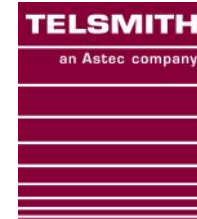


Lubrication & Maintenance Schedule

TelSmith H-Series Gyrasphere Crushers

Lubrication or Maintenance Item:	Daily		Hourly	Weekly	Monthly	Annually
	Before Start-up	After Start-up				
REMOVE DUST AND SPILLAGE FROM AROUND THE CRUSHER.	•					
REMOVE DUST AND DIRT FROM DRIVE MOTOR.	•					
CHECK THAT ALL CHUTES AND HOPPERS ARE FREE OF OBSTRUCTIONS.	•					
VERIFY THAT CRUSHING CHAMBER IS CLEAR.	•					
CHECK THAT CRUSHER DISCHARGE AREA IS FREE OF OBSTRUCTIONS.	•					
REMOVE ANY MATERIAL OR DEBRIS FROM THE CRUSHER FRAME ARMS.	•					
INSPECT ROTARY SEAL RING FOR WEAR OR DAMAGE.	•					
MEASURE THE DISCHARGE OPENING. VERIFY THAT THE SETTING IS CORRECT FOR YOUR APPLICATION.	•					
CHECK LUBRICATION SYSTEM OIL LEVEL. ADD OIL IF LOW.	•					
OPERATE OIL PUMP FOR AT LEAST 15 MINUTES BEFORE STARTING CRUSHER.	•					
VERIFY THAT ALARM HORN SOUNDS WHEN OIL PUMP IS STARTED.	•					
VERIFY THAT ALARM HORN STOPS AFTER OIL CIRCULATES THROUGH CRUSHER.	•					
INSPECT LUBRICATION SYSTEM FOR LEAKS OR OTHER OBVIOUS PROBLEMS.	•					
CHECK THAT OIL FLOW IS VISIBLE AT THE OIL RETURN SCREEN.	•					
CHECK THAT OIL FLOW IS VISIBLE IN THE COUNTERSHAFT BOX SIGHT GAUGE.	•					
VERIFY THAT A <u>SLOW DRIP</u> OF OIL IS VISIBLE AT THE OIL PUMP SEAL.	•					

Warning: Lockout/tagout power to crusher drive before performing any lubrication, maintenance, adjustment or repair procedures!
Shut-off fuel supply and disconnect batteries if crusher is powered by a diesel engine.

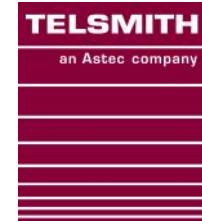


Lubrication & Maintenance Schedule

Telsmith H-Series Gyrasphere Crushers

Lubrication or Maintenance Item:	Daily		Hourly	Weekly	Monthly	Annually
	Before Start-up	After Start-up				
CHECK DIESEL ENGINE FLUID LEVELS (IF EQUIPPED). REFER TO ENGINE MANUFACTURER'S MANUAL FOR INSTRUCTIONS.	•					
REMOVE BUILT-UP DIRT FROM RELIEF CYLINDERS.	•					
LUBRICATE RELIEF CYLINDER COUPLINGS.	•					
CHECK HYDRAULIC SYSTEM OIL LEVEL. ADD OIL IF LOW.	•					
ACTIVATE THE HYDRAULIC RELIEF FUNCTION. CHECK HYDRAULIC SYSTEM FOR OIL LEAKS.	•					
CHECK THE HYDRAULIC RELIEF PRESSURE. BE SURE THAT PRESSURE IS WITHIN ACCEPTABLE LIMITS.	•	•	EVERY 4 HRS.			
DEPRESS HORN TEST BUTTON. ALARM HORN MUST SOUND.	•	•	EVERY 4 HRS.			
CHECK LUBRICATION SYSTEM OIL PRESSURE AND FLOW. BE SURE THAT NORMAL READINGS ARE INDICATED.	•	•	EVERY 4 HRS.			
CHECK THE RETURN LINE OIL TEMPERATURE: – OIL MUST BE AT LEAST <u>50°F</u> BEFORE CRUSHER IS STARTED (10°C) – OIL MUST BE AT LEAST <u>70°F</u> BEFORE CRUSHING BEGINS (21°C). – OIL MUST NOT EXCEED <u>125°F</u> AT ANY TIME (52°C).	•	•	EVERY 4 HRS.			
LISTEN FOR ANY UNUSUAL NOISES OR VIBRATIONS AFTER CRUSHER IS STARTED.		•				
VERIFY THAT THE HEAD BEGINS TURNING SLOWLY COUNTERCLOCKWISE AFTER THE CRUSHING CHAMBER BECOMES FILLED WITH MATERIAL.		•				

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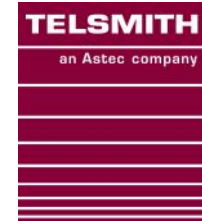


Lubrication & Maintenance Schedule

Telsmith H-Series Gyrasphere Crushers

Lubrication or Maintenance Item:	Daily		Hourly	Weekly	Monthly	Annually
	Before Start-up	After Start-up				
CHECK THAT FEED IS DISTRIBUTED 360° AROUND CRUSHING CHAMBER.		•				
VERIFY THAT FEED IS PROPERLY GRADED.		•				
VERIFY THAT MATERIAL IS NOT BACKING UP INSIDE THE DISCHARGE CHUTE		•				
VERIFY THAT THERE IS NO UPPER FRAME MOVEMENT.		•				
BE SURE THAT POWER DRAW IS WITHIN NORMAL LIMITS.		•				
CHECK THAT THE OIL RETURN SCREEN/STRAINER IS FREE OF METAL PARTICLES.		•				
BE SURE THAT HYDRAULIC SYSTEM FILTER INDICATOR IS IN THE CLEAN ZONE. (CHECK AFTER SYSTEM HAS REACHED NORMAL OPERATING TEMPERATURE)		•	EVERY 4 HRS.			
BE SURE THAT LUBRICATION SYSTEM FILTER INDICATOR IS IN THE OK ZONE. (CHECK AFTER SYSTEM HAS REACHED NORMAL OPERATING TEMPERATURE)		•	EVERY 4 HRS.			
CHECK FOR LOOSE NUTS AND BOLTS. TIGHTEN AS REQUIRED.				•		
CHECK LUBRICATION SYSTEM OIL FOR IMPURITIES.				•		
CHECK CHUTES AND HOPPERS FOR WEAR.				•		
CHECK MANTLE AND CONCAVE RING FOR LOOSENESS, CRACKS OR WEAR.				•		
CHECK DISTRIBUTOR PLATE FOR LOOSENESS OR WEAR (FC ONLY)				•		
VERIFY THAT THE HEAD ROTATES FREELY BY HAND, INDEPENDENT OF ECCENTRIC.				•		
INSPECT FRAME LINER AND FRAME ARM SHIELDS FOR WEAR.				•		
CHECK CRUSHER BOTTOM PLATE AND OIL PIPING FOR LEAKS.				•		

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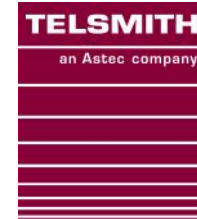


Lubrication & Maintenance Schedule

Telsmith H-Series Gyrasphere Crushers

Lubrication or Maintenance Item:	Daily		Hourly	Weekly	Monthly	Annually
	Before Start-up	After Start-up				
INSPECT ALL HOSES FOR WEAR OR FATIGUE.				•		
INSPECT THE OIL TANK BREATHER. CLEAN OR REPLACE IF CLOGGED.				•		
CHECK THE OIL COOLER FOR LEAKS OR DAMAGE.				•		
REMOVE LOOSE DIRT FROM OIL COOLER FAN AND COOLING FINS. (IF EQUIPPED WITH AIR-OIL COOLER)				•		
REMOVE DIRT FROM FLYWHEEL SHEAVE AND MOTOR SHEAVE.				•		
CHECK SHEAVES FOR WEAR OR LOOSENESS.				•		
INSPECT V-BELTS FOR DAMAGE OR WEAR. CHECK V-BELT TENSION.				•		
CHECK OIL LEVEL IN OIL PUMP GEAR REDUCER(WHERE APPLICABLE*). ADD OIL IF LOW.					•	
UNLOCK THE SUPPORT BOWL ASSEMBLY AND ROTATE IT BACK-AND-FORTH IN THE THREADS OF THE UPPER FRAME.					•	
TEST ALL HYDRAULIC SYSTEM FUNCTIONS FOR PROPER OPERATION.					•	
CLEAN AND INSPECT ALL GAUGES AND SIGHT GLASSES.					•	
CHECK THE AMMETER FOR PROPER OPERATION.					•	
CHECK GEAR BACKLASH. RECORD IN SERVICE LOG.					•	
DRAIN AND REFILL HYDRAULIC RESERVOIR.						•
CLEAN INTERIOR OF HYDRAULIC RESERVOIR. REPLACE SUCTION STRAINER.						•
CLEAN OUT ALL CHUTES, HOPPERS, AND ROCK BOXES.						•

Warning: Lockout/tagout power to crusher drive before performing any lubrication, maintenance, adjustment or repair procedures!
Shut-off fuel supply and disconnect batteries if crusher is powered by a diesel engine.



Lubrication & Maintenance Schedule

Telsmith H-Series Gyrasphere Crushers

Lubrication or Maintenance Item:	Daily		Hourly	Weekly	Monthly	Annually
	Before Start-up	After Start-up				
LUBRICATE OIL PUMP BEARINGS. (WHERE APPLICABLE*)			EVERY 500 HRS.			
DRAIN AND REFILL LUBRICATION SYSTEM OIL TANK.			EVERY 600 HRS.			
DRAIN AND REFILL OIL PUMP GEAR REDUCER. (WHERE APPLICABLE*)			EVERY 2000 HRS.			
REPLACE LUBRICATION SYSTEM FILTER ELEMENTS IF POINTER MOVES TO THE CHANGE ZONE AT NORMAL OPERATING TEMPERATURES.	(AS REQUIRED)					
REPLACE HYDRAULIC SYSTEM FILTER ELEMENT IF POINTER MOVES TO THE BYPASS ZONE AT NORMAL OPERATING TEMPERATURES.	(AS REQUIRED)					
LUBRICATE THE BUTTRESS THREADS IF SUPPORT BOWL IS DIFFICULT TO TURN.	(AS REQUIRED)					
TIGHTEN OR REPLACE OIL PUMP SEAL AS REQUIRED. (WHERE APPLICABLE*)	REFER TO PUMP MANUFACTURER'S MANUAL FOR INSTRUCTIONS AND SERVICE INTERVALS.					
ADJUST OIL PUMP END CLEARANCE AS REQUIRED. (WHERE APPLICABLE*)						
LUBRICATE CRUSHER DRIVE MOTOR.						
LUBRICATE AIR-OIL COOLER FAN MOTOR (IF EQUIPPED).						
PERFORM SCHEDULED MAINTENANCE FOR DIESEL ENGINE (IF EQUIPPED).	REFER TO ENGINE MANUFACTURER'S MANUAL FOR INSTRUCTIONS AND SERVICE INTERVALS.					

*Early Lubrication systems utilized a horizontal oil pump assembly, current models utilize an in tank style which requires no maintenance.

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