

# **SCHERDEL**

# **NORTH AMERICA**



## USA: SCHERDEL SALES & TECHNOLOGY



## MEXICO: SCHERDEL WIESAUPLAST



## MEXICO: SCHERDEL de MEXICO



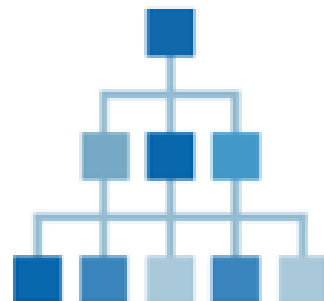






### Family-Run Company

130 Years Of Tradition  
Value-oriented  
World-wide Customers  
World-wide Production  
34 - Locations  
12 - Countries



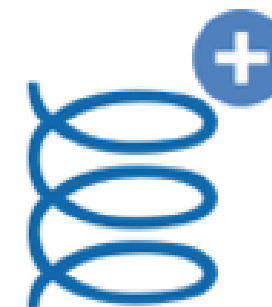
### Comprehensive Product Range

Full-range Portfolio  
Complex Assemblies  
Metal-plastic Combinations



### Innovation & Quality

Numerical Simulation  
Applied Research, Material  
& Process Development  
Logistics Solutions  
350 Employees In R&D



### Technical Expertise

Metal Forming  
Assembly & Surface Technology  
Tool, Machine, & System  
Construction  
Technical Cleanliness  
Efficient Prototypes

# E-MOBILITY

## Green Power

We invest in certificates for the targeted expansion of renewable energy production. It is explicitly important to us to avoid greenwashing



**SCHERDEL:** Will reduce its emissions by using resources carefully, including optimizations in our production procedures, use of heat waste, and insulation of manufacturing facilities.

## Climate Strategy Scope 3

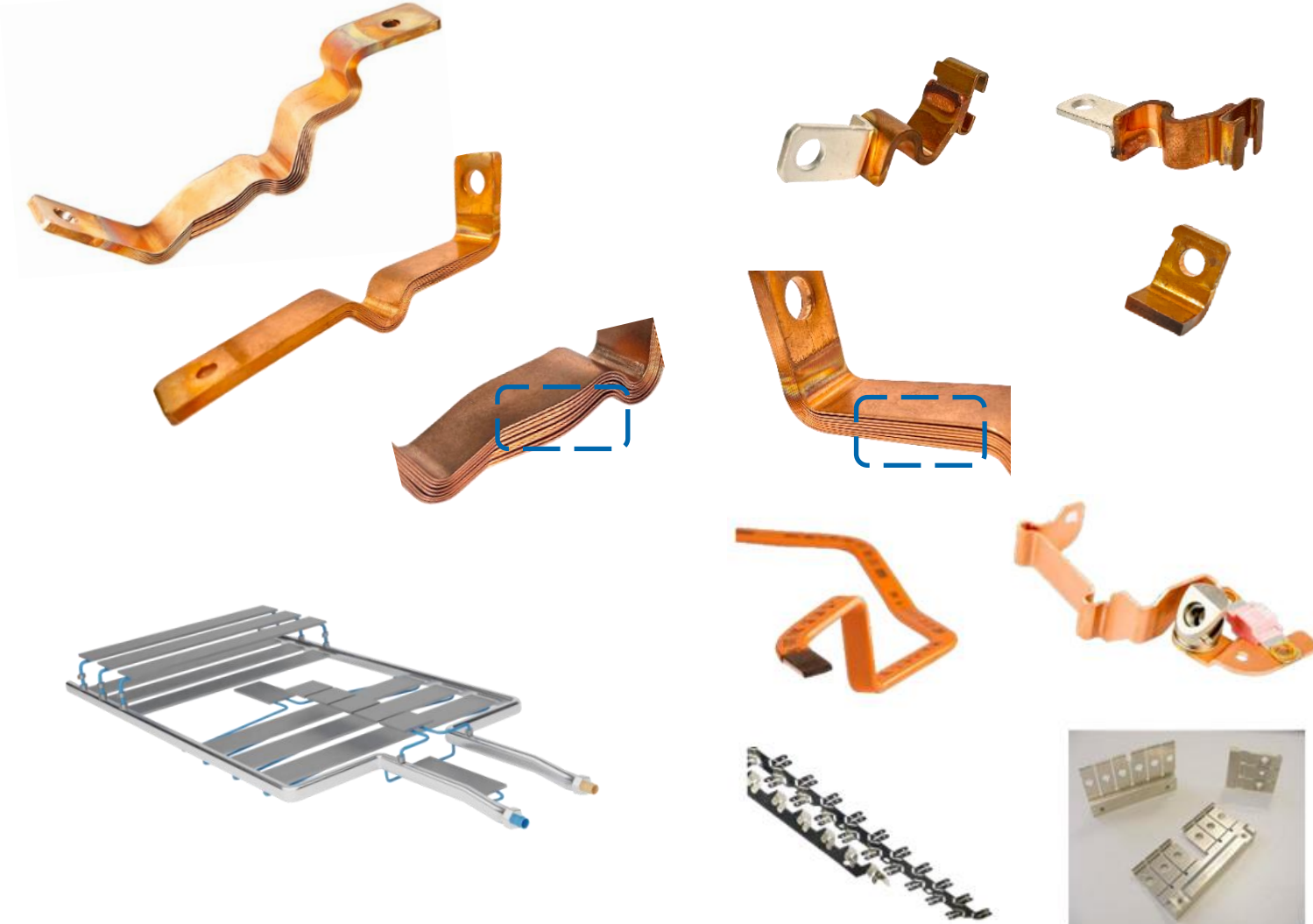
Waste of material in our processes  
Must be reduced to an unavoidable level  
In addition, we require our suppliers to reduce emissions by 25% by 2025  
The Achievement of the target has an impact on the respective rating of the supplier



**SCHERDEL:** It is in the process of reducing emissions by generating our energy. We will build photovoltaic systems on our roofs.



**SCHERDEL:** Reduce our emissions by buying green energy worldwide



## FOR A GREEN FUTURE



- ⚡ POWER ELECTRONICS
- e<sup>+</sup> ELECTRIC DRIVES
- 🔋 BATTERY SYSTEMS
- 🔧 THERMAL MANAGEMENT

## MATERIALS:

Copper, aluminum, polymer

## APPLICATIONS:

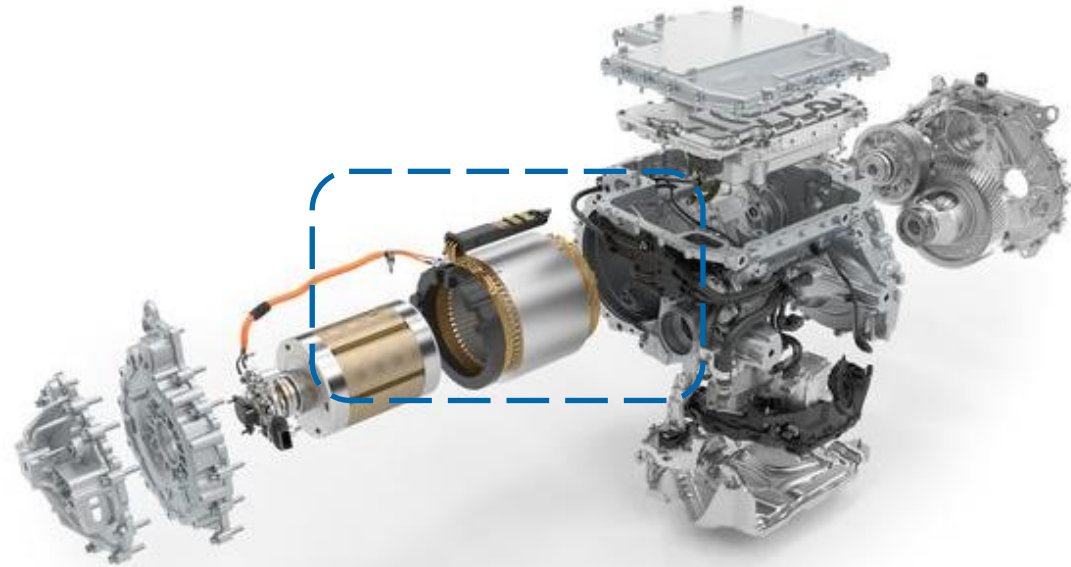
AC and DC connectors

Over-molded busbars

Guided frames

EMC filters

Intermediate circuit capacitor busbars





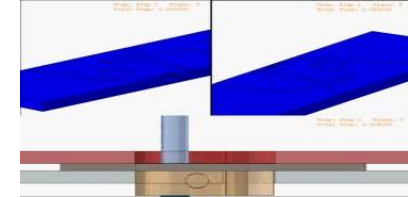
## DESIGN SUPPORTING SIMULATIONS



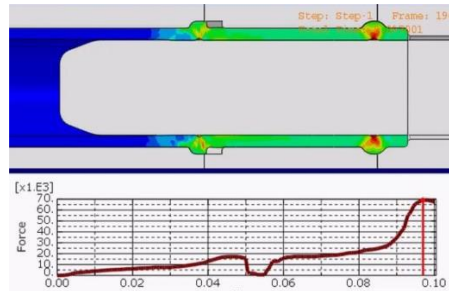
WELDING



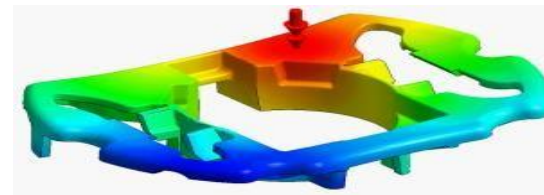
THERMAL AND ELECTRICAL



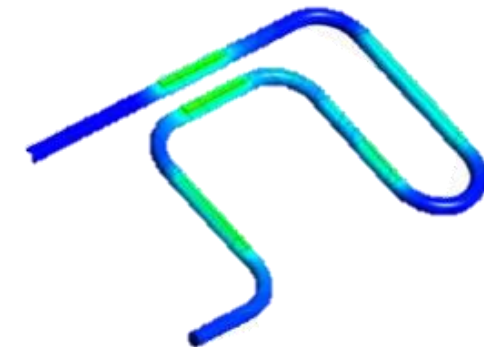
MECHANICAL



TUBE FORMING AND BENDING



MOLDFLOW ANALYSIS



THERMAL DISSIPATION



### TECHNOLOGY:

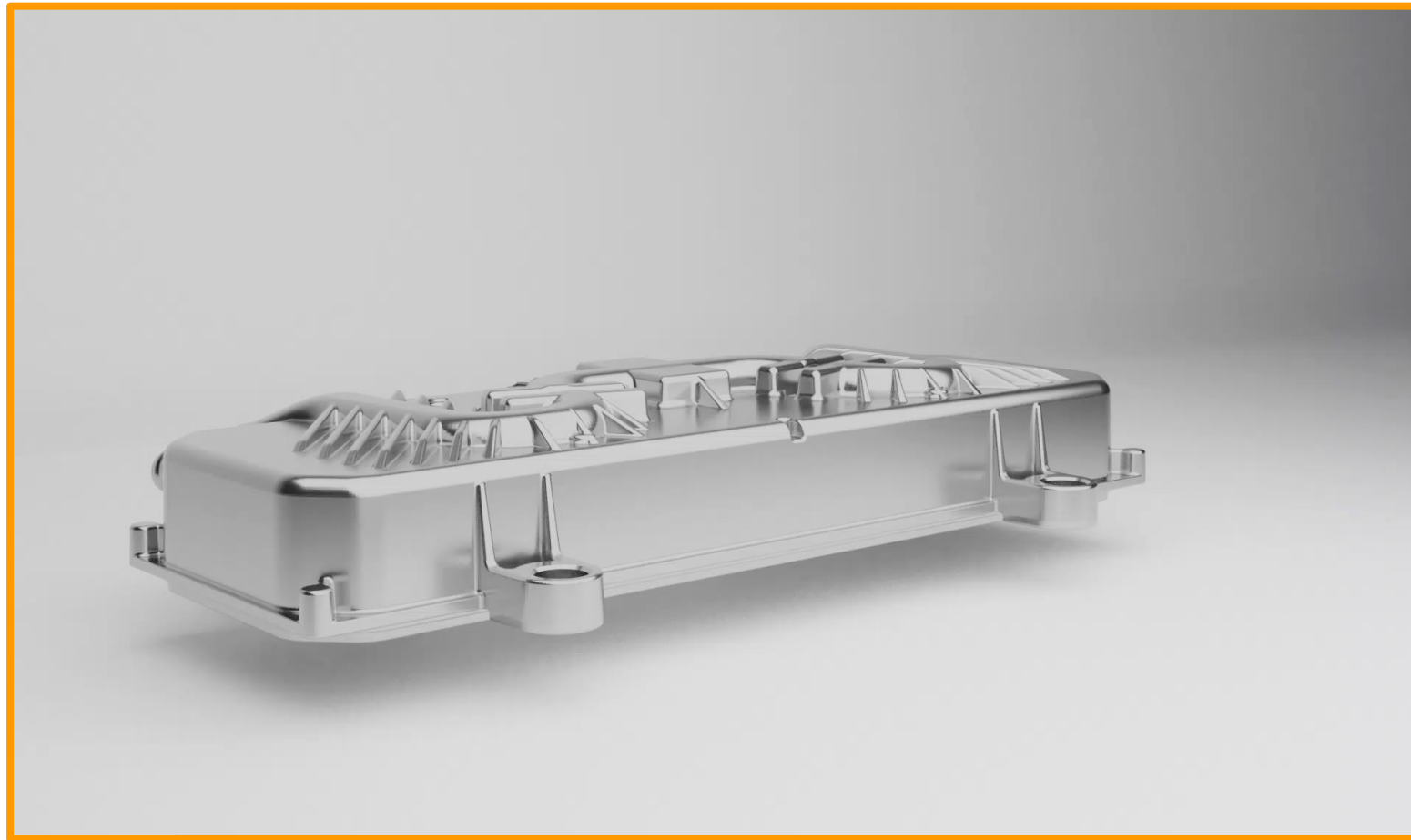
- Bending
- Forming
- Laser Welding
- Plastic Injection Molding
- Bond in Aluminium Cast Mold
- Pour in Aluminium Cast Mold
- Rolling Process
- 100% Vision Inspection

### Material:

- Aluminium
- Polymer
- Laminated material
- Copper
- Stainless Steel

### Advantages:

- Weight & Cost Reduction
- Material Lower Material Usage
- Process Development Including Simulation And Calculations



## TECHNOLOGY:

- Bending
- Forming
- Laser Welding
- Bond in Aluminium cast mold
- Pour in Aluminium cast mold
- Rolling Process
- 100% Vision Inspection

## MATERIAL:

- Aluminium
- Polymer
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## ADVANTAGES:

- Weight & Cost Reduction
- Material saving
- Process Development
- Including Simulation

## MANUFACTURING TUBE SOCKETS



### APPLICATION FIELDS:

Cooling Tubes for Power Electronics  
Medium Pressure Lines for Media Supply  
Recirculation Units in Fuel Cells  
Joining in Aluminum Die Casting Possible  
Injection Molding of Plastic Structures  
Injecting Steel Tubes into Die-cast Aluminum Housings

### PRODUCTION PRINCIPLES:

Fully Automated Production Lines  
Cycle Time 4 Sec.  
Forming of Support  
Feed of Nozzle  
Forming of Sealing Area  
Rolling of Sealing Surface

### ADVANTAGES:

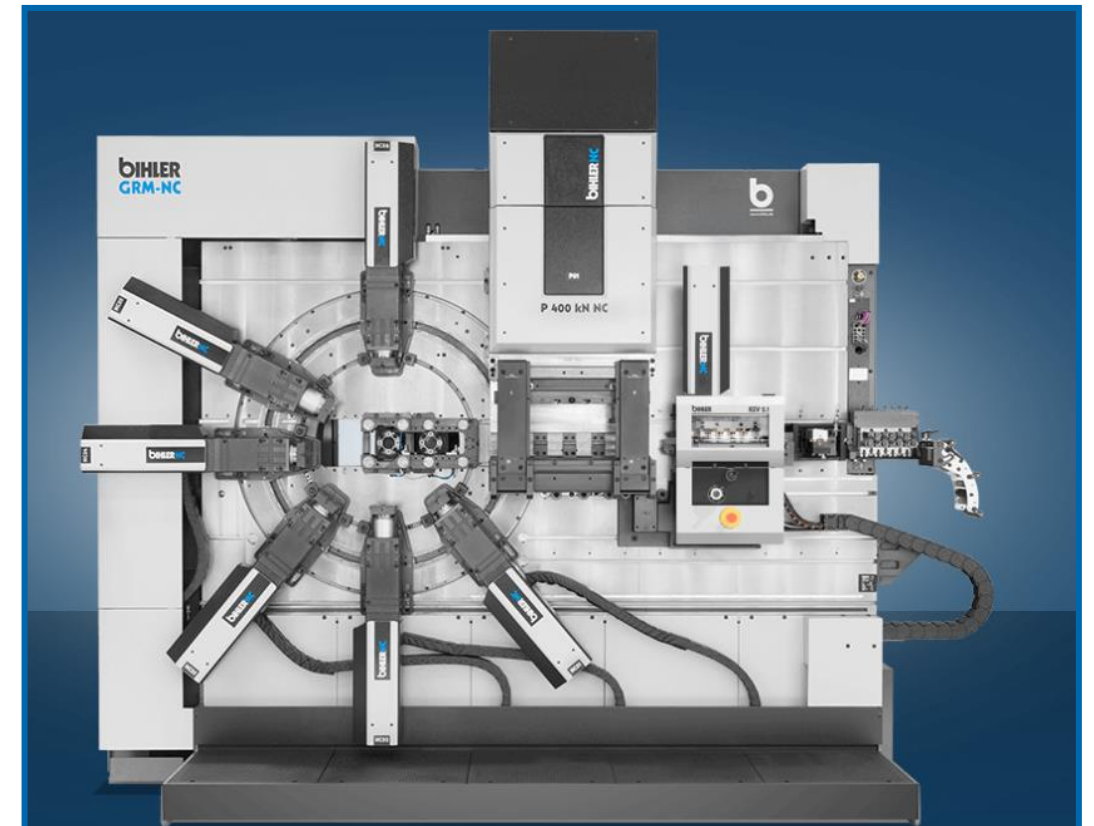
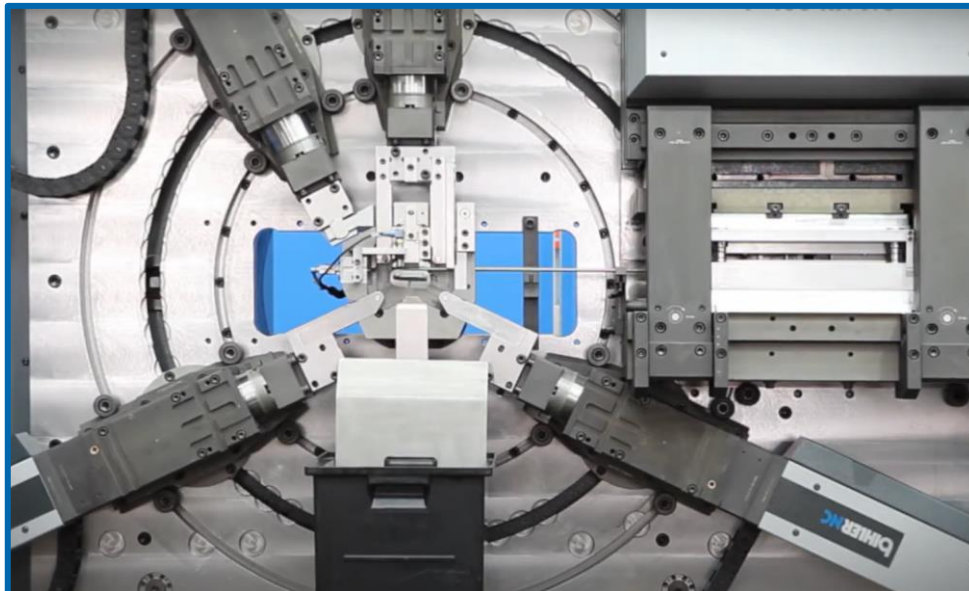
Continuous Tube Geometry Eliminates the Need for Sealing Areas  
No Joining Material Required  
Optimal Material Structure Thanks to Forming Structure  
Weight Reduction  
Compact Structure  
High Cost Savings Potential



**BIHLER**

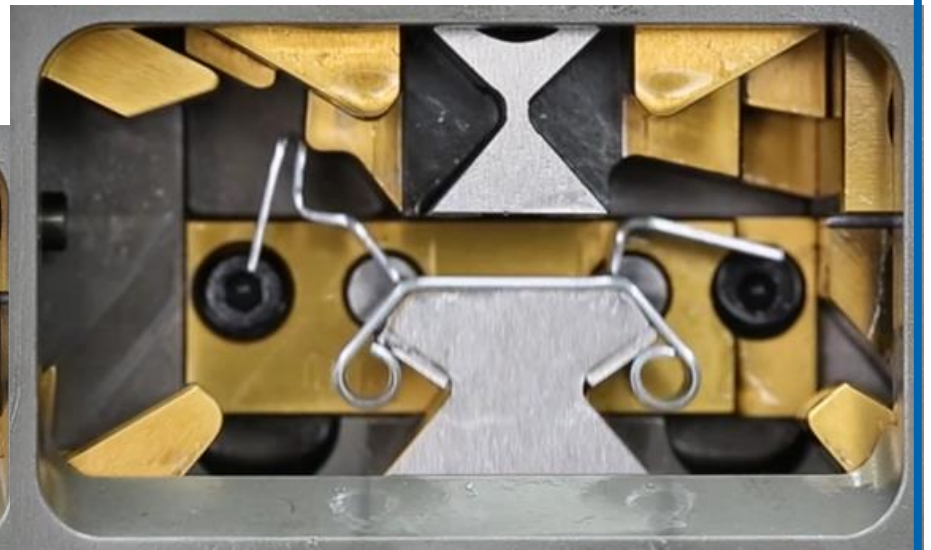
**Stamping & Bending Technology**

“THE WORLD’S FASTEST SERVO-CONTROLLED STAMPING AND FORMING MACHINE”



## Stamping & Bending

- Brake Pad Clips
- Sliding Clips
- Pad Wear Indicators, Housings
- Assemblies
- Headrest tubes
- Bushings
- Terminal Connectors



# BRAKES





SCHERDEL 2022 produced over **80 million** pad clips for worldwide markets



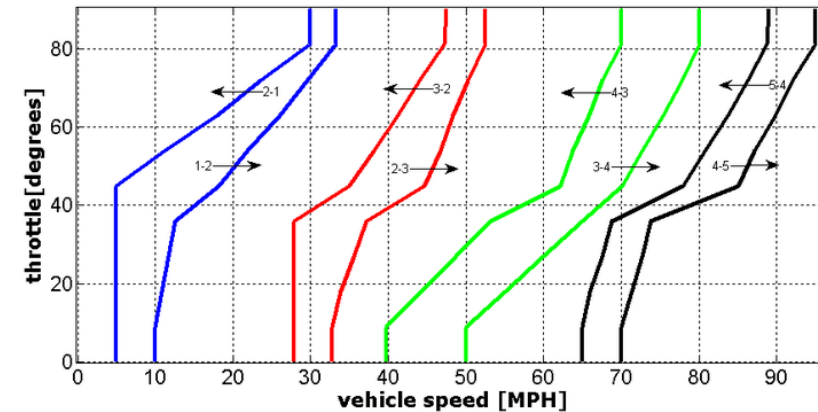
Chevrolet Aveo, Chevrolet Onix, Dodge Journey, Dodge Durango, Chrysler Pacifica, Chrysler Voyager, Jeep Compass, Jeep Cherokee, Jeep Grand Cherokee, Jeep Wrangler, Jeep Gladiator Ford F- 150, Ford F-250, Ford F-350, Ford Explorer, Lincoln Aviator, VW T-Cross, VW Jetta VS, VW Jetta VS

# TRANSMISSIONS

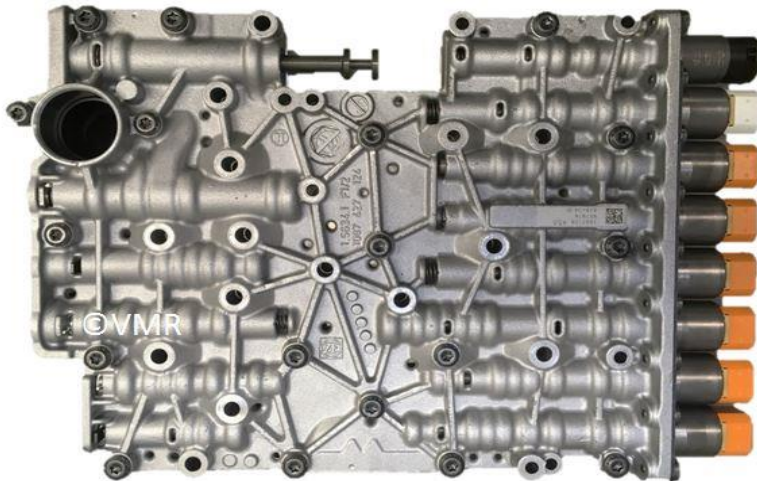
## Valve Body

- The “brain” of the transmission
- Controls shifting between speeds
- Regulates system with oil pressure
- Solenoids and valves provide control and smooth function

## GEAR SHIFT SCHEDULE



## VALVE BODY



## VALVE BODY INSIDE





## **Poppet valve:** Assembly

Regulates oil pressure in system to facilitate gear changes and smooth operation

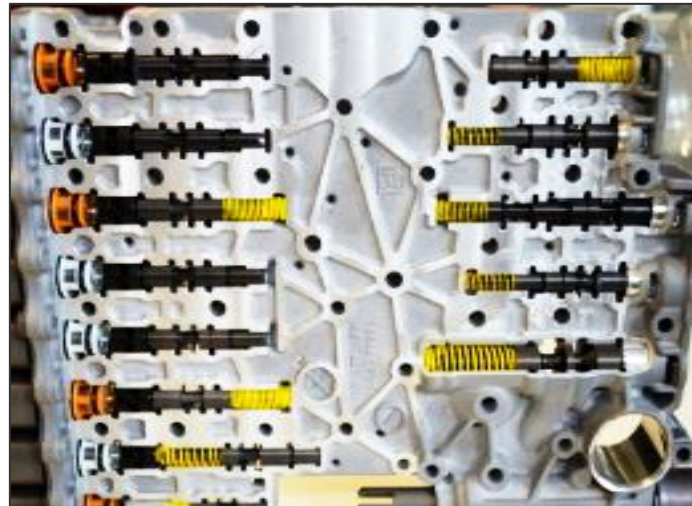
Spring and Valve Assembly Process

High number of 100% checks

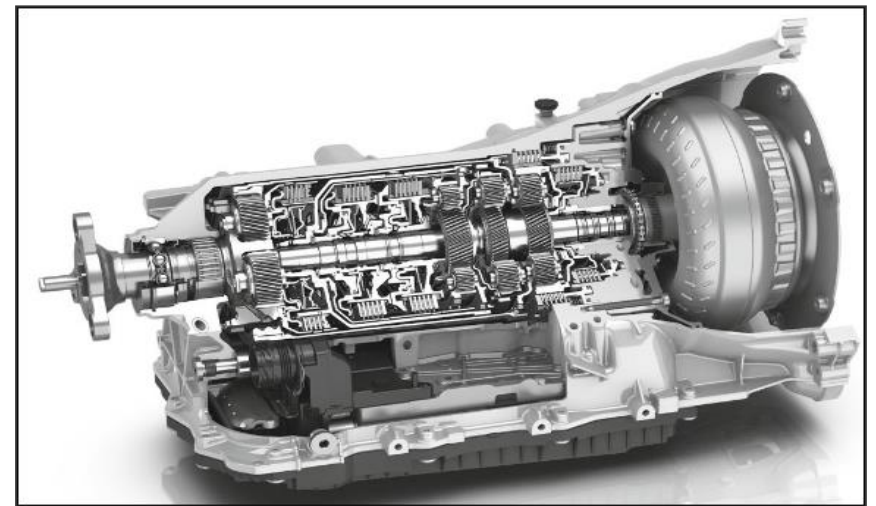
Consistency is Key

Cap Coloration for Easy Assembly

## POPPET VALVE

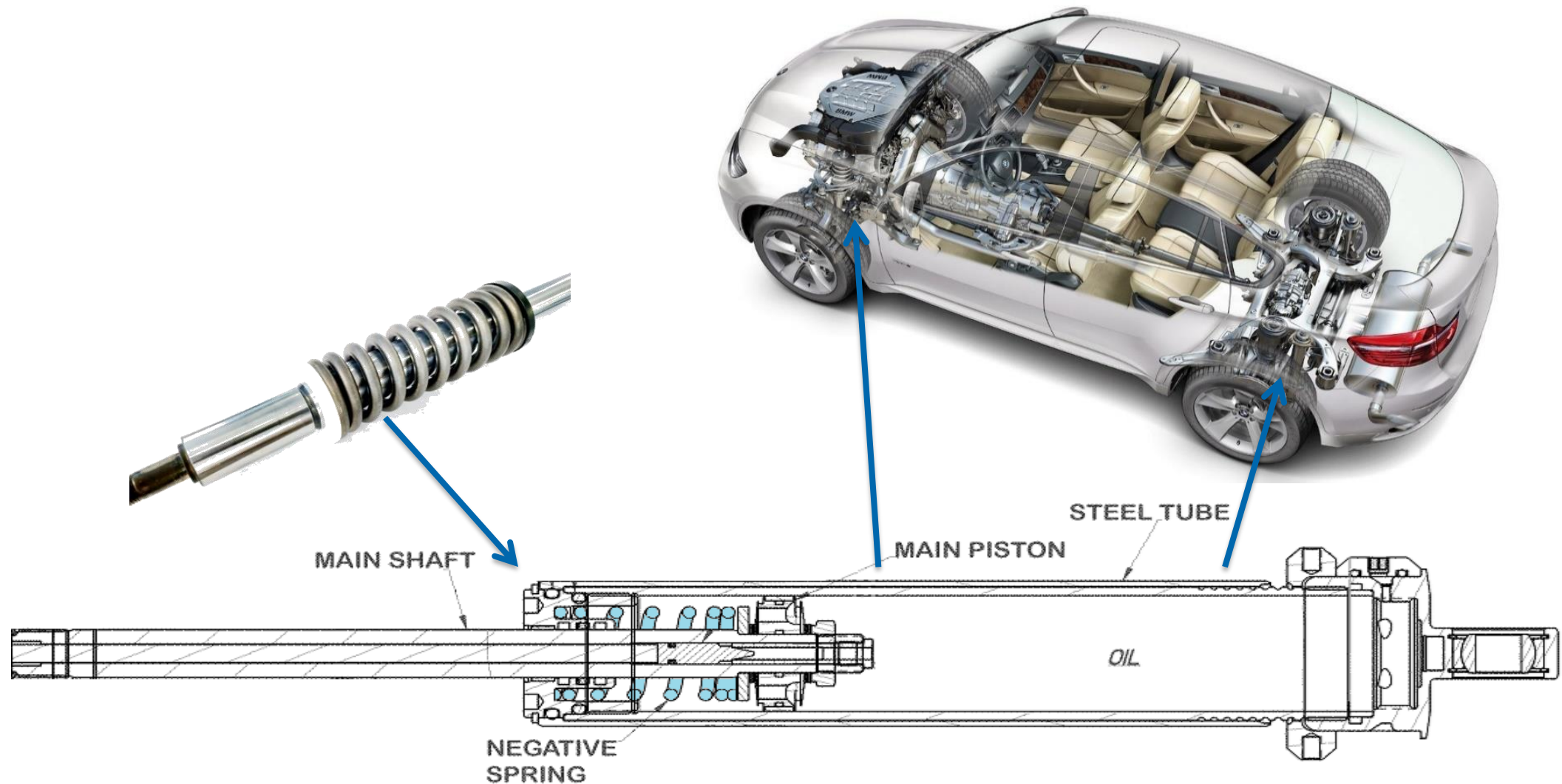


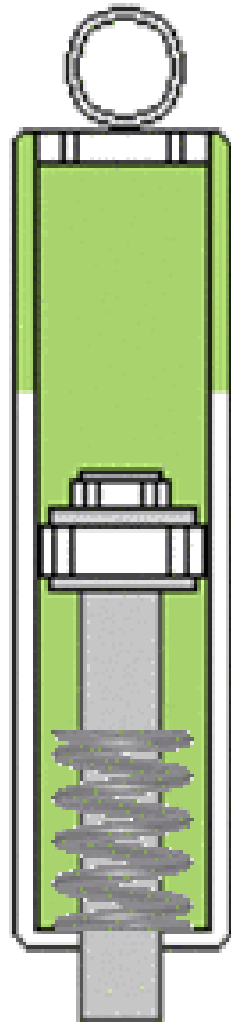
## VALVE BODY WITH POPPET VALVES



# REBOUND SPRING

# REBOUND SPRING

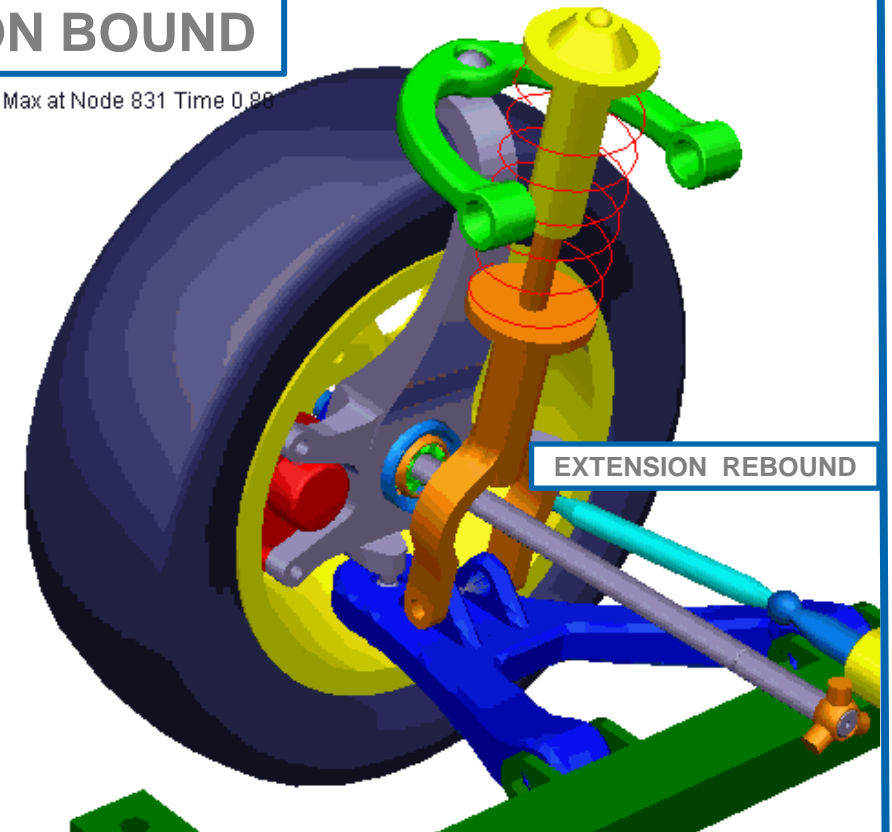
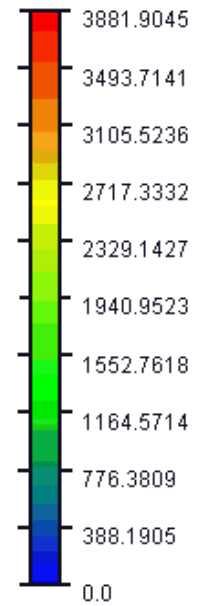




Last Run Time= 0.0000 Frame=001

## COMPRESSION BOUND

Von Mises Stress (psi) Max at Node 831 Time 0.88



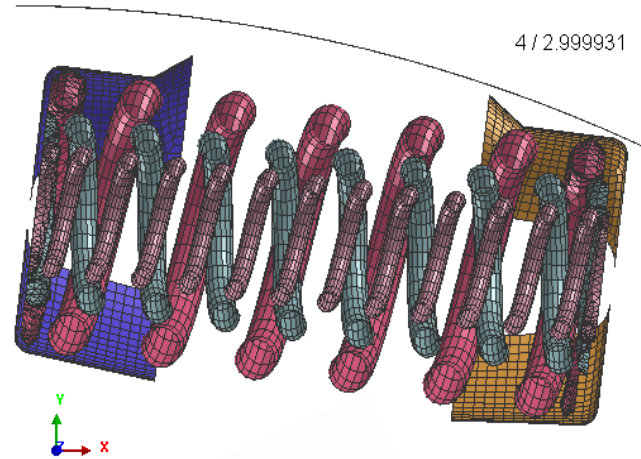


## COMPRESSION SPRING SETS

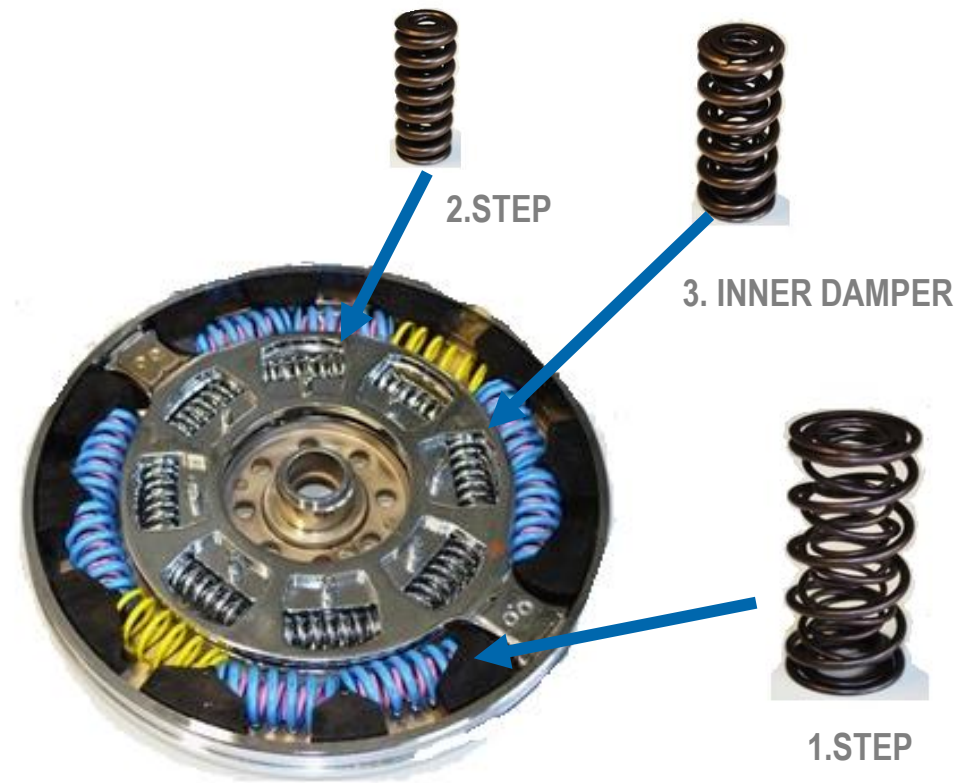
### ADVANTAGES

Optimal absorbing in powertrain with very low energy loss in the system.

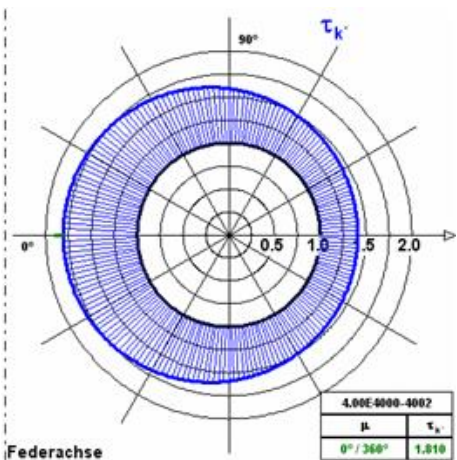
High decoupling variance by optimal design of the absorbing characteristic curve.  
High driving comfort in all operation modes of the vehicle.



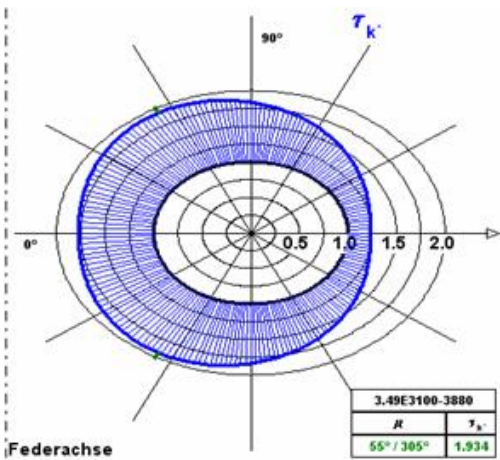
CENTRIFUGAL PENDULUM DISC



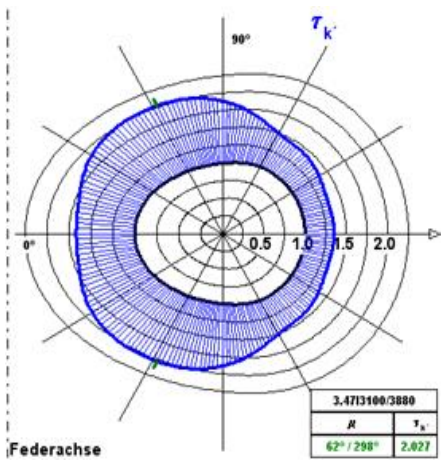
PLASTIC SLIDE SHOES



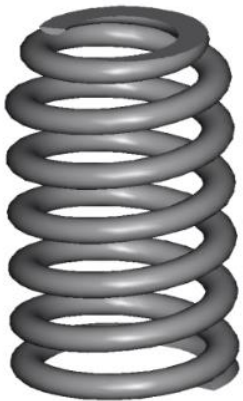
ROUND



ELLIPTICAL



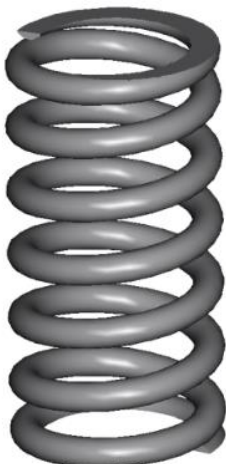
OVATE



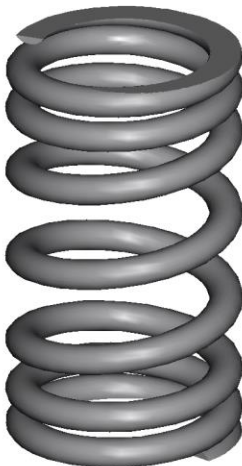
BEEHIVE



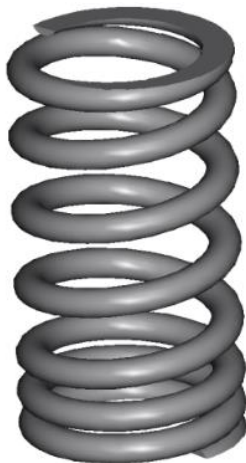
CONICAL



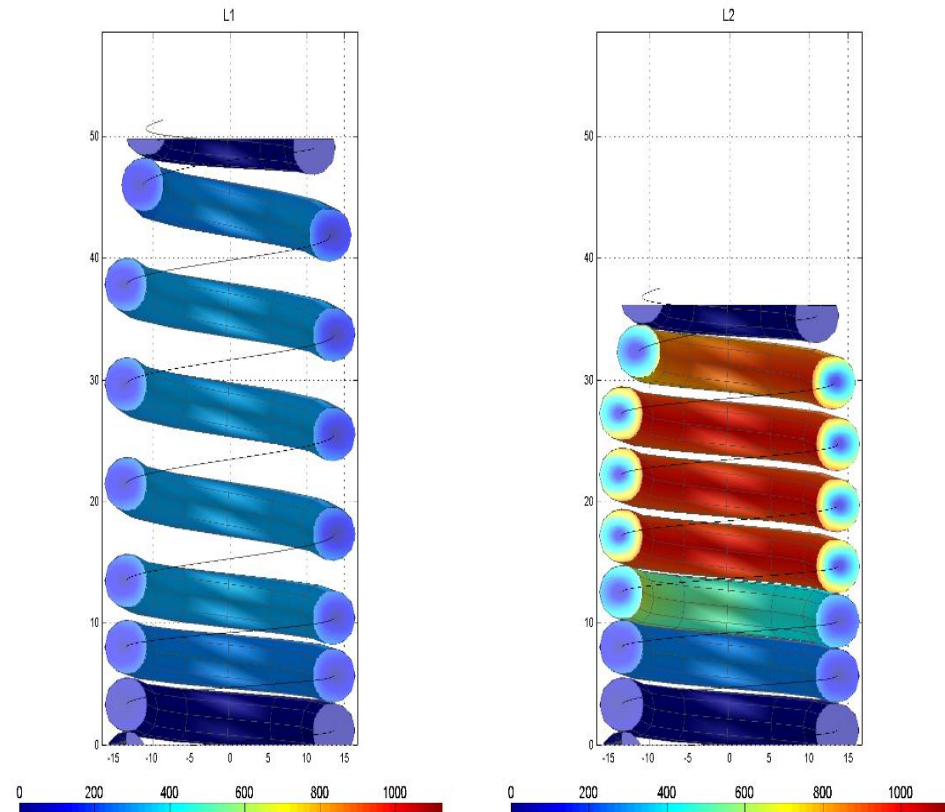
CYLINDRICAL



SYMMETRIC



ASYMMETRIC



	L1	L2
tau_k [MPa]	310	971
tau_kH [MPa]	661	

## SPRING DESIGNER:

3-D Modeling (meshed)

Spring Characteristics

Calculation

Spring Characteristics

Optimization

Kinematic & Dynamic

Simulation

Dynamic Upper &

Stroke Stress

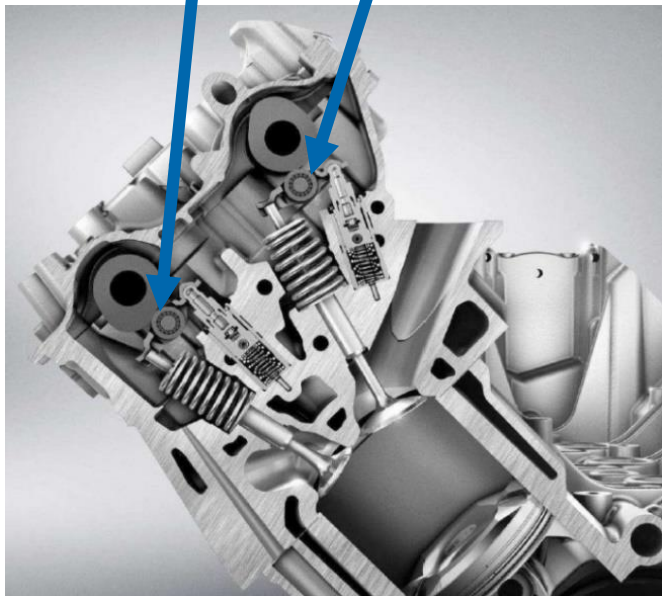
Spring Fixed End(bottom) And

Free End(top) Load

Cam Contact Load

**ENGINE**





## Installed Machine Limits

0.40mm- 8.0mm, Shot peening, Grinding, Hot Setting  
Cold Setting, Color Marking, 100% In-line Load Check





## VCT-Variable Cam Timing

Return Spring- Spiral Or Torsion

Locking Pin Spring-compression

Vane Seal-Leaf Spring



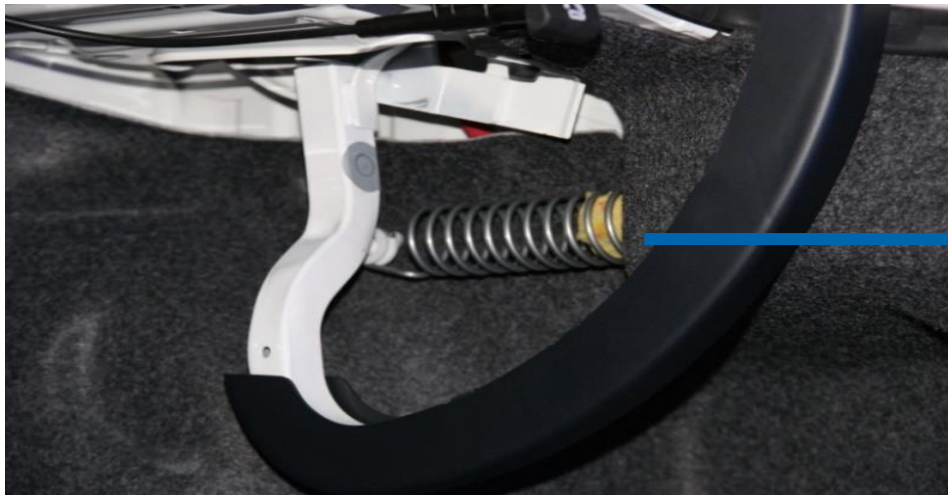
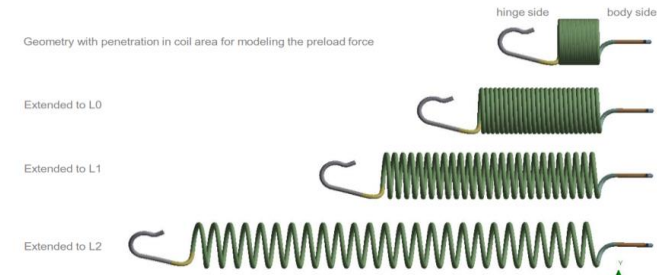
# TRUNK OPENING/CLOSING PRODUCTS

## Wire Assist Tailgate

## Wire Assist Tailgate Assembly

Support Weight Of Liftgate  
Compensate Weight For Easy Closing  
Professional Aesthetic  
Customer Reassurance









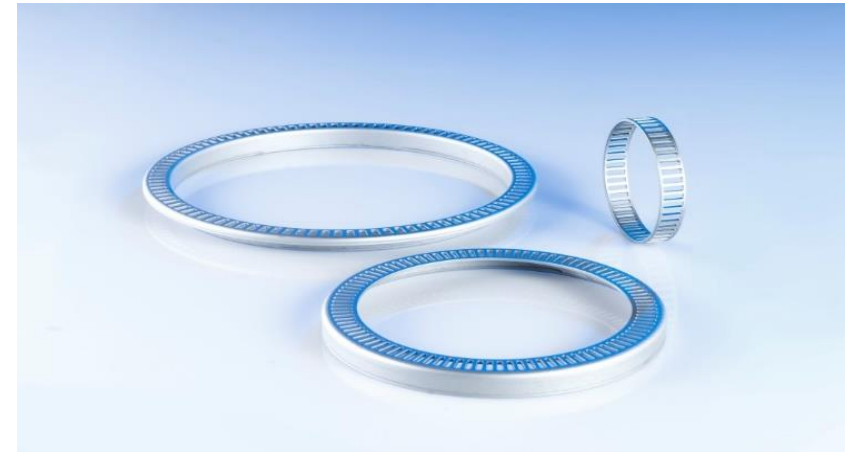


# OFFERED SERVICES

**Product:** Delta-Protekt® KL 100/120, Delta Seal Silver GZ, PTFE friction reduction coating

**Application:** Various shapes, sizes, and coating thicknesses available for protection against chemicals, oils, and corrosion

**Quality examinations:** Salt Spray Test NSS, Condensed Air Test AHT, Coating Thickness



## Degreasing and pretreatment for coating application

Surface treatment for delivered parts to clean the parts from oil, grease and other production residues

The parts can be cleaned in baskets or racks according to the requirements

A **alcohol** (SdM)/ **water** (SST) based cleaning process

Possibility of cleaning small and sensitive to impact parts up to heavy and big parts

Applications: Screws, Springs, Stamping parts, Housings, Die-castings, etc.



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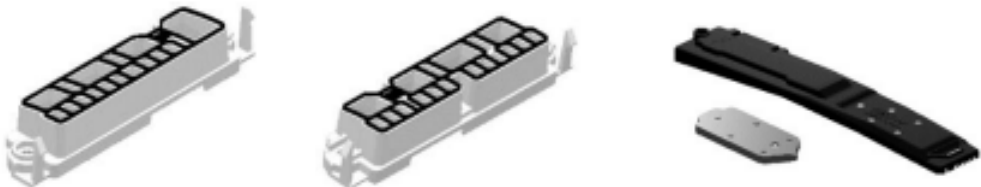
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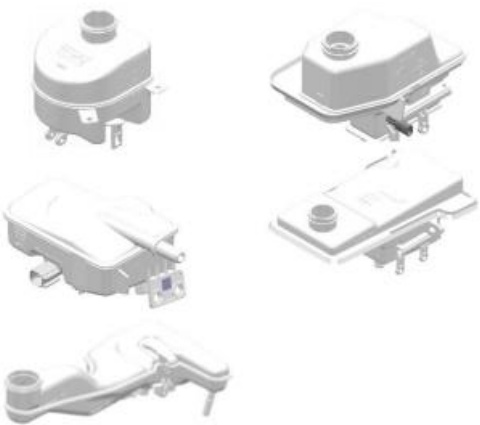
Applications: Screws, Springs, Stamping parts, Housings, Die-castings, etc.

# SCHERDEL WIESAUPLAST

2K Components



Brake Fluid Reservoirs



HVAC Components



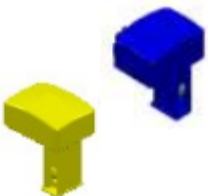
Controlled Housings



New Applications



Floats



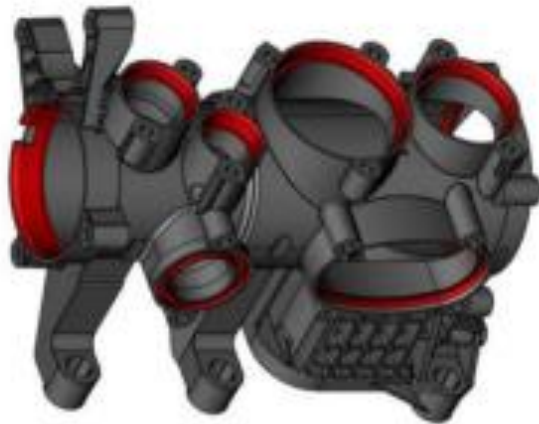
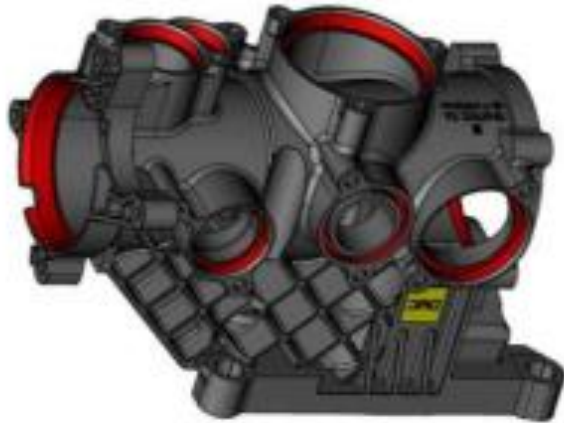
Filler Caps





## A collection of 15 black plastic injection-molded parts, including various housings, brackets, and structural components, displayed on a white background. The parts exhibit a variety of shapes and sizes, from small rectangular components to larger, more complex assemblies with multiple features like slots, holes, and raised surfaces. The parts are arranged in a grid-like fashion, showcasing the capabilities of injection molding in creating diverse plastic components.

TMM Housing



Pedals & Others





# **SCHERDEL***MEDTEC*

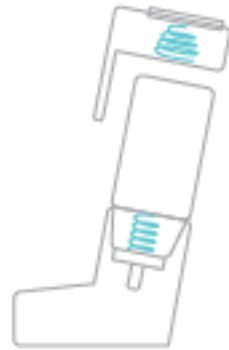
*GLOBAL EXPERTISE AT YOUR FINGERTIPS*

# SPRINGS WE SUPPLY

SOLUTIONS FOR DELIVERY OF HIGH AND LOW VISCOUS DRUGS



PEN INJECTORS



INHALERS



SAFETY SYRINGES



NASAL SPRAY



AUTO-INJECTORS

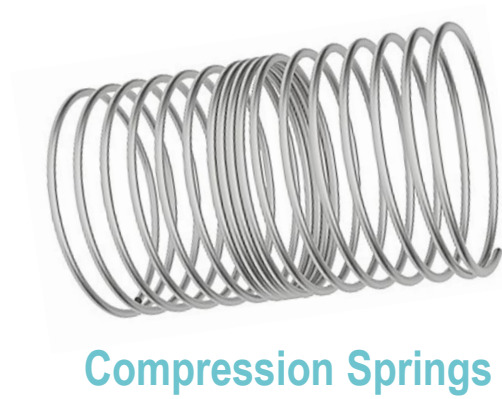


# OUR PRODUCT RANGE

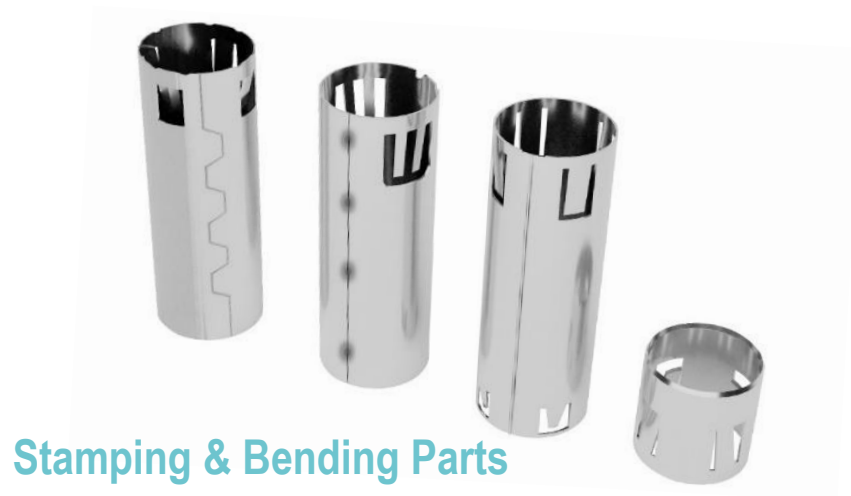
SOLUTIONS FOR DELIVERY OF HIGH AND LOW VISCOUS DRUGS



Torsion Springs



Compression Springs



Stamping & Bending Parts



Spiral, Constant Force & Power Springs

# OUR PRODUCT RANGE

SOLUTIONS FOR DELIVERY OF HIGH AND LOW VISCOUS DRUGS



# WE CARE

*"BECAUSE THERE'S A PERSON BEHIND EVERY COMPONENT WE MAKE"*

Thank you for your attention!

Gracias por su atencion!

Vielen Dank!