



11-2. Fluorescent Penetrant Inspection

Perform this inspection on all cleaned, aluminum or non-ferrous metal parts, including the parts listed below in accordance with ASTM E1417, E1208, E1209, E1219, and Type 1 Fluorescent Penetrant Method A, B, C, or D. For accurate results, parts should free of paint and all foreign substances, such as carbon, dirt, grease, oil, soot, varnish, gum, and paint. Inspection shall be performed by personnel certified to Level II using methods approved by a Level III certified inspector.

Table 11-1. Parts Requiring Fluorescent Penetrant Inspection

Inspect:	Pay particular attention to:
<ul style="list-style-type: none"> • Accessory case, including oil pump cavity • Accessory drive housing • Brackets (non-ferrous) • Crankcase halves • Cylinder heads • Engine mounts • Induction manifolds • Induction risers • Induction tubes • Intake/exhaust valves • Oil cooler mount • Oil filter adapter • Oil sumps (non-ferrous) • Starter adapter housings 	<ul style="list-style-type: none"> • Areas where oil seals or bushings are pressed in or seated • Bearing bosses • Area between cylinder head cooling fins • Areas surrounding through-bolt holes • Crankcase/crankshaft exit area • Cylinder-to-barrel mating area • Intake and exhaust flanges • Intake and exhaust ports • Oil pump cavity area mounting flanges • Mounting and attaching areas where hardware has been previously torqued • Rocker boss areas • Shaft bores • Valve seat insert areas • Valve guide areas

1. Inspect non-ferrous parts for the following conditions:
 - a. Cracks, or indications of the start of cracks
 - b. Unauthorized grinding encountered after the manufacturing process.
 - c. Unauthorized welding

Unless the overhaul repair instructions in the Maintenance and Overhaul (or Overhaul) Manual contains specific instructions to remedy unsatisfactory conditions discovered during the inspection, discard parts which exhibit any of the conditions described in steps 1a through 1c.

2. Look for indications which break into corners, edges, holes, or fillets on parts. Identify parts that contain linear indications; repair is authorized by licensed repair station only.
3. Follow the fluorescent penetrant manufacturer's instructions for the equipment and materials used to perform the inspection regarding use, safety data, and disposal.
4. Label each part's inspection status and required action.
5. Follow the fluorescent penetrant manufacturer's instructions to remove penetrant residue from the inspected, serviceable parts.



11-3. Magnetic Particle Inspection

Prior to performing a Magnetic Particle Inspection, verify the parts are clean and free of carbon, dirt, grease, oil, soot, varnish, gum, and paint. Plating shall not be intentionally removed.

CAUTION: Prior to Magnetic Particle Inspection, ensure that the parts have been thoroughly cleaned and dried according to the instructions in of the Maintenance and Overhaul (or Overhaul) Manual.

The Magnetic Particle Inspection must be performed by a certified technician on cleaned, ferrous parts according to ASTM E1444 using the wet continuous method and full wave rectified alternating current and fluorescent particles. Follow the particular magnetic particle media manufacturer's instructions regarding use, safety data, and disposal. Inspection shall be performed by personnel certified to Level II using methods approved by a Level III certified inspector.

1. Follow the equipment and materials manufacturer's instructions to perform the inspection regarding use, safety data, and disposal. Use the corresponding method of magnetization and amperage listed in Table 11-2. Perform circular, followed by longitudinal inspection.
2. Inspect parts for the following conditions:
 - a. Cracks or indications of the start of cracks
 - b. Unauthorized grinding encountered after the manufacturing process
 - c. Pits

Unless the Maintenance and Overhaul (or Overhaul) Manual contains specific instructions to remedy unsatisfactory conditions discovered during the inspection, discard parts which exhibit any of the conditions described in steps 2a through 2c.

3. Record repair or replacement requirements.
4. Look for linear indications which may break into corners, edges, holes, thread roots, fillets, gear tooth roots or keyways on parts. Identify parts which contain relevant linear indications which cannot be reworked.
5. Label parts which fail inspection as such; indicate reason for failure and if repair or replacement action is required. Repair is authorized by licensed repair station only.
6. Demagnetize the parts to less than 3 gauss.
7. Clean the inspected parts thoroughly according to the "Engine Cleaning" instructions in Chapter 12.

CAUTION: When utilizing compressed air, wear OSHA approved protective eye wear. Never exceed 30 psi when using compressed gases for cleaning purposes (OSHA 1910.242(b)). Dry the parts with compressed air.

8. Dry the parts with compressed air.