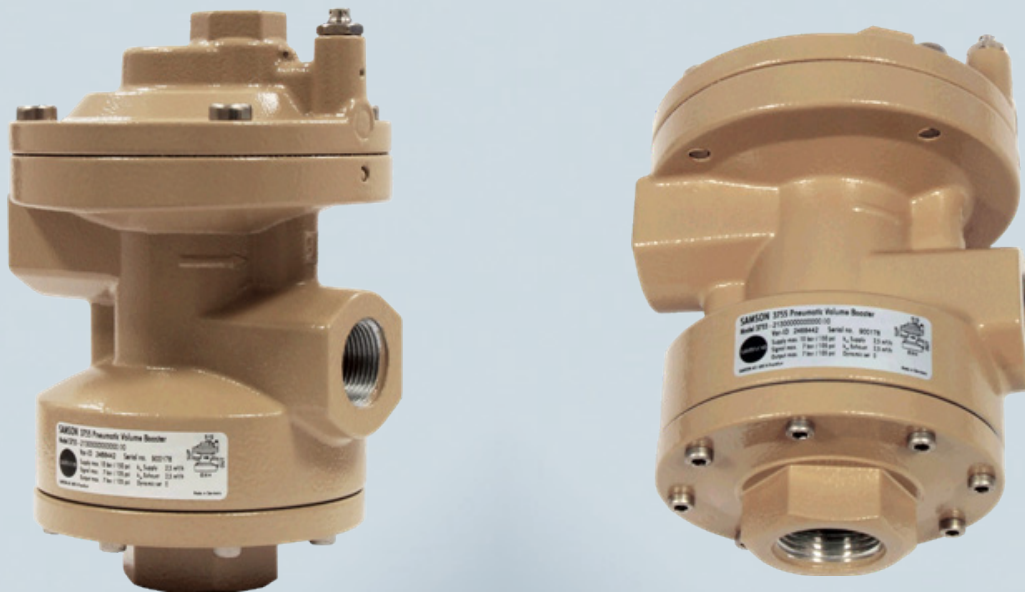
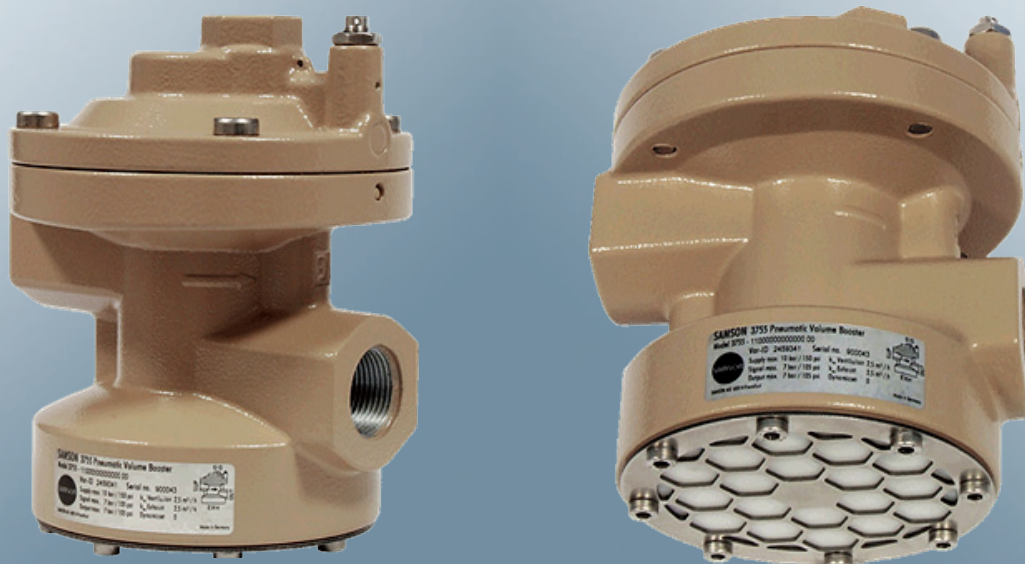


10.8 Pneumatic boosters



Type 3755-2 Version with flanged-on exhaust port



Type 3755-1 Version with threaded exhaust air connection

Particular in association with electro-pneumatic positioners or electro-pneumatic transducers with only a very low air capacity, pneumatic boosters are often indispensable. Smallest forces in these devices must be sufficient to activate the flapper-nozzle system of the electro-pneumatic converter. The volume of the cascade pressure (which depends on the small gap between flapper and nozzle) is, however, very limited through the tiny restriction and subsequently a pneumatic booster is always compulsory.

Pneumatic boosters are classified into **pressure boosters** and **volume boosters**.

Pressure booster

While volume boosters do not change the outlet pressure at the balanced state compared to the reference (inlet) pressure, a specific amplification factor is associated with a pressure booster. Commonly found are inherent gain factors e.g. 2:1 or 3:1 for pressure boosters. Structurally this is managed through different diaphragm areas in the interior of the booster. This allows, for instance, to activate a pneumatic actuator with a signal range of 0.4 to 2.0 bar directly from an electro-pneumatic I/P transducer having a standard signal range of 0.2 to 1.0 bar, if a following pressure booster with an inherent gain of 2:1 is employed. Besides the desired effect of pressure amplification, this kind of booster usually increases the volume flow too. This is normally an acceptable side effect.

Volume booster

This booster device strictly follows the input signal which represents the reference variable for any volume booster. While the inlet pressure fills a small chamber and requires only a very small air capacity, the output signal of the volume booster is amplified by a factor of 100 or more. This requires normally a separate inlet connection with a relatively large cross-sectional area of fittings and tubes in order to guarantee a fast filling and/or purging of the pneumatic actuator. Quite common is the integration of the flapper/nozzle system into the pneumatic volume booster (Figure 10.8.2.-1 and Figure 10.8.1.-1).