
LUBRICATION GUIDE

Model MLC150-1

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THE ORIGINAL LANGUAGE OF THIS PUBLICATION IS ENGLISH

LUBRICATION SYMBOLS

The following symbols are used in the decals on the crane to identify lubrication points.

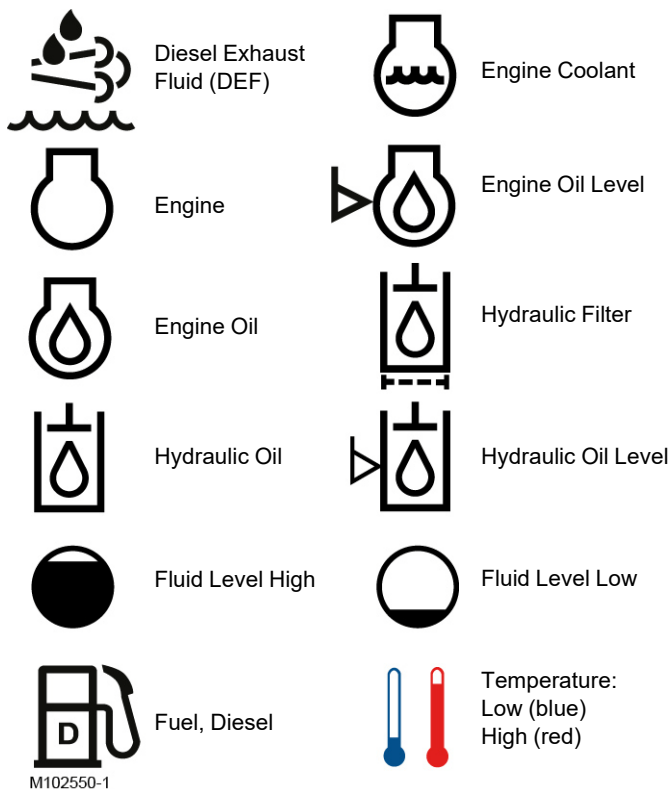


FIGURE 1



WARNING

Personal Injury Hazard

Personal injury can occur if the following safety precautions are not taken before and after servicing machinery.

- Stop the engine and wait until all moving parts have completely stopped (if necessary, position any grease fittings on moving parts at the access point and then stop the engine).
- Attach a WARNING “out-of-order” sign to the engine start control in the operator’s cab to warn all personnel that the crane is being serviced.
- Do not operate the crane until all safety guards and covers have been securely reinstalled and all maintenance equipment has been removed.

GENERAL LUBRICATION

This Lubrication Guide identifies the lubrication points and intervals for this crane.

The lubrication intervals for OEM (Original Equipment Manufacturer) parts (engine, light plant, etc.) have been omitted from this Lubrication Guide. **Service OEM parts**

according to the original equipment manufacturers’ manuals.

Depending on the options your crane is equipped with, some lubrication points given in this Lubrication Guide may not apply to your crane.

LUBRICATION INTERVALS

The intervals listed in this Lubrication Guide are for **average operating conditions** based on experience gained by testing lubricants at the factory and on the recommendations of lubricant suppliers. Severe operating conditions—excessively dusty or corrosive atmosphere, unusually high or low outside temperature, extreme loadings, uncommonly frequent or long operating cycles—may require shortening the lubrication intervals. Follow the intervals given in this Lubrication Guide until adequate experience is obtained to establish intervals which meet your operating conditions.

Bearings and bushings that are too warm, excessive play in moving parts, binding in moving parts, excessive or abnormal wear in gears and chains, and rust accumulation indicate a lack of lubrication. If these conditions are found during regular inspection, the lubrication interval for the faulty parts should be shortened.

CAUTION

Avoid Machinery Damage

Before lengthening lubrication intervals, check that all parts are receiving an adequate supply of clean lubricant; otherwise, parts will be damaged from a lack of lubrication. Contact your Manitowoc dealer or the Manitowoc Crane Care Lattice Team for recommendations on lengthening lubrication intervals.

Perform an oil analysis at regular intervals of each fluid used in the crane to determine oil-change intervals. Oil sample kits are provided in the Parts Box of current production cranes.

It is assumed that the lubrication intervals are cumulative — daily tasks are performed together with weekly tasks, daily and weekly tasks are performed together with monthly tasks, etc.

The lubrication intervals are based calendar time, on engine hours of operation, or on function hours of operation, **whichever occurs first.**

- Engine hours are shown in the Crane Status Bar of the main display (see the MLC150-1 Main Display Manual for instructions).
- Function hours are shown in the Function Hours Screen of the main display (see the MLC150-1 Main Display Manual for instructions).

OVER-LUBRICATION

Over-lubrication is not only wasteful but also harmful:

- Excess lubrication can work its way onto friction surfaces and result in faulty operation.
- Oil or grease which drips onto walkways can cause personnel to slip and be hurt.
- Too high an oil level can cause churning and foaming of the oil and result in excessive heat and over-flow from the reservoir.
- An extra shot of grease, if too stiff or under too much pressure, can pop out a bearing seal.

LUBRICATION TIPS

- Check all oil levels before start-up so the oil has had a chance to run down from the reservoir walls and moving parts.
- Avoid introducing dirt into reservoirs. Carefully clean the area around dipsticks, level plugs, fill plugs, and breathers before removing them.
- Replace level plugs, fill plugs, drain plugs, and breathers snugly and wipe up any spillage.
- Keep oil and grease dispensers and containers tightly closed and stored in a dirt and moisture-free locations.
- Clean grease fittings before and after applying grease.
- Apply grease until the bushing or bearing is purged so dirt and water cannot enter. Wipe up excess grease.
- Protect the environment. Dispose of waste fluids, filters, and batteries properly. See [Environmental Protection on page 4](#).

WATER IN HYDRAULIC OIL

Prevent damage that can occur when water mixes with hydraulic oil. Drain any accumulated water from the bottom of the hydraulic tank at the **start of each work day**. Crack open the drain plug on the bottom of the hydraulic tank. Securely tighten the drain plug as soon as the water stops draining and a steady stream of oil appears.

OIL CAN POINTS

Lubricate with engine oil **all pins** for moving parts not equipped with grease fittings every 40 hours of operation or once a week, whichever comes first.

WIRE ROPE LUBRICATION

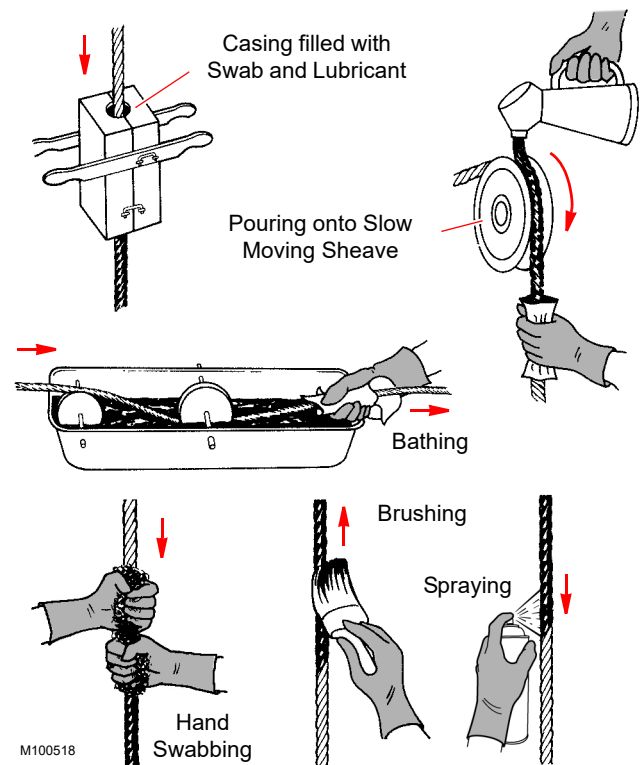
New wire rope is lubricated during manufacturing, but this lubricant is only adequate for initial storage and the early stages of operation. To prevent the damaging effects of corrosion and to reduce wear, the wire rope must be lubricated at regular intervals.

Contact your wire rope manufacturer/dealer for lubrication recommendations. The lubrication interval and the type of lubricant used depends on the type of wire rope, the severity

of duty, and the type of corrosive elements the wire ropes is subjected to.

- The wire rope must be properly protected at all times.
- The lubricant must be fluid enough to fully penetrate the strands and rope core. Use one of the methods shown in [Figure 2](#) to lubricate the wire rope.
- For maximum penetration, apply the lubricant where the wire rope “opens up” as it travels around a sheave or winds onto a drum.
- The wire rope must be clean and dry before applying lubricant. Cleaning methods include an air jet or wire brush.

Do not use grease to lubricate wire rope. Grease will not penetrate the rope properly and will build up in the valleys between the wires and strands. This buildup will inhibit rope inspection and could trap moisture in the rope’s interior. A high-quality wire rope lubricant is available from the Manitowoc Crane Care Lattice Team.



WARNING Moving Rope Hazard

Take every precaution to protect hands from injury when rope is moving. Wear heavy gloves and move rope as slowly as possible.

FIGURE 2

CYLINDER ROD LUBRICATION

The cylinder rods on Manitowoc cranes have a layer of chrome plating on their surfaces to help protect them from corrosion. Inherently, however, the chrome plating has cracks in its structure which can allow moisture to corrode underlying steel.

Depending on ambient temperature and the frequency of cylinder operation, the crane's hydraulic oil may not penetrate these cracks and protect the rods. Even if the cylinders are operated on a regular basis, many cylinders have portions of exposed rod even when the cylinders are fully retracted.

Exposed cylinder rods on cranes that are stored, transported, or used in inclement environments (high humidity, rain, snow and salt air) are at high risk of corrosion.

All exposed cylinder rods must be protected by applying a thorough coat of cylinder rod protectant, available from Manitowoc in 12 oz. aerosol cans (Part No. 9999101803).

One can of the protectant is provided in the Parts Box supplied with the crane.

The cylinder rod protectant contains solvents and lubricants that penetrate metal pores, displace moisture, dissolve existing corrosion and then dry to a resilient, waxy coating. Cylinder operation and weather will remove the protectant over time. Therefore, inspect all cylinder rods weekly and reapply protectant to exposed rods.

ENVIRONMENTAL PROTECTION

Dispose of waste properly Improperly disposing of waste can harm the environment.

Harmful waste used in Manitowoc cranes includes—but is not limited to—oil, fuel, grease, coolant, air conditioning refrigerant, filters, batteries, and cloths which have come into contact with these substances.

Handle and dispose of waste according to local, state, and federal environmental regulations.

When filling and draining crane components, do not pour waste fluids onto the ground, down any drain, or into any source of water.

- Always drain waste fluids into leak-proof containers that are clearly marked with what they contain.
- Always fill or add fluids with a funnel or a filling pump.
- Immediately wipe up any spills.

REFERENCE INSTRUCTIONS

See the MLC150-1 Service Manual for detailed information on specific maintenance checks and procedures.

HYDRAULIC FILTER REPLACEMENT

For instructions, refer to Section 2 of the MLC150-1 Service Manual.

Hydraulic filter elements on this crane are specially designed to withstand high pressure as the elements fill with dirt. This feature prevents the elements from collapsing.

CAUTION

Hydraulic System Damage

Original Equipment Manufacturers' filter elements—available from Manitowoc—must be used on this crane. Substituting with any other brand or type filter element is prohibited.

Filter elements made by other manufacturers may collapse under pressure. This action will allow unfiltered oil to be drawn into hydraulic system—pumps, motors, and valves can be destroyed.

Manitowoc will reject warranty claims for damaged hydraulic components if proper hydraulic filter elements are not used.

LUBRICATION POINTS

- See [Figure 4, page 7](#) for the location of the engine components.
- See [Figure 6, page 10](#) through [Figure 9, page 16](#) for the location of the lubrication points in the upperworks and lowerworks.
- See [Figure 10, page 18](#) for the location of the lubrication points in the boom.

The letters before the item numbers in the illustrations correspond to the following intervals:

- A = At Assembly
- D = Daily
- W = Weekly
- M = Monthly
- Q = Quarterly
- S = Semiannually
- O = At Overhaul
- Y = Yearly
- B = Biennial (every two years)

CRANELUBE

Manitowoc highly recommends using CraneLUBE lubricants to increase your crane's reliability and performance. Contact your Manitowoc dealer for information about the Manitowoc's CraneLUBE lubrication program.

Refer to the Lube and Coolant Product Guide after this publication for lubricant container sizes and part numbers.

APPROVED LUBRICANTS: NORMAL FACTORY FILL

For use down to -23°C (-10°F)

Table 1

ID	Lubricant Description	Specification	Manitowoc Part / Spec No.
A	EP Multi-Purpose Grease	Mobilux N.L.G.I. EP #2 Grease	471197
B	Synthetic Gear Oil	Mobil Delvac 80W-140 Synthetic	A13890
C	Anti-Freeze Coolant	50-50 ethylene-glycol and water	6829101130
E	Engine Oil SAE	15W-40	6829104182
F	Open Gear Lube	Mobiltac 375 NC	471198
G	Synthetic Gear Oil	Mobil Delvac 75W-90 Synthetic	549515 / 6829014058
H	Hydraulic Oil	Phillips 66 Trans XP	6829006444
J	Diesel Exhaust Fluid (DEF)	See Engine Manufacturer's Manual	80019225
K	EP 3% Moly Grease		
L	Spray Lube	Dry Film Moly Multipurpose Lubricant	Fastenal 63277
M	Turntable Bearing	Mobilgrease XHP 322 Mine	A19138

APPROVED LUBRICANTS: ARCTIC PACKAGE OPTION

For use down to -40°C (-40°F)

Table 2

ID	Lubricant Description	Specification	Manitowoc Part / Spec No.
A	EP Multi-Purpose Grease	Chevron RPM Arctic Grease	471166
B	Synthetic Gear Oil	Mobil SHC 626 Synthetic	549455
C	Anti-Freeze Coolant	60-40 ethylene-glycol and water	6829104212
E	Engine Oil SAE	5W-40	6829104412
F	Open Gear Lube	Mobiltac 375 NC	471198
G	Synthetic Gear Oil	Mobil SHC 626 Synthetic	549455
H	Hydraulic Oil	Petro-Canada Hydrex MV Arctic 15	549318/A03745
J	Diesel Exhaust Fluid (DEF)	See Engine Manufacturer's Manual	80019225
K	EP 3% Moly Grease		
L	Spray Lube	Dry Film Moly Multipurpose Lubricant	Fastenal 63277
M	Turntable Bearing	Mobilgrease XHP 322 Mine	A19138

CAUTION**Machinery Damage!**

Do not operate the main crane functions (swing, travel, drums, boom hoist) with arctic lubricants when the ambient temperature is above 16°C (60°F). Crane machinery will be damaged.

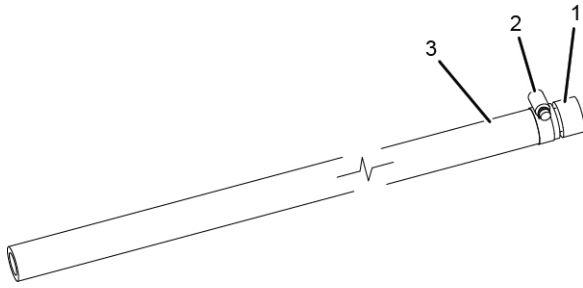
When the ambient temperature is above 16°C (60°F), limit operation to the crane setup functions.

When the ambient temperature is expected to remain above 16°C (60°F), drain the arctic lubricants and refill with the normal factory fill lubricants.

Structural Damage!

Cold weather can affect the structural integrity of the crane and attachment. Before operating in cold weather, read the Cold Weather Operation —Crane Limitations topic in Section 3 of the Crane Operator Manual.

QUICK-DRAIN DRAINER ASSEMBLY



Item	Description
1	Quick-Drain Drainer
2	Hose Clamp
3	Hose: 3/4 in (19 mm) Inside Diameter by 10 ft (3,0 m) Long

FIGURE 3

The following components are equipped with a quick-drain valve which requires the use of the quick-drain drainer

assembly shown in [Figure 3](#). The quick-drain drainer assembly is stored in the parts box supplied with the crane.

When the quick-drainer drain assembly is attached to a quick-drain valve, an internal check valve is opened allowing the fluid to drain into a suitable container.

- Hydraulic tank
- Boom hoist gearbox
- Each load drum gearbox
- Swing gearbox
- Pump drive

FLUID CAPACITIES

The fluid capacities given in [Table 3](#) are approximate and should be used only as a guide for ordering sufficient fluid at oil change intervals.

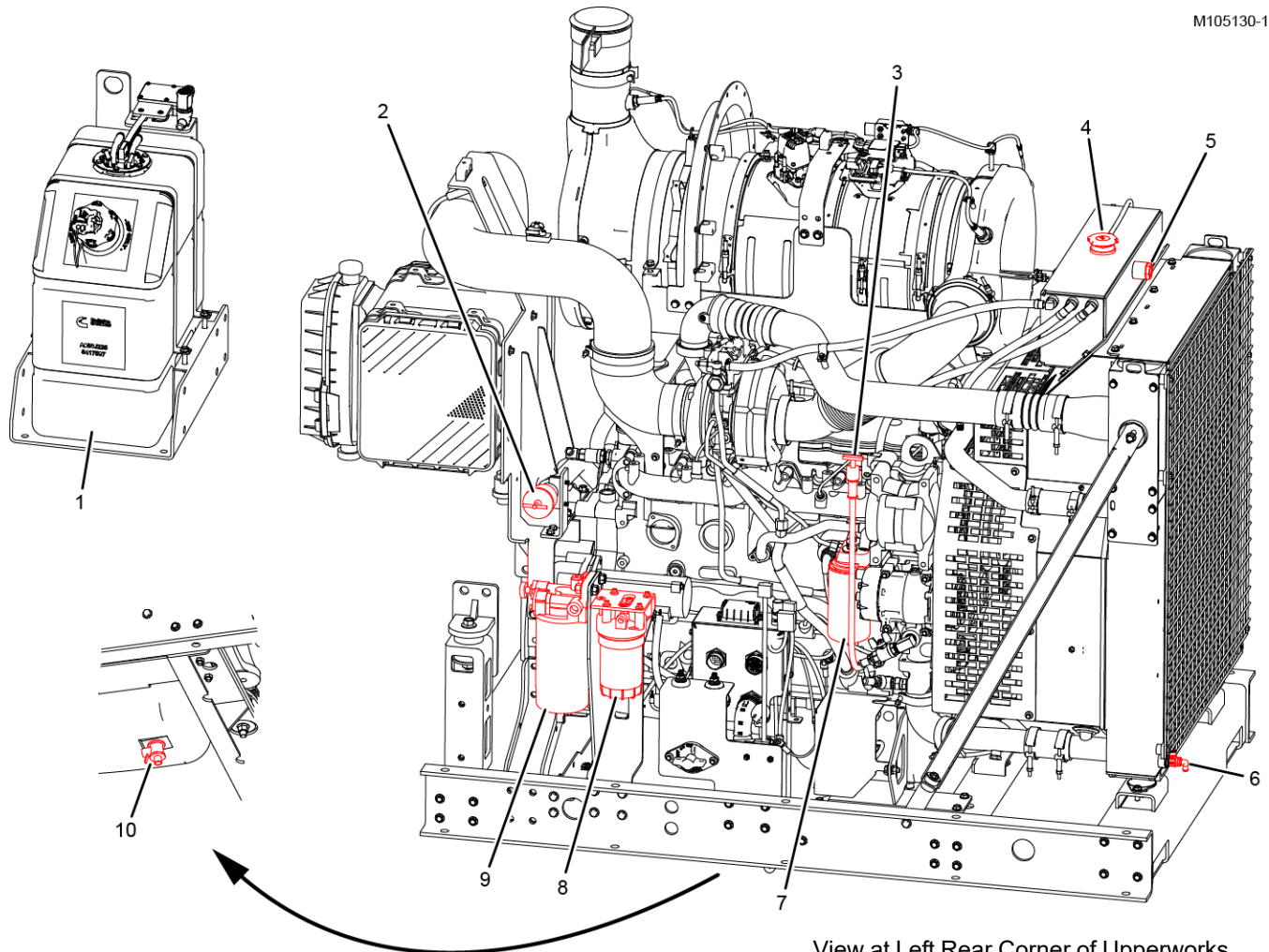
Always fill each system to level plug opening or to specified point on the sight gauge or the dipstick. Do not overfill. Do not mix mineral oil with synthetic oil.

Table 3

System	Capacity		Lubricant Spec ID See Table 1 or Table 2
	US	Metric	
Cooling System	7.5 gal	28,4 L	C
Crawler Gearbox (2 places)	6.6 gal	25 L	B
Crawler Intermediate Roller (11 each crawler)	6 oz	177 ml	Fully Synthetic, Biodegradable Oil, ISO VG 460 (Panolin Biotrack 460 or AGIP SP/EB 460)
DEF Tank	15 gal	56.8 L	J
Drum 1 and 2 (without free fall)	3 gal	11,5 L	G
Drum 1 and 2 (with free fall)	4.6 gal	17,5 L	G
Drum 3 (Auxiliary Hoist)	5.3 gal	20 L	G
Drum 4 (Boom Hoist)	2 gal	8 L	G
Engine Crankcase (QSB6.7 Stage 5 or Export)	4.5 gal	17 L	E
Fuel Tank	125 gal	473,1 L	See Engine Manufacturer's Manual
Hydraulic Tank (to full cold mark)	94 gal	356 L	H
Hydraulic System	190 gal	719 L	H
Pump Drive	3 qt	2,8 L	G
Swing	2.9 gal	11 L	G
Tagline	See decal on each tagline barrel for data.		
Windshield Washer Fluid Tank	1.3 gal	5 L	Non-Freezing Washer Fluid

ENGINE COMPONENTS

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View at Left Rear Corner of Upperworks with Enclosure Removed got Clarity

Item	Description	Required Service
1	DEF Tank	See the Engine Manufacturer's Manual for service intervals.
2	Engine Oil Fill Cap	
3	Engine Oil Dipstick	
4	Coolant Fill Cap	
5	Coolant Level Gauge	
6	Coolant Drain Valve ¹	
7	Engine Oil Filter	
8	Primary Fuel Filter	
9	Fuel Pre-Filter/Water Separator with Drain Valve	
10	Engine Oil Drain Valve ¹	

¹ Connect an owner furnished drain hose to the drain valve.

FIGURE 4

UPPERWORKS AND LOWERWORKS LUBRICATION

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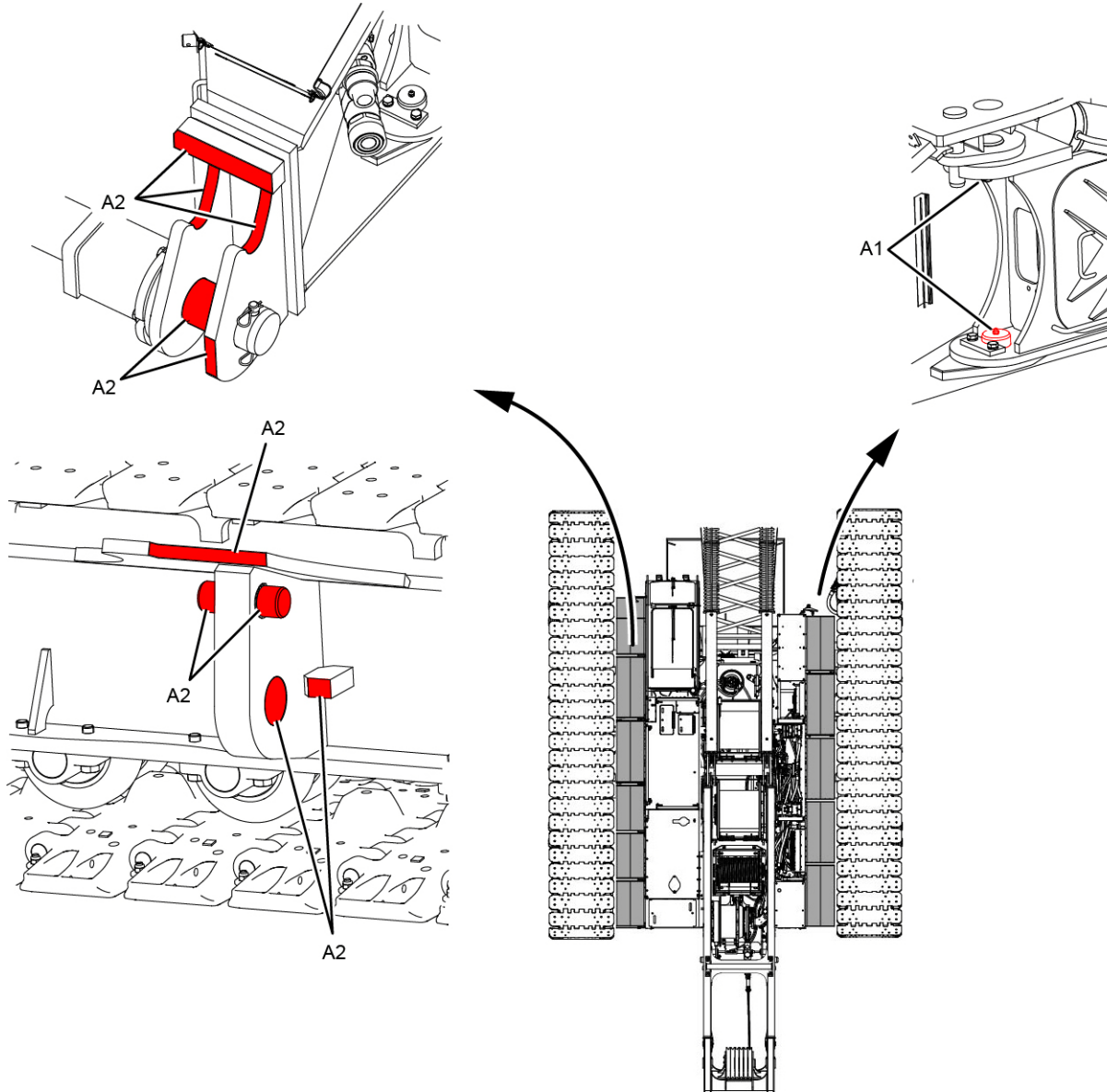


FIGURE 5

Item	Description	Required Service
Prior to Use When Crane is Assembled		
A1	Jacking Cylinder Pivot Pins	Grease 2 fittings each jacking cylinder.
A2	Machined Crawler Surfaces (4 places carbody and each crawler)	<p>Thoroughly clean and apply Dry Moly Spray Lube or an equivalent anti-seizing compound to all machined surfaces of the carbody and the crawlers — surfaces shaded red in Figure 5.</p> <p>If this step is not performed, excessive friction will occur in the closely machined mating surfaces between the crawlers and the carbody. The result will be loud noises coming from the lowerworks when turning (cutting) the crawlers or swinging the upperworks over the corner of the crawlers.</p>

UPPERWORKS AND LOWERWORKS LUBRICATION

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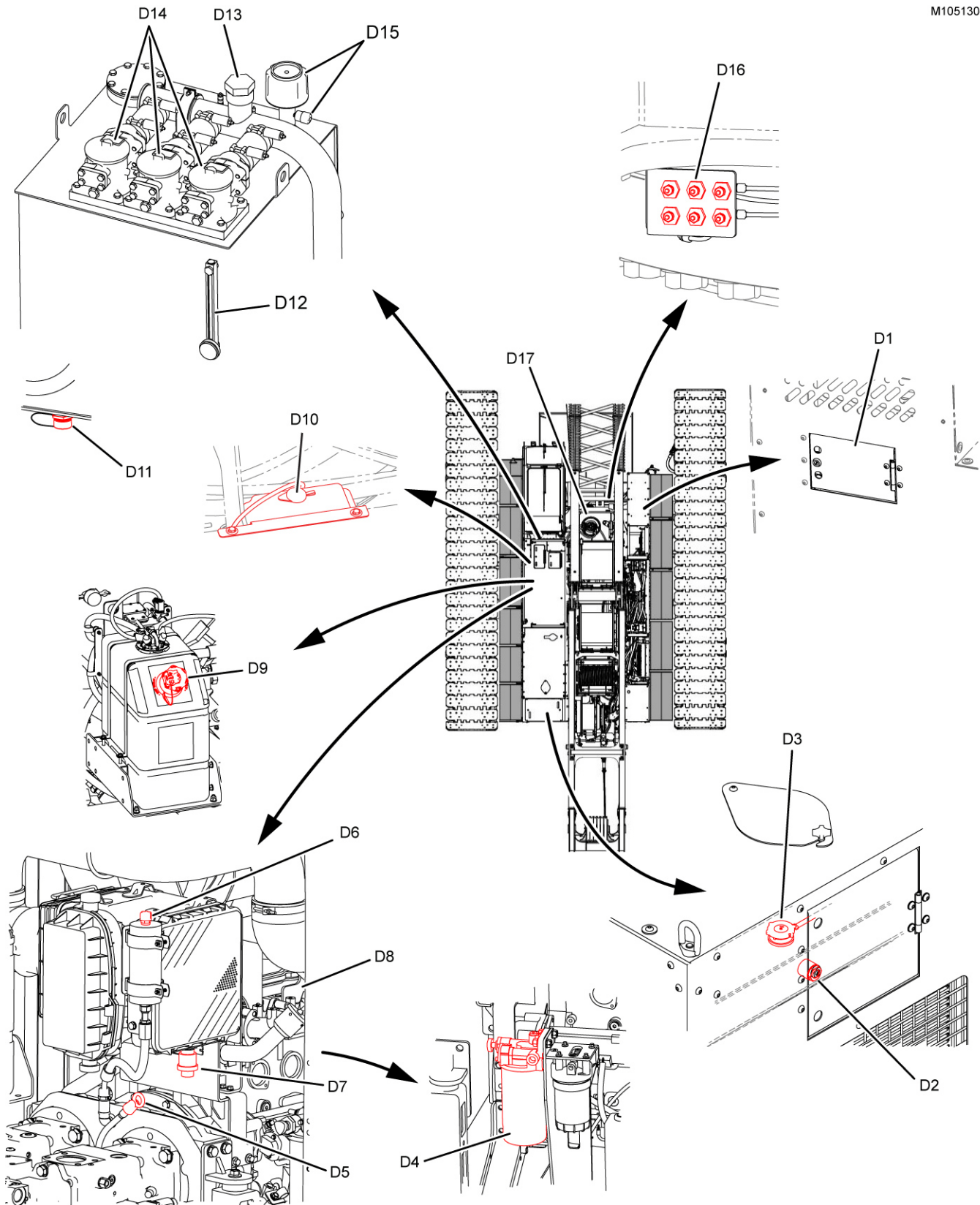


FIGURE 6

Item	Description	Required Service
Daily or Every 8 Hours of Engine Operation or (whichever comes first) See NOTE 1		
D1	Fuel Tank Fill Cap (under cover)	Check level on main display in cab. See NOTE 2 . If required, fill with specified low-sulfur diesel fuel.
D2	Radiator Sight Gauge (inside access door)	Check level. Fill to middle of sight gauge with anti-freeze.
D3	Radiator Fill Cap (under cover)	
D4	Fuel Pre-Filter/Water Separator Drain Valve	Drain water (see Engine Manufacturer's Manual)
D5	Pump Drive Dipstick	Check level. Fill to proper level with gear oil.
D6	Pump Drive Breather/Fill Port	
D7	Air Cleaner Service Indicator	Check. Replace air cleaner elements when indicated.
D8	Engine (oil level, fuel filters, etc.)	Service per engine manufacturer's manual.
D9	DEF Tank	Check level on main display in cab. See NOTE 3 .
D10	Windshield Washer Fluid Tank	Fill with a quality non-freezing washer fluid.
D11	Hydraulic Tank Quick-Drain Valve (under tank)	Drain water. See NOTE 4 .
D12	Hydraulic Tank Sight Gauge (inside enclosure)	Check level. Fill to proper level with hydraulic oil. See NOTE 5 and NOTE 6 .
D13	Hydraulic Tank Fill Port Plug (under cover)	
D14	Hydraulic Tank Filter Elements (under cover)	Check. Replace elements when indicated. See NOTE 7 .
D15	Hydraulic Tank Breather Indicator (under cover)	Check. Replace breather when indicated.
D16	Turntable Bearing	Grease 4 fittings. Grease should seep out seal between outer and inner ring. Swing slowly to distribute grease. Wipe off excess grease. Inspect lube hoses and fittings daily.
D17	Ring Gear and Swing Pinion	Check for proper lubrication. If required, coat with specified open gear oil. See NOTE 8 .

NOTE 1 Inspect the crane daily for leaks. If found, determine the cause, take corrective action, and refill the component with the specified lubricant. Repair or replace damaged parts as required.

NOTE 2 The fuel level is shown in the Crane Systems Bar of the Main Display.



FILL TANK IMMEDIATELY if the fuel level low fault appears in the Alerts Bar of the Main Display.



NOTE 3 The DEF level is shown in the Crane Systems Bar of the Main Display.



NOTE 4 Crack open the quick-drain valve using the quick-drain drainer assembly ([Figure 3](#)). Disconnect the quick-drain drainer assembly as soon as water stops draining and a steady stream of hydraulic oil appears.

NOTE 5 Check the hydraulic oil level when the oil is cold. Fill the tank to the proper FULL COLD mark on decal.

FILL TANK IMMEDIATELY if the hydraulic oil level fault appears in the Alerts Bar of the Main Display.



NOTE 6 Before removing the fill plug, **relieve the pressure in the tank with the vent valves provided.**

NOTE 7 Replace the filter elements when the filter fault appears in the Alerts Bar of the Main Display.



Inspect the suction line and/or clean or replace the suction strainer if the suction pressure fault appears in the Alerts Bar of the Main Display.



NOTE 8 It will be necessary to climb into the carbody to inspect/lubricate the ring gear and swing pinion. **Park swing and STOP engine so crane cannot be operated while servicing.**

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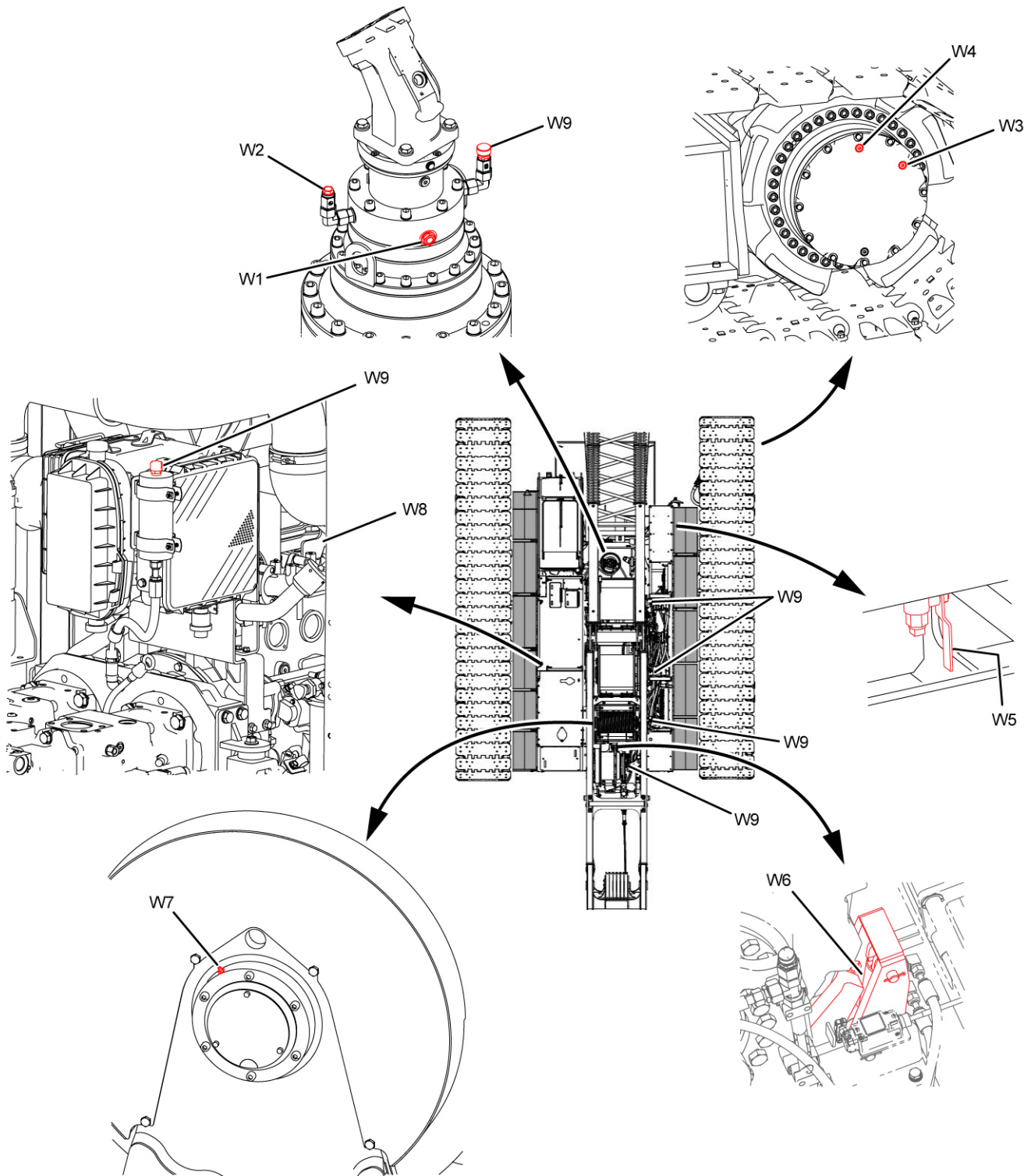


FIGURE 7

Item	Description	Required Service
Weekly or Every 10 Hours of Function Operation or Every 20 Hours of Engine Operation (whichever comes first)		
W1	Swing Gearbox Sight Gauge	Check level. Oil should be at center of gauge. Fill to proper level with specified gear oil.
W2	Swing Gearbox Fill Plug	
W3	Crawler Gearbox Level Plug (both crawlers)	Check level. See NOTE 1 . Oil should be at bottom of plug hole. Fill to proper level with specified gear oil.
W4	Crawler Gearbox Fill Plug	
Weekly or Every 40 Hours of Engine Operation (whichever comes first)		
W5	Fuel Drain Valve (under tank)	Drain water. See NOTE 2 .
W6	Drum 4 Pawl Cam	Coat with specified open gear oil
	Drum 2 Pawl Cam (if equipped)	
W7	Drum Bearing (non-free fall Drum 1, 2, 3, 4)	Grease: left end of Drum 1, 2, 4 and right end of Drum 3.
W8	Engine	Service per engine manufacturer's manual.
W9	Gearbox Breathers (pump drive, swing, Drum 1, 2, 4)	Clean by soaking in a non-flammable solvent and blowing thoroughly dry with compressed air.

NOTE 1 Travel in either direction so the gearbox fill and drain plugs form a visual line vertical to the ground.

NOTE 2 Attach an owner furnished 1/2 in NPT nipple and a hose to the drain valve. Crack open the drain valve. Fully close the drain valve as soon as water stops draining and a steady stream of fuel oil appears. Remove the hose and nipple.

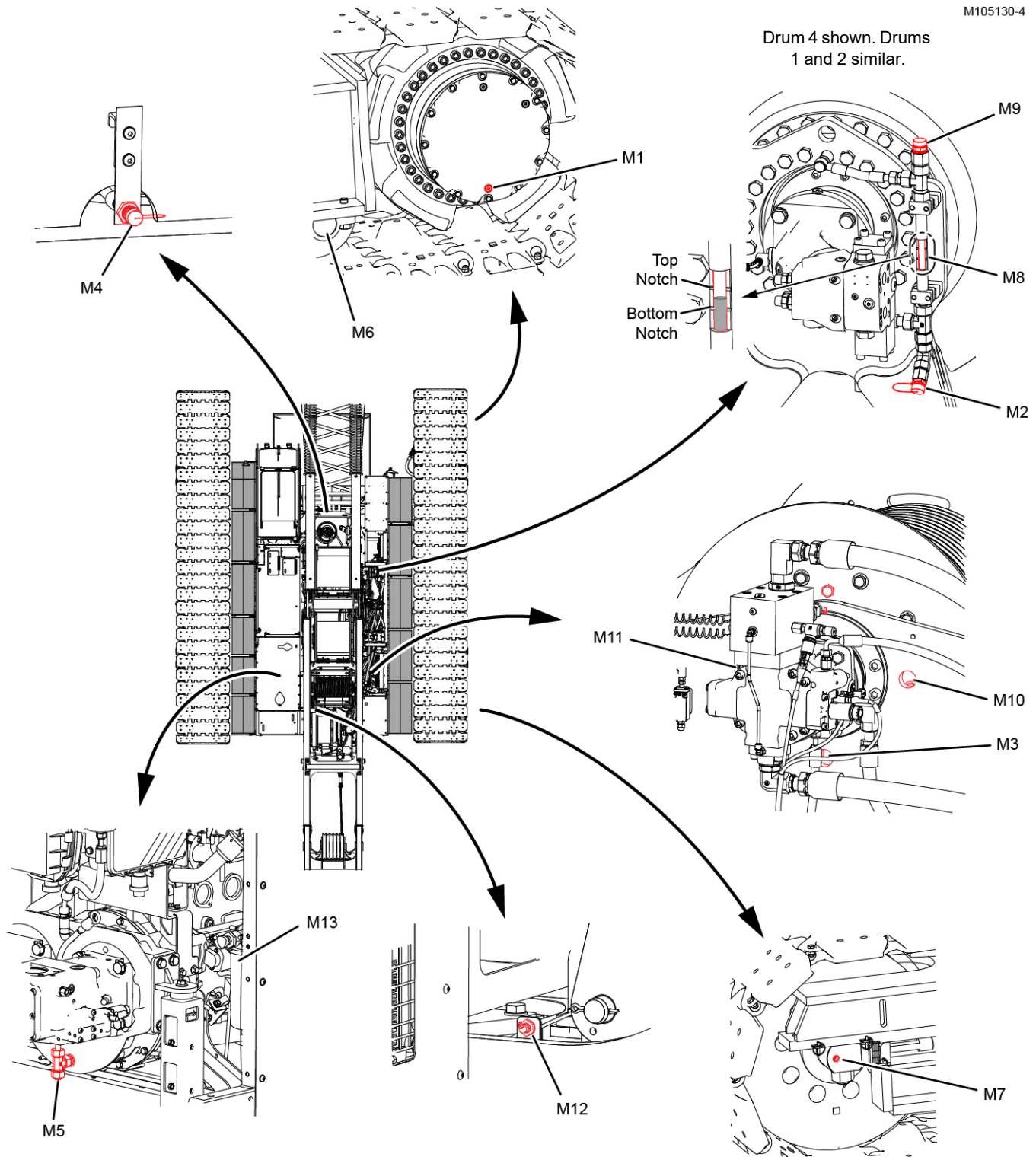


FIGURE 8

Item	Description	Required Service
After First 200 Hours of Engine Operation		
M1	Crawler Gearbox Drain Plug (both crawlers)	Drain and refill with specified gear oil. See NOTE 1 .
M2	Drum 1, 2, 4 Gearbox Quick-Drain Valve	Drain and refill with specified gear oil (see NOTE 2).
M3	Drum 3 Gearbox Drain Plug	Drain and refill with specified gear oil (see NOTE 3).
M4	Swing Gearbox Quick-Drain Valve	Drain and refill with specified gear oil (see NOTE 2).
M5	Pump Drive Drain Plug	Drain and refill with specified gear oil.
Monthly or Every 40 Hours of Function Operation or Every 200 Hours of Engine Operation (whichever comes first)		
M6	Intermediate Crawler Rollers (13 each crawler)	Inspect for oil leaks or other damage. Rollers are sealed for life. Fill with specified gear oil at overhaul.
M7	Front Crawler Roller (both crawlers)	Grease fitting under plug on both ends of shaft.
Monthly or Every 200 Hours of Engine Operation (whichever comes first)		
M8	Drum Gearbox Sight Gauge (typical Drum 1, 2, 4)	Check level. Oil should be between top and bottom notches in sight gauge. When replacing oil, fill gear box to center of sight gauge. Fill to proper level with specified gear oil.
M9	Gearbox Breather/Fill Plug (typical Drum 1, 2, 4)	
M10	Drum Gearbox Sight Gauge (Drum 3)	Check level. See NOTE 3 . Oil should be at center of gauge. Fill to proper level with specified gear oil.
M11	Drum Gearbox Fill Plug (Drum 3)	
M12	Pawl Cam Shaft	Grease.
M13	Engine	Service per engine manufacturer's manual.

NOTE 1 Travel in either direction so the gearbox fill and drain plugs form a visual line vertical to the ground.

NOTE 2 The gearbox is equipped with a quick-drain valve which requires use of the quick-drain drainer assembly shown in [Figure 3](#).

NOTE 3 Rotate the drum so the sight gauge and the plugs are accessible through the holes in the drum flange. ***Park drum and STOP engine so drum cannot be operated while servicing.***

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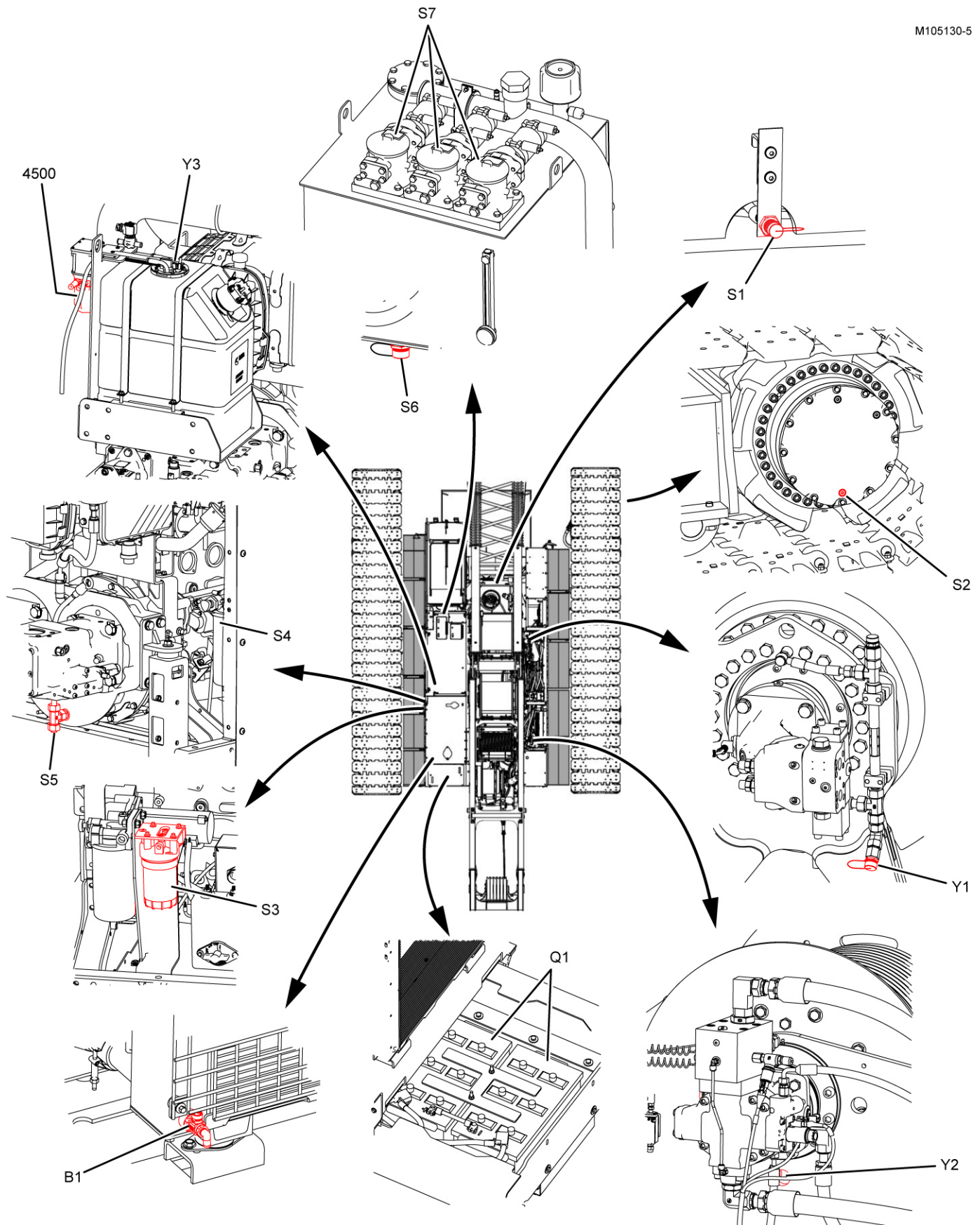


FIGURE 9

Item	Description	Required Service
Quarterly or Every 500 Hours of Engine Operation or (whichever comes first)		
Q1	Batteries (qty 2) (see NOTE 1)	Clean and inspect. Check electrolyte level.
Semi-Annually or Every 200 Hours of Function Operation or Every 1000 Hours of Engine Operation (whichever comes first)		
S1	Swing Gearbox (see NOTE 2)	Drain and refill with specified gear oil.
S2	Crawler Gearbox (qty 2) (see NOTE 3)	Drain and refill both with specified gear oil.
Semi-Annually or Every 500 Engine Hours of Operation or (whichever comes first)		
S3	Fuel Filter	Replace per engine manufacturer's manual.
S4	Engine	Service per engine manufacturer's manual.
Semi-Annually or Every 1000 Engine Hours of Operation or (whichever comes first)		
S5	Pump Drive Drain Plug	Drain and refill with specified gear oil.
S6	Hydraulic Tank Quick-Drain Valve (see NOTE 2)	Drain and refill with specified hydraulic oil.
S7	Hydraulic Filter (qty 3)	Replace each.
Yearly or Every 400 Hours of Function Operation or Every 2000 Hours of Engine Operation (whichever comes first)		
Y1	Drum 1, 2, 4 Quick-Drain Plug (see NOTE 2)	Drain and refill each with specified gear oil.
Y2	Drum 3 Drain Plug (see NOTE 4)	Drain and refill with specified gear oil.
Y3	DEF Tank Filter (inside tank)	Service per engine manufacturer's manual.
Biennially or Every 2000 Hours of Engine Operation (whichever comes first)		
B1	Radiator Drain Valve (see NOTE 5)	Drain and refill with specified antifreeze.
Every 4500 Hours of Engine Operation		
4500	DEF Supply Module Filter	Service per engine manufacturer's manual.

NOTE 1 Two batteries are located under the removable cover.

NOTE 2 The gearbox is equipped with a quick-drain valve which requires use of the quick-drain drainer assembly shown in [Figure 3](#).

An alternative to filling the swing gearbox through the fill plug is to fill it using the Power Fill Procedure outlined in Section 6 of the Service Manual supplied with the crane.

NOTE 3 Travel in either direction so the gearbox fill and drain plugs form a visual line vertical to the ground.

NOTE 4 Rotate the drum so the sight gauge and the plugs are accessible through the holes in the drum flange. **Park drum and STOP engine so drum cannot be operated while servicing.**

NOTE 5 Attach an owner furnished hose to the nipple on the drain valve.

BOOM RIGGING LUBRICATION

M105130-6

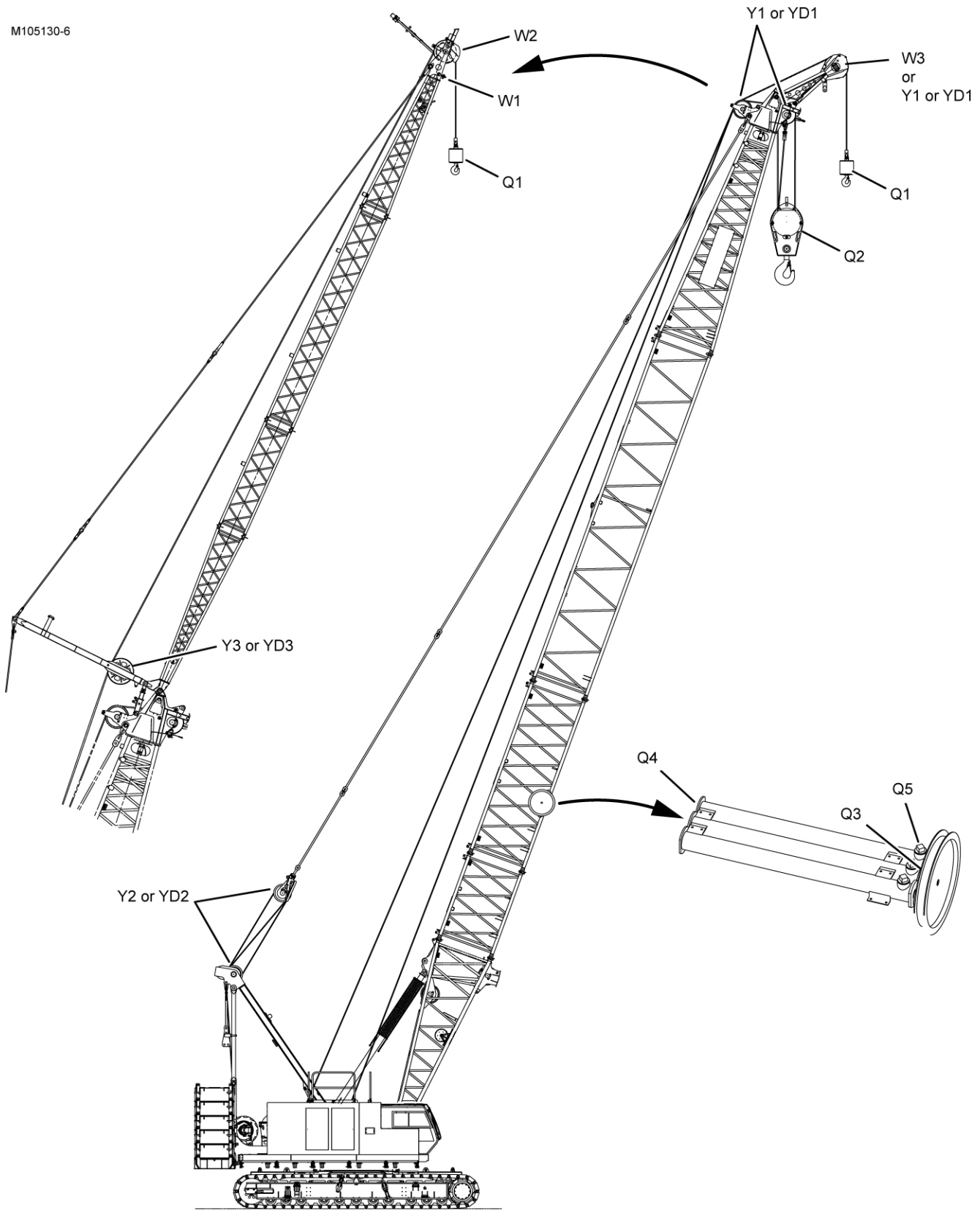
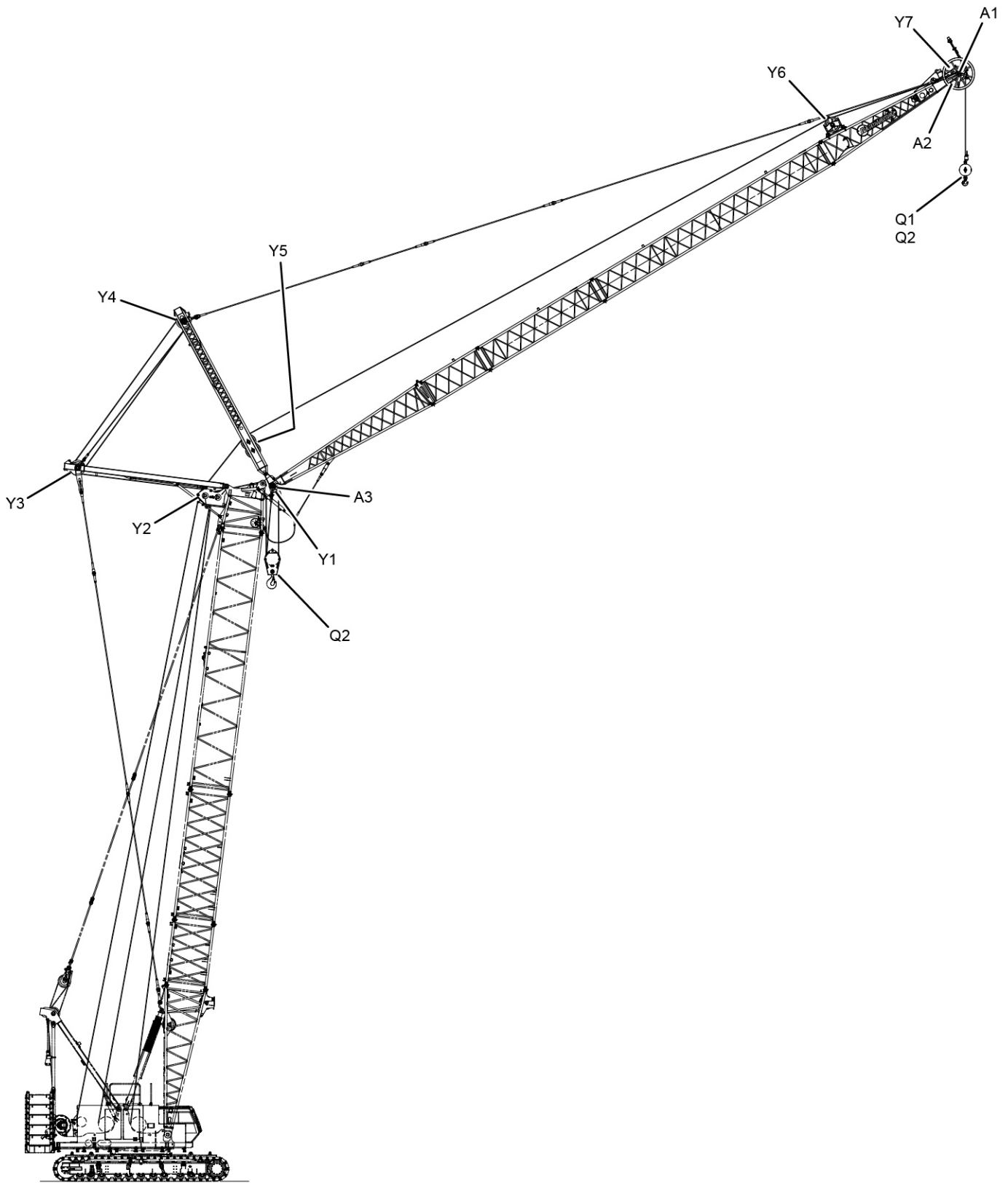


FIGURE 10

Item	Description	Required Service
Weekly or Every 40 Hours of Operation (whichever comes first)		
W1	Universal Anchor Joint (2 fittings if equipped)	Grease.
W2	Jib Point Sheave	Grease.
W3	Upper Boom Point (1 fitting, optional)	Grease.
Quarterly or Every 250 Hours of Engine Operation (whichever comes first)		
Q1	Hook-and-Weight Ball Swivel (1 fitting)	Grease.
Q2	Load Block (fittings vary)	Grease (sheaves, swivel, and trunnion).
Q3	Tagline Gears (1 fitting)	Grease (grease will drop onto gears).
Q4	Tagline Level Plug (1 each barrel)	Check level of each barrel with tagline horizontal. Oil should be up to plug opening.
Q5	Tagline Fill Plug (1 each barrel)	Fill each barrel to proper level with SAE 90 heavy-duty gear oil. See decal on tagline.
Yearly or Every 2000 Hours of Crane Operation (whichever comes first)		
Y1	Boom Top Sheaves (packed with grease at assembly)	The sheaves are either packed with grease at assembly or sealed (bearing filled and sealed by manufacturer) and do not require greasing at regular intervals. Inspect the sheaves for proper operation yearly or every 2000 hours of crane operation. Overhaul the sheaves and repack them with grease if needed.
Y2	Gantry and Equalizer Sheaves (sealed with grease)	
Y3	Jib Strut Sheave (packed with grease at assembly)	
Yearly or Every 2000 Hours of Crane Operation (whichever comes first) or at a Desired Interval if the Sheaves are Equipped with Sealed Bearings and Grease Fittings		
YD1	Boom Top Sheaves	The sheaves are packed with grease at assembly and do not require greasing at regular intervals. If the sheaves are equipped with sealed bearings and grease fittings, they can be greased at a desired interval established by the crane owner/user. Inspect the sheaves for proper operation yearly or every 2000 hours of crane operation. Overhaul the sheaves and repack them with grease if needed.
YD2	Gantry and Equalizer Sheaves	
YD3	Jib Strut Sheave	

LUFFING JIB RIGGING LUBRICATION



M105197

Item	Description	Required Service
Each Time Boom and Lugging Jib Lowered/Raised		
A1	Jib Point Rollers (1 fitting each)	Grease each.
A2	Universal Anchor Joint (2 fittings if equipped)	Grease both.
A3	Jib Hinge Pins (1 fitting each)	Grease both.
Quarterly or Every 250 Hours of Engine Operation (whichever comes first)		
Q1	Hook-and-Weight Ball Swivel (1 fitting)	Grease.
Q2	Load Block (fittings vary)	Grease (sheaves, swivel, and trunnion).
Yearly or Every 2000 Hours of Crane Operation (whichever comes first)		
Y1	Boom Cap Sheaves	The sheaves identified with "Y" are packed with grease at assembly and do not require greasing at regular intervals.
Y2	Boom Cap Guide Sheaves	
Y3	Main Strut Reeving Sheaves	If the sheaves are equipped with sealed bearings and grease fittings, they can be greased at a desired interval established by the crane owner/user.
Y4	Jib Strut Reeving Sheaves	
Y5	Jib Strut Load Line Guide Sheaves	
Y6	Guide Sheave	Inspect these sheaves for proper operation yearly or every 2000 hours of crane operation. Overhaul the sheaves and repack them with grease if needed.
Y7	Jib Point Sheaves	

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