



Customer Service Bulletin Commercial Business Group

Groundsmaster[®] 220-D, 223-D, Greensmaster[®] 3000-D, and Reelmaster[®] 223-D/5100-D

<u>Model/Serial Range:</u>	<u>Model Number:</u>	<u>Service Manual:</u>
	30223/30243/30794	Form 88-712-SL
	04375	Form 89-740-SL
	03500/03501	Form 91-759-SL
	03502/03504	Form 92-796-SL

Subject: Service Manual Corrections.

The Service Manuals listed above include information on 0.25, 0.50, and 0.75 mm oversize pistons. Please note that 0.75mm oversize pistons are listed in error and have never been available. The Service Manual pages that reference 0.75mm oversize pistons in the Specification Section and Cylinder Block Repair Section of the Mitsubishi Diesel Engine chapters should be modified. Modified sample pages are attached as a reference guide.

Engine (cont.)

Item	Standard Specification	Repair Limit	Service Limit
Piston			
Type	Solid		
Material	Aluminum alloy		
Piston Outside Diameter (skirt end)	76 mm (2.99 in.)		
Piston to Cylinder Wall Clearance			0.3 mm (0.012 in.)
Oversize	0.25, 0.50, 0.75 mm (0.01, 0.02, 0.03 in.)		
Protrusion from cylinder block top surface	0.8 mm (0.035 in.)		
Piston Pin			
Type	Semi-floating		
Outside Diameter	18 mm (0.709 in.)		
Pin to Piston Clearance	Press-fit load: 1000 ± 500 lbf (2200 ± 1100 lb.)		
Pin to Connecting Rod Clearance			
Piston Rings			
Number of Rings	No. 1: Chrome plated, semi-keyston No. 2: Tapered		
Oil Compression Ring Width	Chrome plated ring with oil exp. 2 mm (0.079 in.)		
Oil Ring Width	3 mm (0.118 in.)		
Compression Ring Side Clearance (No. 2)	0.05 - 0.08 mm (0.002 - 0.004 in.)		
Oil Ring Side Clearance	0.03 - 0.07 mm (0.001 - 0.003 in.)		
Ring-Gap	0.15 - 0.40 mm (0.006 - 0.016 in.)		
Connecting Rod			
Type	Forged I-beam		
Bend and Twist	Weight 0.25 mm (0.002 in.)		
Big End Thrust Clearance	0.1 - 0.35 mm (0.004 - 0.014 in.)		
Connecting Rod Bearings			
Oil Clearance	0.25, 0.50 mm (0.01, 0.02 in.)		
Crankshaft			
Type	Fully counterbalanced		
Bend	Weight 0.03 mm (0.001 in.)		
End Play	0.05 - 0.175 mm (0.002 - 0.007 in.)		
Journal O.D.	43 mm (1.693 in.)		
Pin O.D.	40 mm (1.575 in.)		
Front Undersize			
Journal U.S. 0.25 mm (0.01 in.)	42.715 - 42.730 mm (1.6817 - 1.6823 in.)		
Journal U.S. 0.50 mm (0.02 in.)	42.465 - 42.480 mm (1.6719 - 1.6724 in.)		
Pin U.S. 0.25 mm (0.01 in.)	39.715 - 39.730 mm (1.5636 - 1.5642 in.)		
Pin U.S. 0.50 mm (0.02 in.)	39.465 - 39.480 mm (1.5537 - 1.5543 in.)		
Main Bearings			
Oil Clearance	0.25, 0.50 mm (0.01, 0.02 in.)		
Undersize			
	0.25, 0.50 mm (0.01, 0.02 in.)		

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Cylinder Block

Before cleaning check the cylinder block for coolant leaks, oil leaks or damage. Clean all parts to remove dirt, oil, carbon deposits and water scale.

Check the cylinder block for cracks or other damage. Check the water jacket for water scale and rust. Replace the cylinder block if necessary.

Measure each cylinder bore size in six locations (Fig. 98). The standard bore diameter is 76 mm (2.99 in.). The cylinder must be rebored and oversized piston and rings installed if the diameter exceeds the standard by 0.7 mm (0.028 in.). Examine the cylinder bore diameter readings to determine the amount of taper in the cylinder. If the taper exceeds 0.01 mm (0.0004 in.), the cylinder must be rebored and oversized piston and rings installed.

IMPORTANT: If one cylinder is rebored, all cylinders must be rebored to the same specifications.

NOTE: See the Specifications section of this chapter for oversize finishing sizes. After machining, install the piston and piston rings corresponding to the rebored cylinder size.

NOTE: When the cylinder bore is worn a small amount and only the piston rings require replacement, check for groove wear in the upper part of the cylinder. Hone the cylinder if necessary.

Reboring Cylinder

- Select a piston:
 - 0.25, 0.50, 0.75 mm (0.01, 0.02, 0.03 in.) oversize
- Measure the piston diameter (Fig. 84).
- Reboring finish dimension = (Piston O.D.) + (Clearance) - (Honing allowance)

Clearance: 0.071 - 0.084 mm (0.0028 - 0.0033 in.)
Honing allowance = 0.02 mm (0.0008 in.)

Figure 98

Cylinder Block Overhaul Page 3 - 66 Rev. B Reelmaster[®] 223-D