



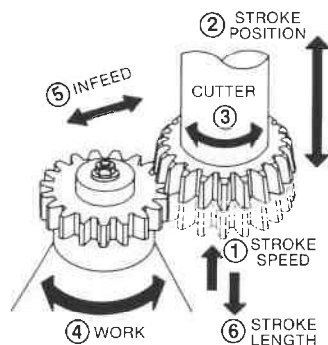
General Description

The Fellows Model FS1270 CNC HYDROSTROKE® Gear Shapers are built to handle large gears up to 1270mm (50") in diameter. Two standard models are available with face width capacities of 200mm (8") or 300mm (12").

The FS1270 Gear Shaper combines the proven, patented hydro-mechanical stroking system with a CNC controller designed specifically for gear processing.

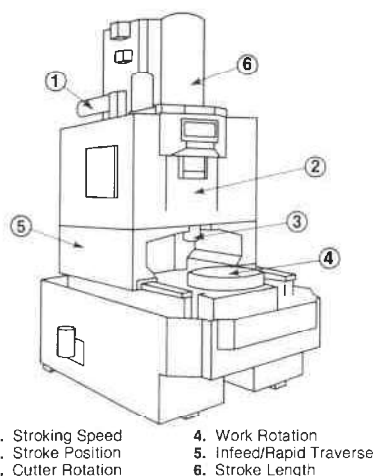
The HYDROSTROKE spindle design provides heavy stock removal capability with smooth stroking action. The HYDROSTROKE principle applies hydraulic power concentric to the cutter spindle in combination with unique mechanical valving to provide positive control of the cutting stroke and rapid return stroking. The result is greatly increased productivity with superior accuracy and finish on either internal or external gears.

CNC Controlled Axes



The flexibility of the CNC control system and the use of AC servo drives allows the FS1270 to be programmed for the optimum cutting cycles.

- 1. Stroking Speed:** The stroking speed is programmable from 12 strokes per minute through 500 strokes per minute.
- 2. Stroke Position:** The stroke position is adjustable through the controller on a "per surface" basis.
- 3. Cutter Rotation:** The cutter direction and speed is programmable through the front panel.
- 4. Work Rotation:** The rotation of the work is determined by the controller as a function of the speed of the cutter and the number of teeth on the cutter and the work.
- 5. Infeed:** The infeed rate is programmed as the amount of infeed/stroke.
- 6. Cutter Stroke Length:** The cutter stroke length is programmable on a "per surface" basis to optimize cutting time.



CNC Control

The powerful Fanuc Series 15 CNC control system is adapted specifically for the gear shaping process. It includes: electronic index drives, automatic calibration of process sensors, setup data, storage and recall for 100 parts, switchable metric/inch operation, and self diagnostics for the control system and machine. The control is user friendly, so operators with normal gear processing skills need not understand computer programming. Two (2) RS232 plus one (1) RS422 ports are available for interfacing with external devices. The 14" color CRT is an example of the "human engineering" features.

Adaptive Controls Stroking Speed

The FS1270 provides AC servo-controlled, infinitely variable stroking speeds within speed ranges of 20:1 (12-250 SPM), and 40:1 (12-500 SPM). Maximum cutting force is available through the entire range.

Rotary Feed

Rotary feed rates are adaptively optimized by continuously monitoring the actual cutting force of each stroke and comparing this to preset force limits. During low cutting force/low chip crowding conditions, rotary feeds are increased for higher production without increased tool wear.

FELLOWS®

FS1270-200/300

Variable Degressive Infeed

The FS1270 variable infeed rate feature provides higher production through higher average infeed rates. Presets to the CNC establish a high initial infeed rate where light cutting forces are encountered. As the cutter nears full depth, where cutting forces are highest, infeed rates are reduced to a preset lower rate. The result; cycle time to full depth in less than one half the time required by "constant infeed rate" gear shapers.

Temperature

Temperature compensation is provided through adaptive loops which sense temperature variations in the machine structure and automatically modify machine settings to adjust for thermally induced changes.

Hydraulic Power Adaptive Control

Hydraulic flow and pressure are controlled by the CNC as a function of actual stroking speed and cutting force. This feature conserves energy when cutting forces are low or when the machine is non-productive.

Quick Return

Hydro-mechanical stroking permits rapid spindle return at speeds up to twice the cutting portion, significantly increasing basic machine productivity. This feature provides either a 25% increase in stroking speed with no increase in tool wear or a 50% increase in tool life over conventional machines at equal stroking speeds.

Improved Production, Tool Life, & Quality

Fellows FS1270 provides dramatic productivity increases up to 100%. Tool life can be extended as much as 250% with significant part quality improvements, when compared with conventional crank-driven gear shapers.



Operator's console and CRT display.