



GEOMAT

HYDRAULICS & METAL WORKS

EQUIPMENT MAINTENANCE HANDBOOK

Comprehensive maintenance procedures for drilling
equipment, hydraulic systems & engineering machinery

ABOUT THIS HANDBOOK

Purpose

This Equipment Maintenance Handbook provides comprehensive guidance for the inspection, servicing, and preventive maintenance of all GEOMAT drilling equipment, hydraulic systems, and engineering machinery. It is designed to ensure maximum equipment uptime, operational safety, and extended asset life.

SAFETY NOTICE

All maintenance procedures must be performed by qualified personnel wearing appropriate Personal Protective Equipment (PPE). Always isolate equipment from power sources before commencing any maintenance activity. Follow all local safety regulations and GEOMAT standard operating procedures.

Maintenance Objectives

- Maximise equipment availability and operational uptime
- Prevent unplanned breakdowns and costly emergency repairs
- Extend the service life of drilling tools and hydraulic components
- Ensure compliance with safety standards and manufacturer specifications
- Reduce total cost of ownership through structured preventive maintenance
- Maintain accurate maintenance records for audit and warranty purposes

Who Should Use This Handbook

Maintenance Engineers & Technicians

Field Operators & Drill Rig Crews

Site Supervisors & Project Managers

HSE Officers & Safety Personnel

Spare Parts & Inventory Managers



ABOUT GEOMAT

Engineering Excellence Since Inception

GEOMAT Hydraulics & Metal Works is a premier provider of drilling equipment, hydraulic systems, and precision-engineered metal components. Based in Abu Dhabi, UAE, we serve mining, construction, geotechnical, and water well drilling industries across the Middle East, Africa, and Asia.



Our Maintenance Support Services

- Preventive & predictive maintenance programmes
- On-site technical support and field service
- Hydraulic system diagnostics and repair
- Drill tool reconditioning and refurbishment
- Spare parts supply and inventory management
- Operator training and maintenance certification
- 24/7 emergency breakdown support

Our Commitment

At GEOMAT, we believe that equipment reliability is the foundation of operational success. Our maintenance support services are designed to minimise downtime, optimise performance, and protect your capital investment. Every procedure in this handbook reflects our commitment to engineering precision and customer-first service.

Why Choose GEOMAT

- ISO-certified quality management systems
- Factory-trained service engineers
- Regional spare parts warehousing for rapid dispatch
- Customised maintenance contracts tailored to your fleet

IMPORTANCE OF PREVENTIVE MAINTENANCE

Preventive maintenance is the systematic approach to equipment care that identifies and corrects potential failures before they result in unplanned downtime. For drilling operations, where equipment operates under extreme conditions, a structured maintenance programme is not optional — it is essential.



Key Benefits

- 1 Reduced Downtime
- 2 Cost Savings
- 3 Extended Equipment Life
- 4 Improved Safety
- 5 Regulatory Compliance

GEOMAT Maintenance Philosophy

Our approach integrates condition-based monitoring with scheduled interventions, ensuring each asset receives precisely the attention it requires — no more, no less. This data-driven methodology delivers measurable improvements in equipment availability and total cost of ownership.

70-80%

Failures Prevented

5-10x

Cost Savings vs Reactive

30-50%

Lifespan Extension

DAILY EQUIPMENT INSPECTION CHECKLIST

Complete this checklist at the start of each shift before equipment operation. Record any deficiencies and report to the maintenance supervisor immediately.

Engine & Power System

- Engine oil level within operating range
- Coolant level adequate — no visible leaks
- Fuel level sufficient for planned operations
- Air filter condition — clean and unobstructed
- Belt tension and condition — no cracks or fraying
- Battery terminals clean and connections secure

Hydraulic System

- Hydraulic fluid level within specified range
- No visible leaks on hoses, fittings, or cylinders
- Hydraulic pressure gauge readings within normal limits
- Cylinder rods free from scoring or damage
- Filter condition indicator in acceptable range

Drill String & Tooling

- Drill rods — check for cracks, bends, thread damage
- Core barrel assembly — latching mechanism functional
- Drill bit condition — adequate diamond/carbide remaining
- Stabilisers and reamers — wear within tolerance
- Thread protectors in place on stored components

Safety Systems & Guards

- Emergency stop buttons functional and accessible
- All guards and safety shields in place
- Fire extinguisher charged and accessible
- First aid kit stocked and available
- PPE available — hard hat, gloves, eye protection, steel-toe boots

Inspector: _____ Date: _____ Shift: _____
Supervisor Approval: _____ Signature: _____

WEEKLY MAINTENANCE SCHEDULE

Perform these tasks once per week during scheduled downtime. Document completion and report any findings requiring corrective action.

Lubrication & Fluids

- Grease all pivot points, pins, and bearings per lubrication chart
- Check gearbox oil levels — top head, rotation unit, winch
- Inspect all grease nipples for blockage or damage
- Verify automatic lubrication system operation (if equipped)
- Sample and inspect hydraulic fluid colour and clarity

Electrical System

- Test all warning lights, gauges, and indicators
- Inspect wiring harnesses for chafing or heat damage
- Check battery electrolyte levels and specific gravity
- Clean and tighten all electrical connections
- Test emergency stop circuit functionality

Drill String & Tooling

- Inspect drill rod threads — clean and apply thread compound
- Measure drill rod wear using go/no-go gauges
- Check core barrel inner tube condition and spring tension
- Inspect overshot assembly and latching mechanism
- Rotate drill rod stock to ensure even wear distribution

Safety & Housekeeping

- Inspect fire extinguishers — check pressure and accessibility
- Review and restock first aid supplies
- Clean work area — remove debris, oil spills, trip hazards
- Inspect lifting slings, shackles, and chains for damage
- Verify all safety signage is visible and legible

Technician: _____ Date: _____ Week #: _____
Supervisor Review: _____ Signature: _____

MONTHLY MAINTENANCE SCHEDULE

Monthly maintenance tasks address deeper system checks and component replacements that ensure long-term reliability and performance.

Hydraulic System — Deep Inspection

Complete hydraulic fluid sampling and laboratory analysis

Replace hydraulic return line filters

Inspect all cylinder seals for wear or extrusion

Check hydraulic pump wear plate clearances

Calibrate pressure relief valves

Engine & Powertrain

Change engine oil and filters (or per OEM interval)

Inspect turbocharger for shaft play and oil leaks

Check injector spray patterns and fuel pressure

Inspect radiator core for blockage or damage

Test engine compression (if performance decline noted)

Structural & Frame

Inspect mast/derrick welds and structural pins

Check levelling jacks and outrigger condition

Inspect track/wheel undercarriage wear

Torque-check critical bolted connections

Inspect wire ropes for broken strands or corrosion

Drill Tooling & Consumables

Inventory all drill bits and assess remaining life

Inspect core barrel outer tubes for straightness

Check swivel washpipe and seals

Inspect water pump impeller and valves

Review consumables stock and reorder as needed

Completed by: _____ Month/Year: _____

Maintenance Manager Approval: _____ Date: _____

DRILL RIG MAINTENANCE PROCEDURES

Systematic maintenance of the drill rig ensures safe, efficient operation and prevents costly unplanned downtime. Follow these procedures at the specified intervals.



Pre-Operation Checks

1. Verify all safety interlocks are functional
2. Check mast alignment and locking pins engaged
3. Confirm rotation head greased and chuck jaws in good condition
4. Inspect wireline sheaves and guide rollers
5. Test all control levers for smooth, full-range operation

During Operation Monitoring

1. Monitor hydraulic pressure and temperature continuously
2. Listen for unusual vibrations or sounds from rotation head
3. Check drill string torque readings against specifications
4. Observe water/mud flow rate and return quality
5. Record hourly meter readings for service interval tracking

Post-Operation Shutdown

1. Flush water system and drain lines in freezing conditions
2. Retract all hydraulic cylinders to prevent seal damage
3. Lower mast to transport position and secure
4. Clean debris from rig deck and walkways
5. Complete shift maintenance log with observations

Critical Reminder

Never operate a drill rig with known safety interlock faults. Tag out and report immediately. All observations must be recorded in the shift maintenance log before handover.

WIRELINER CORE DRILLING SYSTEM MAINTENANCE

The wireline core drilling system requires precise maintenance to ensure reliable core recovery and minimal trip time. Each component must be inspected systematically.

Overshot Assembly

- Inspect latch body for wear on engagement surfaces
- Check spearhead point condition and spring tension
- Verify latch fingers for even wear and proper grip
- Test release mechanism — must disengage cleanly

Inner Tube Assembly

- Measure inner tube ID at multiple points for ovality
- Inspect landing ring contact face for wear depth
- Check core lifter case threads and seating surface
- Verify stabiliser bearing rotation — must spin freely

Outer Tube & Drill String

- Measure outer tube straightness using V-blocks
- Inspect box and pin threads with thread gauges
- Check reaming shell OD against gauge ring
- Verify coupling shoulder faces for galling or damage

Wireline Winch System

- Inspect wireline cable for broken strands or kinks
- Check sheave groove wear and bearing condition
- Verify winch brake holding capacity under load
- Lubricate cable and drum per manufacturer schedule

CORE BARREL & DRILL ROD INSPECTION

Core barrels and drill rods are critical consumables that directly affect drilling performance and core recovery. Regular inspection prevents downhole failures.

Component	Inspection Point	Reject Criteria
Outer Tube	Internal diameter	> 0.5mm over nominal
Outer Tube	Straightness	> 1mm/3m deflection
Inner Tube	External surface	Scoring > 0.3mm deep
Inner Tube	Landing ring	> 50% wear on contact face
Drill Rod	Wall thickness	< 85% of original
Drill Rod	Thread profile	Failed go/no-go gauge
Drill Rod	Straightness	> 1.5mm/m deflection
Core Lifter	Spring tension	< 70% of new specification
Reaming Shell	OD measurement	< gauge ring diameter
Coupling	Thread engagement	< 60% full thread contact

Inspection Procedure

1. Clean all components thoroughly before inspection
2. Use calibrated measuring instruments (micrometers, bore gauges)
3. Record all measurements in the maintenance log
4. Mark rejected components clearly with red paint/tag
5. Segregate rejected items to prevent accidental reuse
6. Report findings to maintenance supervisor for replacement ordering

Thread Inspection Standards

- API thread gauges must be calibrated within 12 months
- Inspect threads under adequate lighting with 10x magnification
- Apply thread compound to manufacturer specification before assembly
- Record make-up torque values for each connection
- Never re-use thread protectors that show deformation

Measurement Recording Protocol

- Record date, operator name, and equipment serial number
- Note ambient temperature — thermal expansion affects measurements
- Take minimum three readings per measurement point
- Flag any measurement within 10% of reject criteria as "monitor"
- Retain records for minimum 5 years per GEOMAT quality system

⚠ Important Note

Components approaching reject criteria must be flagged for increased inspection frequency. Never return a borderline component to service without supervisor approval and documented risk assessment.

DTH HAMMER & BIT MAINTENANCE

Down-The-Hole (DTH) hammers operate under extreme impact forces. Regular inspection and rebuild intervals are critical to prevent catastrophic failure downhole.



DTH Hammer Inspection

1. Disassemble hammer per manufacturer sequence
2. Inspect piston for scoring, cracks, or wear
3. Measure cylinder bore for ovality (max 0.05mm)
4. Check check-valve assembly and backhead
5. Inspect foot valve and bit retainer condition
6. Replace all O-rings and seals during rebuild

DTH Bit Maintenance

1. Measure button protrusion height (min 4mm)
2. Check for cracked or missing carbide buttons
3. Inspect spline/spigot connection for wear
4. Verify gauge buttons maintain full diameter
5. Regrind flat buttons to restore cutting profile
6. Record metres drilled and formation type

Service Intervals

- Every 200 operating hours: Full hammer strip and inspection
- Every 500 metres: Bit gauge check and button assessment
- Every rebuild: Replace all seals, measure all critical dimensions
- Immediately: If penetration rate drops >20% or unusual vibration detected

⚠ Critical Warning

Never operate a DTH hammer without confirming adequate air pressure and lubrication. Running dry causes immediate piston damage and potential downhole seizure. Always verify minimum oil injection rate before commencing drilling.

Quick Troubleshooting Reference

- Low penetration rate → Check bit gauge, button condition, air pressure
- Excessive vibration → Inspect piston/cylinder clearance, bit balance
- Poor sample recovery → Check inner tube seals, splitter condition
- High air consumption → Piston seal wear, backhead gasket failure

DIAMOND CORE DRILLING TOOL MAINTENANCE

Diamond core drilling tools require precise maintenance to ensure optimal core recovery rates and extended tool life. Regular inspection prevents costly downhole failures.

Diamond Core Bit Inspection

- Inspect diamond matrix for wear depth and exposure
- Check waterway channels for blockage or erosion
- Measure OD with ring gauge — reject if undergauge
- Inspect inner diameter for scoring or buildup
- Verify crown profile matches formation requirements
- Record metres drilled and formation type for each bit

Reaming Shell Maintenance

- Measure OD at multiple points — must maintain gauge diameter
- Inspect diamond/TC inserts for fractures or loss
- Check thread condition on both pin and box ends
- Verify waterway alignment with core barrel assembly
- Replace when OD is below minimum gauge specification

Bit Selection & Performance Tracking

- Match matrix hardness to formation abrasiveness
- Select appropriate waterway design for ground conditions
- Track penetration rate per metre to identify wear trends
- Compare bit life across formations for procurement planning
- Document optimal operating parameters (RPM, WOB, flow rate)

Storage & Handling

- Store bits crown-down on wooden racks — never on concrete
- Protect threads with caps during transport and storage
- Keep reaming shells in labelled bins by size and condition
- Separate new, serviceable, and reject items clearly
- Apply light oil to threads before long-term storage

Performance Optimisation Tips

Maintain consistent water flow to prevent thermal damage to diamond segments. Reduce WOB in fractured ground to avoid bit stripping. Always run new bits at reduced parameters for the first 30cm to establish a cutting profile before increasing to full operating specifications.

Every Run
Bit OD Check

500m Drilled
Full Barrel Inspection

1000m Drilled
Thread Re-cut Assessment

RC DRILLING TOOL MAINTENANCE

RC (Reverse Circulation) drilling tools operate under extreme pneumatic pressures and abrasive conditions. Regular inspection of hammers, bits, and pipe ensures consistent sample quality and prevents costly downhole failures.

RC Drill Pipe Inspection

- Inspect inner tube for wear and blockage — sample path must be clear
- Check outer tube wall thickness at joints using ultrasonic gauge
- Verify thread condition — re-cut or reject if damaged beyond tolerance
- Inspect crossover subs for cracking at stress concentration points
- Confirm driver sub splines are not rounded or excessively worn

RC Hammer Maintenance

- Disassemble and inspect piston, cylinder, and check valves after each project
- Measure piston OD and cylinder bore — replace if clearance exceeds spec
- Inspect backhead threads and exhaust ports for erosion
- Check bit retainer ring and locking mechanism for wear
- Verify air consumption matches manufacturer baseline (indicates seal wear)

RC Bit Maintenance

- Inspect carbide buttons for breakage, wear flats, and loss
- Check gauge diameter with ring gauge — reject if undergauge
- Verify face flushing holes are clear and correctly sized
- Inspect skirt wear and shoulder condition
- Record metres drilled per bit and formation type for tracking

Sample Quality Checks

- Monitor sample recovery percentage — declining recovery indicates tool wear
- Check for contamination from outer tube leakage
- Inspect splitter and cyclone for blockage or wear
- Verify sample bags are correctly labelled with depth intervals
- Report any wet samples in dry formations (indicates seal failure)

RC Tool Service Intervals

Hammer rebuild: Every 300 operating hours | Pipe inspection: Every 1000m drilled | Bit gauge check:
Every rod change | Full string NDT: Every 6 months or 10,000m

ROTARY DRILLING TOOL MAINTENANCE

Rotary drilling tools endure extreme torque and abrasive conditions. Systematic inspection of bits, stabilisers, and BHA components ensures consistent hole quality and prevents costly downhole failures.

Tri-Cone Bit Inspection

- Inspect cone shell for cracks, erosion, and bearing seal condition
- Check tooth/insert height and breakage pattern across all three cones
- Verify bearing play — excessive movement indicates imminent failure
- Inspect shirrtail and gauge protection for wear
- Record dull grading using IADC bit classification system

Drag Bit & PDC Maintenance

- Inspect PDC cutters for chipping, spalling, and thermal damage
- Check blade erosion and junk slot clearance
- Verify nozzle condition and flow area — replace if eroded
- Inspect gauge pads for wear and cutter loss
- Assess bit body erosion around cutter pockets

Hole Opener & Stabiliser

- Measure stabiliser blade OD — replace when undergauge by >1mm
- Inspect blade hardfacing for cracking or delamination
- Check hole opener cutter retention and bearing condition
- Verify pin and box thread condition on all connections
- Inspect flow ports for blockage or erosion damage

Drill Collar & BHA Components

- Inspect collar OD for washouts, cracks, and corrosion pitting
- Check elevator shoulders and slip areas for damage
- Verify bore condition — internal corrosion reduces fatigue life
- Inspect crossover subs with MPI after every 200 operating hours
- Record cumulative footage and rotate BHA components systematically

Rotary Tool Service Intervals

Tri-cone bit: Replace at IADC dull grade 5+ | PDC bit: Inspect every stand | Stabiliser gauge: Check every trip | Drill collar MPI: Every 200 hours | BHA thread inspection: Every make-up

HYDRAULIC SYSTEM MAINTENANCE

Hydraulic systems are the lifeblood of drilling equipment. Proper maintenance of pumps, cylinders, valves, and hoses ensures consistent power delivery and prevents costly failures in the field.

■ Hydraulic Pump Maintenance

- Check pump inlet pressure — cavitation causes rapid wear
- Monitor case drain flow — increasing flow indicates internal wear
- Inspect coupling alignment and condition monthly
- Replace shaft seals at first sign of external leakage
- Record operating pressure and compare to baseline readings
- Flush system after any pump failure to remove debris

■ Cylinder Maintenance

- Inspect rod surface for scoring, pitting, or corrosion
- Check rod seal for leakage — replace at first sign of weeping
- Verify cylinder mounting bolts and pin retention
- Inspect barrel bore for scoring during seal replacement
- Check cushion adjustment for smooth end-of-stroke deceleration
- Monitor drift rate — increasing drift indicates seal wear

■ Valve System Inspection

- Test relief valve settings quarterly — recalibrate if >5% deviation
- Inspect directional valve spools for scoring or sticking
- Check solenoid coil resistance and response time
- Verify pilot pressure settings on pressure-compensated valves
- Clean proportional valve pilot stages during filter changes
- Test check valves for backflow — replace if leakage detected

■ Hose & Fitting Maintenance

- Replace hoses at manufacturer-recommended intervals (typically 2–4 years)
- Inspect for abrasion, kinking, bulging, or surface cracking
- Check fitting torque — vibration loosens connections over time
- Route hoses away from heat sources and moving components
- Label all hoses with installation date and pressure rating
- Maintain minimum bend radius — tight bends cause premature failure

⚠ WARNING

Never work on hydraulic systems under pressure. Depressurise all circuits, lock out energy sources, and verify zero pressure with a calibrated gauge before commencing any maintenance activity.

LUBRICATION SCHEDULE & RECOMMENDED LUBRICANTS

Correct lubrication is fundamental to equipment longevity. Use only approved lubricants at specified intervals to maintain warranty coverage and optimal performance.

Component
Engine
Hydraulic System
Gearbox
Drill Head Bearings
Wire Rope
Swivel Washpipe
Chuck Jaws
Rod Thread
Winch Drum
Mast Pivot Pins
Water Pump
Compressor

Important Lubrication Guidelines

- Always clean grease fittings before applying grease gun to prevent contamination
- Store lubricants in sealed containers away from dust, moisture, and extreme temperatures
- Never mix lubricant brands or types without confirming compatibility
- Record all lubrication activities in the equipment maintenance log
- Dispose of used lubricants in accordance with local environmental regulations
- Increase lubrication frequency in dusty, wet, or high-temperature environments
- Use colour-coded grease guns to prevent cross-contamination between lubricant types

⚠ Over-greasing bearings is as damaging as under-greasing. Follow manufacturer specifications for quantity and never exceed recommended volumes.

SPARE PARTS INSPECTION & REPLACEMENT GUIDE

Maintaining an adequate inventory of critical spare parts and conducting regular inspections ensures rapid response to equipment failures. This guide outlines inspection criteria and replacement intervals for key components.

Critical Spare Parts Inventory

- Hydraulic hoses and fittings (complete set for each circuit)
- Seal kits for all hydraulic cylinders and pumps
- Engine filters — oil, fuel, air, and coolant
- Drive belts and tensioner assemblies
- Drill bit selection — diamond core, PDC, tri-cone
- Core barrel inner tube assemblies and bearings
- Wireline overshot and latching components
- Electrical relays, fuses, and solenoid coils
- Pump impellers and wear plates
- Rod thread protectors and coupling sleeves

Inspection Criteria for Stored Parts

- Visual inspection for corrosion, damage, or deformation
- Verify packaging integrity — moisture barriers intact
- Check shelf life expiry dates on rubber seals and hoses
- Confirm part numbers match current equipment specifications
- Rotate stock using FIFO (First In, First Out) method
- Test electrical components for continuity before installation
- Measure critical dimensions against OEM tolerances

Recommended Replacement Intervals

Component	Replace At	Visible weeping or drift
Hydraulic Hoses	2-4 years	
Cylinder Seals	2000 hrs	
Engine Oil Filter	250 hrs	
Hydraulic Filter	500 hrs	
Drive Belts	1500 hrs	
Drill Bit (Diamond)	Per project	
Wire Rope	Annual	
Pump Bearings	5000 hrs	

⚠ IMPORTANT

Always use genuine GEOMAT-approved spare parts. Non-OEM components may void warranty coverage and compromise equipment safety and performance.

TROUBLESHOOTING GUIDE

Use this guide to diagnose common equipment issues quickly. Identify the symptom, determine the probable cause, and apply the recommended corrective action before escalating to specialist support.

Symptom	Probable Cause	Corrective Action
Low drilling ROP	Worn bit or incorrect WOB	Replace bit; adjust weight on bit
Excessive vibration	Imbalanced BHA or worn bearings	Rebalance assembly; replace bearings
Hydraulic overheating	Low fluid level or blocked cooler	Top up fluid; clean cooler fins
Loss of hydraulic power	Pump wear or relief valve fault	Check pump flow; test relief valve
Rod thread galling	Insufficient thread compound	Clean threads; apply fresh compound
Core blockage	Inner tube damage or swelling	Inspect tube; replace if deformed
Wireline not latching	Worn overshot or spearhead	Replace overshot components
Engine black smoke	Clogged air filter or injector fault	Replace filter; service injectors
Erratic gauge readings	Sensor failure or wiring damage	Test sensors; inspect wiring
Hose failure	Age, abrasion, or over-pressure	Replace hose; check routing
Cylinder drift	Seal wear or valve leakage	Replace seals; test check valves
Compressor low output	Worn rings or intake restriction	Rebuild compressor; clean intake
Water pump cavitation	Air leak in suction line	Tighten fittings; replace seals
Mast alignment issues	Worn pivot pins or bushings	Measure wear; replace components
Chuck slippage	Worn jaw inserts or low pressure	Replace jaws; check clamping pressure
Excessive rod wear	Misaligned drill head	Realign head; check mast plumb
DTH hammer stalling	Low air pressure or worn piston	Check compressor; inspect piston
Fluid contamination	Failed breather or seal ingress	Replace breathers; flush system
Electrical intermittent	Corroded connector or chafed wire	Clean connectors; repair harness
Winch brake slipping	Worn brake pads or oil on disc	Replace pads; clean disc surface

⚠ ESCALATION PROTOCOL

If the issue persists after corrective action, isolate the equipment and contact GEOMAT Technical Support immediately at +971565264593.

EQUIPMENT STORAGE & HANDLING BEST PRACTICES

Proper storage and handling of drilling equipment protects your investment and ensures components remain in service-ready condition. Follow these guidelines to prevent damage during transport, storage, and deployment.

Short-Term Storage (Up to 30 Days)

- Store equipment on level, well-drained ground with adequate ventilation
- Apply corrosion inhibitor to all exposed machined surfaces
- Retract hydraulic cylinders fully and release system pressure
- Cover all openings — hydraulic ports, exhaust, air intake — with protective caps
- Engage parking brakes and chock wheels on mobile equipment
- Disconnect and remove batteries if equipment will not be started weekly
- Protect drill rods with thread protectors and store horizontally on racks

Long-Term Storage (Over 30 Days)

- Drain and replace all fluids with storage-grade preservative oils
- Fog engine cylinders with VCI (Vapour Corrosion Inhibitor) spray
- Seal all breathers and vents with desiccant packs inside
- Apply wax-based coating to all unpainted metal surfaces
- Store indoors or under weatherproof covers with UV protection
- Rotate tyres monthly and maintain inflation to prevent flat-spotting
- Run engine and hydraulics monthly for 15 minutes if possible

Handling & Transport Guidelines

- Verify lifting points and rated capacities before any crane lift
- Use certified slings, shackles, and spreader bars — inspect before each use
- Secure all loose components — mast pins, tool trays, hose reels
- Lower mast fully and lock in transport position before road travel
- Ensure load does not exceed vehicle GVWR and axle ratings
- Use tie-down chains rated to 1.5x the load weight minimum
- Place timber dunnage between stacked components to prevent contact damage

Drill Rod & Tooling Storage

- Store rods horizontally on timber or rubber-lined racks — never on bare ground
- Apply thread compound to all connections before storage
- Install thread protectors on both pin and box ends
- Separate rods by size and condition — segregate damaged items for repair
- Keep core barrels vertical with inner tubes removed and stored separately
- Store diamond bits in original cases with waterway ports covered

⚠ CAUTION

Never stack drill rods more than 4 layers high. Unsecured rods can roll and cause serious injury. Always use end stops and securing chains on storage racks.

SAFETY PROCEDURES DURING MAINTENANCE

Safety is non-negotiable. All maintenance personnel must follow these procedures to protect themselves, their colleagues, and the equipment. Failure to comply may result in serious injury or fatality.



ALL maintenance work requires a valid Permit to Work. No exceptions.

Lockout/Tagout (LOTO) must be applied before any maintenance activity on powered equipment.

Before Starting Maintenance

- Obtain and display valid Permit to Work at the job site
- Conduct Job Safety Analysis (JSA) with all team members
- Isolate all energy sources — electrical, hydraulic, pneumatic, mechanical
- Apply personal locks and tags to all isolation points
- Verify zero energy state — test controls, bleed pressure, block gravity loads
- Establish exclusion zone and erect barriers where required
- Confirm all personnel have appropriate PPE for the task

During Maintenance Activities

- Never work alone on high-risk tasks — maintain buddy system
- Use only rated tools and equipment for the task
- Keep work area clean and free of trip hazards
- Never bypass safety interlocks or remove guards without authorisation
- Support all suspended loads with mechanical stands — never rely on hydraulics alone
- Contain and clean all fluid spills immediately
- Report near-misses and unsafe conditions without delay

After Completing Maintenance

- Reinstall all guards, shields, and safety devices
- Remove all tools, rags, and foreign objects from the equipment
- Remove personal locks and tags in reverse order of application
- Conduct functional test with all personnel clear of the equipment
- Verify all gauges and indicators return to normal operating range
- Complete maintenance record and close Permit to Work
- Brief operations team on work completed and any limitations

Mandatory PPE for Maintenance Tasks

- Hard hat with chin strap (when working at height or under loads)
- Safety glasses or face shield (grinding, cutting, pressurised systems)
- Steel-toe safety boots with metatarsal protection
- Cut-resistant gloves (handling sharp components, wire rope)
- Hearing protection (when noise exceeds 85 dB)
- High-visibility vest (when working near mobile equipment)
- Fall arrest harness (when working above 1.8m height)

MAINTENANCE RECORD TEMPLATES & INSPECTION LOG

Accurate maintenance records are essential for tracking equipment health, demonstrating regulatory compliance, and planning future service interventions. Use these templates for all scheduled and unscheduled maintenance activities.

Equipment Maintenance Log

[illegible]

Inspection Record Form

Equipment Name: _____

Serial Number: _____

Location / Site: _____

Inspection Date: ____/____/____ Next Inspection Due: ____/____/____

Inspector Name: _____

Inspection Type: ☐ Routine ☐ Pre-operation ☐ Post-incident

Condition Assessment:

- ☐ Serviceable – no defects found
- ☐ Serviceable with defects – monitor and schedule repair
- ☐ Unserviceable – remove from service immediately

Defects Found: _____

Corrective Action Taken: _____

Inspector Signature: _____ Date: ____/____/____

Supervisor Approval: _____ Date: ____/____/____

MAINTENANCE TIPS & BEST PRACTICES

Implementing these proven maintenance practices will extend equipment life, reduce unplanned downtime, and improve overall operational efficiency across your drilling fleet.

General Best Practices

- Follow manufacturer-recommended service intervals without exception
- Document every maintenance activity — no task is too small to record
- Use only genuine GEOMAT-approved parts and consumables
- Train all operators on basic daily inspection procedures
- Establish a clean, organised workspace before starting any maintenance
- Never bypass safety interlocks or guards during maintenance
- Keep a dedicated tool kit for each major equipment type
- Implement a tag-out system for equipment awaiting parts or repair

Preventive Maintenance Tips

- Schedule maintenance during planned downtime — never defer critical tasks
- Monitor fluid condition through regular oil analysis programmes
- Replace filters on schedule, not just when indicators trigger
- Inspect all safety-critical components before each shift
- Keep spare parts inventory above minimum stock levels at all times
- Use vibration analysis to detect bearing wear before failure
- Maintain detailed hour-meter records for all interval-based tasks
- Conduct root cause analysis on every unplanned failure

Field Maintenance Tips

- Carry a comprehensive field repair kit on every mobilisation
- Protect equipment from dust ingress during maintenance in the field
- Use portable lighting to ensure thorough inspections in low-light conditions
- Communicate maintenance status clearly to all site personnel
- Prioritise repairs that affect safety over those affecting productivity
- Document environmental conditions that may have contributed to failures
- Establish communication protocols with GEOMAT technical support
- Conduct post-maintenance function tests before returning equipment to service

REMEMBER

Effective maintenance is a team effort. Share knowledge, report issues promptly, and always prioritise safety over schedule pressure.

TECHNICAL SUPPORT & SPARE PARTS SERVICES

GEOMAT provides comprehensive after-sales support to keep your drilling operations running at peak efficiency. Our dedicated technical team and extensive spare parts inventory ensure minimal downtime and maximum productivity.

Technical Support Services

- 24/7 emergency technical hotline for critical equipment failures
- Remote diagnostics and troubleshooting via video call
- On-site technical support within 24–48 hours (UAE & GCC region)
- Scheduled preventive maintenance programmes
- Equipment commissioning and operator training
- Annual equipment health audits and condition reports
- Customised maintenance plans based on operating conditions
- Technical documentation and service bulletin updates

Spare Parts Services

- Comprehensive inventory of genuine OEM spare parts
- Express delivery for critical components (same-day UAE)
- Consignment stock programmes for high-usage clients
- Parts identification assistance via photo or serial number
- Obsolete part sourcing and cross-reference service
- Bulk order discounts for fleet operators
- Warranty claims processing and replacement coordination
- Recommended spare parts kits for each equipment model

Service Level Commitments

Service Type	Response Time	
Emergency Hotline	Immediate	
Remote Diagnostics	Within 2 hours	
On-site Support (UAE)	24 hours	
On-site Support (GCC)	48 hours	
Spare Parts (Stock)	Same day	
Spare Parts (Order)	5–10 business days	By arrangement
Scheduled Maintenance	By appointment	
Training & Commissioning	Within 1 week	

⚠ HOW TO REQUEST SUPPORT

Contact us at +971565264593 or email geomat@geomat.me with your equipment model, serial number, and a description of the issue. Include photos where possible for faster diagnosis.

CONTACT GEOMAT

Request Maintenance Support

Our engineering team is ready to support your maintenance requirements.
Contact us for technical assistance, spare parts, or scheduled service.

Phone

+971 56 526 4593

Email

geomat@geomat.me

Website

www.geomatme.com

Address

Abu Dhabi, United Arab Emirates

REQUEST MAINTENANCE SUPPORT

Our Services Include:

- Drilling Equipment Supply & Maintenance
 - Hydraulic System Repair & Overhaul
 - Spare Parts & Consumables
- Technical Training & Commissioning
- Preventive Maintenance Programmes
 - Emergency Field Support (24/7)

GEOMAT Hydraulics & Metal Works

Engineering Excellence in Drilling Solutions

www.geomatme.com