarding all matters concerning packaging and lists in alphabetical order various subjects of material.

9 Each subject is broken down into divisions and sub-divisions and then allocated a relevant specification reference number(s).

10 The initial letter of these references indicates the table which contains information of the relevant document and on turning to the table, document identification plus the supplier's numeric address code can be found.

11 The information levels cover General, Design, Testing, Marking, Handling and Transport and the list of standards, specifications and publications include extracts from the following:

Def Standards	British Standards
Def Specifications	HQ Packaging Officer Standards
Publications	D Pkg A Standards
Air Naval Eng Standards	ISOs
Stanags	US Mil Specifications
ESTC Publications	Statutory Instruments
QSTAG Standards	ASCC Air Standards
JSP's	US ASTM Standards

Misc Pubs (comprising):
Merchant Shipping Notices
DQA/TS reports
ADR,ATA,IATA,IMDG,RID,ICAO
RAE/RPS
British Rail

12 The compilation of an associated publications list can never be complete for every requirement. Proprietary materials are regularly updated and continually amended, thus quickly rendering any such list obsolete.

13 Specialist sources of advice are available within the MOD and this publication should be regarded as complimentary to these sources and not an alternative to them.

14 Considerable published information is available and advice should be sought from manufacturer or supplier on selection or use.

WARNING

SAFETY. THIS PUBLICATION MAY CALL FOR THE USE OF SUBSTANCES AND/OR PROCEDURES THAT MAY BE INJURIOUS TO HEALTH IF ADEQUATE PRECAUTIONS ARE NOT TAKEN AND DOES NOT IN ANY WAY OR AT ANY STAGE ABSOLVE THE TECHNICIAN FROM STATUTORY OBLIGATIONS WHICH RELATE TO HEALTH AND SAFETY.

INTRODUCTION

1 This publication details the procedure for the depreservation, prior to fitting, of diesel engines received from store which have been subjected to preservation in accordance with Def Stan 81-41 and 81-70, also AESP 0200-A-220-013.

2 It should be read in conjunction with service and manufacturers literature pertinent to the assembly/equipment involved.

3 Procedures laid down are intended to cover most designs with the present exception of multi-fuel type opposed piston engines.

GENERAL

4 If during depreservation, corrosion is found to have formed which indicate that preservation may have deteriorated, the assembly should be dismantled sufficiently to determine the extent of damage and arrangements made for a repair.

5 Be aware of specially tied on labels and directions. Their instructions may assist during depreservation.

6 Visually inspect the assembly for any damage or distress which may have been caused during storage and transit.

EXTERNAL DEPRESERVATION

7 If fitted, remove crankshaft locking device.

8 Remove all forms of wrapping. Detach polythene covers and blanking plates. Ensure all orifices are uncovered and clear.

9 Remove all evidence of protective lubricant and preservation from the engine external components.

10 It may be that during preservation, components such as rocker covers, manifolds, starter motor or brush gear bands were removed and temporarily refitted. Seals, gaskets and washers, etc associated with all such items must be carefully inspected and renewed if unserviceable. All components must be correctly secured after refitting. (See also, Internal Depreservation, Para 14)

11 Remove protective lubricant from vicinity of flywheel and from interior of clutch housing.

12 If a clutch assembly is fitted, care must be taken to ensure that the de-greasing solvent does NOT come into contact with non-metallic clutch plates or linings.

13 Using a suitable mandrel to maintain clutch centre plate alignment with the flywheel spigot bearing, ensure that the centre plate is free to rotate when the clutch pressure is 'released'. Remove and clean the assembly using PX 24 if seizure is in doubt.

INTERNAL DEPRESERVATION

14 Remove starter motor. Clean off all traces of protective lubricant from vicinity of bendix drive and refit motor.

15 Remove rocker cover(s). Check valve clearances and adjust as necessary. Lubricate valve gear, push rods and springs, etc.

16 Remove and service fuel injectors. (Flush out injector using a nozzle setting outfit and determine serviceability, see EMER Pwr M 343 and M381/3).

NOTE

During prolonged storage, injectors are liable to dry out or the preservative harden. If an injector is fitted in this condition, minor damage through scuffing can occur which will ultimately shorten its life.

- 17 Inject sufficient lubricating oil into each cylinder to cover the piston crown.
- 18 Rotate the engine at least two complete revolutions to ensure there is no internal impediment and that the crankshaft bearings are free.
- 19 If a renewable element type of lubrication oil filter is fitted, dismantle and check components for serviceability.
- 20 If a renewable element type of fuel (oil) filter is fitted, dismantle and check components for serviceability.
- 21 If a mechanical governor/enclosed camshaft type of fuel injection pump is fitted, drain off any protective compound residue from camshaft and governor housing and refill with correct lubricant.

NOTE

It is possible that after a long period the corrosion preventive compound may begin to harden. Therefore on diesel engines which have been in store for a year or more, the fuel injection pump is to be flushed out using emulsifying agent cleaning compound, H1/7930-99-220-1172 diluted with 20 times its volume of Kerosine/B. The pump must then be thoroughly drained and refilled as follows:

- (1) In line type Use recommended grade of lubricating oil
- (2) DPA type Use fuel oil

- 22 Bleed off sufficient fuel to ensure that any diesel oil or PX4 which may have deteriorated during storage is expelled. Engines fitted with DPA pump MUST NOT be operated above half engine speed during the initial five minutes running.
- 23 Ensure all driven sub-assemblies rotate freely before fitting fan/drive belt(s).

COMMISSIONING (ASSY IN-SITU)

- 24 Lubrication - Engines without an oil gallery priming facility or pressure gauge/switch connection.
 - 24.1 Remove sump oil plug and allow any preservation to drain off completely. Refit plug and fill sump with recommended grade of engine oil.
 - 24.2 Rotate engine sufficiently to prime oil galleries and filter (rotation will be brisk as compression does not occur - CI engine pumping losses will therefore be minimal).
 - 24.3 Fit injectors and renew sealing washers.
 - 24.4 Start engine, the oil warning light/pressure gauge should respond almost straight away. Immediately STOP engine and investigate if oil pressure is suspect.
 - 24.5 Check filter bowl for oil leakage.
 - 24.6 After 5 minutes running STOP engine. Allow to stand for a few moments then re-check oil level.
- 25 Lubrication - Engines with a priming facility or pressure gauge/switch connection.
 - 25.1 Remove sump plug and allow any preservative to drain completely.

25.2 Prime system using the correct grade of oil until fresh oil drips from the sump drain hole.

NOTE

Priming should be carried out under a pressure of 8 to 15 lbf/in² to prevent air locks. Priming rigs can be manufactured locally, the basic requirements being an oil container, flexible pipe, suitable connectors, a hand or power operated pump and a pressure gauge.

25.3 Remove rig and refit priming plug/gauge connection. Refit drain plug and fill sump with recommended grade of oil.

25.4 Action Para 24.2 to 24.6 inclusive.

COMMENT(S) ON AESP*

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Senders Reference	BIN Number	Date
AESP* Title: PROCEDURE FOR THE DEPRESERVATION AND COMMISSIONING OF ENGINES		
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If you require more space please use the reverse of this form or a separate piece of paper. Comment(s):		

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Incorporate comment(s) in future amendments		No action required
Remarks		

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