
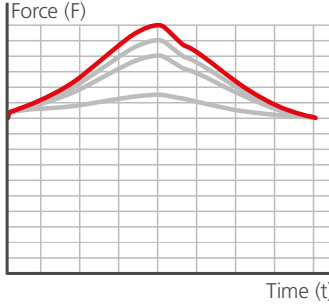

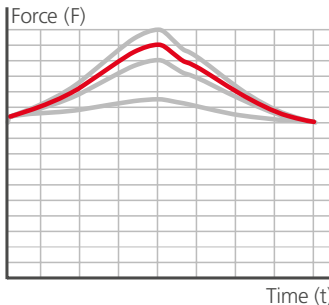

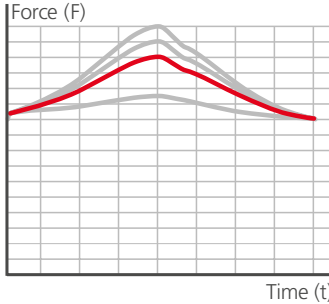
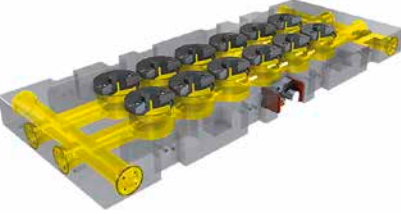
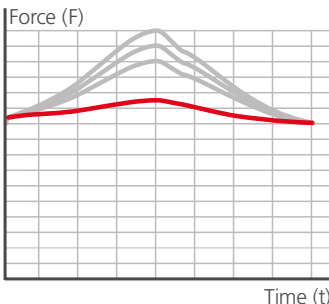
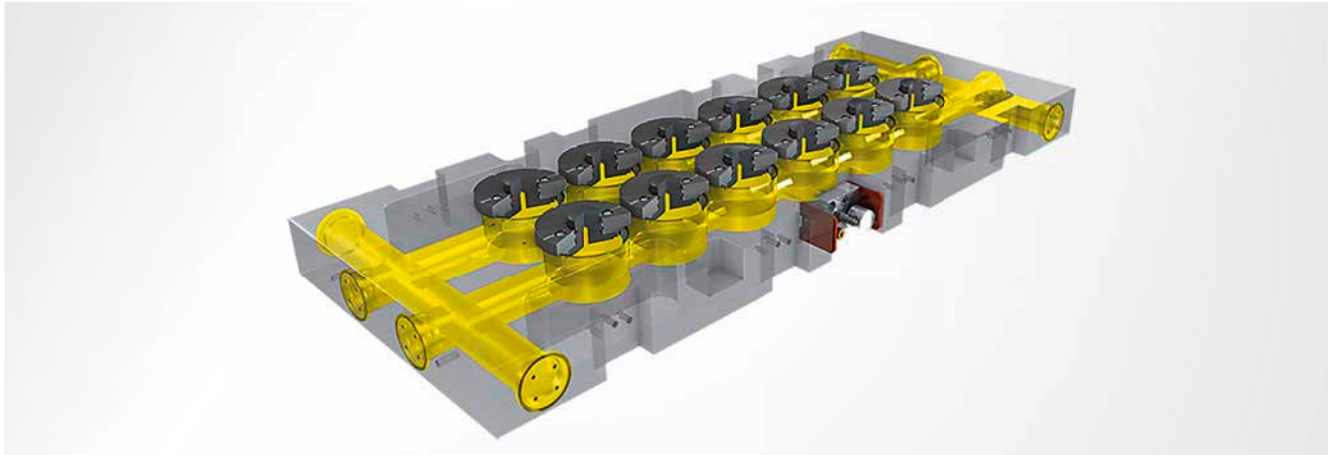


Overview

Nitrogen systems are heavy-duty and flexible alternatives to mechanical spring elements. They provide optimal solutions for complex projects with various compressive forces and the same spring force. They are compact and require less installation space than mechanical spring elements. With nitrogen systems, the installation height of the tools can be reduced and the force progressions optimised. Whether it concerns the selection and design of the nitrogen cylinders, combined solutions or individual manifold plates – with STEINEL nitrogen systems, you will always have technically and economically optimal tools.

Systems	Force curves	Application
nitrogen cylinders 	steep force increase 	They are used as standardised spring elements when large forces are required within small spaces.
Composite tube systems 	levelled force increase 	They are used to ensure that the same pressure prevails for all nitrogen cylinders connected within the system. It can be adjusted using the control panel. The nitrogen volume increases through the tube connections, and this results in a levelled force increase. Composite tube systems are flexible and can also be retrofitted.
Composite plate systems 	low force increase 	They are used in customer-specific solutions and also effect a uniform pressure at the nitrogen cylinders, which can be adjusted using the control panel. In addition to the reduction of the sealing points with respect to the composite tube systems, a greater increase of the nitrogen volume is achieved through the connecting boreholes in the plate. This results in a low force increase.
Manifold plate systems 	very low force increase 	They are always developed according to customer specifications and also guarantee a uniform pressure at all cylinders, which can be adjusted using the control panel. Through the integrated nitrogen buffers (volume boreholes), manifold plate systems achieve an optimal use of space as well as a very low force increase.

The FEM-calculated and TUV-approved design provides the highest safety standards in accordance with the PED directives (Pressure Equipment Directive). Starting at a nitrogen volume of 1 litre, pressure equipment is subject to PED directives and must also be tested and have a CE mark. Additional regulations, installation instructions etc. for our products can be found under www.steinell.com » **Service** » **Operating instructions**.



Manifold plates are constructed and manufactured according to customer specifications. They consist of a metal plate with volume boreholes as an integrated nitrogen buffer, space-saving manifold cylinders and control panels. The nitrogen buffer's large volume allows for a very low force increase.

Drawing cushion

STEINEL also provides machine-bound drawing cushions as a special form of manifold plate. The spring forces are transmitted through guide pins to the correct location in the tool. With phenomenal lifetimes, a high number of cycles and a very low mass to be moved, nitrogen drawing cushions from STEINEL are clearly superior to conventional pneumatic drawing cushions in terms of dynamics, durability and heat generation.

Advantages

- Manifold plates are distinguished by an extremely flat force curve in comparison to other nitrogen systems.
- The standardised system pressure guarantees a uniform force at all manifold cylinders.
- Manifold plates are distinguished by a low temperature increase.
- The maximum filling pressure of 150 bar and the permissible pressure increase of a maximum of 20 % ensure a flexible, tool-friendly production process.
- Control panels, burst protection and pressure controllers are also possible, just like for the composite systems.
- One of the burst protection systems integrated within the control panel provides maximum safety. Individual nitrogen cylinders can also be equipped with burst protection.
- The use of a pressure controller is optional.
- If the force increase has to be further reduced, the nitrogen volume can be increased via the connection of an external storage buffer.

Specific customer requirements are already the main focus with regard to individually designed manifold plate systems and drawing cushions. If testing or repeat testing by a certified entity is required before commissioning, STEINEL will happily provide support for the organising it. If testing by a person qualified in accordance with the operational safety directive (BetrSichV) is required, it can be carried out by STEINEL employees upon request.

Please observe the respective national regulations for the operation of pressure equipment.

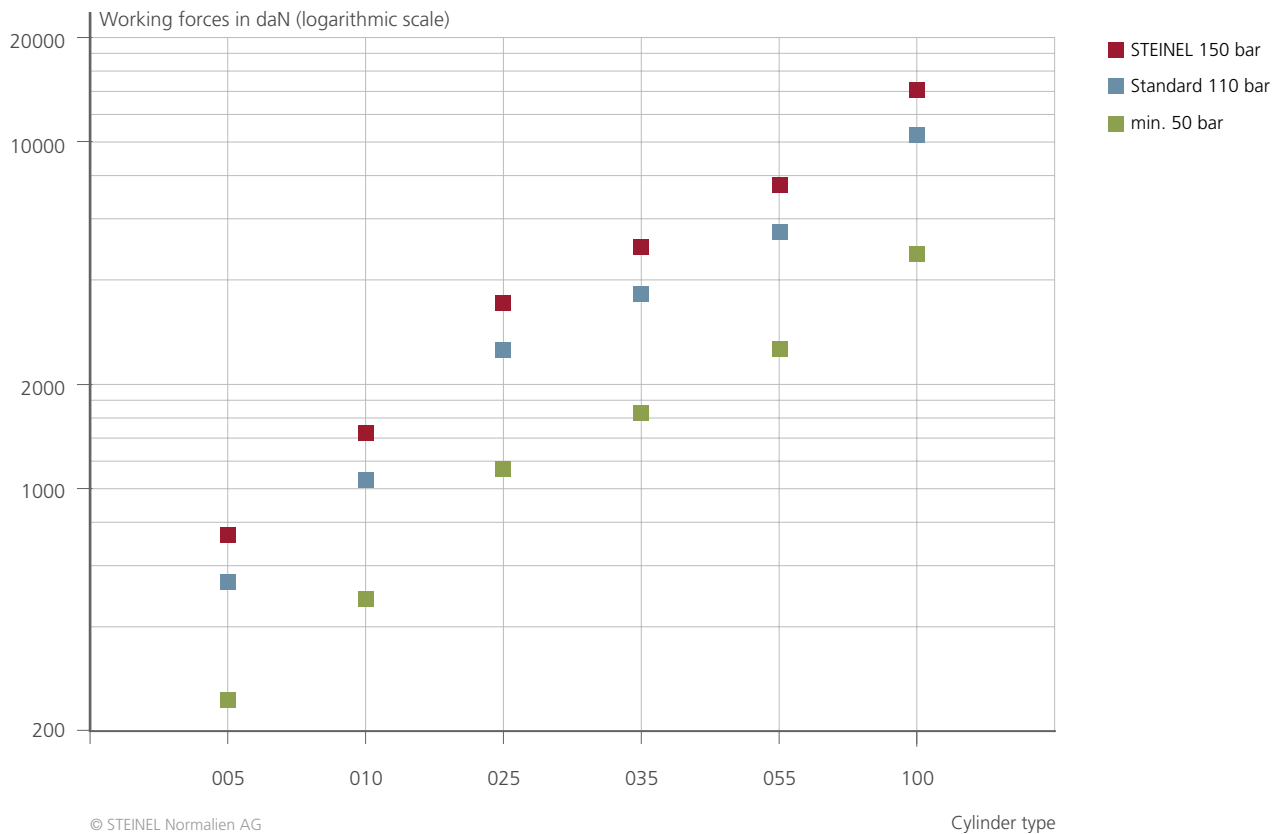
Operating parameters	
pressure medium	gaseous nitrogen N ₂ min. 2.8
permissible temperature (TS)	
min.	5 °C
max.	75 °C
Filling pressure	
min.	50 bar
max.	150 bar
max. permissible pressure (PS)	180 bar

Manifold cylinders



STEINEL manifold cylinders are available in three variants (high, normal, low) and in six different cylinder types each.

Manifold cylinder ST8841 – filling pressure-dependent working forces



Operating parameters	
pressure medium	gaseous nitrogen N ₂ min. 2.8
permissible temperature (TS)	
min.	5 °C
max.	75 °C
Filling pressure	
min.	50 bar
max.	150 bar
max. permissible pressure (PS)	180 bar

The components are to be used in accordance with the Pressure Equipment Directive (PED). Starting at a volume of 1 litre, pressure equipment in which manifold plate components are integrated must be tested and have a CE mark.

Control panels



Standard version

Mini version

Maxi version

Type	Version	Burst pressure bar	Connection possibilities				Remarks
			G 1/8" Tube system	G 1/4" universal	Connections for composite plate	Connections for manifold plate	
ST8845-01-01	standard	180	3	2	–	–	<ul style="list-style-type: none"> with tube connection to manifold plate both rear boreholes with sealing plugs
ST8845-32-01	standard	180	3	2	–	1	<ul style="list-style-type: none"> Direct installation at manifold plates from 32 mm width possible rear upper borehole with sealing plug Connection possibility via rear lower borehole
ST8845-80-01	standard	180	3	2	–	1	<ul style="list-style-type: none"> Direct installation at manifold plates from 80 mm width possible rear lower borehole with sealing plug Connection possibility via rear upper borehole
ST8845-8	mini	180	3	2	–	1	<ul style="list-style-type: none"> only for direct installation at manifold plates
ST8845-02-01	standard	450	3	2	2	–	<ul style="list-style-type: none"> for all composite systems
ST8845-9	mini	450	3	1	1	–	<ul style="list-style-type: none"> for all composite systems
ST8845-444	maxi	450	12	1	–	–	<ul style="list-style-type: none"> only for composite tube systems