

Consumer Solutions

SiLASTIC™

Turbocharger hoses fabrication

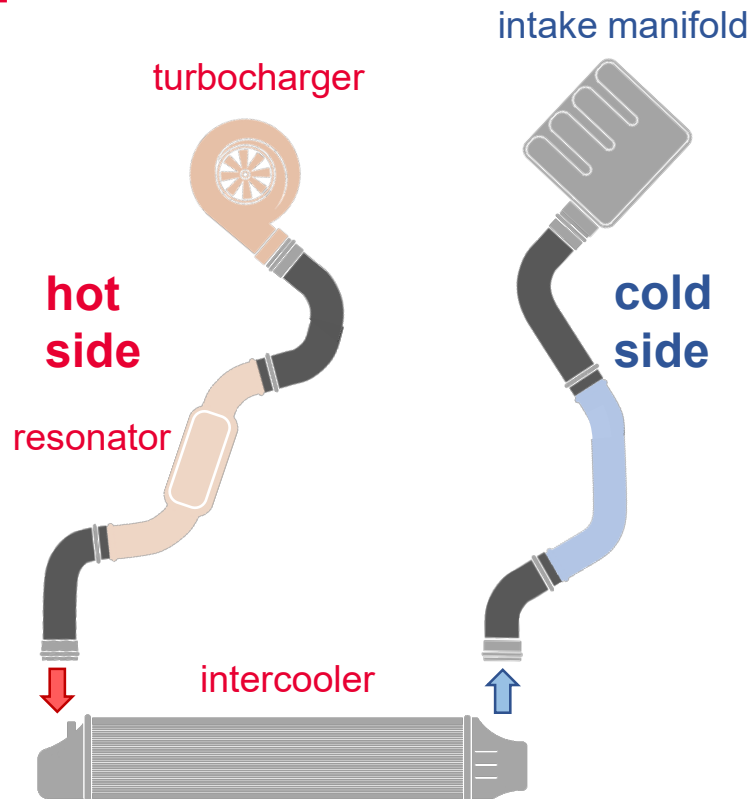
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What is a turbocharger hose?

In compressed air circuit from turbocharger to engine flexible rubber hoses dampen vibrations transmission to the intercooler fixed to the chassis.

In circuit **hot side** high temperature, vibration and pressure require hoses to be made with high performance elastomers and strong textile reinforcement.

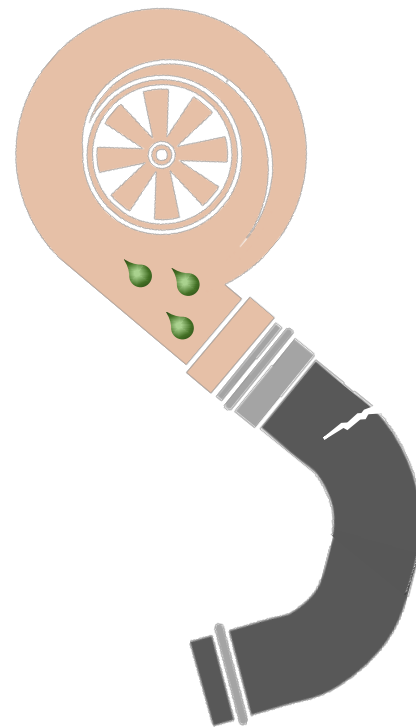
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Why use silicone and fluorosilicone rubber?

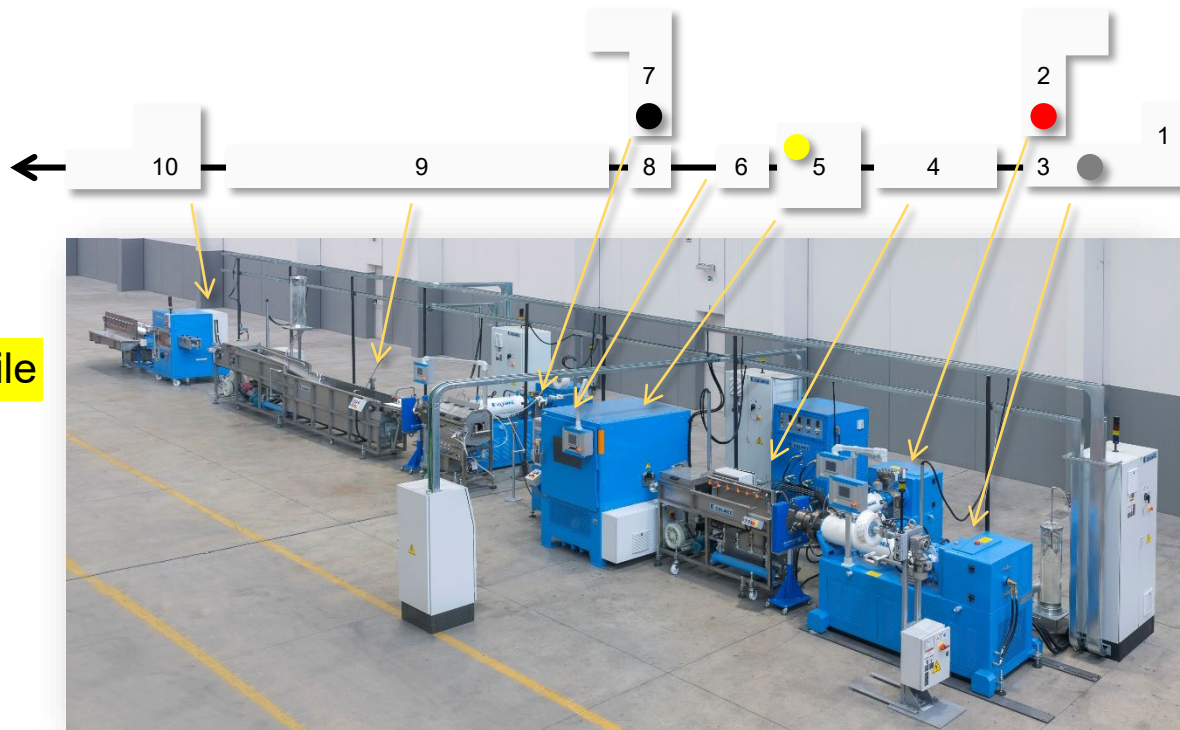
When **hot side** circuit temperature is around **200°C**, **Silicone Rubber** is the material of choice. However, as some engine oil, from turbocharger shaft lubrication, is present in the air stream, an internal fluorinated liner is necessary as a barrier to avoid hose wall swelling and subsequent possible rupture.

Thanks to its excellent oil resistance **Fluorosilicone Rubber** is a preferred option for the liner. Also, its flexibility is important to the fabrication methods (extrusion or calendering) and to final hose mechanical performance.



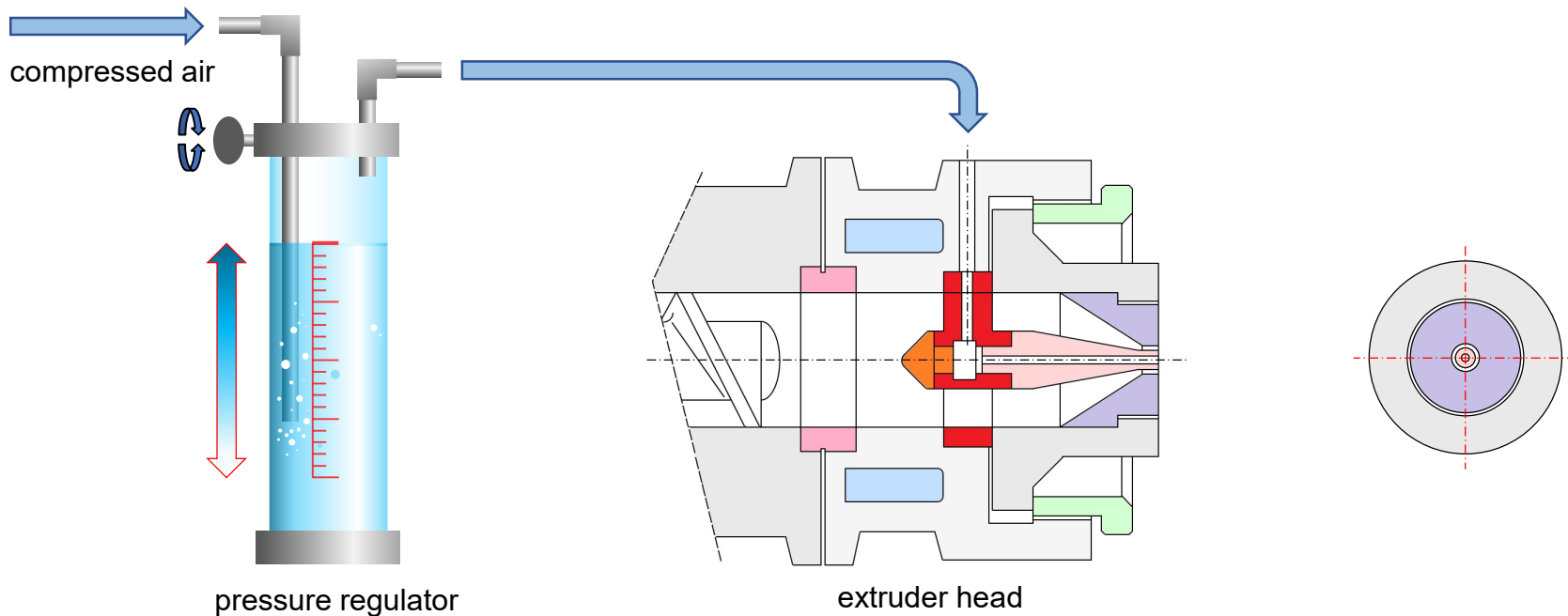
Multilayer TCH co-extrusion line lay-out

1. Extruder 1 – Mid layer
2. Extruder 2 – Liner
3. Co-extrusion head
4. Cooling
5. Knitting/braiding unit – Textile
6. Caterpillar
7. Extruder 3 – Outer layer
8. Extrusion «T» head
9. Cooling unit
10. Cutting device

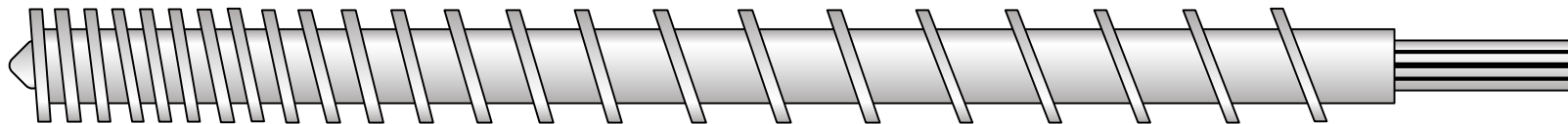


Extrusion w/o mandrel support

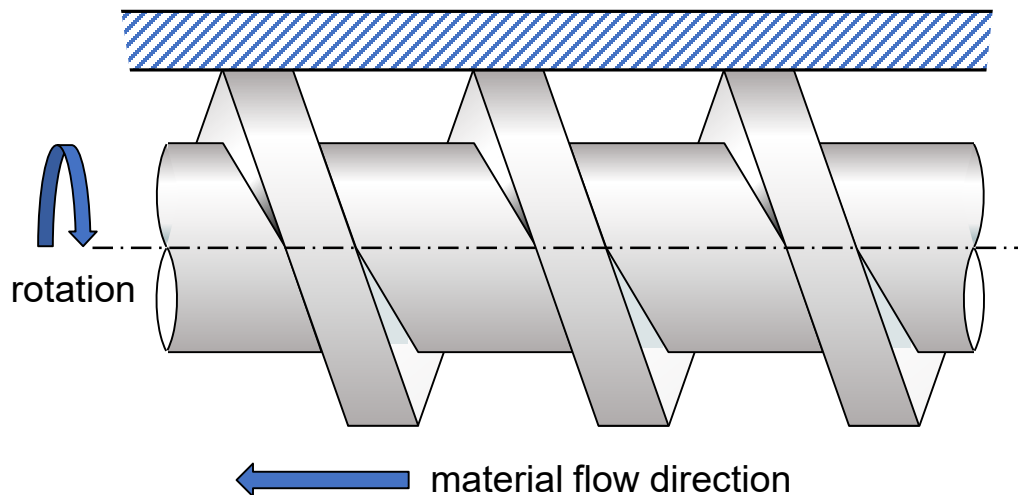
Uncured hose air support is key to avoid it to collapse under textile reinforcement pressure



Silicone rubber screw design

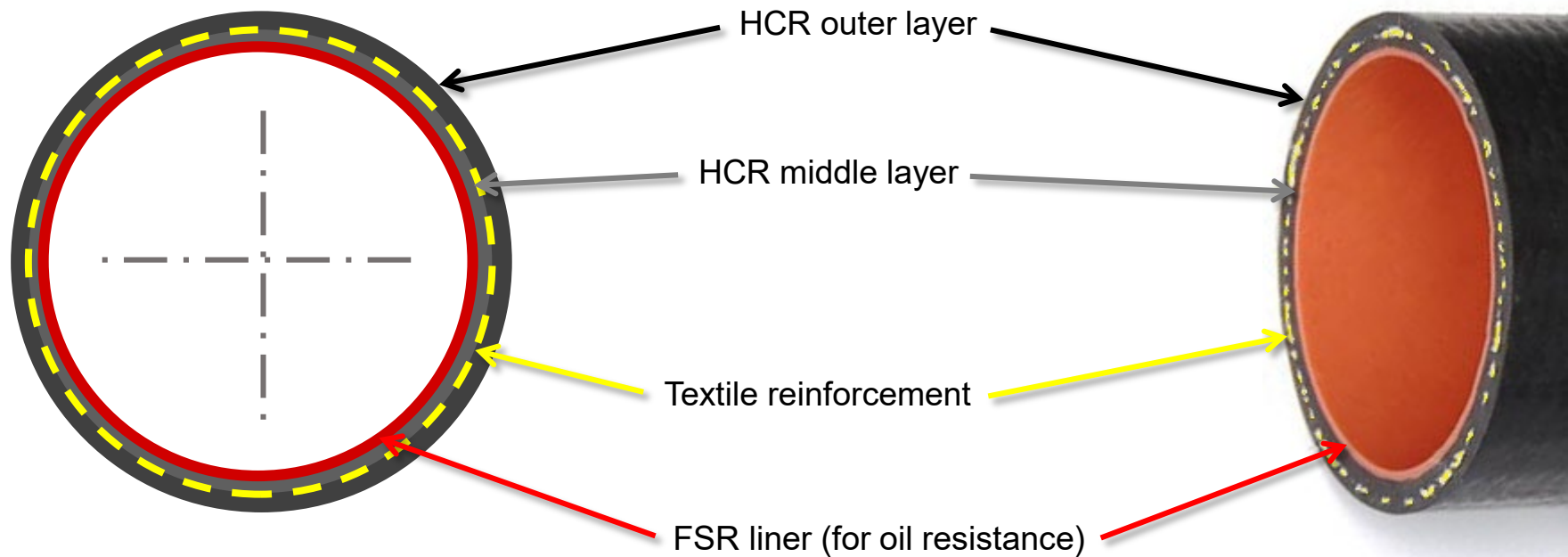


- Flight width and pitch should progressively decrease towards the extruder head (here left) to help compression necessary to pull air backwards
- Minimum recommended screw L/D ratio 12:1

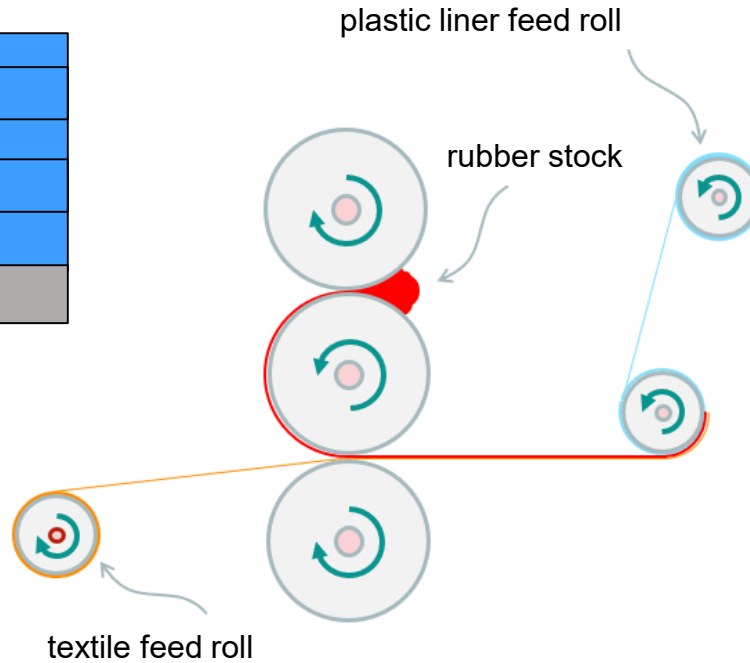
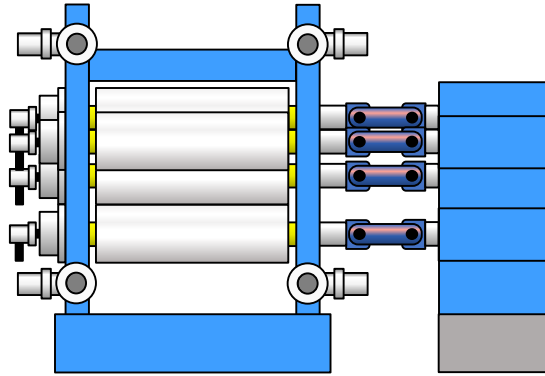


Extruded turbocharger hose lay-out

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Calendering silicone + textile for wrapping method **SiLASTIC™**



Special compounds for TCH fabrication

- Thanks to a patented adhesion technology, specific but not limited to Turbocharger Hoses extrusion process, Dow has developed special FSR and HCR compounds adhering to each other when cured at same time.
- Two preferred grades are:

Fluorosilicone compound	SILASTIC™ FCE 50-4948 SA RED
Silicone compound	SILASTIC™ HCE 70-4770 SA BLACK
- Adhesion can only be obtained by coupling these special Dow compounds together.





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