

URW1006

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The Operator's Reference Guide

Using this Guide

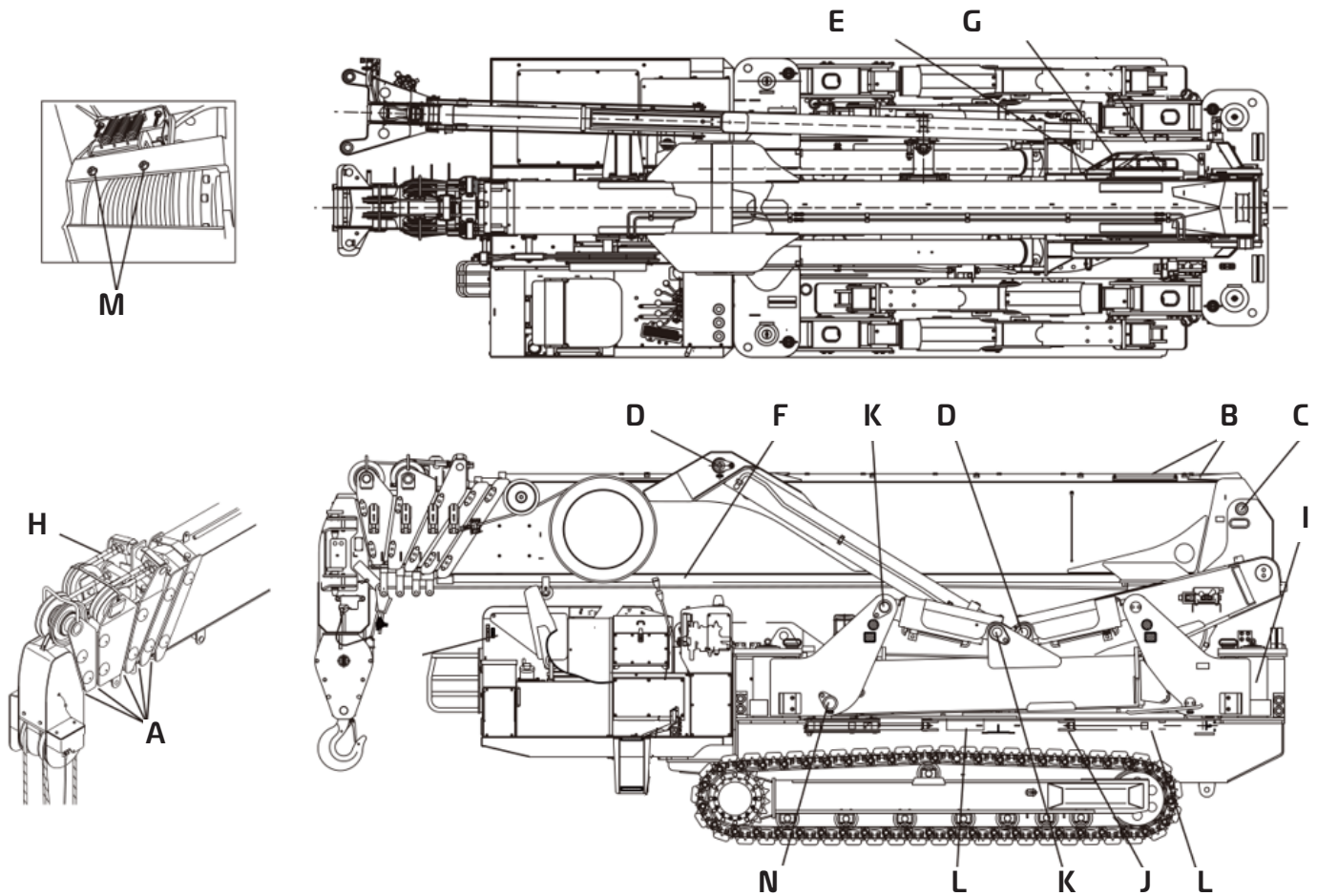
- This guide is a supplemental source of information for using and maintain your SPYDERCRANE
- This guide is offered as a service to customers of Smiley Lifting Solutions
- This guide is NOT a replacement for your SPYDERCRANE's User Manual; if the information contained in this guide contradicts the User's Manual, the User's Manual is considered correct

Edition

- This DRAFT edition was published on 8 August, 2025

Maintain

Lubrication Schedule



Daily				
Component	Number	Lubricant	Tool	#
Boom Slide Plates , Boom Sections 2-6	5 sections, sides and undersides of each section	Molybdenum grease	Manual application	A
Boom Slide Plate, Boom Section 1	2 grease fittings on top of boom section	Molybdenum grease	Grease gun	B
Boom Hinge Pin	1 grease fitting	Chassis grease	Grease gun	C
Lift Cylinder Pin Grease Fittings	1 upper and 1 lower for each cylinder for 4 total fittings	Chassis grease	Grease gun	D

Weekly				
Component	Number	Lubricant	Tool	#
Slew Gear	Apply grease to multiple gear teeth	Chassis grease	Manual application	E

Monthly				
Component	Number	Lubricant	Tool	#
Wire Rope	Apply grease to the length of the wire rope	Wire rope grease	Manual Application	F
Slew Gear Bearings	2 grease fittings	Chassis grease	Grease gun	G
Boom Extension Wire Ropes	Apply grease to the length of the wire rope parts	Wire rope grease	Manual Application	H
Outrigger Deployment Pivot	1 grease fitting per pivot, 4 total	Chassis grease	Grease gun	I
Service Outrigger Positioning Pivot	1 grease fitting per pivot, 4 total	Chassis grease	Grease gun	J
Outrigger Vertical Extension Cylinder Pins	2 grease fittings (upper and lower) per cylinder, 8 total	Chassis grease	Grease gun	K
Outrigger Positioning Links	3 per outrigger, 12 total	Chassis grease	Manual Application	L
Minimum Wire Rope Device	2 pins	Chassis grease	Manual Application	M
Outrigger Vertical Pivot	1 grease fitting per pivot, 4 total	Chassis grease	Grease gun	N

Preventive Maintenance Schedule

Break-In PM (First Time Maintenance)			
Hours	Task	Supplies	Tools
50	Clean Fuel/Water Separator		
50	Replace Engine Oil and Filter and Fuel Filter	SAE 10W-30 Engine Oil (2.5 gal)	
250	Replace Hydraulic Oil	ISO VG 46/32 (56.8 gal)	
250	Replace Hydraulic Oil Return Filter		
500	Replace Slew Gearbox Oil	SAE 140 GL-4 (.37 gal)	
1 Year	Replace Line Filter Element		

250 Hours (3 Months)	
Task	Supplies
Check Crawler Track Drive Sprocket Oil	SAE 90 GL4 Gear Oil (.29 gal)
Replace Engine Oil and Filter and Fuel Filter	SAE 10W-30 Engine Oil (2.5 gal)
Clean Air Filter	
Clean Fuel/Water Separator	

500 Hours (6 Months)	
Task	Supplies
Clean Fuel/Water Separator	

1000 Hours (12 Months)	
Task	Supplies
Replace Crawler Track Drive Sprocket Oil	SAE 90 GL4 Gear Oil (.29 gal)
Replace Coolant	Antifreeze/Coolant based on local conditions (2.2 gal)
Replace Winch Gearbox Oil	SAE 90 GL4 Gear Oil (.37 gal)

2000 Hours (24 Months)	
Task	Supplies
Replace Slew Gearbox Oil	SAE 140 GL-4 (.37 gal)
Replace Hydraulic Oil	ISO VG 46/32 (56.8 gal)
Replace Hydraulic Oil Return Filter	

PM Procedure: Replace Engine Oil and Filter and the Fuel Filter

1. Park the SPYDERCRANE

- Leave the SPYDERCRANE in Travel Mode, park it on level ground, then shut it down
- Allow the engine to cool to ambient temperature
- Place a drain pan or at least 2.5-gallon capacity underneath the Engine Oil Drain Port

2. Drain the Oil Pan

- Place a drain pan or at least 2.5-gallon capacity underneath the Engine Oil Drain Port
- Remove the Drain Port Plug and allow the oil pan to drain completely
- Inspect the Drain Port Plug for damage, replace as needed
- Install and tighten the Drain Port Plug

3. Replace the Engine Oil Filter

- Using a filter wrench to spin the oil filter counterclockwise to remove it; make sure that the filter's O-ring comes off with the filter and is not stuck to the filter port
- Dispose of the old filter
- Unpackage the new Oil Filter and make sure that its O-ring is properly seated
- Apply a small amount of engine oil to the top of the filter and its O-ring
- Install and hand-tighten the new filter, then use a filter wrench to turn the filter an additional 1/2 or 2/3 turn

4. Add Oil

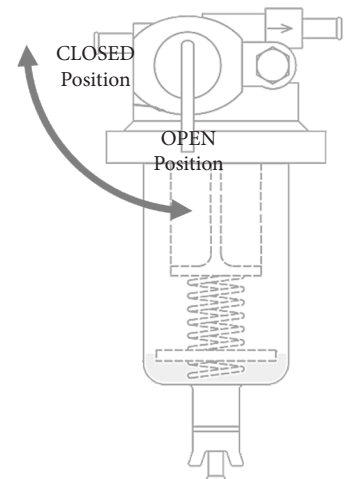
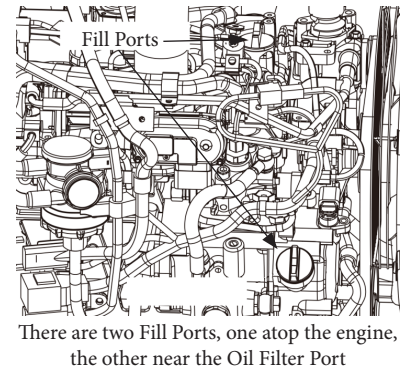
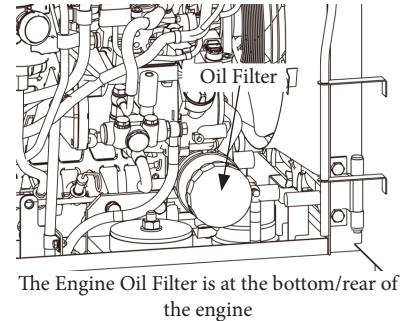
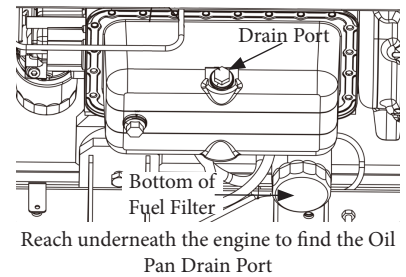
- Remove the Fill Port Plug
- Add up to 2.5 gallons of engine oil through the Fill Port, periodically checking the dipstick to ensure that you are not overfilling the engine
- Install and hand-tighten the Fill Port Plug

5. Replace the Fuel Filter

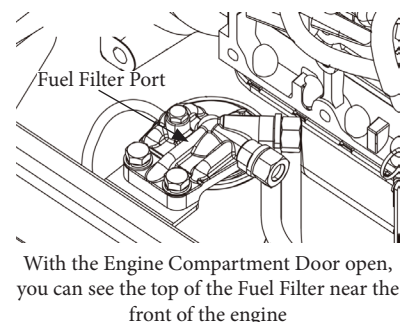
- Close the Fuel Flow Valve above the Fuel/Water Separator Case
- Have rags and/or a small container to catch spilled fuel ready
- Unscrew, remove, and safely dispose of the Fuel Filter
- Using clean towels, thoroughly wipe down the Fuel Filter Port
- Unpackage the replacement Fuel Filter and apply a small amount of diesel to the top of the filter and its O-ring
- Install the new Fuel Filter and use a filter wrench to fasten it tightly (14 to 90 ft*lb of torque)
- Open the Fuel Flow Valve

6. Seals Check

- Start the SPYDERCRANE and let the engine run for a few minutes while checking the Drain Port, Fill Port, and Filter Port for oil leaks
- Shut-down the SPYDERCRANE and leave it off for 10 minutes
- Check the engine oil level with the dipstick
- If no oil leaks are detected, return the SPYDERCRANE to operations



Turn the Fuel Flow Valve 90° clockwise to CLOSE the valve



PM Procedure: Clean/Replace the Air Filter

1. Park the SPYDERCRANE

- Leave the SPYDERCRANE in Travel Mode, park it on level ground, then shut it down
- Allow the engine to cool to ambient temperature

2. Remove the Air Filter

- Open the Engine Compartment Door
- Un-clip and remove the Air Filter Case Cover
- Carefully pull the Air Filter out of the Air Filter Case

3. Clean the Air Filter Case and Cover

- Using a cleaning towel, wipe out the inside of the Air Filter Case and Cover

4. Clean/Replace the Air Filter

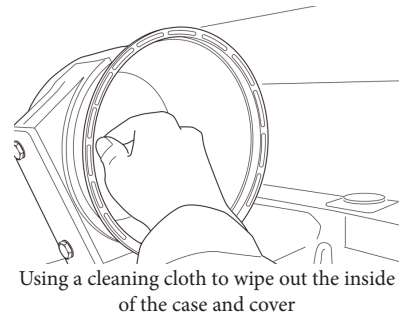
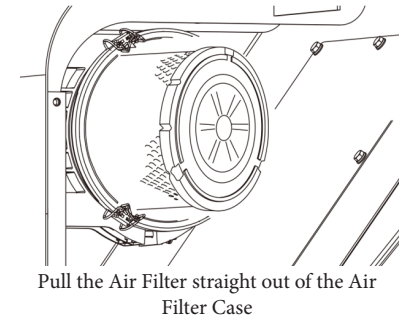
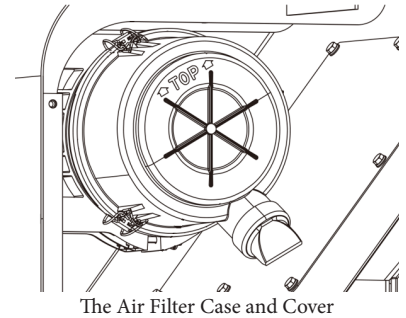
- The Air Filter can be cleaned **UP TO FIVE TIMES** and **MUST** be replaced at the sixth cleaning interval
- To clean the filter, blow compressed air (NO MORE THAN 30 psi) into the interior of the filter to blow off any trapped dust
- Inspect the cleaned filter by shining a light source from the inside of the filter and visually inspecting the exterior for pinholes, tears, or excessive wear
- If the cleaned air filter is damaged or otherwise compromised, replace it with a new filter

5. Install the Air Filter

- Carefully insert the Air Filter into the Air Filter Case
- Attach and clip the Air Filter Case Cover, making sure that the drain spout is facing DOWN

6. Seals Check

- Start the SPYDERCRANE and watch the Engine Control Panel for 60 seconds while the engine runs
- If the Air Filter Warning Icon pops-up, shut down the SPYDERCRANE and check the filter; replace if needed
- If the Air Filter Warning Icon DOES NOT pop-up after 60 seconds, return the SPYDERCRANE to operations



PM Procedure: Clean Fuel/Water Separator

1. Park the SPYDERCRANE

- Leave the SPYDERCRANE in Travel Mode, park it on level ground, then shut it down
- Allow the engine to cool to ambient temperature
- Remove the Ignition Switch Key or disconnect the negative terminal of the 12V Battery

2. Drain the Fuel/Water Separator Case

- Turn the Fuel Flow Valve to the CLOSED position
- Hold a drain pan underneath the Fuel/Water Separator Case Drain Valve
- OPEN the drain valve, drain the water out, then CLOSE the valve

3. Remove the Fuel/Water Separator Case

- Turn the Fuel Flow Valve to the CLOSED position
- Unfasten the Case Retention Ring above the Fuel/Water Separator Case to remove the case
- Empty the case and inspect the Separator Screen, Float, Spring, and Case for damage

4. Clean the Case and Elements

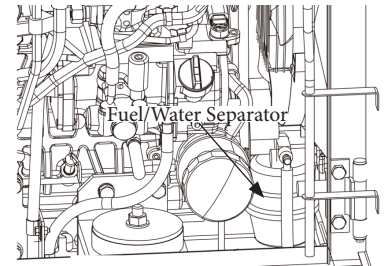
- Use diesel fuel to wash the case elements
- Clean out the inside of the case
- Inspect the O-ring at the top of the case; replace if damaged

5. Assemble and Install the Fuel/Water Separator

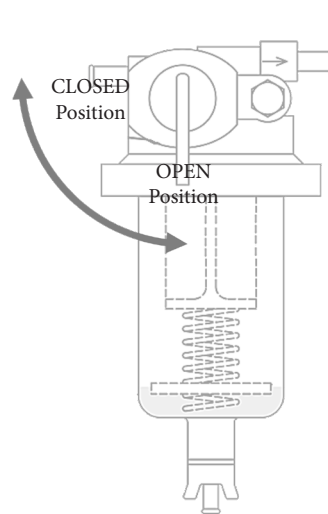
- While holding the Fuel/Water Separator Case upright, insert the spring and float and then the Filter Screen
- Make sure the O-ring is properly seated on the top of the case
- Fit the assembled case onto the Filter Port and hand-turn the Case Retention Ring until the case is fastened tightly
- Turn the Fuel Flow Valve to the OPEN position

6. Bleed Air and Seals Check

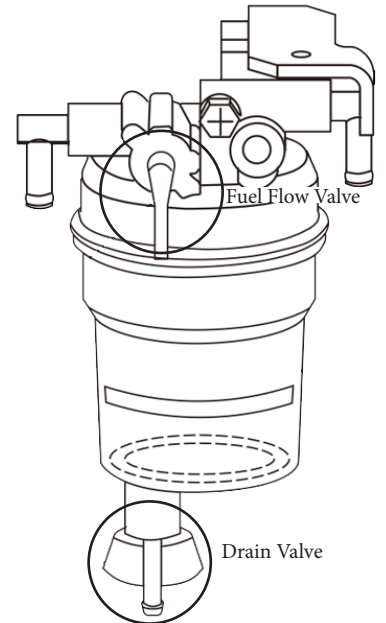
- If needed, re-connect the negative terminal of the 12V Battery
- Turn and hold the keyed Ignition Switch to the START position for 4-5 seconds to bleed air out of the fuel system
- Let the engine run for 60 seconds or more and check for fuel leaks at the Fuel/Water Separator
- If no leaks are detected, return the SPYDERCRANE to operations



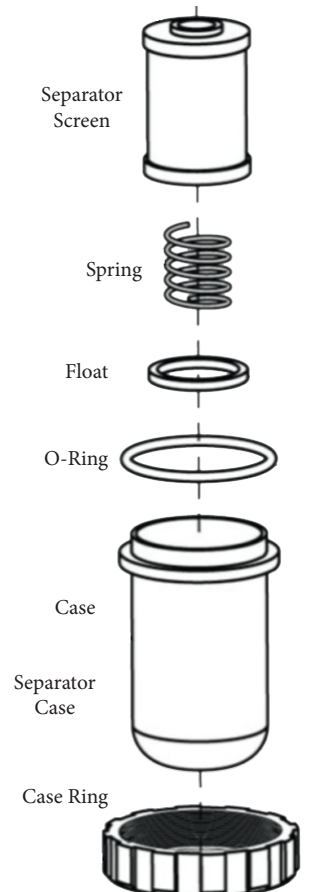
The Fuel/Water Separator is to the right of the Engine Oil Filter



Turn the Fuel Flow Valve 90° clockwise to CLOSE the valve



CLOSE the Fuel Flow Valve BEFORE OPENING the Drain Valve



The Fuel/Water Separator Case exploded view

PM Procedure: Replace Hydraulic Oil and Return Filter

1. Park the SPYDERCRANE and Bleed Pressure

- Leave the SPYDERCRANE in Travel Mode, park it on level ground, then shut it down
- Allow the engine to cool to ambient temperature
- With the engine off, move each Crane Control Lever full-forward and full-back to bleed any pressure in the hydraulic system

2. Open the Fill Port

- Using a 10mm wrench, unfasten and remove the Hydraulic Oil Tank Cover and set aside
- SLOWLY unscrew the Fill Port Plug, to safely bleed out any trapped air

3. Drain the Tank

- Place a drain pan, or pans, for up to 57 gallons of hydraulic oil underneath the Drain Port
- Use a xxmm wrench to remove the Drain Port Plug and allow the tank to drain completely
- Inspect the Drain Port Plug and its O-ring for damage; replace as needed
- Once the tank has completely drained, install the Drain Port Plug

4. Remove the Suction Filter Assembly

- Using an xxmm wrench, remove the six bolts and washer securing the Suction Filter Assembly
- Carefully pull the assembly out of the tank so that the attached Suction Filter does not get dragged on the edges of the tank
- Pull the Suction Filter off the assembly

5. Clean and Install the Suction Filter

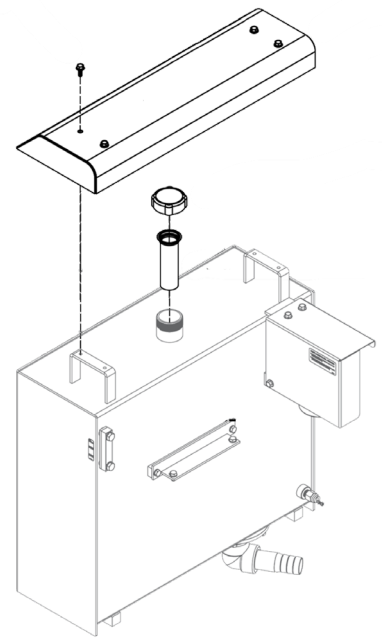
- Use a soft-bristle brush and hydraulic oil to thoroughly wash and clean the Suction Filter
- Inspect the inside of the Hydraulic Oil Tank (through the open port for the Suction Filter Assembly) and remove any foreign debris
- Install the Suction Filter to Suction Filter Assembly
- Inspect the O-ring of the Suction Filter Assembly; replace if needed
- Carefully install the assembled Suction Filter Assembly and fasten it with the six bolts and washer removed earlier

6. Replace Hydraulic Oil Return Filter

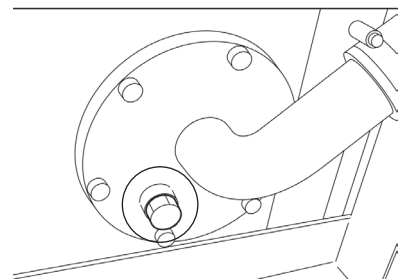
- Using an xxmm wrench unfasten, then remove the Hydraulic Oil Return Filter Cover and set aside
- Place a drain pan to catch and any spilled oil underneath the filter
- Using a filter wrench, unscrew and remove the Hydraulic Oil Return Filter, ensure that the filter O-ring is also removed from the Filter Port
- Unpackage the new filter and make sure that its O-ring is properly seated
- Apply a small amount of hydraulic oil to the top of the filter and its O-ring
- Install and hand-tighten the new filter, then use a filter wrench to turn the filter an additional 1/2 or 2/3 turn

7. Add Oil

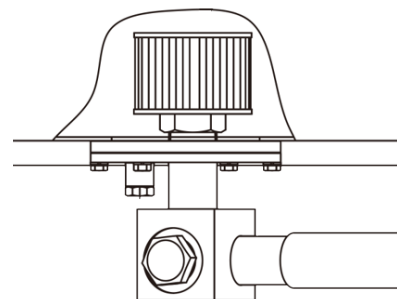
- Add up to 57 gallons of hydraulic oil through the Fill Port, periodically checking the Hydraulic Oil Tank Sight Glass to prevent overfilling the tank
- Install and hand-tighten the Fill Port Plug



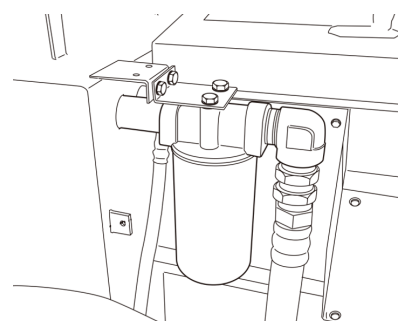
The Hydraulic Oil Tank with the Cover and Fill Port Plug and Screen Filter removed



The Drain Port (circled) and bottom of Suction Filter Assembly



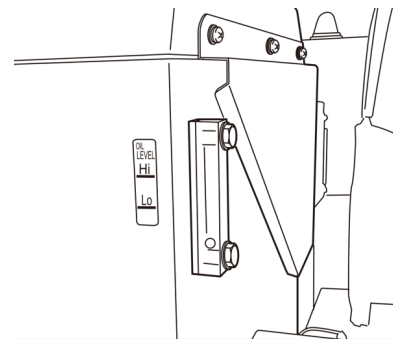
This is a cutaway drawing the of the Suction Filter within the Hydraulic Oil Tank



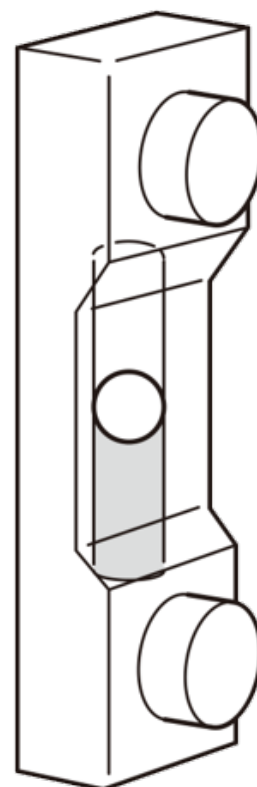
The installed Hydraulic Oil Return Filter Port with the cover removed

8. Bleed Air and Seals Check

- Start the SPYDERCRANE then deploy it to the HALF-EXT Deployment State
- Deploy the upperworks and BOOM UP and DOWN and BOOM OUT and IN to bleed any air trapped in the hydraulic cylinders; move SLOWLY and DO NOT fully-stroke out any cylinder
- Store the upperworks and outriggers, then shut down the SPYDERCRANE
- Check the Drain Port/Suction Filter Assembly, Hydraulic Oil Return Filter Port, and Fill Port for oil leaks
- Confirm that the indicated oil level is between the HI and LO markings of the gauge
- If no leaks are detected, install the Hydraulic Oil Tank Cover and Hydraulic Oil Return Filter Cover
- Return the SPYDERCRANE to operations



The Hydraulic Oil Tank Sight Glass is installed to the right of the operator's seat



Confirm that the indicated oil-level is between the HI and LO markings

PM Procedure: Replace Crawler Track Drive Sprocket Oil

1. Deploy and Orient the Drive Sprockets

- Deploy the outriggers and raise the SPYDERCRANE high enough to place a drain pan underneath the Crawler Track Drive Sprockets
- With the tracks off the ground, use the track controls to rotate the drive sprockets so that their Drain Ports are in the 6 o'clock position
- Shut down the SPYDERCRANE and allow the drive sprockets to cool to the touch

2. Drain the Sprocket

- Using an xxmm wrench, SLOWLY unscrew the Fill Port Plug to bleed any trapped air, then remove the plug completely
- Place a drain pan for up to 0.3 gallons underneath the Drain Port of the sprocket
- Remove the Drain Port Plug, then the Check Port Plug and allow the sprocket to drain completely

3. Add Oil

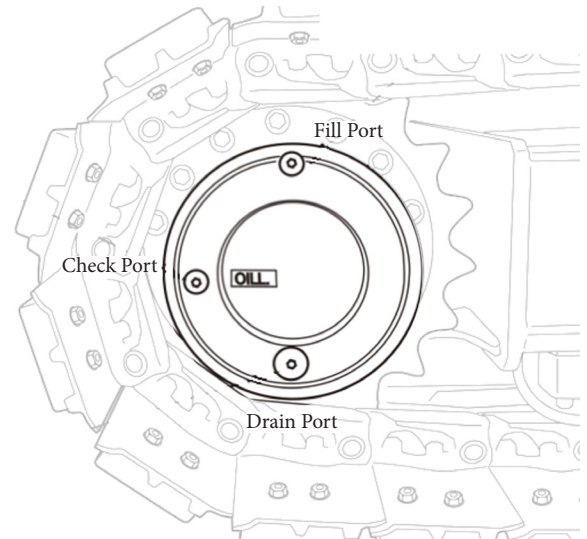
- Inspect all three plugs and their included O-rings, replace any damaged, or worn, components
- Install the Drain Port Plug
- Add oil SLOWLY through the Fill Port until oil begins to leak out of the open Check Port; the sprocket can hold up to .29-gallons of oil
- Install the Check Port and Fill Port Plugs

4. Repeat for other Drive Sprocket

- Repeat Steps 2 and 3 for the other drive sprocket

5. Seals Check

- Start the SPYDERCRANE and rotate both drive sprockets through several full rotations
- If no leaks are detected, return the SPYDERCRANE to operations



With the tracks off the ground, rotate the Crawler Track Drive Sprockets until the Drain Port is at the 6 o'clock position

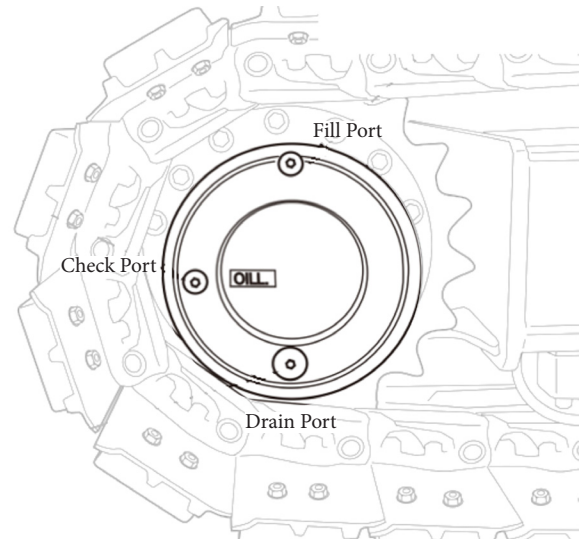
PM Procedure: Check Crawler Track Drive Sprocket Oil

1. Deploy and Orient the Drive Sprockets

- Deploy the outriggers and raise the SPYDERCRANE high enough to place a drain pan underneath the Crawler Track Drive Sprockets
- With the tracks off the ground, use the track controls to rotate the drive sprockets of that their Drain Ports are in the 6 o'clock position
- Shut down the SPYDERCRANE and allow the drive sprockets to cool to the touch

2. Check Oil Level

- Using an xxmm wrench, SLOWLY unscrew the Fill Port Plug to bleed any trapped air, then remove the plug completely
- SLOWLY unscrew the Check Port Plug
 - If oil begins to leak out, stop and screw the plug back in tightly; the sprocket is properly oiled
 - If oil DOES NOT leak, remove the plug and go to ***PM Procedure: Replace Crawler Track Drive Sprocket Oil***



With the tracks off the ground, rotate the Crawler Track Drive Sprockets until the Drain Port is at the 6 o'clock position

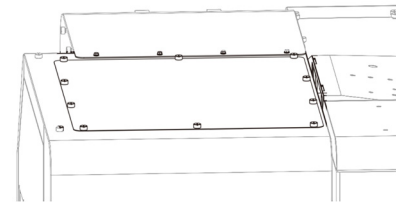
PM Procedure: Replace Engine Coolant

1. Park the SPYDERCRANE

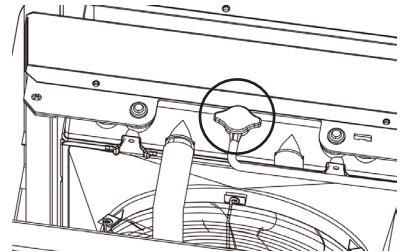
- Leave the SPYDERCRANE in Travel Mode, park it on level ground, then shut it down
- Allow the engine to cool to ambient temperature

2. Open the Radiator

- Using an xxmm wrench unfasten and remove the Engine Compartment Cover at the rear of the Engine Compartment; set the cover aside
- SLOWLY unscrew the Radiator Cap to bleed any hot air, then remove the cap completely



Remove the Engine Compartment Top Cover



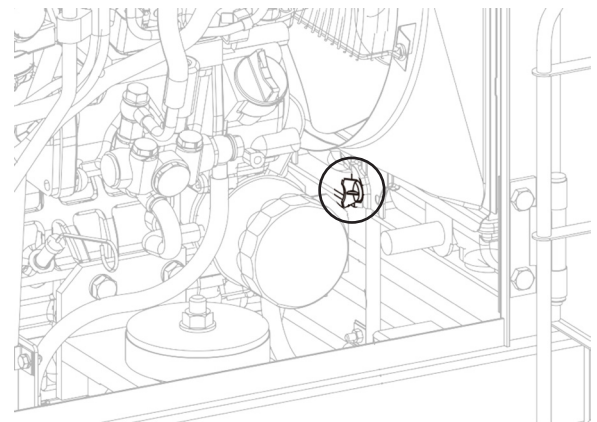
SLOWLY unscrew the Radiator Cap to bleed out any hot air

3. Drain the Coolant

- Open the Engine Compartment Door
- Place a drain pan for 2.2 gallons underneath the Radiator Drain Port
- Open the Drain Valve and allow the coolant to completely drain
- Close the Drain Valve

4. Inspect and Clean the Radiator

- Inspect the hoses and clamps for wear and damage
- Inspect the radiator fins for damage and clean them with compressed air or water



The Radiator Drain Valve is near the Engine Oil Filter

5. Flush the Radiator

- Add up to 2.2 gallons of radiator wash to the radiator (following the mixing directions for the detergent)
- Install the Radiator Cap
- Start the SPYDERCRANE and run the engine at slightly above idle-power (you MUST raise the fluid temperature to MORE THAN 176°F) and run for 30 minutes
- Shut down the engine and allow the radiator to cool to a safe temperature
- Open the Drain Valve to drain the radiator wash, then close the valve
- Fill the radiator with clean water, then start and run the engine at idle for 10 minutes, then shut down the engine and allow the water to cool to a safe temperature before draining; repeat this task until only clean water drains out of the radiator

6. Add Coolant

- Add up to 2.2 gallons of coolant to the radiator
- Start and run the engine for 60 seconds with the Radiator Cap OFF to bleed any air in the cooling system, then shut down the engine
- Open the Fill Port of the Coolant Overflow Tank and add coolant until it is at the FULL marking of the tank, then close the Fill Port
- Remove and inspect the Radiator Cap and its O-ring for damage; replace if necessary; replace the Radiator Cap Spring
- Install the Radiator Cap and the Engine Compartment Cover and return the SPYDERCRANE to operations



Add coolant directly to the Coolant Overflow Tank

PM Procedure: Replace Winch Gearbox Oil

1. Deploy and Level the Winch Gearbox

- Deploy the outriggers
- Raise/lower the SPYDERCRANE's carrier until the Winch Gearbox is leveled with the Fill Port pointing straight up and Drain Port facing straight down
- Shut down the SPYDERCRANE

2. Drain the Gearbox

- Use an xxmm wrench to SLOWLY unscrew and remove the Fill Port Plug
- Place a drain pan for up to .4 gallons of oil underneath the Drain Port
- Use an xxmm wrench to unscrew and remove the Drain Port Plug and allow the gearbox to drain completely
- Use an xxmm to unscrew and remove the Check Port Plug

3. Add Oil

- Inspect the Fill, Drain, and Check Port Plugs and their included O-rings for damage; replace any damaged components
- Install the Drain Port Plug
- Slowly add up to .37 gallons of oil through the Fill Port until oil leaks out of the Check Port
- Install the Check and Fill Port Plugs
- Re-deploy the SPYDERCRANE back to Travel Mode and return to operations

PM Procedure: Replace Slew Gearbox Oil

PM Procedure: Replace Line Filter Element