The Dinex business concept is to develop, manufacture and distribute complete exhaust systems and emission technologies for all commercial vehicles and industrial machinery with diesel engines.

Dinex supplies complete exhaust systems – from turbo to tailpipe – for trucks, buses, vans and industrial machines. In addition, Dinex offers a variety of emission technology products for this range of applications.

The competencies of Dinex include all processes of development, manufacturing and distribution. Development is based on space envelope requirements or specific customer drawings.

Dinex operates within the Original Equipment Manufacturer (OEM), Original Equipment Spare Parts Supply (OES) and Aftermarket segments.

Dinex is Europe’s leading supplier of exhaust systems and emission technologies for commercial vehicles and industrial machinery and is the only industrial player with its own purchase and manufacturing departments for metal as well as ceramic products.

Organisation
Dinex is a Danish family owned company with more than 800 employees. The head office and the Dinex Technology Centre are based in Denmark. The production sites are located in Denmark, Germany, Latvia, UK, Turkey and Russia, with sales and distribution companies situated in Great Britain, Germany, France, Spain, Italy, Poland, Latvia, Russia, Sweden, USA and Turkey.

In 2009/2010, further production sites are planned in USA and Asia.
Company History

1982-1990
Jorgen and Grethe Dinesen founded Dinex A/S in 1982. The founders have retired from daily operations to be active members of the board. Since 2000 Torben Dinesen has been the Managing Director of the Group.

1990-1995
Investment in new products for the market, as well as expansion of the production platform.

1995-2005
Establishment of subsidiaries all over Europe with focus on sales and distribution of the programme.

2005-2015
Global market expansion in Europe, USA and Asia as the next step for the Dinex Group.
The vision of the Dinex Group is to become the world’s leading manufacturer of complete exhaust and emission systems for the off- and on-road markets for diesel engines.

This includes continuous improvement of existing filter medias in conjunction with catalytic wash coating (CDPF’s) and various options for active regeneration (AR).

In addition to this, effective methods for reducing nitrogen oxides (NOx) by selective catalytic reduction (SCR) and reliable, cost-effective exhaust control and monitoring systems to ensure optimal functionality and compliance.

The R&D Company
Dinex Emission Technology A/S, the group’s R&D company, will facilitate the Dinex vision by cooperating with the best technology providers in the world to identify, test and validate the best available technology for future emission control to be applied for diesel engines serving the on-road and off-road market segments.
Product Development
More than 50 R&D employees work on developments of exhaust and emission control systems in house. This includes all stages from design, 3-D drawings, flow dynamics and testing at Dinex’ Test Lab for noise, back pressure and prototype designs.

Design
Dinex uses SolidWorks - a 3D CAD system programme, which is a major advantage when communicating with customers as exchanging 3D models and drawings etc. is simplified.

2D Drawings
• Portable Document Format (PDF)
• 2D DXF/DWG (.DXF, .DWG)
• TIF image (.TIF)

3D Models/Assembly
• STEP AP203/214
• Initial Graphics Exchange Specification (.IGS)
• Pro/ENGINEER files (.PRT, .ASM, .XPR, .XAS)

In the development phase different methods of calculation are applied, based on theoretical values and experience, as well as information supplied by customers.

Information from customers includes:
• Engine type
• Engine power
• Exhaust temperature
• Exhaust flow
• Space envelope available

Calculations are supported by a CFD analysis using a Comsol Multiphysics system programme, which verifies the design of silencers. All new designs are tested.

Emissions 2007-2012

USA
EPA/07 – PM
EPA/10-12 – NOx+PM

Europe
 Euro 4/06 – NOx
 Euro 5/08 – NOx
 Euro 6/10-12 – NOx+PM

Eastern Europe
 Euro 2/3 – No regulations

The sound pressure distribution across the inner surface of a silencer at a single frequency (f = 100 Hz).
Test and Documentation
The in-house test centre includes a range of engine test benches making it possible to test and document silencer functionality with regards to sound attenuation and back pressure. Sound levels are measured in 1/3-octave frequency intervals from 50 Hz to 8 kHz. All tests are carried out according to Dinex standard testing methods or alternatively to customer requirements.

The test centre is used as a design tool for R&D purposes, for documentation and quality control. The new test centre can also take the customers vehicle or engine and test and validate products.

Technology and New R&D Centre
Dinex has installed in excess of 30,000 filter systems in Europe and gained huge experience in emission control installations. In line with the new EURO V and EURO VI regulations, Dinex has established Dinex Emission Technology A/S to ensure the required competences within the Group.

The new Dinex Technology Centre enables Dinex to develop, test and validate silencers and emission technologies much faster, with greater flexibility and accuracy, and in great detail.

The benefit for our customers is an even more professional and scientific approach, resulting in a higher level of development, verification and documentation that will allow Dinex to work with customers to meet tomorrows challenges for exhaust and emission systems.

The Dinex Technology Centre covers 1,400 m² and includes a new - 900 m³ - reverberant sound chamber with Brüel & Kjær measurement equipment for even more detailed analysis of noise and vibrations. In addition, the Technology Centre includes two new Horiba engine dyno's for engines up to 600 kW and a chassis dyno for vehicles up to 18 m and 600 kW.

Furthermore, Dinex has invested in a new flexible FTIR analyser for measuring exhaust gas and air pollution components. Size distribution and part number ultrasizing facilities will also be integrated.

The Technology Centre includes facilities for development of new technologies and design, fitting, testing, vibration and verification of prototype systems. The Dinex Technology Centre is one of the most modern engine laboratories in Denmark and amongst the best in Europe.
Exhaust systems are manufactured in aluminized or stainless steel quality. All aluminized parts are produced in a special B500A Aluzink surface treated quality (55% aluminium, 43% zinc and 2% silicium), as this material is both corrosion and heat resistant, and therefore suitable for manufacturing of exhaust systems. In comparison, Aluzink is six times more durable than ordinary galvanized materials. Even if the aluminized surface is damaged, the Aluzink will prevent corrosion from spreading.

The result of using Aluzink surface treated materials, as well as lock seaming and expansion processes, is a long lasting exhaust system with an average lifetime of 3-5 years, depending on the usage and function of the vehicle.

Not only do the modern technologies of manufacturing and materials used by Dinex make all Dinex exhaust systems compare favourably to the original manufacturer’s products, also the technical specifications and ease of installation of the product ensures that all Dinex exhaust systems are of a superior standard and quality.

The in-house test centre ensures that the quality of the Dinex silencers – in terms of noise level, emission, and back pressure – complies with original silencers. In the same way, accurate laser measuring equipment and fixtures ensure that both pipes and silencers are reproduced and aligned with the original products.

B500A Aluzink is:
- 55% aluminium
- 43% zinc
- 2% silicium
**Quality System**

Being a supplier to both the OEM and OES markets requires a high level of quality management. This is why Dinex A/S maintains a quality management system, which is improved and refined regularly, thereby helping to ensure continuous improvements in quality and standards.

Dinex A/S has been certificated in accordance with ISO 9001 since 1995 and is now certificated according to the latest third generation of ISO 9001 – the ISO 9001:2000 certification.

The TS16949 certification is a superstructure within the automotive industry of the ISO 9001 standard, which Dinex has in progress.

**Environment**

Part of the quality management is to ensure that Dinex A/S is environmentally conscious by evaluating the company’s manufacturing and products in terms of their impact on the environment. Therefore, Dinex A/S documents its environmental initiatives continuously, which makes it easy to evaluate the environmental impact.

Since March 2004, Dinex A/S have been certificated in accordance with the ISO 14001 standard. This defines the international standard for environmental management. By being certificated to this standard, customers and other interested parties are ensured that Dinex A/S has environmental objectives that are continuously refined and updated, and that environmental action plans are set up and maintained.
Assortment

Exhaust Systems for EURO 0 to EURO III
Having more than 10,000 different part numbers, Dinex has the most comprehensive assortment of exhaust system parts for commercial vehicles in Europe.

Dinex is a well known brand within aftermarket (AEM) and original spare parts organisations (OES).

The number of parts is continuously increasing, as the philosophy of Dinex is to supply all parts of an exhaust system – silencers, pipes, fittings etc. – for commercial vehicles, and to cover all types and models for each vehicle make within three years after the vehicle has been introduced.

The Dinex product range includes exhaust systems for European truck makes such as Mercedes, Volvo, Scania, DAF, Iveco, MAN, and Renault, as well as most UK only makes. In the same way, Dinex also covers the bus range of exhaust systems for makes like Evobus, Neoman, Irisbus, Volvo, Scania, and for most of the British produced buses as well.

The van segment, defined by vehicles from 2-7 ton, is a future growth business of Dinex with applications for Mercedes, VW, Iveco, Renault, Peugeot, Citroën, Ford, Fiat, and all the Asian makes. Furthermore, Dinex has a line of universal parts such as pipes, bends, flex pipes, vertical silencers, clamps, rubber mountings etc.

Emission Systems for EURO IV and V
Dinex will as the first supplier introduce EURO IV and V versions over the coming years. Using both SCR catalytic units as well as partial filters used in MAN applications. All are Dinex designs tested and verified in Dinex Emission Technology Centre as well as by accredited institutes. No other competitor in the market can offer this service and competence.
The Dinex Catalogues are important working tools used by customers every day. For each vehicle segment Dinex has a printed catalogue, showing the available systems using both Dinex and OE numbers.

The Truck Catalogue contains more than 1,000 different systems and more than 5,300 part numbers – the catalogue is without comparison the most comprehensive in the industry. In addition, the Van Catalogue and the Bus Catalogue are the only vehicle segmented catalogues available.

Availability of parts is an increasingly important factor when working with exhaust system spare parts. For this reason, Dinex has a setup of regional sales offices and distribution centres in Great Britain, Germany, France, Spain, Italy, Turkey, Russia, Poland and Latvia. This allows customers to have deliveries within 24 hours, and at the same time to have technical assistance, price information etc. in their own language. More subsidiaries are expected, as part of the company strategy.
Production

Production Equipment
The manufacturing equipment consists of various CNC-operated machines such as laser pipe and plate cutters, punching machines, pipe bending machines, presses, robots, lock seaming machines etc. The manufacturing facilities are divided into a silencer line and a pipe line.

Using an advanced 3D-drawing programme all technical specifications are transferred directly to the manufacturing machines, where the different components are processed, eliminating any risk of human error.

The manufacturing equipment and technologies allow Dinex to manufacture pipes in one piece without welding. Silencers are assembled using a lock seaming and expansion technique, making it possible to produce silencers without any outside welding.

Production Sites
Each site produces its own specific range of items, but can be adapted to produce others when required.

Denmark
OEM customers and filter production.

Germany
OEM customers and insulation production.

Latvia
Aftermarket and OES production.

UK
Clamps production OEM and aftermarket.

Turkey
Large scale OEM production and OES volume.

Russia
Aftermarket and OEM production for Russia.
Dinex plans to double the production from 2007 to 2010 in output and production capacity to meet the needs of existing customers and new projects that will materialize during 2010-2012.
Suppliers
The main suppliers are manufacturers of steel materials, and are evaluated according to the applied ISO 9001 quality management system. They are expected to be abreast of developments within their product area and contribute to optimisation of Dinex' supply chain. To ensure that purchased products apply to specifications, samples of incoming materials are carefully checked.

Warehouse
The automatic warehouse is 15 metres high and contains in a 3,000 square meter facility 9,700 pallets, which are stored and restored by five fully automatic robots. The automatic warehouse has been implemented with focus on data logging, unambiguous labelling and storage. The efficiency of the warehouse is approximately 6 times higher than the previous manual warehouse. Raw materials, templates and products are transported directly between the production and the warehouse by automatic trucks (AGVs). The warehouse and production systems are linked thereby making it easier for the production operators to call off the required material from the warehouse.

Shipment
In respect of packaging and preparation for shipment, Dinex is able to comply with specific customer demands relating to branding, wrapping, packing in kits etc. As a standard all Dinex products are steel stamped with product number and provided with a barcode label (EAN13). If the customer has a logistic agreement with Dinex, Dinex will carry a stock of certain products and is able to deliver within 24 hours.
Clamps
A complete new range of low-leakage clamps “tight-fit”.

Insulation techniques
Keeping heat inside or outside.
800 degrees inside and 250 outside.

Flex pipes & bellows
Dinex supplies and designs both flexible hoses and bellows.

Emission technologies
Particle filters and SCR cats can be installed into our modular systems.

Silencers
Lockseamed, stamped or welded units. Dinex supplies alu. or stainless steel in 115 different sizes today with own tooling shop.

Exhaust fittings
All fittings are made in-house for complete systems supply.

Pipes
Bending from 32 mm to 152.4 mm in alu. or stainless steel.
Dinex supplies emission control systems to comply with legislation.

It is Dinex’ defined strategy to manufacture and supply the necessary emission control systems that may be required from the OEM’s to comply with present and future legislation.

During the last five years, Dinex have sold more than 25,000 emission control systems to customers all over the world within the retrofit market, but also to the growing OEM market.

The product portfolio of emission control systems, which is constantly developed, currently includes six different technologies that apply to different operating conditions and special customer requirements:

• Diesel oxidation catalysts (DOC).
• Catalysed Diesel Particulate filters (DiPEX®).
• Silicon carbide filters (DiSiC®).
• Selective Catalytic Reduction (SCR).
• Combination package between a DPF and a SCR system (DiNOx®).
• Active regeneration.

Being a supplier of exhaust systems to the OEM, OES and Aftermarket is a definite advantage of Dinex, as this makes complete kit solution offerings possible. The kit solutions include oval and round filter designs according to space requirement, electronic control units, hose connections, pressure valves, pumping systems and wiring looms etc.
Basic Understanding of Exhaust, Emission and Filter Technologies

Nitrogen Oxides (NOx)
- Nitrogen oxides consist of NO & NO2 and are created in connection with the air intake and convert into nitrate
- Very poisonous for people and leads to smog formation
- Often difficult to reduce but this can be achieved with the use of DiNOx® and SCR systems

Particles (PM)
- Smog formation, carcinogenic
- Organic/inorganic. Very unhealthy for people
- Can be reduced by a particulate filter system, either DiPEX® (cordierite filter), DiSiC® (silicon carbide filter) or DiDOC® (open partial filter)

Hydrocarbon (HC)
- Poisonous, carcinogenic, smog formation
- Can be oxidised by a precious metal catalyst
- Converts into CO2 and water
- Can be reduced by a particulate filter system, either DiPEX® (cordierite filter), DiSiC® (silicon carbide filter) or DiDOC® (open partial filter)

Carbon Monoxide (CO)
- Acutely poisonous
- Can be oxidised by a precious metal catalyst
- Converts into CO2
- Can be reduced by a particulate filter system, either DiPEX® (cordierite filter), DiSiC® (silicon carbide filter) or DiDOC® (open partial filter)
Dinex Particulate Filter
Cleans the exhaust gas by 95-98% of PM, CO and HC. The filter is a ceramic unit coated with either platinum or another coating formula. In some cases, if the vehicle is a very old Pre-Euro 1 classification, it is necessary to add an extra front catalytic unit to ensure that the old vehicle cleans the emission in the expected way.

Dinex SCR Catalyst Filter
Cleans the exhaust gas of NOx by 80-95%. The SCR catalyst is a ceramic coated unit. For the SCR to work it is necessary to inject urea “Adblue” into the exhaust stream by using a pump and control system.

Dinex DINLOG® System
A controlling unit monitors the back pressure level. If the particles (PM) have not been regenerated/burned away from the ceramic cells of the Dinex particulate filter unit, the back pressure raises and the DiNLOG® will give an alarm to the driver. In advanced systems, an AR system can be installed to automatically ensure higher temperatures in the exhaust gas to clean the particles.
Being a complete solutions provider, Dinex offers a broad variety of technologies to the market, addressing environmental as well as legal aspects from development manufacturing and maintenance, to the recycling of the emission products. All of this has been taken care of by Dinex or our partners. In other words, the entire life time of the product is considered.

DiDOC+® is a Dinex partial filter medium, which is commonly used in regions, where there are governmental requirements for PM reduction, but at such level where closed trap diesel particulate filters (DPF’s) are not necessarily required.

This open filter structure is sufficient to meet local requirements of maximum reduction of PM particles of 45-60%. Used on EURO II and III trucks and also older vehicles as well as on vans. Used in environmental zones in Germany, Holland, London Low Emission Zone for trucks, vans and buses and for OE applications in Asia, Eastern Europe and new EURO IV MAN trucks.

DiPEX® is a coated cordierite DPF and can be applied to most on-road vehicles as well as in many off-road applications.

This closed filter cordierite of ceramic is used in many environmental zones in England, Denmark, Sweden, Germany, Holland, Switzerland, US and Japan, typically for trucks from 8-14 ltr. engine size. For new OEM applications we expect an increased use of DiPEX® with the up-coming regulations in Europe - EURO VI in 2012 (OEM on-road) and stage-IIIIB in 2011 (OEM off-road) - and in the USA - EPA in 2010 (OEM on-road) and TIER-4 in 2011 (OEM off-road).

DiSiC® catalysed is a coated silicon carbide DPF which can be applied to most on-road vehicles as well as in many off-road applications.

This closed ceramic filter of silicon carbide structure is used in environmental zones for buses, vans, trucks which experience much idling or low load operation. The DiSiC® catalysed has the same effectiveness as DiPEX®, but with the advantage that the soot load capacity is 4-5 times higher in DiSiC®, enabling it to hold more particles in the filter, before it has to regenerate. It is typically used for vehicles
from 2.5 to 8 ltr. engines. For new OEM applications we expect an increased use of DiSiC® catalysed with the up-coming regulations in Europe - EURO VI in 2012 (OEM on-road) and stage-IIIIB in 2011 (OEM off-road) - and in the USA - EPA in 2010 (OEM on-road) and TIER-4 in 2011 (OEM off-road).

DiSiC® system is an uncoated silicon carbide filter combined with FBC (fuel born catalyst) where the control system injects additive into the exhaust stream. Compared to a catalysed DiSiC® or DiPEX®, the DiSiC® system is ideal for vehicles that have a long idling time or low temperature for longer intervals, typically refuse vehicles or city buses. By continuously injecting additives, the filter will have a low risk of blocking due to higher particle content.

EURO IV (2006) and EURO V (2008) only requires reduction of NOx emission, but if environmental zones are introduced with more focus on particle reduction, Dinex can offer the DiSiC® system as retrofit solutions for new vehicles after 2006 and reduce the particles by 95%. The system can be installed after the SCR catalytic unit.

A unique combined DPF and SCR emission exhaust system with closed filter of silicon carbide or cordierite ceramic structure. The system can take typical EURO II and III vehicles to the level of EURO VI/EEV on the emissions, as it reduces all four types of emission including NOx.

It can be retrofitted to most fleets of trucks, buses, vans and industrial applications and is the ultimate solution for the environment. For new OEM applications we expect an increased use of DiNOx® with the up-coming regulations in Europe - EURO VI in 2012 (OEM on-road) - and in the USA - EPA in 2010 (OEM on-road) and TIER-4 in 2011 (OEM off-road).

A family of high-tech monitoring devices, which ensure continuous monitoring and control of the chosen emission medium. The reporting, monitoring and traceability comply with even the toughest governmental and operational requirements.

A full concept of fitting, maintenance and recycling available throughout Europe.
Exhaust Silencers

All silencer dimensions are designed to optimise sound attenuation and back pressure.

Sound attenuation is documented by the Dinex test procedure where the measured dB(A) values are supported by 1/3 Octave from 125 Hz to 8000 Hz. Back pressure is kept at an absolute minimum in compliance with engine manufacturers maximum allowable limits.

Exhaust silencers in more than 115 different baffle sizes are available in normal mild steel, aluminised steel and stainless steel.

Mild Steel
Mild steel products are finished with either powder coating or heat resistant paint.

Aluminised Steel
Over 90% of all non-stainless silencers are manufactured from aluminised steel. Aluminised steel or alu-zinc steel is a steel type, where mild steel is coated with a thin layer of aluminium oxide composition. This type of material is very resistant to corrosion and no additional after-treatment is required.

Stainless Steel
Dinex manufactures stainless steel products from various types of stainless steel, ranging from AISI 304 to AISI 409.
Exhaust Pipes
Dinex manipulates pipe work ranging from Ø32mm all the way up to 152 mm. Bending technologies utilised within Dinex ensure that all pipes are bent without deformation. New boosting technology also gives minimum Centre Line Radius all the way down to one time the diameter (1-D). All bending processes are CNC controlled to ensure optimal repeatability and quality control. Manipulated pipe work is available in normal mild steel, aluminised steel and in stainless steel.

Mild Steel
Very few products are manufactured in mild steel. Mild steel (DC04/P04) is available but needs after-treatment by either powder coating or heat resistant paint.

Aluminised Steel
Aluminised steel is the most frequently used type of steel for exhaust systems.

Stainless Steel
Dinex manipulates primarily stainless steel in AISI 304/AISI 409. Other types of stainless steel are available upon request.

Water-Cooling and Air Charge Pipes
All pipes are internally cleaned with a high-pressured nozzle and dried. They are then capped/plugged to ensure protection against contamination during transit.

Available Surface Treatments
- Powder coating
- Wet paint
- Blue/Yellow/Black Chromate

If any other surfaces treatments are required, please contract one of the Dinex design engineers.

Other Technical Options
- Mounting bracket
- Flanges for engine
- Mounting stop for rubber hose.
- Pipe beading according to DIN 73550 for water/air pipe to rubber hose joints.
Dinex uses and integrates the highest quality of interlock flexible pipes available on the market. Flexible pipes are used in exhaust systems to absorb engine vibrations, engine movement and heat expansion.

Flexible pipes are supplied in various dimensions as an integrated part of an exhaust pipe or as a separate unit connected with clamps.

**Installation and Use**
Flexible pipes are designed to absorb mainly lateral and angular movements. It is not recommended to use flexible pipes to absorb torsional movement. For this we recommend bellows.

Dinex flex pipes are produced from high quality AISI 304 stainless steel. The Dinex flex pipe is an interlocked pipe which is designed to be gas-tight.

**Correct Installation**
The function of a flex is to compensate and to absorb vibrations in the exhaust system. If the flex pipe is incorrectly installed, by either being compressed, stretched or bent, it will cause a breakage in the flex pipe after only a short usage time. This is due to vibration.

The same problem can also occur when using clamps that are not suitable for flex installation, e.g. U-bolts etc.

To ensure the correct function and durability of the flex pipe, correct installation is required. Therefore, it is recommended that flex clamps are used and the following 3-step installation procedure is followed:

1. Compress
   - Compress length = 100 %

2. Bend
   - Bending length = 112.5 %

3. Flatten to mid-position
   - Extensible length = 125 %
The bellows are made by taking two or more thin wall steel plates and pressing or rolling them into a bellow form.

To design an optimal bellows unit different factors such as heat, axial, torsion, and lateral movements have to be considered as well as the applications where they are used. Please contact a Dinex design engineer to ensure these factors are optimised.

Correct Installation
The function of a bellows is to absorb vibrations and heat expansion in the exhaust system. If a bellows is incorrectly installed by either being compressed, stretched or bent, it will cause a breakage in the bellows pipe after only a short usage time. This is due to vibration.

To ensure the optimised function and durability of the bellows correct installation is required.

1 Single bellows, primarily axial movements, smaller vibrations and lateral movements to a small extent.

2 Double bellows where the spacer is made of the same bellows material. Designed for axial as well as lateral movements. Cannot be fitted with guide pipes.

3 Single bellows with external braid.
Insulation techniques and solutions are mainly required in engine compartments and other high temperature areas where the demand for reduction in surface temperature is of utmost importance.

Further, insulation of exhaust systems with various emission technologies is often required to prevent unintended temperature loss ensuring optimal regeneration.

The quality of insulation and insulation techniques is excellent and is resistant and durable at even very high temperatures. The integral insulation is always manufactured to the highest degree of reliability, easy to use and fit for purpose.

Different insulation techniques are available depending on specific requirements, durability and customer needs.

The Dinex Group uses state of the art techniques and production methods to ensure that customer requirements of product performance, durability, and cost effectiveness are met.

All products are supplied according to customer specifications and requirements with regards to range of surface temperature reduction, thermal and physical properties.

High temperature insulation techniques are supplied as complete technical solutions, fully documented from start of the project to completion.

Integral Insulation on Exhaust Pipes and Silencers
- High temperature resistant insulation (Special stainless steel foil used)
- Non-combustible
- Customised design
- Not sensitive to vibration
- Optimal heat insulation
- Sound insulation/attenuation
- Flexible fitting and can be supplied in segments
- Oil and water resistant
- No adverse health implication during manufacturing, transportation and use
Clamps & Fittings

Dinex Clamps Ltd. is our competence centre for design of clamps as well as production of high quality clamps.

Dinex offers a wide range of products to fit and connect exhaust components. The programme includes flat clamps, DIN Clamps, V-clamps, Flex clamps and U clamps from very simple and cost effective design solutions all the way up to the highest class of products serving the most demanding installations.

Dinex Universal Programme
Please refer to the Dinex Universal Parts Catalogue.

V-Connections and V-Clamps
In general, Dinex recommends the use of V-connections and use of matching V-clamps. ID/OD solutions are only recommended when a certain degree of tolerance is allowed/required (heat expansion, fitting, alignment etc).
FlexFit Exhaust Clamps

- Designed to connect flex to exhaust pipe.
- Strong, reliable yet lightweight and flexible.
- No need to separate pipes before clamping.
- Simply torque the socket cap screws for fast assembly.*
- Available for pipe sizes from Ø50 mm to Ø152.4 mm.
- Available in stainless or aluminized steel.

Design Features
Stepped strap accommodates flex for fast, easy and accurate installation.

Stepped bridging piece provides a 360° force distribution to help seal the joined components whilst still permitting variations in pipe/flex sizes.

Mechanical joints replace spot welds to insure against fatigue failures.

Cylindrical trunnions allow the screws to self-centre to optimise performance.

Socket cap screws provide a strong (12.9 grade) yet compact fastener mechanism.

All fasteners are high strength and coated to provide high corrosion resistance (>700 hours salt spray resistance).**

Tolerates flex size variations of ±2mm on diameter and clamps can be re-tightened because there is no mechanical bridge or stop.

360° force distribution is achieved using a flexible stepped bridging piece.

* Maximum recommended torque = 25Nm.
** In accordance with BS 7479 (ASTM B117) ISO 3768.

<table>
<thead>
<tr>
<th>Dinex no</th>
<th>Inox</th>
<th>A mm</th>
<th>A Inch</th>
<th>B mm</th>
<th>B Inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>99250/T</td>
<td>99251/T</td>
<td>55.0</td>
<td>2 1/4</td>
<td>50.0</td>
<td>2</td>
</tr>
<tr>
<td>99252/T</td>
<td>99253/T</td>
<td>62.0</td>
<td>2 1/2</td>
<td>57.0</td>
<td>2 1/4</td>
</tr>
<tr>
<td>99254/T</td>
<td>99255/T</td>
<td>67.0</td>
<td>2 3/4</td>
<td>63.5</td>
<td>2 1/2</td>
</tr>
<tr>
<td>99270/T</td>
<td>99269/T</td>
<td>75.0</td>
<td>3</td>
<td>70.0</td>
<td>2 3/4</td>
</tr>
<tr>
<td>99272/T</td>
<td>99271/T</td>
<td>81.2</td>
<td>3 1/4</td>
<td>76.2</td>
<td>3</td>
</tr>
<tr>
<td>99288/T</td>
<td>99290/T</td>
<td>93.6</td>
<td>3 1/2</td>
<td>88.9</td>
<td>3 1/2</td>
</tr>
<tr>
<td>99300/T</td>
<td></td>
<td>105.0</td>
<td>4</td>
<td>100.0</td>
<td>3 7/8</td>
</tr>
<tr>
<td>99302/T</td>
<td>99303/T</td>
<td>106.6</td>
<td>4</td>
<td>101.6</td>
<td>4</td>
</tr>
<tr>
<td>99315/T</td>
<td>99315/T</td>
<td>119.0</td>
<td>4 1/2</td>
<td>114.3</td>
<td>4 1/2</td>
</tr>
<tr>
<td>99320/T</td>
<td>99321/T</td>
<td>125.0</td>
<td>4 3/2</td>
<td>120.0</td>
<td>4 3/4</td>
</tr>
<tr>
<td>99327/T</td>
<td>99328/T</td>
<td>132.0</td>
<td>5</td>
<td>127.0</td>
<td>5</td>
</tr>
<tr>
<td>99352/T</td>
<td>99349/T</td>
<td>158.0</td>
<td>6</td>
<td>152.0</td>
<td>6</td>
</tr>
</tbody>
</table>

Copyright © 2007-2008 Dinex Clamps Ltd.

Strong clinching superior to spot welding

Dinex, low leakage fit

Competitor
TightFit Clamps

- Designed to connect exhausts pipes (with slotted ends).
- Strong, reliable yet lightweight and flexible.
- No loose parts and no need to separate pipes before clamping.
- Simply ‘hook-in’ then torque the socket cap screw for fast assembly.*
- Available for pipe sizes from Ø50 mm upwards.
- Made from high tensile 304 or 409 stainless or aluminized steel.

Design Features
Strap made from high tensile grade steel to maximise the strength/weight ratio. All material is edge dressed – no sharp burrs.

‘Hook-in’ style trunnion provides a quick method of clamp assembly or removal.

No need to remove the cap screw. Mechanical joints eliminate spot welds to reduce corrosion and fatigue failures.

Cylindrical trunnions allow the screws to self-centre to optimise performance.

Socket cap screws provide a strong (12.9 grade) yet compact fastener mechanism.

All fasteners are high strength and coated to provide high corrosion resistance (>700 hours salt spray resistance.)**

Design can tolerate variations in diameter of ±2mm and clamps can be re-tightened further if necessary.

Utilise mechanically clinched joints.

* Maximum recommended torque = 30Nm.
** In accordance with BS 7479 (ASTM B117) ISO 3768.

Dinex no.

<table>
<thead>
<tr>
<th>Inox</th>
<th>Aluminized</th>
<th>B mm</th>
<th>B Inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>99852</td>
<td>99851</td>
<td>51.0 - 54.0</td>
<td>2</td>
</tr>
<tr>
<td>99859</td>
<td>99858</td>
<td>54.0 - 57.0</td>
<td>2 1/4</td>
</tr>
<tr>
<td>99861</td>
<td>99860</td>
<td>60.0 - 63.0</td>
<td>2 3/8</td>
</tr>
<tr>
<td>99865</td>
<td>99864</td>
<td>64.0 - 67.0</td>
<td>2 1/2</td>
</tr>
<tr>
<td>99867</td>
<td>99866</td>
<td>66.0 - 69.0</td>
<td>2 5/8</td>
</tr>
<tr>
<td>99872</td>
<td>99871</td>
<td>71.0 - 74.0</td>
<td>2 3/4</td>
</tr>
<tr>
<td>99878</td>
<td>99877</td>
<td>78.0 - 81.0</td>
<td>3</td>
</tr>
<tr>
<td>99881</td>
<td>99880</td>
<td>81.0 - 84.0</td>
<td>3 1/8</td>
</tr>
<tr>
<td>99886</td>
<td>99885</td>
<td>86.0 - 89.0</td>
<td>3 1/3</td>
</tr>
<tr>
<td>99891</td>
<td>99890</td>
<td>90.0 - 93.0</td>
<td>3 1/2</td>
</tr>
<tr>
<td>99893</td>
<td>99892</td>
<td>91.0 - 94.0</td>
<td>3 1/2</td>
</tr>
<tr>
<td>99901</td>
<td>99900</td>
<td>101.0 - 105.0</td>
<td>4</td>
</tr>
<tr>
<td>99904</td>
<td>99903</td>
<td>102.0 - 106.0</td>
<td>4</td>
</tr>
<tr>
<td>99911</td>
<td>99910</td>
<td>111.0 - 116.0</td>
<td>4 3/8</td>
</tr>
<tr>
<td>99916</td>
<td>99915</td>
<td>115.0 - 119.0</td>
<td>4 1/2</td>
</tr>
<tr>
<td>99921</td>
<td>99920</td>
<td>122.0 - 127.0</td>
<td>4 3/4</td>
</tr>
<tr>
<td>99925</td>
<td>99928</td>
<td>128.0 - 132.0</td>
<td>5</td>
</tr>
<tr>
<td>99954</td>
<td>99953</td>
<td>153.0 - 158.0</td>
<td>6</td>
</tr>
</tbody>
</table>
ButtFit Flat Clamps

- Designed to connect exhaust pipes end to end.
- Strong, reliable yet lightweight and flexible.
- No need to separate pipes before clamping.
- Simply torque the socket cap screws for fast assembly.*
- Available for pipe sizes from Ø50mm to Ø152.4mm.
- Made from stainless or aluminized steel.

**Design Features**

75mm wide strap accommodates pipes for fast, easy and accurate installation.

Bridging piece helps provide a 360° seal around the joined pipes and accommodates pipe tolerance variations. Mechanical joints replace spot welds to insure against fatigue failures. Cylindrical trunnions allow the screws to self-centre to optimise performance, but also reinforce the joint.

Socket cap screws provide a strong (12.9 grade) yet compact fastener mechanism. All fasteners are high strength and coated to provide high corrosion resistance (>700 hours salt spray resistance**).

* Maximum recommended torque = 25Nm.
** In accordance with BS 7479 (ASTM B117) ISO 3768.

<table>
<thead>
<tr>
<th>Dinex no.</th>
<th>Inox</th>
<th>B mm</th>
<th>B inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>99350/T</td>
<td>99450/T</td>
<td>50.8</td>
<td>2</td>
</tr>
<tr>
<td>99357/T</td>
<td>99457/T</td>
<td>57.0</td>
<td>2 1/4</td>
</tr>
<tr>
<td>99360</td>
<td>99460</td>
<td>60.3</td>
<td>2 3/8</td>
</tr>
<tr>
<td>99363/T</td>
<td>99463/T</td>
<td>63.5</td>
<td>2 1/2</td>
</tr>
<tr>
<td>99370/T</td>
<td>99470/T</td>
<td>69.9</td>
<td>2 3/4</td>
</tr>
<tr>
<td>99376/T</td>
<td>99476/T</td>
<td>76.2</td>
<td>3</td>
</tr>
<tr>
<td>99389/T</td>
<td>99489/T</td>
<td>88.9</td>
<td>3 1/2</td>
</tr>
<tr>
<td>99402/T</td>
<td>99502/T</td>
<td>101.6</td>
<td>4</td>
</tr>
<tr>
<td>99408</td>
<td></td>
<td>108</td>
<td>4 1/2</td>
</tr>
<tr>
<td>99414/T</td>
<td>99514/T</td>
<td>114.3</td>
<td>4 1/2</td>
</tr>
<tr>
<td>99427/T</td>
<td>99527/T</td>
<td>127.0</td>
<td>5</td>
</tr>
<tr>
<td>99438</td>
<td></td>
<td>140</td>
<td>5 1/2</td>
</tr>
<tr>
<td>99455/T</td>
<td>99553/T</td>
<td>152.0</td>
<td>6</td>
</tr>
</tbody>
</table>
HoseFit Clamps

- Designed to connect rubber hose to pipe.
- Strong, reliable yet lightweight and flexible.
- No loose parts and no need to separate hoses or pipes before clamping.
- Simply ‘hook-in’ then torque the socket cap screw for fast assembly.
- Available for hose sizes from Ø50mm upwards.
- Made from high tensile 304 or 409 stainless steel*.

Design Features
Strap made from high tensile grade stainless steel to maximise the strength/weight ratio. All material is edge dressed – no sharp burrs.

Bridging piece provides a 360° seal whilst still permitting variations in hose size and tension.

Mechanical joints on straps replace traditional spot welds to reduce corrosion and fatigue failures.

Cylindrical trunnions allow the screws to self-centre to optimise performance.

Socket cap screws provide a strong (12.9 grade) yet compact fastener mechanism.

All fasteners are high strength and coated to provide high corrosion resistance (>700 hours salt spray resistance**).

* Maximum recommended torque as per chart.
** In accordance with BS 7479 (ASTM B117) ISO 3768.

<table>
<thead>
<tr>
<th>Dinex no</th>
<th>Clamp Range mm</th>
<th>Strap Width</th>
<th>***Maximum Torque Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min Dia</td>
<td>Max Dia</td>
<td></td>
</tr>
<tr>
<td>99150</td>
<td>50</td>
<td>55</td>
<td>20</td>
</tr>
<tr>
<td>99157</td>
<td>55</td>
<td>59</td>
<td>20</td>
</tr>
<tr>
<td>99160</td>
<td>59</td>
<td>63</td>
<td>20</td>
</tr>
<tr>
<td>99164</td>
<td>63</td>
<td>68</td>
<td>20</td>
</tr>
<tr>
<td>99176</td>
<td>79</td>
<td>85</td>
<td>20</td>
</tr>
<tr>
<td>99189</td>
<td>91</td>
<td>97</td>
<td>20</td>
</tr>
<tr>
<td>99202</td>
<td>104</td>
<td>112</td>
<td>25</td>
</tr>
<tr>
<td>99214</td>
<td>112</td>
<td>121</td>
<td>25</td>
</tr>
<tr>
<td>99227</td>
<td>121</td>
<td>133</td>
<td>25</td>
</tr>
<tr>
<td>99235</td>
<td>130</td>
<td>140</td>
<td>25</td>
</tr>
</tbody>
</table>
VeeFit Premium V-Clamps

Designed to connect vee flanges on exhaust pipes and turbos.

- Strong, reliable yet lightweight and flexible enough to open around flanges.
- With no loose parts and 360° positioning of the fastener mechanism, easy assembly saves time, no need to separate flanges before clamping.
- Simply ‘hook-in’ then torque the socket cap screw for fast assembly.*
- Available for pipe sizes from Ø50 mm upwards.
- Made from 304 or 409 stainless steel or premium aluminized steel with >5000hrs salt spray resistance.**
- Unlike cast clamps, the fabricated construction maximises strength to weight ratios.

Design Features

All material is edge dressed – no sharp burrs.

“Hook-in” style trunnion provides a quick method of clamp assembly or removal. No need to remove the cap screw.

Mechanical joints on straps replace spot welds to reduce corrosion and fatigue failures.

Cylindrical trunnions allow the screws to self-centre to optimise performance.

Socket cap screws provide a strong (12.9 grade) yet compact fastener mechanism.

All fasteners are high strength and coated to provide high corrosion resistance (>700 hours salt spray resistance**).

* Maximum recommended torque = 12Nm.
** In accordance with BS 7479 (ASTM B117) ISO 3768.
Dinex has developed a new clamp range from our clamp factory in England suitable for heavy duty pipes.

- Designed to connect exhaust pipes (with slotted ends).
- High strength clamps rated to 60Nm installation torque.
- Wide straps cover the whole of the slots on the outer pipe.
- Available for pipe sizes from Ø48mm upwards.
- No loose parts.

**Design Features**

- High strength mechanism designed to compress the outer slotted pipe onto the standard inner pipe OD.
- Cylindrical trunnions allow the screws to self-centre to optimise performance.
- Socket cap screws provide a strong (12.9 grade) yet compact fastener mechanism.
- All fasteners are coated to provide high (>700hours) salt spray resistance**.
- 35mm wide straps are edge dressed – no sharp burrs – and made from 409 stainless steel for longer life.

** in accordance with BS 7479 (ASTM B117) ISO 3768.

### PipeFit Clamps

<table>
<thead>
<tr>
<th>Dinex no.</th>
<th>Inner Pipe Size</th>
<th>Clamp Size Range (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>99815</td>
<td>47.6</td>
<td>Ø48 - Ø54</td>
</tr>
<tr>
<td>99800</td>
<td>50.8</td>
<td>Ø51 - Ø57</td>
</tr>
<tr>
<td>99801</td>
<td>57</td>
<td>Ø57 - Ø63</td>
</tr>
<tr>
<td>99816</td>
<td>60.3</td>
<td>Ø60 - Ø66</td>
</tr>
<tr>
<td>99802</td>
<td>63.5</td>
<td>Ø64 - Ø70</td>
</tr>
<tr>
<td>99817</td>
<td>66.7</td>
<td>Ø67 - Ø73</td>
</tr>
<tr>
<td>99803</td>
<td>69.9</td>
<td>Ø70 - Ø76</td>
</tr>
<tr>
<td>99804</td>
<td>76.2</td>
<td>Ø76 - Ø82</td>
</tr>
<tr>
<td>99818</td>
<td>79.4</td>
<td>Ø80 - Ø86</td>
</tr>
<tr>
<td>99805</td>
<td>85</td>
<td>Ø85 - Ø91</td>
</tr>
<tr>
<td>99806</td>
<td>88.9</td>
<td>Ø89 - Ø95</td>
</tr>
<tr>
<td>99819</td>
<td>100</td>
<td>Ø100 - Ø106</td>
</tr>
<tr>
<td>99807</td>
<td>101.6</td>
<td>Ø102 - Ø108</td>
</tr>
<tr>
<td>99808</td>
<td>110</td>
<td>Ø110 - Ø116</td>
</tr>
<tr>
<td>99809</td>
<td>114.3</td>
<td>Ø114 - Ø120</td>
</tr>
<tr>
<td>99810</td>
<td>120</td>
<td>Ø120 - Ø126</td>
</tr>
<tr>
<td>99811</td>
<td>127</td>
<td>Ø127 - Ø133</td>
</tr>
<tr>
<td>99812</td>
<td>139.7</td>
<td>Ø140 - Ø146</td>
</tr>
<tr>
<td>99813</td>
<td>152.4</td>
<td>Ø152 - Ø158</td>
</tr>
</tbody>
</table>