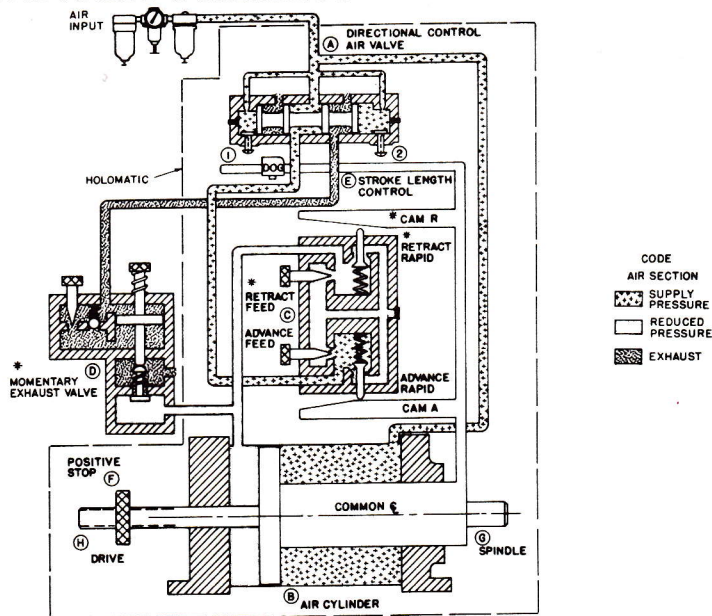


MONTPELIER, OHIO

DESCRIPTIVE BULLETIN
HIS-4

OPERATING PRINCIPLE BALANCED AIR HOLOMATIC POWER FEED UNITS

FUNCTIONAL SCHEMATIC



SEQUENCE OF OPERATION

The illustration shows Holomatic quill advancing in rapid motion.

Poppet ① on Directional Control Air Valve ① has been momentarily opened which dropped air pressure at that end of spool. The higher pressure at opposite end caused spool to shift to position shown. Air is being admitted to Drive end of Air Cylinder ② thru Feed Control Section ③. The thrust developed on larger piston area of Drive end has overcome constant air pressure retract thrust on Spindle end, and the quill is moving forward in rapid motion. The quill will continue to advance in rapid motion until Cam A allows spring and pressure loaded Advance Rapid valve to close. When advance Rapid valve is closed, air will flow at a slower rate thru Advance Feed valve with piston in a virtual state of thrust balance. (Quill movement is proportional to air flow.) The air flow passes thru retract portion of Feed Control Section ③ to Drive end of Air Cylinder ② by forcing spring loaded *Retract Rapid valve open.

When dog on Stroke Length Control ⑤ or a lever operated by Positive Stop ⑥ opens Poppet ②, the spool of Directional Control Air Valve ① will be shifted to its original position. Air will then be exhausted from Drive end of Air Cylinder ②, the direction of thrust power will be reversed, and quill will retract as allowed by the flow of exhaust air from Drive end of Air Cylinder ② thru Feed Control Section ③. When optional Retract Stroke Control is not present, the quill retracts in rapid motion for full distance. When installed, *Retract Feed valve establishes back feed rate, and *Retract Rapid valve establishes retract rapid travel distance by metering flow of exhaust air. The exhaust air passes thru advance portion of Feed Control Section by forcing spring loaded Advance Rapid valve open.

When installed, the Momentary Exhaust Valve ④ receives an air signal from Directional Control Air Valve ① as spool returns to its original position (quill starts to retract). The spring loaded piston advances and opens exhaust line from Drive end of Air Cylinder ② to atmosphere. Metered air to bottom of piston balances thrust, and spring retracts piston closing exhaust line after short time. The Momentary Exhaust Valve ④ is used to dump surplus air at large area end of thrust piston when stroke of unit must be synchronized with motor reversing spindle action for threading.

*Optional controls.

COMPONENT FUNCTION

- ① DIRECTIONAL CONTROL AIR VALVE directs air to and from the Drive end of the Air Cylinder.
- ② AIR CYLINDER, double acting with area differential, develops thrust power for stroke action. (Air is applied continuously to Spindle end of cylinder.)
- ③ FEED CONTROL SECTION meters air flow to and from Drive end of Air Cylinder to establish quill rapid and feed movements. Thumbscrews establish feed rates, and Cams and plunger valves establish rapid travel distances.
- ④ MOMENTARY EXHAUST VALVE* provides quick momentary release of surplus advance thrust power air to synchronize retract motion of quill and spindle reversal time for threading applications.
- ⑤ STROKE LENGTH CONTROL operates Directional Control Air Valve for automatic retract action. (Some units use lever moved by Positive Stop for Stroke Length Control.)
- ⑥ POSITIVE STOP establishes the forward stroke limit.
- ⑦ SPINDLE moves with quill and mounts tools and tool holders.
- ⑧ DRIVE incorporates a telescoping spline to transfer the rotational power of a motor to the Spindle.

GRAPHICAL DIAGRAM

