

Document Title: Frame and track unit, specifications	Function Group: 700	Information Type: Service Information	Date: 2014/9/22
Profile:			

Frame and track unit, specifications

Specifications

Item	Unit	EC210	EC240	
Length of undercarriage	mm	4460	4650	
	inch	175.6	183.1	
Track link pitch	mm	190		
	inch	7.5		
No. of links	EA	49	51	
No. of top roller	EA	2 × 2	2 × 2	
No. of bottom roller	EA	9 × 2	9 × 2	
Spring	Type	–	Hydraulic adjuster (grease)	
	Spring, set length	mm	444 (17.5)	468 (18.4)
	Spring, free length	(in)	555 (21.9)	570 (22.4)
	Set load	kg (lbs)	13309 ± 800 (29280 ± 1760)	14916 ± 800 (32815 ± 1760)
	Adjust	mm	–20 ~ +100	
inch		–0.79 ~ +3.94		
Sprocket	No. of tooth	EA	21	21
	Pitch circle diameter	mm	644.6	644.6
		inch	25.3	25.3
No. of shoes	EA	98	102	
Ground contact pressure with standard digging unit (boom, arm, and bucket)	600 mm width (Triple grouser)	kgf / cm ²	0.43	0.47
		psi	6.11	6.69
	700 mm width (Triple grouser)	kgf / cm ²	0.38	0.41
		psi	5.40	5.83
	800 mm width (Triple grouser)	kgf / cm ²	0.33	0.36
		psi	4.69	5.12
	900 mm width (Triple grouser)	kgf / cm ²	0.30	0.33
		psi	4.26	4.69
	910 mm width (Swamp)	kgf / cm ²	0.30	0.32
		psi	4.26	4.55

Document Title: Upper (Superstructure), removal	Function Group: frame 710	Information Type: Service Information	Date: 2014/9/22
Profile:			

Upper frame (Superstructure), removal



WARNING

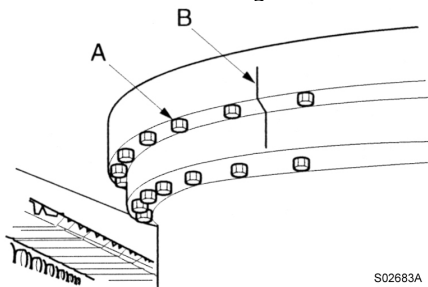
The superstructure weigh approximate 4 ~ 7 tons (excluding counterweight and digging units). Pay attention to safe footing and the area around the crane before proceeding to remove or install the superstructure.

1. Remove the digging unit.
2. Disconnect turning joint clamping screw, seal cover, hydraulic oil hoses, drain hose, and one servo hydraulic oil hose from turning joint.

NOTE!

Bundle the hoses. Blind plug each disconnected hose and pipe.

3. Remove screws (A) fixing the outer race of the slew ring.

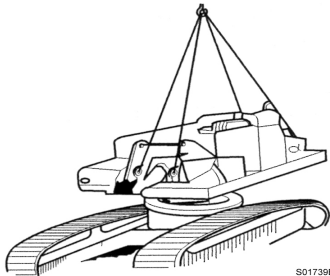


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Figure 1
Slew ring installed

- A. Screw
- B. Confirm alignment of match marks

4. Dismantle the cab, counterweight and guard. Place a wire rope on the upper frame and lift it with a crane to an extent that the wire rope is not slack.



S01739B

Figure 2
Lifting the upper frame

5. Lift the upper frame just a little, and after confirming safety all around, lift it up and out.

Document Title: Upper (Superstructure), installation	frame	Function Group: 710	Information Type: Service Information	Date: 2014/9/22
Profile:				

Upper frame (Superstructure), installation

1. Bundle the hoses attached to the turning joint together and place them upright.
2. Coat the screws and threaded holes of the slew ring with "Three bond 1215" (Loctite #515).

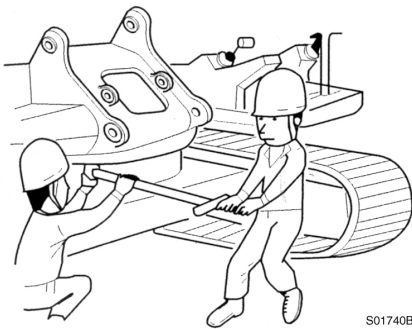


Figure 1
Installing the upper frame

3. Lift the upper frame and install it to the slew ring.
NOTE!
Lower the superstructure so that the slew pinion and the slew ring are engaged.
NOTE!
For tightening torque, see torque chart.
NOTE!
Tighten diagonally opposite screws in sequence.
4. Connect the hoses, turning joint clamping screw and seal cover disconnected for removal.

Document Title: Additional counterweight & digging unit	Function Group: 716	Information Type: Service Information	Date: 2014/9/22
Profile:			

Additional counterweight & digging unit

When special digging units (such as : scrap handling clam, log loader etc.,) are installed on the excavators, an additional counterweight is required for stability.

In these cases, check the digging unit specification and compare it carefully to the excavator load lifting capacity chart.

And if in doubt, contact your local dealer for advice.

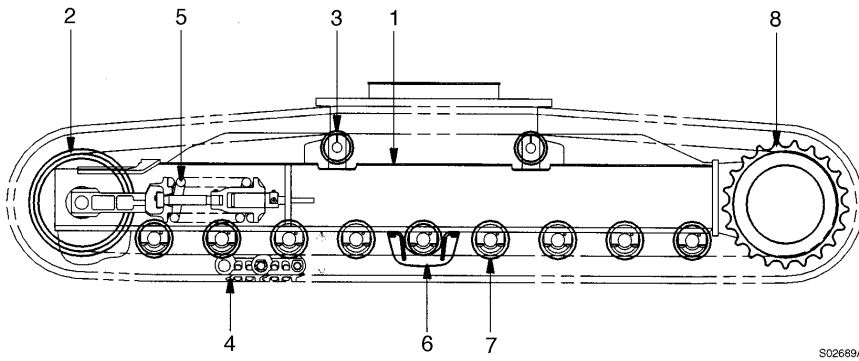
Additional counterweight can be installed according to special digging units, however we are not responsible for any failure of the excavator or breakage of digging units due to such application.

For reference, an excavator is basically designed only for excavating and is not designed to be used as a crane.

Document Title: Undercarriage, description	Function Group: 7181	Information Type: Service Information	Date: 2014/9/22
Profile:			

Undercarriage, description

Undercarriage consists of idlers, springs, top and bottom rollers, sprockets, track links, track frame and track guards.



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Figure 1
Structure, undercarriage

1	Track frame	5	Spring package
2	Idler	6	Track guard
3	Top roller	7	Bottom roller
4	Track link	8	Sprocket

Document Title: Undercarriage, tightening torque	Function Group: 7181	Information Type: Service Information	Date: 2014/9/22
Profile:			

Undercarriage, tightening torque

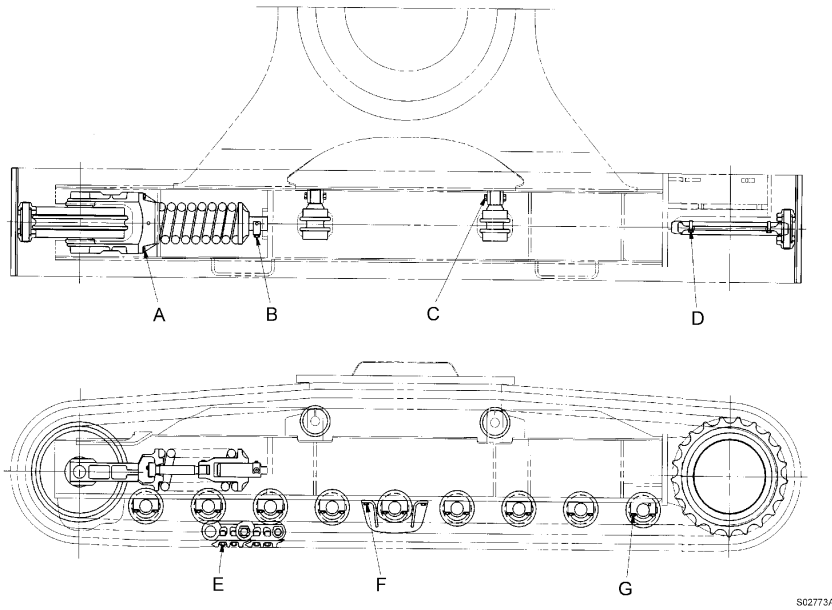


Figure 1
Tightening torque, kgf-m (lbf-ft)

A	28.5 ± 3 (206 ± 2)	D (EC210)	28.5 ± 3 (206 ± 22)	F	28.5 ± 3 (206 ± 22)
B	5 ± 0.25 (36 ± 1.8)	(EC240)	38 ± 4 (274 ± 29)	G	28.5 ± 3 (206 ± 22)
C	56 ± 6 (404 ± 43)	E	80 ~ 90 (578 ~ 650)		

Document Title: Selection of track shoes	Function Group: 775	Information Type: Service Information	Date: 2014/9/22
Profile:			

Selection of track shoes

Choose suitable track shoes to match the ground conditions.



Method of selecting shoes

Confirm the category from the list of uses in the following table then use the table "Selection, track shoes" to select the shoe.

Categories "B" and "C" are wide shoe, so there are restrictions on their use. Therefore, before using, check the restrictions and consider carefully the conditions of use before selecting a suitable shoe width. If necessary, give the customer guidance in their use.

When selecting the shoe width, select the narrowest possible within the range that will give no problem with flotation and ground pressure. If a wider shoe than necessary is used, there will be a large load on the shoe, and this may lead to bending of the shoe, cracking of the links, breakage of the pins, loosening of the shoe screws, or other problems.

Category, track shoes

Category	Use	Precautions when using
A	Rocky ground, normal soil	Travel in low speed when traveling on rough ground with obstacles such as large boulders and fallen trees.
B	Soft ground	Travel in high speed only on flat ground. When it is impossible to avoid traveling over obstacles, lower the travel speed to approximate half of low speed.  Cannot be used on rough ground where there are large obstacles such as boulders and fallen trees.
C	Extremely soft ground (swamp ground)	Use only for ground where "A" and "B" are impossible to use. Travel in high speed only on flat ground. When it is impossible to avoid traveling over obstacles, lower the travel speed to approximate half of low speed.  Cannot be used on rough ground where there are large obstacles such as boulders and fallen trees.

Selection, track shoes

Specification	EC210	EC240
600 mm grouser	A	A
700, 800 mm grouser	B	B
900 mm grouser and 910 mm swamp	C	C

Document Title: Idler, assembly	Function Group: 7751	Information Type: Service Information	Date: 2014/9/22
Profile:			

Idler, assembly

Assemble in the reverse order of disassembly.

1. Place bushing (4) on idler wheel (1), and using jig (h), force fit with press (a).

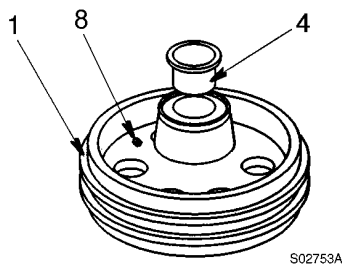


Figure 1
Assembly, bushing

2. Install o-ring (9) on shaft (2).

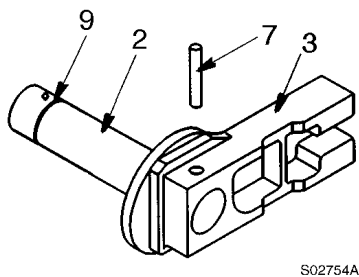


Figure 2
Assembly, o-ring and etc

3. Apply a thin coat of grease to inner side of support (3), install shaft (2), and insert spring pin (7). In this case, take care not to damage o-ring (9).
4. Insert seal ring (5) and o-ring (6) to the support and idler wheel (1), respectively.
5. Install shaft (2) to idler (1). Lightly coat engine oil on seal ring (5) contact face.

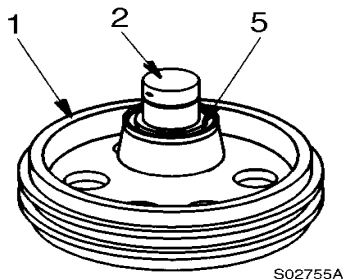
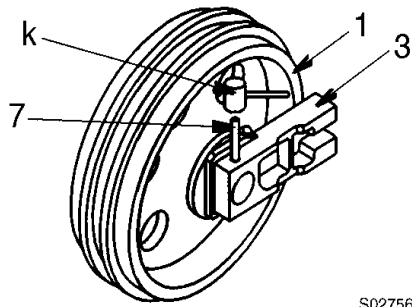


Figure 3
Assembly, shaft

6. Install support (3) with seal ring (5) and o-ring (6).
7. Insert pin (7) with hammer (k).



S02756A

Figure 4
Assembly, spring pin

8. Prior to filling with oil perform a pressure leak test. – Attach a pressure regulated air line to the oil fill port, then completely immerse the assembly in water. – Under a pressure of 2 ~ 3 kgf/cm² (28 ~ 43 psi), air bubbles must not form for 15 seconds.
9. Fill with engine oil (j).

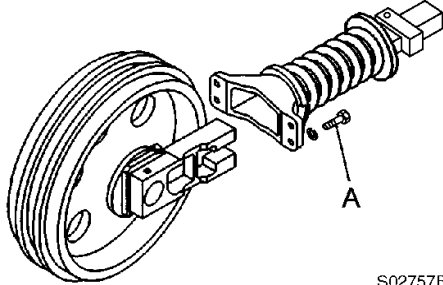
Oil amount

EC210 Series	EC240 Series
365 cc (22.3 cu-in)	

10. Install plug (8) with teflon tape (L), and tighten securely.

Inspection after assembly

1. Confirm that there are no oil leaks around seals (5,6) and plug (8).
2. Assemble the idler assembly and track spring. After assembling, manually confirm that idler (1) rotates to the extent you can rotate it despite the resistance. (More than 10 times).



S02757B

Figure 5
Assembly, idler and track spring

- Apply loctite #277 to screw A
 - Tightening torque : 25.5 ~ 31.5 kgf-m(184 ~ 227 lbf-ft)
3. End play must be within 0.1 to 0.6 mm.

Document Title: Idler, description	Function Group: 7751	Information Type: Service Information	Date: 2014/9/22
Profile:			

Idler, description

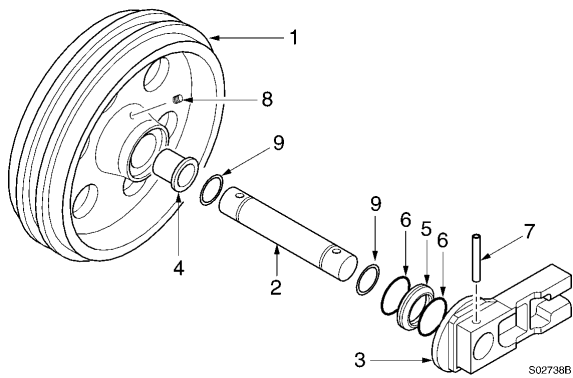
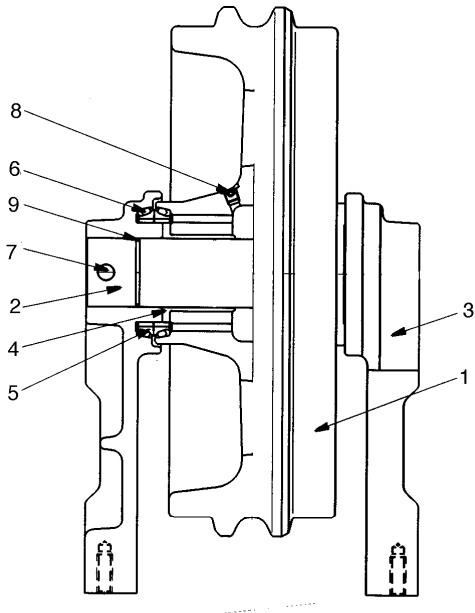


Figure 1
Structure, idler

1	Idler wheel	6	O-ring
2	Shaft	7	Pin
3	Support	8	Plug
4	Bushing	9	O-ring (shaft)
5	Seal ring		

Document Title: Idler, disassembly	Function Group: 7751	Information Type: Service Information	Date: 2014/9/22
Profile:			

Idler, disassembly

The numbers in parentheses following each part name in the text correspond to those in figure.

1. Remove the screws, and remove the spring package.

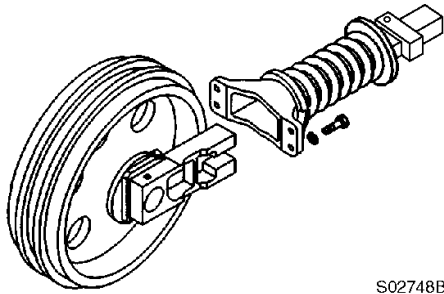


Figure 1
Removal, spring package

2. Remove plug (8) to drain oil.
3. Put pin jig (d) on pin (7), and force out the pin by lightly tapping the jig with a hammer.

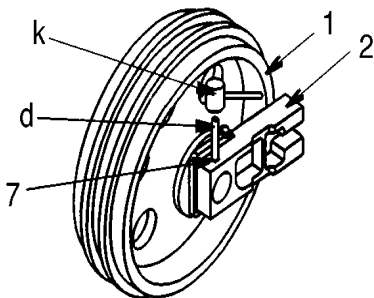


Figure 2
Removal, pin

4. Place idler (1) on idler support jig (f), put shaft removal jig (g) on shaft (2) and force out the shaft using press(a).

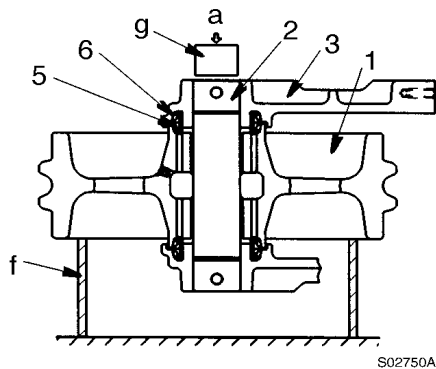


Figure 3
Push with a press

5. Place idler (1) on idler support jig (f), put bushing removal jig (e) on bushing (4), and drive out the bushing by lightly tapping the jig.

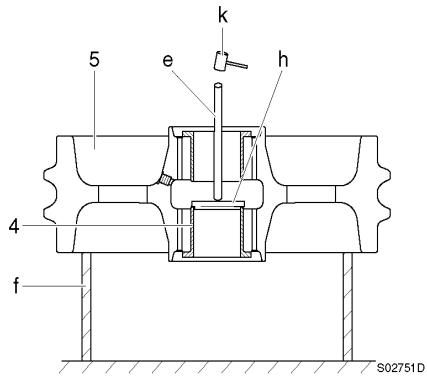


Figure 4

Removal, bushing

6. Remove seal ring (5) and o-ring (6) from idler wheel (1) and support (3), respectively.
7. Remove o-ring (9) from shaft (2).

Inspection after disassembly

1. Confirm that there is no damage or rust on the sealing face of seal (5).
2. Confirm that any wear of idler (1) is within the allowable range.
3. Confirm that any wear of shaft (2) or bushing (4) is within the allowable range.

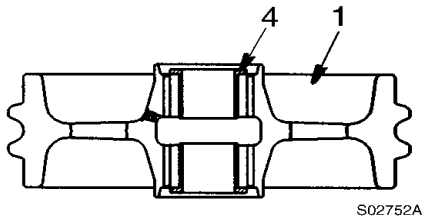


Figure 5

Location to be inspected

Document Title: Idler, installation	Function Group: 7751	Information Type: Service Information	Date: 2014/9/22
Profile:			

Idler, installation

Installation of the idler and the spring package

1. Tighten connecting screws (1) of idler and track spring.
2. Pass a wire rope around the spring package bracket, lift the idler assembly, then fit and push the slide block into the slide groove in the track frame.



Confirm that the boss at the piston end of the spring package is in the track frame hole.

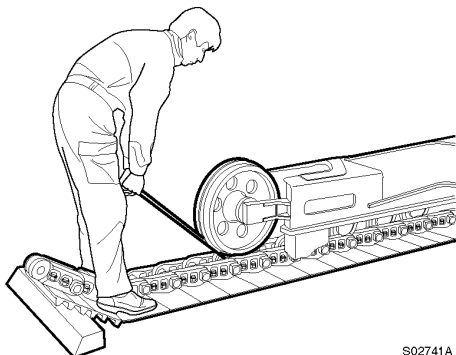


Figure 1
Install, idler assembly

3. Install the track.

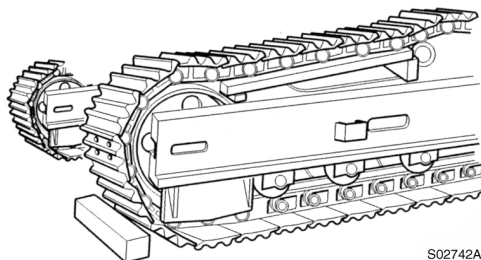
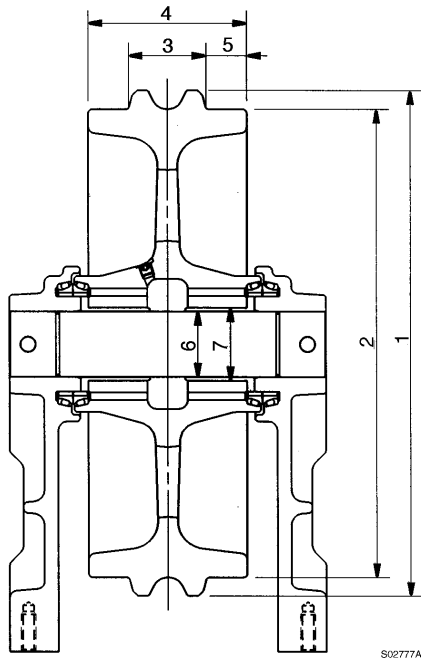


Figure 2
Installation, track

Document Title: Idler, measurement of wear	Function Group: 7751	Information Type: Service Information	Date: 2014/9/22
Profile:			

Idler, measurement of wear



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Figure 1
Measurement, wear

Limit of wear, unit : mm (in)

No.	Check item	Standard size	Repair limit		Remedy			
1	Outer diameter of flange	540 (21.3)	-		Reinforcement welding or replace			
2	Outer diameter of tread	500 (19.7)	488 (19.2)					
2-1	Tread height	20 (0.79)	26 (1.02)					
3	Width of flange	83 (3.3)	75 (3.0)					
4	Total width of tread	170 (6.7)	-					
5	Width of tread	43.5 (1.7)	50 (2.0)		Replace bushing			
6	Clearance between shaft and bushing	Standard size	Tolerance				Clearance	
			Shaft	Hole			Standard size	Repair limit
		70	-0.03 -0.09	+0.35 +0.30	0.33 ~0.44	1.5		
7	Clearance between shaft and support	78	+0.15 +0.12	+0.03 0	0.09 ~0.15	-	Replace bushing	

Document Title: Idler, removal	Function Group: 7751	Information Type: Service Information	Date: 2014/9/22
Profile:			

Idler, removal

Removal of the idler and the spring package

1. Remove the track.
2. Pass a wire rope around the track spring bracket, lift the idler assembly, and push the bracket out of the track frame using a pry bar.

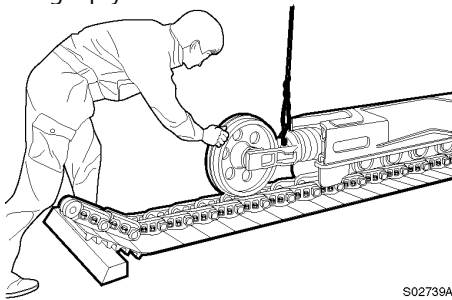


Figure 1
Removal, idler assembly

3. Remove connecting screws (1) of idler and spring package.

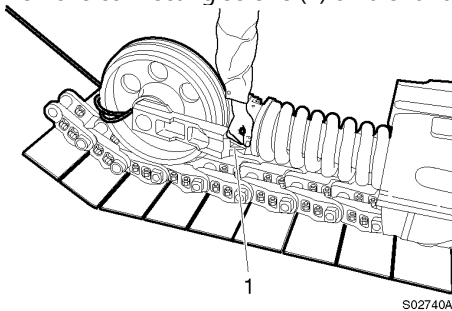


Figure 2
Removal, connecting screw

Document Title: Idler, tools for disassembly and assembly	Function Group: 7751	Information Type: Service Information	Date: 2014/9/22
Profile:			

Idler, tools for disassembly and assembly

Prepare the following tools for disassembly and assembly.

Tools (unit : mm)

Symbol	Tools	Remarks
a	Press	20 ton class (44000 lbs)
b	Grease gun	
c	Torque wrench	60 kgf-m (433 lbf-ft)
d	Pin jig 8920-00360	
e	Bushing driver jig (1) 8920-01050	
f	Idler support jig 8920-01060	400 * 300 * 40 (Width * Height * Depth)
g	Shaft extruding jig (2) 8920-01040	
h	Bushing driver jig	
j	Engine oil	SAE 10W-30
k	Hammer	
L	Teflon tape	1 Roll
m	L wrench	
n	Loctite	#277
p	Container for oil	500 cc

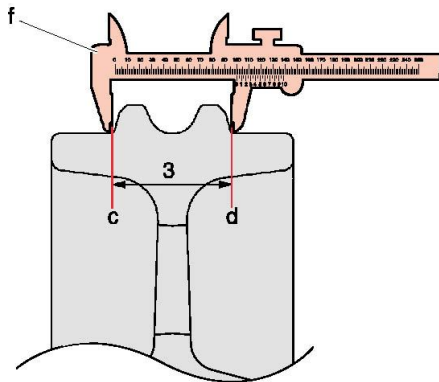
Document Title: Measuring of flange	Function Group: 7751	Information Type: Service Information	Date: 2014/9/22
Profile:			

Measuring of flange

Op nbr 00000

Vernier calipers (200 mm)

1. Clean the surface of measurement of the idler.



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Figure 1
Flange, measurement of wear

2. Measure the width of the flange between (c) and (d) using vernier calipers (1).
3. Measure 3 places to take average value.
4. Measure right and left alternately. Repair or replace if necessary.

Document Title: Measuring of tread and flange wear	Function Group: 7751	Information Type: Service Information	Date: 2014/9/22
Profile:			

Measuring of tread and flange wear

Op nbr 00000

Depth gauge (150 mm)

Tread

1. Clean the surface of tread (a) and flange (b) of the idler.

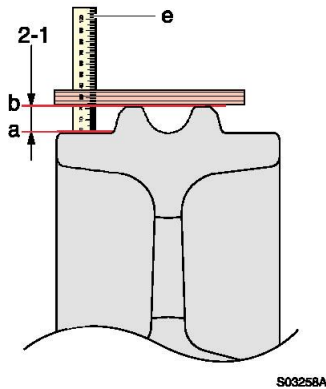


Figure 1
Tread, measurement of wear

2. Set a scale on the surface of flange (b) horizontally.
Measure the depth (2-1) between surface of flange (b) and surface of tread (a) using depth gauge (e).
3. Measure 3 places to take average value.
4. Measure right and left alternately. Repair or replace if necessary.

Document Title: Measuring of sprocket tooth profile	Function Group: 7752	Information Type: Service Information	Date: 2014/9/22
Profile:			

Measuring of sprocket tooth profile

Op nbr 00000

14516700 Sprocket wear gauge

Vernier calipers

1. Clean the sprocket.

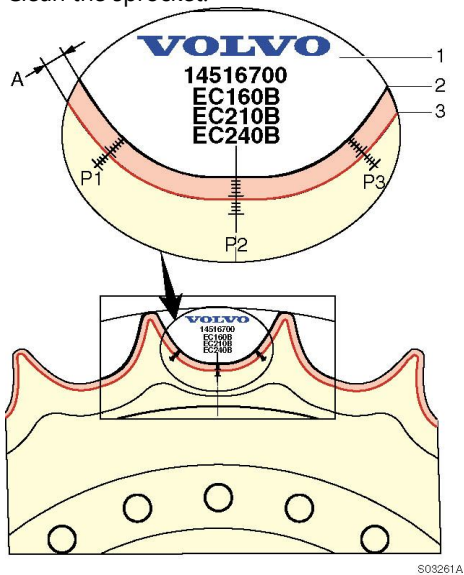


Figure 1
Sprocket tooth, measurement of wear

1	Sprocket wear gauge
2	Sprocket new part line
3	Sprocket wear part line
A	Wear of tooth profile

2. Align the P1, P2, P3 of sprocket wear gauge (1) and wear line (3) of the sprocket tooth.
3. Measure 2 places to take average value.
4. If the measuring value (A) is over wear limit, replace the sprocket.

Document Title: Measuring of sprocket tooth width	Function Group: 7752	Information Type: Service Information	Date: 2014/9/22
Profile:			

Measuring of sprocket tooth width

Op nbr 00000

1. Clean the sprocket.
2. Measure the width (B) of the sprocket using vernier calipers (A).

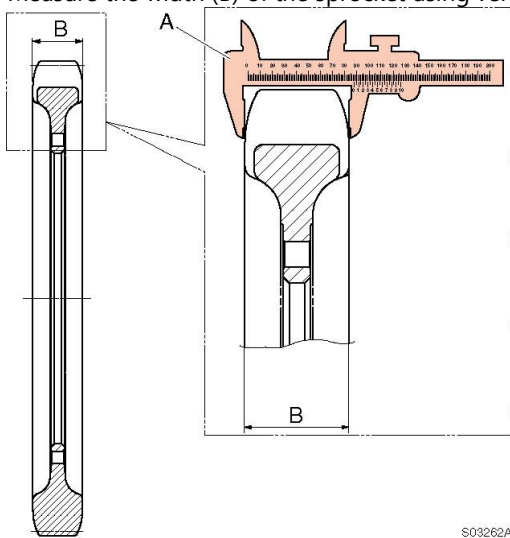


Figure 1
Sprocket, measurement of wear

A	Vernier calipers
B	Wear of tooth width

3. Measure 2 places to take average value.
4. If the measuring value (B) is over wear limit, replace the sprocket.

Document Title: Sprocket, installation	Function Group: 7752	Information Type: Service Information	Date: 2014/9/22
Profile:			

Sprocket, installation

The installation procedure is reverse order of removal.

1. Install the sprocket on the track gearbox.
2. Apply loctite #277 to the sprocket screws (C), and tighten them to the specified torque.

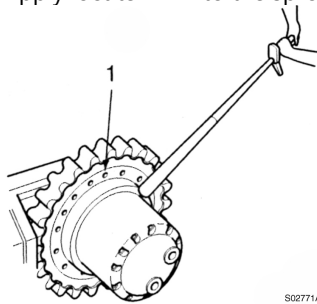


Figure 1
Screw in, screws

Tightening torque, unit : kgf-m (lbf-ft)

EC210 Series	EC240 Series
25.5 ~ 31.5 (184 ~ 227)	34 ~ 42 (245 ~ 303)

Document Title: Sprocket, measurement of wear	Function Group: 7752	Information Type: Service Information	Date: 2014/9/22
Profile:			

Sprocket, measurement of wear

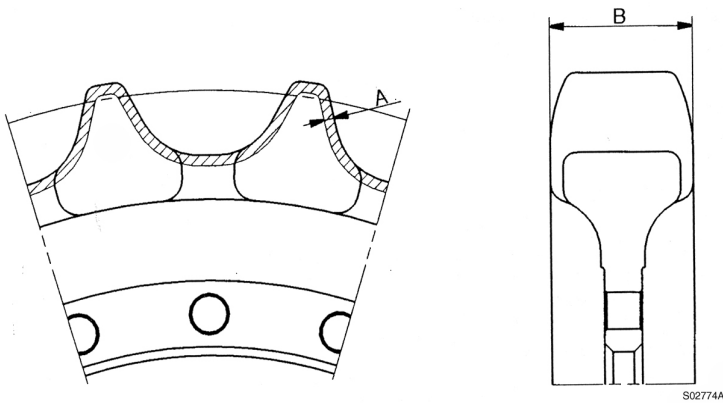


Figure 1
Sprocket

Wear limit, unit : mm (in)

Symbol	Item	Wear limit	Remedy
A	Wear limit of sprocket tooth profile	6 (0.24)	Replace
B	Width of sprocket tooth	Standard value	
		Allowable value	62 (2.44)
C	Number of tooth	21 EA.	–

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manual instantly.**

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Document Title: Sprocket, removal	Function Group: 7752	Information Type: Service Information	Date: 2014/9/22
Profile:			

Sprocket, removal

1. Remove the track.
2. Place a wooden block on the track, and place the undercarriage on the block to raise the sprocket off the track.
3. Remove the sprocket mounting screw (C), using a socket wrench.

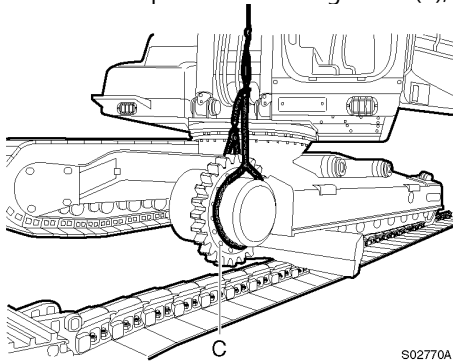


Figure 1
Removal, sprocket

Document Title: Track, adjusting track sag	Function Group: 7753	Information Type: Service Information	Date: 2014/9/22
Profile:			

Track, adjusting track sag

1. Slew the superstructure to the side, and raise the track using boom down operation.

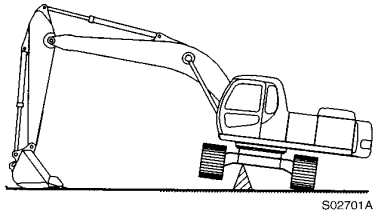


Figure 1
Raising the track

2. Slowly turn the track in forward and reverse direction several times. Stop the track while moving in the reverse direction.
3. Measure the track slack (A) at the center of track frame between track shoe and track roller mounting surface.

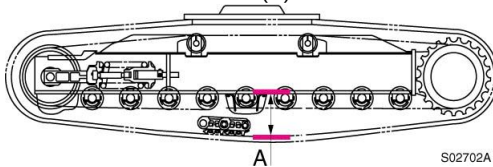


Figure 2
Measurement, track slack

! WARNING

High pressure grease in track adjuster cylinder. Do not remove grease fitting or nut and valve assembly to release grease.

4. To decrease track sag, add multi-purpose grease to track adjuster cylinder through grease nipple (B) using a grease gun with a maximum capacity 690 bar (10000 psi). To increase track sag, loosen valve assembly (A) one turn so that grease in the track adjuster cylinder can be drained through rod hole (C). Tighten the valve assembly when track sag is correct.

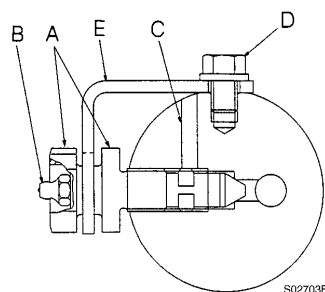


Figure 3
Adjusting, track sag

- A. Tightening torque : 7 ± 0.25 kgf-m (51 ± 2 lbf-ft)

! CAUTION

If the piston in track adjuster cylinder does not move, replace the valve assembly, repair or replace the cylinder.

5. Adjust the track sag according to soil condition of work site. See the following table.

Track sag according to soil condition, unit : mm (in)

Distance (A)	EC210/240 Series
Normal soil	320 ~ 340 (12.6 ~ 13.4)
Rocky ground	300 ~ 320 (11.8 ~ 12.6)
Soft ground (swamp, clay, sandy soil)	340 ~ 360 (13.4 ~ 14.2)