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# Service Letter

## 1100 Series Crankshaft Timing Ring

5 Issue 1  
June 2012

This Service Letter is a Product Support Program (PSP) for the replacement of the crankshaft timing ring and associated components on certain four cylinder engines, model NJ for the affected product that is listed in table 1.

### Notes:

- The campaign number is C12/032.
- The termination date for the campaign is the 30th June 2013.
- The information supplied in this Service Letter may not be valid after the termination date of this program. Do not perform the work outlined in this Service Letter after the termination date without first contacting your Perkins product support representative.

### Problem

There have been a number of isolated instances of issues with the crankshaft timing ring (Perkins part number 3116L022). These issues may cause the engine to operate erratically or may cause the engine to stop. The engine may not restart.

**Affected Product****Table 1**

NJ38698U109056V	NJ38698U111183V	NJ38698U111187V	NJ38698U111190V
NJ38698U111192V	NJ38698U111209-111211V	NJ38698U111899-111903V	NJ38698U111904V
NJ38698U111905V	NJ38698U111906V	NJ38698U-111908V	NJ38698U111910V
NJ38698U111911V	NJ38698U111913V	NJ38698U111914-111916V	NJ38698U112572V
NJ38698U112574-112575V	NJ38698U113310V	NJ38698U113314V	NJ38698U113316-113318V
NJ38698U113320-113322V	NJ38698U113324V	NJ38698U113327V	NJ38698U113329-113331V
NJ38698U113332V	NJ38698U113333-113334V	NJ38698U113336V	NJ38698U113338V
NJ38698U113787-113790V	NJ38698U114017-114028V	NJ38698U114029-114030V	NJ38698U114031-114032V
NJ38698U114034-114037V	NJ38698U114039-114040V	NJ38698U114043-114047V	NJ38698U114049V
NJ38698U114050V	NJ38698U114052-114056V	NJ38698U114057V	NJ38698U114059-114061V
NJ38698U114062V	NJ38698U114540-114541V	NJ38698U114543V	NJ38698U114545V
NJ38698U114547V	NJ38698U114548-114549V	NJ38698U114550-114551V	NJ38698U114552V
NJ38698U114960-114965V	NJ38698U115461V	NJ38698U115463-115466V	NJ38698U115464V
NJ38698U115468V	NJ38698U115470-115475V	NJ38698U115477V	NJ38698U115850V
NJ38698U116213-116219V	NJ38698U116221-116224V	NJ38698U116226V	NJ38698U116607-116609V
NJ38698U116611-116612V	NJ38698U116614V	NJ38698U116616V	NJ38698U116964-116971V
NJ38698U116973-116974V	NJ38698U116975V	NJ38698U116977-116979V	NJ38698U116982-116984V
NJ38698U116986V	NJ38698U116989-116990V	NJ38698U117765V	NJ38698U117766-117767V
NJ38698U117769V	NJ38698U117771-117775V	NJ38698U117778-117780V	NJ38698U117782-117791V
NJ38698U117793-117794V	NJ38698U117797-117801V	NJ38698U118026V	NJ38698U118027V
NJ38698U118028V	NJ38698U118030V	NJ38698U118216-118217V	NJ38698U118220-118222V
NJ38698U118224-118232V	NJ38698U118234V	NJ38698U118235V	NJ38698U118239V
NJ38698U118240V	NJ38698U118241V	NJ38698U118243V	NJ38698U118244-118245V
NJ38698U118248-118252V	NJ38698U118307V	NJ38698U118310V	NJ38698U118381-118383V
NJ38698U118385-118386V	NJ38698U118390-118395V	NJ38698U118490V	NJ38698U118492-118496V
NJ38698U118498-118503V	NJ38698U118504V	NJ38698U118505V	NJ38698U118620-118622V
NJ38698U118624V	NJ38698U118625-118626V	NJ38698U118627-118628V	NJ38698U118629V
NJ38698U118631-118634V	NJ38698U119052V	NJ38698U119055V	NJ38698U119057-119064V
NJ38698U119066-119069V	NJ38698U119072-119073V	NJ38698U119075V	NJ38698U119077-119080V
NJ38698U119082V	NJ38698U119084-119085V	NJ38698U119087V	NJ38698U119089-119091V
NJ38698U119093V	NJ38698U119324-119325V	NJ38698U119327V	NJ38698U119329-119330V
NJ38698U119406-119407V	NJ38698U119450-119455V	NJ38698U119457V	NJ38698U119462V
NJ38698U119464V	NJ38698U119545V	NJ38698U119546V	NJ38698U119548V
NJ38698U119551-119553V	NJ38698U119555V	NJ38698U119557V	NJ38698U119559-119560V
NJ38698U121091V	NJ38698U121302-121303V	NJ38698U121304V	NJ38698U121786-121793V
NJ38698U121795V	NJ38698U121796V	NJ38698U121797V	NJ38698U121798V
NJ38698U121799-121808V	NJ38698U121810-121812V	NJ38698U121814-121815V	NJ38698U121818-121820V
NJ38698U121821V	NJ38698U121822-121824V	NJ38698U122780V	NJ38698U122781-122782V
NJ38698U122784-122789V	NJ38698U123243-123247V	NJ38698U123251-123253V	NJ38698U123255V
NJ38698U123257-123258V	NJ38698U123263-123264V	NJ38698U123266V	NJ38698U123268V
NJ38698U123270V	NJ38698U123882V	NJ38698U123886-123891V	NJ38698U123893-123894V
NJ38698U123896-123903V	NJ38698U124548-124549V	NJ38698U124553V	NJ38698U124555-124556V
NJ38698U124558-124561V	NJ38698U124563V	NJ38698U124935-124938V	NJ38698U124942-124943V
NJ38698U124947-124959V	NJ38698U124962-124964V	NJ38698U125655-125662V	NJ38698U126100-126101V
NJ38698U126104-126105V	NJ38698U126107-126118V	NJ38698U126590V	NJ38698U126591-126593V

NJ38698U126595-126608V	NJ38698U126609V	NJ38698U126610-126619V	NJ38698U126883V
NJ38698U126884V	NJ38698U126886V	NJ38698U126887-126899V	NJ38698U127628-127630V
NJ38698U127632-127635V	NJ38698U127637V	NJ38698U127639V	NJ38698U127880-127881V
NJ38698U127891V	NJ38698U128147-128154V	NJ38698U128699V	NJ38698U129379V
NJ38698U129381V	NJ38698U129383-129384V	NJ38698U130433V	NJ38698U130443V
NJ38698U130793V	NJ38698U130797-130798V	NJ38698U131287V	NJ38698U133262-133266V
NJ38698U133268-133275V	NJ38698U133277-133291V	NJ38698U134552V	

## Repair Time Schedule

**Note:** There is a standard 15 hours for all three solutions in order to remove and install an engine. In addition to this time, the following times will apply to each solution.

For solution 1, the total labour allowance will be 2 hours.

For solution 2, the total labour allowance will be 8 hours.

For solution 3, the total labour allowance will be 16 hours.

## Solutions

There are three possible solutions regarding the issue with the crankshaft timing ring. Select the solution that is relevant to the situation. Certain parts are required in order to conduct the repairs. Refer to table 2 for the relevant parts.

Table 2		
Part Number	Part Description	Qty
3681K036	Gasket - Sump	1
2418F704	Seal - REOS Housing	1
3116L022	Crankshaft Timing Ring	1
2316T244	Screw	3
3313A036	Timing Ring Dowel	1
3682A011	Gasket - Water Pump	1
3789A005	Gasket - Bypass Tube	1
3681P046	Gasket - Front Cover	1
3681P053	Gasket - Front Housing	1
2418F437	Seal - Front End Oil Seal	1
3525A217	Pipe - Fuel Injection Pump	1
ZZ90241	Crankshaft Kit	1

### Solution 1: No Damage to the Crankshaft Timing Ring

- 1 Remove crankshaft rear seal. Refer to Disassembly and Assembly, 'Crankshaft Rear Seal - Remove' for the correct procedure.
- 2 Remove engine oil pan. Refer to Disassembly and Assembly, 'Engine Oil Pan - Remove and Install' for the correct procedure.
- 3 Inspect the crankshaft timing ring for loose screws, wear or for damage. If the crankshaft timing ring is worn or damaged, proceed to 'Solution 2: Damage to the Crankshaft Timing Ring'. If the crankshaft timing ring is not worn or not damaged, proceed to step 4.



- 4 Remove the flywheel housing to improve access. Refer to Disassembly and Assembly, 'Flywheel Housing - Remove and Install' for the correct procedure.
- 5 The engine should be mounted on a suitable stand and placed in the inverted position.
- 6 Remove the suction pipe. Refer to Disassembly and Assembly for the correct procedure.
- 7 Remove the bridge piece. Refer to Disassembly and Assembly for the correct procedure.
- 8 Rotate the crankshaft in the normal direction of rotation until a screw for the crankshaft timing ring is visible.
- 9 Remove the existing screw for the crankshaft timing ring. Discard screw. Inspect the threaded hole in the crankshaft for debris. Clean the threaded hole in the crankshaft.
- 10 Install the new screw to the crankshaft timing ring. Tighten the screw to a torque of 15 Nm (11 lbf/ft) 1.5 kgf m.
- 11 Repeat steps 8 to 11 for the remaining screws. Ensure that there is no gap between the crankshaft and the timing ring.
- 12 Install the bridge piece. Refer to Disassembly and Assembly for the correct procedure.
- 13 Install the suction pipe. Refer to Disassembly and Assembly for the correct procedure.
- 14 Install the flywheel housing. Refer to Disassembly and Assembly, 'Flywheel Housing - Remove and Install' for the correct procedure.
- 15 Install engine oil pan. Refer to Disassembly and Assembly, 'Engine Oil Pan - Remove and Install' for the correct procedure.
- 16 Install crankshaft rear seal. Refer to Disassembly and Assembly, 'Crankshaft Rear Seal - Remove' for the correct procedure.

## Solution 2: Damage to the Crankshaft Timing Ring

- 1 With the crankshaft rear seal and engine oil pan removed, inspect the crankshaft timing ring for wear or for damage.
- 2 Remove the existing crankshaft timing ring. Refer to Disassembly and Assembly, 'Crankshaft Timing Ring - Remove and Install' for the correct procedure.
- 3 Inspect the threaded holes in the crankshaft for wear or for damage. If the threaded holes in the crankshaft are worn or damaged, proceed to 'Solution 3: Damage to the Crankshaft'. If the threaded holes in the crankshaft are not worn or not damaged, proceed to step 4.
- 4 Clean the threaded holes in the crankshaft. Install new timing ring to the crankshaft. Install the new setscrews to the crankshaft assembly. Tighten the setscrews to a torque of 15 Nm (11 lbf/ft) 1.5 kgf m. Ensure that there is no gap between the crankshaft and the timing ring.
- 5 Install the crankshaft to the engine. Refer to Disassembly and Assembly, 'Crankshaft - Install' for the correct procedure.
- 6 Inspect the engine oil pump and balancer (if equipped) for wear or for damage. Refer to Systems Operation Testing and Adjusting, 'Engine Oil Pump - Inspect' for the correct procedure.

## Solution 3: Damage to the Crankshaft

- 1 If the threaded holes in the crankshaft are worn or damaged, replace the crankshaft.
- Note:** If necessary, degrease the threaded holes in the new crankshaft.
- 2 Install new timing ring to the new crankshaft. Install the new setscrews to the crankshaft assembly. Tighten the setscrews to a torque of 15 Nm (11 lbf/ft) 1.5 kgf m. Ensure that there is no gap between the crankshaft and the timing ring.
  - 3 Install the new crankshaft to the engine. Refer to Disassembly and Assembly, 'Crankshaft - Install' for the correct procedure.

- 4** Inspect the engine oil pump and balancer (if equipped) for wear or for damage. Refer to Systems Operation Testing and Adjusting, 'Engine Oil Pump - Inspect' for the correct procedure.
- 5** Check the piston heights of the cylinders. Refer to Systems Operation Testing and Adjusting, 'Piston Height - Inspect' for the correct procedure.
- 6** If necessary, replace the connecting rods. Refer to Disassembly and Assembly for the correct procedure.