



## Leadscrew Tapping Cycle - A7/A8 Block Electric AFTE

Leadscrew tapping uses a fixed mechanical drive and hence the forward feed and retract feed are fixed by the pitch of the leadscrew. It is important that the leadscrew being used is the correct one for the thread that is being tapped.

Leadscrew tappers reverse the motor to withdraw the tap from the hole. On electric AFTE's their depth and datum signals are given by electric proximity switches on the A7/A8 Block which are to reverse the motor at depth and to stop it at the datum position.

The control for this is **SEPARATE** and is commonly carried out by machine builders own control circuitry.

The electric leadscrew tappers from Desoutter come equipped with three proximity switches for home/datum, depth and no-hole sensing.

### In any Control Circuitry the following are recommended:

Cycle Button	When pressed the tool will cycle.
Emergency Stop	When pressed the tool will stop.
Inch Reverse	Enables inch reversal of the tool when setting up (also used to return tool to datum after emergency stop is pressed or no hole sensed.
Inch Forward	Enables the tool to be inched forward when setting up.

### Proximity Switch Types Connections and Use

Block Type	Proximity Switch Type	Operating Voltage	Voltage Drop	Rated Operating Current	Operating Temperature
A7	M8 PNP NO	10-30V	<=2.5V	250mA	-25 to 70 C
A8	M8 NPN NO	10-30V	<=2.5V	250mA	-25 to 70 C

The output is short circuit protected (pulsed). After elimination of the short circuit the switch is ready again for operating.

Datum should be used to sense home position and hence to stop the motor at the end of a cycle.

Datum -           24V (Brown)   to 24V  
                       0V (Blue)       to 0V  
                       Output (Black) to STOP the motor

Depth should be used to sense end of stroke position and hence to actuate the reverse of the motor.

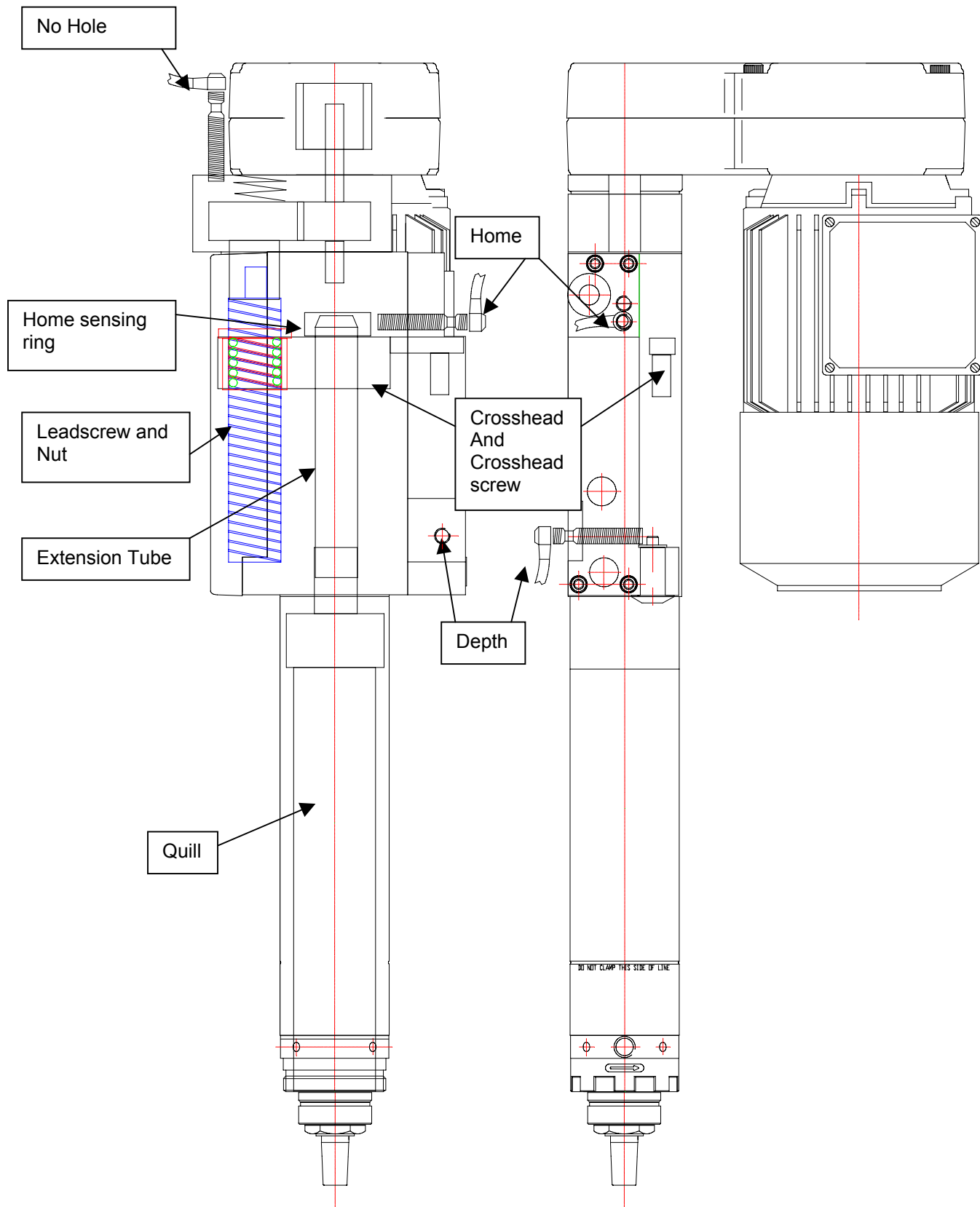
Depth -           24V (Brown)   to 24V  
                       0V (Blue)       to 0V  
                       Output (Black) to REVERSE the motor

No -Hole should be used to sense a component with no hole - the output should be used to stop the motor.

No Hole -         24V (Brown)   to 24V  
                       0V (Blue)       to 0V  
                       Output (Black) to STOP the motor

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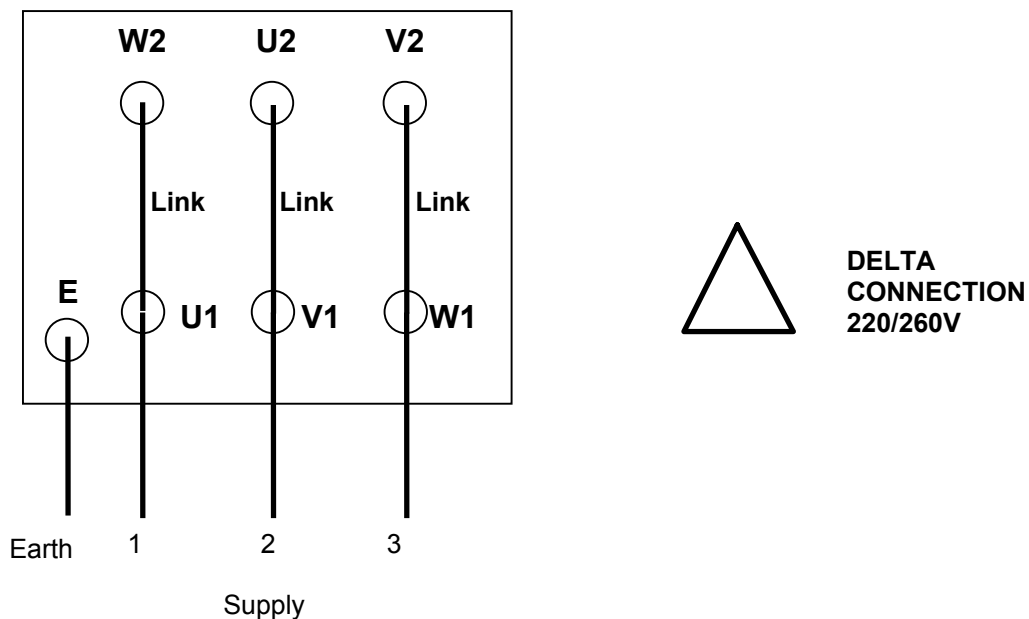
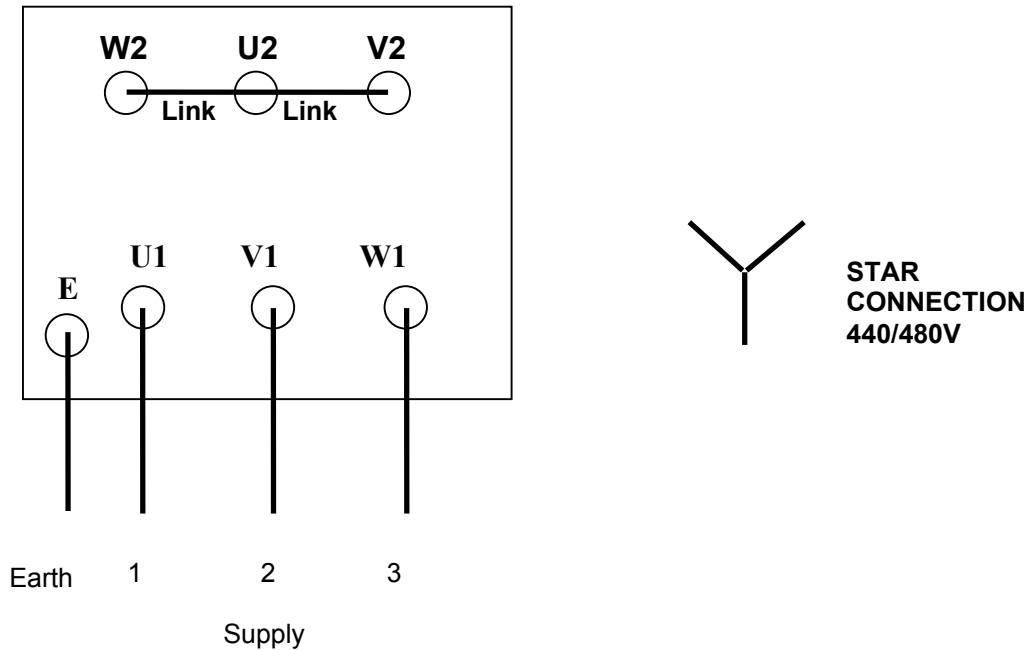


AFTE showing Home, Depth and No Hole Sensors on A7(PNP) A8 (NPN) Control Blocks



### Electric Motor Connection

The electric motor used on the AFTE's are 3 phase mechanical brake motors and can be connected to into both 440-480 volts or 220-240 volts at 60Hz by changing the connections to the motor as shown below.



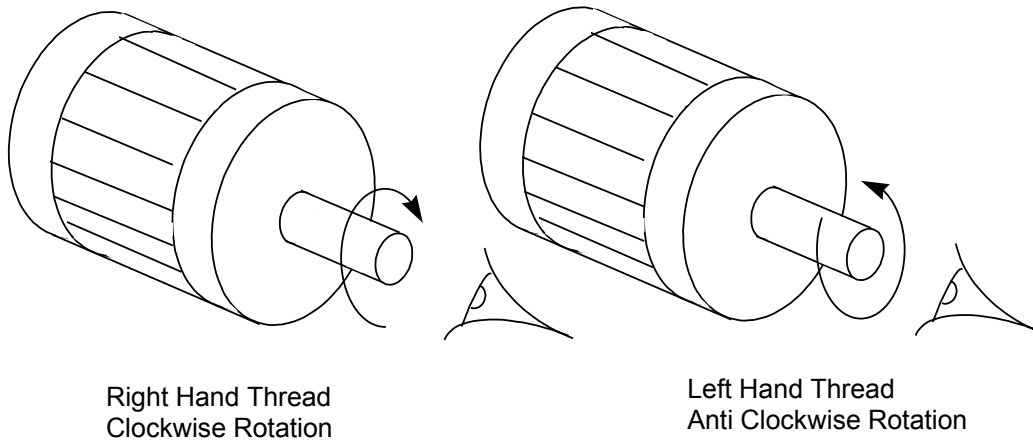
The motors must be connected to a 3 phase supply in accordance to the Voltage Charts in the relevant service sheet and provided with a starter fitted with an overload protection.



Recommended overload settings and the connection type.

Tool Series (Motor Part No.)	Speeds (50Hz)	Voltage /V	Frequency /Hz	Motor Connection	Power /hp	Full Load Current /A	Recommended Overload Setting /A
AFTE270 (381253)	1100-2950 4 pole	220/260 440/480	60 60	Delta Star	0.28	1.0 0.6	1.0-1.2 0.6-0.8
AFTE470 (310373)	180-1450 4 pole	220/260 440/480	60 60	Delta Star	0.6	2.0 1.1	2.0-2.2 1.1-1.3
AFTE480 (380433)	180-1450 4 pole	220/260 440/480	60 60	Delta Star	1.2	3.8 2.2	3.8-4.0 2.2-2.4

When connecting the motor ensure that the motor rotation is correct. Remove the belt from the pulley's and view the motor from the shaft end of the motor. For right hand threads the rotation should be clockwise and anti clockwise for left hand threads.



To reverse the motor interchange U1 and V1 connections.

**NOTE: Before cycling a leadscrew tapper check the following:-**

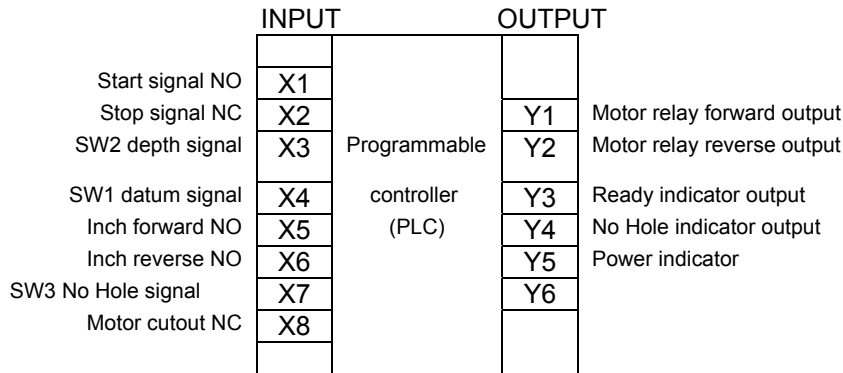
- 1. Electric Motor is running in the correct direction.**
- 2. Proximity switches are fitted correctly i.e. are sensing datum and depth and that the logic of the control circuitry is functioning correctly:-**
  - i.e. Depth reverses the direction of the electric motor.**
  - Datum stops the electric motor.**

## Operation of AFTE Tapper using a Programmable Controller

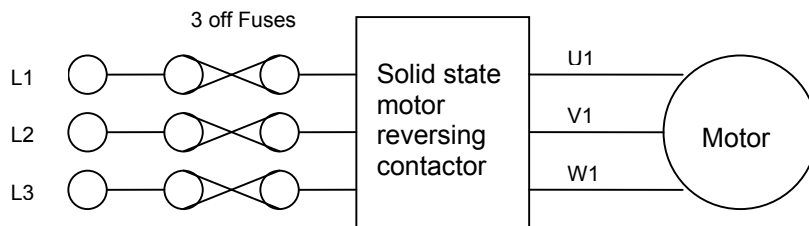
### Electrical connections to AFTE270/470/480:

Consult tool service sheet for correct wiring of motor and proximity switches.

### Control circuit:



### Motor Switching Circuit:



Note\*: Ultra-fast fuses must be used. The fuses must have an I<sup>2</sup>T rating lower than the contactor.  
 Fuse size Ø10 x 38mm.

Motor rotation test must be carried out as described in AFTE service sheet before operating the tool.

Desoutter recommends that the SRC3D Solid State Relay from Intercable Danmark is used in the circuit.

### Warning :

Customer is responsible for ensuring the safe installation and operation of the control equipment.



Ladder Diagram:

