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BEFORE STARTING ENGINE

Work Site Precautions

Before starting operations, thoroughly check the area for any unusual conditions that could be dangerous.

Check the terrain and condition of the ground at the work site, and determine the best and safest method of operation.

Make the ground surface as hard and horizontal as possible before carrying out operations. If there is a lot of dust and sand on the work site, spray water before starting operations.

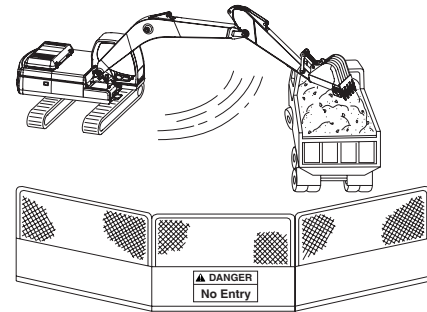
If you need to operate on a street, protect pedestrians and cars by designating a person for work site traffic duty or by erecting fences and posting "No Entry" signs around the work site.

Erect fences, post "No Entry" signs, and take other steps to prevent people from coming close to or entering the work site. If people come close to a moving machine, they may be hit or caught by the machine, and this may lead to serious personal injury or death.

Water lines, gas lines, phone lines and high voltage electrical lines may be buried under the work site. Contact each utility and identify their locations. Be careful not to damage or cut any of these lines.

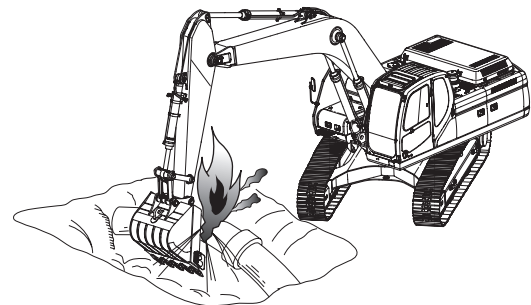
Check the condition of the river bed, and the depth and flow of the water before operating in water or crossing a river. NEVER be in water that is in excess of the permissible water depth.

Any type of object in the vicinity of the boom could represent a potential hazard, or cause the operator to react suddenly and cause an accident. Use a spotter or signal person working near bridges, phone lines, work site scaffolds, or other obstructions.



FG000400

Figure 13



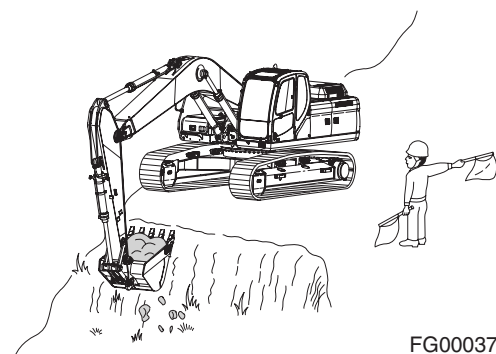
FG000363

Figure 14

Minimum levels of insurance coverage, work permits or certification, physical barriers around the work site or restricted hours of operation may be mandated by governing authorities. There may also be regulations, guidelines, standards or restrictions on equipment that may have to be followed for local requirements. There may also be regulations related to performing certain kinds of work. If there is any question about whether your machine and work site complies with the applicable standards and regulations contact your local authorities and agencies.

Avoid entering soft ground. It will be difficult for the machine to escape.

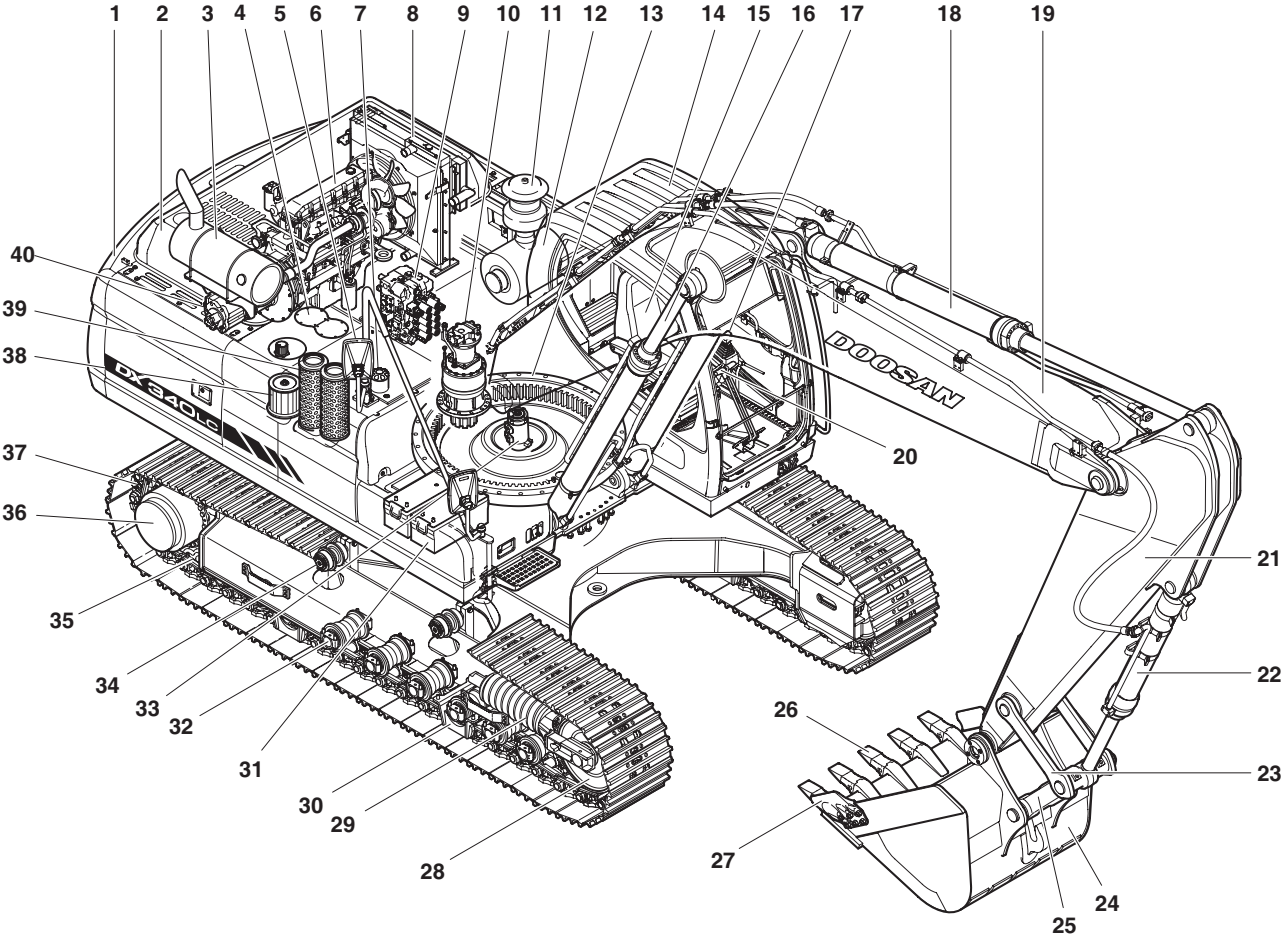
Avoid operating your machine too close to the edge of cliffs, overhangs, and deep ditches. The ground may be weak in such



FG000372

Figure 15

COMPONENT LOCATIONS



FG003644

Figure 1

CLEANING AND INSPECTION

General Guidelines

All parts must be clean to permit an effective inspection. During assembly, it is very important that no dirt or foreign material enters unit being assembled. Even minute particles can cause malfunction of close fitting parts such as thrust bearing, matched parts, etc.



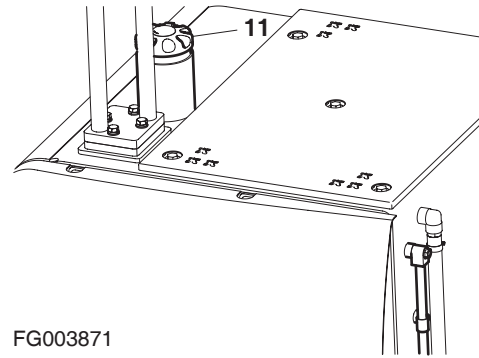
Care should be exercised to avoid inhalation of vapors, exposure to skin and creating fire hazards when using solvent type cleaners.

1. Clean all metal parts thoroughly using a suitable cleaning fluid. It is recommended that parts be immersed in cleaning fluid and moved up and down slowly until all oils, lubricants, and/or foreign materials are dissolved and parts are thoroughly clean.
2. For bearings that can be removed, soak them in a suitable cleaning fluid for a minute or two, then remove bearings from cleaning fluid and strike flat against a block of wood to dislodge solidified particles of lubricant. Immerse again in cleaning fluid to flush out particles. Repeat above operation until bearings are thoroughly clean. To dry bearings, use moisture-free compressed air. Be careful to direct air stream across bearing to avoid spinning bearings that are not lubricated. **DO NOT SPIN BEARINGS WHEN DRYING**; bearings may be rotated slowly by hand to facilitate drying process.
3. Carefully inspect all bearing rollers, cages and cups for wear, chipping or nicks to determine condition. Do not replace a bearing cone or cup individually without replacing mating cup or cone at the same time. After inspection, dip bearings in light weight oil and wrap in clean lintless cloth or paper to protect them until installation.

For those bearings that are to be inspected in place; inspect bearings for roughness of rotation, scoring, pitting, cracked or chipped races. If any of these defects are found, replace bearings. Also, inspect defective bearing housing and/or shaft for grooved, galled or burred conditions that indicate bearing has been turning in its housing or on its shaft.

4. It is more economical to replace oil seals, O-rings, sealing rings, gaskets and retaining rings when unit is disassembled than waiting for premature failures; refer to latest Micro Fiche and/or Parts Book for replacement items. Be extremely careful when installing sealing members, to avoid cutting or scratching. Curling under of

- Clean area around fuel tank fill cap (11, Figure 5). Open fuel cap.

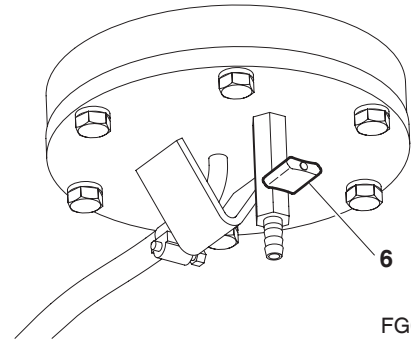


FG003871

Figure 5

- Place a large enough container under fuel tank to collect remaining fuel. Open drain valve (6, Figure 6) at bottom of tank and drain.

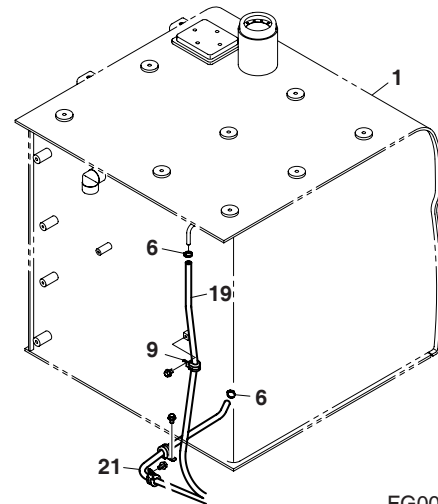
NOTE: Fuel tank capacity is 550 liters (145 U.S. gal).



FG003872

Figure 6

- Tag and disconnect fuel supply line (21, Figure 7) and fuel return line (19) from fuel tank (1) and carefully drain remaining fuel from lines.
- Remove clamp (9, Figure 7) holding fuel return line (19) to tank (1).



FG005213

Figure 7



Figure 52

4. Insert the collar in the shaft, keep it horizontal, put the piston on it, put the press fitting jig on it, and use a press to insert it.

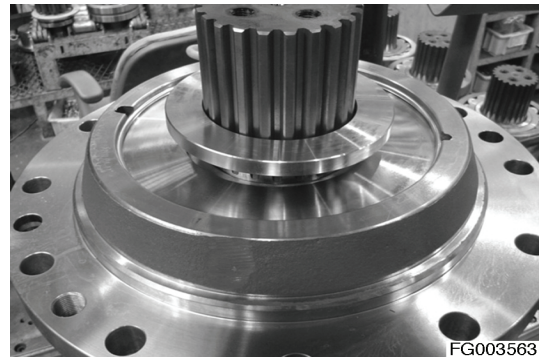


Figure 53



Figure 54

5. Put the lock plate on it, engage the bolt applied Loctite #262 (M16x40, torque: 2,700 kgf•cm), and complete the procedure by tying it with wire as shown in the figure below.

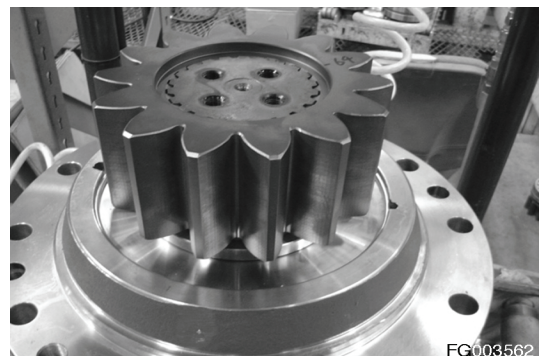
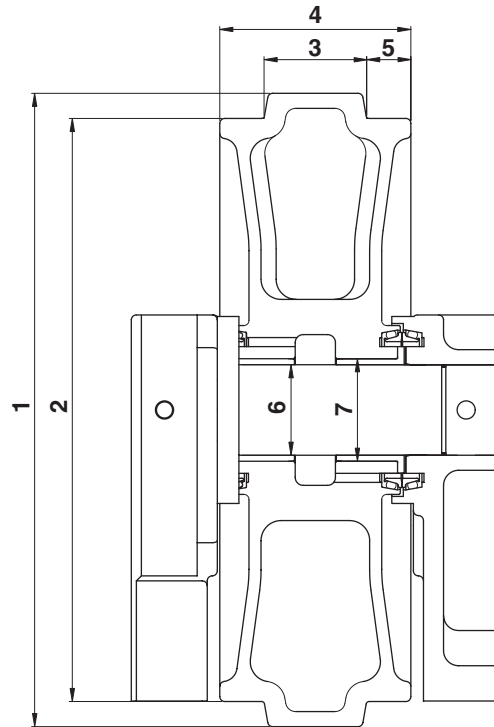


Figure 55

Front Idler



FG000510

Figure 7

No.	Check Item	Standard Dimension	Recommended Limit for Maintenance		Limit for Use (Repair - P or Replace - R)	
1	Outside Diameter of flange	630 mm (24.803")				
2	Outside Diameter of Tread	580 mm (22.835")	572 mm (22.520")		568 mm [P] (22.362")	
3	Width of Protrusion	102 mm (4.016")				
4	Total Width	190 mm (7.480")				
5	Width of Tread	44 mm (1.732")	47 mm (1.850")		49 mm (1.929")	
6	Clearance between shaft and bushing	Standard Dimension	Tolerance		Standard Interference	Repair Limit
		90 mm (3.543")	Shaft	Hole		
			-0.072	+0.34	0.372 - 0.447	1.0 mm [R] (0.039")
			-0.107	+0.30		
7	Interference between roller and bushing	Standard Dimension	Tolerance		Standard Interference	Repair Limit
		102 mm (4.016")	Shaft	Hole		
			+0.190	+0.054	0.101 - 0.19	
			+0.155	0.0		

SAFETY PRECAUTIONS



CAUTION

Follow all safety recommendations and safe shop practices outlined in the front of this manual or those contained within this section.

Always use tools and equipment that are in good working order.

Use lifting and hoisting equipment capable of safely handling load.

Remember, that ultimately safety is your own personal responsibility.

APPLICABLE MODELS

The contents of this section apply to the following models and serial number ranges.

MODEL	SERIAL NUMBER RANGE
DX340LC	5980 and Up

SWING SYSTEM TROUBLESHOOTING

Precautions/Initial Checks

1. Stop work. Release all weight or any type of load safely before proceeding. Avoid risking injury or adding to damage.
2. Shut down engine and disengage control functions until initial tests are ready to be made.



Prevent possible injury and/or loss of operating control. Stop work and park the excavator at the first indication of:

1. **Equipment breakdown.**
 2. **Inadequate control response.**
 3. **Erratic performance.**
-

Stop the machine, put the boom and arm in the inoperative (overnight park) position and begin by making the fastest, simplest checks first:

- Check oil level.
- Check for overheating, oil leaks, external oil cooler clogging or broken fan belt. Consult service record for prior repair/service work.
- Drain some tank oil into a clean, clear container. Look for metal shavings/grit, cloudiness/water or foam/air bubbles in the oil.
NOTE: *Dispose of drained fluids according to local regulations.*
- Check for wobble through the engine/pump flex coupling. Run engine with the pump input hydraulic power control nut turned to the lowest power to check the engine.
- Investigate unusual operating noises or vibration. Check for loose bolts, connections.

Operation of Relief Valve

The relief valve performs two functions:

1. It maintains uniform pressure when hydraulic motor starts and bypasses surplus oil at the inlet of the motor to the outlet in relationship with acceleration of the inertia weight.
2. Device is forced to stop by the generation of brake pressure at the discharge side when the inertia weight is stopped.

High-pressure oil flowing in to port P increases pressure in the shockless spool through a poppet orifice, which acts to keep a set pressure when it is higher than the spring force.

It maintains a set pressure when the hydraulic motor starts and forces the swing motor to stop by generating brake pressure at the discharge side when the inertia weight stops.

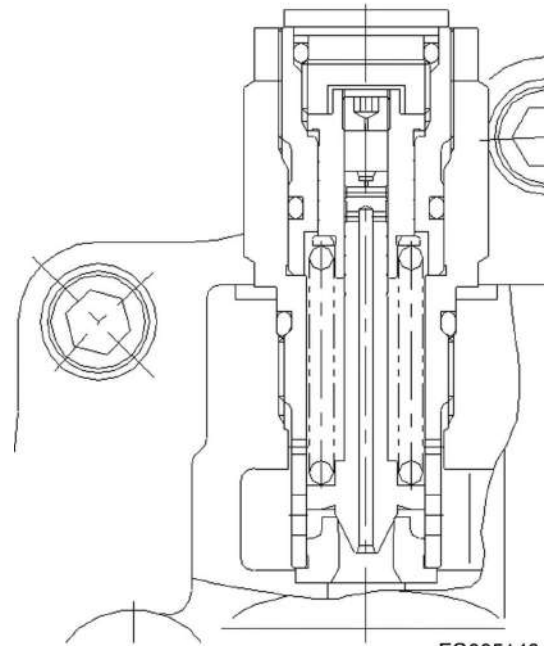


Figure 3

Operation of Parking Brake

1. Swing Brake Off

Pilot oil moves the swing spool and flows to port SH of time delay valve in swing motor through shuttle valve in case when the swing control lever is in the swing position. This pressure moves the spool to the left against the spring force, causing the port PG oil of the time delay valve to move to the parking piston. The oil moves the parking piston, pressing the friction plate upwards to release the parking brake.

2. Swing Brake On

When the swing control lever is returned to the neutral position, swing pilot pressure applied to the port SH in the time delay valve through shuttle valve will be blocked. The spool is returned by spring force and the port PG pressure at the time delay valve, which always is ready if the relief valve is interrupted by flow to the parking piston. The orifice then causes a six second time delay at the spool to prevent the discharge of line oil at that time in order to avoid any shock when the swing brake is suddenly applied.

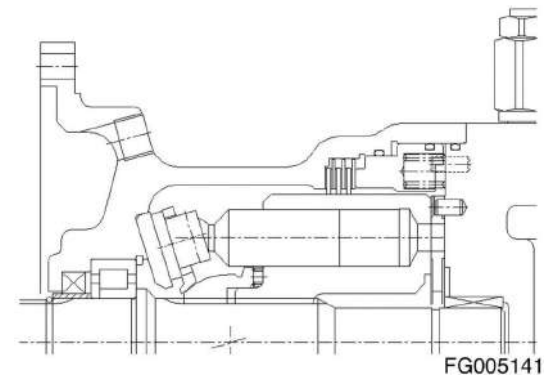


Figure 4

Reduction Gear Part

Tool name	B Dimension	Applying part name
Hex L-wrench	4 mm	Socket Screw (054)
	84 mm	Socket Bolt (030)
	10 mm	Plug (032)
	14 mm	Socket Bolt (029)
Pliers (For shaft)		Snap Ring (044, 037)
Eye Bolt (M8)		Ring Gear (001)
Eye Bolt (M10)		No. 2 Carrier (006)
Eye Bolt (M16)		Housing (002)
Eye Bolt (M20)		Shaft Casing (272)
Hammer, Plastic hammer		Also wood hammer is possible
Driver (-)		Jig for assembling of floating seal
Press (1 ton)		Angular Bearing (033)
Depth Gauge (100 mm in depth)		For adjusting washer (053)
Punch		Spring Pin, set screw caulking
Torque Wrench		
Tap (M16)		For removing LOCTITE from threaded part
Oilstone		Finish
Loctite (Three Bond 1373B)		Set Screw (054)
Loctite		Socket Bolt (029)
Jig for Assembling Nut Rings		Nut ring (047)

8. Install thrust ring (027) on shaft casing (272).

NOTE: Use care to assembly direction for thrust ring (Guide groove should face up.).



Figure 91

9. Install needle cage (023) inside No. 3 planetary gear (014) and assemble side plate (020) on both sides, then insert gear assembly into shaft casing.

NOTE: Align pin hole of shaft casing with center of planetary gear.



Figure 92

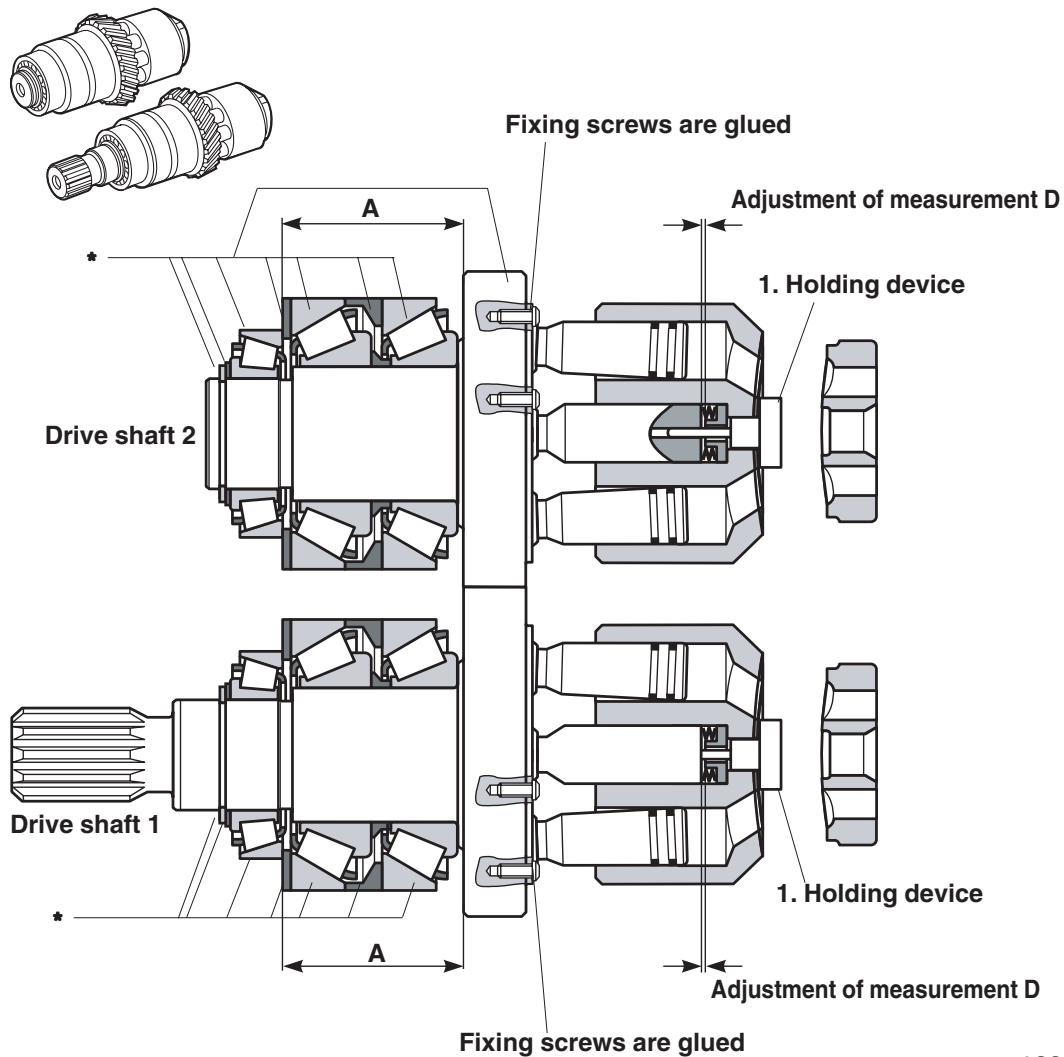
10. Insert No. 3 pin (017) into shaft casing. Install snap ring (037).



Figure 93



Figure 94



ASS0510L

Figure 52

- NOTE:**
- 1) Position (*) drive shafts with bearing set are the smallest assembly group.
 - 2) The assembly group is adjusted to measurement A.
 - 3) The tapered roller bearings are adjusted to the specified through-torque.

- NOTE:**
- 1) Fixing screw - Retaining device.
 - 2) Removal of screws is only possible if drive shaft is warmed up to a temperature of approximately 120°C for 1/2 hour in an oil bath or heat air furnace.
 - 3) Remove screw quickly.

INITIAL OPERATION

Item	Input (Terminal)	Output (Operation and initial setting mode)
Initial Operation	When "CN6-1,2" is applied battery voltage (starter switch shifts from "OFF" to "ON")	<ul style="list-style-type: none"> LCD, all of LED and warning lights are turned "ON" and turned "OFF" after about 2 seconds. Warning buzzer is activated and turned "OFF" after about 2 seconds. Power mode: Standard mode. Auto Idle: High Output (Activation). Display: Indicating coolant temperature, Fuel level, Hydraulic oil temperature, Engine speed. Clock: Current time display.

NOTE: Refer to method for setting clock in operation manual for setting time.

MODE SELECTOR SWITCH

Power Mode Switch

Operation Mode		Output Check (Operation mode display)	e-EPOS Output		
			Electromagnetic Proportional Reducing Valve (E.P.P.R Valve) Current (mA)	Pressure Swing Priority Solenoid Valve	7-Segment Display
Power Mode	Power Mode	ON	No-load: 200 ± 20mA Load: Variable output (Max. current: 650 ± 20mA)	-	9 x
	Standard Mode	OFF	No-load: 350 ± 20mA Load: Variable output (Max. current: 650 ± 60mA)	-	7 x
	Economy Mode		No-load: 400 ± 20mA Load: Variable output (Max. current: 650 ± 60mA)	-	5 x

NOTE: When the engine speed is below 1,000 rpm, the output current of E.P.P.R valve is fixed to be 600 ± 60mA.

Auto Idle Switch

Operation Mode		Output Check (Operation mode display LED)
Auto Idle	Activation	ON
	Cancellation	OFF