

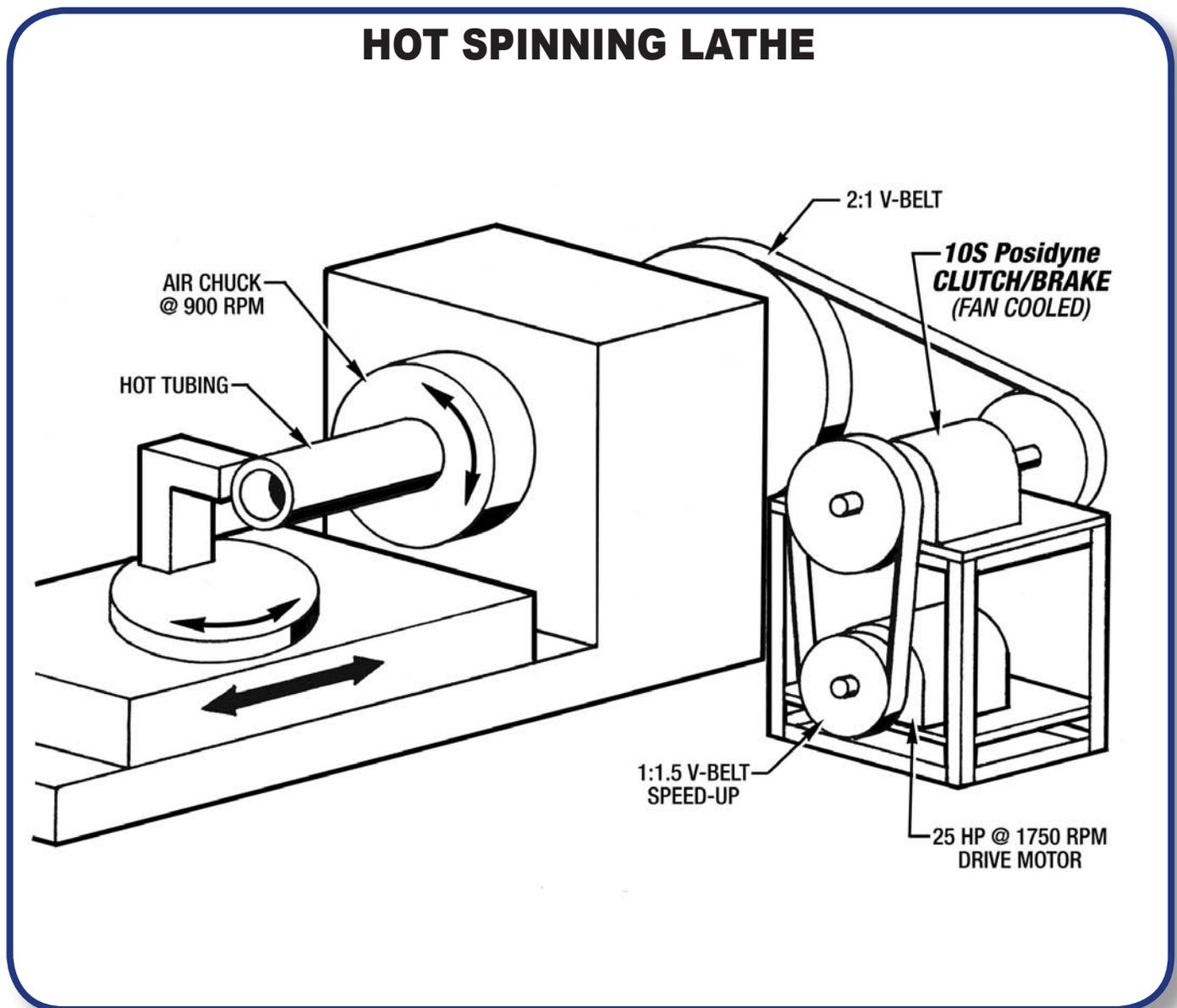
# APPLICATION BULLETIN



**APPLICATION:** Hot Spinning Lathe

**INDUSTRY:** High Pressure Gas Cylinder Manufacturing

**PRODUCT:** Posidyne Clutch/Brakes



## HOT SPINNING LATHE

**DRIVE REQUIREMENTS:** The drive is to start and stop the spindle, air chuck or collet, and tube being hot formed in a hot spinning lathe. The inertias involved are normally high, and as the tube diameters go up, naturally, so do the spindle and clutch sizes, reflecting greater and greater inertias. This high load start is one consideration. Even more important is a rapid stop capability so that the hot-formed end of the cylinder can be put into a press to form the reverse dish shape in the bottom. This must be done while the tube is still as hot as possible to reduce stress points.

**APPROACH:** The drive horsepower and belt ratios will vary dependent upon tube size. There is an optimum RPM for various wall thickness, tube diameter, and type of steel being formed of which the manufacturers will be aware. Usually, the flexibility of changing V-Belt ratios and pushing up or down the air chuck or collet bores is a good combination to allow the running of various sizes in one machine.

These variables dictate an individual evaluation of each application. The **Posidyne** should be run at as high an RPM as practical up to 1800 RPM. It can run at a higher speed if dynamically balanced and equipped with water cooling rather than forced air.

**SEQUENCE:** The typical cycle will be to heat one end of a cut to length tube in a furnace or induction heater. The tube is then chucked into the lathe and the clutch is engaged accelerating the tube and head stock drive to the proper RPM, which is established by the belt ratios. The forming process begins by moving the in-feed table toward the hot tube end. As the rotary table unit with the forming tool attached is rotated around the tube end it contacts the wall, forming it toward the center. As the in-feed is moved in at small increments, the rotary table is moved back and forth forming the end around until the hole is closed and fused together closing the end of the tube.

The tool is then rapidly backed away so that the part can be removed and the brake is applied to stop the rotation as quickly as possible.

The part is then removed and put into a press, which forms the reverse dish in the bottom of the cylinder. Time is of the utmost importance to get the part into the press while still hot to reduce possible stress points, which would occur if the end of the tube is not hot enough.

A similar operation is performed on the opposite end where the on/off valve will be installed. This end, however, need not be completely closed since a threaded adapter is welded in place.

### FEATURES:

- The **Posidyne** is very well suited for the high inertia starting conditions as well as stopping the load.
- With actuation pressure be fine tuned so as not the maximum in starting the pressure regulators and torque being linear, the drive can to overload belt drives but deliver and stopping torques by adjusting in the actuation lines.
- The long life of the **Posidyne** increases the UP time of the spinning lathe.
- The totally enclosed design is well suited for the hot dirty atmosphere.



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