

Henkel

A Brand like a friend



Technologies

TTA

Sealing Automatic Transmissions

Glen May



Technologies

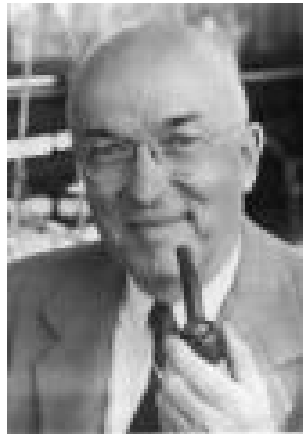
LOCTITE®

Loctite Introduction



Technologies

- Professor Vernon Krieble invented anaerobic adhesives in 1953
- Commercially launched in 1963
- Eastman Kodak discovered CA technology
- Loctite commercialised the chemistry in 1972 with IC 12
- Super glue name for the consumer market came in 1979
- Henkel ownership 1997



2005 Henkel Worldwide



Technologies



- Sales 10,592 mill. euros
- 50,000 employees
- 125 countries

Three Areas of Competence, Four Business Sectors



Home
Care



Personal
Care



Adhesives, Sealants &
Surface Treatment



Consumer
& Craftsmen



Industry

Quality with Brands & Technologies

Henkel Technologies Value Chain:



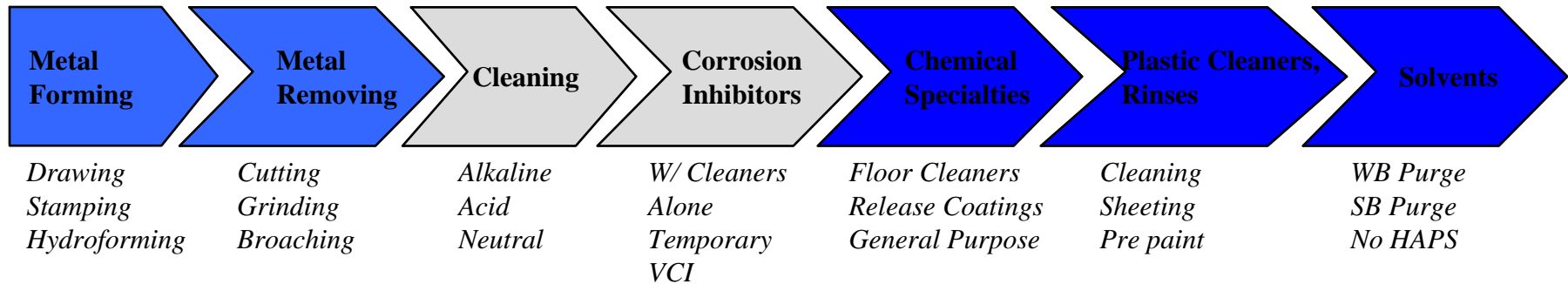
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ONE POINT ACCOUNTIBILITY

Lubrication

Cleaning

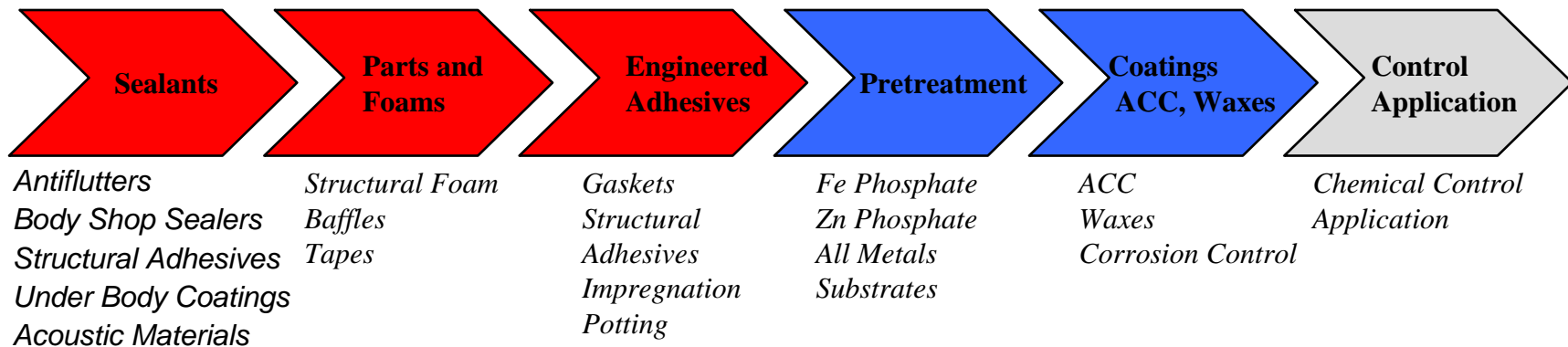
Chemical Specialties



Adhesives and Sealants

Coatings

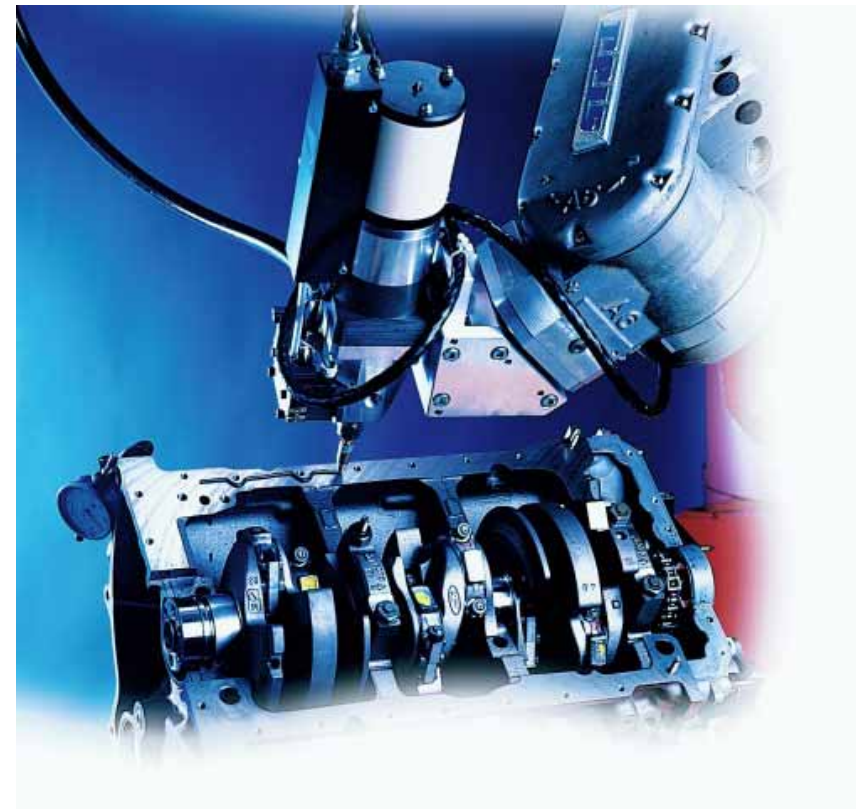
Equipment



Loctite Powertrain Technologies



- Anaerobics
- Silicones
- Epoxies
- Equipment
- Mould release

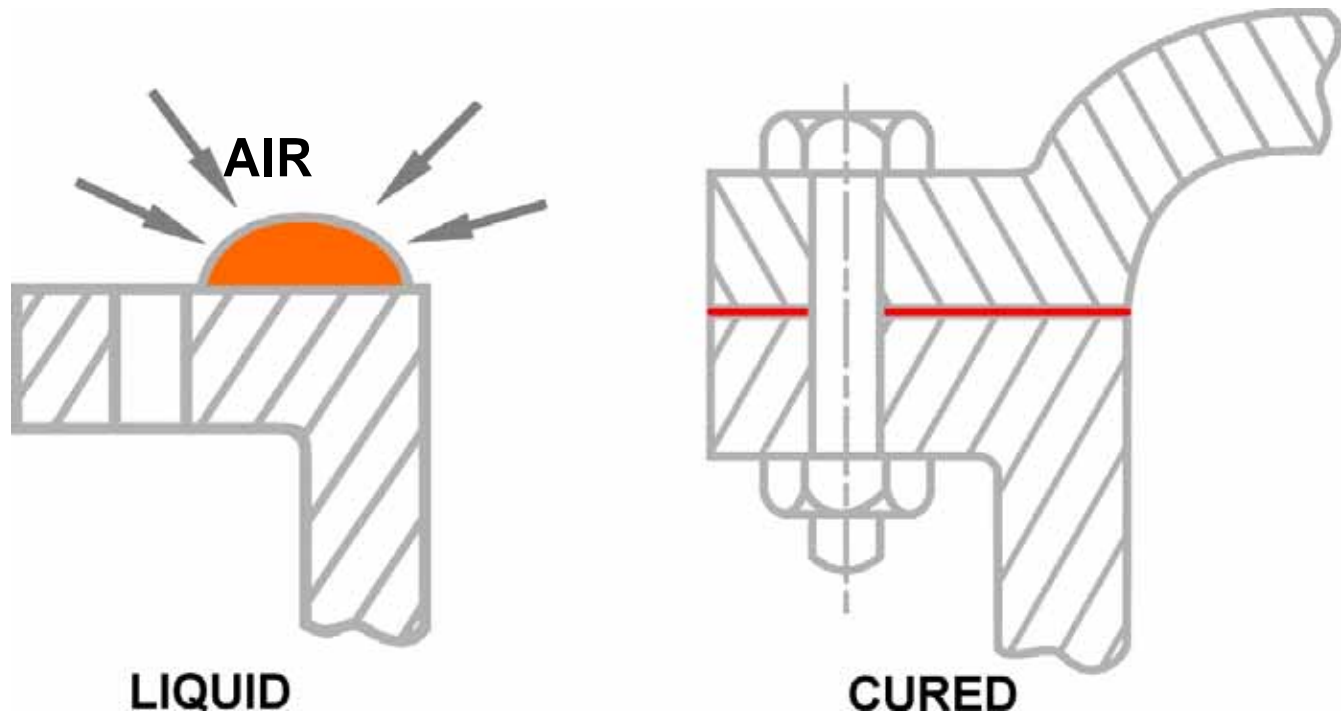


Anaerobic Gasketing Technology



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Blocking of small valves and ports



Cures by absence of air and metal part contact
Metal to metal contact

Application


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Resistance to ATF

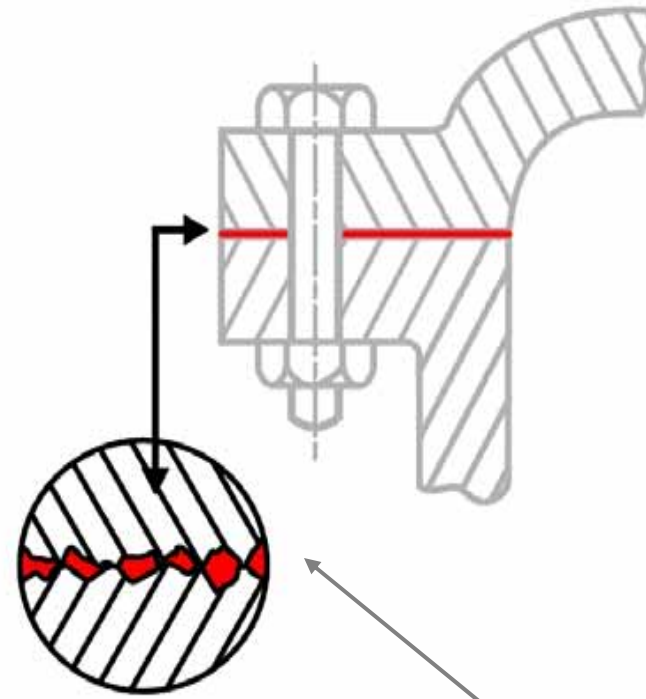
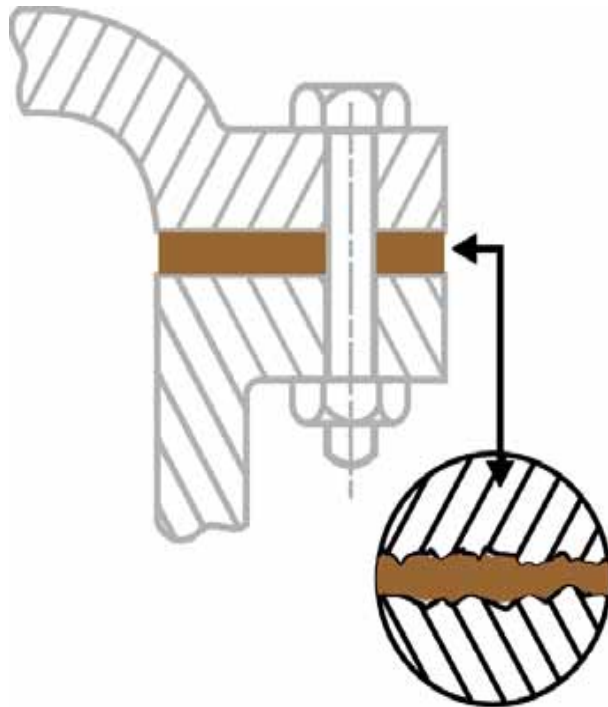
How gaskets work



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Traditional

Liquid

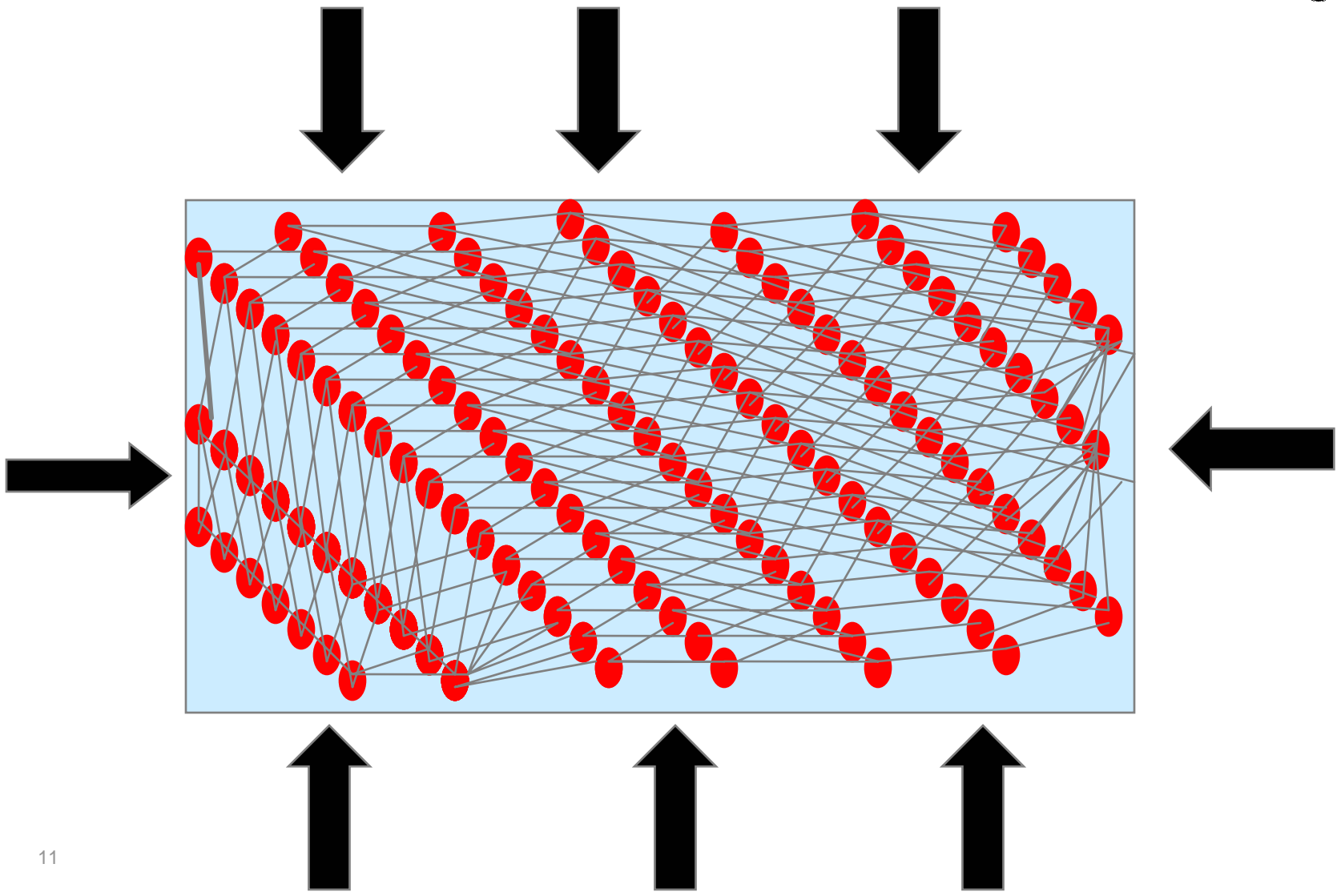


Tough thermo set plastic high resistance to chemicals

Oil resistance



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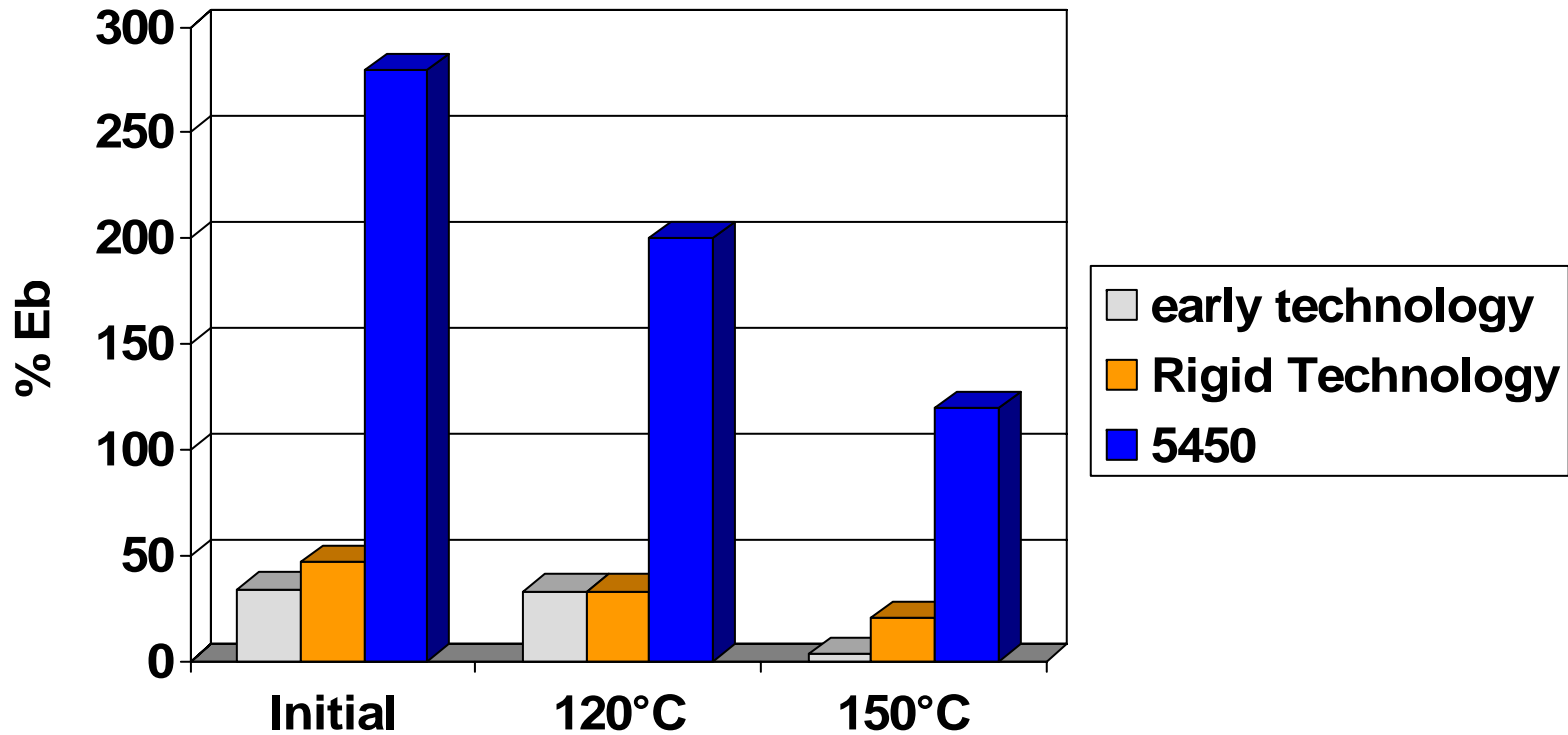


Flexible product 5450



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New technology is ideally suited to transmission applications



Static Sealing Performance of Product 5450



Technologies

Test Piece – Aluminium static test flanges at 0.1mm gap.

<u>Test Condition</u>	<u>Result</u>
Instant Seal test - 0.2 bar for 2 minutes	OK
Motor Oil @150°C and 4 bar for 7 days	No leaks
Gear Oil @ 150°C for 7 days – Test at 4 bar	No Leaks
ATF @ 150°C and 2 bar for 7 days	No Leaks
Water/glycol @ 120°C and 2 bar for 7 days	No Leaks
Thermal Shock; -30 to +150°C (8hrs @ -30°C then 16hrs at +150°C)	No Leaks

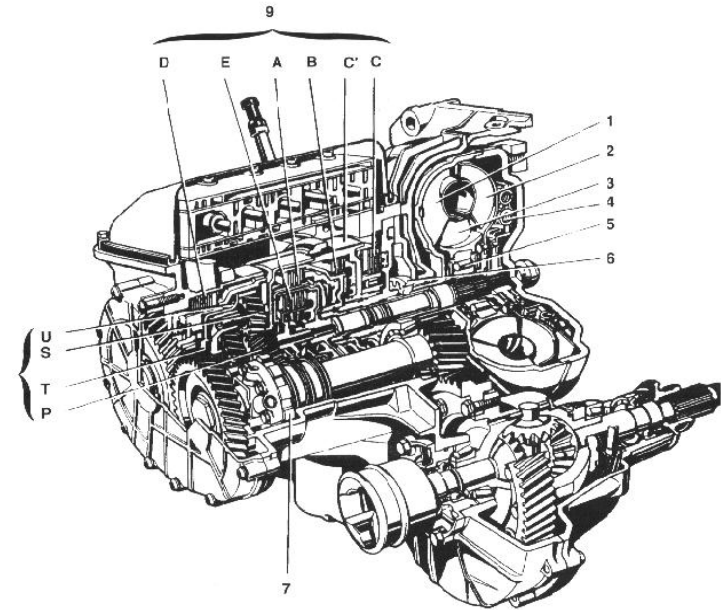
Sealing automatic transmissions summary



- Good resistance to automotive fluids including ATF
- Thermal resistance from -40 to 150C – specials up to 200C
- Cures in the absence of air
 - remains liquid out side of the flange
 - long open time fast cure
- Medium shear strength – to enable disassembly
- Easy to dispense – screen printing, robot, hand, brush
- Accurate dispensing – no excess, high quality control
- Able to maintain high tolerances
 - Metal to metal contact ensure accurate bearing end float

Sealing Automatic gearboxes

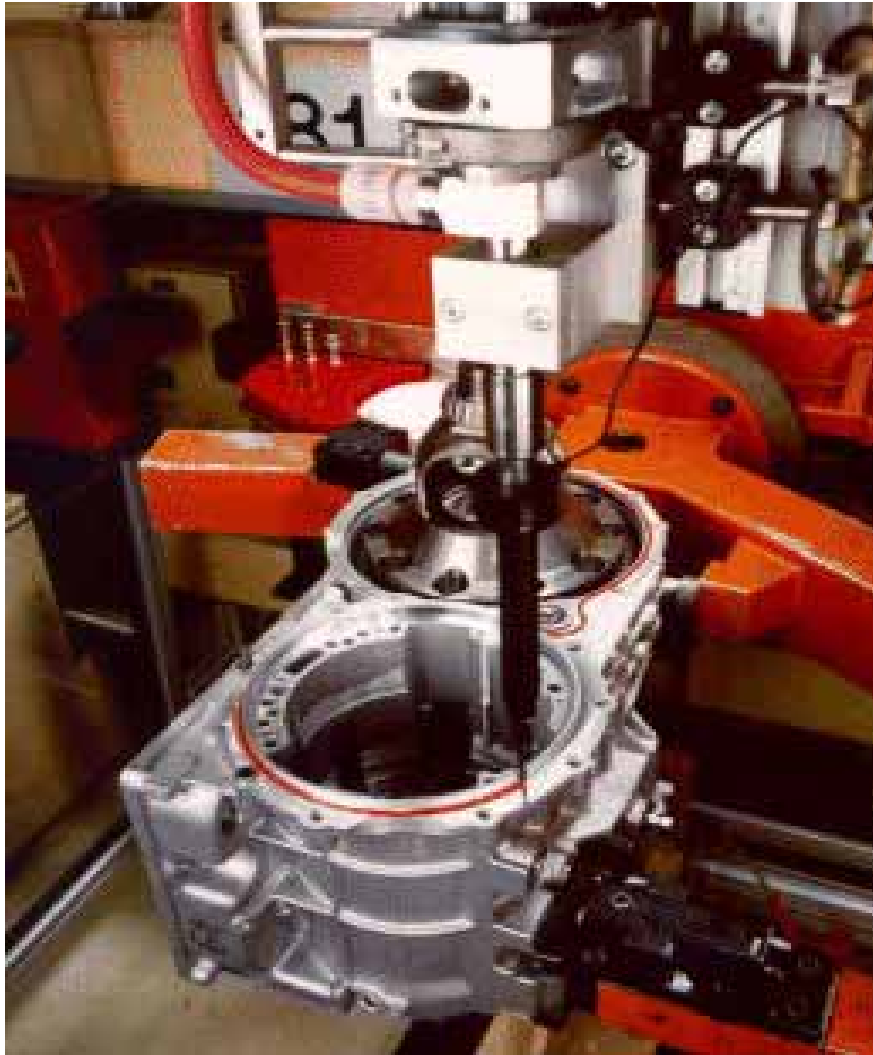
- Despite the significant economic advantages, there are concerns using liquid sealers due to:
 - ~~Oil contamination~~
 - ~~Blocking of small valves and ports~~
 - ~~Resistance to ATF~~
 - ~~Flange micro-movement~~



Chemical, design, dispensing expertise



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**Standard technology
utilising “stepped”
flange design to
eliminate internal
excess**

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Questions