

ENGINEERING DATA
Series A3 Lead Screw Feed Holomatic Units with Rapid Travel
4" and 6" Stroke Models

GENERAL

A series A3 lead screw feed Holomatic unit ready for operation consists of the following elements, chosen to provide suitable physical and operational characteristics.

BASIC UNIT — Air powered rapid travel, lead screw feed and switch control elements. Ref.: Bul. 21902-01

ACCESSORY	DESCRIPTION
Spindle and Spline Tube Assembly	Sockets for 1 3/8" and 1 1/2" dia. tool shanks and standard slotted spindle. Ref.: spindles and drives section
Quill Adapters	Non-rotating clamp-on type for multiple heads. Ref.: spindles and drives section
Drive Assemblies	Direct, belted or belted reductions. Ref.: spindles and drives section
Belt Housings	Supported by the unit and mount NEMA flange and foot frame motors, either extended or overhead. Ref.: spindles and drives section
Motors (Reversing Type)	NEMA flange and foot frame motors in 1/2, 3/4, 1, 1 1/2, 2, 3, and 5 HP with 900, 1200, 1800 and 3600 RPM speeds for use with 3 phase, 60 Hertz, 230/460 volt current for spindle rotation. Ref.: spindles and drives section
Pulleys and Belts	Step vee pulleys and belts with and without gear reductions provide combinations for all spindle speed requirements. Ref.: spindles and drives section
	Speed and Horsepower Table. Ref.: Bul. 21606-0
Control Panel	Includes spindle motor reversing controller, plug stop and relays to monitor the tapping motion sequence in correspondence with the switch settings. Ref.: controls section

SPECIFICATIONS

Ref.: Dwg. 21903-01

Capacity	Taps and threads 48 to 7 straight threads per inch and to 11 1/2 taper pipe threads per inch.
Stroke (2 Models)	4" maximum and 6" maximum. Advance Rapid 1/2" to 3 7/8" and 1/2" to 5 7/8". Lead Screw Feed 1/8" to 2" for both strokes.
Cycle Control	Built in directional control air valve with electric solenoid operated bleeder pilots for remote actuation.
Thrust Power (Rapid Travel)	Forward—5 1/2 times input pressure. Retract—3 times input pressure. Recommended pressure range 40 to 150 PSI.
Thrust Overload Safety	Positive stop switch cuts off power to spindle motor at adjustable thrust limit.
Cylinder Displacement	8 1/2 cu. in. per inch of stroke (total for both directions).
Stroke Movement Control	Advance rapid by air cylinder, to adjustable positive stop position with spindle dead, followed by lead screw feed action forward and return by spindle motor turning forward and then in reverse. Spindle motor is electrically plugged to a stop at the initial screw position, and the quill returns in retract rapid motion to its starting position by air cylinder return action.
Rapid Travel Rate	Advance—Adjustable 50 to 600 inches per minute. Retract—Approximately 500 inches per minute.
Lead Screw Feeds	Selective by changing screws and nuts. Standard pitches are 7, 8, 9, 10, 11, 11 1/2, 12, 13, 14, 16, 18, 20, 24, 27, 28, 32, 36, 40 and 48—all right hand. Left hand & metric available.
Depth Repeatability	1/8 revolution of spindle at 1000 R.P.M.
Mounting	Unlimited, mount in any position at any angle.
Weight	Average less motor, 4" stroke 95 pounds. 6" stroke 120 pounds.

INSTALLATION AND SETUP INSTRUCTIONS

Ref.: Dwg. 21903-01

INSTALLATION

ASSEMBLY

Holomatic units are shipped from the factory assembled except for motors, motor pulleys and belts. Motors should be mounted to the belt housings and the pulleys to the motor shafts in that order. Care in aligning pulleys and adjusting motor positions for proper belt tension will assure maximum life of belts and motor and drive bearings.

MOUNTING

Holomatic units have a standardized and interchangeable mounting design that incorporates side flanges for clamping strips, screw holes for fixed position mounting and a central one-inch wide key on the bottom for alignment purposes. The use of a matching keyway in the machine base or in an adapter plate secured to the machine base simplifies initial alignment and subsequent service efforts.

AIR POWER INPUT

A single air input line is required from a continuous compressed air source of 50 to 150 PSI. The air must be **clean, regulated and lubricated**. Connect air to 1/4 NPT air inlet.

ELECTRIC POWER INPUT

Spindle drive motors operate on three phase, 50 or 60 Hertz, 230 or 460 volts electricity depending on the user's requirements. Motor nameplates should always be checked for motor characteristics before hookup.

REMOTE CYCLE AND INTERLOCK CONTROLS

A lead screw control panel, Bul. 21914-01 is connected to the switch box control assembly on the unit as shown, to command the tapping motion sequence. A reversing controller and a plug stop are included for the spindle motor. 110 Volt, 60 Hertz, single phase current is standard for the control circuit.

LUBRICATION

Spindles, drive and motors incorporate sealed-for-life type ball bearing assemblies and no further lubrication is required. Lead screw and nut should be lubricated daily as indicated on the unit.

Use light weight high quality "air cylinder" type oils with a medium analine value in air line lubricators to Holomatic air input. (Use Mobil DTE #24 or equiv.) REFER TO BUL. 21873-00 FOR LEAD SCREW AND NUT CHANGE INSTRUCTIONS.

SETUP PROCEDURE

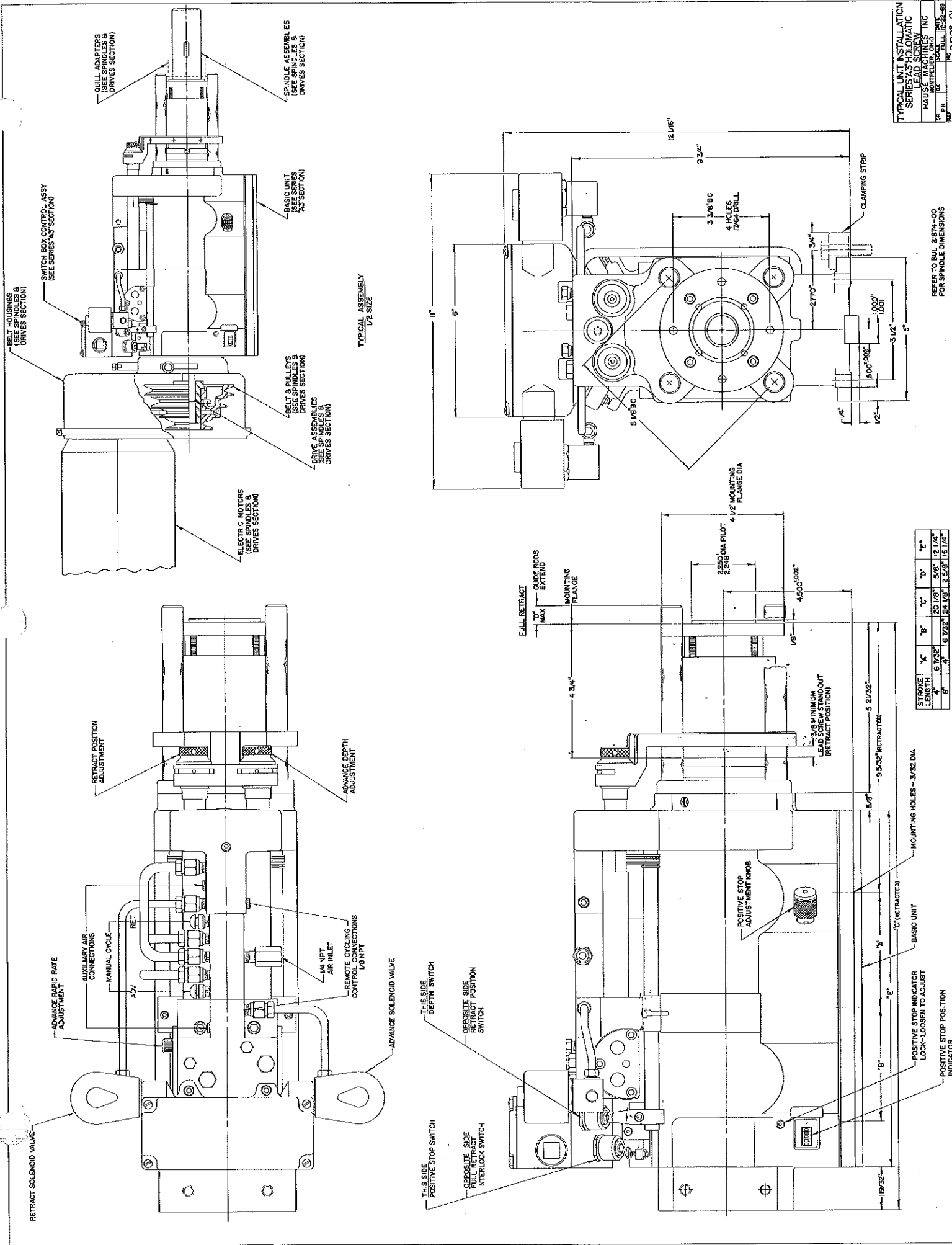
(Tapping and threading with solid tools)

- Set spindle motor power should be off.
- The Holomatic quill should be fully retracted.
- Secure Holomatic unit at approximate desired distance from work.
- The lead screw should be at a "stand out" position of 3/8" minimum as shown.
- Set positive stop indicator to read the desired advance rapid distance.
- Set retract position adjustment at the same value.
- Set advance depth adjustment at the total stroke desired (advance rapid plus lead screw feed).

NOTE: This total must **not** be more than the unit stroke capacity, and the lead screw feed distance should not exceed 2".

It is wise to observe switch operation with spindle motor power off.

The full retract interlock switch should be actuated when the quill is fully retracted.



With connected air pressure of 50 to 90 PSI, momentarily depressing advance manual cycle poppet should advance the quill to the positive stop setting. At this point, the positive stop switch should be actuated.

The rate of this advance motion can be regulated with the advance rapid rate adjustment.

Manual forward rotation of the spindle one or two turns should cause the retract position switch to be de-actuated. If this action fails to occur, a slight movement of the retract position adjustment will bring about the correct action.

Continued manual forward rotation of the spindle should cause the depth switch to be de-actuated at the thread depth desired. At this point, regulation of the advanced depth adjustment will bring about the desired action.

Manually reverse rotation of the spindle until the retract position switch is actuated, which should happen at near the original "stand out" position.

Momentarily depressing the retract manual cycle poppet will cause the quill to retract. This retract motion will de-actuate the positive stop switch and actuate the full retract interlock switch, which terminates a cycle.

Remove the drive belt and connect the control panel according to the diagram, including motor power. Depress the electric cycle button and when the quill advances to the positive stop setting, the motor should start and run in the direction which would advance the spindle.

Manually turn the spindle forward to the depth previously set, at which point the motor should reverse.

Manually turn the spindle back to the original "stand out" position, at which point the motor should "plug stop" and the quill will automatically retract. Notice which way the motor coasts, following the plug stop action. If forward, decrease the setting on the time delay relay in the control panel. If the motor coasts in reverse, increase the setting. A minimum rolling stop is desired.

The unit should now be ready to operate with spindle power. Final adjustments, if required, can be made with tools in place.

SAFETY FEATURES

If a "no hole" condition occurs in tapping or an obstruction to forward motion of the lead screw feed is encountered during normal operation, the motor will automatically stop. This automatic action interrupts the cycle and usually avoids tool breakage and other damage. The quill can be retracted with the emergency push button.

If the spindle motor fails to reverse or stop due to a switch malfunction or a power failure, the lead screw may over-run and become disengaged from the nut, either forward or back with no damage.

If lead screw and nut are dis-engaged, disconnect the spindle motor power first, then re-engage the nut and screw manually by urging them together as the spindle is rotated, thereby avoiding damage to the end threads. Re-connect the spindle motor and cycle with caution. If a power interruption was not apparent, inspect the depth switch and the retract position switch.

Refer to Hauser machining computer for suggested spindle speeds in various materials.

For basic unit sub-assembly descriptions, refer to Bul. 21902-01.

For maintenance information, refer to individual sub-assembly bulletins.