Frame Group

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Gas Tank
Fenders
Frame
Taking it apart

Whitworth wrenches

Sawing off nut
Frame in the Shop Manual
Nuts & Bolts: Torque

Torque on wrench = Force x lever arm

- Maximum torque is produced when the force is perpendicular to the wrench.
  \[ \theta = 90^\circ \]

- Torque approaches zero with the angle between the force and the wrench handle.

\[ \text{Lever arm} = r \sin \theta \]

- Reduced lever arm → reduced torque

- Less torque

Socket wrench - stronger grip

WD-40 - Penetrating oil

Stripped bolt
Sandblasting, Sanding

Sandblasting joints to find fractures before powder coating
Science: why do things break?

- improper use, overuse
- sharp edge, defect - concentrates force
  - eg. sandblasting frame joints - where the force is greatest bc where sharp edges come together
- toughness - ability to absorb energy and deform without breaking
  - steel is tough because of carbon atoms in the interstitial space

Joints sandblasted as force applied there from use risked possible fractures in the frame
Science: Rust

- rust is corrosive
- iron bonds with oxygen through electrochemical rx
- iron differs from iron oxide (ceramic material, no conduction, brittle)
- solution:
  - paint
  - chroming
  - grease
Powder Coating

- powder stick to surface through static electricity
  - need electric field
  - sucked onto surface, coats everywhere
- could not powder coat gas tank because of bondo (not conductive & cannot withstand heat)
Bondo + Sanding

**Bondo**: a polyester putty commonly used as an automotive body filler, consists of a resin with a hardener mixed in.

“This simple two-part solution includes a **resin-based filler and a hardener**. A tube of the hardener is included with Bondo® Body Filler. The consistency of both compounds is creamy, but as the hardener is blended together with the filler it acts as a **catalyst**, creating a chemical reaction which cures the product. This fast-curing body filler spreads easily and will adhere to correctly prepared surfaces.” *(from Bondo)*

**Why used**: in order to fill in and repair imperfections in the fenders and gas tank, so that when painted they would appear as a smooth surface.
Priming & Spray Painting

**Primer:** used to provide a smooth and uniform surface before painting

**Wet Sanding:** using water on wet sandpaper prevents further scratches by removing particles from surface

**Spray Painting:** used for both decorative and protective means; since rust weakens the material, providing a barrier between air and the metal components of the frame is necessary for preventing rust from forming

**Glaze:** used to fill small cavities and micro-scratches in paint, prevents gasoline from messing up paint
Links to Images Used

Torque on Wrench Stripped Bolt
Sandblasting Diagram
Steel Alloy
Cause of rust image
Power Coating