

ITEM[®]

SHOP MANUAL

**DIESEL ENGINE
MODEL: KUBOTA D1105/V1505**

MANUEL D'ATELIER

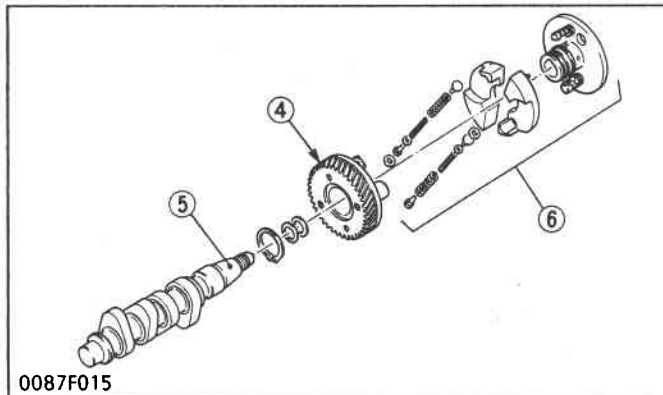
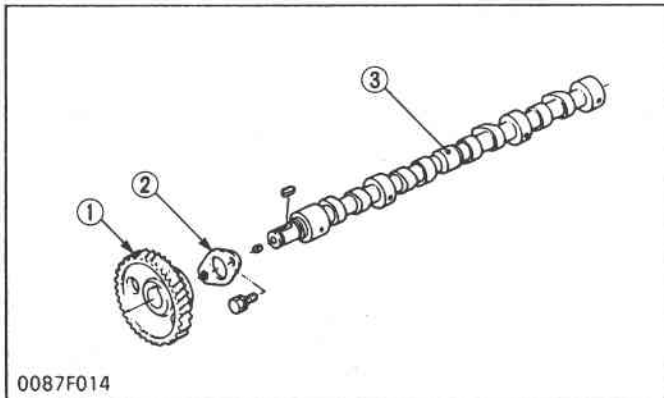
**MOTEUR DIESEL
MODELE: KUBOTA D1105/V1505**

WERKSTATTHANDBUCH

**DIESELMOTOR
MODELL: KUBOTA D1105/V1505**

TOYO UMPANKI CO., LTD.

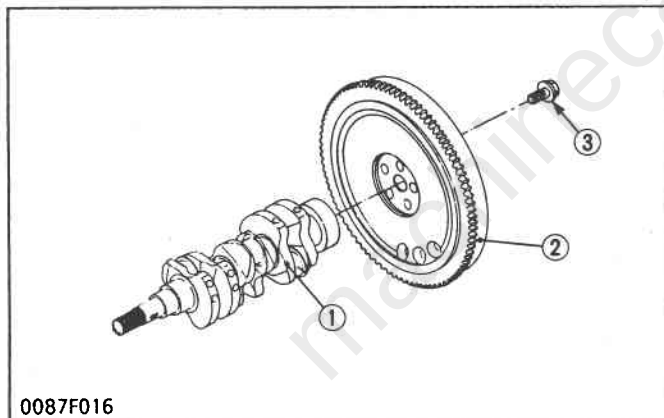
[6] CAMSHAFT



The camshaft (3) is made of special cast iron and the journal and cam sections are chilled to resist wear. The journal sections are force-lubricated. The fuel camshaft (5) controls the reciprocating movement of the injection pump. The fuel camshaft is made of carbon steel and the cam sections are quenched and tempered to provide greater wear resistance.

- (1) Cam Gear
- (2) Camshaft Stopper
- (3) Camshaft
- (4) Injection Pump Gear
- (5) Fuel Camshaft
- (6) Automatic Advance Timer
(not included in the basic model)

[7] FLYWHEEL



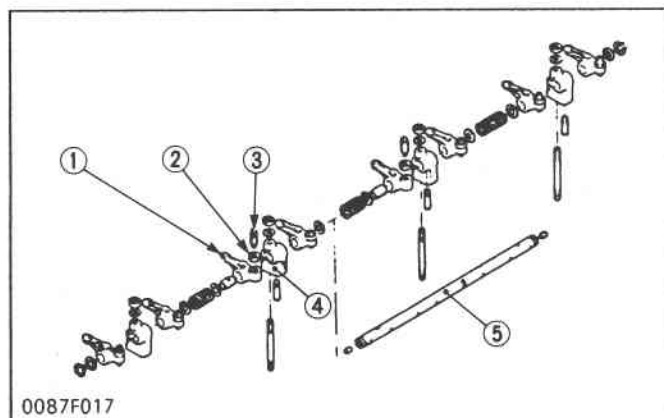
The flywheel stores the rotating force in the combustion stroke as inertial energy, reduces crankshaft rotating speed fluctuation and maintains the smooth rotating conditions.

The flywheel periphery is inscribed with the marks showing and top dead center mark TC.

The flywheel has gear teeth around its outer rim, which mesh with the drive pinion of the starter.

- (1) Crankshaft
- (2) Flywheel
- (3) Flywheel Screw

[8] ROCKER ARM

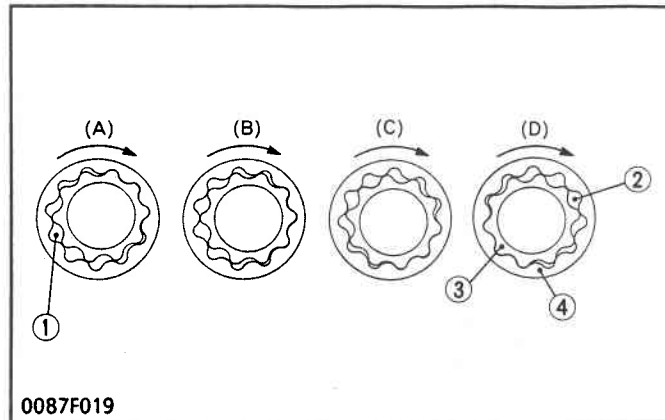


The rocker arm assembly includes the rocker arms (1), rocker arm brackets (4) and rocker arm shaft (5) and converts the reciprocating movement of the push rods to an open/close movement of the inlet and exhaust valves.

Lubricating oil is pressurized through the bracket to the rocker arm shaft, which serves as a fulcrum so that the rocker arm and the entire system are lubricated sufficiently.

- (1) Rocker Arm
- (2) Lock Nut
- (3) Adjusting Screw
- (4) Rocker Arm Bracket
- (5) Rocker Arm Shaft

[2] OIL PUMP



The oil pump in this engine is a trochoid pump.

Inside the pump body, the 10 lobe inner rotor (3) is eccentrically engaged with the 11 lobe outer rotor (4). The inner rotor is driven by the crankshaft, which in turn rotates the outer rotor.

When the inner rotor rotates, the outer rotor also rotates in the same direction.

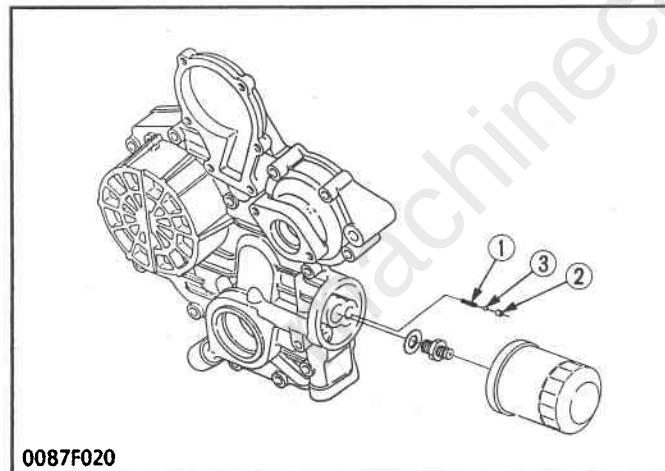
The two rotors have differences in lobe number and center, which generates space between lobes as shown in the figure.

At position (A), there is little space between lobes in the inlet port. As the rotor rotates towards position (B), the space between the lobes becomes larger, creating a negative pressure which sucks in oil.

Outside the inlet port, as shown in position (C), the space between the lobes becomes gradually smaller, and oil pressure increases. At position (D), oil is discharged from the outlet port.

- (1) Inlet
- (2) Outlet
- (3) Inner Rotor
- (4) Outer Rotor

[3] RELIEF VALVE

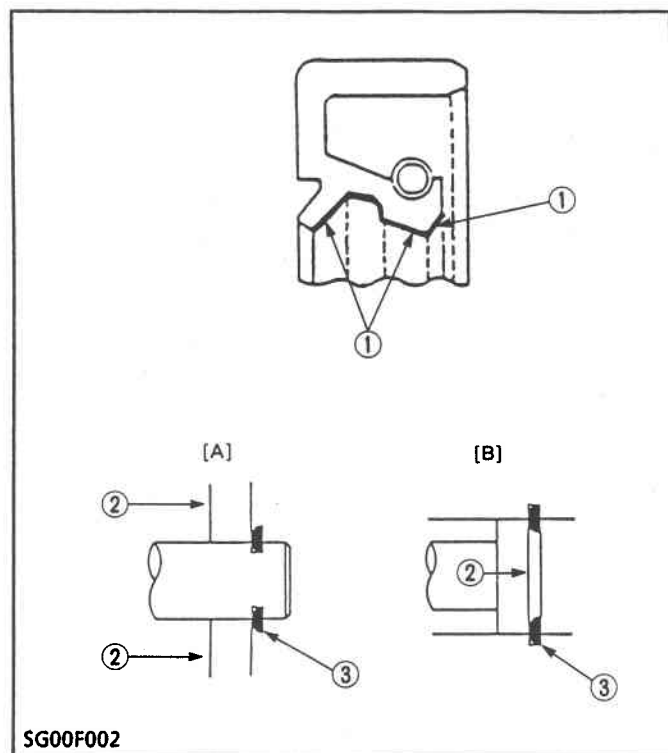


The relief valve prevents the damage of the lubricating system due to high oil pressure. This relief valve is a ball type direct acting relief valve, and is best suited for low pressures.

When oil pressure exceeds the upper limit, the ball (3) is pushed back by the pressure oil and the oil escapes.

- (1) Spring
- (2) Valve Seat
- (3) Ball

[2] GENERAL PRECAUTION



- During disassembly, carefully arrange removed parts in a clean area to prevent confusion later. Screws, bolts and nuts should be replaced in their original position to prevent reassembly errors.
- When special tools are required, use Kubota's genuine special tools. Special tools which are not frequently used should be made according to the drawings provided.
- Before disassembling or servicing live wires, make sure to always disconnect the grounding cable from the battery first.
- Remove oil and dirt from parts before measuring.
- Use only Kubota genuine parts for parts replacement to maintain engine performance and to ensure safety.
- Gaskets and O-rings must be replaced during reassembly. Apply grease to new O-rings or oil seals before assembling.
- When reassembling external or internal snap rings, position them so that the sharp edge faces against the direction from which force is applied.
- Be sure to perform run-in the serviced or reassembled engine. Do not attempt to give heavy load at once, or serious damage may result to the engine.

⚠ CAUTION

- Certain components used in this engine (cylinder head-gasket, exhaust gasket, etc.) contain asbestos. Handle with care according to safety regulation.

- (1) Grease
 (2) Force
 (3) Place the Sharp Edge against the Direction of Force

- [A] External Snap Ring
 [B] Internal Snap Ring

Kipphebel

Teil	Werkdaten	Zulässiger Grenzwert
Spiel zwischen Kipphebelachse und Kipphebel	0,016 bis 0,045 mm	0,10 mm
Kipphebelachse Außendurchmesser	11,973 bis 11,984 mm	–
Kipphebel Innendurchmesser	12,000 bis 12,018 mm	–

Stößel

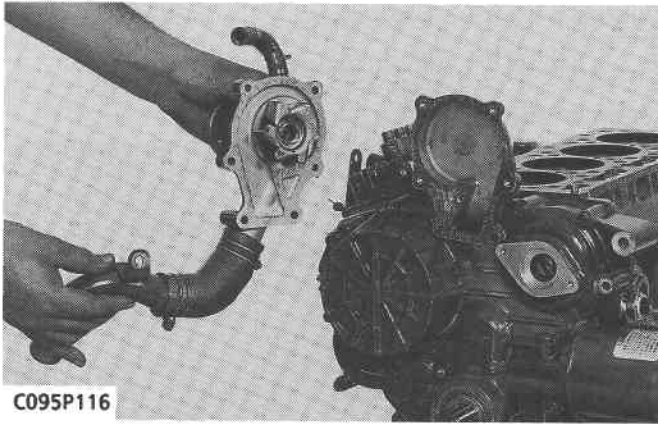
Spiel zwischen Stößel und Führung	0,020 bis 0,062 mm	0,07 mm
Stößel Außendurchmesser	19,959 bis 19,980 mm	–
Stößelführung Innendurchmesser	20,000 bis 20,021 mm	–

Nockenwelle

Seitenspiel der Nockenwelle		0,07 bis 0,22 mm	0,3 mm
Nockenwellenausrichtung		–	0,05 mm
Nockenhöhe	Einlaß	28,80 mm	28,75 mm
	Auslaß	29,00 mm	28,95 mm
Ölspiel der Nockenwelle		0,050 bis 0,091 mm	0,12 mm
Nockenwellenzapfen Außendurchmesser		35,934 bis 35,950 mm	–
Nockenwellenlager Innendurchmesser		36,000 bis 36,025 mm	–

Steuerung

Spiel der Steuerung			
Kurbelgetriebe – Leerlaufgetriebe 1		0,032 bis 0,115 mm	0,15 mm
Leerlaufgetriebe 1 – Nockengetriebe		0,036 bis 0,114 mm	0,15 mm
Leerlaufgetriebe 1 – Einspritzpumpengetriebe		0,034 bis 0,116 mm	0,15 mm
Leerlaufgetriebe 1 – Leerlaufgetriebe 2		0,033 bis 0,117 mm	0,15 mm
Leerlaufgetriebe 2 – Reglergetriebe		0,030 bis 0,117 mm	0,15 mm
Spiel zwischen Leerlaufachse und Leerlaufbuchse			
Leerlaufgetriebe 1		0,020 bis 0,054 mm	0,10 mm
Leerlaufbuchse Innendurchmesser		26,000 bis 26,021 mm	0,10 mm
Leerlaufachse 1 Außendurchmesser		25,967 bis 25,980 mm	–
Leerlaufgetriebe 2		0,020 bis 0,054 mm	0,10 mm
Leerlaufbuchse Innendurchmesser		26,000 bis 26,021 mm	–
Leerlaufachse 2 Außendurchmesser		25,967 bis 25,980 mm	–
Leerlauf – Seitenspiel			
Leerlaufgetriebe 1		0,20 bis 0,51 mm	0,8 mm
Leerlaufgetriebe 2		0,20 bis 0,51 mm	0,8 mm

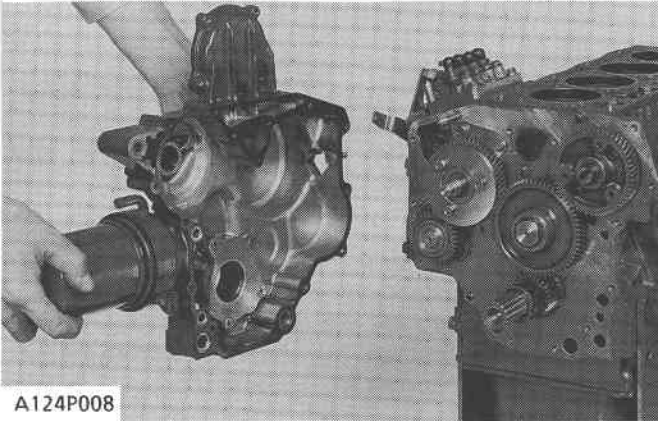


Water Pump

1. Remove the water pump flange.

(When reassembling)

- Apply a liquid gasket (Three Bond 1215 or equivalent) to the both sides of water pump flange gasket.

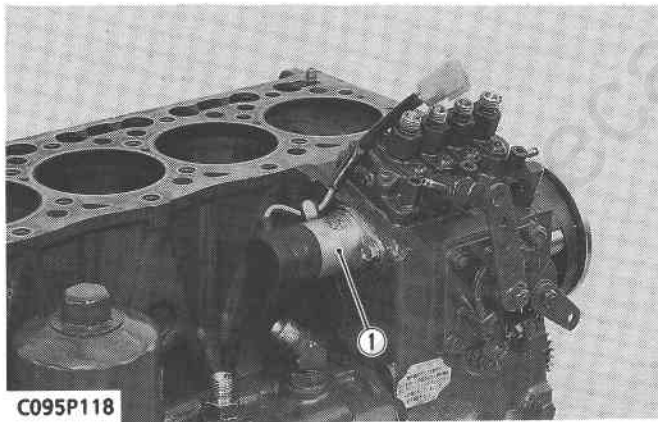


Gear Case

1. Remove the gear case.

(When reassembling)

- Apply a liquid gasket (Three Bond 1215 or equivalent) to both sides of the gear case gasket.
- Grease thinly to the oil seal, and install it, ensuring the lip does not come off.



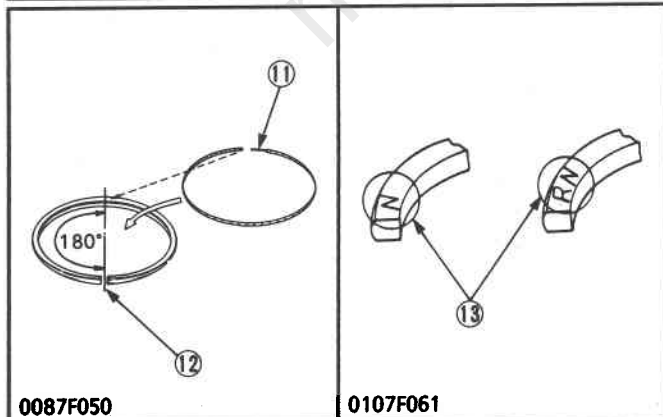
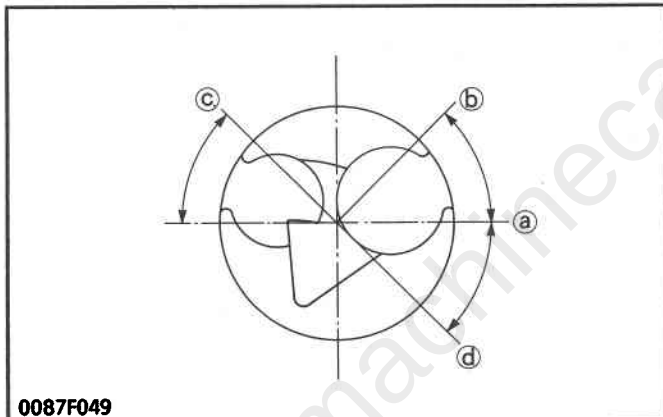
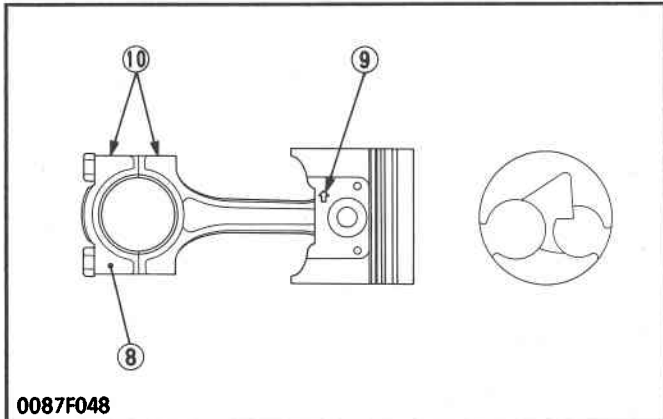
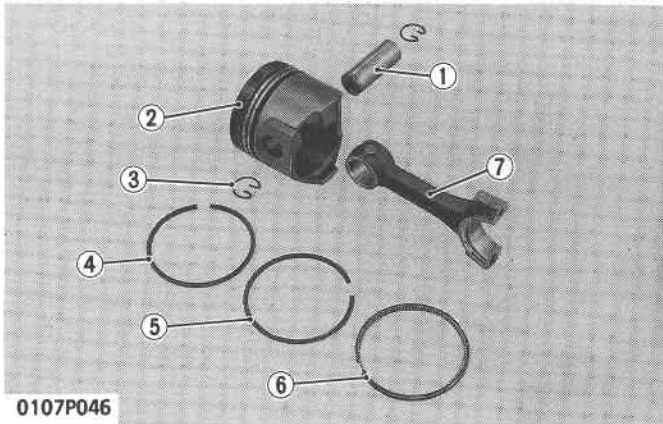
Engine Stop Solenoid

1. Remove the engine stop solenoid (1).

(When reassembling)

- Apply a liquid gasket (Three Bond 1215 or equivalent) to both sides of the solenoid cover gasket.

- (1) Engine Stop Solenoid



Piston Ring and Connecting Rod

1. Remove the piston rings using a piston ring tool.
2. Put the casting mark (↑) (9) on the piston as shown in figure.
3. Remove the piston pin (1), and separate the connecting rod (7) from the piston (2).

(When reassembling)

- When installing the ring, assemble the rings so that the manufacturer's mark (13) near the gap faces the top of the piston.
- When installing the oil ring onto the piston, place the expander joint (11) on the opposite side of the oil ring gap (12).
- Apply engine oil to the piston pin.
- When installing the piston pin, immerse the piston in 80°C (176°F) oil for 10 to 15 minutes and insert the piston pin to the piston.
- When installing the connecting rod to the piston, align the mark (10) on the connecting rod to the casting mark (9).

■ IMPORTANT

- Mark the same number on the connecting rod and the piston so as not to change the combination.

- (1) Piston Pin
 - (2) Piston
 - (3) Piston Pin Snap Ring
 - (4) Compression Ring 1
 - (5) Compression Ring 2
 - (6) Oil Ring
 - (7) Connecting Rod
 - (8) Connecting Rod Cap
 - (9) Casting Mark
 - (10) Mark
 - (11) Expander Joint
 - (12) Oil Ring Gap
 - (13) Manufacturer's Mark
- (a) Piston Pin Hole
 - (b) Top Ring Gap
 - (c) Second Ring Gap
 - (d) Oil Ring Gap

[5] CYLINDRE

Usure de cylindre

1. Mesurer le D.I. du cylindre à six endroits (voir figure) avec un calibre de cylindre, afin de localiser les D.I. maximum et minimum.
2. La différence obtenue entre les D.I. maximum et minimum correspond à l'usure maximale.
3. Si l'usure dépasse la limite de service, aléser et roder jusqu'à la cote du cylindre sur-dimensionné. (Voir "Rectification du cylindre")
4. Effectuer le contrôle visuel pour vérifier si le cylindre présente des rayures.
Si des rayures profondes sont décelées, le cylindre doit être réalésé. (Voir "Rectification du cylindre")

D.I. du cylindre	Valeur de référence	78,000 à 78,019 mm
Usure maximale	Limite de service	0,15 mm

A : Environ 20 mm

B : Environ 40 mm

C : Environ 100 mm

a : Perpendiculaire à l'axe de piston

b : Parallèle à l'axe de piston

Rectification du cylindre

1. Lorsque le cylindre est usé au-delà de la limite de service, aléser et roder jusqu'à la cote du cylindre sur-dimensionné.

D.I. du cylindre sur-dimensionné	Valeur de référence	78,250 à 78,519 mm
Usure maximale	Limite de service	0,15 mm
Surfaçage	1,2 à 2,0 µR max. Roder à ∇∇∇	

2. Avec un cylindre sur-dimensionné, utiliser un piston et des segments sur-dimensionnés de même manière.

Sur-dimension	Nom de la pièce	Référence	Marque
0,5 mm	Piston	16281-2191-0	05 OS
	Ensemble segment	16261-21090	05 OS

■ NOTA

- Quand le cylindre sur-dimensionné est usé au-delà de la limite de service, remplacer le bloc-moteur.

(1) D.I. du cylindre (avant rectification)

(2) D.I. du cylindre sur-dimensionné

[5] ZYLINDER

Zylinderverschleiß

1. Messen Sie den Innendurchmesser des Zylinders an jeweils sechs Stellen (siehe Abbildung) mit einer Zylinderlehre um max. und min. Innendurchmesser zu bestimmen.
2. Bestimmen Sie die Differenz des max. und min. Innendurchmessers. Dies ist der max. Verschleiß.
3. Ist der Verschleiß größer als die zulässigen Grenzwerte, bohren und hohnen Sie der Zylinder auf die größeren Zylinderabmessungen. (Siehe "Berichtigung des Zylinders")
4. Die Zylinderwand auf Kratzer überprüfen.
Wenn tiefe Kratzer festgestellt werden, muß der Zylinder aufgebohrt werden. (Siehe "Berichtigung des Zylinders")

Zylinder I.D.	Werkdaten	78.000 bis 78,019 mm
Max. Verschleiß	Zulässiger Grenzwert	0,15 mm

A : ca. 20 mm

B : ca. 40 mm

C : ca. 100 mm

a : Im rechten Winkel zum Kolbenbolzen

b : Richtung des Kolbenbolzens

Berichtigung des Zylinders

1. Ist der Zylinder über den zulässigen Grenzwert verschlissen, sie gemäß den Werkdaten aufbohren und honen.

Übergröße-Zylinder I.D.	Werkdaten	78,500 bis 78,519 mm
Max. Verschleiß	Zulässiger Grenzwert	0,15 mm
Endbearbeitung	1,2 bis 2,0 µR max. Abziehen auf ∇∇∇	

2. Ein Übergröße-Zylinder muß einen Kolben und Kolbenring der gleichen Übergröße verwenden.

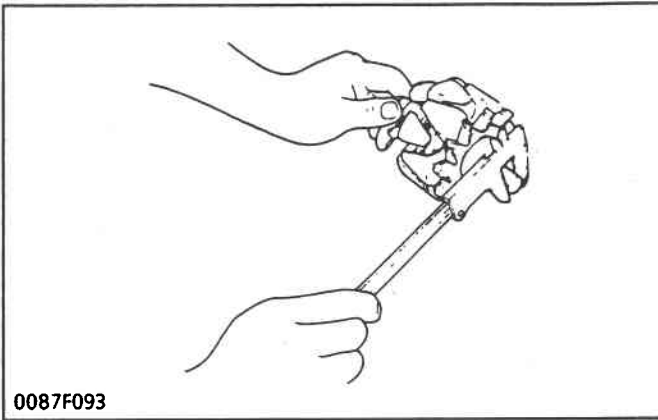
Über-größe	Teilename	Code-Nr	Markierung
05 mm	Kolben	16281-2191-0	05 OS
	Kolbenring-versammlung	16261-21090	05 OS

■ ANMERKUNG

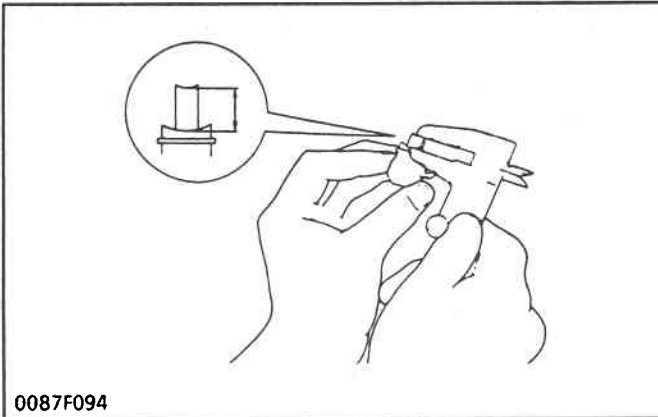
- Ist der Übergröße-Zylinder über den zulässigen Grenzwert hinaus verschlissen, den Zylinderblock austauschen.

(1) Zylinder I.D. (vor der Berichtigung)

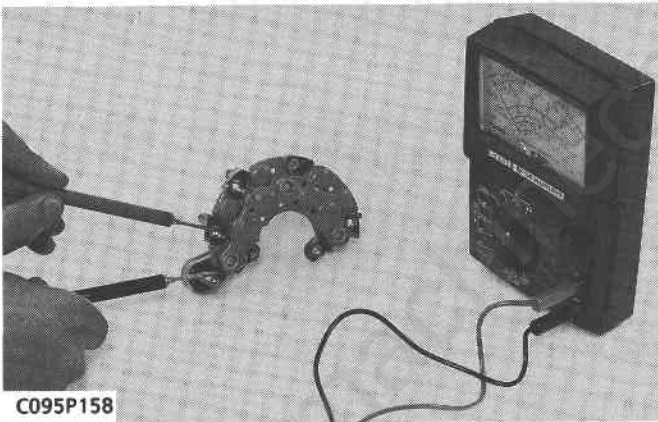
(2) Übergröße-Zylinder I.D

**Slip Ring**

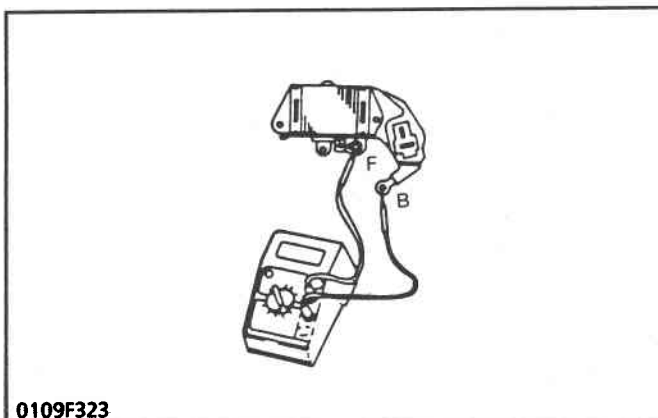
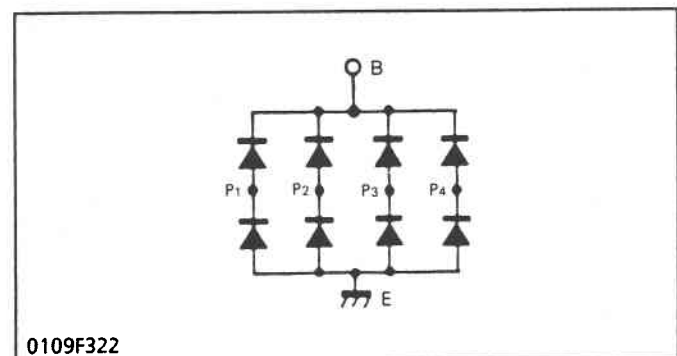
1. Check the slip ring for score.
2. If scored, correct with an sand paper or on a lathe.

**Brush Wear**

1. Check the length of the brush, if the length is shorter than the allowable limit, replace it.
2. Make sure that the brush moves smoothly.
3. If the brush is defective, replace it.

**Rectifier**

1. Check the continuity across each diode of rectifier with an ohmmeter.
2. The rectifier is normal if the diode in the rectifier conducts in one direction and does not conduct in the reverse direction.

**IC Regulator**

1. Check the continuity across the "B" terminal and the "F" terminal of IC regulator with an ohmmeter.
2. The IC regulator is normal if the conducts in one direction and does not conduct in the reverse direction.

Vollversion verfügbar

**Hitachi ZW20, ZW20L Kubota D1105/V1505 Dieselmotor
Werkstatthandbuch (ME-D1105AFX)**

Hitachi ZW20/ZW20L Werkstatthandbuch als PDF mit Reparaturdaten für den Kubota-Motor. Sofort als PDF herunterladen.

VOLLSTÄNDIGES HANDBUCH ANSEHEN

Buch-Nr.: ME-D1105AFX · Seitenzahl: 196 · Dateianzahl: 1 · Sprache: Deutsch