

# TechTIPS

Digital Ebook | A Design World Resource

# CYLINDERS

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**AND MORE!**

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**NASON**

NEW THINKING

# SPECIFYING APPLICATION— SPECIFIC CYLINDERS



Nason's **space-efficient pneumatic and hydraulic cylinders** are engineered smaller and stronger for a variety of uses, while their **custom-build designs** ensure there's no one-size-fits-all approach. With Nason, your specific application gets the perfect solution.

Our pneumatic and hydraulic cylinders feature a standard amount of power in a much smaller, more efficient package. Our **compact, space-saving cylinders** come with an aluminum or stainless steel housing, custom-drilled to match your exact specifications.

In fact, every part of the cylinder is assembled by our engineers with **your specific needs in mind** — and every configuration is designed to minimize breakaway and running friction, promoting efficiency and longer operational life.

Our completely in-house design and assembly process ensures that your cylinders can be processed and delivered quickly — **often shipping within only 24 hours**. And our experienced engineers are ready to help you find the cylinder that's perfect for your next application.

# DEBUNKING COMMON MYTHS ABOUT SPECIFYING SPECIAL CYLINDERS



Download full whitepaper here.

1

**MYTH:**  
Custom cylinders are **more expensive** (even cost-prohibitive) than standard ones.

**FACT:**

Because standard cylinders may require extra parts in order to properly mount the piece, they can **increase costs** by as much as **10-15%** on a given project. While special cylinders may be comparatively more expensive on the front end, the **savings realized over the life** of the part are significant, with no need for extra engineering time or additional materials.

The advantages and disadvantages of selecting standard cylinders or special cylinders are largely **determined by the application itself**, but recent manufacturing innovations have made it possible to choose special cylinders when it may have been impossible before. Yet many myths persist about special cylinders — namely, how much they cost, how long it takes to produce them and whether they can be replicated.

In today's market, all three of these perceived **challenges are being directly addressed** by special manufacturers — and engineers everywhere are discovering the benefits of conveniently ordering application-specific cylinders within the timing and scope of their projects. With more complex and precise applications than ever, special manufacturers have largely eliminated previous obstacles to efficient production of customized cylinders — making it easy for engineers to **get exactly the part they need, when they need it, at a competitive price.**

2

**MYTH:**  
Custom cylinders **take much longer** to produce.

**FACT:**

When unique circumstances arise, engineers often find themselves designing around standard cylinders, adding considerable time to a project. But with many of today's manufacturers using manual equipment to produce low quantities without breaking into larger production runs, they can turn around a special cylinder in **roughly the same amount of time as a standard cylinder** — eliminating the need to work around unwieldy parts.

3

**MYTH:**  
Spare or replacement parts for custom cylinders aren't **readily available**.

**FACT:**

Manufacturers are often able to produce spare or replacement parts for application-specific cylinders in **less time** than it took to build the original part. With **streamlined processes** and manual equipment at their disposal, these manufacturers are ensuring a **readily available supply** of additional parts for every specialized cylinder they design and build.

# THE RIGHT MANUFACTURER FOR THE RIGHT CYLINDER

Today's design engineers have a number of options when it comes to choosing a manufacturer to specify the perfect cylinder. So why choose Nason?

## A smarter approach to cylinders: yours

At Nason, we start with real questions, not pre-packaged answers. What is the ideal cylinder solution for your application? How can we help you solve your biggest design challenges? What would work best for you? Once we understand exactly what you need, we get to work designing and engineering the perfect cylinder for you.

## Setting the industry standard

Our cylinders are the most compact, space-efficient designs available — so instead of building around an unwieldy component, our smaller footprint gives you more room to work with.

## Precision manufactured

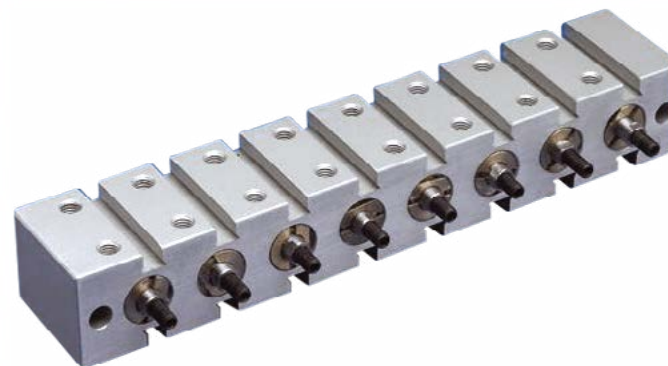
Unmatched attention to detail. A perfectly concentric bore. Extended product life. That's the Nason difference — cylinders that work harder longer, saving you time and money.

## Designed by you

Forget designing around a standardized component. With Nason, you get the precise specifications you need — putting you in control and guaranteeing that the final product fits your application.

## The cost-effective choice

Not only are Nason cylinders a better value based on initial purchase price, they continue to deliver cost savings over the product's entire life cycle.



Located in Upstate South Carolina, Nason operates a 50,000-square-foot manufacturing facility that is home to a team of expert design engineers and customer service specialists with decades of combined experience. After more than 60 years, Nason is a proven leader in space-efficient electrical, hydraulic and pneumatic component manufacturing.

Our switches, compact cylinders and transducers have set a new industry standard for quality, precision manufacturing, efficiency and flexibility — yet our biggest point of pride is our commitment to taking on new challenges for our customers. We strive to be a flexible partner — always innovating, always customizing solutions, big and small.

In fact, we're always willing to create exactly what a customer needs. That's why we're proud to offer a minimum order of just one — any order, any piece, any time. It's at the core of what we do, and we believe it's the best way to serve our customers.

To learn more about Nason, visit [www.nasonptc.com](http://www.nasonptc.com).



Take a closer look at Nason precision — request a free sample today!

# PRODUCT HIGHLIGHT:

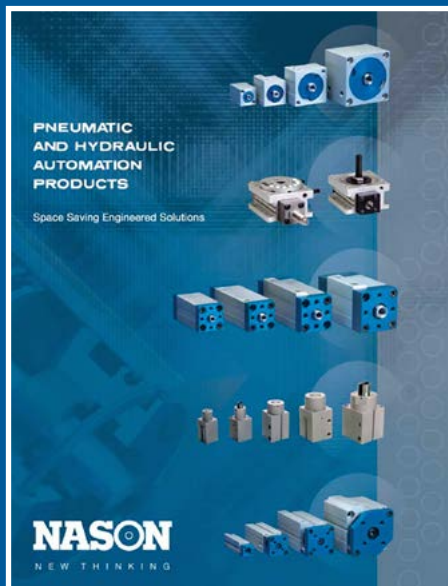
## SC Series Stopper Cylinders

Nason's SC series stopper cylinders were designed for today's demanding conveyor systems. With more power in a smaller package, the SC series is offered in seven different mounting styles with three different rod end configurations to fit into almost any design situation.

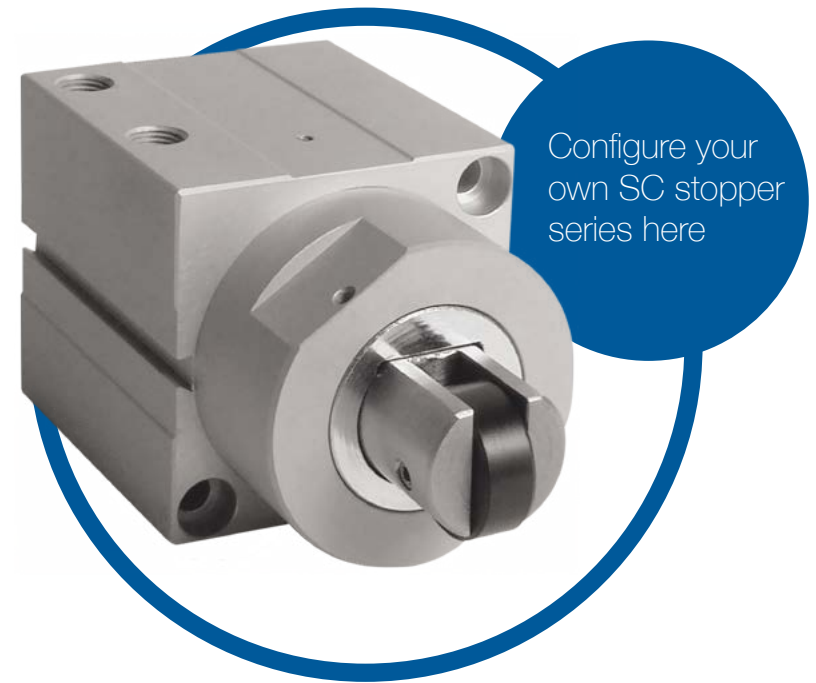
- Compact yet more powerful than comparable competitive products
- Incorporates 60,000 PSI tensile strength bearings with oversized 100,000 PSI yield strength rod for maximum stopping power
- Metric in design, both bore and rod
- Offered in inch and metric mounting and porting with five different threaded mounting options and two different flange mounting options
- Easily customizable
- All SC series cylinders are field re-buildable

### Bore sizes:

- 20mm (3/4")
- 25mm (1.0")
- 32mm (1-1/4")
- 40mm (1-1/2")
- 50mm (2.0")



To see what other products Nason has to offer, view the cylinder catalog. But remember, if you don't see exactly what you're looking for, we'll create a custom-engineered cylinder just for you.



## CASE STUDIES:

1



### Innovative Guided Cylinders

This customer needed a cylinder that could withstand adverse conditions. Part of the company's production process is to fill battery casings with acid, a process during which, acid often spills over the edge of the casing and onto the guided cylinders. The standard cylinder they were using was made of aluminum, which disintegrates within a short amount of time when exposed to acid. Stainless steel was a better option, but still would not eliminate the issue.

Our team concluded that since battery casings are made of plastic, the guided cylinders should be, too. Therefore, we created a plastic cylinder that the company washes and reuses daily, with no corrosion.

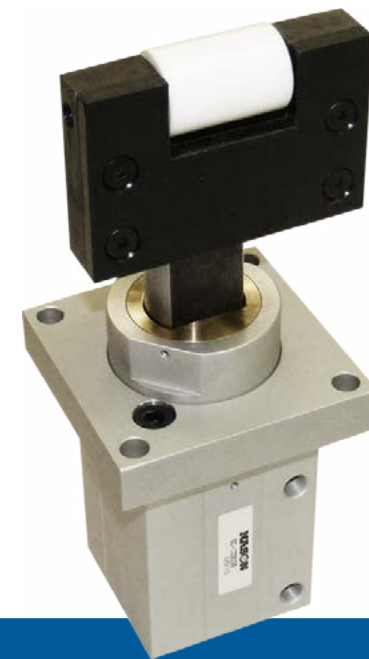
2

### Stronger Stopper Cylinders

A company that manufactures refrigerators experienced frequent issues with their stopper cylinders.

During this company's production process, refrigerators travel on a pallet along a conveyor belt. These pallets are stopped at various points along their route by stopper cylinders. The company's existing stopper cylinders were damaging the pallets over time and had to be replaced frequently.

Nason worked with the manufacturer to design a stopper cylinder specifically for their production line that caused no harm to the pallets. Additionally, the component was designed to fit within the footprint of the existing machine, so there were no modifications needed to the customer's equipment. The Nason stopper cylinders bolted directly to the machine and kept the manufacturer from experiencing down time as a result of repurchasing materials or redesigning the machine.

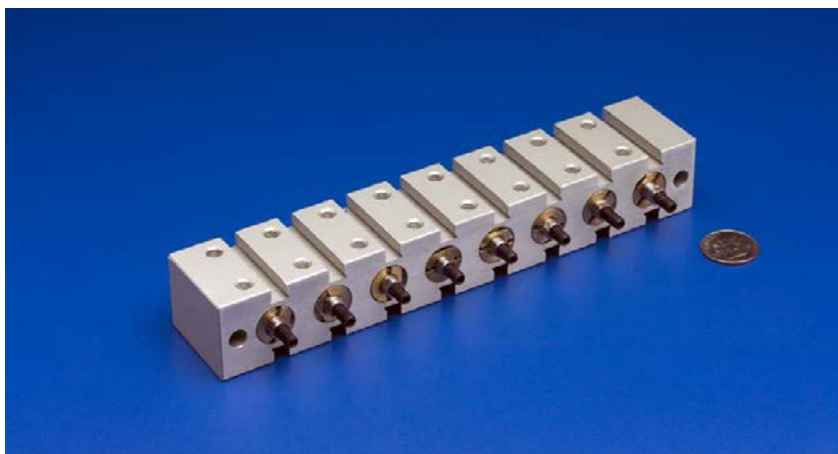


[Read other case studies here](#)

# WHAT ARE COMPACT PNEUMATIC CYLINDERS?

By Paul Heney, Editorial Director of [PneumaticTips.com](http://PneumaticTips.com)

Compact cylinders have been shortened relative to standard pneumatic cylinders. They may take up to 50% less space than the normal, while still maintaining the capacity to exert the same force as their larger counterparts. Important parameters for the proper selection of a compact cylinder can be broken up into general, dimensional, performance, material, features.



The “Pancake cylinder” was the original compact pneumatic cylinder, invented by Al Schmidt in 1958, to fill a need for force in a tight, enclosed space. The basic intent was to get the most stroke in a short overall length using common machined parts and seals. Through the years, this design has been further developed, with many features and options to satisfy an extreme variety of customer applications. This round body cylinder has a smooth, clean outside diameter for ease of machinery cleaning. Even though initially used for strokes less than 1-in., manufacturing methods have allowed increased strokes to as much as 4-in. Non-metallic rod bushings and piston bearings can accommodate extreme or unforeseen loads to provide long term durability.



Other compact cylinders vary quite a bit. They can be square shaped, offer numerous mounting features and can be placed with adjacent cylinders at a close center-to-center dimension. Piston bearings, materials, hard anodized bore and chrome plated rods can enhance cylinder capability for unexpected side loads and long term durability. Up to 6-in. strokes can be accomplished with extruded body material. Other features may include metric dimensions, extruded sensor mounting, and non-rotating styles.

## Selecting a compact cylinder

Application data needed for sizing a compact cylinder and choosing the best component:

- Operating psi, force required ( $\text{Force} = \text{Pressure} \times \text{Piston Area}$ )
  - Stroke
  - Preferred mounting, foot print
  - Spring return or double acting
- Other items to consider:
- Ambient temperature
  - Media temperature
  - Environment
  - Excessive loads other than required axial force
  - Load guiding (non-rotating) requirement

# MAKING LIFE EASIER – ONE CUSTOMER AT A TIME



**Dave Maurer**

Air Engineering & Supply

Our goal is simple: to create exactly what you need when you need it. But don't take our word for it. See what real Nason customers are saying about our custom cylinder solutions.

### **Quality at a Competitive Price**

"Nason produces high-quality cylinders at a very competitive price. Everyone is working with a tight budget and an even tighter timeframe. Every bit of savings is valuable.

Nason is also willing to produce small quantities of non-standard components to satisfy a customer's needs and requirements. And I have never had an issue with defective quality or workmanship in a cylinder that we've purchased."



**Mike Schapoehler**

Airline Hydraulics

### **Not just cylinders. Solutions.**

"Nason cylinders are solutions. They are built to fit a design, not to make a design fit the cylinder. Nason will tailor the product to fit any configuration needed for your application. They'll even take a competitive cylinder and redesign it better than the original. And not at a custom price.

The key thing with Nason is they design a high-quality cylinder that isn't going to fail. They are good partners in the design process because they rely on me to give them as much information as I can. And their turnaround time is one of the best I've seen."

## CONTACT US



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