





## Overview



#### Our Brands





















#### **Our Markets**

- Transportation
- Agriculture
- Construction
- Mining
- Marine
- Military
- Material Handling

### Our Categories

- Brake Parts
- Suspension Components
- Steering Components
- Cooling Components
- Trailer Parts & Accessories
- Permatex Products
- Instrumentation
- Tachographs & Fleet Safety
- Actuators
- Visibility Systems
- Multimedia
- Human-Machine Controls
- Joystick Controls
- Pedals & Throttle Controls
- Position Sensors

## Our Brands





Duroline is one of the largest producers of friction material in the world
Over 25 years of international experience
Produce premium quality
brake linings
More than 350-part
numbers available
Fully operational brake lining finishing plant



A high-quality range of brake linings, brake pads, brake drums, brake shoes, lined brake shoes & rivets



A range of quality Truck and Trailer components all under the trusted MAG brand.

- MAG Suspension
- MAG Electrical
- MAG Cooling
- MAG Lighting
- MAG Trailer Parts



OE supplier for MAN,
Mercedes, Scania and
Volvo
The long distances
travelled, and harsh
climate of South Africa
require that heavy
vehicles have superior
cooling
Fans and viscous for most
makes of heavy vehicles
on South Africa's roads
Proven to lower fuel
consumption by between
2 – 6 %



Kit Masters, Inc.
manufacture heavy-duty
aftermarket components,
specializing in
remanufactured fan
clutches, rebuild kits and
accessories



SEM Lastik – OE supplier to MAN, Mercedes Benz, Ford (Otosan), BMC as well as Temsa in Turkey We have a full range of suspension parts for all European vehicles Expanding range of parts for American, Chinese & Japanese vehicles

## Our Brands





South Africa's No 1 Shock Absorber Brand

Over 100 Years of supplying shocks

Wide product range for European, Japanese and American Trucks

Gabriel was the original OE shock for Freightliner



Premium quality sealants and adhesives

More than 100 years of quality and innovation

OEM specified products

Nr 1 selling brand in the USA



**OE Platform Development** 

Latest Manufacturing technologies to ensure optimum performance

Rugged components are ideal for tough environments

Direct replacement to original part

Range of products and parts to cover all market segments

Worldwide distribution network



Components can be specified straight from catalogue to existing customers of standard products

Provide the most reliable and cost-effective product solution to suit unique application

Extensive hardware design expertise, with 3D modeling and rapid prototyping

In-House experienced software design teams

EMC test facilities in Europe and USA

Environmental and accelerated life testing facilities



First company to design flight data recorder back in 1957

World leader in design and manufacture of motor controllers i.e powered wheelchair applications etc.

In-House design of leading-edge technology products for aviation, professional broadcasting as well as industrial applications



Previously VDO Marine Switzerland

20+ plus years experience in design and manufacture of Hi-Tech Marine instruments and Navigation products

Inhouse design and engineering departments ensure up to date quality products

Continues technology changes and updates to conform to latest industry standards.

Direct supply into marine OE market

## Our Markets



Transport	Agricultural	Construction and Mining	Marine	Military	Material Handling
<ul> <li>Medium Commercial</li> <li>Heavy Commercial</li> <li>Bus</li> </ul>	<ul> <li>Agriculture Machinery</li> <li>Forestry Equipment</li> </ul>	<ul> <li>Construction Machinery</li> <li>Mining Equipment</li> </ul>	<ul><li>Power Boating</li><li>Yachts</li><li>Tugboats</li></ul>	<ul> <li>Armored Vehicles</li> <li>Navy</li> </ul>	<ul> <li>Forklifts</li> <li>Cranes</li> </ul>



#### Brake







- Brake Linings
- Lined Shoes
- Unlined Shoes
- Brake Pads
- Brake Discs
- Rivets

# Suspension & Steering

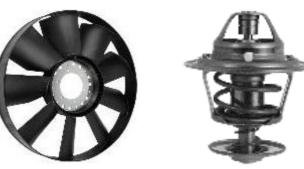




- Unlined Shoes
- Brake Pads
- Brake Discs
- Rivets

#### Cooling







- Radiator Fans
- Viscous Drives
- Radiator Caps
- Thermostats
- Water Pumps

#### **Fuel Systems**



- Fuel Injectors
- Fuel Caps
- Oil Caps

## Trailer Components



- Suzie Hoses
- Slack Adjusters
- Air Fittings
- Raufoss Fittings
- Trailer Bearings

#### Instrumentation









- Tachometers
- Hour meters
- Ammeters
- Voltmeters
- Tank level gauges
- Pressure gauges
- Speedometers
- Temperature Gauges
- Clocks



#### Lighting & Visibility







- Chevrons
- Reflective Tape
- **Trailer Lights**

#### **Auto Electrical**





- Alternators
- Starters

#### **Tachographs**







- Head units
- Charts
- Installation components

#### Multimedia









- 24V Radio
- **Entry Line Radio**
- OE Radio
- Can Radio
- Accessories

#### Windshield **Systems**





#### Fleet Safety **Systems**







- Washer Pumps
- Washer Nozzles
- Washer Kits

- Reverse Cameras
- ProViu 360
- RightViu (Blindspot Monitoring)



## Pedals & Throttle Controls







- Floor-mounted Pedals
- Suspended Pedals , Rocker Pedals
- Tilt Sensors ,Thumb Controls
- Twist Controls
- RX Pedal Module

#### Joystick Controllers



- Single and Multiaxis Joysticks
- Lever and Rotary Hand Controls

#### **Position Sensors**



- Linear and Rotary Hall-effect Sensors
- In-Cylinder and Spool Valve Sensors
- Spool Valve Linear Sensors
- Tilt Sensors

## Human Machine Interface Controls



- Dash Mounted and Column Shifter
- Multi-function
   Operator Consoles
- Customized Armrest Consoles

#### Power Management







- Low Power AC and DC Motor Controllers
- Traction Inverters
- Power Distribution Modules\*
- High Voltage Inverters

#### **TPMS**





- TPMS
- Conticheck pressure systems
- Commercial Vehicle TPMS



#### Gasketing









- **Gasket Makers**
- **Anaerobic Gasket** Makers
- **Gasket Sealants**
- **Gasket Removers**

#### **Thread** Compounds









Permatex

- **Thread Lockers**
- **Thread Sealants**

### Stop Leaks









- **Head Gasket** Repair
- Oil Stop Leaks
- **Power Steering** Leaks
- Radiator Repair

#### Adhesives & **Sealants**









Permatex

Restrictes
All Furpose
Spray
Admessive

- **Epoxies**
- **Adhesive Sealants**
- Spray Adhesives
- Super Glues
- Adhesive Removers
- Weatherstrip Adhesives

#### **Hand Care**







- Fast Orange
- Wipes
- Hand Care
- **Extended Line**

#### Lubricants







- Anti-Seize Lubricants
- Specialty Lubricants
- **Brake Lubricants**

#### Maintenance & Repair





Permatex

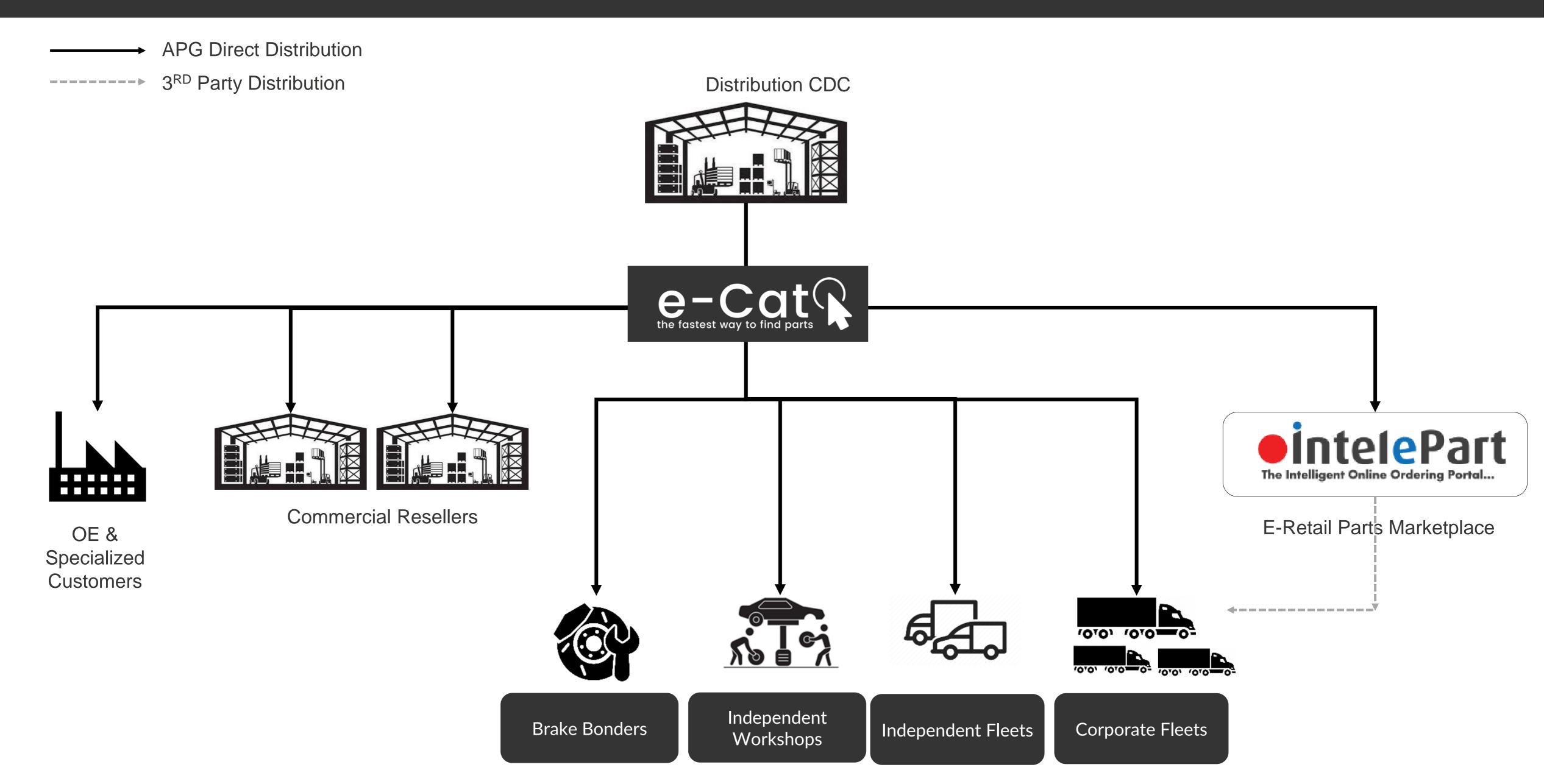




- Body & Under Bonnet
- Brake Repair
- **Body Repair**
- **Rust Treatment**
- Repair Kits
- Rebuilders Aid

## Our Distribution





## Our Geographic Reach





#### **National Distribution – South Africa**

- Export Territories
  - Namibia
  - Botswana
  - Mozambique
  - Zimbabwe



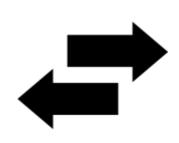
## E-Cat Catalogue & E-Commerce system





#### **On-Line Catalogue**

A full featured B2B on-line catalogue & ordering systems with data and images, features & benefits



#### **Cross References**

More than 1.7m cross references currently catalogued in the system



#### **Vehicle Applications**

+ 11 500 vehicles cross referenced to parts basket



#### Search Engine

Fastest search engine in the Industry 0.2s



#### **Quick Orders**

Quick Order Screen



#### **Live SOH and Pricing**

Live SOH and live channel pricing per customer.



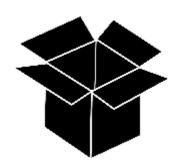
#### Call centre backed

Help is a call away to either help the user use the system or process an order on their behalf. Whatsapp enabled.



#### **3 000 Parts**

+ 3 000 parts on the e-Commerce platform



#### **My Lists**

Custom build lists, Favorites, Weekly/Monthly Orders



#### **My Account Suite**

Fully Integrated B2B account suite, Order Tracking, Statements, POD, Invoices



## Our Team





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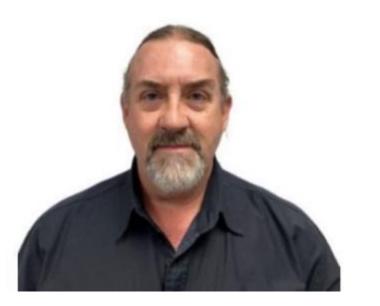
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## Contact Us





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## Traxx



#### Linings



- Value for money brake linings
- 25 fast moving part numbers
- MCV/HCV/Bus

#### **Drums**



- A range of 42 high quality brake drums
- No compromise on weight

#### Pads



- Cost effective, high quality brake pads
- A range of 8 fast moving brake pad part numbers
- MCV/HCV/Bus

#### Shoes



- A range of 18 high quality brake shoes
- Cast iron & fabricated
- Lined and Unlined Shoes

#### Discs

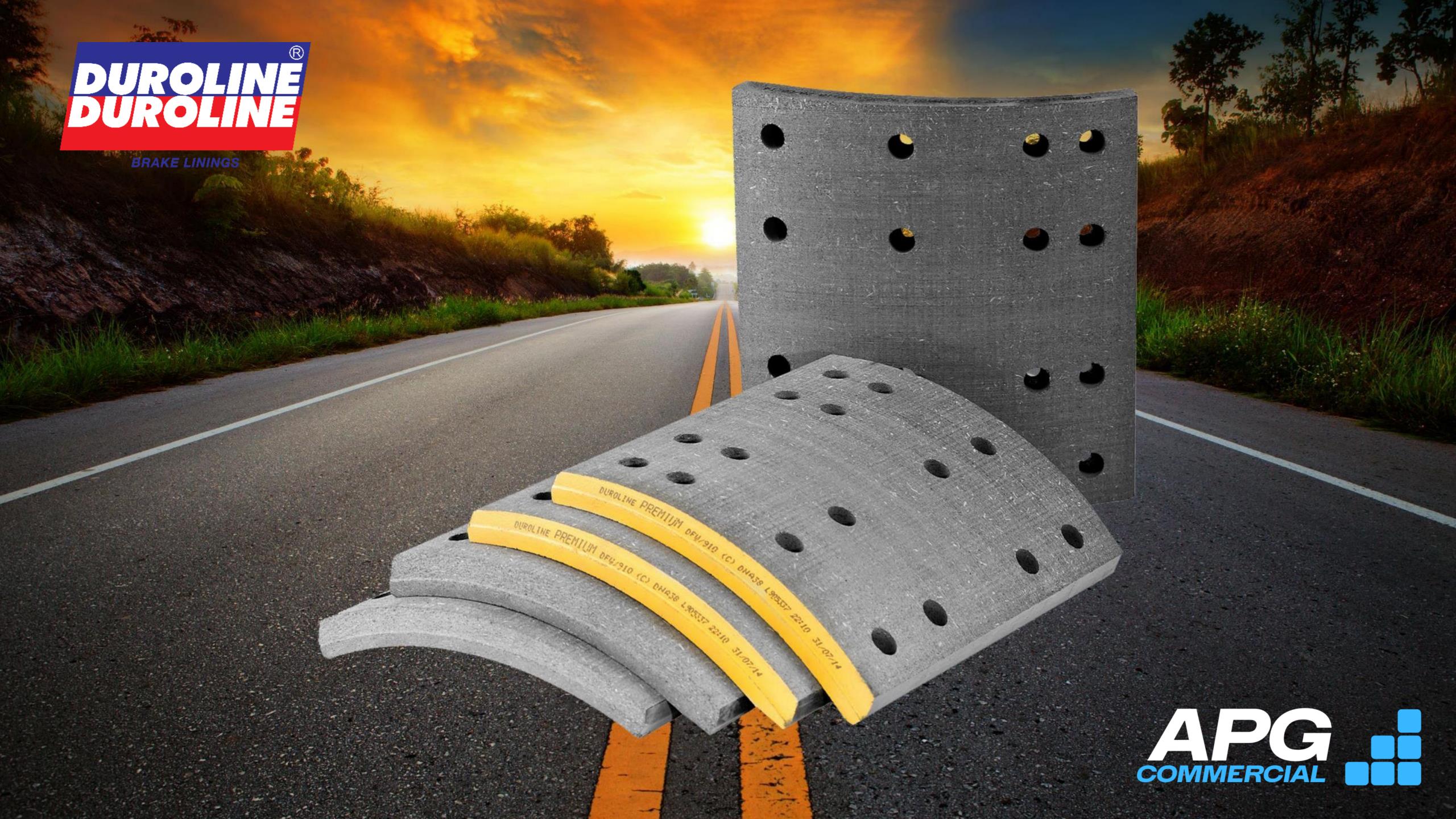


- A range of commercial vehicle brake discs for popular applications
- MCV/HCV

#### Accessories



A range of rivets for all applications





## Duroline





- Duroline is one of the largest producers of friction material in the world
- Over 25 years of international experience
- Produce premium quality brake linings
- More than 350-part numbers available
- Fully operational brake lining finishing plant





## Duroline



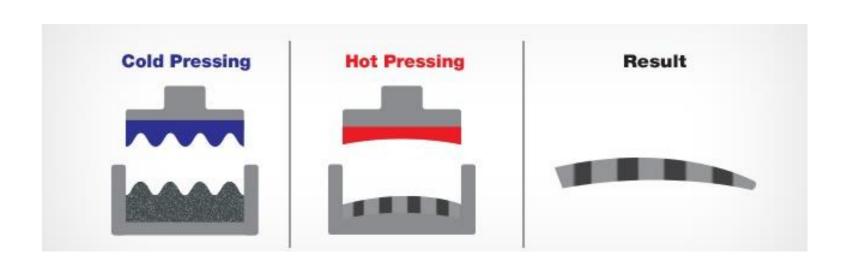
#### **Brake Linings**

More than 350-part numbers available



#### **Wave Process**

- Varying densities for enhancing performance and durability
- Recycled material restricted to base layer
- Extending drum life
- Proven lower cost per kilometre









## **MAG Truck Parts**















- Air Fittings
- Grease Nipples
- Slack Adjusters
- Wheel Bearings & Hubs
- Suzie Hoses & Cables
- Couplers & Connectors

- Starters
- Alternators

- Chevrons
- Reflective Tape
- Lighting

- Bushes & Repair Kits
- Shocks
- Spring Bolts
- Spring Bushes & Repair Kits
- Spring Mountings
- Stabilizer Arms
- Stabilizer Bushes
- Repair Kits
- Torque Arms
- V-stays

- Fans
  - Fan Clutch units
- Water Pumps
- Radiator Caps
- Thermostats

- Truck Shocks
- Cab Struts









- Air Fittings
- **Grease Nipples**
- Slack Adjusters
- Wheel Bearings & Hubs
- Suzie Hoses & Cables
- Couplers & Connectors





- Starters
- Alternators











- Chevrons
- Reflective Tape
- Lighting







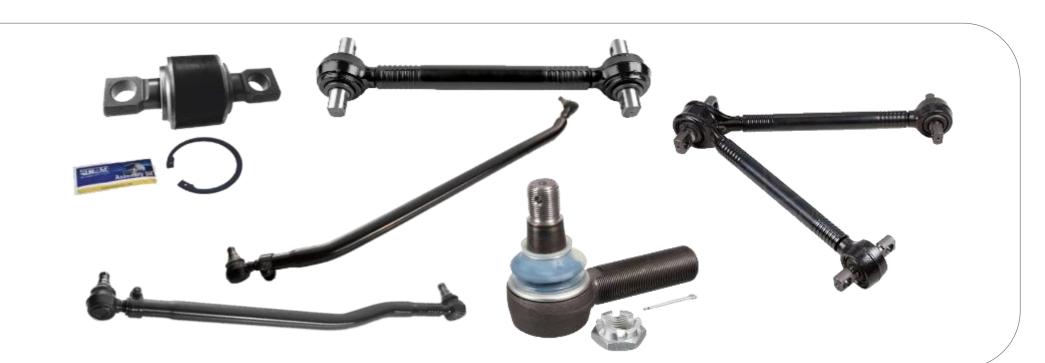








- Bushes & Repair Kits
- Shocks
- Spring Bolts
- Spring Bushes & Repair Kits
- Spring Mountings
- Stabilizer Arms
- Stabilizer Bushes
- Repair Kits
- Torque Arms
- V-stays





- Fans
- Fan Clutch units
- Water Pumps
- Radiator Caps
- Thermostats













- Truck Shocks
- Can Struts
- Bushes & Mountings









## Borg Warner



# **BorgWarner**

#### **Keeping Cool on the Long Road**

- BorgWarner OE supplier for MAN, Mercedes, Scania and Volvo
- The long distances travelled and harsh climate of South Africa require that heavy vehicles have superior cooling
- Fans and viscous clutches for most makes of heavy vehicles on South Africa's roads
- Proven to lower fuel consumption by between 2 6 %



## Borg Warner



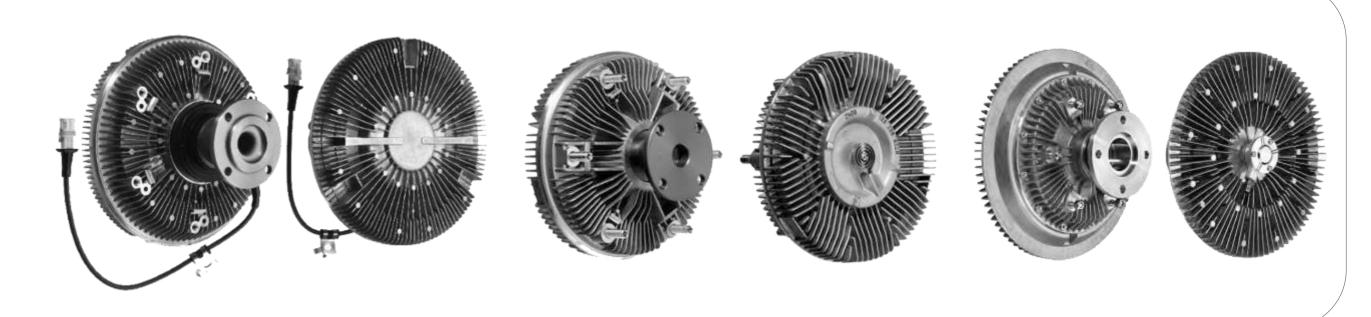
#### **Plastic Fans**

- Ring Fans
- Open Blade Fans
- Suction & Blower Fans



#### **Viscous Drives**

- Electronic Viscous
- Mechanical Viscous
- Air Viscous









### SEM Introduction



#### **Steering Your Fleet In The Right Direction**

- SEM Lastik OE supplier to MAN, Mercedes Benz, Ford (Otosan), BMC as well as Temsa in Turkey
- We have a full range of suspension parts for all European vehicles
- Expanding range of parts for American, Chinese & Japanese vehicles







OTOSAN





BMC

TEMSA





## SEM Product Range



#### **Suspension Group**



- Bushes & Repair Kits
- Shocks
- Spring Bolts
- Spring Bushes & Repair Kits
- Spring Mountings
- Stabilizer Arms
- Stabilizer Bushes & Repair Kits
- Torque Arms
- V-stays

## **Engine & Transmission Group**







- Engine & Gearbox Mountings
- Engine & Gearbox
   Products
- Hoses
- Silicone Hoses
- V-Belts

#### Cab Group





- Cab Bushings, Mountings & Repair Kits
- Cab Cylinders
- Cab Locks & Equipment's
- Cab Pumps
- Cab Shocks
- Pressure Springs

#### **Steering Group**



- Draglinks
- Gear Shift Links
- Tie Rods
- Tie Rod Ends

## Clutch & Brake Group



- Repair Kits
- Slack Adjusters









## Permatex Product Categories



#### Gasketing







- **Gasket Makers**
- **Anaerobic Gasket** Makers
- **Gasket Sealants**
- **Gasket Removers**

#### Thread Compounds









- **Thread Lockers**
- **Thread Sealants**

### Stop Leaks









- **Head Gasket** Repair
- Oil Stop Leaks
- **Power Steering** Leaks
- Radiator Repair

#### Adhesives & **Sealants**





Permatex

Restrictes
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Spray
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- **Epoxies**
- Adhesive Sealants
- Spray Adhesives
- Super Glues
- Adhesive Removers
- Weatherstrip Adhesives

#### **Hand Care**









- Fast Orange
- Wipes
- **Hand Care**
- **Extended Line**

#### Lubricants







- Anti-Seize Lubricants
- Specialty Lubricants
- **Brake Lubricants**

#### Maintenance & Repair











- Body & Under Bonnet
- Brake Repair
- **Body Repair**
- **Rust Treatment** Repair Kits
- Rebuilders Aid



## **Stop Leaks**



## Radiator Repair Leak

#### Permatex ® Radiator Repair Stop Leak

- Reduces need to top off fluid due to mild corrosion
- No Draining or Flushing
- One-Step Process
- Anti-Clog Formula



The Permatex Radiator Repair flows through the heater core without restriction and plugs pinhole leaks reducing engine overheating and frequently adding coolant. Corrosion of cooling system components causes pinhole leaks and can lead to engine overheating and the need to frequently add coolant.

## Head Gasket Repair Leak

#### Permatex ® Head Gasket Repair Stop Leak

- ASTM D3147, D6107 and D1881 Approved
- Heat Syncing Formula
- One-Step Process
- No Draining or Flushing
- Anti-Clog Formula



The Permatex Head Gasket Repair is designed to seal pinhole leaks 2x faster and prevent coolant, oil and other fluids from mixing with each other. Leaks in head gaskets cause loss of engine power, overheating and excess coolant consumption.

## **Engine Oil Stop Leak**

#### Permatex ® Engine Oil Stop Leak

- Works on all gas, hybrid and diesel engines
- Eliminates exhaust smoke due to burning oil
- Conditions o-rings and seals to prevent cracking and future leaks
- No Draining or Flushing
- Anti-Clog Formula



Permatex Engine Oil Stop Leak increases viscosity of engine oil and conditions, softens and expands rubber components. Brittle seals and gaskets allow oil to seep from the engine and cause deposit formations and dark exhaust smoke.

## Power Steering Repair Leak

#### Permatex ®Power Steering Repair Stop Leak

- Quiets Noisy Power Steering Pumps
- Improves Steering Response
- One-Step Process
- No Draining or Flushing
- Anti-Clog Formula



Permatex Power Steering Repair stops leaks, increases fluid viscosity while conditioning and protecting rubber components, reducing cracking and future leak points. Leaky fluids and low levels cause squealing and squeeking



## Maintenance & Repair



## **Body and Under Bonnet**

- Under Coating, Engine Degreaser, Weatherstrip Cement
- Battery Protector, Battery Cleaner, Throttle & Choke Cleaner, Radiator Cleaner











#### **Brake & Parts**

- Brake & Parts Cleaner
- Electrical & Contact Cleaner



- Muffler & Tailpipe Sealant & Putty
- Muffler & Tailpipe Bandage



- Prussian Blue
- Valve Grinding Compound

## **Repair Kits**

- Wheel Restorations Kits
- Windscreen & Vinyl Repair Kits

#### **Rust Treatments**

- Rust Treatments
- Rust Dissolver Gel







































## Gasketing



#### **Gasket Makers**

- Black Gasket Makers
- Red Gasket Makers
- Grey Gasket Makers

#### **Gasket Sealants**

- Gasket Dressings
- Spray On Gaskets
- Gasket Sealants



































## **Anaerobic & Specialty Gasket Makers**

- **Anaerobic Gasket Makers**
- Specialty Gasket Makers
- Applications: Transmission/Water Pumps/Thermostats

















#### **Gasket Removers**

- Gasket Scraper
- **Gasket Remover**







## Hand Care



### **Fast Orange**

- Heavy Duty Hand Cleaner
- Pumice Hand Cleaner / Lotion
- Pro clean Hand Cleaner















## Wipes

- Fast Orange Wipes
- Heavy Duty Scrubbing Towel







#### **Extended Line**

- Grease X Laundry Detergent
- Grease X Body Wash
- Repair Cream / Foaming Hand Wash







#### **Permatex Hand Cleaners**

- Mechanics Gloves
- Scrubs in a Bucket
- Grease Grabber











### **Thread Compounds**



#### **Blue Thread Lockers**

Medium Strength

















### **Orange Thread Lockers**

High Strength









#### **Red Thread Lockers**

- High Strength
- High Temperature









#### **Thread Sealants**

- Pipe Joint Compounds
- Thread Compounds / Sealants / Bearing Mount























### **Additional Thread Compounds**

- Bolt Mark
- Retaining Compounds



### Adhesives & Sealants



### **Epoxies & Syringe Adhesives**

- Epoxy
- Plastic Weld / Steel Weld / Cold Weld























#### **Adhesive Sealants**

- Silicone Adhesives
- Windshield Glass Sealer



- Leak Repair Spray / Headliner Adhesive
- All Purpose Spray



- Super Glue
- Ultra Bond Super Glue

### Specialty Adhesives & Removers

- Fuel Tank Repair / Plastic Adhesive/Liquid Tape
- Contact Cement / Wrap it / Decal Remover / Metal Fill

### Weatherstrip Adhesives

- Weather Strip Adhesives
- Weather Strip Cement















































### Lubricants



#### **Anti Seize**

- Chain Lube
- Belt Dressing
- Anti Seize Lubricants

















#### **Brake Lubricants**

- Brake Parts Lubricants
- Ultra Lube / Ceramic Extreme
- Disc Brake Quiet





















### **Specialty Lubricants**

- Bulb Grease / Engine Assembly Lube
- Di Electric Tune Up Grease/ Lithium Grease
- Silicon Lubricants









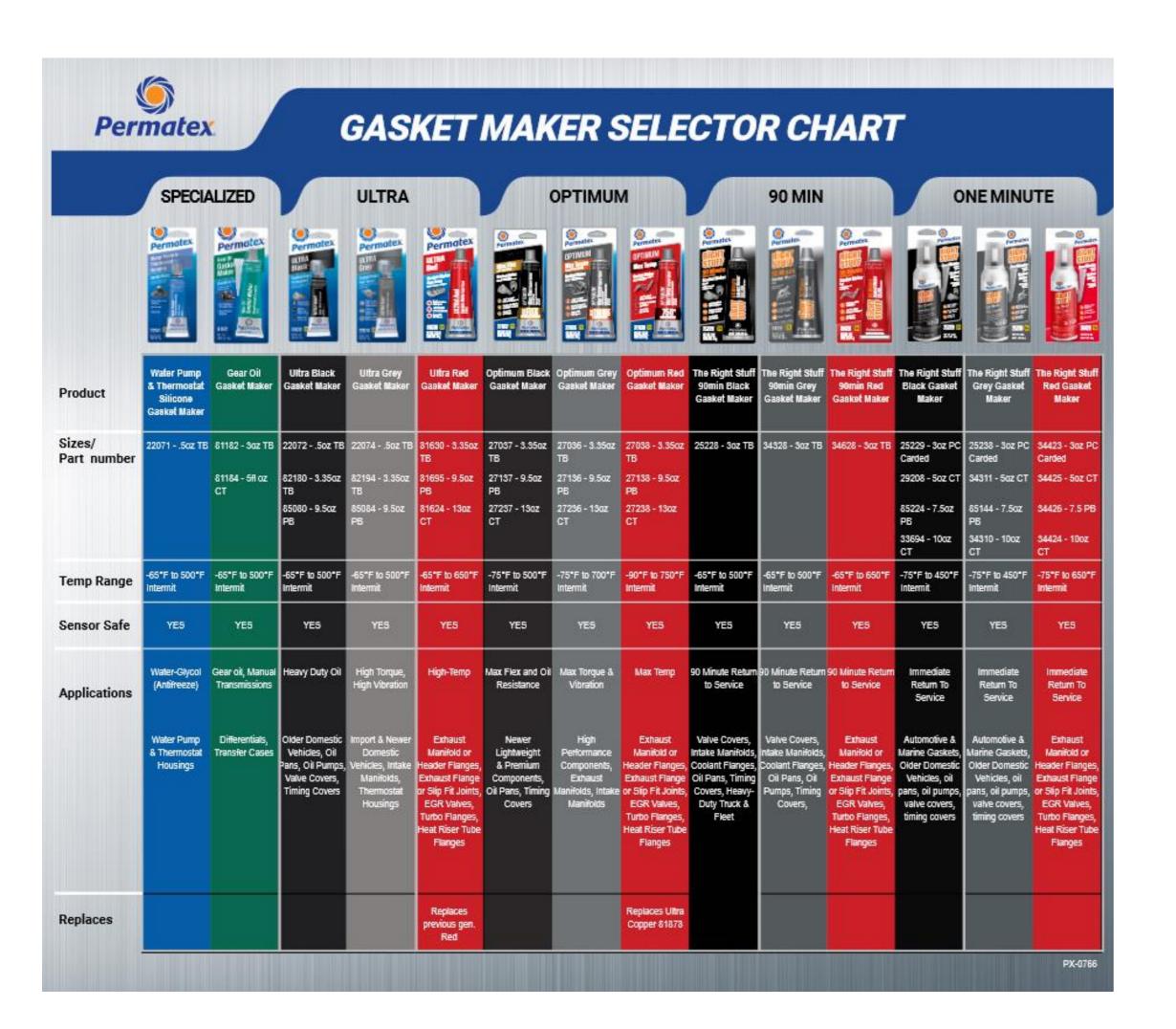






### Permatex Selector Charts









### Permatex Selector Charts







### Hand Care Sales Sheets & Posters









## Permatex Fast Orange Displays











### Contact Us







#### Address

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Office Phone: +27 (11) 627 2500





### VDO Transition to Continental



# VDO is now Continental. Original stays Original.

As a global technology company and one of the leading automotive suppliers, we are the ideal partner for aftermarket solutions and services. Thanks to our broad portfolio and the top quality of an original equipment manufacturer, we always offer our customers real added value.

This bundled know-how represents our Continental brand – and therefore VDO original spare parts for electronics and mechatronics and VDO service tools are supplied in the new Continental packaging as part of the brand transfer. The products will of course be identical.







#### Instrumentation









- Tachometers
- Hour meters
- Ammeters
- Voltmeters
- Tank level gauges
- Pressure gauges
- Speedometers
- Temperature Gauges
- Clocks

#### **Tachographs**



- Head units
- Charts
- Installation components

## Switches & Senders



- Pressure senders
- Temperature senders
- Tank level senders
- Pressure switches
- Temperature switches
- Adapters and fittings

#### Sensors



- Mass airflow sensors
- MAP sensors
- Cam and crankshaft sensors
- Wheel speed sensors
- Knock sensors
- Oxygen/NOX sensors

#### **Actuators**





- Throttle Actuators
- Idle Control Actuators
- EGR Valves

#### **Fuel Systems**





- Common Rail
   Diesel Systems
- Fuel Injectors
- Wide Range of Fuel Pumps





#### **Cooling Systems**



Electric Water Pumps

#### Windshield Systems





- Washer Pumps
- Washer Nozzles
- Washer Kits

#### Multimedia









- 24V Radio
- Entry Line Radio
- OE Radio
- Can Radio
- Accessories

#### **TPMS**





- TPMS
- Conticheck pressure systems
- Commercial Vehicle TPMS

## Fleet Safety Systems



- Reverse Cameras
- ProViu 360
- RightViu (Blindspot Monitoring)



### Instrumentation



#### **VDO Cockpit International**

- Range available for last 30+ Years
- Market coverage Automotive, Commercial and Off-Highway
- 52mm, 80mm and 100mm Variants
- Speedometers and Tachometers now discontinued











#### **VDO SingleViu**

- New Technology (Analogue and CAN)
- Market coverage Automotive, Commercial and Off-Highway
- 52mm, 80mm and 100mm Variants
- Fully customizable input settings to work with OE senders
- Standard connectors on all instrument sizes
- Customizable back light colors (White, Green, Red, Orange, Yellow)
- Programmable warning limits











#### **Veratron Viewline**

- Market coverage Marine and Off-Highway
- IP67 rating
- Analogue and CAN inputs
- Double lens configuration for marine use
- Suitable versions specific for marine applications (Rudder Angle, Trim Tilt, Sumlog etc.)











### Switches & Senders



#### **Pressure Senders**

- Oil
- Water
- Air and Turbo/Boost pressure

#### **Pressure Switches**

- Engine Oil
- Hydraulic Oil
- Water and Brake Air pressure

#### **Temperature Senders**

- Engine Coolant
- Oil, & Air-Cooled engine
- EGT (Exhaust gas) and Ambient

#### **Temperature Switches**

- Engine Coolant
- Oil
- Hydraulic Oil

#### **Tank Level Senders**

- Tubular Type
- Lever Arm type
- Stainless Reed Switch

































### Sensors



### **Oxygen Sensors**

• No of References: 322

New References: 158

Vehicle Coverage : 4.75m vehicles (56%)



#### **CAM & Crankshaft Sensors**

• No of References: 165

New References : 56

Vehicle Coverage: 7.75m vehicles (86%)



### Wheel Speed Sensors

• No of References: 0

New References: 0

• Vehicle Coverage: 0m vehicles (0%)







### MAP Sensors (Air Pressure)

• No of References: 165

• New References: 56

Vehicle Coverage: 7.75m vehicles (86%)









### Sensors



### Air Temperature Sensors

• No of References: 322

New References: 158

• Vehicle Coverage: 4.75m vehicles (56%)







### **Engine Oil Level Sensors**

• No of References: 165

New References : 56

Vehicle Coverage: 7.75m vehicles (86%)







#### **Throttle Position Sensors**

• No of References: 0

New References: 0

Vehicle Coverage : 0m vehicles (0%)







### MAF Sensors (Mass Air Flow)

• No of References: 322

New References: 158

• Vehicle Coverage: 4.75m vehicles (56%)









### Sensors



#### **Knock Sensors**

- No of References: 165
- New References : 56
- Vehicle Coverage: 7.75m vehicles (86%)







### **EGT Sensors (Exhaust Gas)**

- No of References: 0
- New References: 0
- Vehicle Coverage : 0m vehicles (0%)







#### **Other Sensors**

- High Pressure Sensors
- Rudder Angle Sensors
- CKP/CMP Sensors









### Valves & Actuators



#### **Throttle Valves**

- Electromotive Throttle Valves
- Electronic Throttle Valves
- Mechanical Cable and Electric Servo Operated





### Idle Speed Control

Electric pneumatic





### **Digital Linear Actuator**

• Electric servo controlled



Design and Manufacturing at OE manufacturer specification

Direct replacement (Mounting and Electrical)

Full integration with vehicle electronics

Ensuring improved efficiency in all load conditions, producing better performance, fuel economy and emissions

OE – VDO Cross reference



### **Fuel Components**



#### **Common Rail Diesel**

- Common Rail Pumps
- Common Rail Injectors
- CR Diesel Rails



### Fuel Pumps & Fuel Feed Units

- In tank Electric pumps
- Swirl Pots
- Cartridge Pumps



### Petrol Fuel Injectors

Direct OE Replacement



Direct Replacement of OE part

Design/Manufactured to OE manufacturers specification

Cross-reference between VDO and OE number

Full integration with vehicle electronics

### Contact Us







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### Williams Controls







### The complete Solution



- Human-Machine Interface Controls
- Power Management
- Joystick Controls
- Throttle Controls
- Sensors



On-Highway Vehicles
 medium- and heavy-duty
 trucks, buses and motor
 coaches, recreational
 vehicles, refuse trucks, road

sweepers

- Off-Highway Vehicles
   construction, material
   handling, mining, agriculture,
   forestry, defense, motorsport,
   recreational vehicles
- Static Machinery
   business machines,
   switchgear, process control,
   security









### Product Range



## Human Machine Interface Controls



- Dash Mounted and Column Shifter
- Multi-function Operator Consoles
- Customized Armrest Consoles

#### **Joystick Controls**



- Single and Multi-axis Joysticks
- Lever and Rotary Hand Controls

#### **Throttle Controls**



- Floor-mounted Pedals
- Suspended Pedals , Rocker Pedals
  - Tilt Sensors ,Thumb Controls
    - Twist Controls
    - RX Pedal Module

#### Sensors



- Linear and Rotary Hall-effect Sensors
- In-cylinder and Spool Valve Sensors
  - Spool Valve Linear Sensors
    - Tilt Sensors



### Human Interface Controllers



- Dash-mounted and Column Shifters
- Multi-function Operator Consoles
- Customized Armrest











### Power Management



- Low Power AC and DC Motor Controllers
- Traction Inverters
- Power Distribution Modules\*
- High Voltage Inverters







Low Voltage - Controls

#### High Voltage Traction Converters













## Joystick Controllers



- Single and Multi-axis
   Joysticks
- Lever and Rotary Hand Controls















### Foot pedals and Throttle Controls



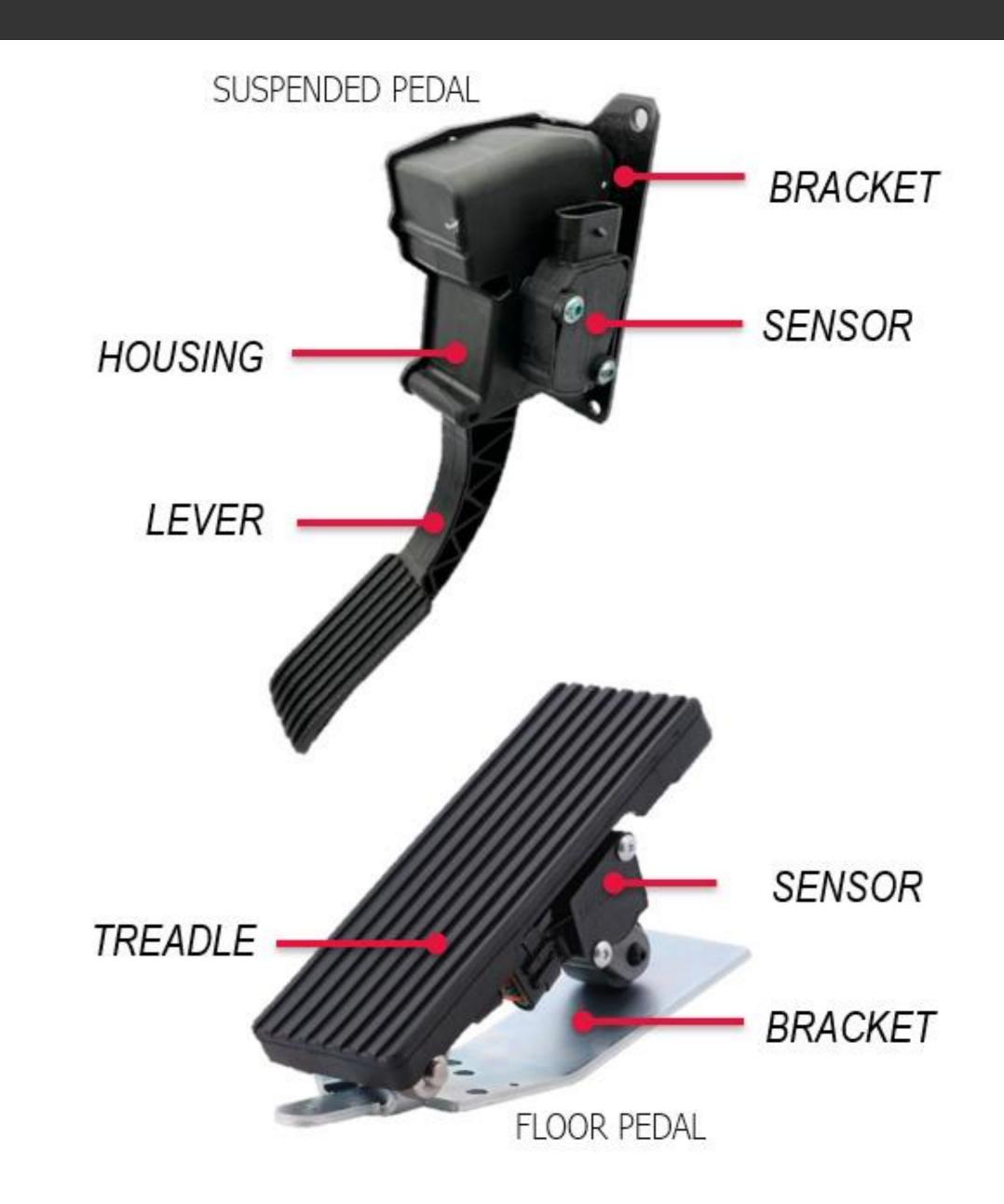
- Floor-mounted Pedals
- **Suspended Pedals**
- **Rocker Pedals**
- **Tilt Sensors**
- **Thumb Controls**



### **Product Overview**



- Pedal mounting placement
  - Bracket
- Programming
  - Sensor
- Starting pedal angle
  - Bracket
- Overall travel angle
  - Lever
- Forces
  - Return springs
  - Kickdown module



### WM-380 Sensor



- Hall Effect Non-Contact Sensor
- Environmental Protection
  - IP68S and IP69k
  - Salt fog 1000 hour while powered on
- Endurance Tested to 10 Million Cycles
- EMC Tested to International Standards
  - ISO11452, ISO7637, CISPR25, ISO16750, ISO10605
- Sensor Outputs Available
  - Dual Analog or PWM Outputs
  - Analog and Dual IVS Outputs
  - CAN Message Output
- Sensor Power Supply Regulated 5V
  - 12V & 24V Battery (CAN Option only)
- Sensor Electronic Platform Used in Integrated Products
- High DC Magnetic Immunity Option (Inductive Foundry Applications)





### WM-900 Sensor



- Hall Effect Non-Contact Sensor
- Environmental Protection
  - IP67 & IP69k
  - Salt fog 96 hour while powered on
- Endurance Tested to 10 Million Cycles
- EMC Tested to International Standards
  - ISO11452, ISO7637, CISPR25, ISO16750, ISO10605
- Sensor Outputs Available
  - Dual Analog or PWM Outputs
  - Dual 4-20mA Current Output
  - Analog and Dual IVS Outputs
- Sensor Power Supply
  - Regulated 5V (Analog and PWM Outputs)
  - 12V & 24V Battery (PWM and Current Outputs)
- Optional Flying Lead Connector





### WM-526 Floor Pedal



#### Features

- Multiple configurable mounting options
- Optional magnetic kickdown
- Integrated hysteresis
- Standard pedal angles of 28.5, 35, and 45 degrees
- Certified to FMVSS-124 (Dual springs for redundant safety return)

#### Testing

- Based on SAE J1455
- Tested to 10 million cycles
- Designed for Heavy duty applications
  - on-highway, agriculture, and construction markets



### WM-532 Floor Pedal



#### Features

- Narrow and compact design
- Multiple configurable mounting options
- Standard pedal angles of 35 and 52 degrees
- Certified to FMVSS-124 (Dual springs for redundant safety return)

#### Testing

- Based on SAE J1455
- Tested to 4 million cycles
- Designed for Heavy duty applications
  - on-highway



### WM-558 Floor Pedal



#### Features

- Injection molded engineering plastic construction
- Multiple mounting points available
- Integrated hysteresis
- Standard pedal angles of 35 and 45 degrees available.
- Certified to FMVSS-124 (Dual springs for redundant safety return)
- Testing
  - Based on SAE J1455
  - Tested to 3 million cycles
- Designed for Medium and Light duty applications
  - on-highway



### WM-537 Floor Pedal



#### Features

- Injection molded engineering plastic construction
- Multiple mounting points available
- Integrated hysteresis
- Standard pedal angles of 30, 37.5, and 45 degrees

Certified to FMVSS-124 (Dual springs for redundant safety return)

#### Testing

- Based on SAE J1455
- Tested to 3 million cycles

#### Medium duty applications

on-highway, agriculture, and construction markets



### WM-528 Floor Pedal



#### Features

 Injection molded engineering plastic construction

Under panel/through floor installation

Standard pedal angles of 22 degrees

Certified to FMVSS-124 (Dual springs for redundant safety return)

#### Testing

- Based on SAE J1455
- Tested to 3 million cycles
- Designed for material handling and offhighway applications
  - Lift trucks and sweepers



### WM-540 Suspended Pedal



#### Features

- All metal construction with die cast aluminum and steel
- Many lever arm options available
- Plastic or heavy-duty aluminum pedal pads available.
- Configurable steel mounting bracket with many available options
- Certified to FMVSS-124 (Dual springs for redundant safety return)

#### Testing

- Based on SAE J1455
- Tested to 3 million cycles
- Designed for Heavy and Medium duty applications
  - on-highway, agricultural, and construction



### WM-542 Suspended Pedal



#### Features

- Injection molded engineering plastic construction
- Many lever arm options
- Configurable steel mounting bracket with many available options
- Optional magnetic kickdown
- Optional hysteresis
- Certified to FMVSS-124 (Dual springs for redundant safety return)
- Testing
  - Based on SAE J1455
  - Tested to 3 million cycles
- Designed for Heavy and Medium duty applications
  - on-highway



### WM-554 Suspended Pedal



#### Features

- Injection molded engineering plastic construction
- Many lever arm options
- Configurable steel mounting bracket with many available options
- Narrow profile
- Certified to FMVSS-124 (Dual springs for redundant safety return)
- Testing
  - Based on SAE J1455
  - Tested to 3 million cycles
- Designed for light and medium duty applications
  - on-highway, off-highway, sports and rec





### WM-E10 Rotary Control Module



#### Features

- Snap in panel mount
- Soft touch 360° continuous rotation knob with 12 detent positions
- Up to 4 configurable buttons on faceplate
- Customizable button icons with dimmable LED backlighting and
- Separate LED status indicators
- Integrated 6-pin Metri-pack 150 Series connector
- Programable CAN outputs

#### Testing

Sealed to IP67 and IP69K

#### Designed for rugged environments

agricultural, construction, sports and recreation





### WM-G10 Off-Road Pedal RX



#### Features

- High performance pedal for use in extreme environments
- Low profile housing allowing ergonomic placement in cab
- Integrated WM-830 sensor platform
- Mounts under the floor or onto the firewall

#### Testing

- Tested to 3 million cycles
- Mechanism sealed to IP67
- Integrated sensor sealed to IP69K
- Designed for extreme environment applications
  - agricultural, construction, and material handling



### WM-J10 Gearshift Handle



#### Features

- Custom designed handle for use in open or closed cabs
- Ergonomic surfaces provide many comfortable hand positions
- Can be shipped to customer as fully assembled handle
  - All components, harness, and cover can be pre-installed
  - Reduced assembly time
  - Simplified field retrofit installation
- Customizable arrangement of buttons from preferred button manufacturers
- Customizable insert with shift pattern, company logo, ISO graphical symbols, etc.
- Mounts directly to shafts from 16.5 to 22 mm

#### Designed for Heavy Duty applications

agricultural, construction



### WM-G20 Medium Duty Pedal



#### Features

- Designed for use in closed cabs
- Optional magnetic kickdown
- Optional Integrated hysteresis
- Integrated WM-830 sensor platform
- Mounting bracket is integrated into pedal housing
- Optional brackets for specific mounting arrangements available
- Certified to FMVSS-124 (Dual springs for redundant safety return)
- Testing
  - Tested to 3 million cycles
  - Sensor sealed to IP67 and IP69K
- Designed for Light and Medium duty applications
  - on-highway





### **Position Sensors**



- Linear and Rotary Hall-effect Sensors
- In-Cylinder and Spool Valve Sensors
- Spool Valve Linear Sensors
- Tilt Sensors











### Contact Us









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