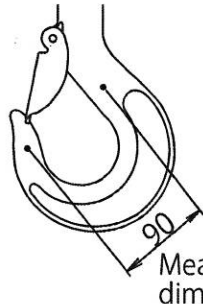
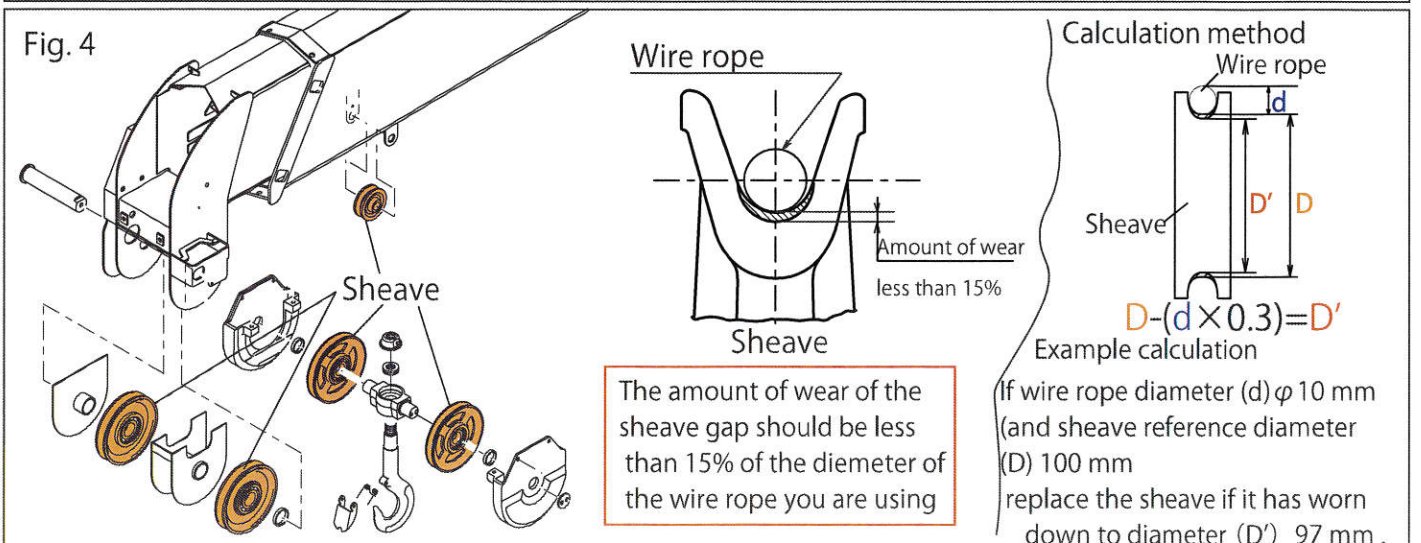
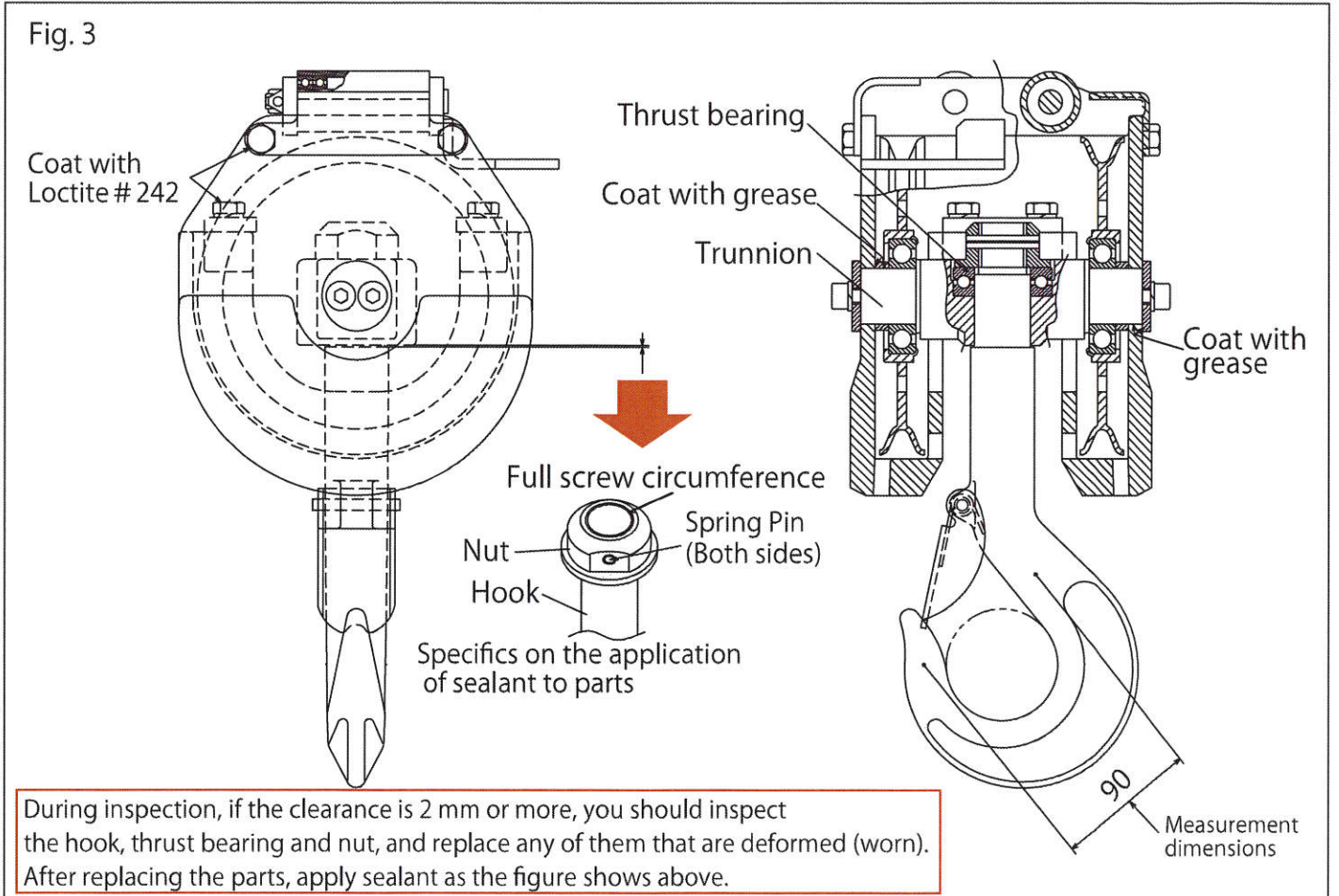
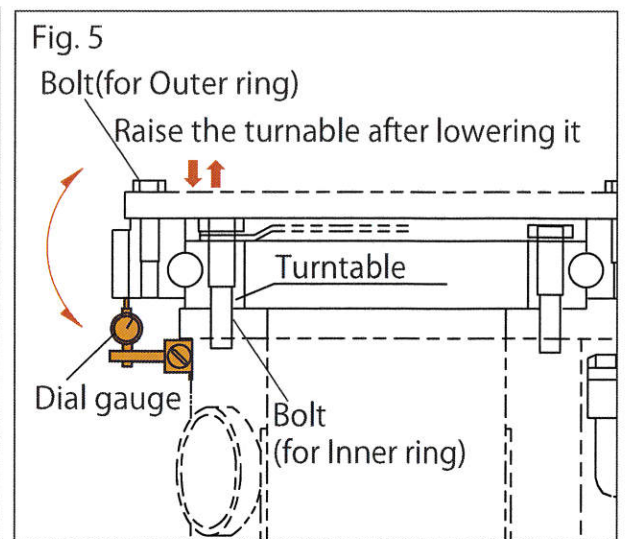
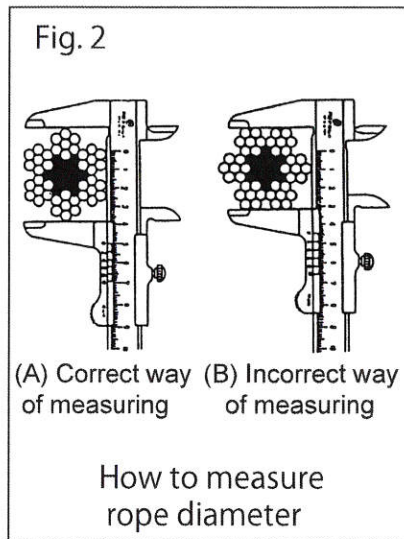
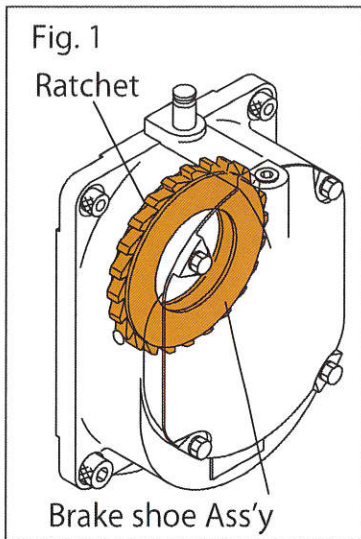


No.	Parts, equipment	Replacement criteria
1	Packing and seals for each cylinder	3 years
2	Boom slide plate	Three years, or a wear amount of 2 mm or more
3	Hydraulic hose	Three years, or damaged/deformed
4	Hoist winch brake shoe Ass'y See Fig.1	Replace after 3000 hours or every three years. (Replacement criteria: 2.5 to 3 mm shoe thickness)
5	Filter element replacement	Return
		Line
6	Wire rope See Fig.2	Yearly but replace it after 3 months from the start.
		1 Year from the start and new pump, also everytime new pump.
7	Various rubber parts (Wires, cables, etc.)	The rope diameter has decreased by 7% or more of the rated diameter. 10% or more of the wires come to broken within a pitch of strand. The rope is kinked, significantly misshaped, corroded.
8	Batteries, switches, light bulbs, fuses	Replace based on how damaged they are.
9	Hook, thrust bearings, nuts See Fig.3	<p>The original gauge length (hook opening) has widened more than 5% of the reference size. The trunnion clearance is 2 mm or more. Original hook gauge length. (Interval for punchmark) UR 100, 200 → 60 mm UR 230 ~ 500 → 90 mm UR 580, 600 → 130 mm UR 1000, 1200 → 130 mm Original gauge length</p> 
10	Wear limit of sheave See Fig.4	The amount of wear for the diameter of the wire rope you are using is 30% or more.
11	Turntable (Place the dial gauge on the rope to measure the inner and outer clearance. ) See Fig.5	<p>The following are the measurements used as the replacement benchmarks. (Small) 2.4 mm (Medium) 2.6 mm (Large) 2.8 mm</p> <p>※ It must be needed to replace all bolts that 1 or more bolts slacked at inner ring and outer ring.</p>
12	Outrigger sinking(at the rated load)	Replace if it sinks 1.5 mm in 5 minutes. See Fig.6
13	Derrick sinking(at the rated load)	Replace if it sinks 2.0 mm in 5 minutes. See Fig.7
14	Telescoping boom sinking (rated load, 60° boom angle, 1 section of the boom)	Replace if it sinks 5.0 mm in 5 minutes. See Fig.8



# Inspection to measure outrigger cylinder sink

## 1. Steps to take before inspection

- ① Extend the outrigger cylinder out fully.
- ② Place a line on the rod with a felt pen. (Fig. 6-1)
- ③ To release the pressure remaining in the outrigger system, stop the engine and shift the manual lever for extending/retracting the outrigger.

## 2. Starting the inspection

- ④ Remove the retraction pipe to check if oil overflows from the retraction side port of the cylinder side. Also, check how much the rod moves. If no oil flows out of the retraction side port, the cylinder is normal.
- ⑤ Next, remove the extension pipe. If oil overflows from the pilot check valve of the extension port, the seating surface of pilot check valve is damaged. (refer to Fig.6-2) Also, check how far the cylinder sinks.

### Caution

To release the pilot pressure in the retraction side, be sure to remove the extension side hose after the retraction pipe has been removed. (refer to Fig. 6-1)  
If oil overflows from the retraction side port, it means that the cylinder is leaking internally. Be sure to measure the how far each outrigger cylinder sinks as it is key for judging whether each outrigger is normal or abnormal.

Fig.6-2

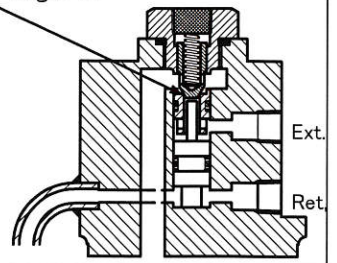
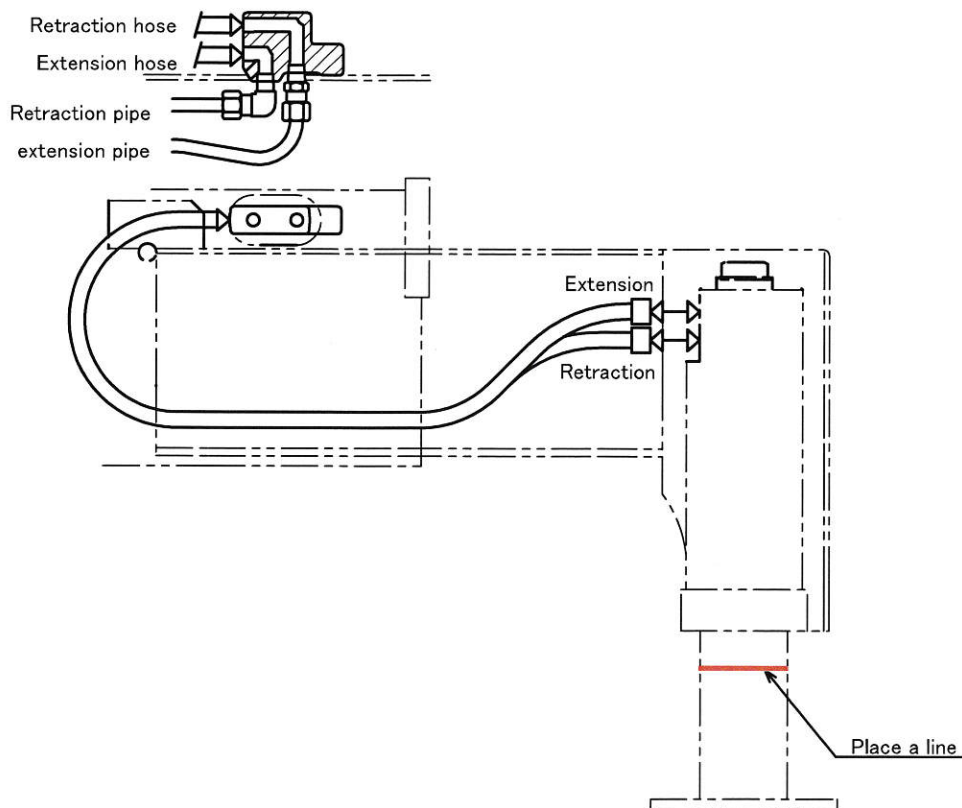


Fig.6-1





# Inspection to measure derrick cylinder sink

## 1. Steps to take before inspection

- ① Raise the boom to an angle of approx.  $30^{\circ}$  .
- ② Place a mark on the rod with a felt pen. (refer to Fig.7-1)
- ③ To release the pressure remaining in the derrick system, stop the engine and shift the manual lever for raising/lowering the boom.

## 2. Starting the inspection

- ④ Remove the lowering hose to check if oil overflows from the lowering side port of the cylinder side. Also, check how much the rod moves.  
If no oil flows out of the lowering side port, the cylinder is normal.
- ⑤ Next, remove the raising side hose. If oil overflows from the counterbalance sheet surface of the raising port, the counter balance sheet surface is damaged. (Fig.7-2)  
Also, check how far the cylinder sinks.

### Caution

To release the pilot pressure in the lowering side, be sure to remove the raising side hose after the lowering side hose has been removed. (Fig.7-3)

If oil overflows from the lowering side port, it means that the cylinder is leaking internally.

Be sure to measure the how far the derrick cylinder sinks as it is key for judging whether the cylinder normal or abnormal.

Fig.7-1

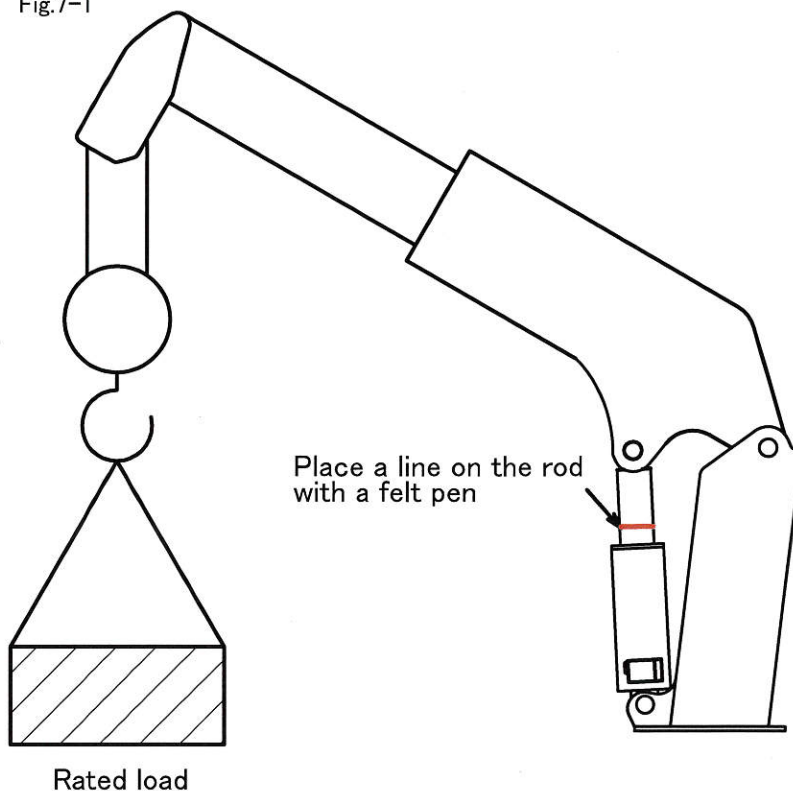


Fig.7-2

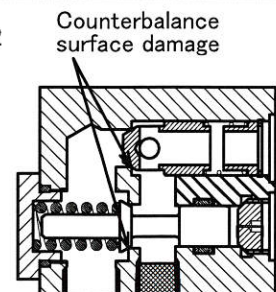
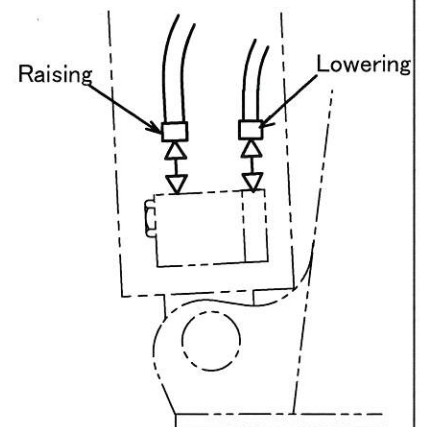


Fig.7-3



# Inspection to measure sinking in the Dual telescopic cylinder 3 or 4 section boom

## 1. Steps to take before inspection

- ① Level the boom, extend its sections out fully and place a mark on each boom section. (Fig.8-1)
- ② Raise the boom to its maximum boom angle and suspend a load.
- ③ To release the remaining pressure in the telescoping system, stop the engine and shift the manual lever for boom telescoping.

## 2. Starting the inspection

- ④ Remove the retraction hose to check if oil overflows from the retraction side port of the cylinder side.  
Also, check which boom section sinks and assess their overall condition.  
If no oil flows out of the retraction side port, the cylinder is normal.

- ⑤ Next, remove the extension hose. If oil overflows from the extension port of the counterbalance, the sheet surface of the counterbalance is damaged. (refer to Fig.8-2)  
Also, check how far boom section.3 sinks.

### Caution

To release the pilot pressure in the retraction side, be sure to remove the extension hose after the retraction hose has been removed. (Fig.8-3)  
If oil overflows from the retraction side port, it means that the cylinder is leaking internally. Inspect tele 1 and tele 2 separately.  
Be sure to measure the how far each boom sinks as it is key for judging whether the boom it is normal or abnormal.

Fig. 8-1

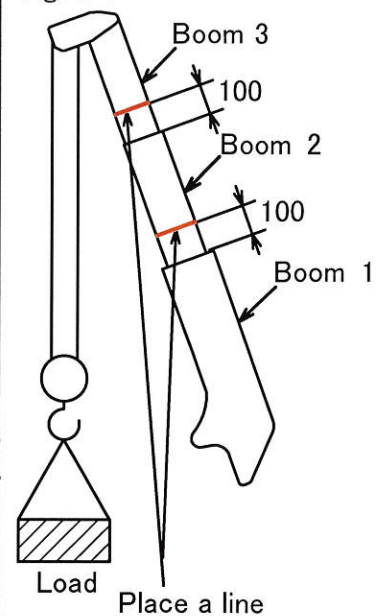


Fig. 8-2 Counterbalance surface damage

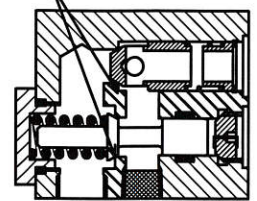
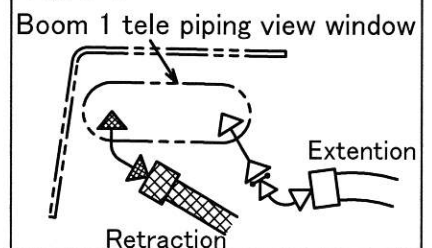


Fig. 8-3



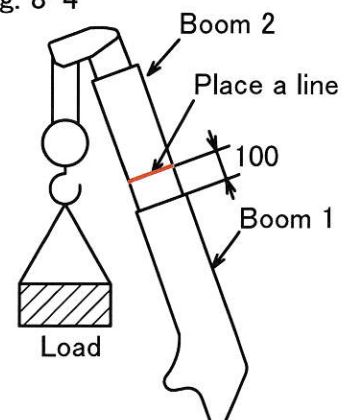
## 3. Inspecting Tele1

- ⑥ Extend the boom until it lies slightly below boom section 2 and mark a line on it. (Fig.8-4)
- ⑦ Raise the boom to its maximum boom angle and suspend a load.
- ⑧ To release the remaining pressure in the telescoping system, stop the engine and shift the manual lever for boom telescoping.
- ⑨ Remove the retraction hose to check if oil overflows from the retraction side port of the cylinder side. If boom 2 sinks, tele 1 is leaking internally.  
Also, check how far boom 2 sinks.

## 4. Inspecting Tele2

- ⑩ Level the boom, extend its sections out fully and place a mark on each boom section. (Fig. 8-1)
- ⑪ Raise the boom to its maximum boom angle and suspend a load.
- ⑫ To release the remaining pressure in the telescoping system, stop the engine and shift the manual lever for boom telescoping.
- ⑬ Remove the retraction hose to check if oil overflows from the retraction side port of the cylinder side. If boom 3 sinks, tele2 is leaking internally.  
Also, check how far boom 3 sinks.

Fig. 8-4



# UR Crane Lubrication Criteria

Wearing part name	Replacement criteria
Hydraulic oil, filter	Hydraulic oil: Replace every 2000 hours, or every 2 years (Initial:250 hours or three months) Filter: Replace every 1000 hours or, yearly. (Initial:250 hours or three months) (If you use a general purpose oil checker, refer to the color hue table. ) Refer to Fig. 9
Gear oil (winch reducer) (swing reducer)	Replace every 1000 hours or yearly. (Initial:500 hours or six months) Replace every 2000 hours or two years. (Initial:500 hours or six months) Refer to Fig. 9
Lubrication	Replace based on state of breakdown. Refer to the lubrication interval table or refer to Fig. 9

## ◆ Lubrication interval table

Daily lubrication	Boom slide plate (Boom ②, underside and side) 2-section boom Boom slide plate (Boom ②, ③ underside and side) 3-section boom Boom slide plate (Boom ②, ③, ④ underside and side) 4-section boom Boom slide plate (Boom ②, ③, ④, ⑤ underside and side) 5-section boom Boom slide plate (Boom ②, ③, ④, ⑤, ⑥ underside and side) 6-section boom Boom slide plate (Upper side of boom ①)
Weekly lubrication	propeller shaft
Monthly lubrication	Winch reduction gear Ass'y Swing reduction gear Ass'y Wire rope Turn table Wire rope for boom extension

## ◆ Table of recommended lubricants

★Use the recommended hydraulic oils shown below.

General use	ISO VG46
Cold weather use	ISO VG32

We recommend you use special hydraulic oil for machines in extremely cold and tropical regions.

★Use the recommended brands shown below as the gear oil used to lubricate this crane.

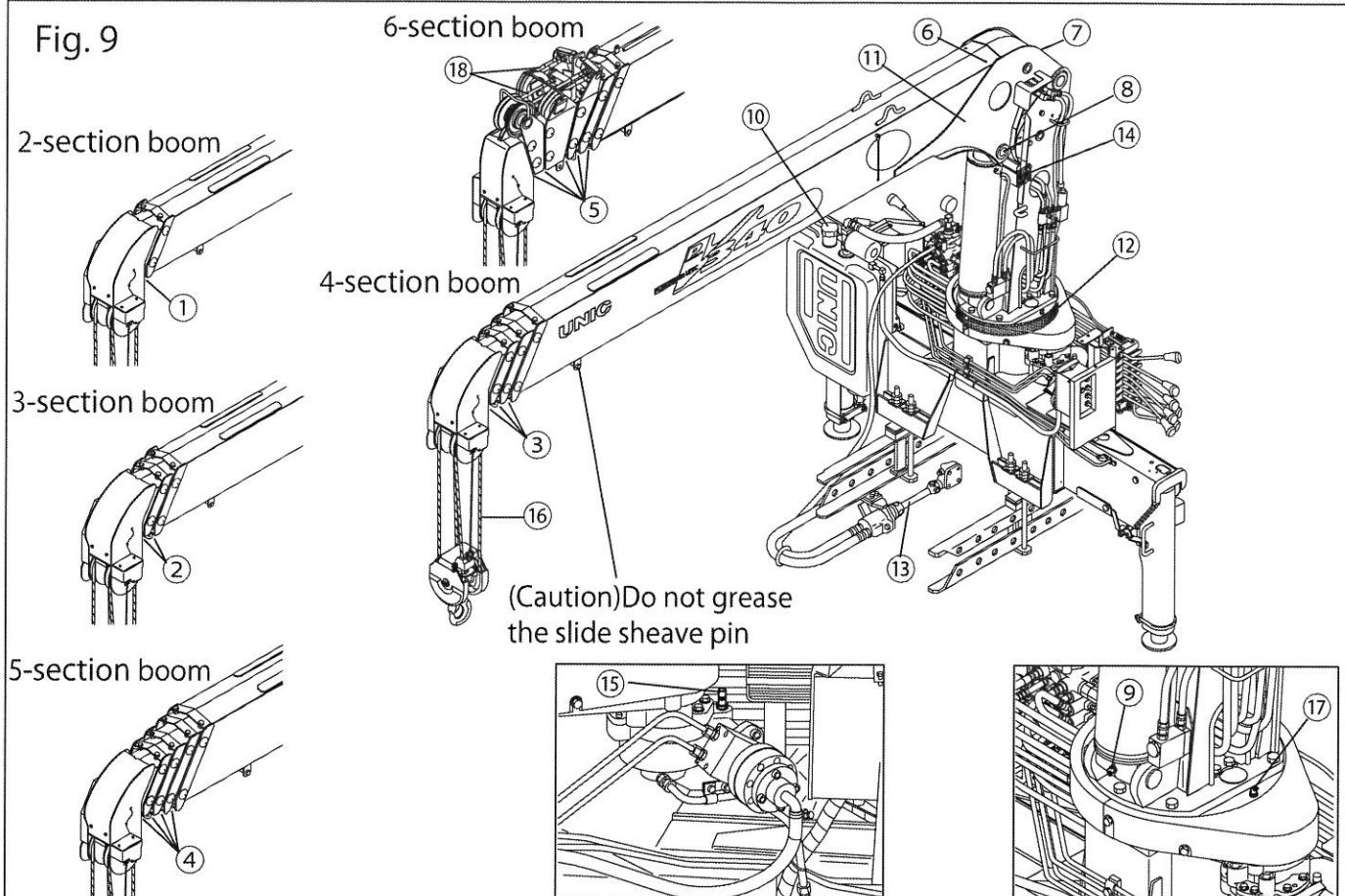
Application	Petroleum Maker	Brand
Reducer for winch	EXXON MOBIL	Mobil Delvac Super DH-2 15W-40
	SHELL	Shell Rimula R3 X 15W-40
Reducer for slewing gear	Use API service GL-4 gear oils.(Refer to the followings)	
	CHEVRON	Thuban GL4 90
	SHELL	Shell Spirax EP 90

★Use the recommended grease shown below.

Chassis grease	NO.1 (consistency 310-.340)
Specified grease	NO.2 (consistency 265-.295) ※Non molybdenum lithium complex grease.



Fig. 9



Name of lubrication part	Number of parts	Oil type	Procedure
① Boom slide plate (Boom ②, underside and side, 2-section boom)	1	Specified grease	Apply grease
② Boom slide plate (Boom ②, ③, " 3-section boom)	2	Specified grease	Apply grease
③ Boom slide plate (Boom ②, ③, ④, " 4-section boom)	3	Specified grease	Apply grease
④ Boom slide plate (Boom ②, ③, ④, ⑤, " 5-section boom)	4	Specified grease	Apply grease
⑤ Boom slide plate (Boom ②, ③, ④, ⑤, ⑥, " 6-section boom)	5	Specified grease	Apply grease
⑥ Boom slide plate (Grease nipple of the top of boom)	2~6	Specified grease	Grease pump
⑦ Boom foot pin	1	Chassis grease	Grease pump
⑧ Derrick cylinder upper support pin	1	Chassis grease	Grease pump
⑨ Derrick cylinder lower support pin	1	Chassis grease	Grease pump
⑩ Oil tank	1	Hydraulic oil (up to mid-level gauge)	
⑪ Winch drum gear	1	Chassis grease	Grease pump
⑫ Turntable (gear tooth surface)	1	Chassis grease	Apply grease
⑬ Propeller shaft	3	Chassis grease	Grease pump
⑭ Winch reduction gear Ass'y	1	Gear oil	
⑮ Swing reduction gear Ass'y	1	Gear oil	
⑯ Wire rope	1	Rope grease	Spray
⑰ Turntable	2	Chassis grease	Grease pump
⑱ Wire rope for boom extension		Rope grease	Spray