

**FEIN POWER TOOLS INDIA PVT LTD**

**FEIN – STAINLESS STEEL SURFACE PREPARATION  
PROGRAMME**



**WELCOME TO  
STAINLESS STEEL SURFACE PREPARATION  
PRESENTATION  
JUNE 17 2011 PUNE**

# FEIN POWER TOOLS INDIA PVT LTD



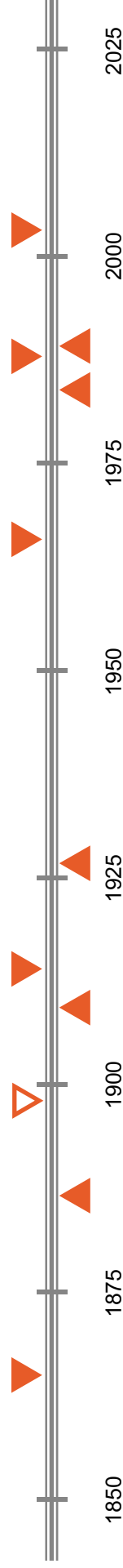
## Key figures and core business

- **Founded:** 1867
- **Patents and copyrights:** 800 active property rights, including 500 patents and patent applications
- **Market:** industry and manual trades
- **Market segments:** metal, interior construction, automotive



**More than 140 years of premium power tools:  
the history of our company**

- **1895**  
The world's first power tool is developed by C. & E. FEIN: the electric hand drilling machine.



# FEIN POWER TOOLS INDIA PVT LTD

## FEIN - India



- FEIN india (100% subsidiary of FEIN GmbH) started in 2009. Head office based at Chennai.
- Having dealers in all over India.
- Demo vehicle - Fully equipped with machines and accessories: our applications advisors will at your door step.
- Solve complex, individual problems on-site at the customer's premises



# FEIN POWER TOOLS INDIA PVT LTD

## FEIN - India



- FEIN – A complete solution provider in the area of Stainless Surface Finishing.
- Sharing the know – how knowledge.
- A complete range of tools and abrasives for grinding to finishing according to the Ra value required by the customer.
- Demo vehicle - Fully equipped with machines and accessories: our applications advisors will at your door step. Solve complex, individual problems on-site at the customer's premises.



# FEIN POWER TOOLS INDIA PVT LTD



## Fascination stainless steel



Alle Rechte bei FEIN, insbesondere für den Fall der Schutzrechtsanmeldung.  
Jede Verfügungsbefugnis wie Kopieren und Weitergabe liegt bei FEIN.

R Rajesh.

January 2009



## Basics

Common causes of corrosion in the field

- Tools / Abrasives which were previously used with steel.
- Sparks on stainless steel surfaces
- Lack of tarnish removal.
  - ▶ No passive layer generation
- Chemical influences such as Chlorine in cleaning agents.
- Mechanical influences
- Deposits in crevices and seams





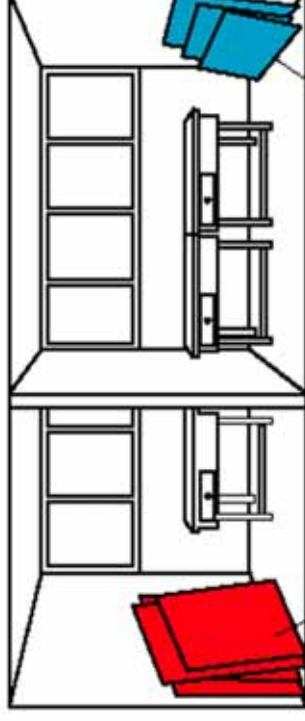
## Basics Types of corrosion

### ■ Contact Corrosion:

- ▶ Occurs when carbon steel particles are deposited on a Stainless steel surfaces (rust, grinding dust , welding sparks and grinding disks containing ferrite).

### ■ Remedy:

- ▶ Dedicated stainless steel tools
- ▶ Separate material and working areas
- ▶ Clean machines before working with stainless steel







## Basics Surface Finishing / Peak to Valley Height

- Peak to valley height is influenced by:
  - ▶ Grinding motion (rotation/eccentric/linear)
  - ▶ Do not use oil and grease. They reduce the peak to valley height.
  - ▶ Grinding material (Silicon Carbide, Corundum, Zircon-Corundum)
  - ▶ Grinding pressure.





**Basics  
Surface Finishing**

■ **GRINDING MOTION**



**ECCENTRIC**



**ROTATION**



**LINEAR**





**Different finishes in Stainless Steel**



**Brush finish Grit 60**  
**1.0 micron Ra (Surface roughness)**



**Matt Finish Grit 120**  
**0.8 micron Ra (Surface roughness)**



**Satin Finish Grit 280**  
**0.4 micron Ra (Surface roughness)**

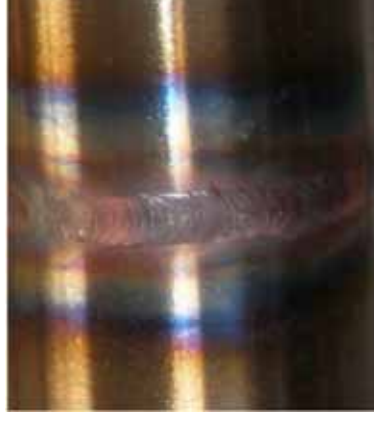


**Mirror Finish**  
**1.0 micro inch or below (Surface roughness)**



## Focus applications

- Remove of tarnish colours
- Remove of light scratches
- Remove of deep scratches
- Remove of weld seams
- Finishing
- Grinding in edges and corners
- Deburring
- Notching



01.2009

Yunus



## FEIN – STAINLESS STEEL SURFACE PREPARATION PROGRAMME

- Weld seam removal
- ▶ Coarse grinding of mill scale
- ▶ Coarse grinding of stainless steel welded seams
- ▶ Creating grinding patterns
- ▶ Deburring larger workpieces
- ▶ Stage prior to use of Stainless steel set
- ▶ Satin-finishing surfaces





**Machining surfaces  
Roughness depths**

- Roughness depths are influenced by
  - ▶ the sanding material (rotary/eccentric/belt)
  - ▶ sanding oils and greases (reduce the roughness depths)
  - ▶ grit types (silicon carbide, corundum, zirconium corundum)
  - ▶ the contact pressure during sanding

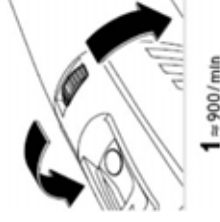


## Machining surfaces Heat-induced warping of sheet metals

- Due to the low thermal conductivity of stainless steel, it is possible for sheet metals to warp even at low temperatures

### ■ Tips

- ▶ Reduce speed
- ▶ Lay a copper or aluminium plate underneath
- ▶ Use cool sanding tools





## Machining surfaces Polishing

### ■ Tips

- ▶ Clean with Vienna chalk + microfibre cloth
- ▶ Label the polishing tools after deciding which polishing paste to use with each finishes.







- No. 0: Hot rolled, annealed, thicker plates
- No. 1: Hot rolled, annealed and passivated
- No. 2D: Cold rolled, annealed, pickled and passivated
- No. 2B: Same as above with additional pass-through highly polished rollers
- No. 2BA: Bright annealed (BA or 2R) same as above then bright annealed under oxygen-free atmospheric conditions
- No. 3: Coarse abrasive finish applied mechanically
- **No. 4: Brushed finish**
- **No. 5: Satin finish**
- **No. 6: Matte finish**
- **No. 7: Reflective finish**
- **No. 8: Mirror finish**

## Machining surfaces Rough material removal



FLÄCHE

- Sanding polisher + sanding sleeves
- ▶ High surface material removal
- ▶ Basis for building up the sanding pattern further
- ▶ Vullkolan expansion cylinders carry the sanding sleeves safely



**Starting situation: Hot  
rolled scale**



**Work steps:  
Coarse sanding with  
sanding sleeves, grit  
60/80/120  
speed 2500 rpm**



**Result:  
Surface sanding, grit 120,  
stage prior to satin-  
finishing**

## Machining surfaces Matt Finish



FLÄCHE

- Sanding polisher + sanding sleeves
  - ▶ Light material removal
  - ▶ Basis for building up the sanding pattern further
  - ▶ With Low rpm and constant feed to maintain even sanding pattern



**Surface sanding with  
elastic sanding sleeve  
Grit 60 with 900 rpm**



**Sanding sleeve of Grit  
180 with 900 rpm**



**Result:  
Matt finish of grit 180**

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**SATIN Finish**



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**THANK YOU  
FOR YOUR ATTENTION**