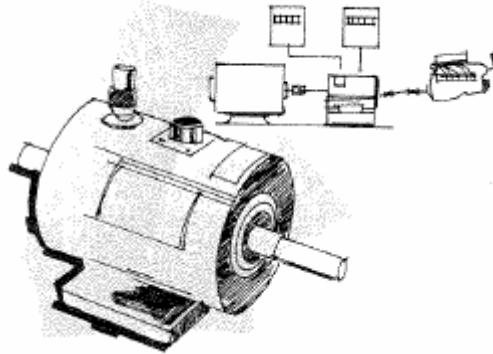
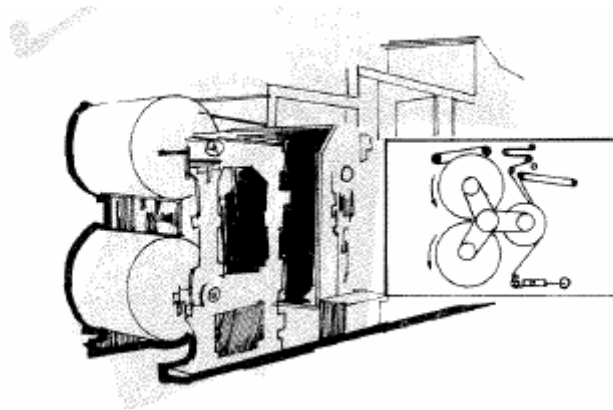


## VRS Sensor Application Notes



### Rotating Shaft Torque Sensor

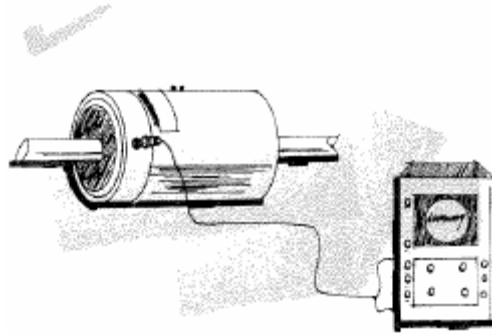
A 3030AN provides speed signals from a rotating shaft. A 60 – tooth gear is mounted on the torque sensor shaft with the pickup positioned so as to sense the passage of each gear tooth. The pickup generates 60 pulses for each shaft revolution with output voltage and frequency varying at different speeds. Output may be presented for readout in many different ways. This is typical of industry-wide use of magnetic pickups for speed sensing by detecting gear rotation.



### High Speed Newspaper Press

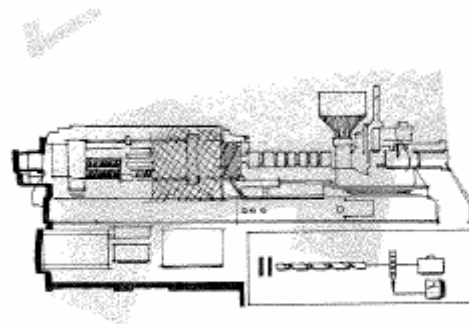
Paste up of paper rolls are controlled by an electronic pilot switch activated by a 3010AN Honeywell magnetic pickup. The pickup, actuated by a gear, counts revolutions of the press drive. Signals sent from the pickup to a binary counter are stretched and compared with signals from a commutator mounted on paper reel spindles. As the expiring paper roll gets smaller and revolves faster, the interval between the end of the stretched pulse and the signal from the commutator gets smaller. When the end of the stretched signal pulse and the commutator signal coincide, the circuit controlling the knives and brushes is activated to make the paste and cut the web.

## VRS Sensor Application Notes



### **Generator Bearing Failure**

Bearing failure can be predicted by magnetic pickups. A standard 3055A pickup is installed permanently in each generator. In use it is connected to the oscilloscope of the equipment console. As long as the shaft runs true, there is no significant output from the pickup. If shaft run-out (wobble) develops, the pickup is excited and the resulting voltage shows up as a modulation of the horizontal oscilloscope trace.



### **Injection Molding Machines**

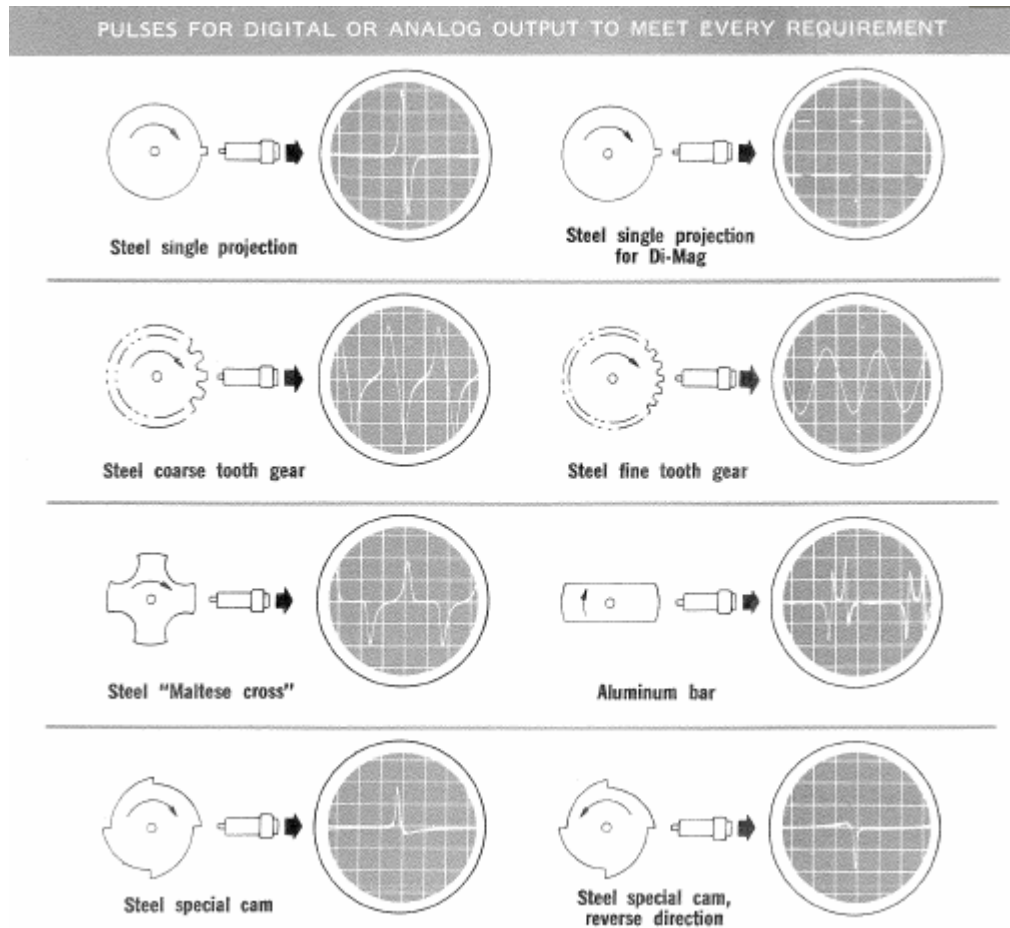
The speed of the ramming screw that forces powdered plastics into heated molding dies is indicated by a standard 3010AN pickup. A gear is mounted on the drive shaft of the ramming screw. The output of the 3010AN is fed through a doubler circuit to an ammeter calibrated in RPM. When the screw rotation slows down to a predetermined point, as shown by the meter, the operator stops feeding the mold. This inexpensive reliable method of control can be installed on existing plastic extruding or injection machines in the field without difficulty.

## Output Voltage

Magnetic sensors are non-contact transducers whose output voltage reflects the rate of change that is taking place in their magnetic field. The output that results is a measure of this change in terms of electrical energy.

Three factors affect the output voltage, and they are:

1. The speed of the actuator.
2. The size and shape of the actuator, or gear tooth.
3. The pole piece clearance, or air gap.



Generally speaking, gears are the most frequently used actuators. As shown above, actuators of varying sizes and shapes produce different waveforms. Fine tooth gears generate a near sine wave output, while coarse toothed gears produce a sharply peaked pulse. However, the same results can be obtained by utilizing wheel spokes, a vibrating surface, a moving bar, crank, or even a steel screw head mounted on a moving surface.