Technical Data

000	General engine data	F3L 914	F4L 914	F5L 914	F6L 914	BF3L 914/T	BF4L 914/T	BF6L 914 C/T
001	Engine weight according to DIN 70020-A approx. kg	277	307	380	430	320	350	485/510
002	Total engine volume cm^3	3.236	4.314	5.393	6.472	3.236	4.314	6.472
003	Bore mm	102						
004	Stroke mm	132						
005	Direction of rotation	When facing flywheel counter-clockwise						
006	Rated speed max. min^{-1}	2.500 to 2.800						
007	Minimum idle speed min^{-1}	650 to 700						
008	Working cycle	Four-stroke diesel						
009	Combustion system	Direct injection						

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Checking the compression pressure

Tools

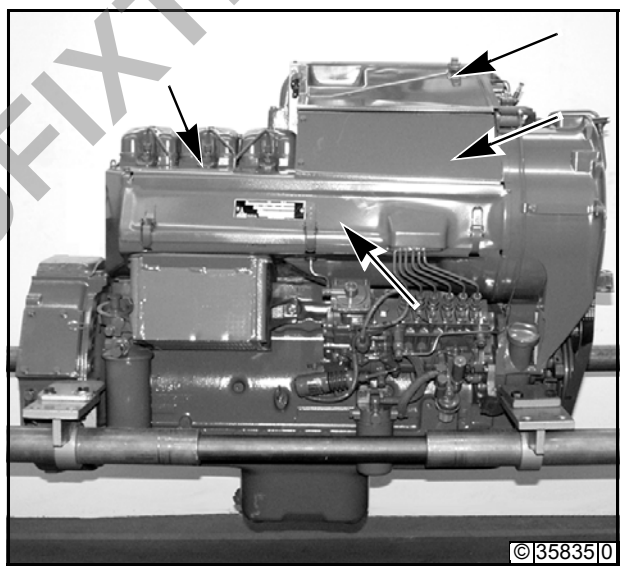
- Commercial tools
  - Compression pressure tester _____8005
  - Claw wrench _____8018
- Special tools
  - Connector _____ 100 140
  - Extractor _____ 110 030
  - Extracting device _____ 120 630
  - Extracting device _____ 150 800

References

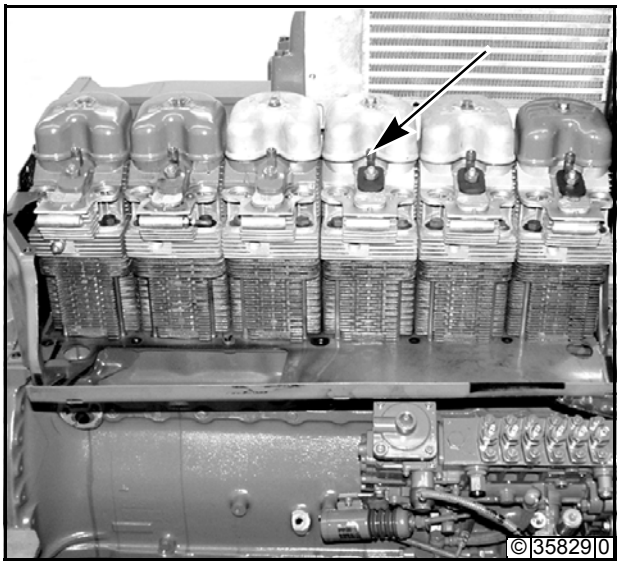
- W 1-1-1
- W 7-3-1

Disassembly

- Remove cooling air guide sheets.



- Check valve clearance, adjust if necessary - see work card **W 1-1-1**.
- Remove injection lines - see work card **W 7-3-1**.
- Remove all injectors.



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2

910	Table for bolt tightening torques	Initial tightening torque Nm	Initial tightening torque Final tightening torque Nm
910	Injector fastening	25 to 30 Nm + 5 Nm	
911	Intermediate gear bearing bolt	27 Nm to 33 Nm	30° + 30°
912	Nut on injection pump drive	80 Nm + 10 Nm	
913	Positioning bolt sleeve on injection pump	40 Nm to 50 Nm	
914	Injection valve cap nut	30 Nm +10 Nm	
915	Pipe clip injection lines	9 Nm	
916	Rocker arm nut	28 Nm + 3 Nm	
917	Cylinder head cover bolt	12 ±1.3 Nm	
918	Sealing nut for blower	50 Nm	90°

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900	Table for bolt tightening torques	Initial tightening torque Nm	Final tightening angle ° / Final tightening torque Nm
901	Bolts for filter bracket and change-over housing	25 Nm	50 Nm + 5 Nm
902	Cylinder head bolts	30 Nm to 45 Nm	45° + 45° + 45° + 30°
903	Connecting rod bolts	20 Nm to 30 Nm	60° + 30°
904	Main bearing bolts	20 Nm to 30 Nm	60° + 45°
905	Flywheel bolts	30 Nm	M10 x 1 x 30-50 = 60° M10 x 1 x 55-60 = 60° + 30° M10 x 1 x 75-80 = 60° + 60°
908	V-belt pulley bolt	50 Nm	210°
909	V-belt pulley nut	M8 = 21 Nm M10 = 40 Nm	

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Removing and refitting the cylinder head

Tools

- Commercial tools
  Torque wrench
- Special tools
  Socket wrench for
  cylinder head bolts _____ 120 040
  Spring compressor _____ 125 310

References

- W 1-2-2
- W 6-1-5
- W 7-3-1
- W 7-7-1

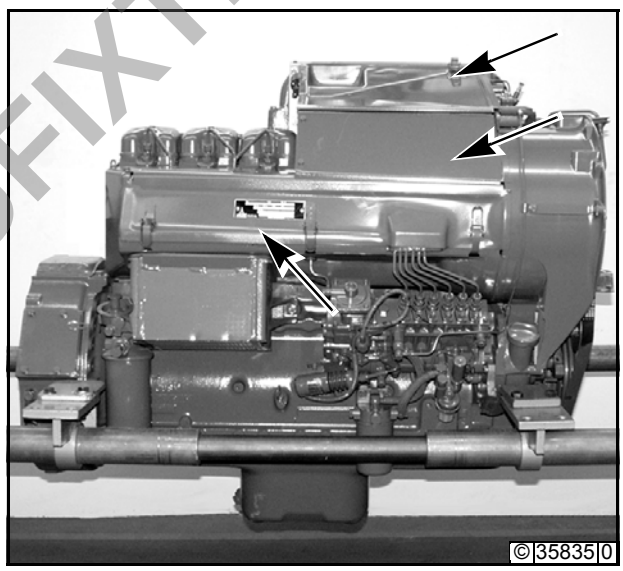
Auxiliary aids

- DEUTZ KL 8

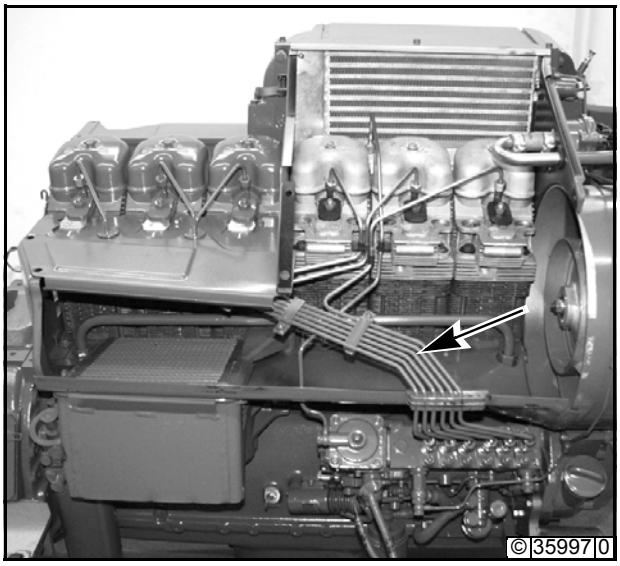
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Remove cylinder head

● Remove cooling air guide sheets.



● Remove injection lines.



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0 Introduction

Editorial, foreword, quick access, contents

1 User instructions

1.1 General

1.2 Regulations

1.3 Operating instructions and workshop manual

1.4 Work cards

1.5 Key to symbols

2 Technical Data

3 Work cards

3.1 Overview work cards, alphabetical

3.2 Overview work cards, numerical

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Foreword

1

DEUTZ engines have been developed for a broad range of applications. The extensive range of models available ensures that each particular requirement can be fulfilled.

The engine is equipped for the specific installation conditions, that means that not all parts and components described in this documentation are actually built onto your engine.

We have tried to point out these differences so that can easily find the operating, maintenance and repair specifications relevant to your engine.

Should you have any further questions, please do not hesitate to contact us.

Yours

DEUTZ AG

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423	Drive system	F3L 914	F4L 914	F5L 914	F6L 914	BF3L 914/T	BF4L 914/T	BF6L 914 C/T
423	Axial end float normal 2nd ring Double trapezoid ring mm	0.1						
424	Wear limit mm	0.15						
425	Axial end float normal 3rd ring Bevel-edge slotted oil ring mm	0.04 to 0.072						
426	Wear limit mm	0.15						
429	Gap clearance normal 1st ring mm	0.3 to 0.5						
430	Wear limit mm	0.80						
431	Gap clearance normal 2nd ring mm	0.8 bis 1.0						

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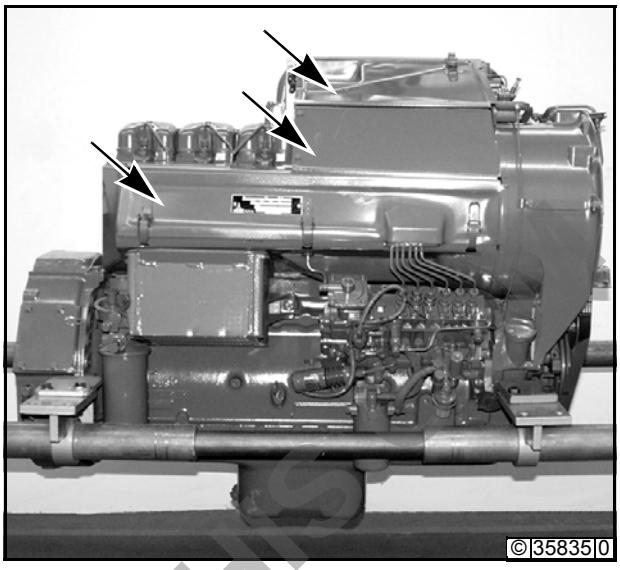
3

Designation of component group / activity	Work card	Maintenance group
Injection pump, removing and remounting	W 7-4-1	Fuel system
Injectors, checking and adjusting	W 7-7-5	Fuel system
Injectors, removing and refitting	W 7-7-1	Fuel system
Oil cooler, removing, remounting and cleaning	W 8-8-2	Lube oil system
Oil pan, removing and remounting	W 8-4-7	Lube oil system
Oil pump, removing and remounting	W 8-4-5	Lube oil system
Oil suction pipe, removing and refitting	W 8-4-6	Lube oil system
Piston and cylinder, removing and refitting	W 3-2-4	Crankcase
Piston crown clearance, measuring	W 1-4-9	Cylinder head
Piston rings and grooves, checking	W 2-10-3	Drive system
Pistons, checking	W 2-9-7	Drive system
Rear cover (opposite to coupling), removing and refitting	W 3-9-1	Crankcase
Rocker arm and rocker arm bracket, removing and refitting	W 1-2-2	Cylinder head
Rotary vibration damper, checking	W 12-2-3	Other components
Rotary vibration damper, removing and remounting	W 12-1-4	Other components
Starter ring gear on flywheel, renewing	W 12-6-3	Other components
Starter, removing and remounting	W 13-3-2	Electrical system
Three-phase alternator and support, removing and remounting	W 13-2-3	Electrical system
Tools, commercial	-	Commercial tools
Tools, special	-	Special tools
Top dead center, checking	W 1-2-5	Cylinder head
Turbocharger, removing and remounting	W 6-6-4	Exhaust system / charging
Valve clearance, checking and adjusting	W 1-1-1	Cylinder head
Valve guide, checking	W 1-6-3	Cylinder head
Valve guide, removing and refitting	W 1-6-2	Cylinder head
Valve recess, checking	W 1-7-8	Cylinder head
Valve seat inserts, removing, refitting and checking	W 1-7-3	Cylinder head
Valves, checking	W 1-5-4	Cylinder head
Valves, removing and refitting	W 1-5-1	Cylinder head
V-belt idler pulley, disassembling and reassembling	W 12-2-5	Other components

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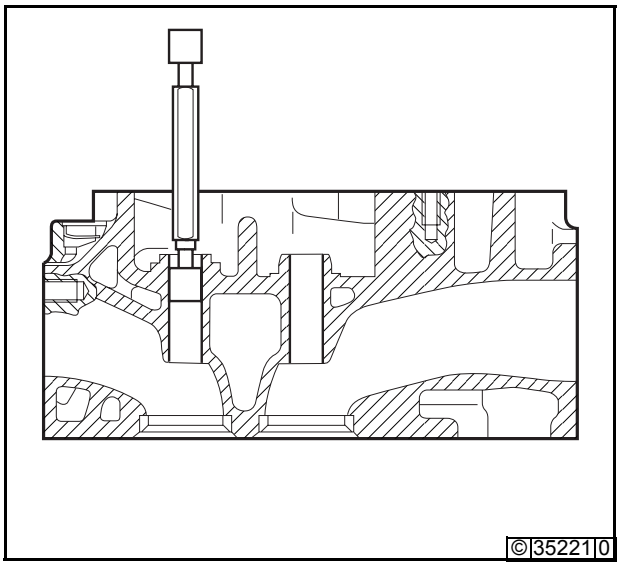
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● Remount cooling air guide sheets.



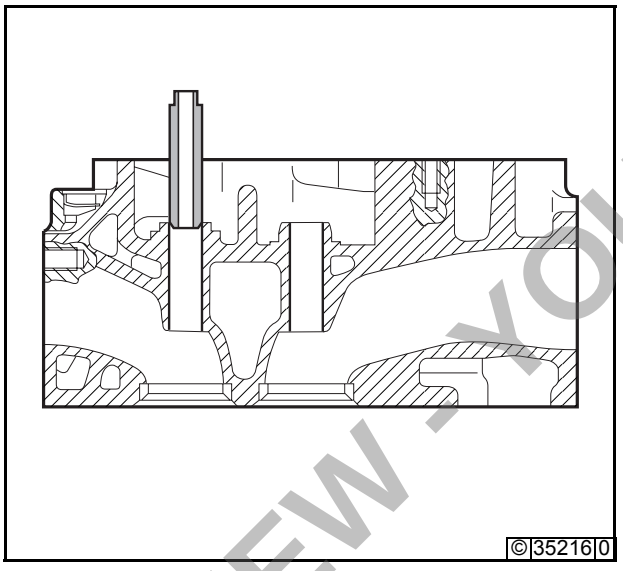
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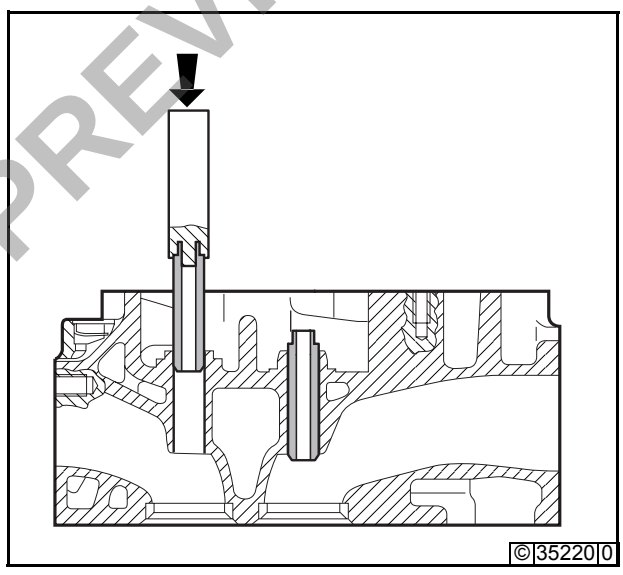
- Before dismounting original parts, the take-up geometry of the valve guides must be gauged with a limit plug gauge and must be within tolerances.

211 212



Install valve guides

- Insert new valve guide from above. The inclined side of the valve guide points towards the cylinder head.



- Carefully force the valve guide in using the assembly mandrel, from top to bottom, until the stop is reached (flush).

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Checking the connecting rod

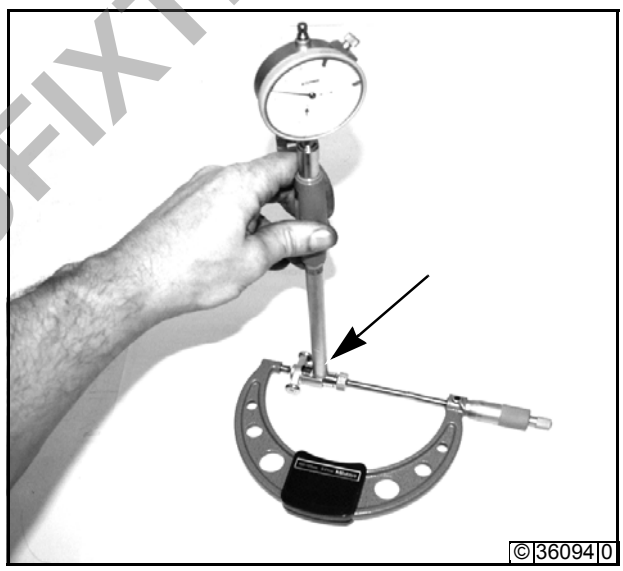
Tools

- Tools
  External micrometer
  Connecting rod testing device
- Special tools
  Dial gauge_____ 100 400

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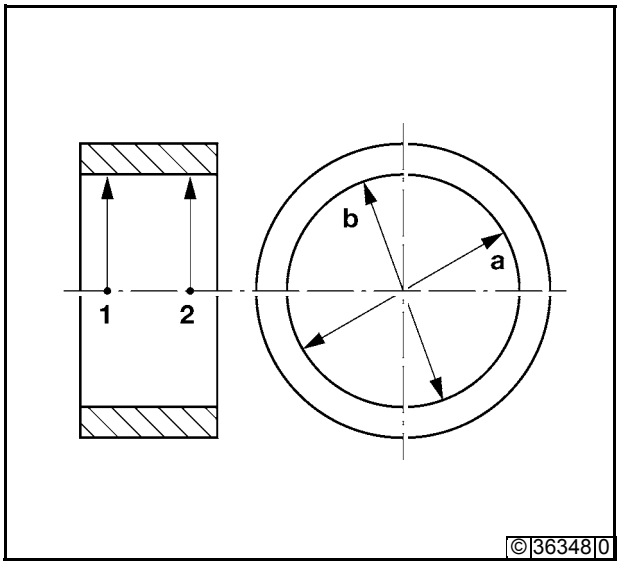
Check small end bush

- Use and set internal dial gauge with tracer pin for measuring range 35 - 45 mm



Note

Gauge small end bush at points "1" and "2" in planes "a" and "b".



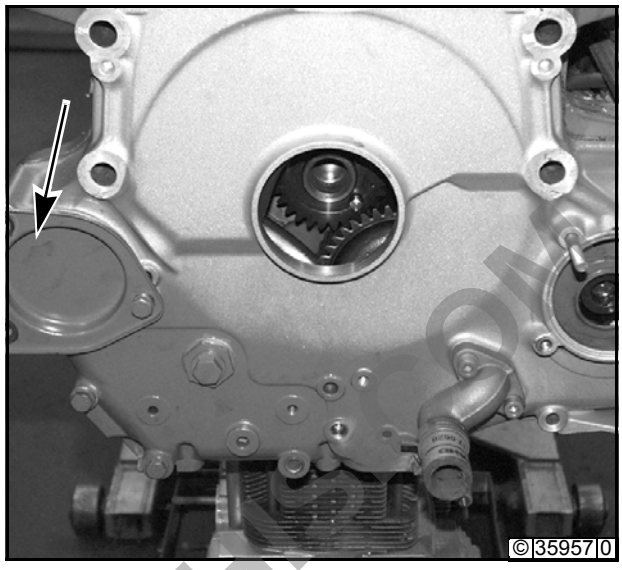
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- Refit front cover with new seal. Tighten bolts.

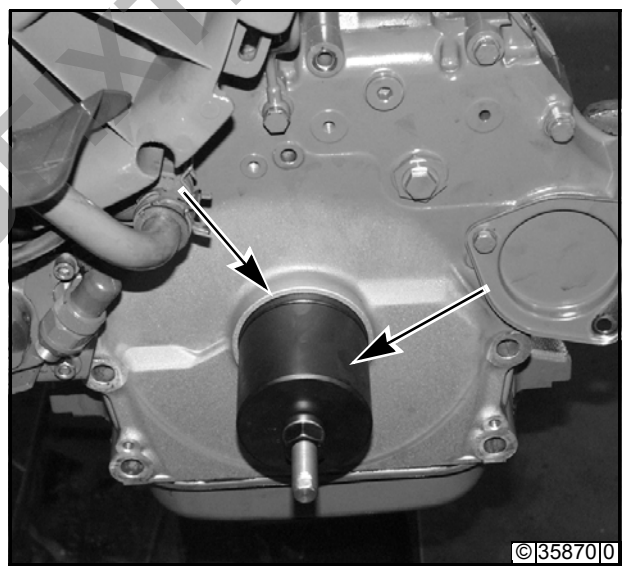
947

- Refit cover with new sealing ring. Tighten bolts.

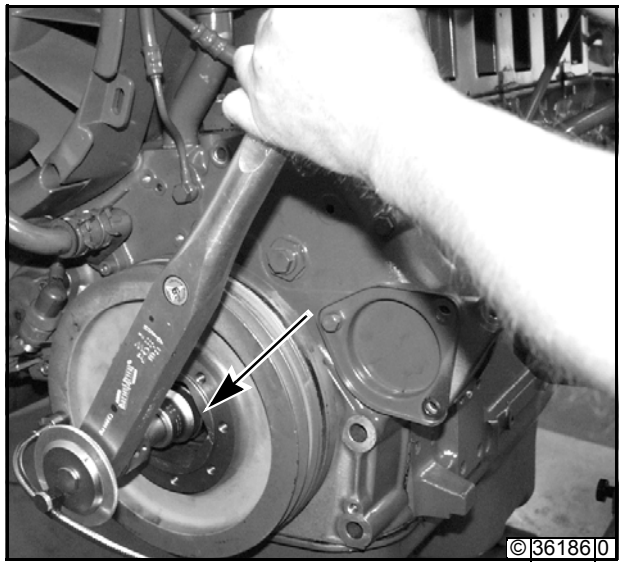
948



- Renew crankshaft seal (opposite end to coupling) of complete engine
  - see work card **W 2-2-4**.



- Refit rotary vibration damper
  - see work card **W 12-1-4**.
- Refit blower
  - see work card **W 9-11-1**.
- Refit three-phase alternator and support
  - see work card **W 13-2-3**.



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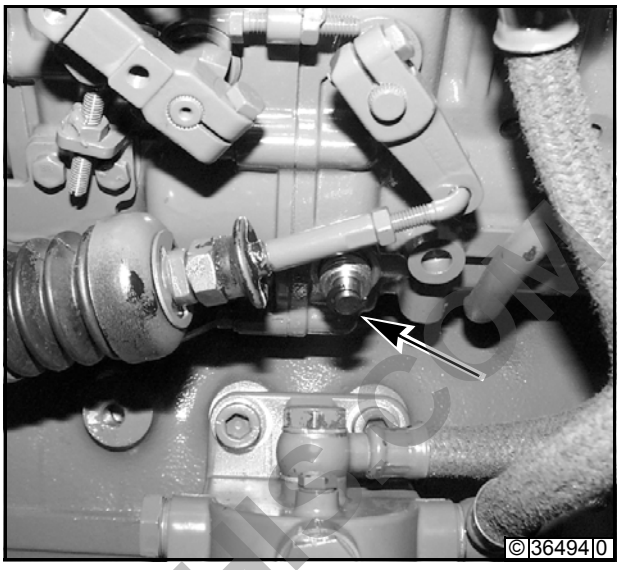
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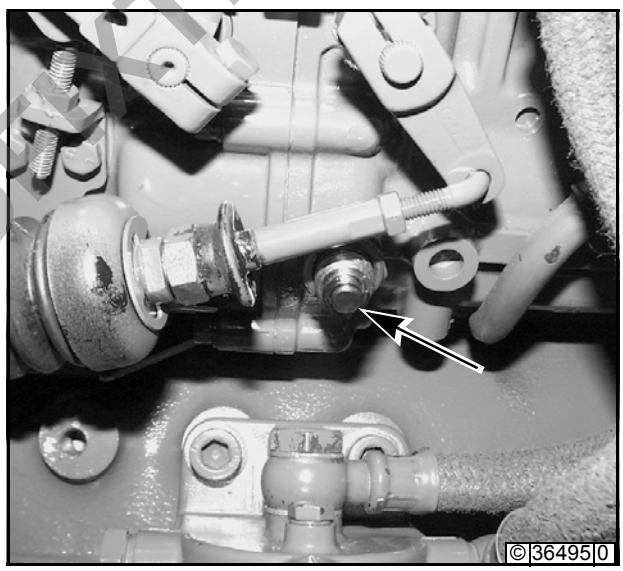
- Insert positioning bolt without compression spring into injection pump.



- Positioning bolt must latch into recess in the injection pump camshaft.

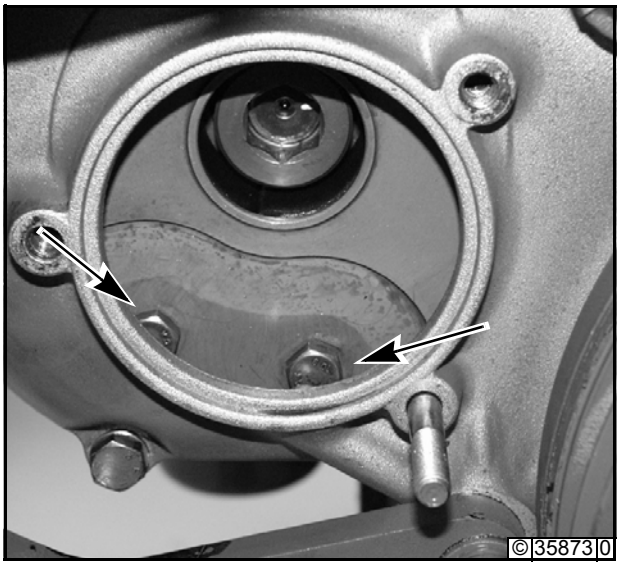
Note
This corresponds to commencement of delivery of 1st cylinder.

- If the positioning bolt does not latch into injection pump camshaft, set commencement of delivery as follows.



Set commencement of delivery

- Undo bolts (four) on injection pump gear/injection timing device.



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- Press in ball bearing over the outer race.



- Insert circlip.



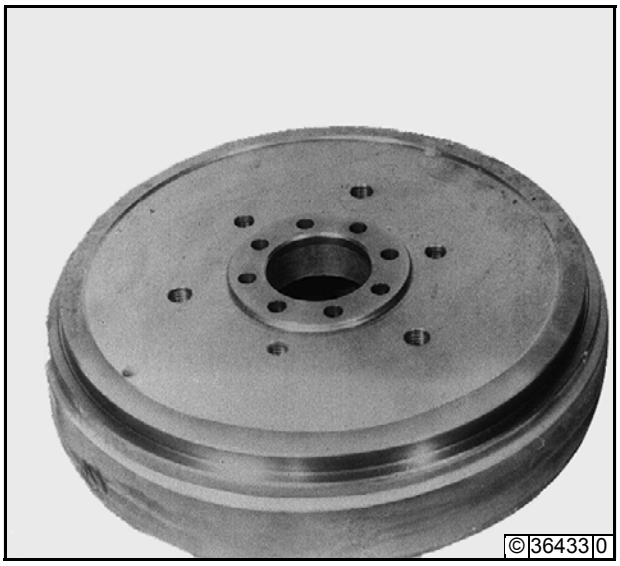
- Guide shaft through shaft seal and press into ball bearing.

Note
Support blower casing on the inner race of the ball bearings.

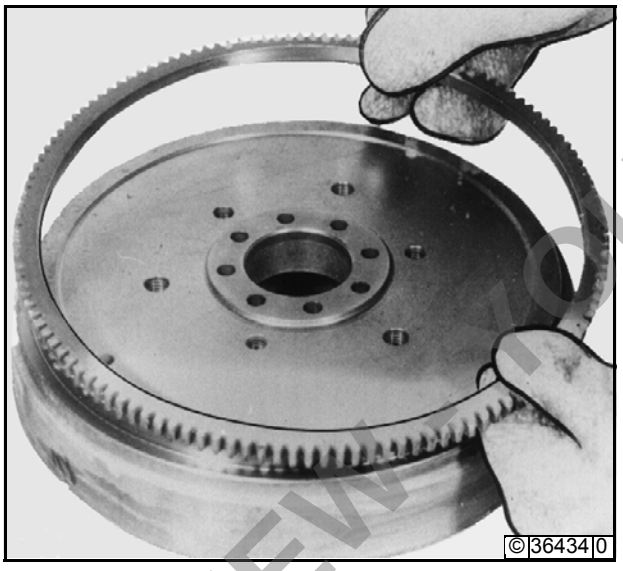


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- Clean flywheel and visually inspect at supporting flange.



Renew starter ring gear

- Heat up new ring gear to max. **210° C**. Place ring gear in position and bring to stop at flange.

Note
Chamfered teeth point away from flywheel.



- Mount flywheel
  - see work card **W 12-6-1**.

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