



Service Manual

JS200

from machine no. 705001

JS210

from machine no. 705648

JS220

from machine no. 705001

JS240

from machine no. 708001

JS260

from machine no. 708501

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Issue 2

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Torque Specifications JS200/JS240

Component	Nm	kgfm	lb/ft	Remarks
Drive sprocket fastening bolts	267-312	27.2-31.8	196.65-229.91	Apply 262
* Idler wheel installation bolts	267-312	27.2-31.8	196.65-229.91	Apply 262
* Top roller installation bolts	521-608	53.1-62	383.91-448.26	Apply 262
* Bottom roller installation bolts	371-432	37.8-44.1	273.29-318.84	Apply 262
* Recoil unit installation bolts	380-443	38.7-45.2	279.8-326.79	Apply 262
Track shoe bolt	775.1-931.6	77-95	556.71-686.85	Apply 262

Note: Install the drive sprocket with the chamfer to the body side.

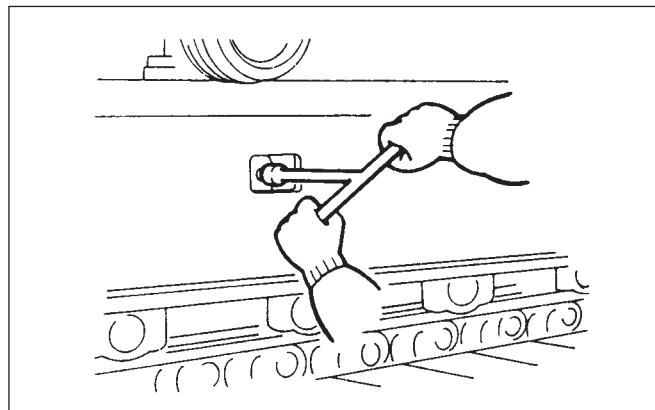
Removal

1. Slacken the check valve to bleed out grease.

WARNING

When opening the check valve always stand to one side and loosen a little at a time until grease starts to come out. If you over-loosen too much grease could spurt out or the valve cover fly out and cause serious injury.

8-3-4-5

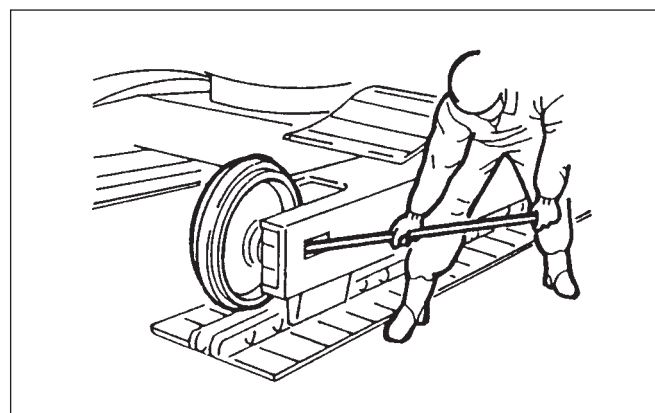


- * 2. Disconnect the track link (see *Track Motor/Reduction Gearbox, Removal and Replacement, Section F*). Move the idler wheel and recoil assembly to the end of the undercarriage using a bar.

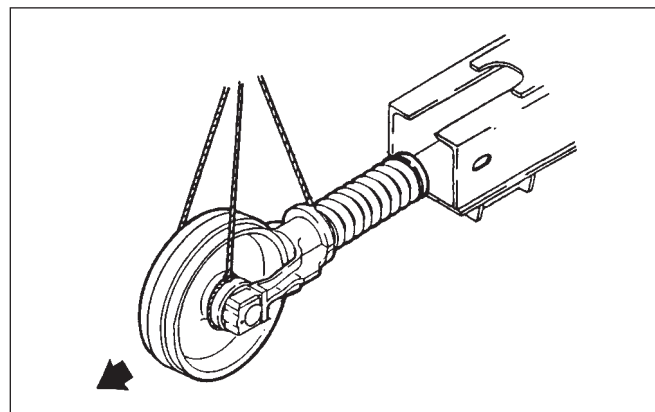
WARNING

Stand clear and to one side of the track while you remove the master pin. When the master pin is removed the track could fall forward and injure you.

TRACK 1-1



3. Fasten a sling around the idler wheel and recoil assembly and remove it from the undercarriage.



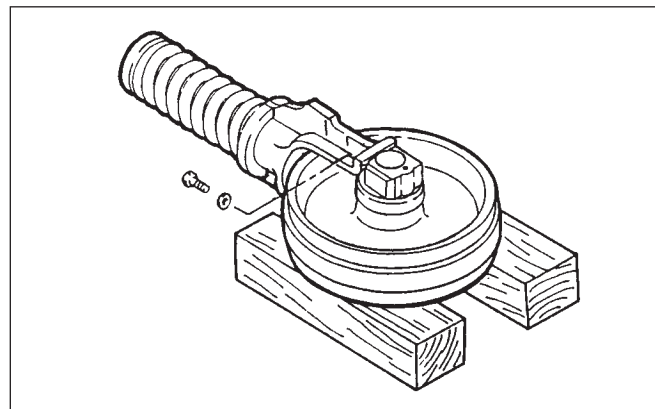
4. Remove the bolts and remove the idler wheel from the recoil unit.

WARNING

RECOIL UNITS ARE DANGEROUS. They must not be dismantled without using suitable tools to compress the spring safely. The spring pressure can cause serious injury if suddenly released. Scrap units must be made harmless by compressing the spring in a hydraulic press and cutting through the end of the shaft before slowly releasing the pressure.

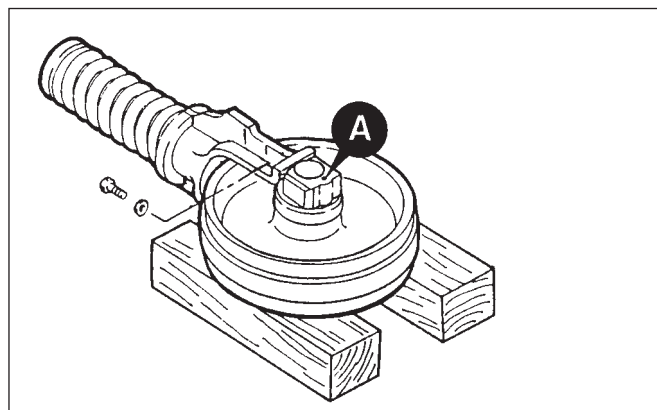
TRACK 1-10

- * **Note:** see *Removal, Grease Cylinder, for Recoil Spring dismantling details.*

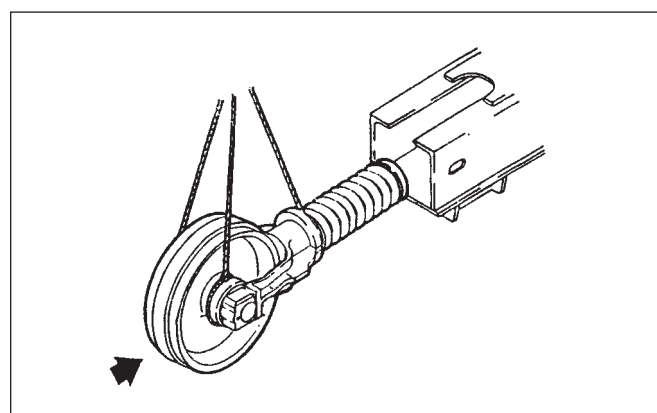


Replacement

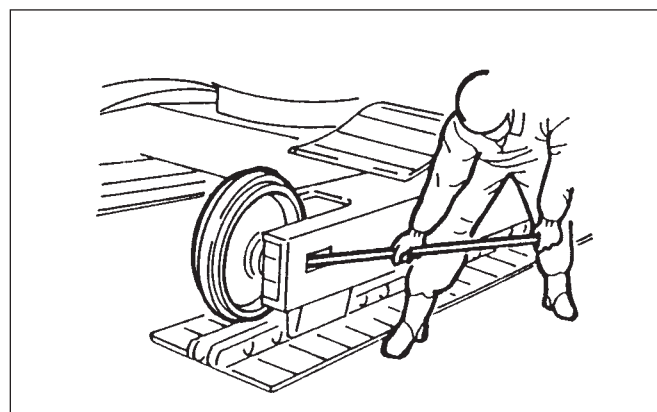
1. Before fitting the idler wheel, check the oil level at **A**. If required, top up with the specified oil (see *section 3*). Assemble the idler wheel to the recoil unit and fit the mounting bolts.



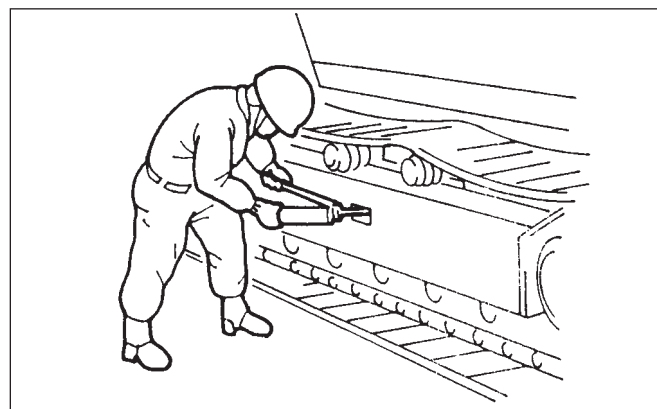
2. Fasten a sling around the idler wheel and recoil assembly and enter it into the undercarriage.



3. Position the idler wheel in the undercarriage using a bar.

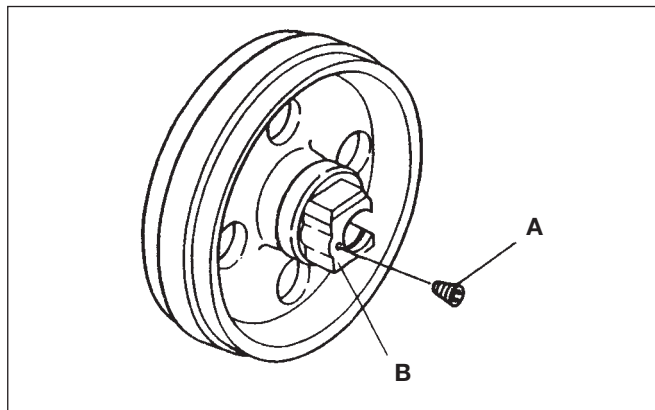


- * 4. Connect the track link (see **Track Motor/Reduction Gearbox, Removal and Replacement, Section F**).

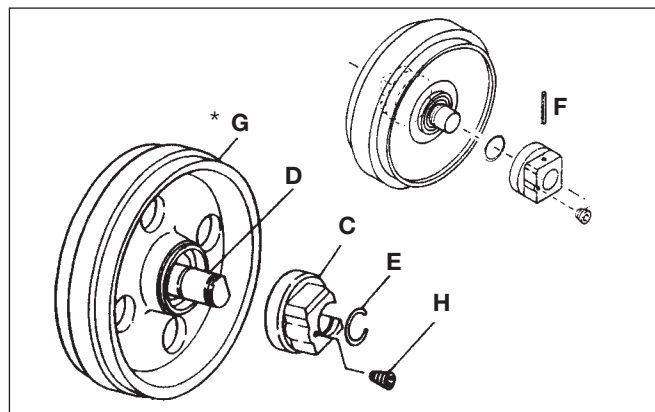


Dismantling

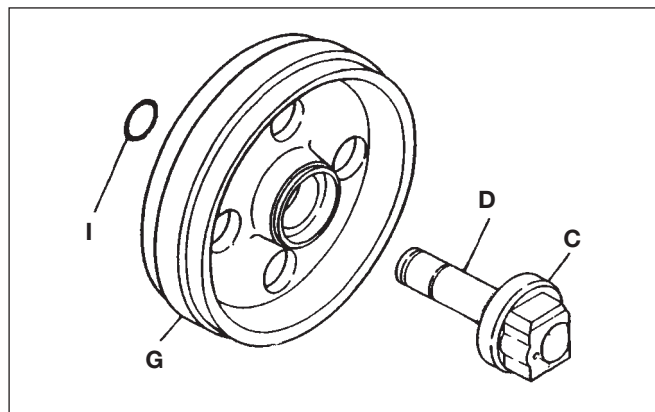
1. Clean the idler wheel with a suitable solvent. Remove the plug **A** from hub **B** and drain the oil.



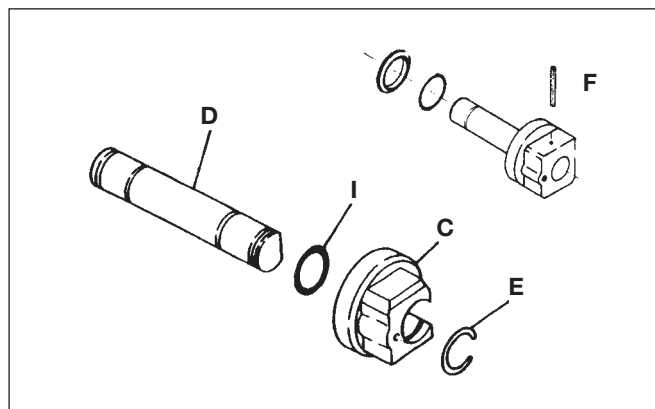
2. On one side of the unit only, remove the wire clip **E** or roll pin **F** and separate the hub **C** from shaft **D**.



3. Remove 'O'-ring **I** from shaft **D**. Pull out the shaft **D** from the idler wheel **G**.

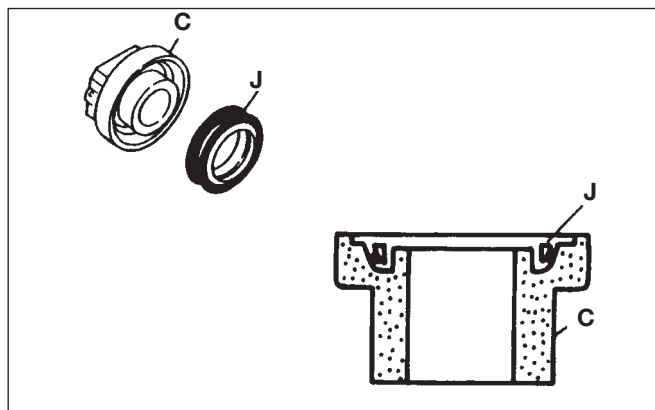


4. Remove the wire clip **E** or roll pin **F** and separate hub **C** from shaft **D**. Remove 'O'-ring **I** from shaft **D**. **3. Remove 'O'-ring I from shaft D. Pull out the shaft D from the idler wheel G.** **4. Remove the wire clip E or roll pin F and separate hub C from shaft D. Remove 'O'-ring I from shaft D.**

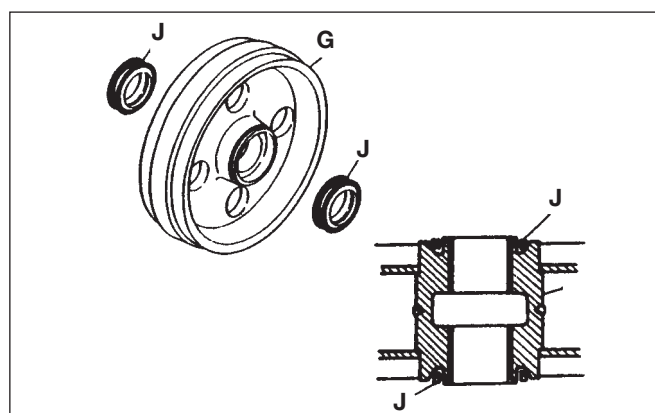


Dismantling (*continued*)

5. Remove floating seal **J** from each hub **C** using a pry bar.

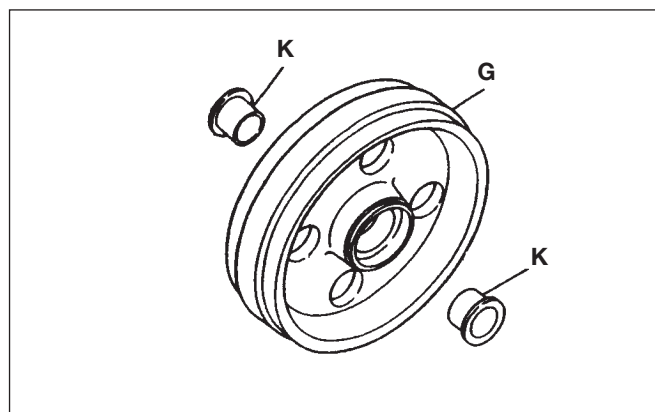


6. Remove floating seal **J** from each side of idler wheel **G** using a pry bar.



7. If badly worn or damaged, remove the bushes **K** from idler wheel **G** using a press or puller.

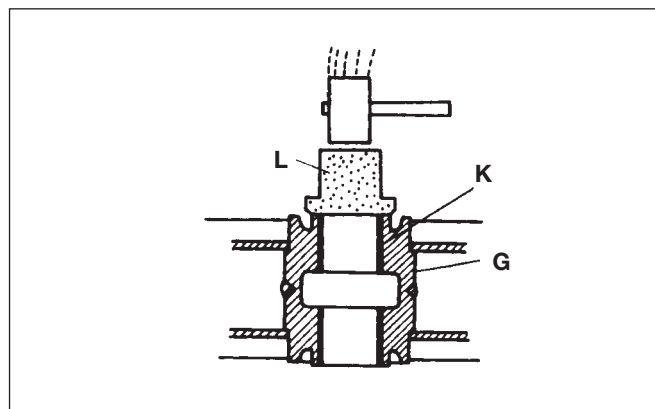
Protect parts from moisture and dust if left dismantled for some time.

**Assembly**

1. Clean all parts thoroughly in a suitable solvent. Dry shaft and bore of idler wheel using compressed air in a place free of dust and moisture.

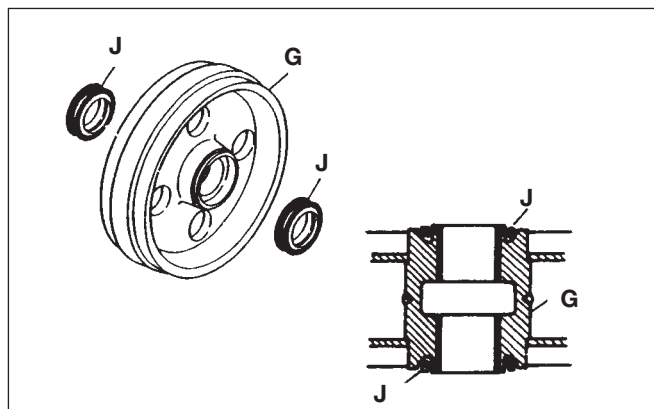
Check components for wear as detailed under **Wear Limits**. Polish out scratches and roughness using an oil stone. Then apply a coat of engine oil to all parts.

Carefully drive the new bushes **K** into the idler wheel **G**, using a suitable dolly **L**.

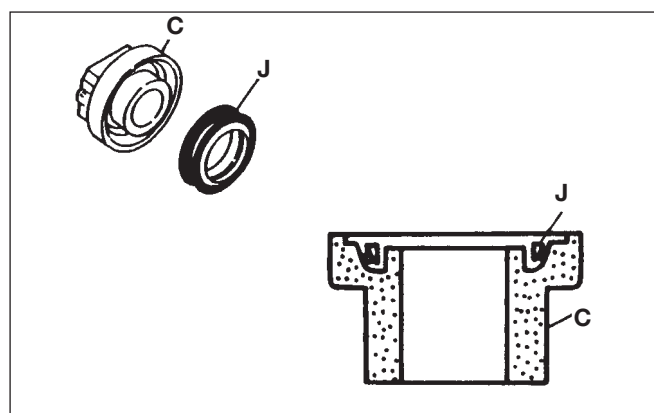


Assembly (*continued*)

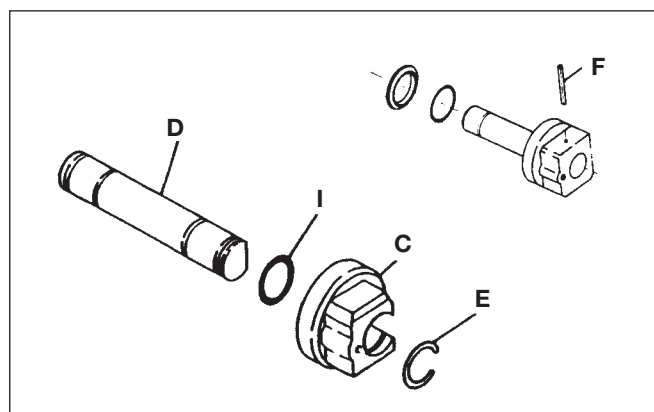
2. Apply a coating of grease and install a new floating seal **J** into each side of the idler wheel **G**.



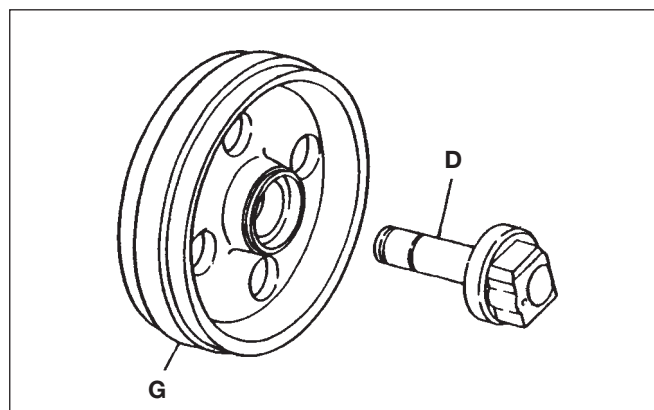
3. Apply a coating of grease and install a new floating seal **J** into hub **C**.



4. Grease a new 'O'-ring **I** and install on one end only of shaft **D**. Install shaft **D** into hub **C**. Fit new wire clip **E** or roll pin **F**.



5. Coat shaft **D** with grease. Clean the metallic face of the seal, coat the metallic face with engine oil and insert the shaft into the idler wheel **G**.

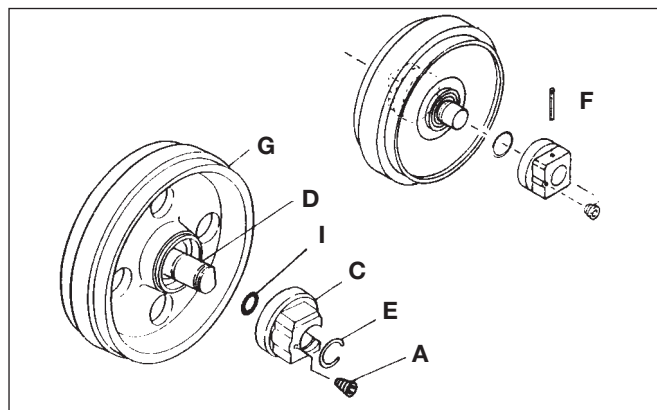


Assembly (*continued*)

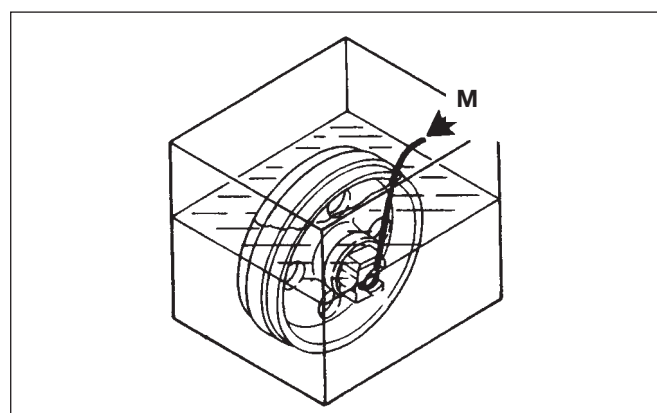
6. Apply grease to a new 'O'-ring **I** and install it on the shaft **D**.

Clean the metallic face of the seal, coat the metallic face with engine oil and install the hub **C** onto the shaft **D**. Fit new wire clip **E** or roll pin **F**.

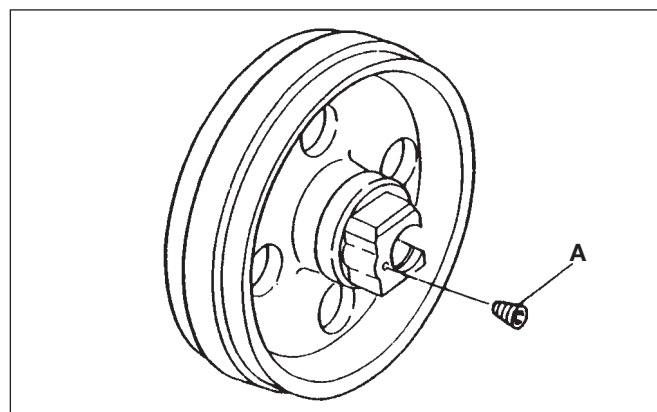
Wrap sealing tape around the plug **A** with one thread remaining uncovered. Insert this plug but leave the other one out until after testing.



7. Using extreme care to prevent water entering the assembly, lower it into a tank of water. Connect compressed air at **M** and apply pressure of 1.9 bar (28 lbf/in²). Check for air bubbles.



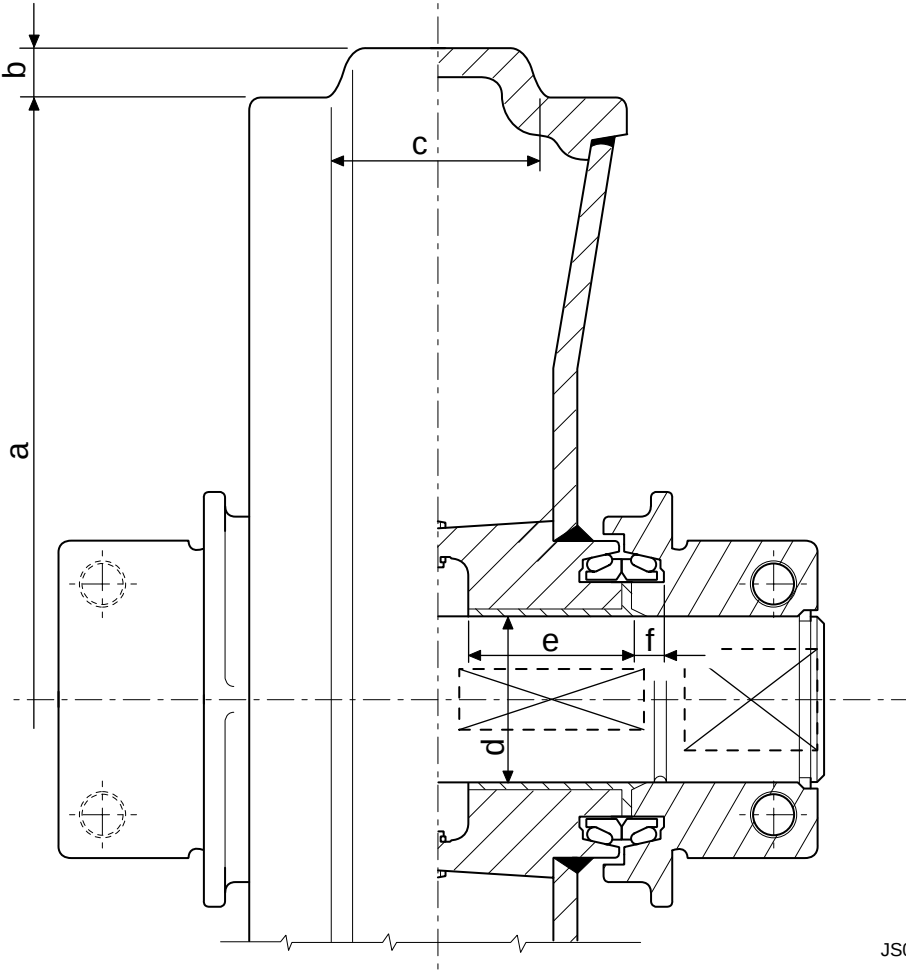
8. Remove the assembly from the tank. Dry with compressed air. Add the specified oil (*see Section 3*). Install plug using an appropriate pipe sealant.



Wear Limits

Item	Dimension	Machine	Standard Size		Service Limit		Action
			mm	in	mm	in	
Wheel Diameter	a	JS200 JS240	494	* 19.4	490	19.29	Build up or renew
	b	JS200 JS240	21	* 0.8			Build up or renew
Wheel Width	c	JS200 JS240	84	3.3	80	3.14	Build up or renew
Shaft Diameter	d	JS200	65	2.55	64.5	2.53	
	d	JS200	70	2.75	69.5	2.73	
Bush Bore	d	JS200	65	2.55	65.0	2.59	Renew
	d	JS200	70	2.75	70.8	2.78	Renew
Length over Bush/Seal	e	JS200	69	2.71	68.6	2.7	Renew
	e	JS240	74	2.91	73.6	2.89	Renew
Hub	f	JS200	12.4	.48	11.9	.46	Renew
	f	JS240	15.9	.62	15.4	.60	Renew

*



JS03780

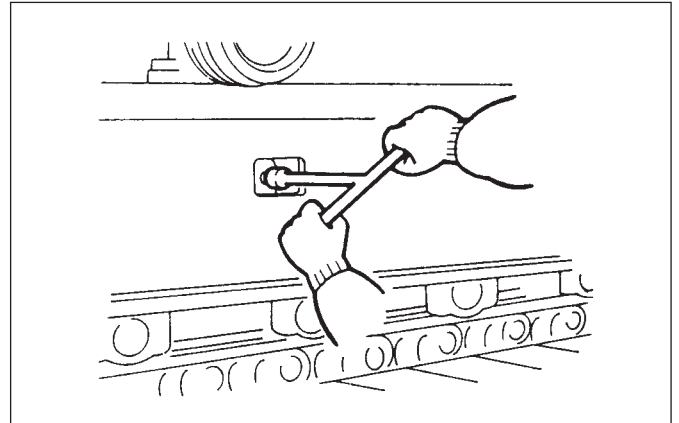
Removal

1. Slacken the check valve to bleed out grease.

! WARNING

When opening the check valve always stand to one side and loosen a little at a time until grease starts to come out. If you over-loosen too much grease could spurt out or the valve cover fly out and cause serious injury.

8-3-4-5

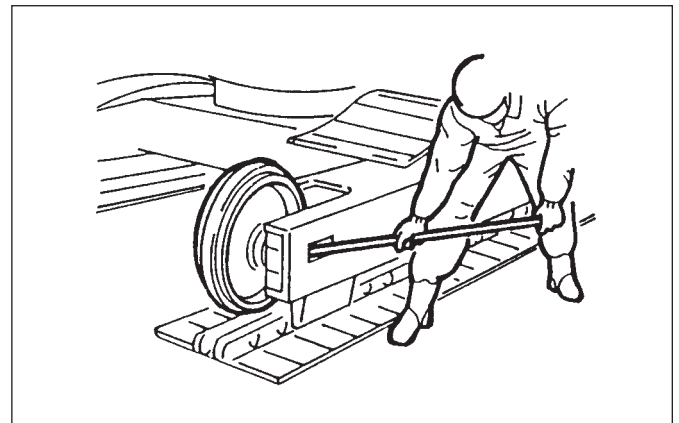


- * 2. Disconnect the track link (see *Track Motor/Reduction Gearbox, Removal and Replacement, Section F*). Move the idler wheel and recoil assembly to the end of the undercarriage using a bar.

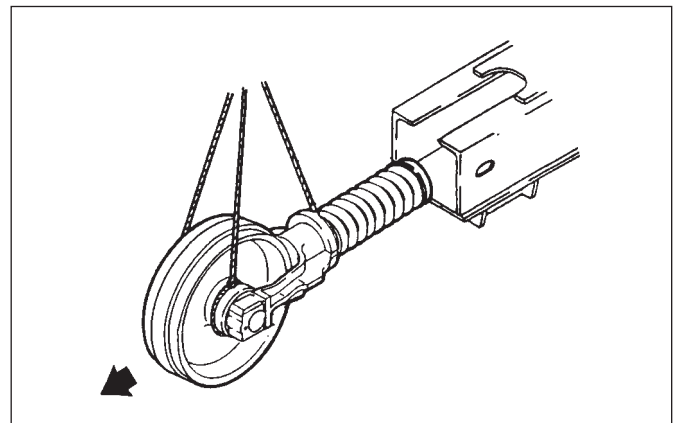
! WARNING

Stand clear and to one side of the track while you remove the master pin. When the master pin is removed the track could fall forward and injure you.

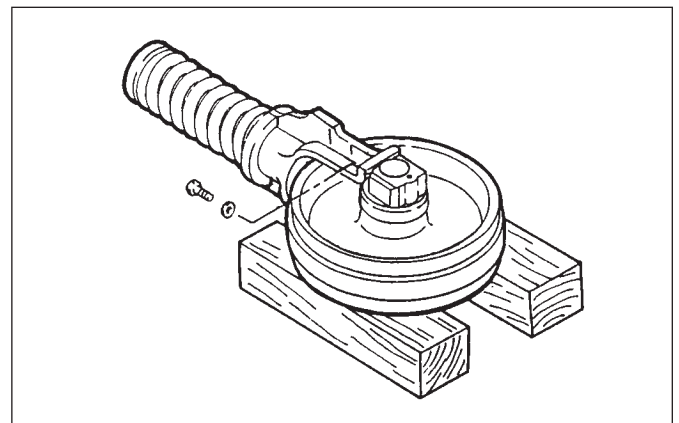
TRACK 1-1



3. Fasten a sling around the idler wheel and recoil assembly and remove it from the undercarriage.



4. Remove the bolts and remove the idler wheel from the recoil unit.



Removal (continued)* **⚠ WARNING**

RECOIL UNITS ARE DANGEROUS. They must not be dismantled without using suitable tools to compress the spring safely. The spring pressure can cause serious injury if suddenly released. Scrap units must be made harmless by compressing the spring in a hydraulic press and cutting through the end of the shaft before slowly releasing the pressure.

TRACK 1-10

* **Note:** If it becomes necessary to dismantle the recoil spring assembly, the following procedure should be used.

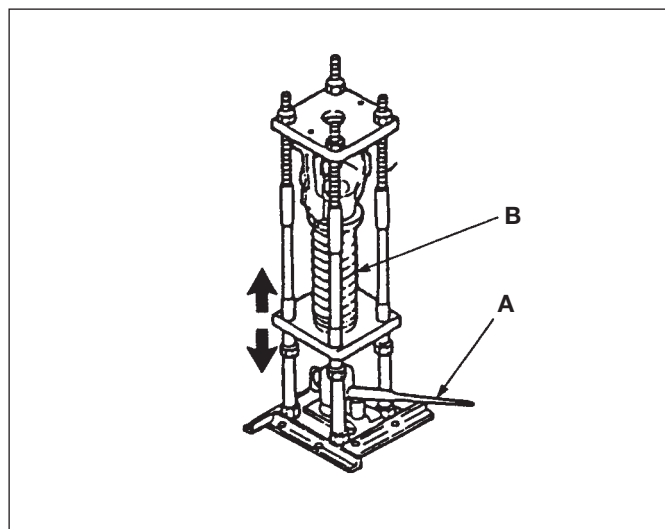
5. Prepare the jig for Recoil Spring Disassembly.

Place the re-coil spring unit as shown.

Jack up the hydraulic jack **A** and compress the Recoil Spring **B**.

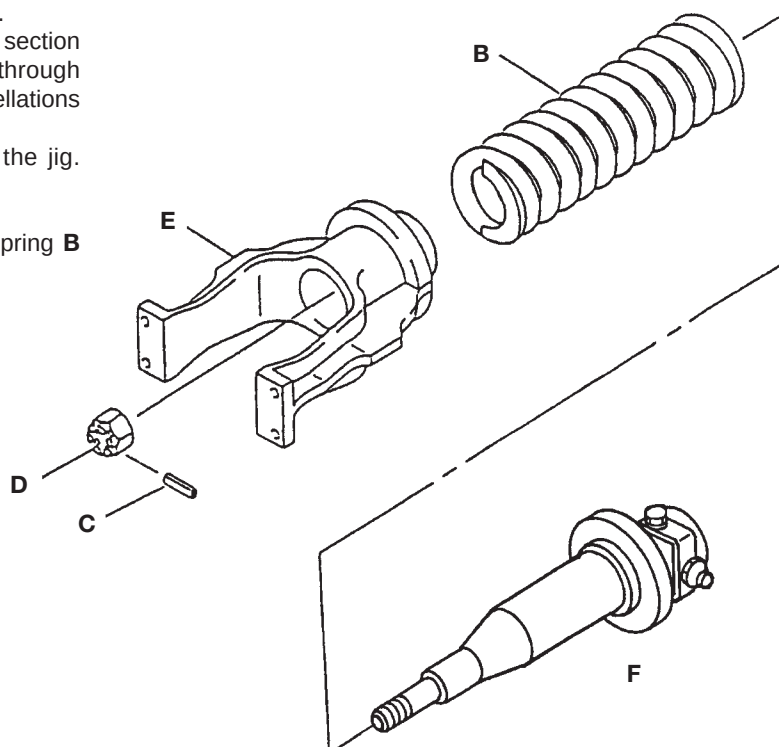
6. Remove the Recoil Spring.

- * Pull out the Spring Pin **C** and remove the castellated nut **D**. Let the jack **A** down to relieve the pressure on the recoil spring **B**.
- * Remove the components from the jig, firstly the yoke **E**, spring **B** and finally, the grease cylinder **F**.

**Replacement**

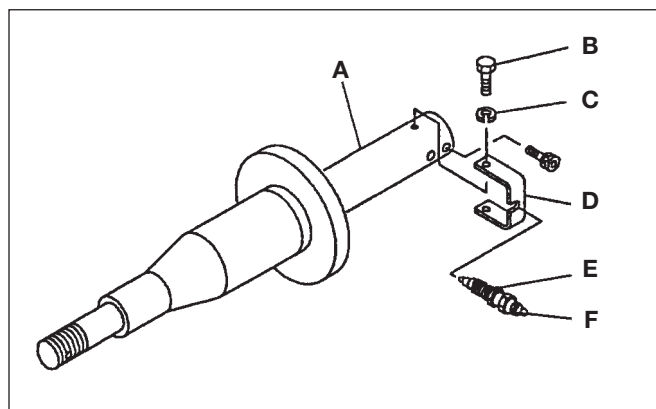
* **1. Reassembly of Components.**

- a. Set the components in the jig, firstly the grease cylinder **F**, then place the spring **B** on top, and finally, the yoke **E**.
- * b. Extend jack **A** and compress recoil spring **B**.
- * c. Install the castellated nut **D** on the threaded section of the grease cylinder **F** which protrudes through the yoke **E**. Tighten nut **D**, aligning the castellations with the pin hole.
- * d. Remove the recoil spring assembly from the jig. See "**Recoil Spring Installation**".
- * e. Renew and install spring pin **C**.
- * f. Release jack **A** carefully and allow recoil spring **B** to expand. Remove assembly from the jig.

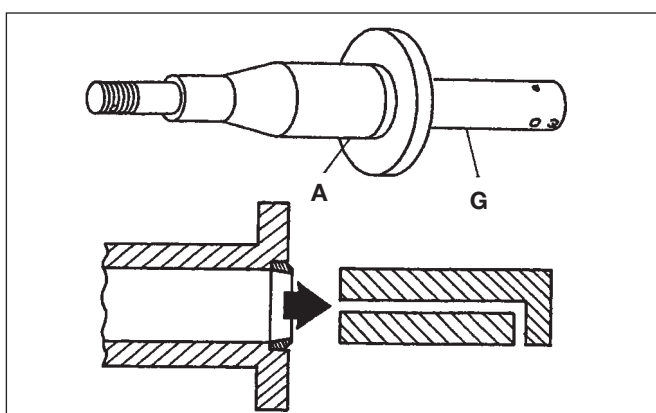


Dismantling

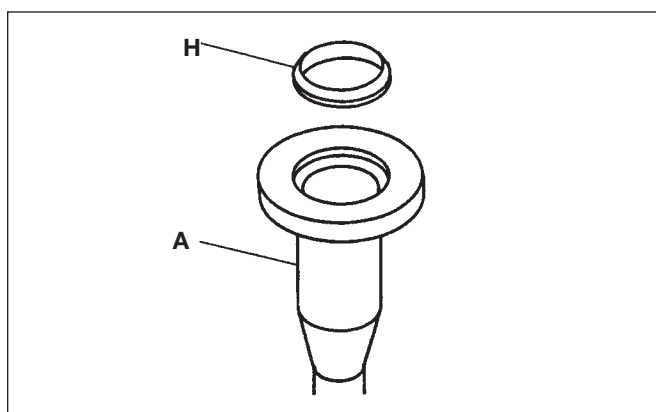
1. Clean the grease cylinder **A** with an appropriate detergent. Remove bolt **B** and washer **C**, remove the bracket **D**. Remove the check valve **E**, together with the grease nipple **F** from the cylinder **A**.



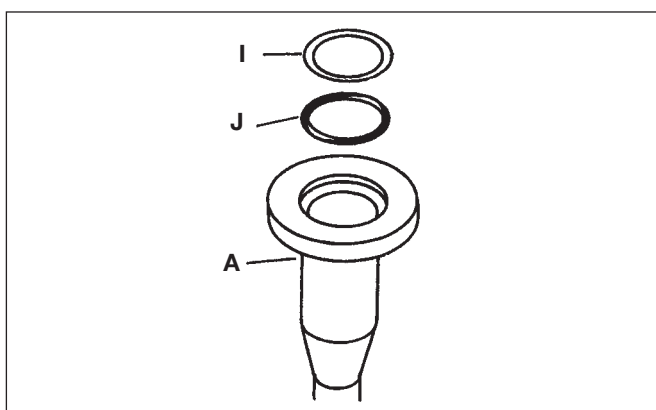
2. Pull out the Piston Rod **G** from the grease cylinder **A**.



3. Remove the Dust Seal **H** from the grease cylinder **A**.

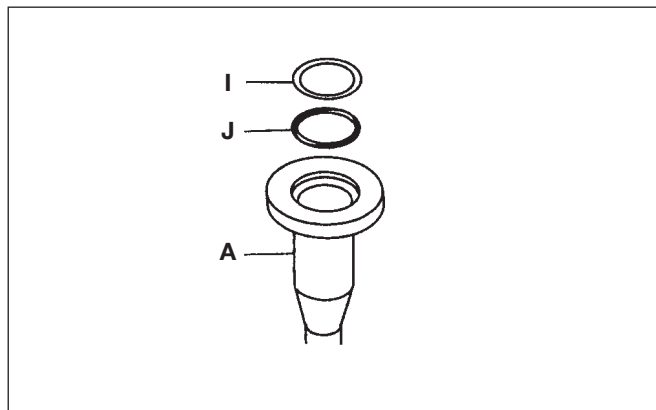


4. Remove the Back-up ring **I** and 'O'-ring **J** from the grease cylinder.

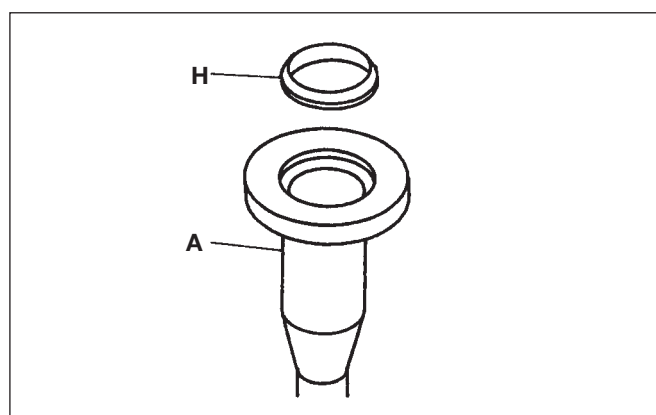


Assembly

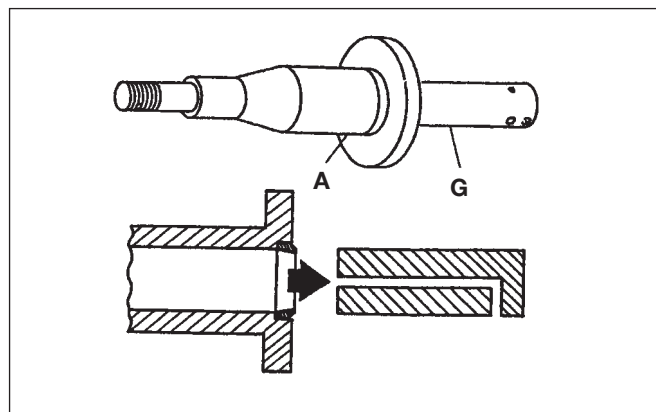
1. Install a new greased 'O'-ring **J**, to the grease cylinder **A**.
Install a new back-up ring **I**.



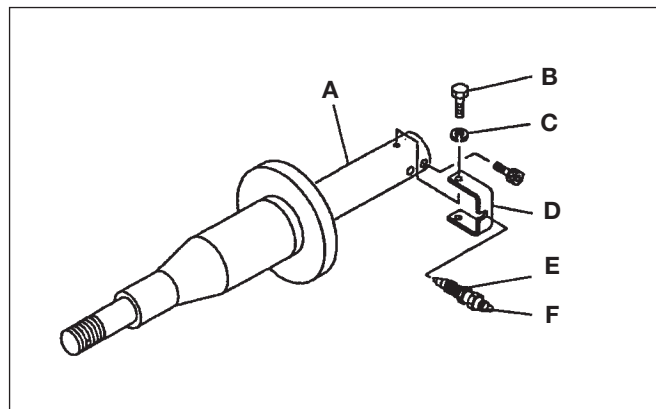
2. Install the dust seal **H** using a suitable jig and hammer to the grease cylinder **A**.



3. Coat the piston rod **G** with grease.
Insert the piston rod **G** into the grease cylinder **A**.



4. Install the check valve **E**, with the grease nipple **F**, to the grease cylinder **A** torque to 58.84 Nm (43.4 lb/ft).
Fasten the bracket **D** to the grease cylinder **A** using the bolt **B** and washer **C**.



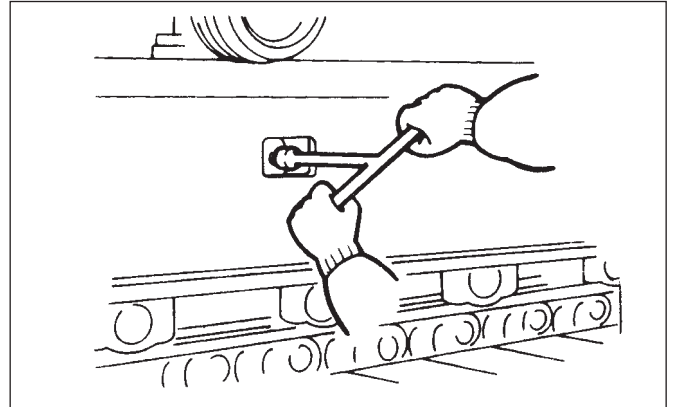
Removal

1. Slacken the check valve to bleed out grease.

! WARNING

When opening the check valve always stand to one side and loosen a little at a time until grease starts to come out. If you over-loosen, too much grease could spurt out or the valve cover fly out and cause serious injury.

8-3-4-5

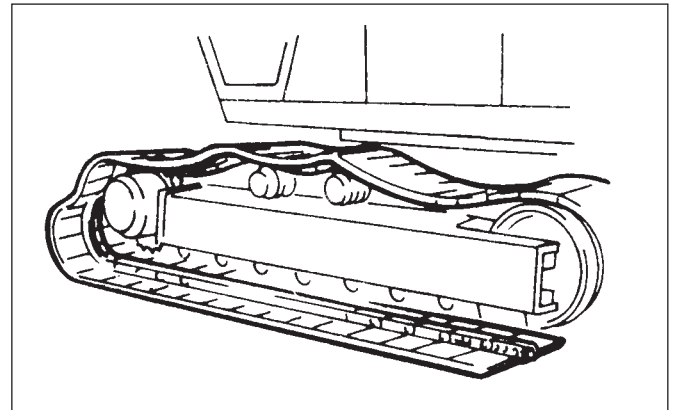


2. Disconnect the track link.

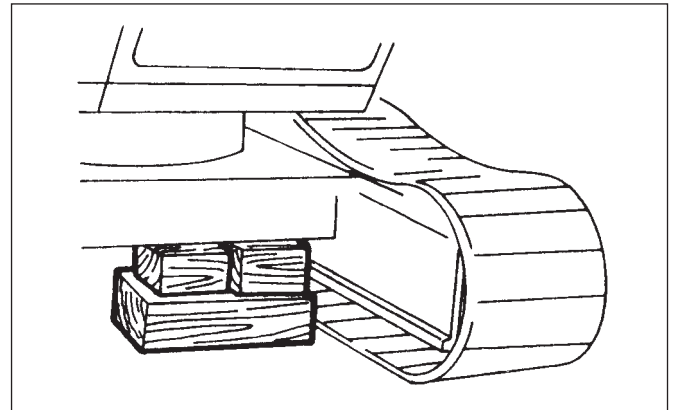
! WARNING

Stand clear and to one side of the track while you remove the master pin. When the master pin is removed, the track could fall forward and injure you.

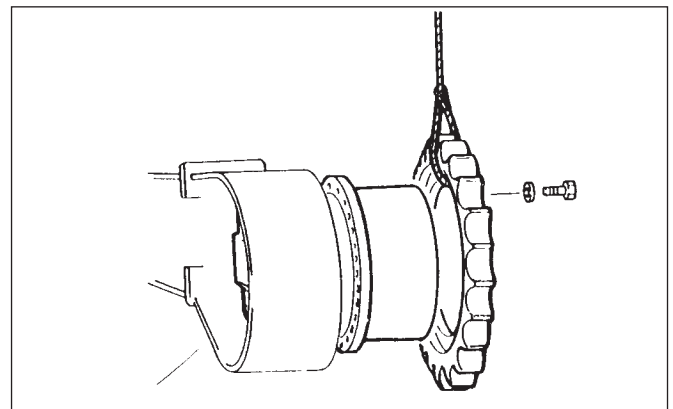
TRACK 1-1



3. Lift the side of the undercarriage high enough to permit drive sprocket removal. Support with wooden blocks.



4. Support the drive sprocket, remove the bolts and lever it away from the gearbox unit.

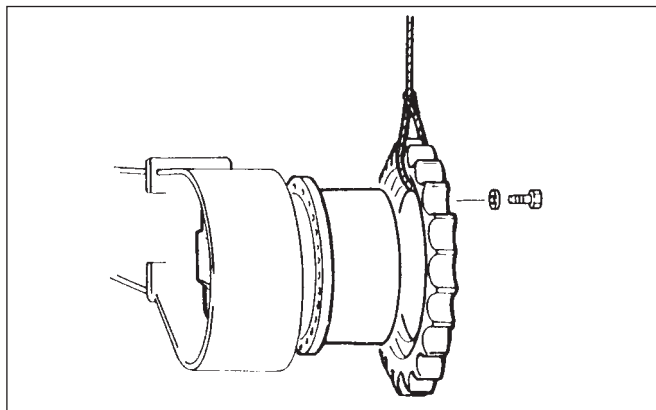


Replacement

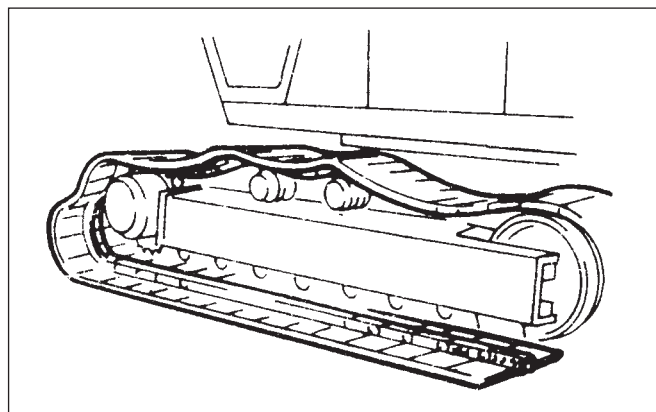
1. Support the sprocket and position it on the gearbox. Install the bolts and washers, using Loctite 262 on the bolt threads. Tighten the bolts in a diagonal sequence.

Torque Settings

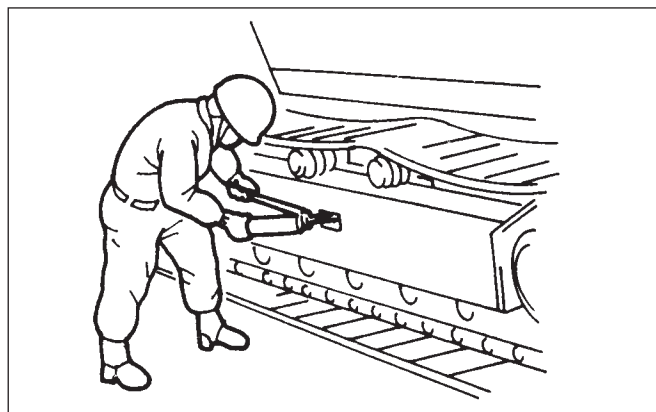
Machine	Nm	lbf ft
JS200	267.312	196-230
JS240	267.312	196-230



2. Remove the wooden blocks. Connect the track link.

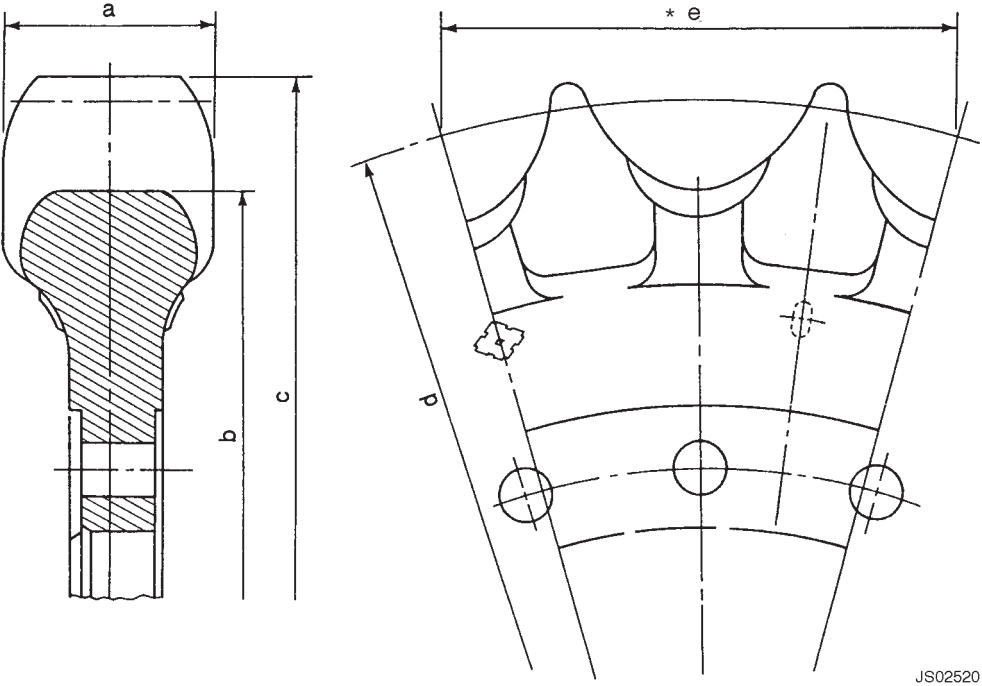


3. Apply grease through the check valve to adjust the track tension (see Section 3).



Wear Limits

Item	Dimension	Machine	Standard Size		Service Limit		Action
			mm	in	mm	in	
Width	a	JS200 JS240	66	2.59	60	2.59	Renew
Diameter	b	JS200 JS240	582.5	22.93	576.5	22.69	Renew
Diameter	c	JS200 JS240	659	25.9	65.3	25.7	Renew
Diameter	d	JS200 JS240	644.6	25.37			Renew
Centres	e	JS200 JS240	190	7.4			Renew



Removal

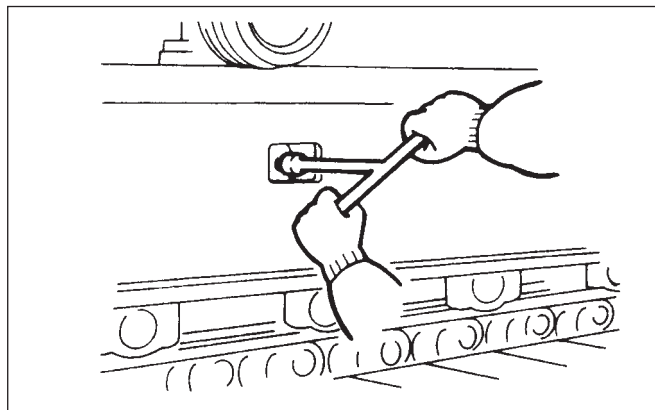
Note: The following procedure is applicable to all top rollers but as there are visual differences, the illustrations show only a typical unit.

1. Slacken the check valve to bleed out grease.

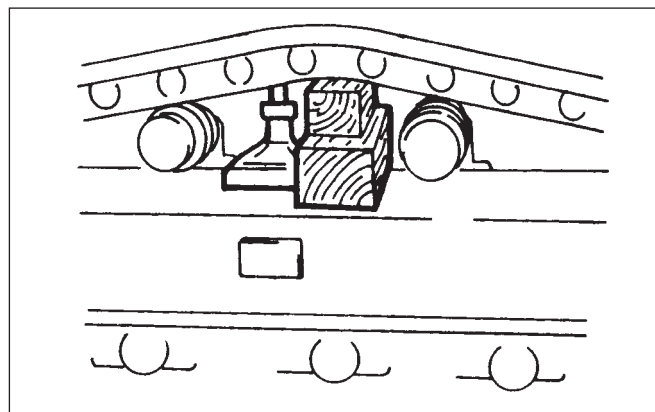
WARNING

When opening the check valve, always stand to one side and loosen a little at a time until grease starts to come out. If you over-loosen too much, grease could spurt out or the valve cover fly out and cause serious injury.

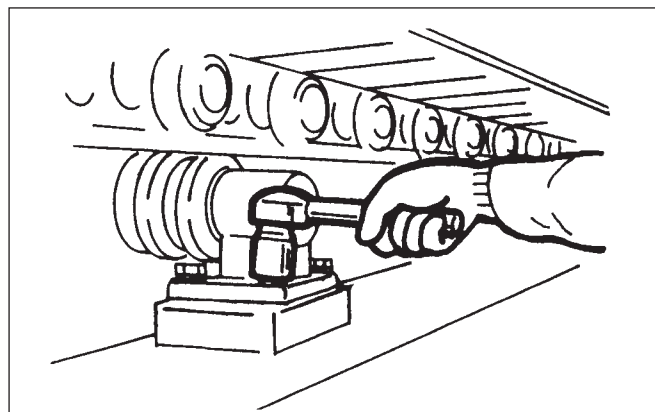
8-3-4-5



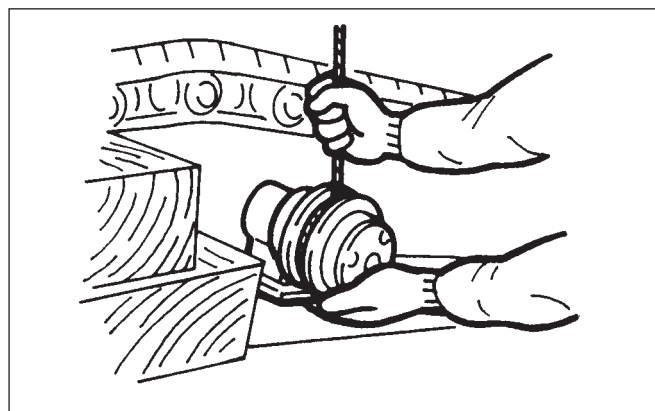
2. Jack up the track high enough to permit roller removal. Put wooden blocks between track link and side frame.



3. Remove the mounting bolts, and tap the upper roller with a copper mallet to separate it from the side frame.

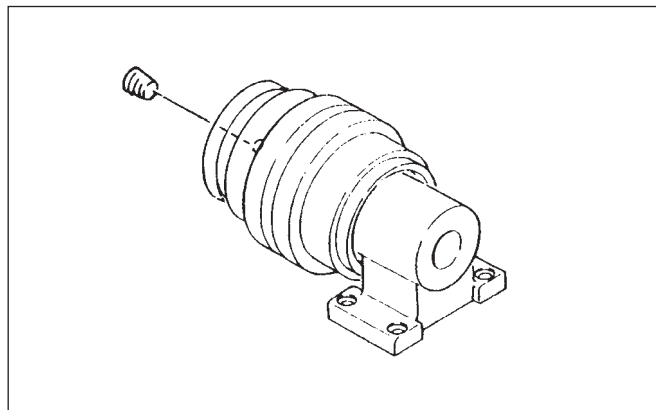


4. Fasten a sling to the upper roller, and completely remove the upper roller bolt and remove the upper roller.

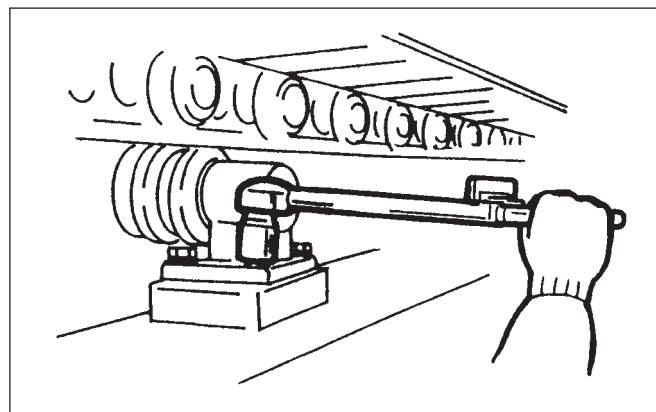


Replacement

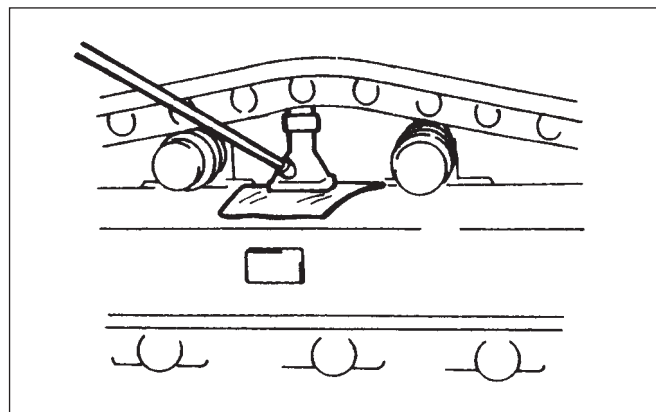
1. Before fitting the roller, add the specified oil (see *Section 3*). Install plug using an appropriate pipe thread sealant.



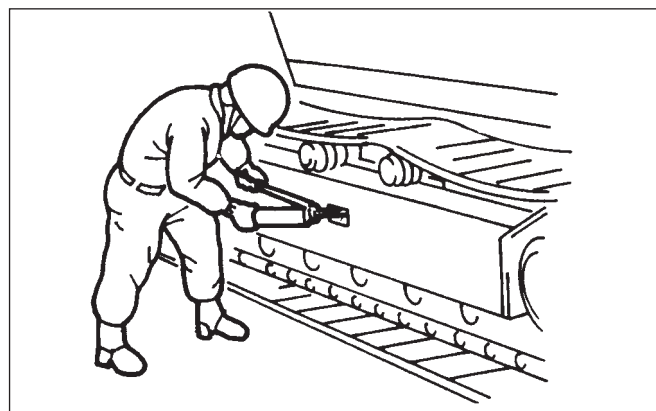
2. With the track supported as shown under Removal, install the roller. Apply Loctite 262 to the threads and fit the mounting bolts.

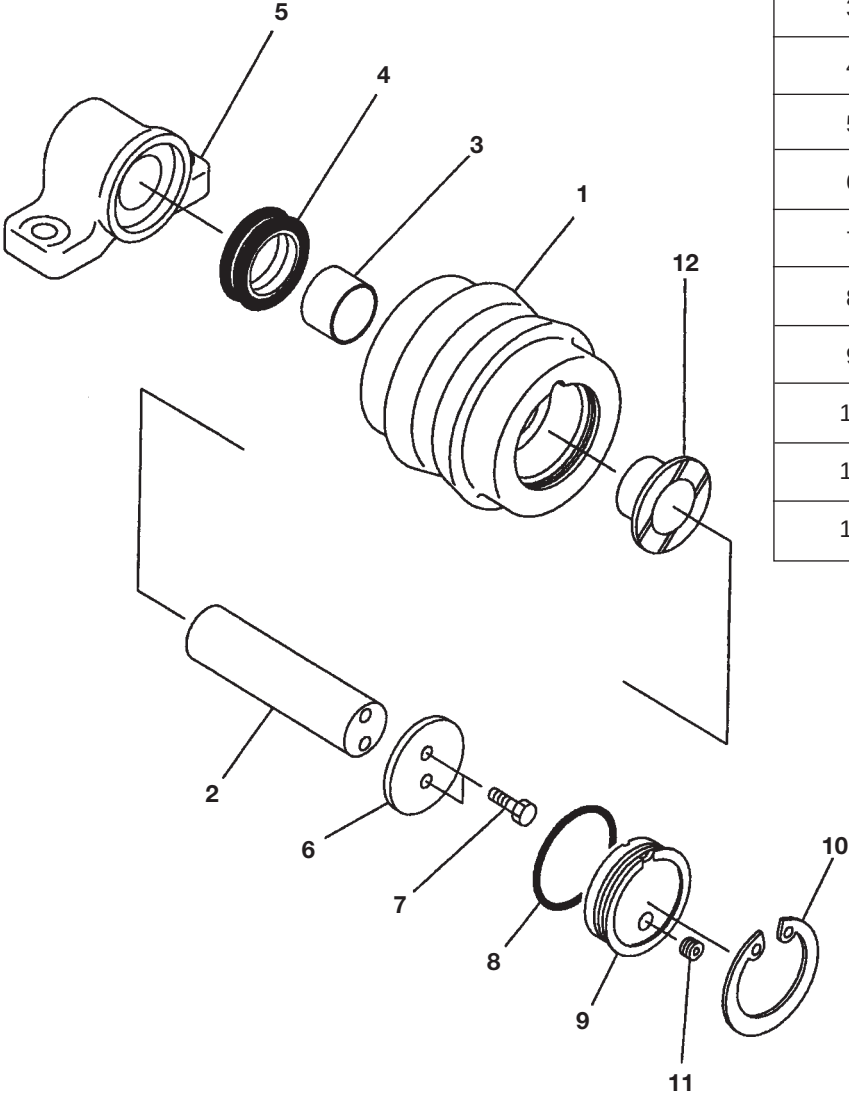


3. Remove the wooden blocks and jack.



4. Apply grease through the check valve to adjust the track tension (see "**Checking/Adjusting the Track Tension**").

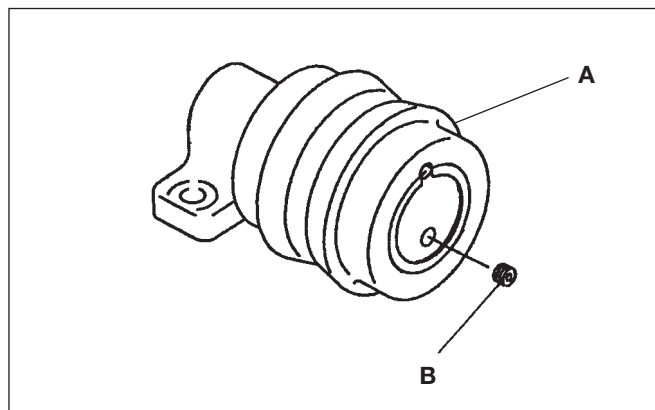




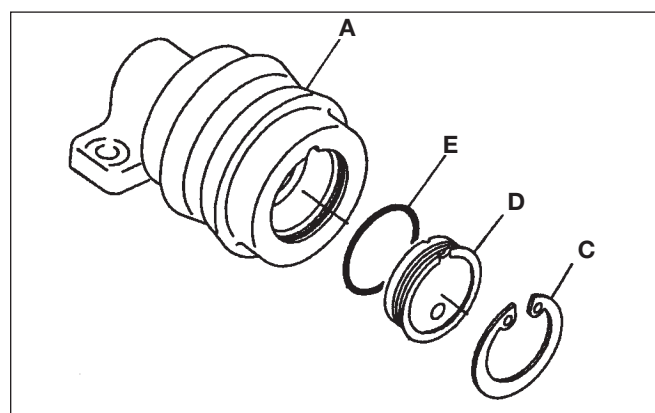
Item	Part Name
1	Roller
2	Shaft
3	Bushing
4	Floating seal
5	Bracket
6	Thrust plate
7	Hexagonal bolt
8	O-ring
9	Cover
10	Snap ring
11	Plug
12	Bushing

Dismantling (Two and Four bolt pedestal).

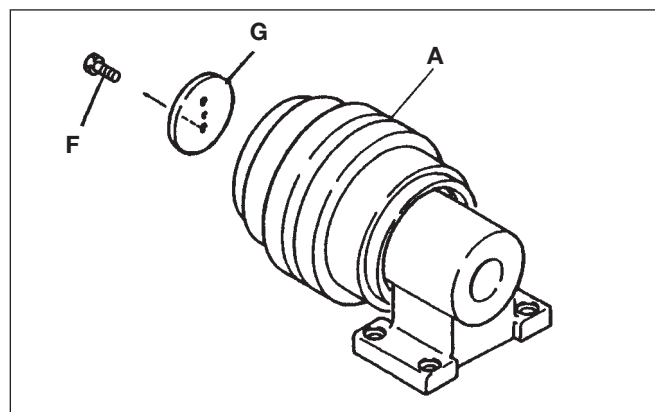
1. Clean the upper roller **A** with an appropriate detergent. Remove the plug **B** from the cover and drain the oil.



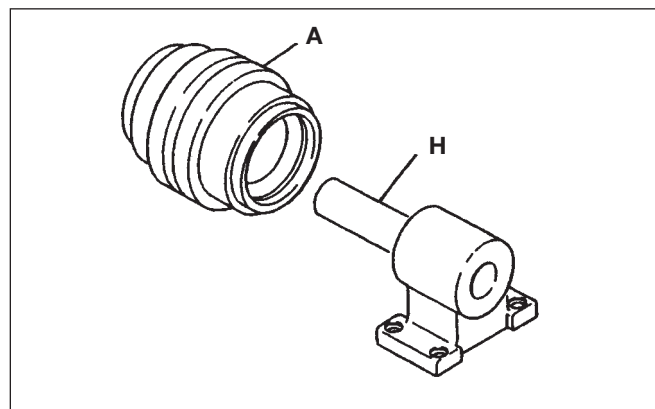
2. Remove the retaining ring **C**, and remove cover **D**. From cover **D**, remove 'O'-ring **E** and discard.



3. Remove bolt **F**, and the thrust plate **G** from the end of the shaft.

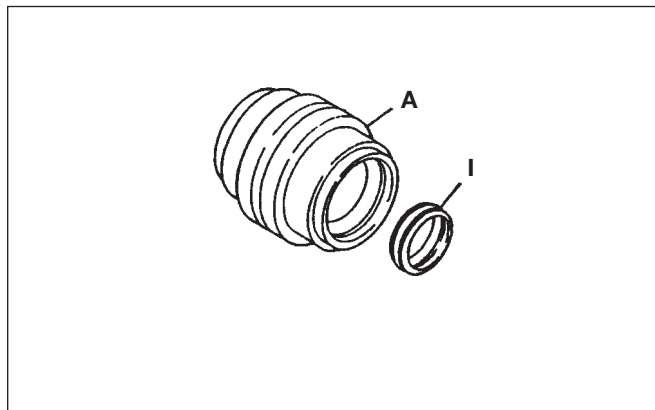


4. Pull the upper roller **A** from the shaft **H**.

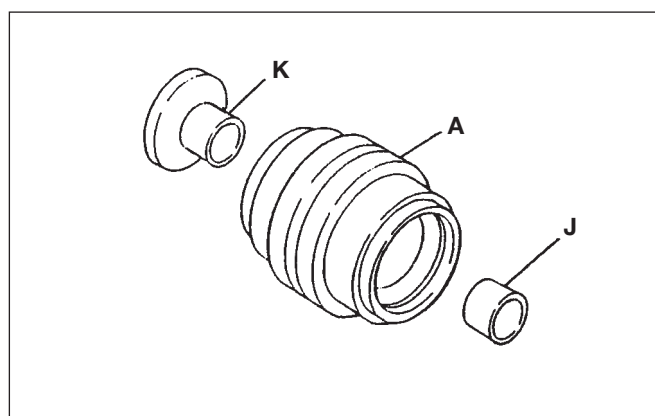


Dismantling (*continued*)

5. Remove the floating seal **I** from the upper roller **A**.

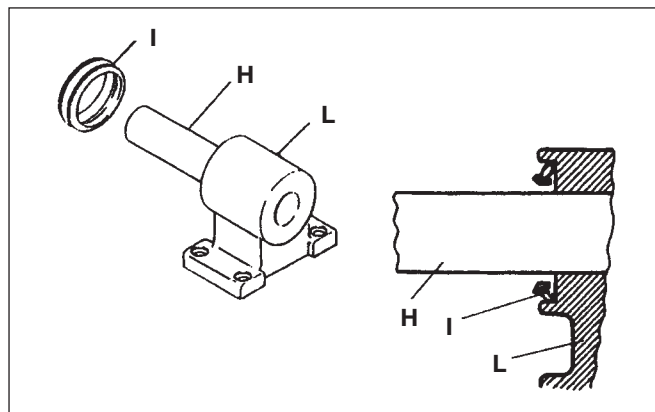


6. If badly worn or damaged, remove the bushes **J** and **K**, from the roller **A**.



7. Remove seal **I** from bracket **L** using a pry bar.

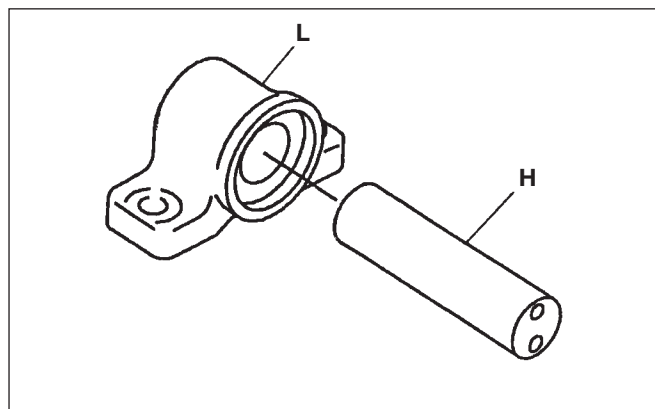
Protect parts from moisture and dust if left dismantled for some time.

**Assembly**

1. Clean all parts thoroughly in a suitable solvent. Dry shaft and bore of roller using compressed air in a place free of dust and moisture.

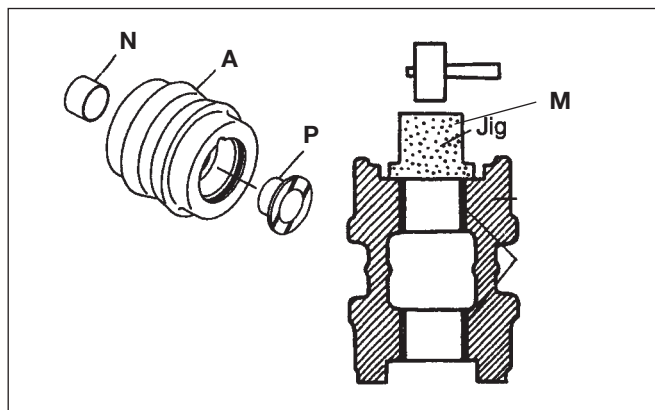
Check components for wear as detailed under (**Wear Limits**). Polish out scratches and roughness using an oil stone. Then apply a coat of engine oil to all parts.

If a new shaft or bracket are required, press-fit shaft **H** into bracket **L**, taking care to protect the threads of the tapped holes in the end of the shaft.

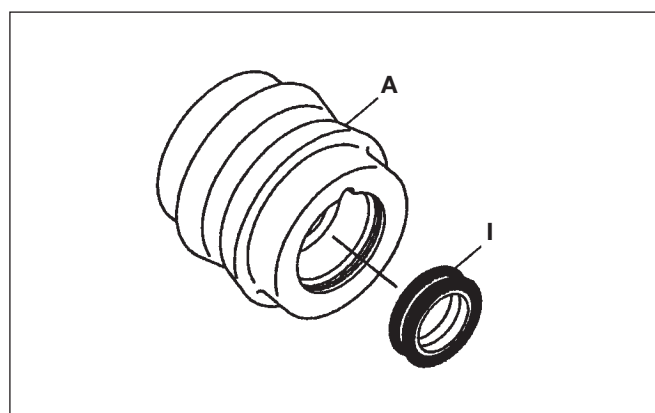


Assembly (continued)

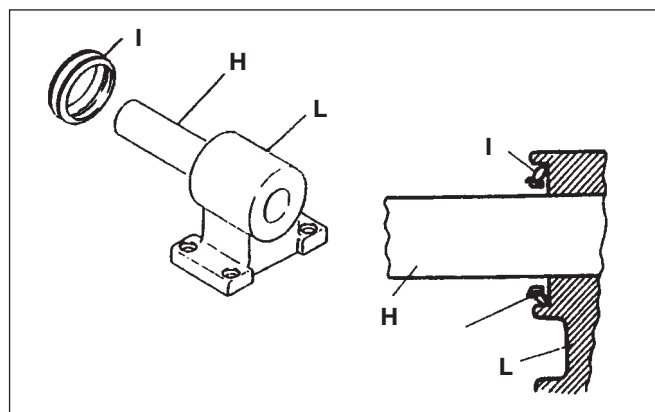
2. Using a jig **M**, and hammer, insert the bushing **N**, and **P** into the roller **A**.



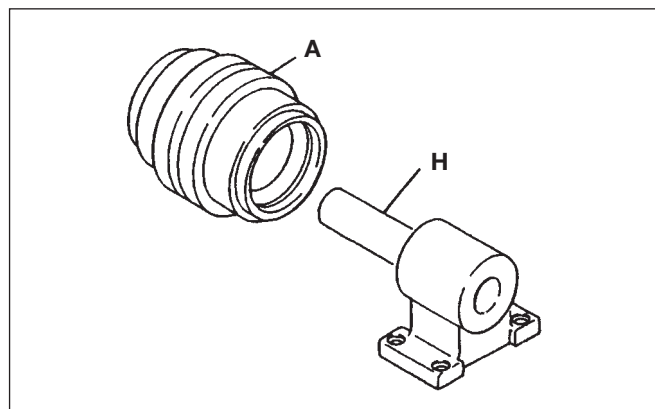
3. Install the new floating seal **I** into the roller **A** coat oil onto the floating seal surface.



4. Install the new seal **I** into the bracket **L**. Coat the metallic face of the seal with engine oil.

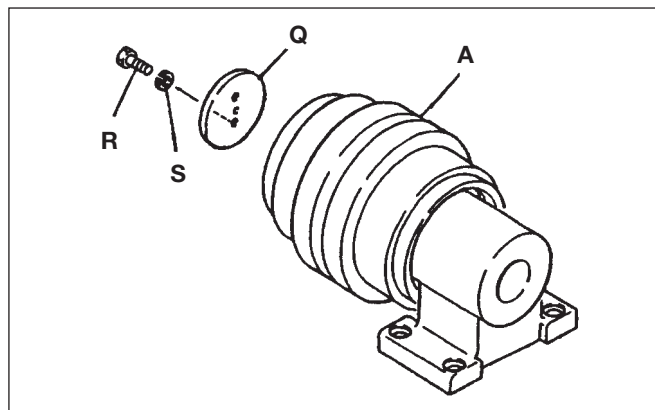


5. Coat the shaft **H** with grease. Install the roller **A** onto the shaft **H**.

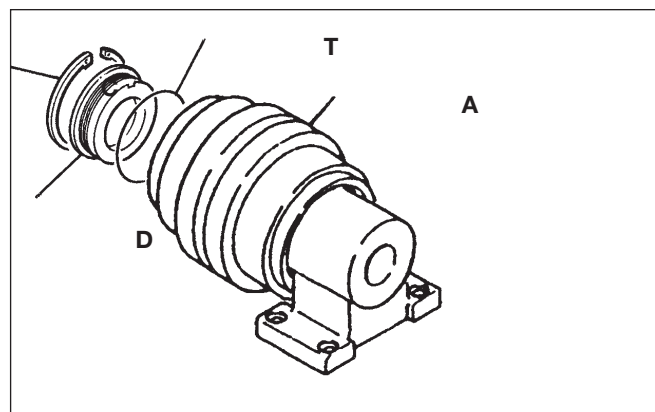


Assembly (continued)

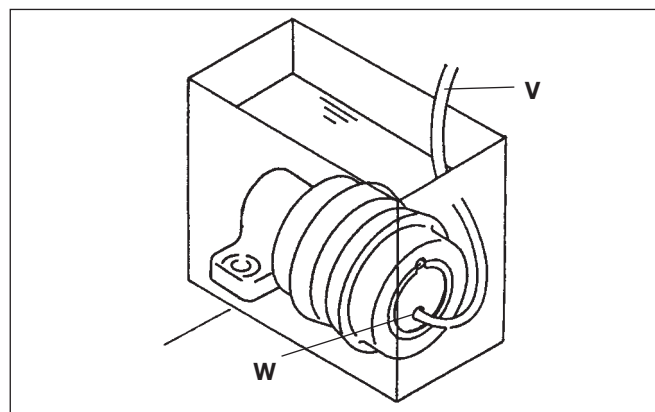
6. Apply grease to the inside face of the thrust plate **Q** and install it on the shaft using bolt **R** and washer **S**.



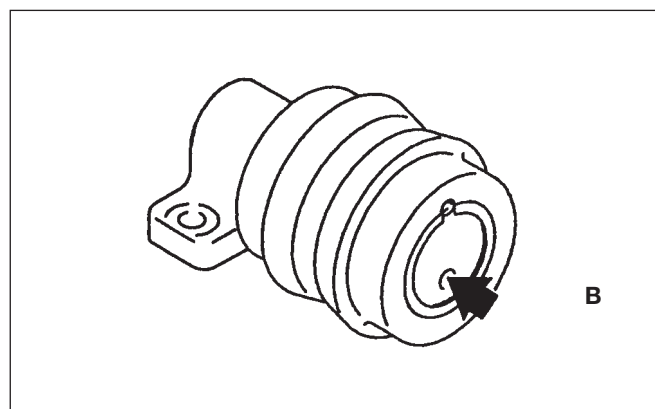
7. Apply grease to a new 'O'-ring **T** and install it onto cover **D**. Install the cover **D** to the roller **A**. Retain with the retaining ring **C**.



8. Using extreme care to prevent water entering the assembly, lower it into a tank of water. Connect a compressed air pipe **V** to the port **N**, check for air bubbles. Apply a pressure of 1.9 bar (28 lb/in²).

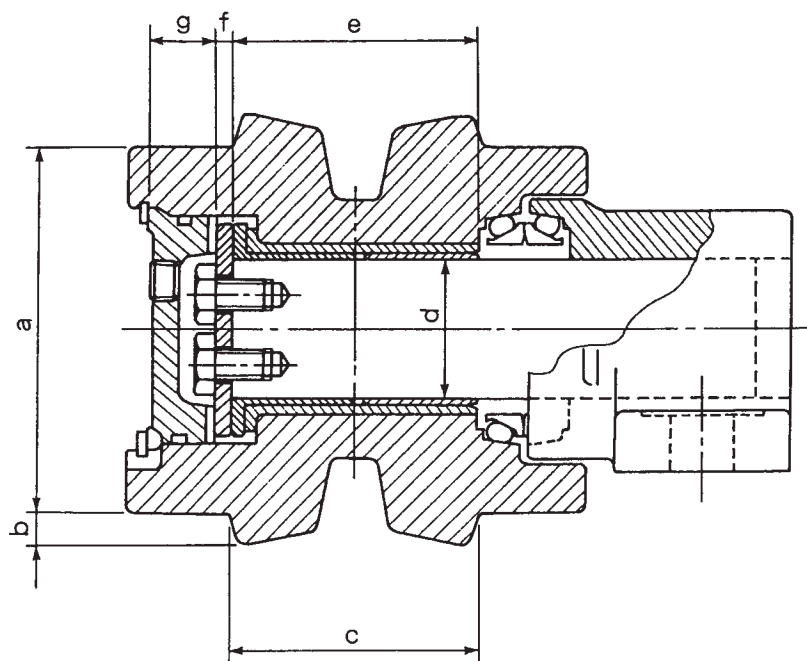


9. Remove the assembly from the tank. Dry with compressed air. Add the specified oil (see **Routine Maintenance**). Install plug **B** using an appropriate pipe thread sealant.



Wear Limits

Item	Dimension	Machine	Standard Size		Service Limit		Action
			mm	in	mm	in	
Carrier Roller	a	JS200 JS240	120	4.72	112	4.40	Renew
	b	JS240 JS240	0	.39			Renew
	c	JS200 JS240	85	3.34	79	3.11	Renew
Inner Flange width	d	JS200 JS240	46	1.81	45.5	1.79	Renew
Outer Flange width	d	JS200 JS240	46	1.81	46.8	1.84	Renew
Shaft Diameter	e	JS200 JS240	83	3.26	82.6	3.25	Renew
Length	f	JS200 JS240	5.5	.21	5	.19	Renew
Collar	g	JS200 JS240	23	.90	22.5	.88	Renew



Removal

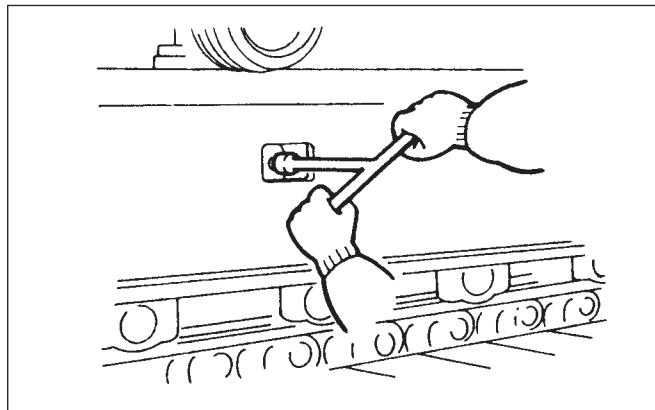
Note: The following procedure is applicable to all bottom rollers, but as there are visual differences, the illustrations show only a typical unit.

1. Slacken the check valve to bleed out grease.

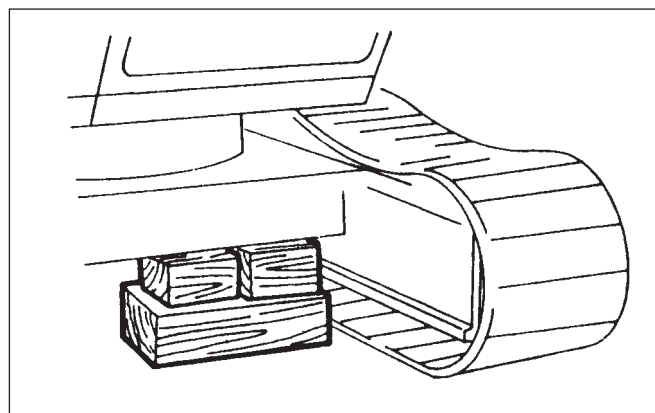
WARNING

When opening the check valve always stand to one side and loosen a little at a time until grease starts to come out. If you over-loosen too much, grease could spurt out or the valve cover fly out and cause serious injury.

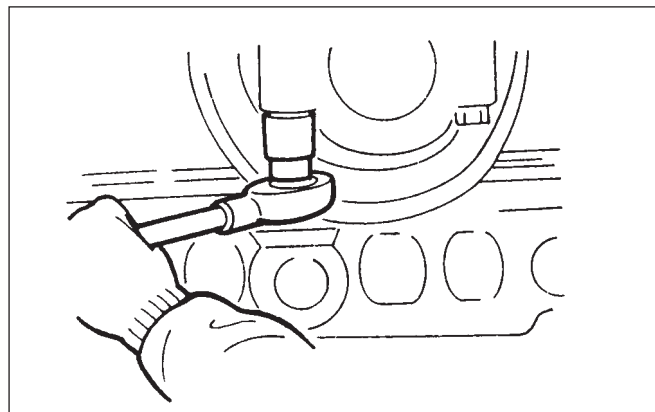
8-3-4-5



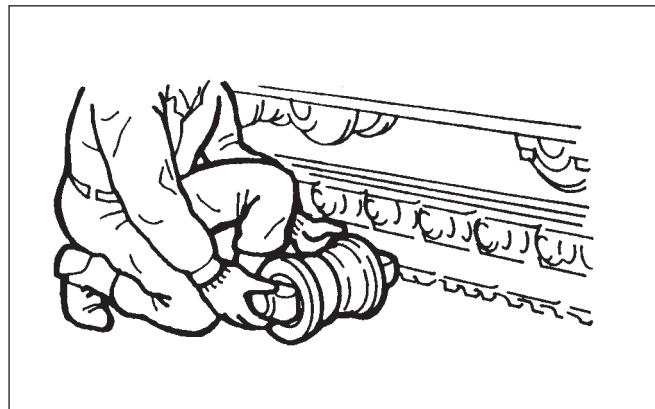
2. Lift the side of the undercarriage high enough to permit bottom roller removal. Support with wooden blocks.



3. Remove the mounting bolts, and tap the bottom roller with a copper mallet to separate it from the side frame.



4. Remove the roller.

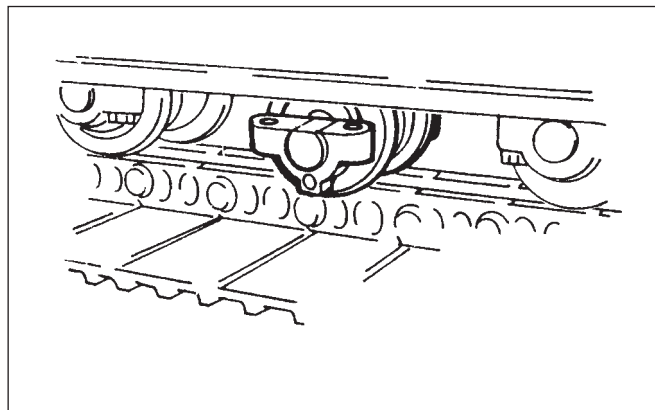


Replacement

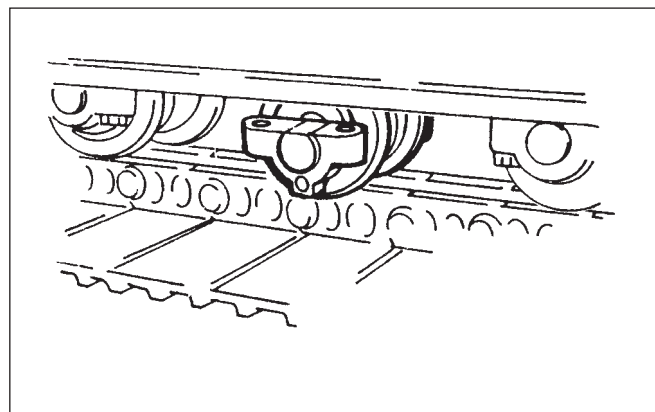
1. Before fitting the roller, add the specified oil (see Section 3). Install plug **A** using an appropriate pipe thread sealant.

With the undercarriage lifted and supported as shown under Removal, position the roller on the track link as shown.

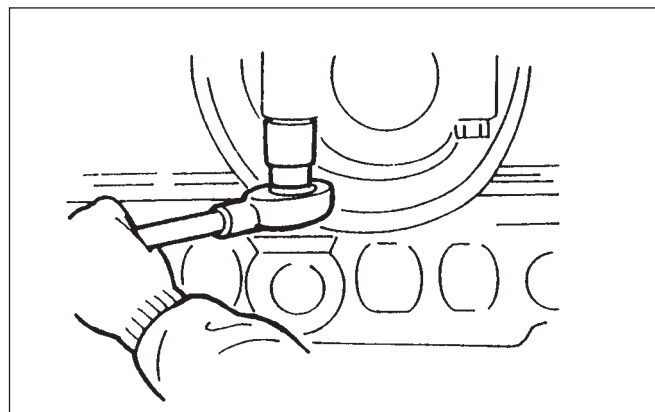
Align the holes in the brackets with the tapped holes in the undercarriage.



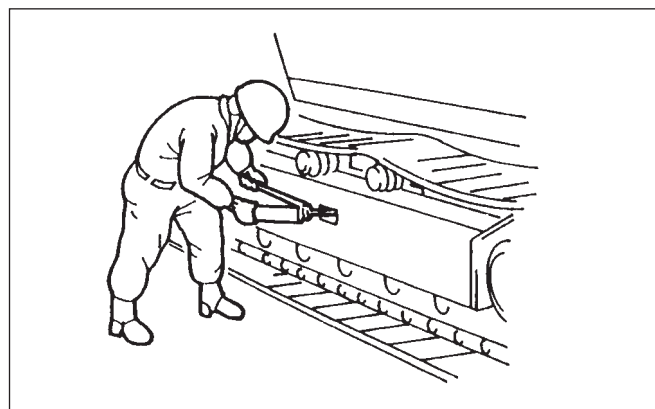
2. Lower the undercarriage sufficient to allow the mounting bolts to be installed.

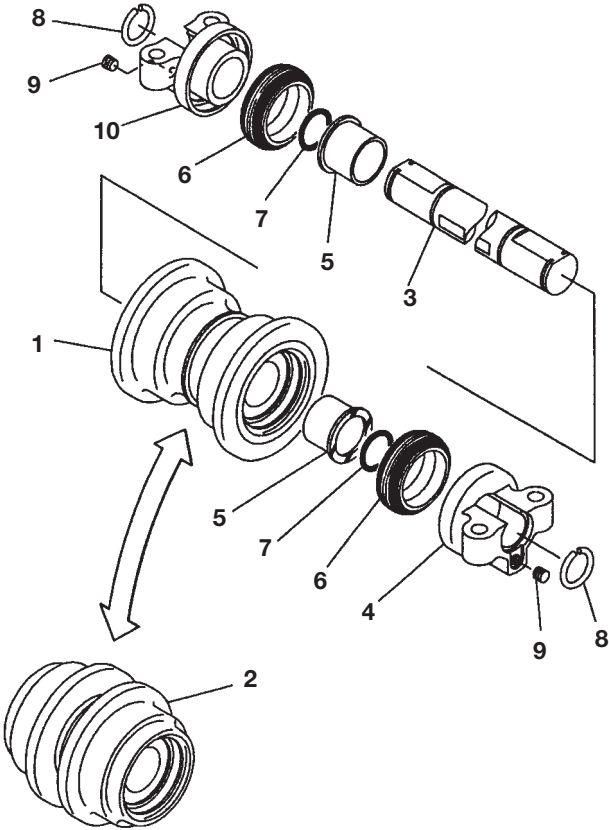


3. Apply Loctite 262 to the threads and install the mounting bolts.



4. Apply grease through the check valve to adjust the track tension (see Section 3).



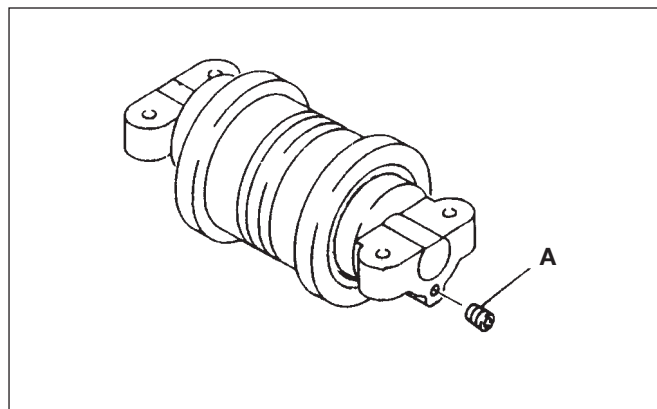


Item	Part Name
	Roller assembly(outer flange)
1	Roller (outer flange)
	Roller assembly (inner flange)
2	Roller (inner flange)
3	Shaft
4	Collar
5	Bushing
6	Floating seal
7	O-ring
8	Wire clip
9	Plug
10	Collar

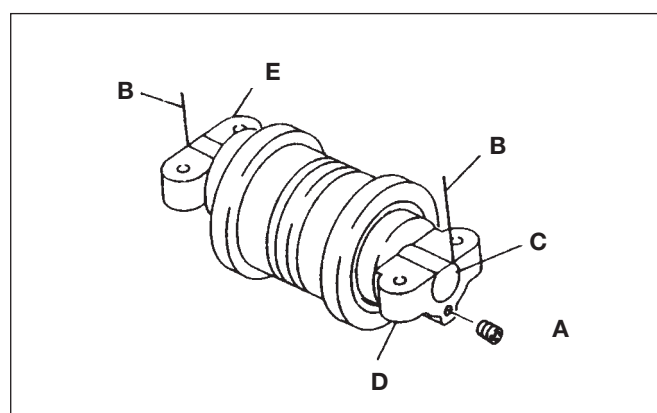
Dismantling

Note: The following procedure is applicable to all bottom rollers, but as there are visual differences, the illustrations show only a typical unit.

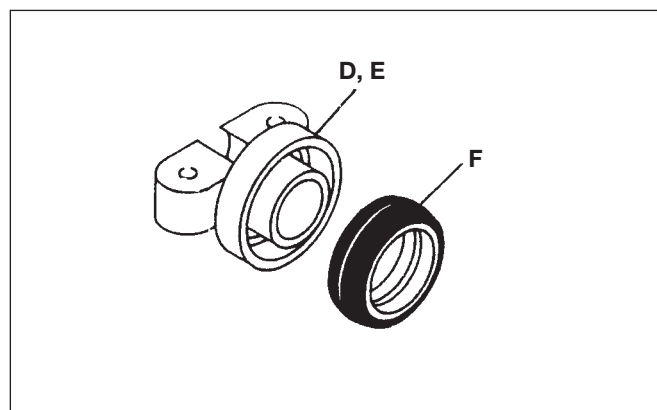
1. Clean the roller with a suitable solvent. Remove the plug **A** and drain the oil.



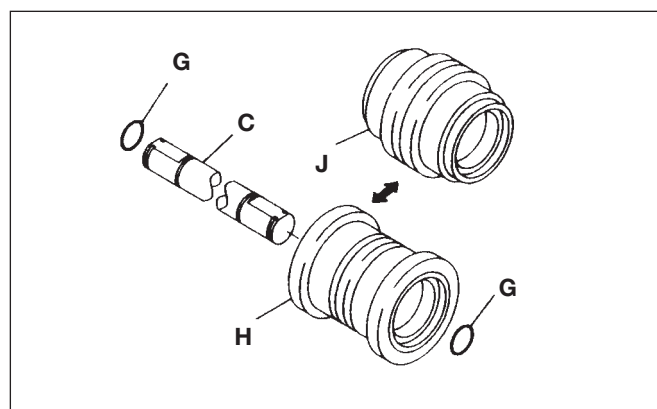
2. Remove locking wire **B** from each end of the shaft **C**. Remove brackets **D** and **E** from shaft **C**.



3. Remove seal **F** from brackets **D** and **E**, using a pry bar.

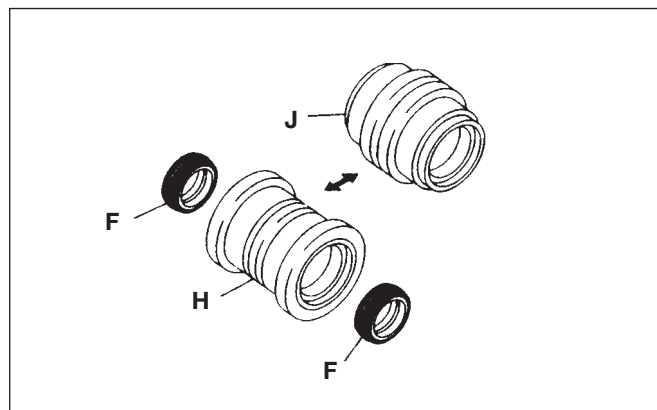


4. Remove 'O'-rings **G** from shaft **C**. Pull out shaft **C** from roller **H** or **J**.



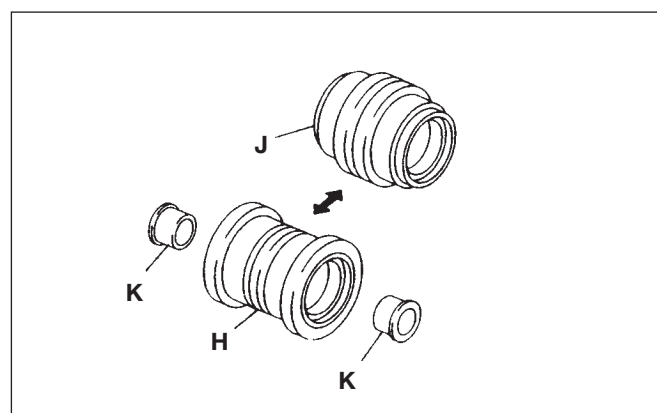
Dismantling (*continued*)

5. Remove seals **F** from roller **J** or **H** using a pry bar.



6. If badly worn or damaged, remove the bushes from roller **J** or **H**, using a press or puller.

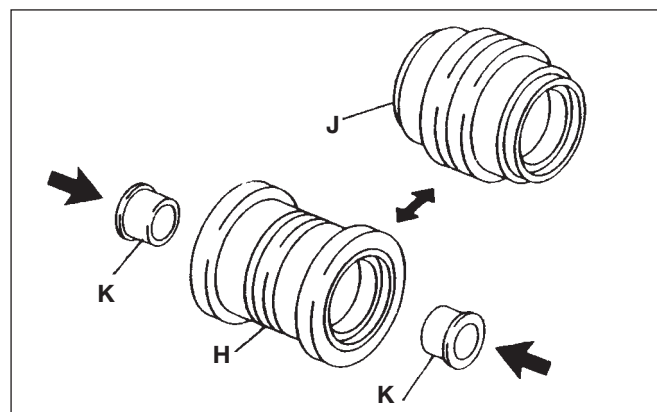
Protect parts from moisture and dust if left dismantled for some time.

**Assembly**

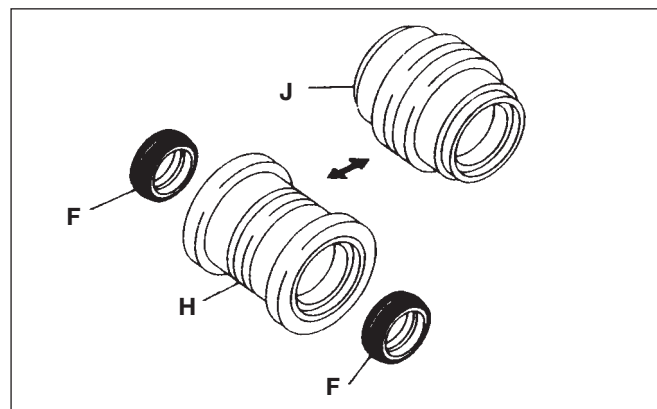
1. Clean all parts thoroughly in a suitable solvent. Dry shaft and bore of roller using compressed air in a place free of dust and moisture.

Check components for wear as detailed under Wear Limits. Polish out scratches and roughness using an oil stone. Then apply a coat of engine oil to all parts.

Drive bushes **K** into roller **J** or **H**, using a dolly and hammer.



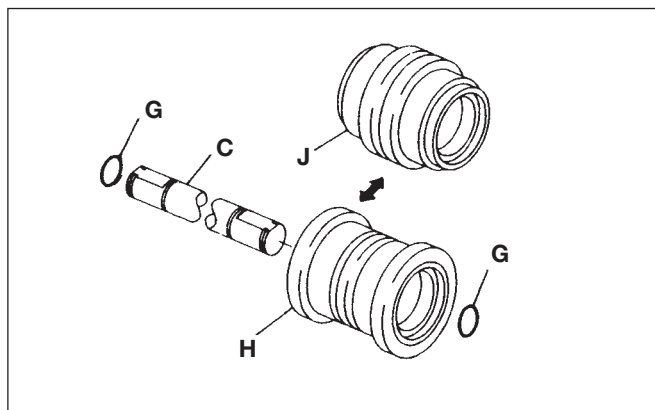
2. Install new seals **F** into roller **J** or **H**.



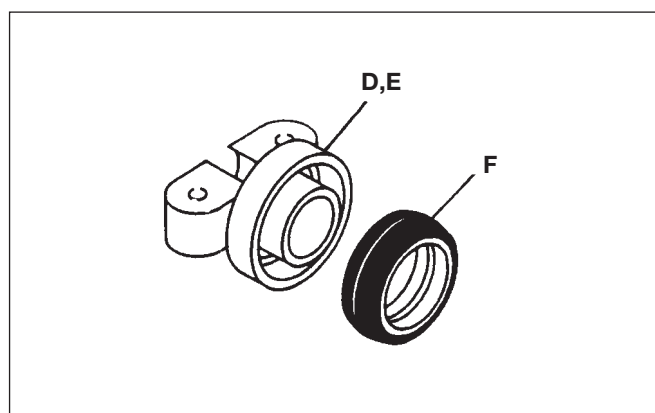
Assembly (continued)

3. Coat shaft **C** with grease. Insert the shaft into roller **J** or **H**.

Apply grease to new 'O'-rings **G** and install them on shaft **C**.

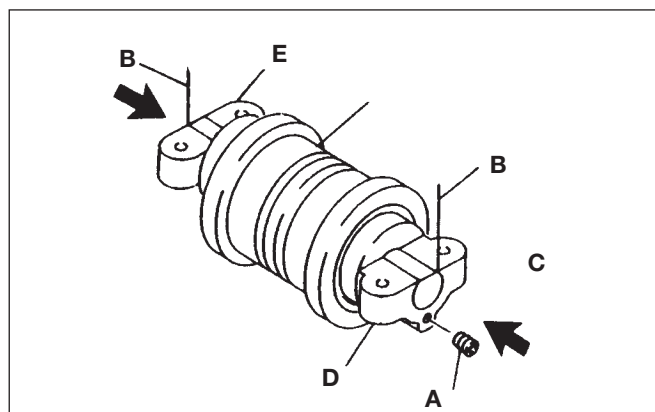


4. Install a new seal **F** into brackets **D** and **E**. Coat the metallic face of each seal with engine oil.

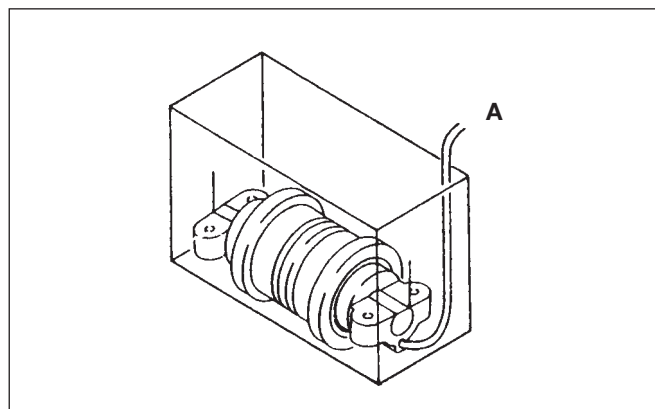


5. Press brackets **D** and **E** onto shaft **C** and insert new locking wires **B**.

Wrap sealing tape around one plug **A** with one thread remaining uncovered. Insert this plug, but leave the other one out until after testing.

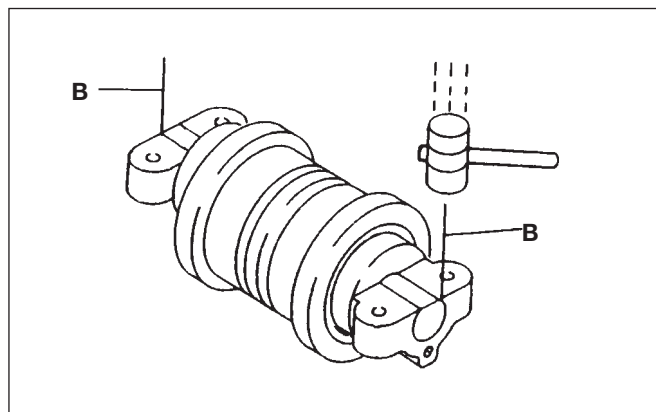


6. Using extreme care to prevent water entering the assembly, lower it into a tank of water. Connect compressed air at **A** and apply pressure of 1.9 bar (28 lbf/in²). Check for air bubbles.

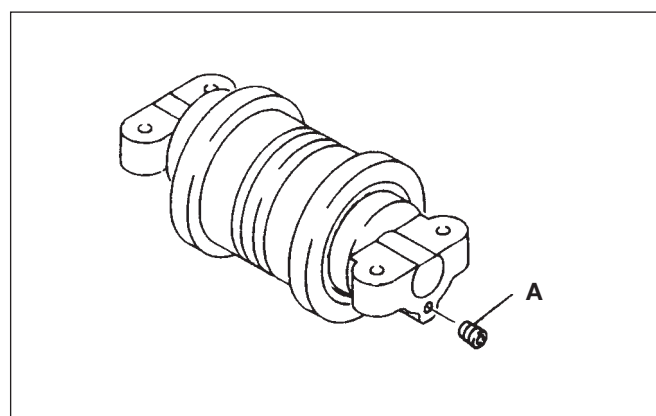


Assembly (continued)

7. Hammer in locking wires **B**.

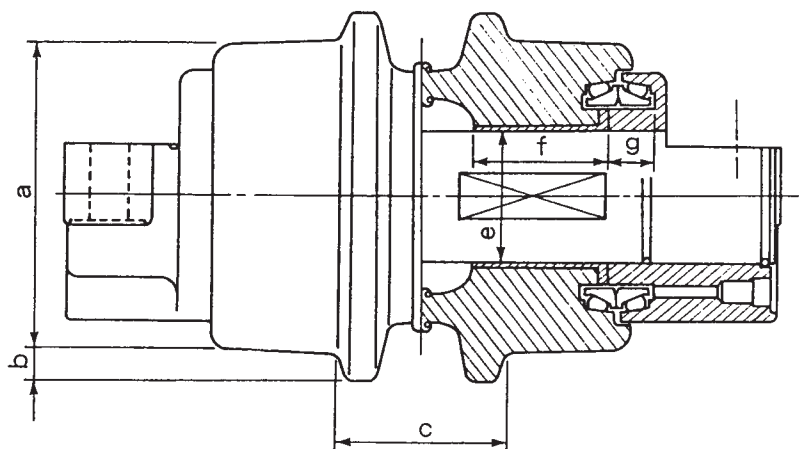


8. Add the specified oil (see Section 3). Install plug **A** using an appropriate pipe thread sealant.



Wear Limits

Item	Dimension	Machine	Standard Size		Service Limit		Action
			mm	in	mm	in	
Roller Diameter	a	JS200	150	5.9	142	5.5	Renew
	a	JS240	160	6.3	152	5.98	Renew
	b	JS200 JS240	150	5.9			Renew
Inner Flange width	c	JS200 JS240	86	3.38	80	3.14	Renew
Outer Flange width	d	JS200 JS240	173	6.8	170	6.7	Renew
Shaft Diameter	e	JS200	65	2.5	64.5	2.53	Renew
	e	JS240	70	2.7	69.5	2.73	Renew
Length	f	JS200	69	2.7	68.6	2.7	Renew
	f	JS240	74	2.9	73.6	2.9	Renew
Collar	g	JS200	28.8	1.13	28.3	1.11	Renew
	g	JS240	26.8	1.05	26.3	1.03	Renew

Lower Roller (inside)**Lower Roller (outside)**