



40105-07

# Gaskets and Packing

- An introduction to
  - Gaskets
  - Packing
  - O-rings

# I.0.0 Introductory Review

- Gaskets
  - **Seals two flat mating surfaces.**
  - Rigid (non-moving) joints only.
- Packing
  - Packed into a cavity (packing gland).
  - Rigid, rotating, or sliding joints.
- O-rings
  - Fits into a groove on one surface and compresses against the other surface.
  - Rigid or rotating joints.

# SECTION 6 : PACKING

- Types of Packing
- Removing Packing
- Installing Packing

# 6.0.0 Packing

- Packing is used to form a seal around shafts that revolve.
- Typical packing material includes:
  - Teflon Yarn
    - acids, solvents, up to 550°F
  - Teflon Filament
    - General service
  - Lubricated Graphite Yarn
    - High temperatures
  - Lubricated Cotton Yarn
    - Water, steam, high rotational speeds
  - TFE Synthetic Fiber
    - Caustics, acids, chemicals, solvents

# 6.0.0 Packing



Graphite Packing



Cross-Section of Packing



Kelvar Packing



PTFE Packing

## 6.6.0 Removing Packing

- Follow lockout/tagout procedures
- Remove the packing nut
- Use a packing puller to remove each packing from the packing gland
- Clean out any loose packing debris left in the packing gland

## 6.6.0 Installing Packing

- Cut each packing to fit snugly around the shaft.
  - Cut the ends at a 45\* angle so that the ends overlay each other.
- Insert first packing into gland, gently tapping around the shaft with a pin punch to seat the packing securely.
- Insert the second packing with the cut directly opposite the first one.
  - (As: first one at 12:00 position, then the second one would be at 6:00 position)

## 6.6.0 Installing Packing

- Gently tap around the shaft with a pin punch to seat the packing securely.
- Continue inserting packing in this manner until all packings have been inserted.
  - Remember to stagger the packing ends
- Replace the packing nut.
  - Tighten the packing nut just to the point of being snug; you do not want to over-tighten.

## 6.6.0 Installing Packing

- Turn the machine on.
- Either loosen or tighten the packing nut until you achieve a very small amount of leakage.
  - As in: a small drop every few seconds.
  - This leakage is important for lubrication and cooling of the packing and the shaft.

# SECTION 7 : O-RINGS

- Types of O-rings
- Removing and Installing O-rings

# 7.0.0 O-rings

- Very dependable
- Wide range of uses
- Common materials:
  - Buna-N
    - petroleum and hydraulic fluids
  - Ethylene Propylene
    - **brake fluids**
  - Viton
    - petroleum, solvents, acids

# 7.0.0 O-rings

- Common materials:
  - Teflon
    - chemicals, **-300°F to 500°F**
    - **Must be mechanically loaded if dynamic seal**
  - Silicone
    - static sealing conditions
  - Teflon-Encapsulated Silicone
    - static sealing conditions
  - Polyurethane
    - toughest material

## 7.8.0 Removing and Installing O-rings

- Use a prick pin to remove o-ring.
  - Roll the o-ring out of the groove and off the shaft.
- To install o-ring:
  - Be sure the shaft and groove is clean.
  - Lubricate o-ring only if recommended by manufacturer.
  - Roll the o-ring onto the shaft end.
  - Roll the o-ring down the shaft and into the groove.