

Capetown Official Technical Service Manual



Introduction

This manual has been carefully designed for technicians at Phelon and Moore's authorized service centers to facilitate the maintenance and servicing of the Capetown motorcycle. It provides detailed instructions for pre-delivery checks, including mechanical and electrical inspections, fluid verification, and the assembly of components, as well as comprehensive guidelines for inspection, maintenance, repair, and part replacement.

To perform maintenance effectively and avoid errors, it is essential to read and understand this manual before beginning any operation. Work should always be conducted in a clean and organized environment. Where the use of specific tools or equipment is indicated, temporary or makeshift alternatives must not be substituted. The motorcycle's mechanical performance and safety are reliant on using the correct tools and equipment, as improper substitutes may jeopardize safe operation.

During the warranty period, it is strongly recommended that all routine maintenance and repair tasks be performed in strict compliance with the procedures outlined in this manual. If the owner conducts maintenance personally or deviates from the prescribed processes, Phelon and Moore cannot be held responsible for any resulting issues.

To ensure the longevity and reliability of the Capetown motorcycle, adhere to the following principles:

- Follow the periodic maintenance schedule outlined in this manual.
- Address malfunctions promptly and avoid irregular maintenance practices.
- Utilize the appropriate tools and genuine Phelon and Moore spare parts.
- Employ the specialized tools, calipers, and testers specified in this manual. Genuine spare parts are detailed in the parts catalog.
- Strictly adhere to the maintenance procedures described in this manual.
- Maintain a comprehensive record of all maintenance and repair activities, including dates and schedules for replacing parts.

How to Use This Manual

This manual is structured into chapters, each dedicated to one of the motorcycle's primary systems. These chapters are further divided into sections for specific components, making it easy to locate the required information. For example, to find details about the ignition coil, refer to the chapter on electrical systems and consult the section listed in the chapter's index.

For clarity and ease of use, symbols are employed throughout the manual to highlight important instructions, helpful tips, or additional information. Always follow the guidance indicated by these symbols to ensure safe operation and proper maintenance.

Notice:

The symbols in this manual are intended to draw attention to key points. They do not serve to repeat technical details or safety warnings unnecessarily. It is crucial to understand and comply with their meaning.

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Chapter 1: General information

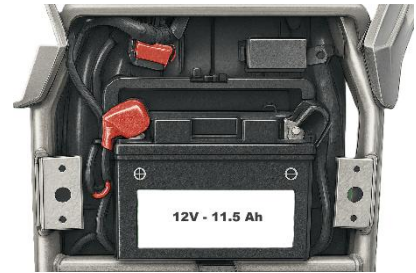
Message from the Phelon and Moore Technical Support Team

Before beginning any inspection, repair, disassembly, or reassembly of your motorcycle, we strongly advise carefully reviewing the following precautions. This guide has been meticulously crafted to ensure your safety and the longevity of your motorcycle.

Each chapter includes essential notes, clear illustrations, detailed diagrams, critical warnings, and step-by-step instructions to support you through the process. This section specifically highlights key considerations and areas requiring special attention during the disassembly and reassembly of general components.

By adhering to these guidelines, you can ensure accurate and efficient maintenance while minimizing the risk of damage or injury. We are here to support you every step of the way.

- **Battery Handling:** Disconnect the battery's ground (-) cable first, followed by the positive (+), and reconnect them in reverse order after repairs to avoid accidental engine start-up.



- **Components Handling:** Wear protective gloves when handling large or heavy components to prevent injuries from sharp edges.
 - **Clean the Vehicle Before Disassembly:** Thoroughly clean the motorcycle before starting disassembly to avoid contamination of sealed areas.
 - **Organizing and Cleaning Disassembled Components:** Arrange parts in order of disassembly/reassembly and clean them systematically to prevent mix-ups.
 - **Check:** Inspect parts for corrosion, discoloration, or damage, and replace any that exceed maintenance limits as detailed in the manual.
 - **Replacement:** Use only original Phelon & Moore spare parts and replace components like washers, O-rings, and self-locking nuts during repairs.
 - **Assembly Sequence:** Follow the reverse disassembly order unless specific assembly instructions are provided.
 - **Tightening Sequence:** Tighten screws or nuts in the prescribed sequence to avoid distortions, loosening them gradually when disassembling.
 - **Tightening Torque:** Use a torque wrench to ensure bolts, nuts, and screws are tightened to the specified torque values.

- **Use Force Moderately:** Avoid excessive force during disassembly; use appropriate tools like a plastic hammer or percussion screwdriver when needed.
- **Seals and O-Rings:** Replace seals and O-rings after disassembly, clean surfaces thoroughly, and install new ones to maintain sealing performance.
- **Liquid Gasket and Thread Locker:** Clean and degrease surfaces before applying these products, using only the necessary amount to prevent blockages.
- **Pressure Insertion:** Use a small amount of oil on contact surfaces for press-fit components like bearings and align them correctly during installation.
- **Radial Shaft Seals and Dust Covers:** Replace these components if removed and ensure proper alignment during reassembly.
- **Seeger Rings and Split Pins:** Replace them after disassembly and ensure they are not deformed during installation.
- **Lubricant:** Lubricate moving parts during assembly to reduce wear during initial operation, using specified oils or greases.
- **Direction of Engine Rotation:** Rotate the engine shaft manually in the correct clockwise direction from the exit end.
- **Electric Cables:** Connect cables to matching colors unless otherwise specified in the manual.
- **Test Equipment:** Use precise measuring devices and follow the manufacturer's instructions to ensure accurate adjustments.

Advised Oils and Liquids

Phelon and Moore recommend the exclusive use of the following products, as they have been identified by the company as ideal for ensuring optimal performance and reliability of the engine and vehicle:

- **Coolant:** G40
- **Engine Oil:** SHELL 10W40 API SN
- **Brake Fluid:** DOT 4 BASF

Regular inspections:

Scheduled maintenance should be performed according to this chart to ensure the

motorcycle remains in optimal running condition. **The initial maintenance is critically important and must not be overlooked.**

Regular Replacement Items	Every	Odometer reading (km or mi)						
		1000 600	6000 3700	12000 7400	18000 11100	24000 14800	30000 18500	36000 22200
Engine								
Clean air filter element - cleaning				x		x		x
Valve clearance - inspection	42000 km - 25900 mi							
Check throttle system (clearance, flexible return) - inspection	1 year	x		x		x		
Idle speed - inspection		x		x		x		x
Fuel leak (fuel pipe) - inspection	1 year	x		x		x		x
Fuel pipe damage - inspection	1 year			x		x		x
Fuel pipe installation -inspection	1 year	x		x		x		x
Throttle valve body -cleaning				x		x		x
Coolant volume - inspection		x		x		x		x
Coolant leak - inspection	1 year	x		x		x		x
Damage to radiator and pipeline -inspection	1 year	x		x		x		x
Radiator and pipeline installation - inspection	1 year	x		x		x		x
Intake system damage - inspection				x		x		x
Clutch and drive chain								
Clutch operation (clearance, engagement, disengagement) - inspection		x		x		x		x
Transmission chain lubrication - inspection*	600km - 100mi							
Transmission chain tightness - inspection*	1000 km - 600 mi							
Wear of transmission chain - inspection*				x		x		x
Wear condition of transmission chain guard - inspection				x		x		x
Rim and tire, crown wheel flexible coupling bearing								
Tire pressure - inspection		x		x		x		x
Rim/tyre damage - inspection				x		x		x
Tire surface wear and abnormal wear-inspection				x		x		x
Crown wheel flexible coupling - inspection	1 year			x		x		x
Pedal - Lubrication		x		x		x		x
Sprocket seat bearing - inspection				x		x		x
Braking system								
Brake fluid leakage - inspection	1 year	x	x	x	x	x	x	
Damage to the brake fluid pipe - inspection	1 year	x	x	x	x	x	x	
Brake pad wear - inspection*			x	x	x	x	x	
Brake fluid pipeline installation - inspection	1 year	x	x	x	x	x	x	x
Brake fluid volume - inspection	6 months	x	x	x	x	x	x	x
Brake control (braking force, clearance flexible action) - inspection	1 year	x	x	x	x	x	x	x
Brake light switch operation - inspection		x	x	x	x	x	x	x
Damping								
Front fork/rear suspension (regular suspension inspection)				x		x		x
Front fork/rear suspension hydraulic oil leakage - inspection	1 year			x		x		x
Control system								
Steering clearance - inspection	1 year	x		x		x		x
Steering bearing - lubrication	2 years					x		
Electrical system								
Light and switch operation - inspection	1 year			x		x		x
Headlight - inspection	1 year			x		x		x
Temple flameout switch operation - inspection	1 year			x		x		x
Engine flameout switch operation - inspection	1 year			x		x		x
Chassis								
Chassis parts - lubrication				x		x		x
Bolt and nut torque - inspection		x		x		x		x

* When operating in challenging environments such as dusty, wet, or muddy conditions, or during high-speed riding or frequent start-and-stop scenarios, increased maintenance frequency is essential to ensure the motorcycle's reliability and performance.

Note: For higher odometer readings, perform the checks at the same intervals specified in this chart.

Regular spare parts

Regular Replacement Items	Every	Odometer reading (km or mi)				
		1000 600	12000 7400	24000 14800	36000 22200	48000 29600
Air filter element *			x	x	x	
Engine oil *						
Oil filter	6 months	Every 4000 km/first 1000 km				
Fuel pipe	1 year					x
Coolant					x	
Radiator and pipeline					x	
Brake fluid line	4 years					x
Brake fluid (front/rear)				x		x
Brake pumm rubber seal						x
Spark plug			x	x	x	x
Sprocket seat buffer block			x	x	x	x

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Note: For higher odometer readings, perform the checks at the same intervals specified in this chart.

Regular inspections – First 1000km

Air Filter maintenance



the air filter.

Note: When operating in dusty or wet conditions, inspect and clean the air filter more frequently than the recommended intervals. Always check the filter immediately after driving in the rain or on muddy roads to maintain optimal performance.

1. Disassembly.

Remove the fuel tank (refer to the fuel tank removal procedure in the feeding system section). Then, remove the screw securing

2. Inspection and Cleaning

Perform a visual inspection for cracks or splits. Replace the filter if any damage is detected. Use compressed air to blow dust and debris out of the filter. If the filter is excessively dirty, replace it immediately.



Chapter 2 – Suspension

2.1 Overview

The **43 mm upside-down front fork** and **direct-link monoshock rear suspension** both feature **full adjustability** in preload, rebound, and compression, allowing precise setup for different riders and conditions.



Important: Always perform suspension work on a clean, level surface using calibrated tools. After any service or adjustment, verify operation and inspect for leaks or abnormal resistance.

2.2 Suspension Specifications

Component	Type / Dimension	Adjustment	Travel
Front Fork	Ø43 mm Upside-Down (USD) Telescopic	Preload, Rebound, Compression	170 mm
Rear Shock	Direct-acting Monoshock with Remote Reservoir	Preload, Rebound, Compression	170 mm

Recommended Oil (Front Fork): P&M Suspension Fluid Type G5 (viscosity 5W)

Oil Quantity (per leg): 480 ± 5 ml

Air Pressure (if applicable): Atmospheric only — non-pressurized type

Rear Shock Gas Charge: Nitrogen – 1.0 MPa (10 bar)

Spring Preload Range: 7-position adjuster (rear knob)

2.3 Front Suspension

2.3.1 Assembly & Installation

Components

- Ø43 mm fork legs (LH & RH)
- Triple clamps (upper and lower)
- Steering stem and bearings
- Front axle, spacers, and fork brace (if equipped)

Procedure

1. Mount the motorcycle securely on a front stand, lifting the wheel clear of the ground.
2. Loosen upper and lower clamp pinch bolts.
3. Slide each fork leg upward until the top cap is **flush with the upper clamp surface**.
4. Lightly tighten the lower clamp bolts to hold the fork in position.
5. Insert the front axle and wheel to ensure fork alignment before final torquing.
6. Torque all fasteners as follows:

Fastener	Torque
Upper clamp pinch bolts	22 N·m
Lower clamp pinch bolts	19 N·m
Front axle nut	90 N·m
Axle pinch bolts	20 N·m

Tip: Compress the fork several times before tightening the axle pinch bolts to eliminate fork stiction and ensure alignment.

2.3.2 Adjustment

Preload Adjustment

- Location: Top of each fork leg.
- Use a 17 mm spanner to turn the adjuster.
- **Standard position:** 5 turns out from fully clockwise.
- Range: 0 (hardest) – 10 (softest).

Rebound Damping

- Location: Right fork leg (top).
- Use a flat screwdriver to turn the screw.
- **Standard position:** 10 clicks out from fully closed.

Compression Damping

- Location: Left fork leg (bottom).
- **Standard position:** 10 clicks out from fully closed.

Note: Always adjust in small increments (1–2 clicks) and record changes. Both legs must be synchronized in preload.

2.3.3 Disassembly & Service

Required Tools:

- Fork spring compressor
- Seal driver (Ø43 mm)
- Measuring cylinder (graduated)
- Torque wrench, 0–50 N·m

Procedure

1. Remove the front wheel, calipers, and fender.
 2. Loosen the top cap while fork is clamped in the lower yoke.
 3. Remove the fork leg and drain oil into a suitable container.
 4. Disassemble the outer tube, spring, and damper cartridge.
 5. Inspect the fork seal and bushings for scoring or wear.
 6. Replace if damaged — lubricate with fork oil before reassembly.
 7. Fill with 480 ml of fork oil (5W), bleed air by cycling the damper rod.
 8. Refit fork cap and torque to **25 N·m**.
 9. Reinstall to frame and retorque all bolts per Section 2.3.1.
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2.4 Rear Suspension

2.4.1 Description

The Capetown 7x/7s employs a **direct-acting monoshock** with a **remote nitrogen canister**. It offers tool-free preload adjustment via a large rear-mounted knob, and independent **rebound** and **compression damping** adjusters for fine-tuning ride quality.

2.4.2 Removal & Installation

Components

- Rear shock absorber
- Mounting bolts (upper & lower)
- Remote canister bracket and lines

Procedure

1. Support the motorcycle on a center stand or hoist to unload the rear suspension.
2. Remove seat and side panels for canister access.
3. Loosen and remove the lower shock bolt.
4. Remove the upper bolt and gently lower the shock assembly.
5. Inspect mounting bushings for cracks or wear. Replace if required.
6. Install in reverse order, ensuring hose routing is free from exhaust heat and pinch points.

Torque:

- Upper mounting bolt: 55 N·m
- Lower mounting bolt: 60 N·m
- Canister bracket: 10 N·m

Note: Do not open the nitrogen chamber or valve. This operation must be performed only by an authorized service center with certified gas-charging equipment.

2.4.3 Adjustment

Adjuster	Location	Function	Standard Setting
Preload	Tool-free rotary knob (rear left)	Adjusts spring tension	Factory mid-setting (4/7)
Rebound	Lower eyelet screw	Controls return speed	12 clicks out from full hard
Compression	Remote canister screw	Controls compression rate	10 clicks out from full hard

Tip: Adjust rebound and compression together in small increments for balanced damping. Excessive rebound may cause “packing down” over consecutive bumps.

2.4.4 Inspection & Service

- Check for oil leaks around shaft and canister fittings.
- Compress and release shock manually — it should move smoothly without knocking or dead zones.
- Inspect preload adjuster function; ensure tool-free knob rotates evenly.

- Check nitrogen pressure annually (authorized service only).
- Replace rear shock oil and seals every **20,000 km or 2 years**, whichever comes first.

2.5 Suspension Setup Recommendations

Riding Condition	Front Preload	Front Rebound / Compression	Rear Preload	Rear Rebound / Compression
Solo Rider (Comfort)	7 turns out	12 / 12 clicks	4/7	14 / 12 clicks
Sport / Aggressive	3 turns out	8 / 8 clicks	2/7	10 / 8 clicks
Two-Up / Touring	4 turns out	10 / 10 clicks	5/7	12 / 10 clicks

Note: After adjustment, recheck static sag:

- Front: 35 ± 5 mm
- Rear: 30 ± 5 mm

2.6 Post-Service Verification

After any assembly or maintenance:

1. Torque all fasteners to specification.
2. Clean any residual oil from fork or shock surfaces.
3. Verify full steering and suspension movement without interference.
4. Test-ride the motorcycle and check for proper damping response, return to ride height, and absence of noise.
5. Reinspect for leaks after the first 10 km of use.

Completion Check:

Suspension installed, adjusted, and verified for performance and safety.

Chapter 3 – Engine

Phelon & Moore Capetown 7x & 7s Service Manual

3.1 Overview

The Capetown 7x and 7s are powered by a **693 cc parallel-twin, liquid-cooled, DOHC, 8-valve engine**.

This chapter covers **installation, removal, disassembly, inspection, and reassembly** of the complete engine unit.

Important: Engine service must only be performed by qualified Phelon & Moore technicians using calibrated tools. Always adhere to specified torque values and cleanliness standards.

3.2 Technical Specifications

Parameter	Specification
Engine type	4-stroke, liquid-cooled, parallel twin
Displacement	693 cm ³
Bore × Stroke	83 mm × 64 mm
Compression ratio	11.6 : 1
Valvetrain	DOHC, 4 valves per cylinder
Fuel system	EFI (Bosch ECU)
Lubrication	Wet sump
Cooling system	Pressurized liquid with thermostat
Ignition	ECU controlled, dual coil
Starter	Electric
Idle speed	1 350 ± 100 rpm
Engine oil	SAE 10W-50 (P&M Specification EVO-4)
Oil capacity	2.8 L (with filter)
Spark plug	NGK LMAR9AI-8 (gap 0.8–0.9 mm)

3.3 Engine Installation / Removal

Tools Required

- Engine support stand or hydraulic jack
- Torque wrench (5 – 120 N·m)
- Socket set M6 – M12
- Rubber mallet

- Coolant drain tray

3.3.1 Engine Removal

1. Place the motorcycle on a stable lift. Disconnect the **battery negative terminal**.
2. Drain coolant via the pump drain bolt; remove the radiator cap.
3. Remove both side panels and the fuel tank.
4. Disconnect:
 - ECU connectors
 - Fuel injector plugs
 - O₂ sensor connectors
 - Starter motor lead
 - Ground cables
5. Remove the muffler and exhaust header.
6. Disconnect the throttle body intake boots from the airbox.
7. Remove the front and rear engine mounting bolts while supporting the engine with a jack.
8. Lower the engine gently and transfer it to a padded workbench.

Torque specifications (re-installation):

- Front engine mount – 55 N·m
- Rear engine mount – 75 N·m
- Sprocket nut – 120 N·m (stake after tightening)
- Ground cable – 10 N·m

Tip: Mark each electrical connector before disconnection for easier reassembly.

3.4 Cooling System

1. Drain the coolant completely and inspect hoses for wear or swelling.
2. Remove the radiator and fan assembly if required; note routing of the overflow tube.
3. Inspect the water pump for leakage at the weep hole.
4. Replace any distorted hose clamps.

Coolant specification: P&M Coolant Type L (ethylene glycol, 50/50 mix)

Capacity: 1.8 L

Torque:

- Drain bolt – 10 N·m
- Water-pump cover – 8 N·m

Note: After refill, bleed the system by idling the engine with the radiator cap off until the fan cycles twice.

3.5 Air Intake System

Components

- Air filter housing
- Throttle body assembly
- MAP and IAT sensors

Procedure

1. Remove the seat and fuel tank.
2. Disconnect breather and AIS hoses.
3. Detach the airbox lid and remove the filter element.
4. Inspect filter for oil or dust saturation — replace if contaminated.

Torque:

- Airbox bolts – 8 N·m
- Throttle body clamps – 5 N·m

Filter element: P&M High-Flow Type A; replace every 10 000 km or annually.

3.6 Lubrication System

3.6.1 Oil Change

1. Warm the engine to operating temperature.
2. Remove the drain bolt and washer; allow full drainage.
3. Replace the oil filter.
4. Refit drain bolt and torque to 25 N·m.
5. Fill with 2.8 L of SHELL 10W40 API SN

Oil filter torque: 12 N·m

Caution: Always prime the oil system by idling the engine for 1 minute before increasing RPM.

3.7 Valve Clearance Inspection / Adjustment

Interval: Every 24 000 km or 2 years.

Clearance (when cold):

- Intake – 0.22 – 0.28 mm

- Exhaust – 0.08 – 0.13 mm

Procedure

1. Remove the fuel tank and airbox.
2. Remove ignition coils and spark plugs.
3. Rotate crankshaft until TDC mark ("1 | T") aligns.
4. Use feeler gauge to measure between cam lobe and tappet.
5. If out of spec, remove camshafts and replace tappets of proper thickness.

Cam cap torque: 12 N·m

Tip: Record each valve's clearance before adjustment for service records.

3.8 Cylinder Head and Piston Service

3.8.1 Cylinder Head Removal

1. Drain coolant and engine oil.
2. Remove camshafts and timing chain.
3. Loosen head bolts in reverse-sequence pattern, one-quarter turn at a time.
4. Lift off the head, remove gasket and dowels.

Torque (on reassembly):

- Cylinder head bolts – 40 N·m + 90° angle
- Cam sprocket bolts – 20 N·m
- Tensioner bolts – 12 N·m

3.8.2 Inspection

- Check valve seating with solvent leak test.
- Inspect cylinder surface for scoring; hone if wear limit > 0.05 mm.
- Measure piston ring end gap:
 - Top ring – 0.30 – 0.45 mm
 - Second ring – 0.40 – 0.55 mm

Replace any components exceeding limits.

3.9 Clutch and Transmission

3.9.1 Clutch Removal

1. Remove the right crankcase cover.
2. Remove clutch spring bolts and pressure plate.
3. Withdraw friction and steel plates sequentially.

4. Remove center nut with clutch-holding tool.

Torque specifications:

- Spring bolts – 10 N·m
- Center nut – 120 N·m

Plate thickness: 2.95 – 3.05 mm (min 2.8 mm).

3.9.2 Transmission Inspection

- Inspect gear teeth for pitting or blueing.
- Check shift forks for straightness (limit 0.1 mm).
- Measure gear backlash – max 0.2 mm.

Reassembly Torque:

- Gearshift cam bolts – 12 N·m
- Crankcase bolts – 25 N·m

3.10 Ignition and Starting System

1. Inspect spark plugs, coils, and high-tension leads.
2. Check resistance values:
 - Primary coil 0.5 – 0.7 Ω
 - Secondary 6.5 – 8.5 k Ω
3. Verify starter motor draws ≤ 70 A at 12 V.
4. Confirm crankshaft position sensor output > 0.2 V AC while cranking.

Torque:

- Spark plugs – 12 N·m
- Starter mount – 10 N·m

3.11 Fuel Injection System

1. Depressurize fuel line by removing fuel pump fuse and running engine until stall.
2. Disconnect injector connectors and fuel rail.
3. Clean injectors ultrasonically if flow imbalance > 5 %.
4. Check fuel pressure: 3.0 ± 0.1 bar.

Torque:

- Fuel rail bolts – 8 N·m
- Injector clamps – 5 N·m

3.12 Reassembly Notes

- Replace all gaskets and O-rings with new genuine parts.
- Apply engine oil to all moving surfaces during assembly.
- Tighten bolts gradually in cross-sequence patterns.
- After installation, perform the following checks:

Item	Action
Oil pressure	Verify oil light extinguishes within 3 s of start
Coolant level	Top up and bleed system
Idle stability	Confirm $1\ 350 \pm 100$ rpm
Exhaust	No leakage or abnormal noise
ECU faults	Check via diagnostic tool – no codes

Engine Verified: All fasteners torqued, fluids filled, and electrical systems connected.

3.13 Service Intervals

Operation	Interval
Engine oil & filter	Every 6 000 km / 6 months
Valve clearance	Every 24 000 km
Spark plugs	Every 12 000 km
Coolant	Every 2 years
Air filter	Every 10 000 km or annually
Fuel system inspection	Every 12 000 km

3.14 Torque Summary

Component	Torque (N·m)
Engine mount (front)	55
Engine mount (rear)	75
Cylinder head bolts	40 + 90°
Cam sprocket bolts	20
Clutch spring bolts	10
Clutch center nut	120
Oil drain bolt	25
Oil filter	12
Spark plug	12
Water-pump cover	8
Crankcase bolts	25