



HIDRACAR S.A.

INSTRUCTIONS OF USE OF THE HIDRACAR CHARGING & CONTROL GAS KIT FOR VERY HIGH PRESSURE PULSATION DAMPENERS AND HYDRO-PNEUMATIC ACCUMULATORS UP TO 1,000 bar

DESCRIPTION: [follow drawing no. BV(***)A1TM/E]

A complete kit includes:

- a) A block (with a maximum design pressure of 1,000 bar) fitted with: Manometer (2), valve core drive handle (1), gas purge valve handle (4), check valve (3), and knurled rotating nut (5), to attach the block to the accumulator charging valve .
- b) A 1.5 meter long flexible hose (for a max. working pressure of 1,000 bar).
- c) A female thread adapter for connecting the hose to the Nitrogen cylinder valve.
- d) A plastic case for the protection and transport of the kit.

Note: The upper limit of the manometer range should be approx. 30% higher than the value of the gas pre-charge.

OPERATION: [follow drawing no. BV(***)A1TM/E]

WARNING! Charge with **NITROGEN** gas only. The use of Oxygen is forbidden due to the risk of explosion if it reacts with the liquid in the circuit. For low gas charging pressures or non oxygen reactive liquids, compressed air can also be used.

I - Remove the cap of the accumulator charging valve (on top of the accumulator / pulsation dampener) and check that the o-ring of the charging valve is in its place.

II – Check that the core depressor pin of the block (12) is retracted into the block. For this, the valve core drive handle (1) must be completely turned counter-clockwise. Also, make sure that the gas purge valve handle (4) is firmly screwed in (closed). Once all this has been checked, proceed to attach the charging block to the charging valve and screw it by rotating the knurled nut (5) until firmly secured.

III – Now connect the flat seat end fitting of the flexible hose to the check valve (3) of the block (after removing its cap and checking that its o-ring is in place, all just as you did before with the accumulator one).

IV - Connect the fitting in the other end of the flexible hose, with the appropriate adapter already attached, to the Nitrogen cylinder valve and open the cylinder gas valve handle slowly. You should do this while keeping the accumulator in vertical position.

V – Once the needle of the manometer (2) is approximately 15% above the required gas charging pressure, close the valve handle of the cylinder.

VI – Now, purge the gas inside the block by opening the gas purge valve handle (4) slowly, until the manometer (2) indicates 0 bar and no gas is released through the gas purge outlet hole (11), and then close again the gas purge valve handle.

VII – At this point, the accumulator has been filled with gas, which forced its entrance to the accumulator through the charging valve by means of the cylinder gas pressure, but the gas inside the accumulator can't get out because the charging valve remains closed. In order to communicate now

the interior of the accumulator with the charging block, the core depressor pin (12) of the block must be driven into the charging valve, to open it, by slowly turning the valve core drive handle (1) clockwise. The manometer will then show the pressure inside the accumulator.

VIII - As the pressure is slightly above the required charging pressure, now it is necessary to purge out the gas excess by turning the gas purge valve handle (4) until adjusted.

IX – Turn the valve core drive handle counter-clockwise so the gas charging valve of the accumulator gets closed.

X – Finally, open once again the gas purge valve handle to release all the gas that remains inside the block. Then you can unscrew the block from the accumulator by turning the knurled rotating nut (5). You are done.

Note: When the gas is compressed, its temperature rises. With high gas charging pressure values, it is necessary to wait a few minutes before checking the pressure in the manometer

If the working temperature is higher than the room temperature, the following formula must be used to determine the charging pressure:

$$P_o \text{ (fill)} = P_o \text{ (required)} \times \frac{\text{charging temp} + 273}{\text{working temp.} + 273} \quad (P_o = \text{Charging pressure})$$

When detaching the flexible hose, you must be careful with the gas stored inside.

To check the pressure inside the accumulator, follow the actions in points I, II, VII, IX and X.

Weight of complete kit: 2 Kg. Dimensions of the case: 31 cm x 38 cm x 10 cm.

EXAMPLE OF REFERENCE CODE FOR A COMPLETE KIT:

