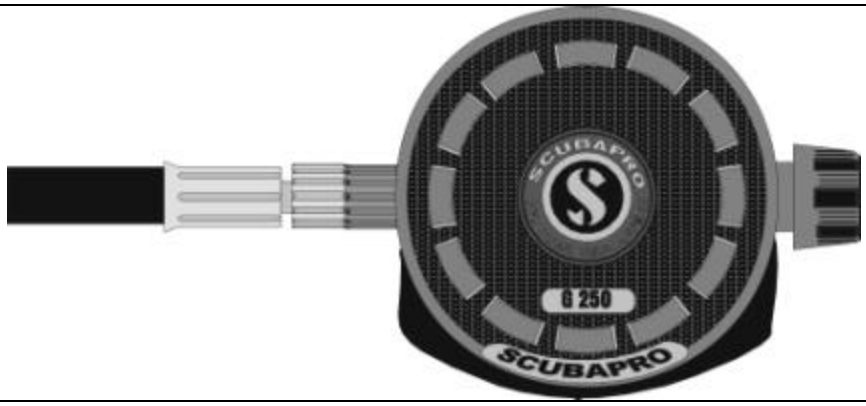
SCUBAPRO®

#265

Engineering Bulletin

August, 1999

SCUBAPRO Announces the Next Generation of G250: The G250-HP



The SCUBAPRO G250-HP

SCUBAPRO announces the latest in a long line of regulator innovations: The G250 High Performance. The G250 HP has all of the performance characteristics customers have grown to love about the SCUBAPRO G250, while incorporating the latest poppet design, and the best components and engineering features of more recent SCUBAPRO regulators. The result is superior cracking effort and a venturi system that provides a very natural flow of air. The G250 now meets standards that exist in Europe and other parts of the world, making it a truly worldwide regulator. This means that parts and service will be available worldwide for this unit, regardless of location. The following changes in design will help you differentiate the G250 HP from the previous version.

"S-Wing" Poppet

The G250 HP uses the SCUBAPRO "S-Wing" Poppet design (see Engineering Bulletin #261 - March 1999) and incorporates an adjustable pneumatic balance chamber which allows the unit to be fine-tuned during regulator annual service.

Automatic, Pneumatically-Controlled Anti-Set Feature

The G250 HP also features an automatic pneumatic "anti-set" feature. This feature permits the spring pressure to be removed from the poppet when the air pressure is turned off. In turn, engraving on the poppet surface is reduced during the service life of the poppet, providing for more consistent, trouble-free performance.

Housing/Cover/Air Barrel

The housing has been re-designed so that there is more physical space *inside* the regulator itself. The outside dimensions of the housing are the same as in previous models.

The air barrel outside diameter has been reduced in size to allow for more movement of exhaust air, in order to reduce the exhalation effort.

The G250 HP uses a larger breathing adjustment knob which makes it easy for the diver to fine tune the cracking effort, even while wearing gloves. In addition, the knob now fits over the end of the air barrel, rather than threading inside. This means there is virtually no chance of bending the knob during use or service.

The housings, air barrel and covers for the G250 are *not* interchangeable with previous models. Accommodation for replacements of previous housings, air barrels and covers will be made.

Finally, the purge button has now been equipped with an anti-set feature that can be used to keep the performance of the poppet consistent between warranty service.

Exhaust

A single sliding pin now holds the center section of the exhaust tee. The tee is easy to install after service, and there is less likelihood of damage to the housing as might occur while threading in a hex screw.

VIVA Flow Vane

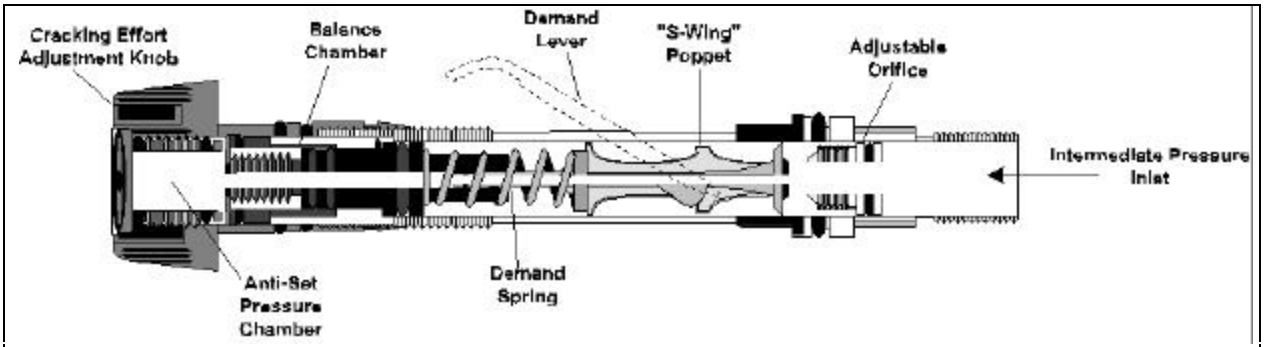
The VIVA flow vane is designed to "snap" into place without the need for a retaining ring. Retaining rings are often lost during service and this design helps to prevent accidental removal of the vane during use.

Previous versions of the flow vane cannot be used in the new housing, nor can the snap-in flow vane be used in the previous housings. Both flow vanes and housings will remain available for replacement needs.

Function

The internal workings of the newest G250 are similar to the previous version, with one important exception; the balance chamber is now adjustable so that the "cracking effort" can be finely tuned. This regulator has one of the lowest breathing efforts of any on the market.

The G250-HP - A Cutaway View

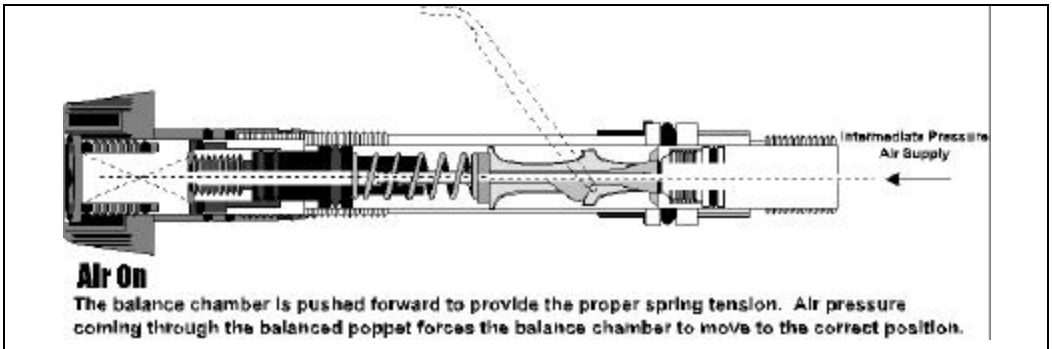


The G250-HP Second Stage

The G250-HP - How The Anti-Set Feature Works

When the air is turned on:

- Air enters the air barrel, passes through the poppet, and enters the balance chamber and the anti-set chamber.
- The anti-set chamber is pressurized by the in-coming air, increasing the space between the balance chamber and the anti-set chamber. This pushes the spring seat stop against the spring, and provides a non-moving surface against which the spring can "push" or apply force.
- As long as pressure is present in the anti-set chamber, the spring will be able to apply force between the chamber and the poppet. In this configuration, the poppet forms a tight seal against the knife-edged orifice.

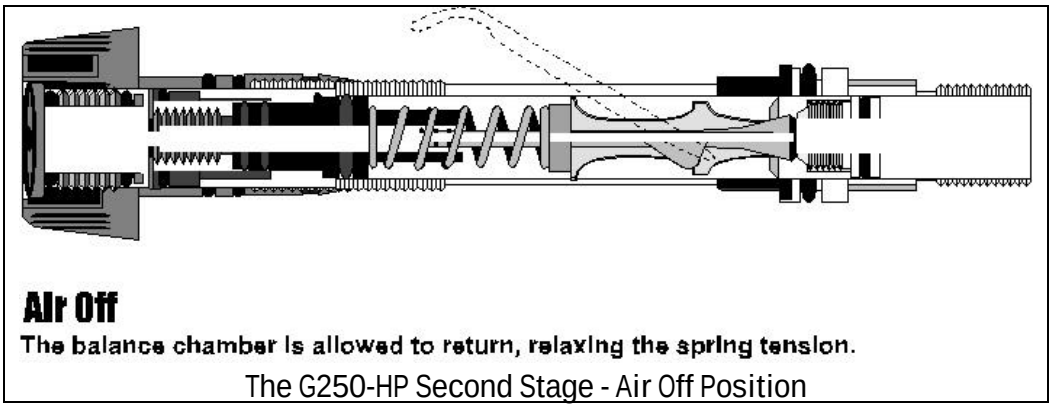


The G250-HP Second Stage - Air On Position

When the air is turned off and the regulator purged:

- Air pressure drains from the anti-set chamber, leaving through the poppet-orifice seal.
- Because there is no longer a force pushing the spring seat stop tightly against the spring, the spring tension relaxes, and the poppet no longer forms a tight seal with the knife-edged orifice. This provides an *automatic* and pneumatically controlled anti-set feature.
- While the seal is no longer completely airtight, the poppet may still rest against the knife-edged orifice, or may back away *slightly*. This means it is unlikely that water will enter the second stage hose, if the regulator is rinsed without the use of an air supply. However, for divers wishing to rinse their second stage while no air is connected to it, simply threading the inhalation effort adjustment knob will apply tension to the demand spring, and form an air tight seal between the orifice and the poppet seat.

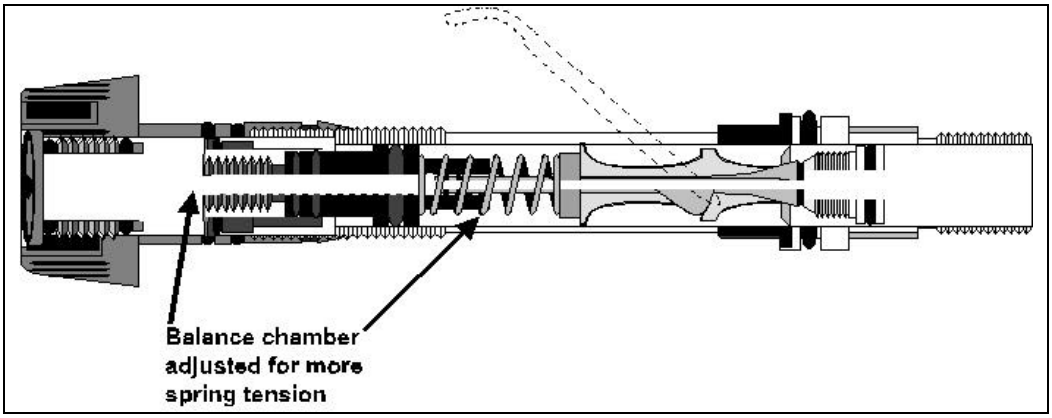
- This configuration prevents the poppet seat from being "engraved" while it is in storage. The poppet no longer "takes a set" with the knife-edge. The performance of the poppet is much more consistent throughout the service life between required warranty overhauls.



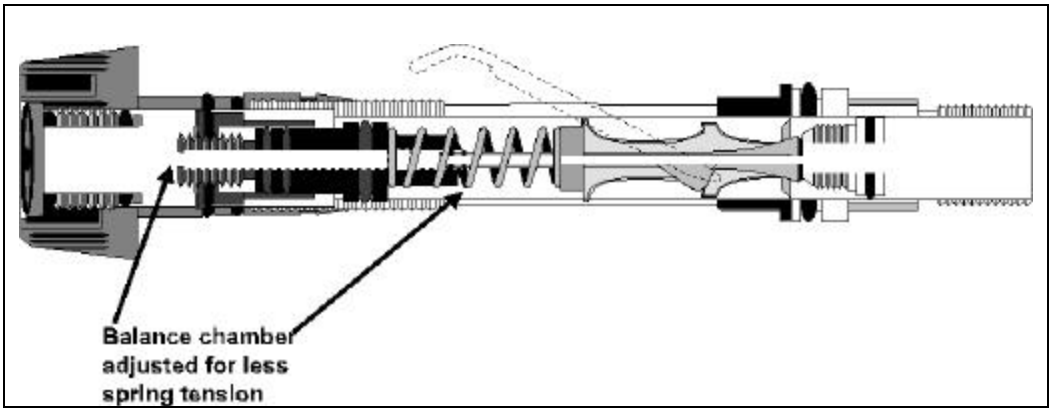
The G250-HP Second Stage - Air Off Position

The Balance Chamber Adjustments Available on the G250-HP

With the addition of the adjustable balance chamber, the G250-HP can be made to have an even lower cracking effort than before. The balance chamber adjustments operate by increasing or decreasing spring tension to fine tune and reduce the breathing effort. These are technician-made adjustments.

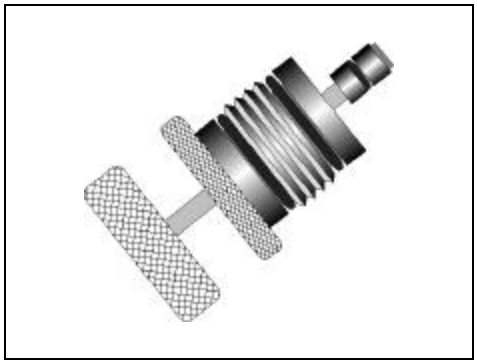


When the balance chamber adjustment is threaded inward, the tension on the demand spring is increased slightly. This position can be used to make fine adjustments which will stop a slight free-flow, following overhaul.



To decrease the cracking effort, the balance chamber can be threaded outward slightly, decreasing the spring tension and making the mechanism more sensitive to the movements of the diaphragm.

This adjustment is made using the Balance Chamber Adjusting Tool (p/n 43.300.227).



The G250 HP is available now from SCUBAPRO and replaces the G250 (11.254.000). The following configurations are available:

Description	Part Number
G250-HP Second Stage	11.264.000
G250-HP/MK 20UL	12.670.000
G250-HP/MK 20	12.671.000
G250-HP/MK 14	12.672.000

If you have any additional questions, please contact:	***SCUBAPRO Technical Services*** ***1-800-382-2211***

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SCUBAPRO G250 HP

Selling Features	Benefits
• Meets worldwide design standards	Parts and service are available worldwide, regardless of location
• New housing design with more physical space *inside* the regulator	Easy movement of exhaust air, reducing exhalation effort
• High flow exhaust valve	Minimal effort required for exhaust - reducing even more the "work of breathing."
• Diver inhalation effort control	Diver can adjust amount of effort required to initiate airflow. Critical in currents and wave surge situations
• Large inhalation effort adjustment knob	Easy for the diver to grip during use, even while wearing gloves
• ***Two*** anti-set features: One built into the purge button for manual operation, the other pneumatically operated automatically when the air is turned off	Preserves the integrity of the poppet for more consistent performance throughout the service period.
• Technician-reversible "VIVA" flow vane	Provides the diver with the choice between a natural flow of air, and extra venturi.
• Diver-adjustable VIVA flow assist	Diver can adjust the amount of resistance to air flow following initial cracking effort
• Air balanced linear flow valve with an adjustable balance chamber	Minimal work required to initiate air flow
• Limited Lifetime Warranty	Regulator is good for the life of the original owner if maintained properly as described in the materials accompanying the regulator.