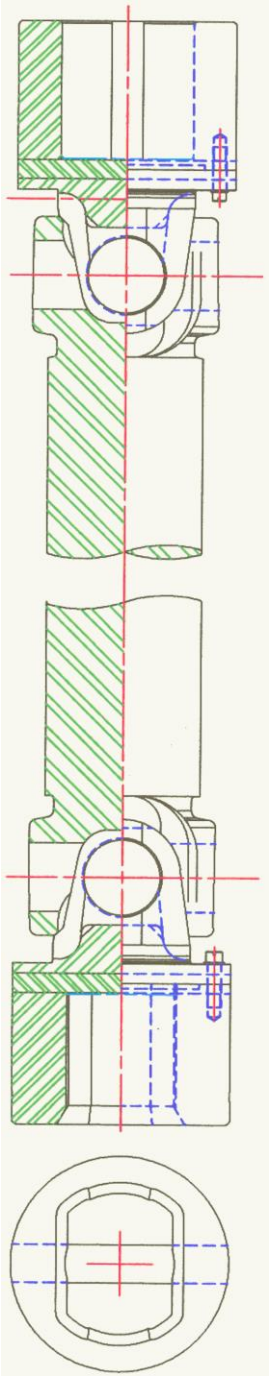
Universal Joint

Introduction



Universal Joints in the Steel Industry

- Mill stand speeds continue to increase and mill builders designing larger offset angles
- Steady increase in the use of universal joints on smaller mills
- U.Joint = high speed - low torque

  vs.

- Gear Coupling = high torque - low speed
- Abuse resistant.
- Easier to repair for customers.
- Lower operating maintenance

Comparing Universal Joints to Gear Couplings

Gear Coupling

- **Higher torque capacity thru 5 degrees**
- **Misalignment capacity 6 degrees**
- **Operating speed up to approx. 800 -900 RPM**
- **Low speed - high torque - low angle**

Universal Joint

- **Torque capacity is comparable after 5 degrees**
- **Misalignment capacity to 15 degrees**
- **Operating speed up to 1500 RPM - balancing after 300 RPM**
- **High Speed - low torque - high angle**

Comparing Universal Joints to Gear Couplings

Gear Coupling

- **Higher shock type load capacity**
- **Typically less expensive to manufacture**
- **Better able to handle harsh roll change**
- **Easier/Cheaper to recondition**

Universal Joint

- **Far less backlash (bearing clearance)**
- **Reduced vibration due to mechanical looseness = higher operating speeds with less associated vibration (amplitude)**

Comparing Universal Joints to Gear Couplings

Gear Coupling

- **Internal spring provides -**

- shock absorber @ roll change

- holds casing horizontal @ roll change

- stabilizes casing during operation and idle periods

Universal Joint

- **Predictable bearing life**
- **Lower lube & maintenance manpower cost**
- **Seals operating on a constant diameter = better retention and contamination control**