

Portable digital Nitrogen accumulator charging & testing kit with datalogging

N₂ Service Pal

- Unique all-in-one testing, regulating, charging & recording device
- Easy to operate & very accurate
- Fine control of charging pressures
- 1-230 bar N₂ pressure regulation
- Target pressure/over pressure warnings
- Temperature compensation alert & Look up table
- Easy to use & safe tool free Minimess® connections
 - Full data logging for traceability /reporting



The ideal field service tool for accumulator service engineers. Minimess connections for quick, safe and reliable testing & charging of accumulator pressures. Quickly set target pressure for rapid charging. Digital LCD readout for accurate pressure & temperature values with easy to use datalogging for traceability

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Accumulator gas charging equipment

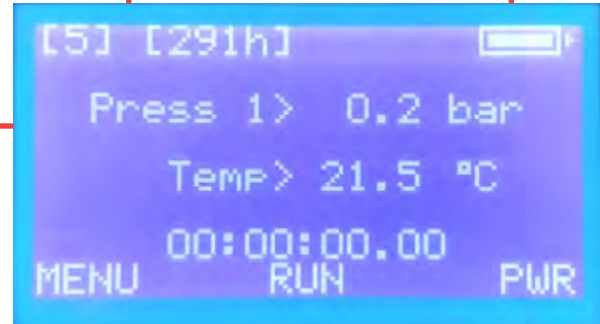
Hold hundreds of tests

Remaining memory status display.

Bright LCD Screen

Bright LCD screen with easy to read numerical data.

Rechargeable battery indicator



Easy data logging

Simple start/stop operation for datalogging of processes

Easy Navigation

Easy menu system for quick and easy access to settings and operations.

Storage space

Lid and base storage space for accumulator adaptors, battery charger, charging hoses and documents etc.

High Pressure

Precise pressure regulation from 10 bar up to 230 bar

Tough IP67 case

Weatherproof case for harsh field environments

Low Pressure

Precise pressure regulation from 1 bar up to 20 bar

Safe, accurate accumulator charging...

Digital pressure and temperature sensors give highly accurate readings allowing Engineers to accurately pre-set target accumulator pressures before connecting to the accumulator. Low & High pressure regulators allow precise pressure regulation from 1-20 Bar or 10 – 230 Bar. A highly accurate internal pressure sensor displays the pressure in real time. A charge pressure LED shows when the target pressure has been achieved.

A built-in temperature sensor alerts Engineers to low or high ambient temperatures where a compensated pressure target will need to be applied due to extreme temperatures, (a compensation chart is supplied with each kit).

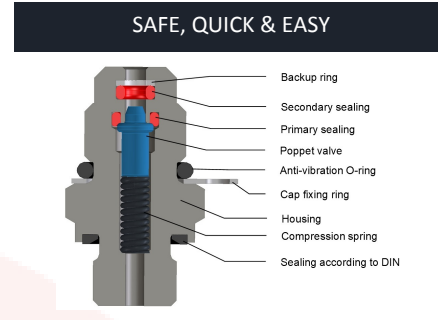
Target pressures and accumulator fill pressures can all be recorded and logged on the internal memory. Serial or Job numbers can be added to each charging event to keep a record of work completed; these results can then be downloaded as .csv file for analysis later. Temperatures are also recorded.

Feature rich

The N₂ Service Pal has all the features an engineer needs for safe testing and charging of Nitrogen Accumulators with data logging, target pressure alerts and temperature comparison warnings.



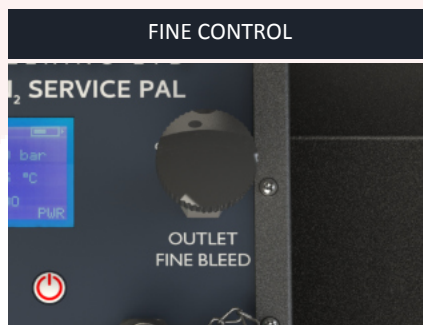
1 – 20 Bar and 10 -230 Bar inbuilt pressure regulators for accurate control of target pressures.



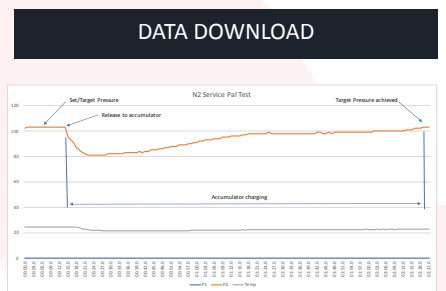
Tool-free, safe and quick Minimesse inlet & outlet connections provides easy & efficient implementation on-site



High and low temperature warning
Pressure target light – Green = achieved, red = under/over pressure.



Fine control bleed valve for accurate setting of target pressures and reduction of pressurisation



Export test files via USB in .csv file format to easily chart the recorded data.



Easy to read bright LCD display for live pressure & temperature readings.



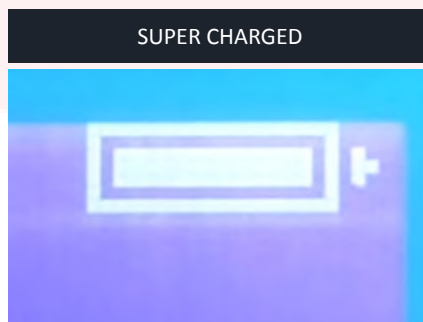
Room to store Accumulator and bottle adapters, battery charger etc.



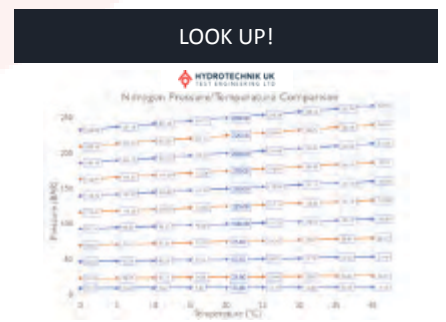
Space for connection hoses, Temperature compensation lookup table.



Minimesse hoses for safe and tool free testing or charging with anti leak check valved ends.



Get over 24 hours of continual use from a single charge.

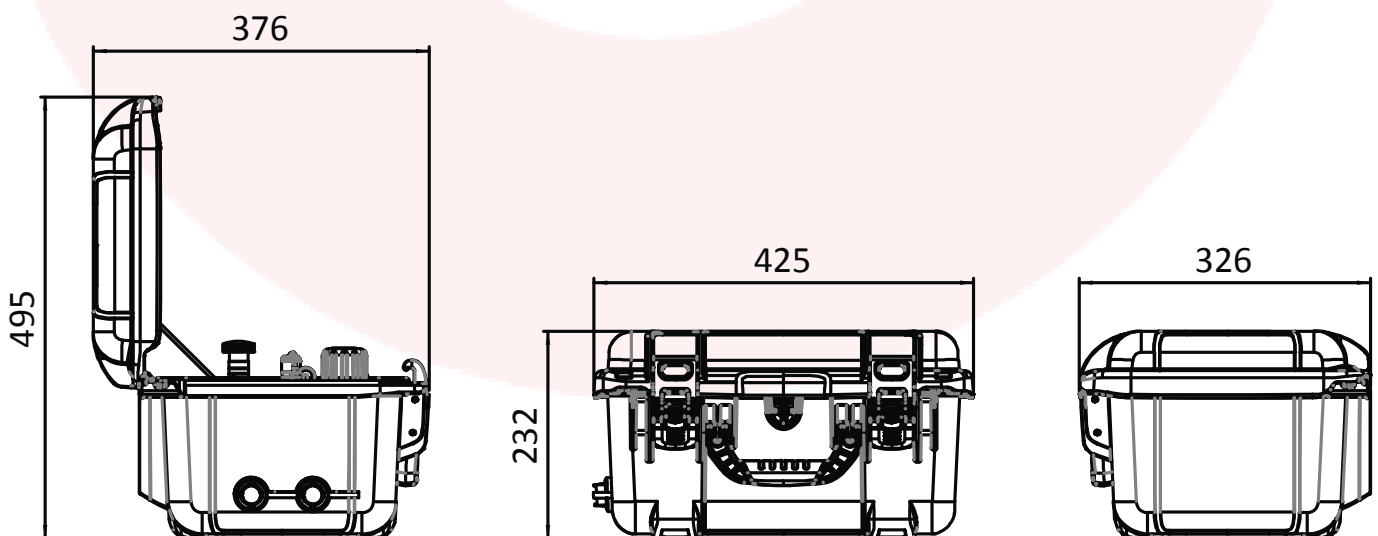


Temperature compensation look up table when charging at different temperatures.

Technical Specifications

SPECIFICATION	DETAIL
Dimensions	(w)425 mm x (d)326 mm x (h)232 mm
Weight	9.5 kg
Finish	Black HPX resin
Nominal Battery Voltage	7.5 VDC
Charge Voltage	12 VDC
Capacity	2250 mAh
Charge time	2 hours (80%) 3 hours (100%)
Run time	Up to 24 hours
Connections	1620 Minimess® test points, 2.5m long microbore hoses
Regulators	1 - 120 bar or 10 - 230 bar
Operating temperature	0°C to +60°C
Environment	Lid closed – IP67 Lid open – IP54
Maximum inlet pressure	300 bar
Certification	Factory calibration certificate CE declaration
Verification frequency	12 months recommended

Drawing

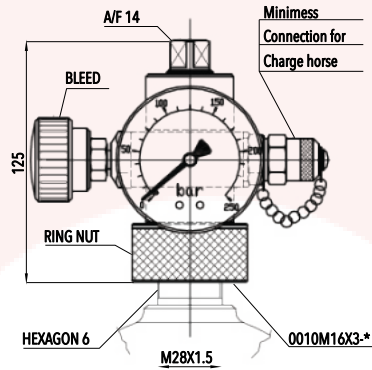


Accumulator charging / testing devices & adaptors for connection to different accumulator valve connections

Devices and adaptors allowing connection to valve types as pictured (see ordering table below to specify in your N₂ Service Pal kit)



PCFPU Charging Device (M28x1.5 Female)

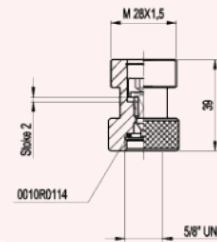


Important note: Accumulator connection to be specific (refer to ordering codes)



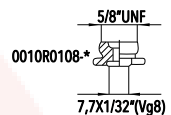
M28x1.5 master valve adaptors

HT2431 (M28x1.5 male to 5/8"-18 UNF female)

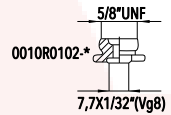


Additional valve adaptors (requires HT2431 Adaptor)

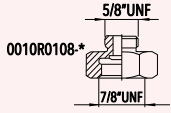
HT2510 (VG8 Schrader style short thread)



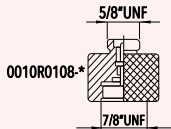
HT2513 (VG8 Schrader style long thread)



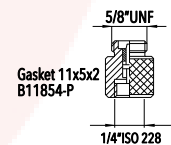
HT2511 (7/8"-14 UNF Female short thread)



HT2514 (7/8"-14 UNF Female long thread & pin)



HT2512 (1/4" BSP Female Parker style with pin)



Gasket 11x5x2 B11854-P

1/4" ISO 228



- Minimesse® charging hose for 1620 series accumulator valves supplied as standard
- Minimesse® charging hose for 1615 series accumulator valves supplied on request (see ordering table below)

Features

- Test or charge using tool-free Hydrotechnik Minimesse® connections up to 630 bar
- Simple hand tightening hose connection on to accumulator charging device
- Connection options for most popular accumulator charging valves

N2 Service Pal Ordering Codes

N2 - SP - 230 - **A** - **B** - **CC**

Replace **A** with the code for Connection to Accumulator

- X** = Minimesse 1620 (Standard)
- A** = Minimesse 1615
- B** = M28x1.5
- C** = 5/8"-18 UNF
- D** = 5/16"-32 UNEF / VG8 female (short)
- E** = 5/16"-32 UNEF / VG8 female (long)
- F** = 7/8"-14 UNF female (short)
- G** = 7/8"-14 UNF female (long with pin)
- H** = 1/4" BSP female (with pin)
- U** = Universal (all of the above)

Replace **CC** with the code for Charging Hose Length (length in meters)

- 2.5** = 2.5m long (standard)
- 5** = 5m long
- 10** = 10m long

Any length available on request

Replace **B** with the code for Connection to Nitrogen Bottle

- B** = G5/8" BSP male (standard)
- W** = W24,32x1/14" female
- M** = W21,7x1/14" female
- A** = CGA580 male
- N** = W30x2 Nevoc female

Other country Nitrogen bottle adaptors on request

Ordering example: N2-SP-230-U-B-2.5

N₂ Service Pal instructions (a)

How to measure existing pressures of accumulators with Minimes® test points fitted

- A) Isolate the Accumulator from the system and reduce the liquid under pressure to zero
- B) Remove the protective end sealing caps from the accumulator Minimes test & charging point
- C) Make sure both bleed valves “3” & “12” are closed
- D) Switch on the N2 Service Pal. Connect the microbore charging hose to the outlet test point “11”
- E) Start recording “4” if you wish to record the current accumulator pressure.
- F) Connect the other end to the Accumulator. The pressure will be displayed as “Pressure” On the LCD screen “1”.
- G) In the case of the accumulator being over-charged, reduce pressure via Bleed Valve “12”
- H) When finished, disconnect the microbore charging hose from the accumulator end first i.e. before disconnecting from outlet “11”



1.) Gas bottle pressure gauge	7.) Nitrogen gas inlet port
2.) LCD display	8.) Pressure set
3.) Inlet bleed valve	9.) Low pressure control valve
4.) Start recording a test	10.) High pressure control valve
5.) Temperature alert	11.) Nitrogen gas outlet port
6.) Pressure alert	12.) Outlet bleed valve

N₂ Service Pal instructions (b)

How to increase or reset the pre-charge pressure of accumulators with Minimes[®] test points fitted

- A) Switch on the N₂ Service Pal.
- B) Make sure the Nitrogen gas bottle is shut off.
- C) Unwind the pressure regulators “9” & “10”
- D) Connect a microbore charging hose between the Gas Bottle and Inlet “7”.
- E) Ensure inlet and outlet bleeds “3” & “12” are closed.
- F) Open the Nitrogen gas bottle to release pressure into the N₂ Service Pal. The available pressure in the bottle will be shown on the analogue gauge “1”. Make sure that this pressure is higher than the target pressure for the accumulator.
- G) Press RUN on the keypad “4” to start logging and create a .csv file of the charging event.
- H) To set the target pressure: Slowly adjust either regulator “9” or “10” to set the target accumulator pressure (displayed on the screen) press the pressure set button “8”
- I) If the target pressure is accidentally set too high, back off the pressure regulator “9” or “10” a little, and open and close the fine bleed valve “12” to reduce the pressure. Increase the pressure again using regulator “9” or “10” as necessary until the target pressure is achieved.

*** Note:** backing off either regulator without releasing trapped internal pressure via outlet bleed valve “12” will give the impression that the pressure is still high, this ‘locked in’ pressure needs to be released via “12”.
- J) Connect a microbore charging hose firstly to outlet “11” and then to the accumulator charging valve (you must connect in this order). Charging then starts the LED “6” will turn red and then green when the target is filled and the target pressure is achieved.
- K) When target pressure has been reached (please allow time for final pressure to settle), disconnect from the accumulator end first, and then outlet “11”. You **must** do it in this order to avoid releasing pressure from the accumulator
- L) Turn off the gas at the bottle, bleed via “3”, then remove the microbore charging hose from the gas bottle and inlet “7”
- M) Any residual pressure in the N₂ Service Pal can be bled via “3” & “12” bleed valves.
- N) Press “STOP” on the keypad “4” to end the recording and follow on-screen instructions to save the test.

