

# NAK Successful Cases of Shock Absorber Seals



ISO-9001/14001  
ISO/TS-16949  
OHSAS-18001



*World Class Brand World Class Manufacturing*



## Contributing to Taiwanese Bicycle

Taiwanese bicycle industry took off in 1950s. Owing to technique breakthrough, quality improvement, and innovative design, Taiwan exported more than 300 million bicycles in 1980 and substituted for Japan as the No.1 exporting country. Nowadays, Taiwan plays an important role in bicycle market. NAK has cooperated with many shock absorber suppliers such as SRAM, HODAKA, DURASHOX, APRO, OHLINS, SR SUNTOUR and etc. for famous bicycle manufacturers in initial stage. After developing various designs of shock absorber seals for bicycles, NAK devoted to expand the market domain and cooperated with several OE manufacturers of motorcycle and vehicle shock absorbers. Behind customer's belief, NAK keeps investing in R&D, quality enhancement and has acquired approvals from many international automotive tier 1 and tier 2 manufacturers of shock absorbers through years.

## Application

The function of shock absorber is to damp the bouncing spring oscillations caused by vehicle rolling or swaying on turns, bouncing on rough road, braking and accelerating. Shock absorbers are developed to do full justice to the vehicle and contributed to comfort and good driving characteristics.

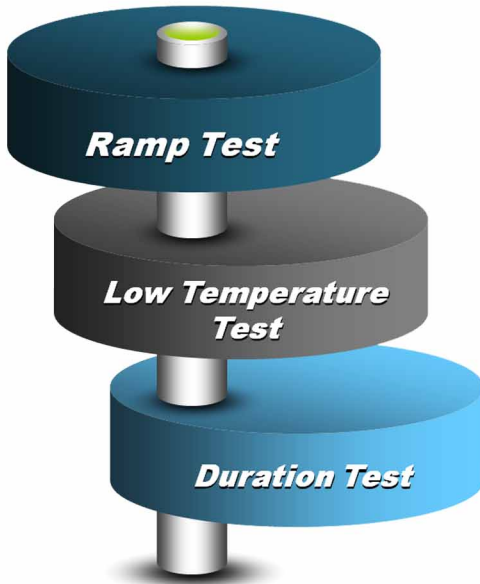
Shock absorber seals can be simple or complex according to the applications including mono-tube, twin-tube, struts, gas-pressurized for motorbikes, passenger cars, light, medium, heavy-duty trucks, and industrial applications. Many modern shock absorbers use a combination of pressurized gas and oil. Seals for these applications typically include a primary seal lip, a contaminant exclusion lip, and a check valve to prevent excess pressure build-up as the shock absorber is cycled. Shock absorber seal is positioned between piston rod and tube. It is important that seals are not failure in use, since they must keep out contaminants at the same time as preventing the oil from leaking out during the reciprocating motion of the piston rod. NAK researches and develops different elastomeric components with high-performance in resistance to pressures, temperatures and shock absorber fluid or gas according to customer's requirements.



NAK Shock Absorber Seals  
in bicycle fork



# NAK's High Performance Shock Absorber Seals



NAK shock absorber seals are developed through critical design considerations and quality requirements all according international automotive standards.

NAK deploys dynamic testing equipments to investigate the dynamic properties of shock absorber seals through the simulation of original conditions. To support our customers' testing needs in different applications, NAK can conduct a variety of dynamic testing such as service life, stroke length, oil temperature, and rod velocity of the shock absorber.

## NAK Shock Absorber seals have the characteristics:

- 🔥 Prevent leakage of the dampening fluid or gas
- 🔥 Keep out external contaminants during the reciprocating motion of the piston rod
- 🔥 High performance in resistance to wide temperature range
- 🔥 Excellent resistance to high pressures
- 🔥 Work well under high surface velocity
- 🔥 Outstanding resistance to shock absorber fluid / gas



New dynamic testing equipments for more efficient testing procedure.



# Why should I choose NAK sealing solutions?



## Expert and reliable supplier

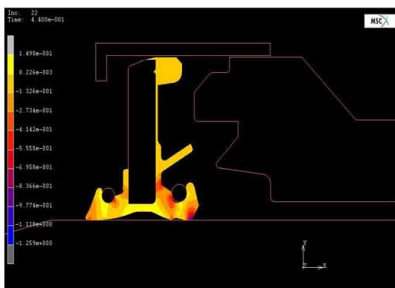
NAK is an ISO-9001/14001, TS-16949 and OHSAS-18001 registered manufacturer of shock absorber sealing solutions. NAK offers sealing solutions which are developed with a series of advanced lab instruments and latest technologies to meet or exceed the ASTM, DIN, BS, and the SAE international standards. NAK also implements 6  $\sigma$  (Six Sigma) management to advance sophisticated products and higher quality for years.

## State-of-the-art Technologies

NAK has a complete line of equipment and ingredient research lab. We implement rubber testing method including processibility of unvulcanized rubber, hardness of plastic and rubber, material tensile strength and adhesive strength, heat aging / oil immersion / fuel immersion / low temperature properties / compression set, rebound properties / microscopy of compound dispersion, FT-IR analysis, and etc.

## Comprehensive products and designs

NAK offers a comprehensive range of shock absorber seal types and sizes including custom-made products. Special elastomer compounds are available to fit different applications. It's cost-effective for customers to find correct sealing solutions for shock absorber applications.



## Dedicated R&D team and support

NAK has a strong and dedicated R&D team to offer technical consultation and support for mutual connection. To enhance R&D capability, NAK has invested in modern software and hardware development of FEA (Finite Element Analysis), SCAD, in house dynamic test center and etc. to build up theoretical analysis for operating conditions, decrease the failure rates during trial runs, and improve the efficiency of new product development.

## Efficiency manufacturing process

NAK has implemented full automation and computerization in manufacturing process by deploying machineries such as automatic spring loading machines, automatic packaging machines, automatic storage system and etc. NAK keeps improving efficiency and capability to satisfy and even exceed requirements from different OE customers.







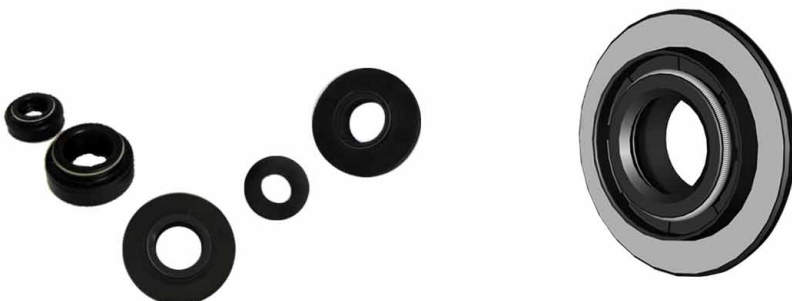
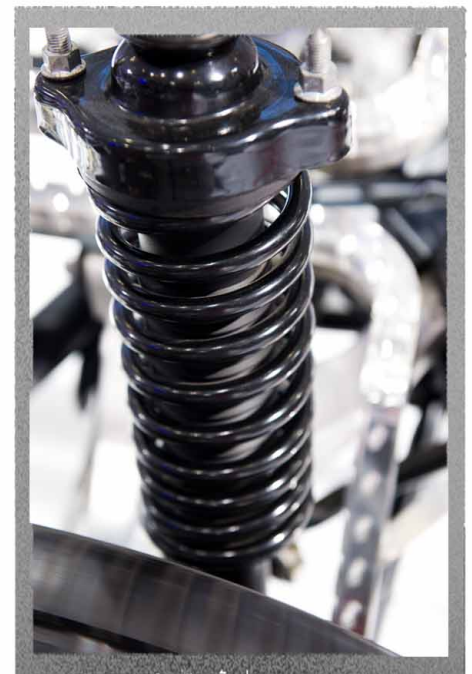
## ***NAK's Partnership with OEM Customers***

With more than 35 years of experience in manufacturing sealing products, NAK has lots of successful projects in shock absorber seals with OEM customers all over the world. Especially in shock absorber applications, NAK has cooperated with several top shock absorber manufacturers for many customized projects.

**In Brazil**, NAK collaborates with COFAP Automotive Suspension which belongs to the Fiat Group and specializes in shock absorbers. The COFAP brand was established in the Brazilian market in 1951, and exports in 98 countries on five continents.

**In Russia**, where weather condition is extreme and temperature constantly goes down to minus degrees, we offer shock absorber seals made of special rubber that has excellent low temperature capability to accommodate operating condition for native Russian cars. NAK provides shock absorber seals for SAAZ which is the largest manufacturer of shock absorbers in Russia supplying to Lada cars. NAK also provides shock absorber seals for AvtoVAZ which is Russia's largest car maker and engaged in the manufacture of passenger cars. NAK also cooperates with some native brands such as PLAZA, PAAZ and etc.

**In India**, as the road condition and traffic can often be challenging to the vehicle especially the suspension system and shock absorbers. NAK seals have proved to be superior both in terms of function and long life. NAK provides shock absorber seals to RAMBAL Limited which is engaged in manufacturing and supplying Rear Suspensions, Shock Absorbers, Dampers, Gas Spring and etc. It not only provides its products to native Indian market, but also to abroad.



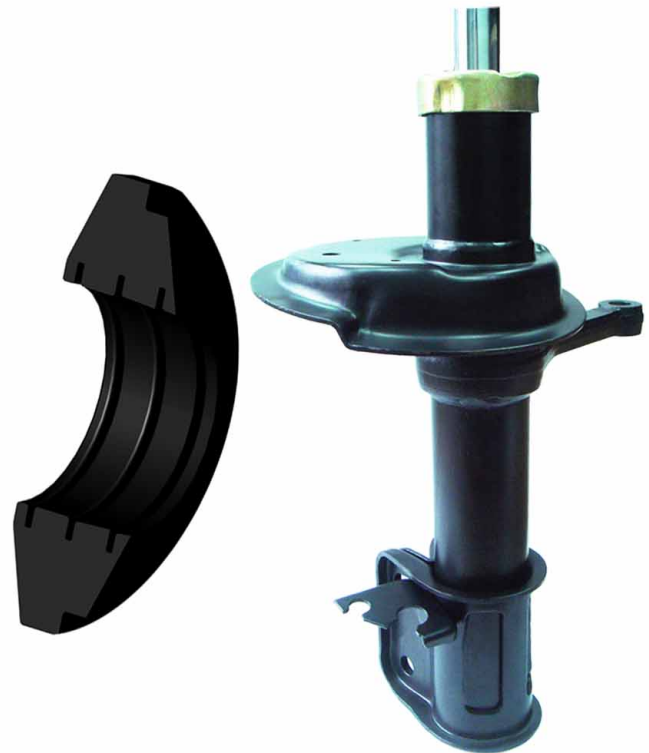




**In Turkey,** NAK collaborates with Maysan Mando which was founded in 1969 and manufactures shock absorbers for the automotive ranging from passenger cars, light commercial vehicles, buses and heavy trucks to some railway and military applications. Maysan Mando not only exports its products all over Europe, North Africa, Middle East, Russia and Latin America, but also provides service to prestigious customer in the Local OEM market.

**In Malaysia,** NAK provides shock absorber seals to APM Automotive Holdings Berhad. The company manufactures automotive suspension systems such as shock absorbers which is the world's largest auto parts exporter exporting to more than 45 countries since its inception in 1984.

**In China,** NAK collaborates with Wanxiang Group which is the largest Auto parts company in China and is China's second-biggest company, with 30,000 employees and \$10 billion in annual revenue. Wanxiang and Magneti Marelli, have signed an agreement aimed at setting up a joint venture in China for the production of automobile shock absorbers which is expected to be operational by the end of 2011. NAK also cooperates with some native brands such as Wuhu Tianyou, Jinzhou Leader, Hanai, Jiangxi Jucheng, Zhejiang Shiny, and etc.





## Subsidiary map

### Existing subsidiaries worldwide



Factory



Service office & warehouse



#### Taiwan (NAK Headquarters)

**NAK SEALING TECHNOLOGIES CORPORATION**  
No.336, Industrial Road, Nankang Industrial Zone, Nantou  
City 54065, Taiwan  
TEL : 886-49-2255011  
FAX : 886-49-2250035  
E-mail : [service@mail.nak.com.tw](mailto:service@mail.nak.com.tw)  
[www.nak.com.tw](http://www.nak.com.tw)



#### China

**KUNSHAN MAOSHUN SEALING PRODUCTS INDUSTRIAL CO., LTD.**  
No.271, Xingpu Road, Zhoushi Town, Kun Shan City,  
Jiangsu Prov., China 215337  
TEL : 86-512-57666240; 86-512-57665788  
FAX : 86-512-57665827; 86-512-57664409  
E-mail : [sales@nak.com.cn](mailto:sales@nak.com.cn)  
[www.ksnak.com](http://www.ksnak.com)



#### Iran

**KISH NAK OIL SEAL MFG. CO., LTD.**  
No.67, Eshghyar St. Khorramshahr Ave.,  
Tehran 15339, Iran  
TEL : 98-21-88761965  
FAX : 98-21-88741319  
E-mail : [kishnak@parsonline.net](mailto:kishnak@parsonline.net)



#### Thailand

**NAK SEALING PRODUCTS(THAILAND) CO., LTD.**  
120/36 Moo 12 Soi 21/2 Kingkaew-Bangplee Road, Tumbul  
Rachatewa, Ampur Bangplee Samutprakarn 10540, Thailand  
TEL : 66-2-750-1988  
FAX : 66-2-750-1868  
E-mail : [sales@mail.thainak.com](mailto:sales@mail.thainak.com)



#### Russia

**NAK INTERNATIONAL LTD.**  
Russia, Postal Index 143956, Moscow Region, Balashiha,  
Mikroaion Nikolsko-Arhangelskiy, Vishnyakovskoe Shosse,  
56, "NAK INTERNATIONAL LTD."  
TEL : 7-495-545-94-00  
FAX : 7-495-646-79-29  
E-mail : [info@naksealing.ru](mailto:info@naksealing.ru)  
[www.naksealing.ru](http://www.naksealing.ru)



#### India

**NAK SEALING TECHNOLOGIES (INDIA) PRIVATE LIMITED**  
P-1, Phase II, Dr.Vikram Sarabhai Industrial Estate,  
Thiruvanniyur, Chennai - 600 041, Tamilnadu, India.  
TEL : 91-44-64586657; 91-44-64586661  
FAX : 91-44-24540254  
E-mail : [marketing@nakindia.com](mailto:marketing@nakindia.com)



#### Brazil

**NAK DO BRASIL INDUSTRIA E COMERCIO DE COMPONENTES DE VEDACAO LTDA**  
Rua Soldado Benedito Eliseo Dos Santos, NRO 10 CEP  
02177-020, Sao Paulo S.P, Brazil  
TEL : 55-11-3807-3001  
FAX : 55-11-3807-3002  
E-mail : [nakbrasil@nakbrasil.com.br](mailto:nakbrasil@nakbrasil.com.br)  
[comercial@nakbrasil.com.br](mailto:comercial@nakbrasil.com.br)



#### Australia

**NAK TOTAL SEALING SOLUTIONS AUSTRALIA**  
Unit 1-17 Buttonwood Place,  
Willawong QLD 4110, Australia  
TEL : 617-3161-5210  
FAX : 612-6674-2516  
E-mail : [sales@sealingtechnologies.net](mailto:sales@sealingtechnologies.net)  
[www.naksealingtechnologies.com](http://www.naksealingtechnologies.com)



#### Disclaimer

1. NAK products are not intended to be used, installed or applied in or on any aerospace related instruments and/or equipment. Any such use, installation, or application is prohibited and shall void all warranties.
2. NAK disclaims any and all express or implied warranties if the products :
  - 2.1 are modified or tampered with;
  - 2.2 are misused, abused or misapplied;
  - 2.3 are used in a critical environment or specific equipment without NAK's prior written consent;
  - 2.4 are not used in accordance with the printed user instruction materials; or
  - 2.5 are damaged due to natural deterioration, decomposition or transformation of chemical structure.
3. The products may be applied in critical environment or specific equipment only upon official confirmation of the sample by NAK's technical personnel and the passing of tests conducted by buyer.



Related data, graphs, drawings, figures, statistics, estimates, and any technical information on this document are for reference only and should not be taken as confirmed specifications.