MOTEURS Baudouin

CPCB IV+
POCKET GUIDE

FOR SERVICE PERSONNEL/TECHNICIANS/CUSTOMERS

Vision

Innovating to produce world-class products that bring value to our customers, as well as being socially and environmentally responsible.

Mission

Our aim is to exceed customer expectations.

Purpose

To provide a quick, easy reference to Service Engineers, maintenance personnel on CPCB IV+ After Treatment System operation, safety, basic maintenance, and troubleshooting for safe use, emission compliance, and reliable engine performance.

Safety Information

Failure to follow the safety instructions in this manual or on the engine can lead to serious injury or engine failure. Keep this Operation and Maintenance manual near the engine and accessible at all times. Most accidents can be avoided by following basic precautions and recognizing hazards, but no manual can cover every risk. Operators and maintenance staff must identify dangers and have the necessary skills, training, and tools to work safely.

Symbols Used

Please follow all warnings and precautions in this manual to avoid unsafe conditions. The following symbols are used to highlight important safety information.

Symbol	Definition
	Wear hand protection
	Wear ear protection
	Wear eye protection
	Wear head protection
	Wear protective mask
	Wear foot protection
	Wear overalls
	Avoid naked flames
	Do not smoke
	Do not use a mobile phone
	Danger : live cables, electrical risks
	Highly flammable products
	Keep away from hanging loads
	Risk of thermal burns
	Risk of mechanical drive/rotating parts
	Lifting is forbidden
	Water drain valve
	Keep an extinguisher close
	Danger : battery acid

CPCB IV+ Product Range

Sr. No	Model	Power Rating(KVA)	Cylinder Configuration	Type of Fuel system	Post Processing
1	4M12G4D4/5	100	4 – In line	HPCR	DOC + SCR + ASC
2	4M12G6D4/5	125	4 – In line	HPCR	DOC + SCR + ASC
3	6M12G2D4/5	200	6 – In line	HPCR	DOC + SCR + ASC
4	6M12G4D4/5	225	6 – In line	HPCR	DOC + SCR + ASC
5	6M12G6D4/5	250	6 – In line	HPCR	DOC + SCR + ASC
6	6M21G2D4/5	400	6 – In line	HPCR	DOC + SCR + ASC
7	6M21G4D4/5	450	6 – In line	HPCR	DOC + SCR + ASC
8	6M21G6D4/5	500	6 – In line	HPCR	DOC + SCR + ASC
9	6M33G2D4/5	650	6 – In line	HPCR	DOC + SCR + ASC
10	6M33G4D4/5	750	6 – In line	HPCR	DOC + SCR + ASC

What is After Treatment System?

The after-treatment system cleans the exhaust gases (NOx, HC, CO, PM) coming out of the engine before releasing them into the atmosphere

Major Components of ATS

1. **DOC – Diesel Oxidation Catalyst**

   A DOC is a catalytic converter that is designed to convert carbon monoxide (CO) & hydrocarbons into carbon dioxide (CO2) & water.

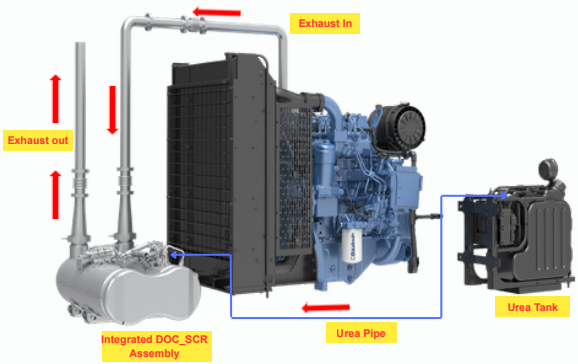
2. **SCR–Selective Catalytic Reduction**

   A Selective Catalytic Reduction (SCR) is converting the Nitrogen Oxides (NOx) with the help of aqueous (water-soluble) Urea Solution.

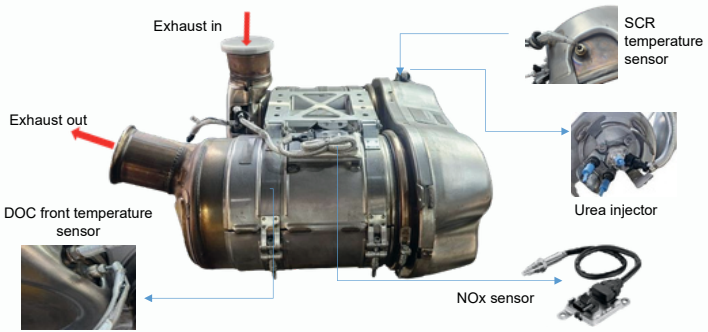
3. **ASC–Ammonia Slip Catalyst**

   It converts excess ammonia (NH) into nitrogen (N_2) and water (H_2O), preventing ammonia slip and secondary pollution.

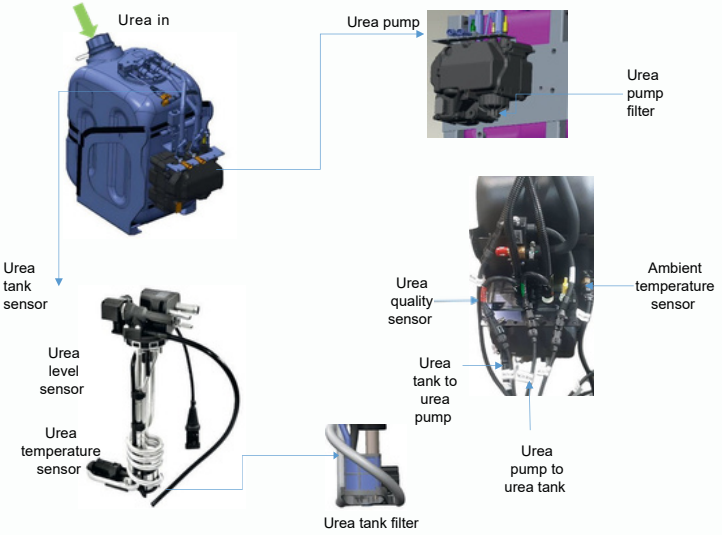
After Treatment System Basic Architecture



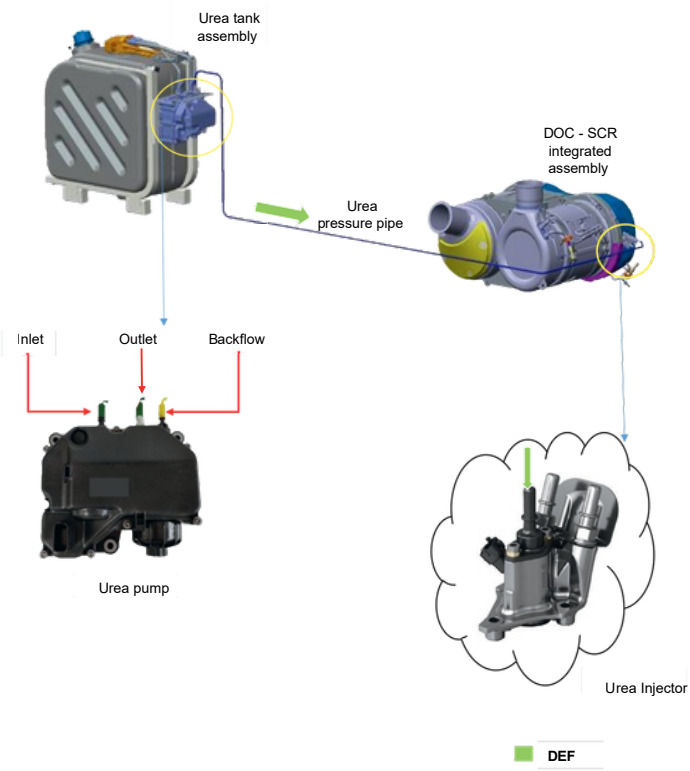
Integrated DOC – SCR Assembly



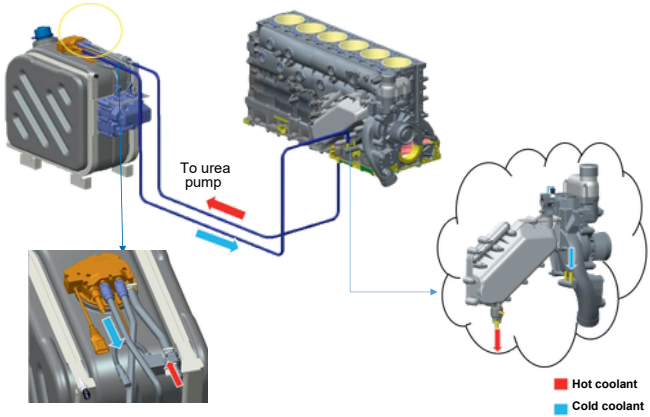
Integrated Urea Tank Assembly



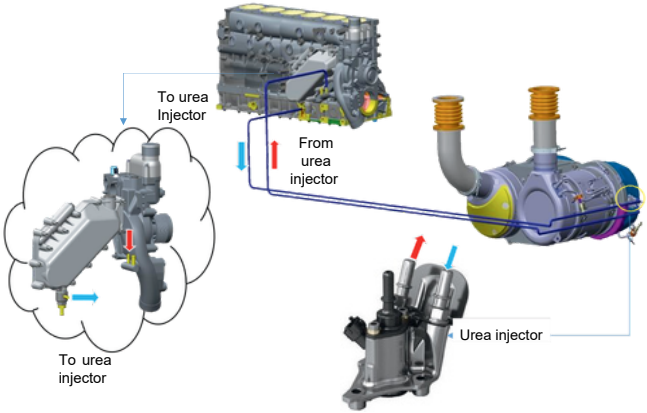
DEF (Urea) Circuit From Urea Pump To Nozzle



Coolant (Circuit) Inlet and Outlet To Urea Tank



Coolant (Circuit) Inlet and Outlet to Urea Nozzle



Troubleshooting Chart

Possible Causes / Symptoms	Urea Pressure Not Build-Up	High Urea Consumption	Less / No Urea Consumption	Urea Not Released After Heating	Urea Crystallization	Low NOx Conversion Efficiency	Solution
Urea tank empty / low level	✓		✓	✓		✓	Refill DEF, verify level sensor reading in DiagSmart
Poor quality / contaminated DEF (AdBlue)	✓	✓	✓	✓	✓	✓	Drain & clean system & Refill DEF, check urea quality sensor
DEF suction line leakage	✓		✓		✓	✓	Inspect suction line, perform urea pressure test in DiagSmart to confirm pressure build-up
Air trapped in urea line	✓		✓	✓		✓	Inspect urea line, perform urea pressure test in DiagSmart to confirm pressure build-up
Clogged urea return line	✓		✓	✓	✓	✓	Check and clean return line
Urea Crystallization	✓		✓	✓	✓	✓	Check & clean urea line, injector, dosing pipe, check heater operation and shutdown purge
Urea pump failure	✓		✓			✓	Perform Urea pressure/dosing test in DiagSmart
Urea tank filter clogged	✓		✓	✓	✓	✓	Check, Clean/replace filter
Urea pump filter clogged	✓		✓	✓	✓	✓	Check, Clean/replace filter
Urea injector clogged / stuck		✓	✓	✓	✓	✓	Check injector injection by urea dosing test in diagsmart, clean or replace injector
Urea injector leakage /damage		✓			✓	✓	Check injector injection by urea dosing test in diagsmart, clean or replace injector
Electrical fault / wiring issue	✓		✓	✓		✓	Check sensor resistance, connectors & wiring
Heater not working / heater relay failure			✓	✓	✓	✓	Check heater circuit, confirm heater status & temp enable in DiagSmart
DOC Temperature sensor faulty	✓	✓	✓	✓	✓	✓	Compare sensor values in DiagSmart, replace if out of range
NOx sensor faulty		✓	✓	✓	✓	✓	Check NOx sensor, wiring harness or, replace
Exhaust temperature too low	✓		✓	✓	✓	✓	Ensure minimum load, verify exhaust temp. in DiagSmart & check DOC temp sensor
ECU calibration / dosing map issue	✓	✓	✓	✓	✓	✓	Contact Baudouin

Maintenance Schedule

Check - ●		Maintenance & Inspections shall be carried out based on either operating hours or time period, whichever occurs first.			
Clean - Δ					
Replace- □					
Operation	Hours	Daily	500	1000	200
	Month		12	12	12
Coolant level		●			
Engine Oil		●			
Fuel primary filter			□		
Fuel secondary filter			□		
Urea tank			●/Δ		
DEF Level		●			
Urea pump			●/Δ		
Urea nozzle			●/Δ		
Urea tank filter			●/Δ		
Urea pump filter			□		
Electrical wiring, connectors, sensors		●/Δ			
Faults recorded in ECU		●			
Battery		●			

Maintenance of Urea Tank

1. Open the drain valve and empty all urea tank
2. Take out the urea sensor and filter, if possible,for separate cleaning.
3. Spray clean luke warm water into the tank and drain multiple times to dislodge debris and wash the bottom
4. Open the drain valve and empty all ure
5. Fill the urea solution into the urea tank (Fill up to 80%).
6. Ensure the tank is completely dry before refilling to maintain proper Concentration.
7. After filling cover the urea tank with cap

Storage of Urea Solution

The urea solution shall be stored in an enclosed light-resistant container at the ambient temperature of 5°C-25°C, with the shelf life shown.

Shelf life of urea solution	
Ambient storage temperature°C	Minimum shelf life(month)
≤10	36
≤25	18
≤30	12
≤35	6
≥35	b
Note: Avoid transporting or storing urea solution at a temperature above 25°C for a prolonged period of time, so as to prevent decomposition	

Urea Concentration – 32.5 % (+/- 0.5%)

Urea Tank Capacity

Engine Model	Urea Tank Capacity
4M12	25L
6M12	35L
6M21	70L
6M33	90L

Maintenance of Urea / DEF Pump

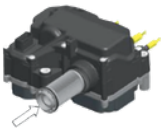
1.Use clean water to clean the urea pump filter. Unscrew the filter cover.

2.Take out the balance unit.

3.Observe element color. Use the matching tool end and insert it into the filter until a “click” confirms proper installation.

4.Pull out the filter element. If necessary, use the card slot of the tool to borrow other tools to help pull out.

5.Clean the outersurface of the filter cover with water.



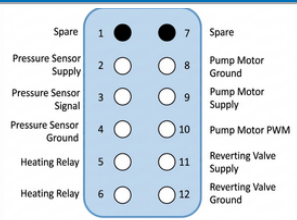
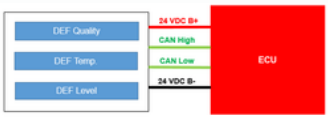
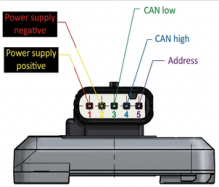
6.After lubricating the O-rings at both ends of the HCF filter element, install the filter element.

7.Tighten the filter cover, with the torque of 20 +5) N-m, and the wrench size of 27mm

Do’s & Don’ts

Sr. No	Do’s (Recommended practices)	Don’ts (Avoid these mistakes)
1	Check DEF lines, injector, sensors, and connectors for leaks or crystallization.	Do not store DEF in direct sunlight or heat.
2	Use only ISO 22241 certified DEF from sealed containers.	Do not ignore warning lamps or fault codes.
3	Fill DEF tank up to 80% only.	Avoid skin/eye contact with urea; wash with water if spilled.
4	Allow 2-minute ATS suck-back after engine stop (After T15 OFF).	Do not mix DEF with water, fuel, or any other fluid.
5	Ensure DEF is clear, colourless, and clean.	Do not perform welding near ATS components.
6	Store DEF in cool, shaded area (5°C–25°C) with container sealed.	Do not ignore repeated derate or emission-related faults.

Standard Value

Sr. No	Parameter	Value	Pin diagram
1	Urea pump pressure	6 - 9 Bar	
2	Urea pump voltage	12V /24V	
3	Urea tank sensor supply voltage	24 V	
4	CAN L & CAN H Volatge	2.5 V	
5	DOC upstream & downstream temperature sensor voltage	5 V	
6	NOx sensor voltage	24 V	
7	Urea injection quantity	20 mg/sec	

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