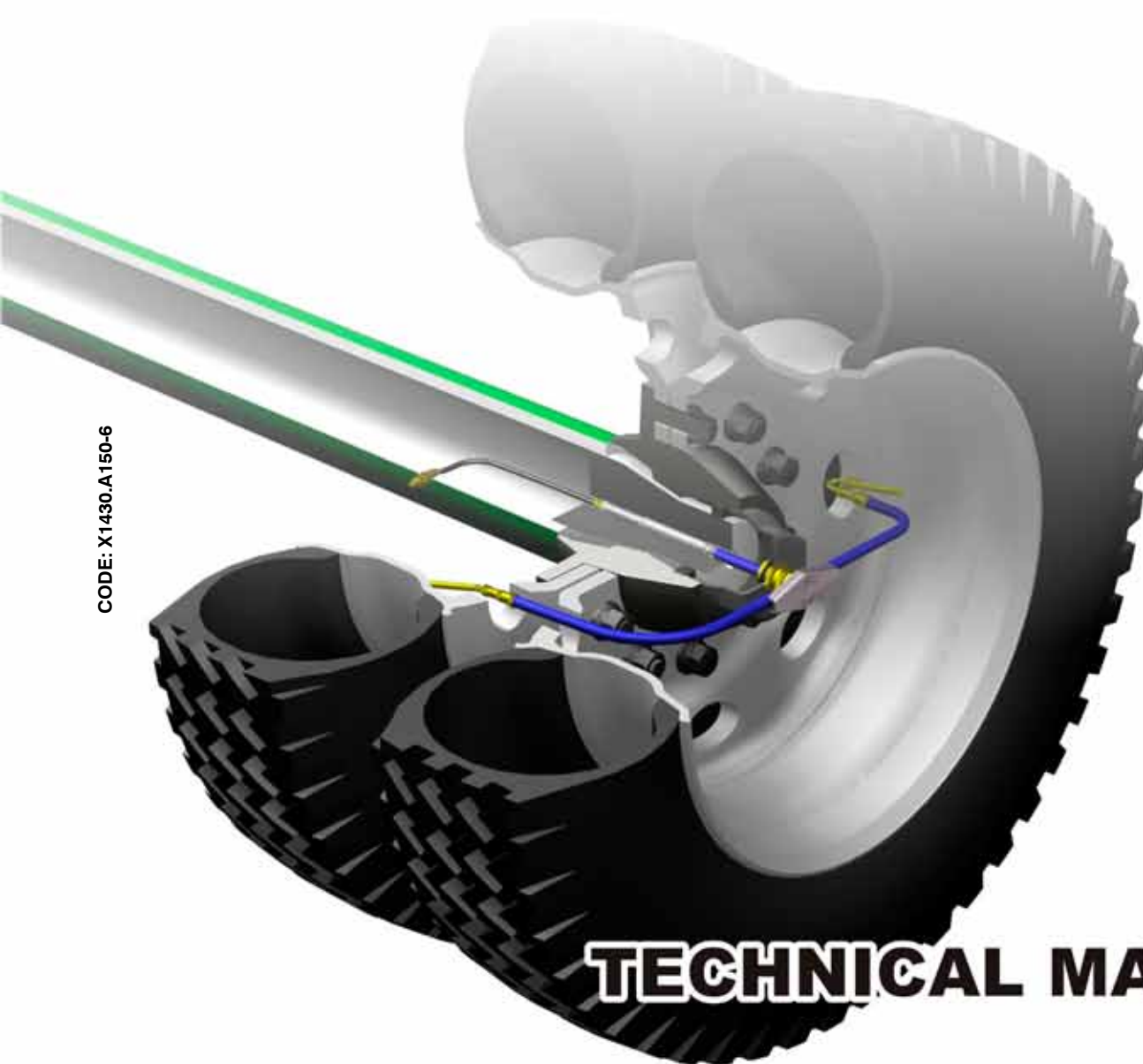




AUTOMATIC TYRE PRESSURE SYSTEM FOR BPW

INTERNAL SYSTEM



CODE: X1430.A150-6

TECHNICAL MANUAL

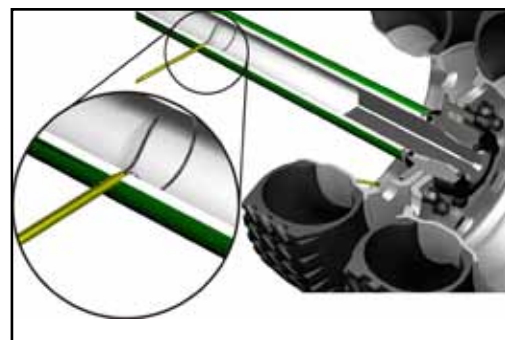
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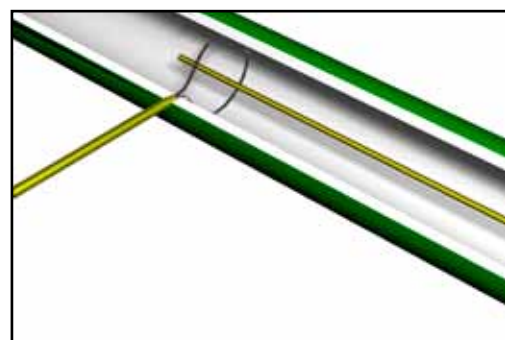
I - APPLICATION PROCEDURE FOR THE VIGIA CONNECTION SYSTEM

Explanation: *This part of the installation requires the involvement of 2 operators.*

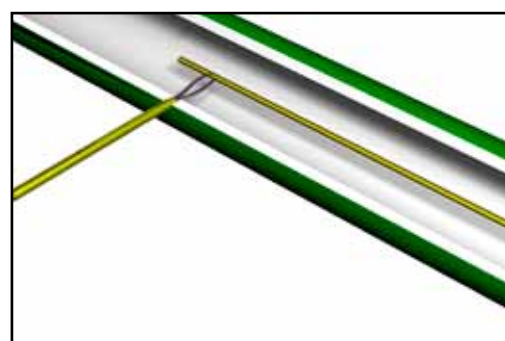
✓ Position the pin in one of the threaded holes directing it in such a way that the flexible steel arc remains in the position indicated in the figure.



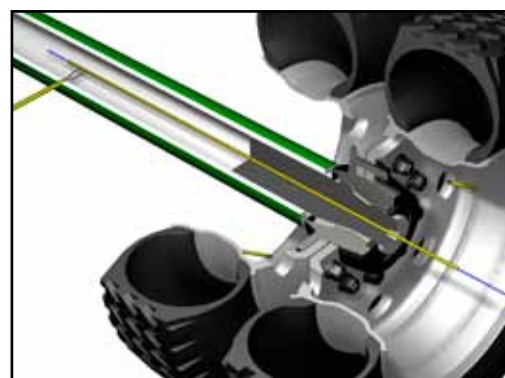
✓ Insert the pipe tool inside the axle tip until it passes the pin line.



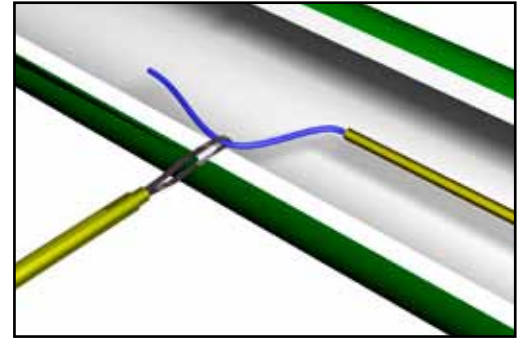
✓ Pull the pin to ensure that the pipe has been gripped and support it by exerting slight pressure.



✓ Insert the Ø 4 mm. pipe inside the pipe tool until the former passes approx. 150 mm.

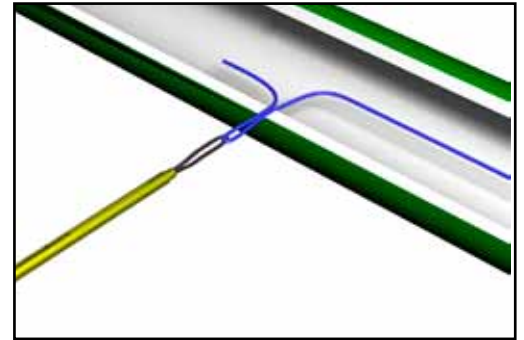


✓ Continue to exert gentle pressure on the outside of the pin, slowly remove the pipe tool until the pin grips the Ø 4 mm. pipe. Proceed to completely remove the pipe tool.

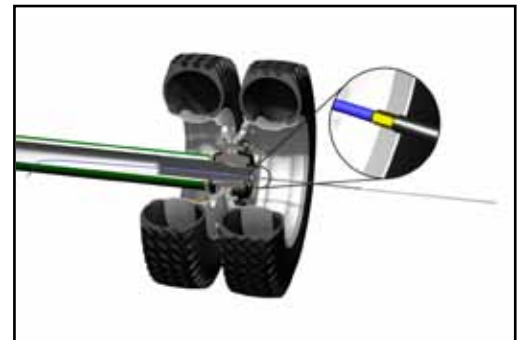


✓ Pull the pin outwards until the Ø 4 mm. pipe comes out. Then manually pull the pipe until the end comes out.

Note: *An operator must support the other end of the pipe (on the tyre side).*

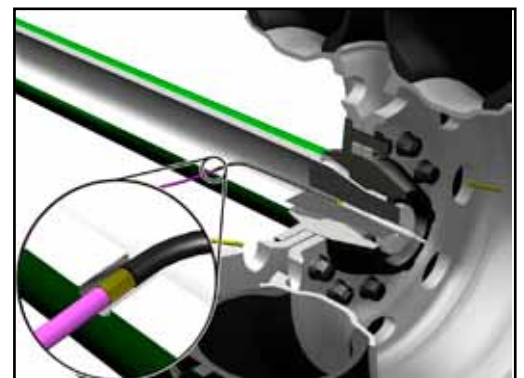


✓ Couple the Ø 4 mm. pipe with the Ø 6.3 mm. pipe by using the fastening (tool supplied).

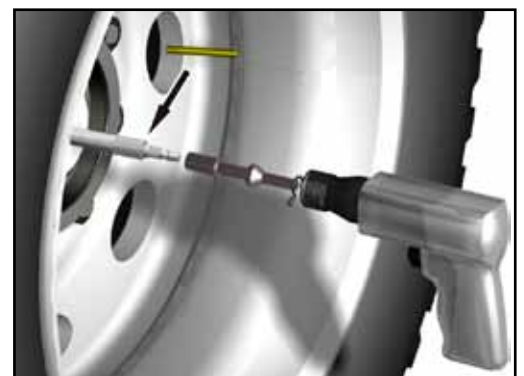


✓ Pull the Ø 4 mm. pipe until the Ø 6.3 mm. pipe comes out of the transverse hole.

Explanation: *Do not force, especially when the fastening is passing through the hole, since it could block and disconnect.*



✓ Apply liquid Teflon to the steel connection pipe rings and fit it in the axle tip; avoid excess.



✓ Insert the steel pipe until the tool reaches the limit in the axle. To do so follow the steps below:

a) Position the assembly tool with the pneumatic hammer in the pipe, press the catch and gently press the pneumatic hammer to gradually insert the pipe into the axle.

At the same time, remove the \varnothing 6.3 mm. pipe via the transverse hole to prevent it from choking.

b) Remove the tool once it has reached the limit in the axle.

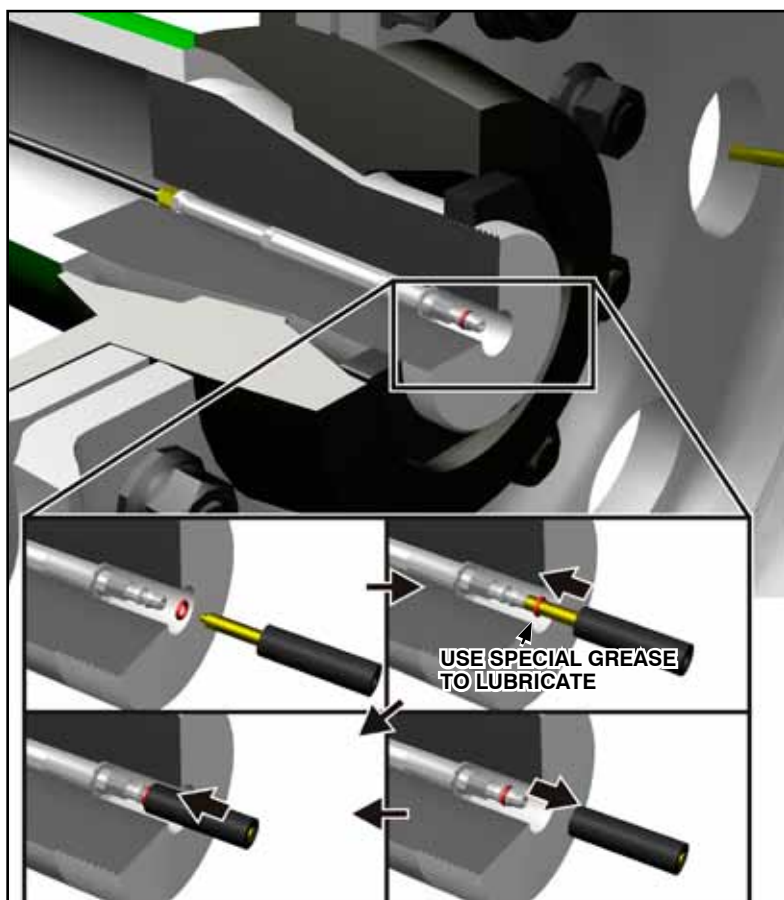


Note: Do not exert excessive pressure on the catch, since when it strikes, the assembly tool could come out of the pipe and damage the pipe tip.

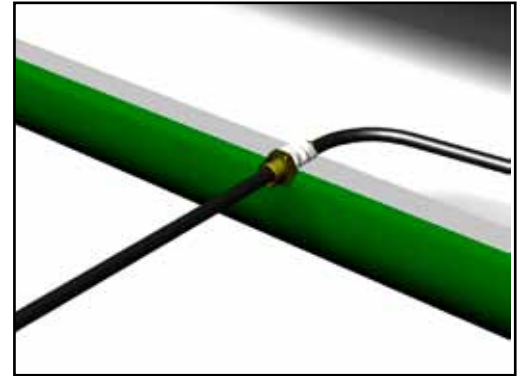
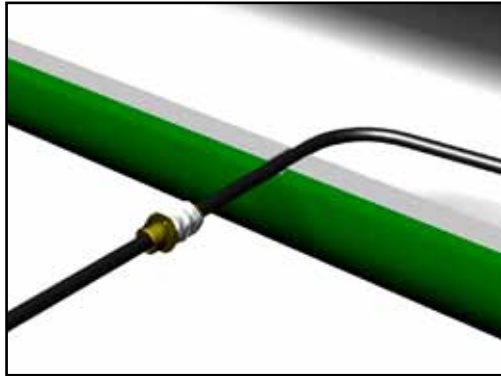
Important: All the steel pipes must be the same distance from the edge of the axle tips, thus if for any reason the rotors are changed over there will be no negative effects.

✓ Remove chips which may be produced by the steel connection pipe and the Teflon residues.

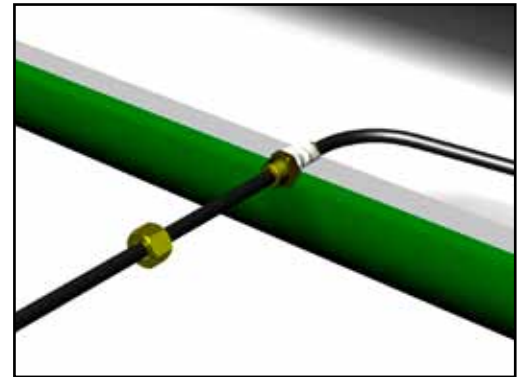
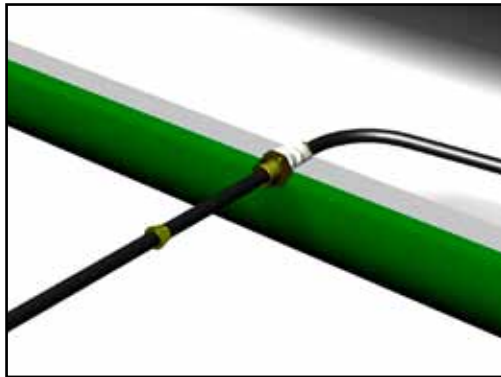
✓ Position the O-ring in the terminal using the tool supplied after having lubricated the O-ring with the special grease provided.



✓ Pass the Ø 6.3 mm. pipe through the inside of the NPT 1/4" x 18 coupling. Apply liquid Teflon to the coupling thread, screw it and adjust with a torque of approximately 12 lbs x ft or 1.6 kg x m or 16.3 N x m.

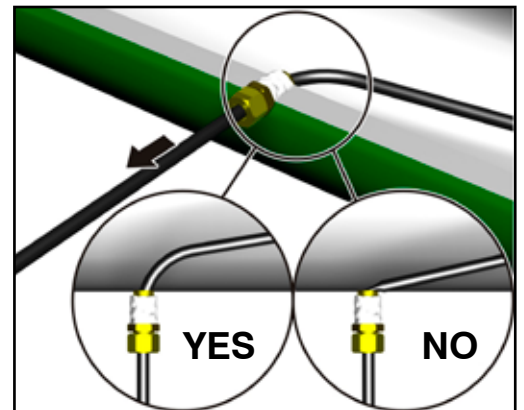


✓ Position the cone as indicated in the figure and then position the set nut (tool) without adjusting it.



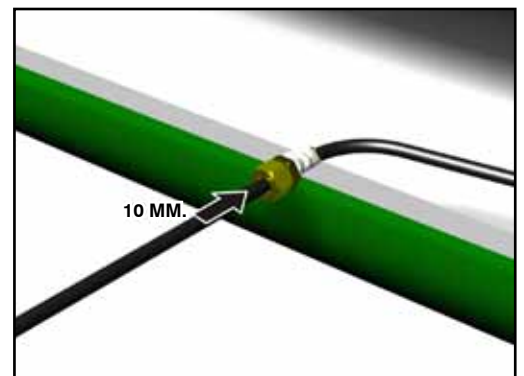
✓ Pull the Ø 6.3 mm. pipe outwards until it can no longer be pulled.

Explanation: Do not force, otherwise the pipe could suffer damage.

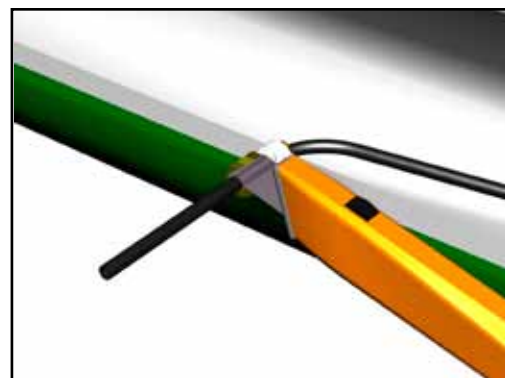


✓ Insert the pipe approximately 10 mm. and slowly and gently adjust the nut (tool) until the pipe is fixed in place.

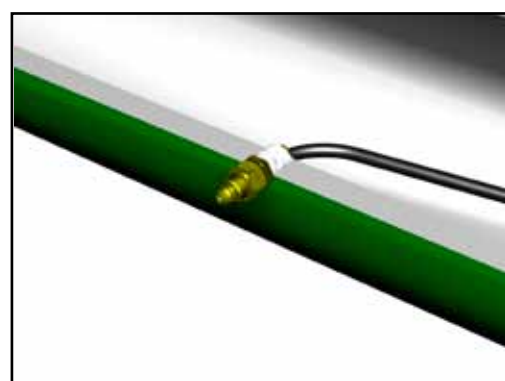
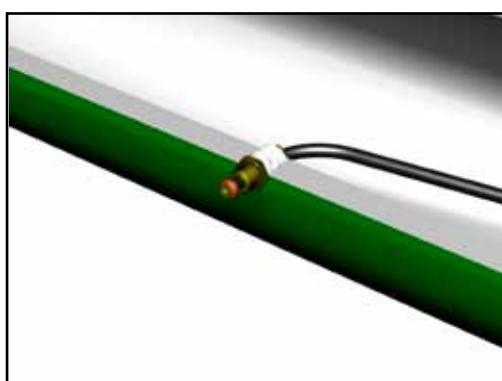
Important: Do not exceed the nut torque, since the pipe will close internally and the other VIGIA part will not be able to be inserted.



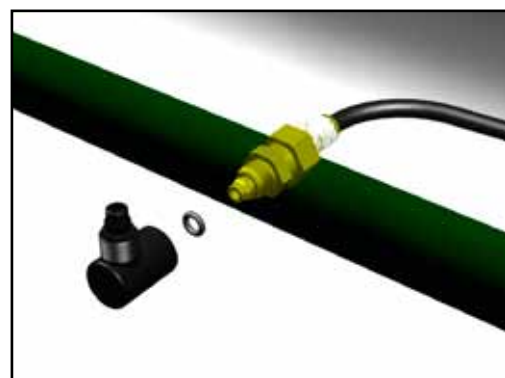
✓ Cut the pipe flush with the nut tool avoiding that it closes or that any roughness remains.



✓ Remove the nut. Position the VIGIA metal pipe (with its respective O-ring) inside the Ø 6.3 mm. pipe and position and adjust the VIGIA connector.

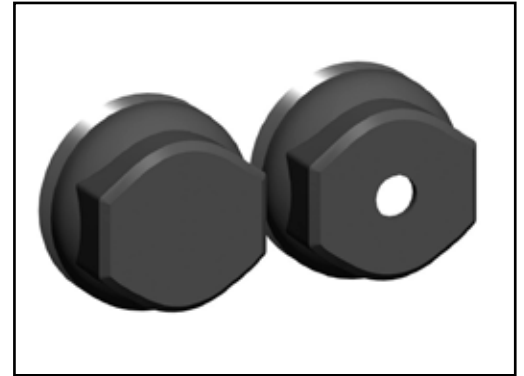


✓ Put the o'ring and the elbow connector.



2- PROCEDURE FOR THE INSTALLATION OF THE ROTOR SUPPORT

Make a 29 mm. hole exactly in the centre of the original cap.



Position the rotor coupling in the cap and adjust.

Important: Use thread fastener (Loctite 277).

Explanation: To prevent the coupling body from rotating use the assembly tool supplied.



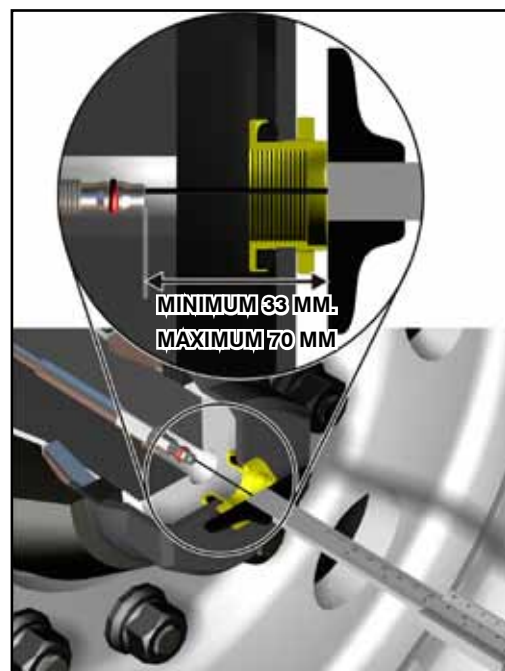
2.1- PROCEDURE FOR THE INSTALLATION OF THE ROTOR

Once the rotor support is installed in the unit maul, proceed to install the rotor taking into account the following steps:



✓Take distance (L) from the outer edge of the support or rotor coupling to the end of the connection pipe terminal.

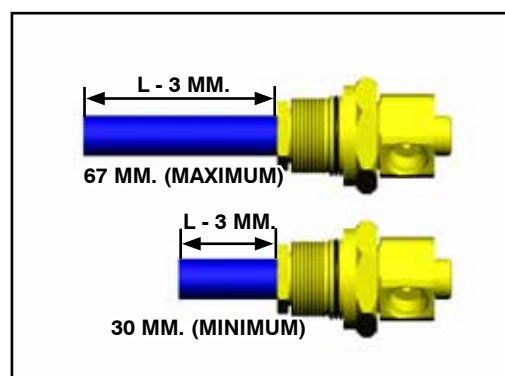
Important: *Us a gauge.*



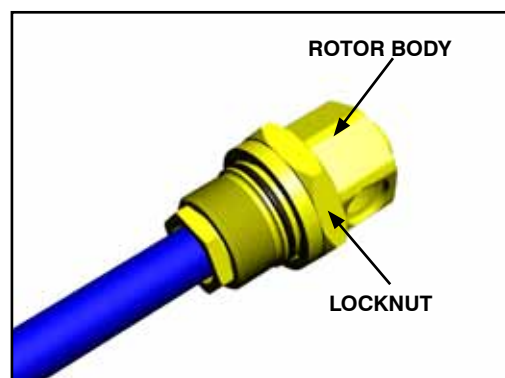
✓Cut the rotor hose in accordance with value "L", deducting 3 mm.

Important: *The maximum L value can be up to 70 mm. and the minimum 33 mm.*

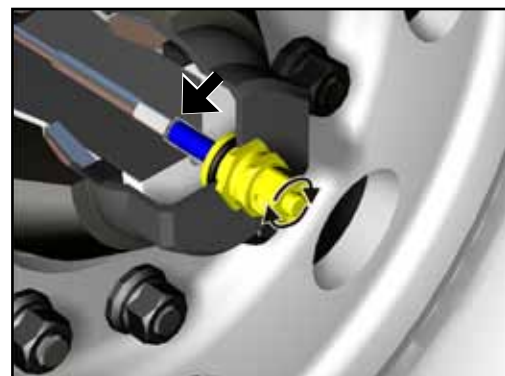
Explanation: *If the values exceed the established ones, the position of the pipe located in the axle tip must be modified.*



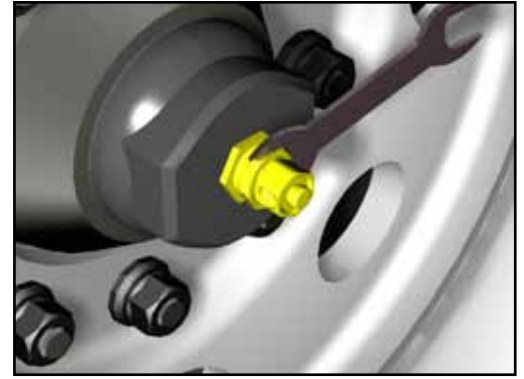
✓Screw the locknut into the rotor body as far as possible without forcing it.



✓Lubricate the inside of the hose with the special grease supplied and ensure that it coincides in the internal terminal, pressing and screwing the rotor as far as possible, without forcing.



✓ Unscrew the rotor (a complete turn at most), directing the outlets towards the tyre valves and adjusting the locknut.



✓ Position the nipples in the rotor, adjusting them with a torque of approximately 2 lbs. x ft or 0.276 kg. x m. or 2.7 N x m.



✓ Position the coupling terminals, gently adjusting them with the spanner.



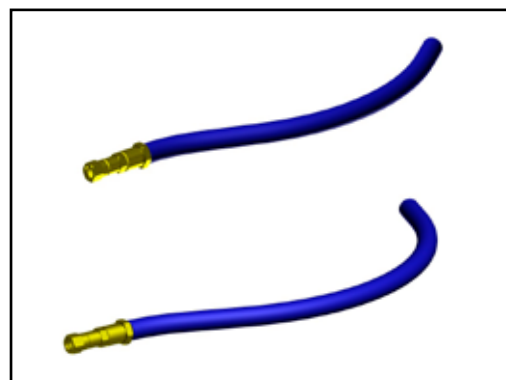
Important: *In the maul where the mileage recorder is used, the specific VIGIA rotor supplied must be used (it contains 1/2 x 20 female thread).*



3- INSTALLATION PROCEDURE FOR THE CONNECTORS WITH INFLATION VALVE FOR THE TYRES

Different models are provided with the following applications:

a) Straight connectors: For the internal tyre of dual axles.



b) "U" connectors: for outside tyre with dual axles.

Explanation: *This connector must be complemented with straight connectors from option a).*



✓ Preferably use a stock to correctly clean the external thread of the original valve.



- ✓ Remove the internal ovule of said valve.
- ✓ Screw the VIGIA connector gently adjusting it with a spanner.



✓ Check that the tyre pressure is less than that at which it is supposed to be calibrated.

Important: *If the original dual valve has an extension, remove it.*



✓ Extend the hoses up to the rotor, cut to size and insert them in the terminals.

Explanation: *Cut the hoses straight lengthways ensuring that they do not rub the VIGIA support or the rim.*



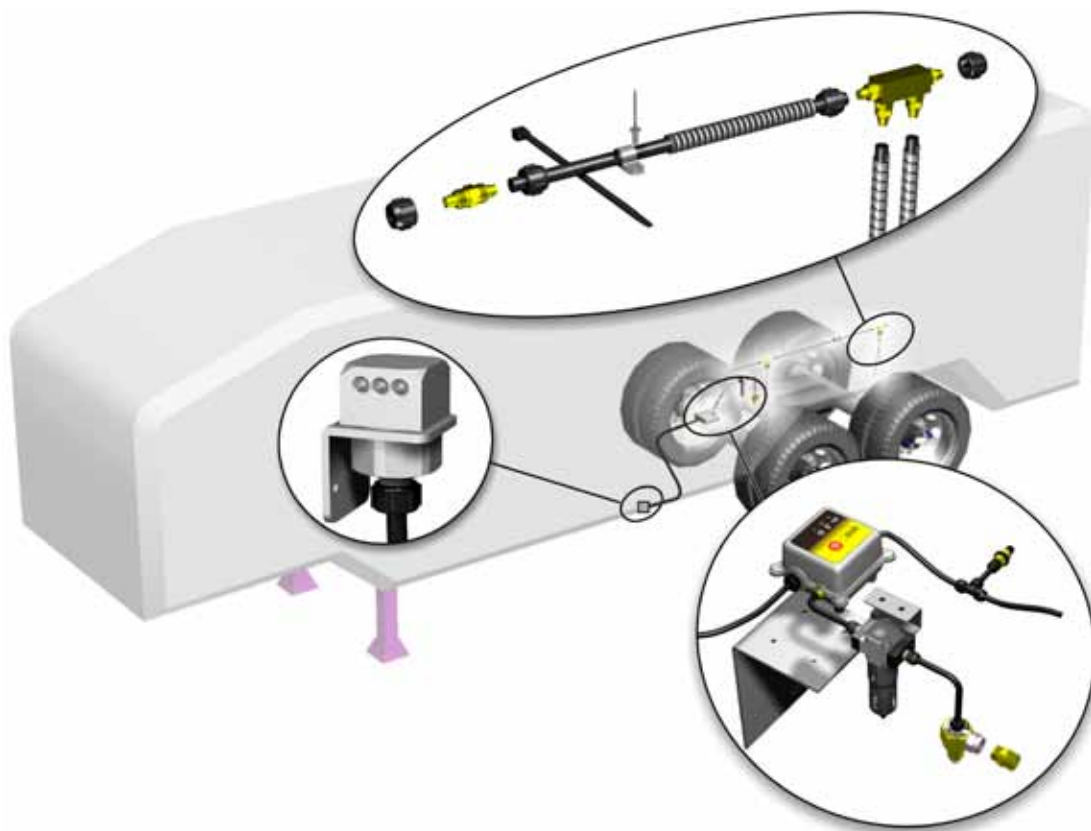
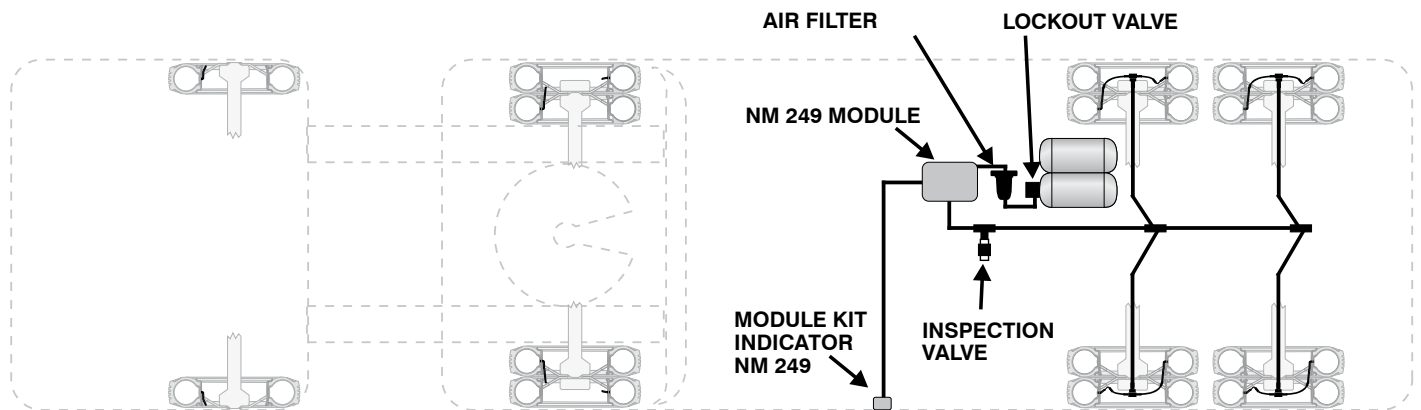
✓ Position the rotor cover caps.



4- AIR NETWORK CONNECTIONS

Carry out the air connections with the pipe, fasteners and connectors supplied. Ensure that they are presealed, clamped and protected adequately.

This system is installed independently from the truck.



5- AUTONOMOUS SYSTEM NM 249

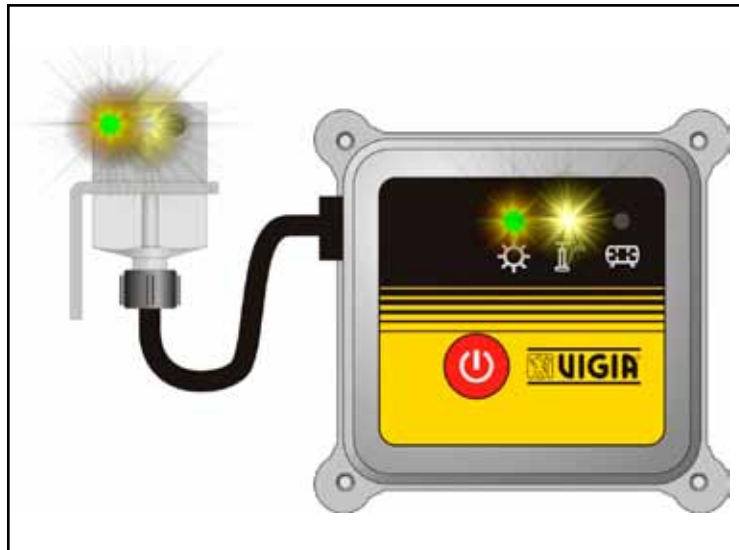
Function

This constantly and automatically regulates the tyre calibration by maintaining the "cold" preset pressure and that of the vehicle in motion.

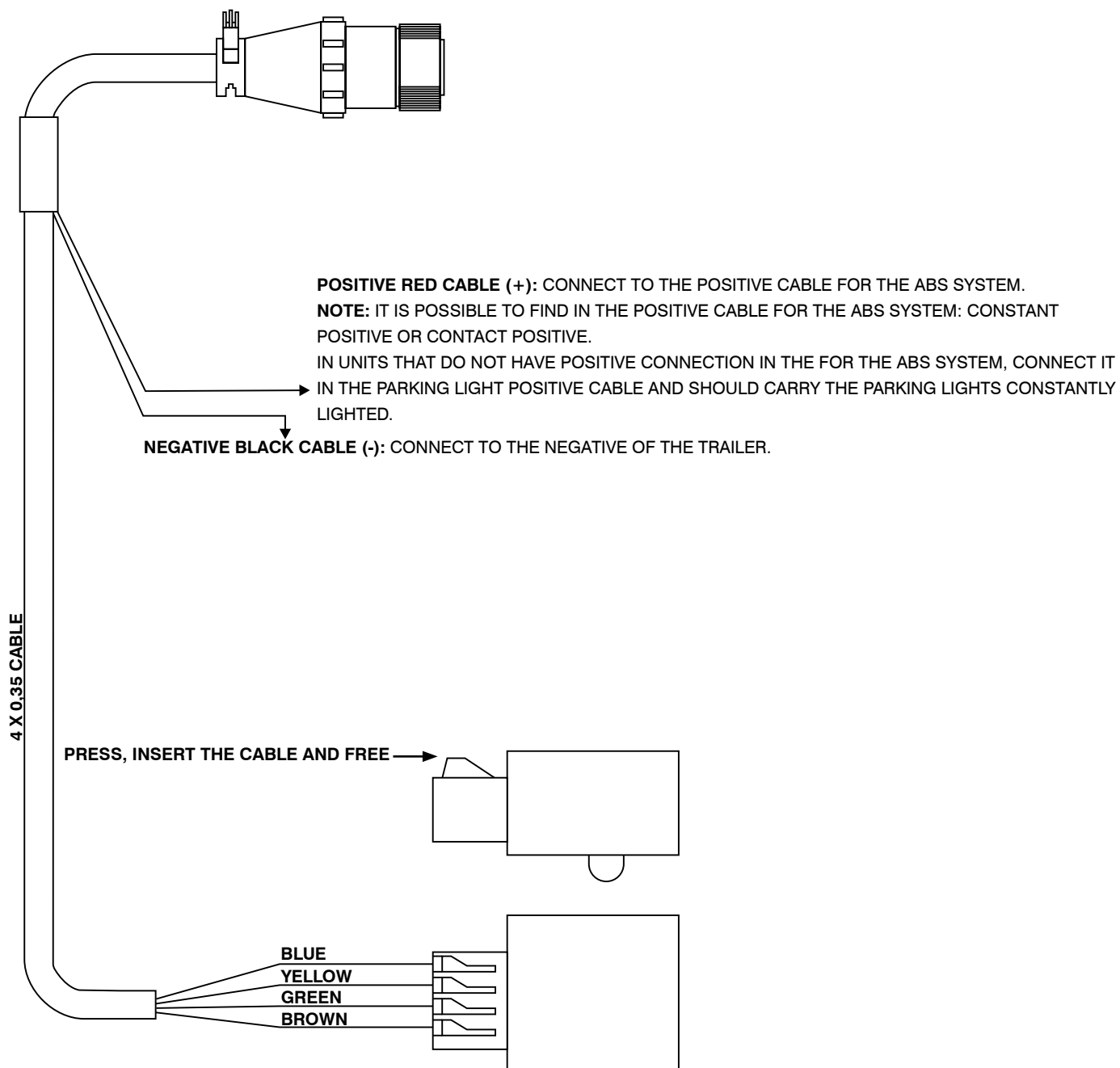
Operation

In the event of any drop in the preset pressure in one or more of the tyres, regardless of how little, due to punctures or for other reasons, the equipment automatically generates a light signal which notifies the driver of the problem, whilst at the same time starting the inflation process by keeping the cold calibration pressure permanently.

If the air loss were to be considerable (e.g. a blowout) and the unit compressor were unable to compensate it, thus forcing the pressure in the air reservoir to decrease, a light signal notifies the driver of the situation, whilst at the same time an electronic safety mechanism blocks the equipment, thus impeding the air supply to the damaged tyre. This ensures the normal functioning of the other air-driven systems: brakes, suspension, etc.



5.1- NM PANEL CONNECTION



5.2- INSTALLATION PROCEDURE

5.2.1- LOCKOUT VALVE

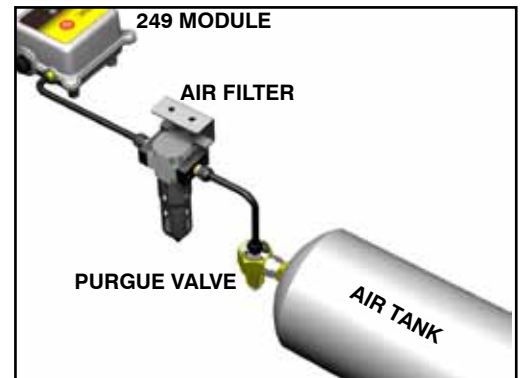
Install by replacing a cap located on the middle or top section of an air reservoir. Use the coupling supplied.

Explanation: *If necessary, remove the top, drill it with a \varnothing 5 mm. and 8,75 mm. drill and then make and NPT 1/8" x 27 male thread.*



5.2.2- AIR FILTER

Position in a visible location (to aid cleaning), however ensure that it is not exposed to direct contact from stones or other objects. Use the support and screws provided.



5.3- CONTROL AND COMMAND MODULE

This control and command module is supplied either as 12 V. or 24 V. It is worth highlighting that it can control one or more axles, regardless of the number of tyres, provided that these are calibrated at the same pressure.



5.3.1- FUNCTION

This allows the permanent control of the tyre calibration pressure and the emission of a light signal using high intensity LEDs in accordance with the situations arising, whether air loss or low pressure in the unit reservoir.

The light signal is received by the driver in the rear-view mirror via the indicator module.

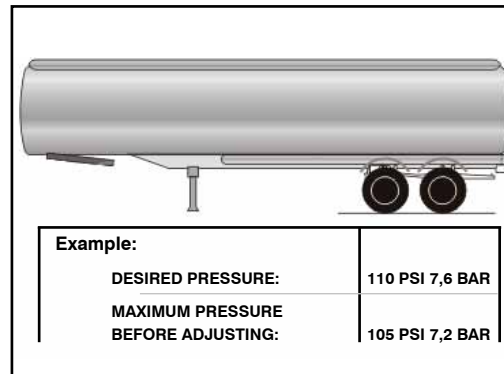
The calibration pressure control is carried out using a highly sensitive device which, in the event of any loss, regardless of how insignificant, activates an electronic circuit which energizes the electrovalve in order to initiate the recovery of this loss.

It has a built-in safety mechanism (input sensor) which automatically cancels the air supply in the event of losses which cannot be compensated for by the unit compressor.

5.3.2- ADJUSTMENT OF THE MODULE FOR TYRE CALIBRATION

Before proceeding with the adjustment of the module it is very important to do the following:

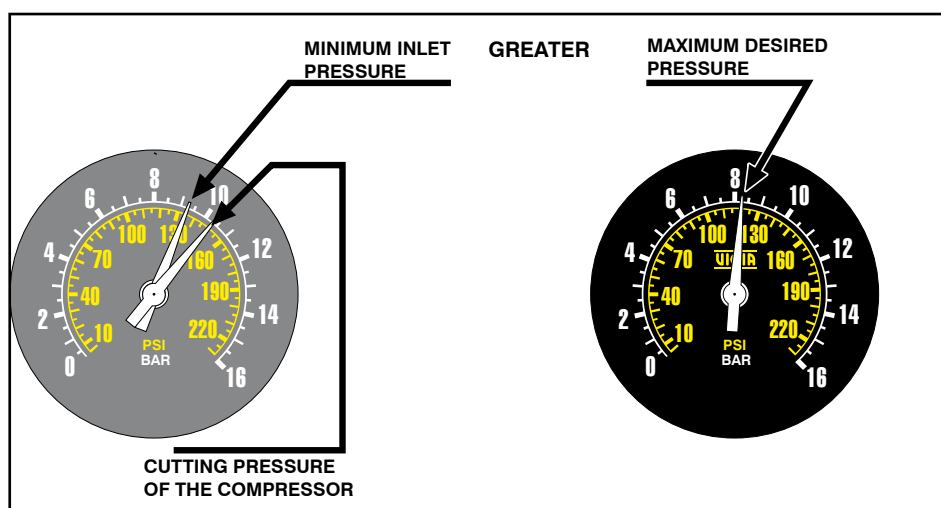
✓ Check that the pressure of all the tyres is less, by at least 5 PSI (0.3 BAR), than that at which they will be calibrated.



✓ Ensure that the tyres are "cold", at ambient temperature (minimum 4 hours after having been driven).



✓ Check that the input pressure to the module is greater than the maximum pressure at which the tyres are going to be calibrated; minimum 15 PSI (1 BAR).



✓ Insert a pressure gauge in the VIGIA air pipe which goes to the tyres.



After having completed the previous steps and with all the equipment connected, proceed as follows:

a) Position the register in the rear part of the module.

Explanation: Remove its cap and use an Allen key to rotate the register.



b) With the truck running and with the semitrailer connected, the green and red indicators must be on, as there is no pressure in the air tank.

c) When the red indicator goes out, the equipment is enabled for calibrating the tyres. The yellow indicator will light indicating the start of inflation.

Important: During the calibration process and prior to reaching the function desired, cancel the inflation function by pressing the switch (yellow indicator switched off):

- * The pressure gauge will indicate the minimum pressure of the tyres (whilst the equipment is being calibrated, it is normal that the pressure gauge indicates a higher pressure than that of the tyres.
- * The pressure gauge needle must remain fixed at a pressure (if it permanently decreases, this indicates that there are losses in the equipment which have to be repaired before continuing to adjust).

d) Activate the equipment and continue with the adjustment until reaching the desired calibration. This will occur when the yellow indicator goes out by itself before the pressure gauges indicate a pressure which exceeds by approximately 3 PSI (0.20 BAR) the set calibration pressure.

Explanation: During this phase 2 situations could occur, depending on the various working pressures of the compressors in accordance with the different unit brands and models:

✓ The increase in pressure, shown on the pressure gauge, is shown progressively and smoothly.
The compressor pressure is slightly higher than the module pressure regulation.



✓ The increase in pressure is shown intermittently.
The compressor pressure is considerably higher than the module pressure regulation.

Important: Each time the yellow indicator switches on, it will be indicating the air supply to the tyre. When it goes out, this will indicate an interruption in the air supply.



Note: If at this stage in the regulation it is observed that the required pressure has not been achieved and the LED is switched off, **very slowly** turn the corresponding register in the direction of the plus (+) sign until the yellow indicator switches on. Repeat this operation as often as necessary until the yellow indicator goes out (without closing the register) before exceeding the desired calibration by 3 PSI (0.20 BAR).

If the yellow indicator goes out by itself and the pressure gauge needle does not fall by 2 PSI (0.14 BAR) below the desired pressure, the equipment is regulated and the tyres calibrated.

If the needle drops more than 2 PSI (0.14 BAR) and the yellow indicator remains switched off, rotate the register **very slowly** in the direction of the plus (+) sign until it switches on.

CONCLUSION: The equipment must start the inflation process (yellow indicator switched on) at no more than 2 PSI (0.14 BAR) below the set calibration.

Example: If calibrating to 100 PSI (6.9 BAR), the yellow indicator must switch on at 98 PSI (6.7 BAR), i.e. at no more than 2 PSI (0.14 BAR) of the desired pressure.

Calibration validity environment: depending on the numerous equipment and compressor variables, the pressure indicated on the pressure gauge will remain at $\pm 3\%$ with regard to the regulation pressure.

e) Regulation verification

With the VIGIA equipment activated proceed to:

- ✓ Cause a minimum loss in the VIGIA, in each of the circuits, positioning the cap with calibrated leak in one of the rotor outlets.
- ✓ Check the pressure gauge to ascertain at how many PSI (BAR) the yellow LED is illuminated.

Note: *The needle must not drop more than 2 PSI (0.14 BAR) of the calibrated pressure and recover. If this is not the case, rotate the register **very slowly** in the direction of the plus sign (+) until corrected.*



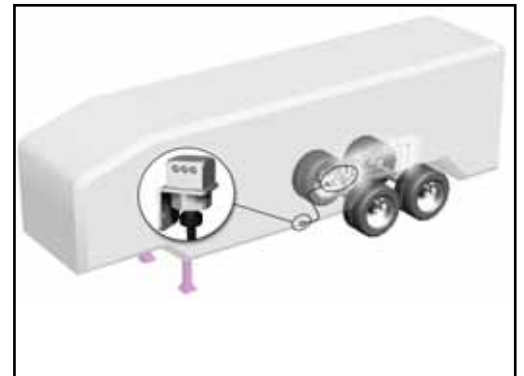
f) If the desired pressure is unintentionally exceeded (or calibrated pressure change), invariably the following must be undertaken:

- ✓ Disconnect the equipment from operation.
- ✓ Manually deflate the tyres (approximately at 5 PSI-0.3 BAR below the desired calibration pressure) corresponding to this circuit.
- ✓ Rotate the register, approximately one turn, in the direction of the minus (-) sign.
- ✓ When the unit is in operation, proceed to recalibrate as indicated in d) and e).

g) It could occur that after adjusting the equipment it continues to intermittently calibrate for a few minutes. This is due to the tyres not being filled to capacity.

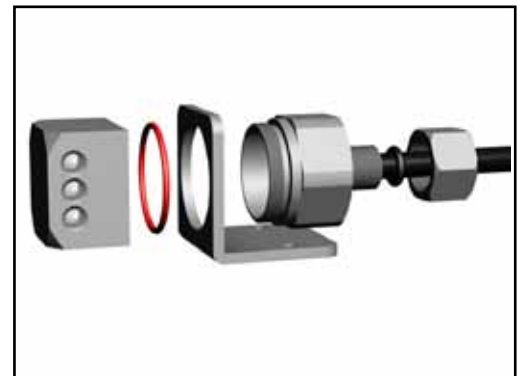
5.4- NM 249 MODULE INDICATOR

Position in a visible location, where it can be seen by the driver in the rear-view mirror. Use the support and screws provided.



Important: *In the assembly, ensure sealing: do not deform the bearing. Tighten the entrance nut from the electrical wiring.*

Explanation: *Make electrical wiring according to the diagram shown on page 14.*



5.4.1 - LIGHT WARNINGS

Normal operation.

- ✓ Calibrated tyres.



Equipment recovering pressure.

- ✓ Intermittent yellow LED, the journey can continue. Repair as soon as possible.
- ✓ Continuous, stop the vehicle and remedy the loss.



Excessive pressure drop.

- ✓ Stop the vehicle immediately and change the damaged tyre. The yellow and red LEDs flash alternately.



Low pressure in the reservoir.

- ✓ Automatic disconnection of the VIGIA equipment. The equipment will restart when the air reservoir recovers its operating pressure.



5.5- INSPECTION VALVE

In a place easy to reach, make the installation using the bearing and screws provided; directly in the air system that goes to the tyres.

Explanation: *This element's function is to verify quickly the module regulating pressure.*



**TECHNICAL MANUAL OF THE AUTOMATIC TYRE PRESSURE SYSTEM,
INTERNAL SYSTEM FOR BPW
CODE X1430.A150-6
REG 19 05 035 - REVISION 001
MAY 2007**

Approved by:

A handwritten signature in black ink, appearing to be 'A. P. M.', written over a horizontal line.

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