

AFT10 User Manual

Checking, charging and adjusting nitrogen precharge in hydraulic accumulators



AFT10 kit: charging and testing unit, hose, adapters, pressure gauges and carrying case.

Scope of this manual

This manual is for trained service personnel using the AFT10 to measure and adjust gas-side precharge pressure with dry nitrogen. Always obtain the target precharge pressure, gas valve type and permitted limits from the accumulator and hydraulic system manufacturers' instructions.

Before you start

Release pressure on the hydraulic side and verify zero pressure. Use dry nitrogen only. Use sound hoses, adapters, gauges, cylinder connections and regulators with suitable pressure ratings. Never loosen a pressurized connection or place your face or body near it.

Pressure limit

The AFT10 datasheet specifies a maximum operating pressure of 400 bar. This does not increase the pressure rating of the accumulator, selected gauge or hose connection. The lowest rated component sets the limit for each operation.

Kit contents and connection checks



Open case. Check the supplied contents against the ordered kit configuration.

Component	Specification in the datasheet
Charging and testing unit	Gas valve actuator, bleed valve and gauge connection
Charging hose	2 m; M16×1.5 to M12×1.5
Adapters	7/8-14 UNF; G1/4; M14×1.5; 5/8-18 UNF; 5/16-24 UNF; M8
Pressure gauges	Ø63 mm; 0-100 bar and 0-250 bar; dry type, rear connection
Other items	6 mm hex key and carrying case

Before each use

Check the gauge zero and range, hose markings and condition, adapter threads, O-rings and bleed valve action. Do not use parts that are missing, worn, leaking or have unknown pressure ratings. Confirm the cylinder connection thread and that the regulator is suitable for nitrogen.

Connection sequence

With the gas cylinder closed, the bleed valve closed and the gas valve actuator backed off, fit the appropriate gauge and the adapter matching the accumulator gas valve. Check that the seal is in place. Connect the charging hose only when charging is required and while the hose is depressurized. Never force mismatched threads together.

Checking precharge pressure

Confirm how the accumulator gas valve is opened and closed in its manufacturer's instructions. Check the operating directions of the black actuator and green bleed component against the markings on the actual AFT10 unit.

- 01 Shut down and secure the system against restart. Safely release pressure on the hydraulic side of the accumulator and verify zero pressure on an appropriate indicator.
- 02 With the nitrogen cylinder and AFT10 bleed valve closed, back off the gas valve actuator. Remove the protective cap and connect the AFT10 to the gas valve with the correct adapter and an intact seal.
- 03 Open the gas valve slowly using the method appropriate to its design. When the gauge reading stabilizes, read the gas precharge pressure. Stop if the pressure could exceed the gauge range.
- 04 Close the accumulator gas valve or back off the gas valve actuator. Before disconnecting the kit, carefully vent the pressure trapped inside the AFT10 through the bleed valve. The gauge must return to zero.
- 05 Remove the unit, check the gas valve for leaks and replace its protective cap. Record the reading, ambient temperature and date in the maintenance log.

If the pressure is low

First check the gas valve and connections for leakage. Repeated charging without repairing a leak is not a lasting solution. If hydraulic fluid emerges from the gas valve, stop and service the accumulator according to its manufacturer's procedure.

Temperature affects the reading

Gas temperature may rise immediately after charging. Evaluate the target pressure at the reference temperature specified by the accumulator manufacturer. Allow pressure to stabilize, then measure it again.



AFT10 charging and testing unit. Check the connection markings on the green body before use.

Charging and adjustment with dry nitrogen

Never use oxygen or compressed air. Use a pressure regulator suitable for the nitrogen cylinder. Verify that every component exposed to cylinder pressure has an adequate rating. Do not estimate the target precharge; use the value specified by the accumulator manufacturer.

- 01 With the hydraulic side at zero pressure, make the connections described in the checking procedure. With the nitrogen cylinder closed, connect the depressurized hose to the AFT10 filling line and regulator. Close the bleed valve.
- 02 Open the accumulator gas valve in the way specified for its type. Start charging by opening the regulator and nitrogen supply slowly. Watch the gauge continuously; avoid rapid flow and pressure surges.
- 03 Close the nitrogen supply as the reading approaches the target. Read again after the gas temperature stabilizes. If the target is exceeded, keep the cylinder closed and very slowly open the bleed valve to release gas in small increments; close it at the target.
- 04 Close the accumulator gas valve or fully back off its actuator. Close the cylinder and regulator. Carefully vent pressure trapped in the AFT10 and hose through the bleed valve; verify that the gauge returns to zero.
- 05 Remove the depressurized hose first and then the unit. Check the gas valve for leaks, replace its protective cap and record the stabilized precharge pressure.

Reducing precharge

For precharge adjustment only, with nitrogen supply closed and the gas valve open under control, use the AFT10 bleed valve in small increments. Stop if leakage or uncontrolled discharge occurs. Do not depress the gas valve core with an improvised tool to release gas.

Before disconnection

Do not loosen any connection until the gauge reads zero. Direct released gas away from people and provide adequate ventilation indoors.

Sequence at a glance: Depressurize hydraulic side → fit correct adapter → open gas valve → admit nitrogen slowly → allow pressure to settle → close gas valve → vent hose → disconnect and leak-check.

Care and storage

After use, place the clean, dry and depressurized kit in its case. Coil the hose without sharp bends; protect threads, seals and gauge lenses from impact. Check gauge calibration under your facility's measurement plan. Replace damaged parts with components of suitable pressure rating. Do not improvise repairs to pressure-bearing parts in the field.

Troubleshooting

Symptom	Possible cause and safe action
No pressure reading	Verify zero pressure on the hydraulic side; check the connection, adapter, gas valve opening method and gauge. Do not remove a pressurized connection.
Pressure will not hold	Close the cylinder. Check the valve, O-rings and connections with an appropriate leak detection method. Stop if oil appears at the gas valve.
Target cannot be reached	Check cylinder/regulator output, hose and leaks. Do not compensate by exceeding any component rating.
Gauge will not return to zero	Do not disconnect. Confirm the gas valve is closed and carefully vent trapped pressure. Service a faulty gauge.

Technical data

Model	AFT10
Maximum operating pressure	400 bar; any lower rating of an individual component still applies
Hose	2 m; M16×1.5 to M12×1.5
Pressure gauges	Ø63 mm; 0–100 bar and 0–250 bar
Accumulator adapters	7/8–14 UNF, G1/4, M14×1.5, 5/8–18 UNF, 5/16–24 UNF, M8

Sources and technical review

Product configuration: supplied four-page PNOTOL AFT10 Series Technical Datasheet. Safety procedure framework: Parker Hannifin, Bladder Accumulators Pre-Charging Instructions, HY10-2300-M1.2. PNOTOL technical approval is required for accumulator valve variants, AFT10 control and bleed directions, and the pressure ratings of the supplied components.