

## Procedure for Calibrating XL Tool Turret Indexer

1. Restart the machine (a fresh start is needed so that tool indexer positions will be small enough to display).
2. 'Locate' the machine as usual. If the indexer has been calibrated before, this will locate it as well as other axes. If not, the indexer will remain 'unlocated'.
3. Navigate to the manual move menu: "Setup menu | Move manually | Tool Indexer".
4. Move the indexer to station 1 by turning the pulsewheel. If the indexer has been calibrated before, it will move to station 1 and try to lock the pin automatically. If the indexer has not been calibrated, the pin will not lock; use your best judgement as to when the indexer is "exactly" at station 1 in this case.
5. Navigate to the setup menu: "Advanced Menu | Service Menu | Setup tool indexer | Setup/move to ref". The screen will look this:

```
Tool Indexer Setup
  F  2% SL-99.1234 r
    Esc=Abort <>=Move
  >Set ref at curr pos
```

6. Set the pulsewheel decade to x.01 (the slowest decade).
7. Verify the pin locked:  
While in the setup menu, the lock pin goes to an always-locked state. It should have remained in or dropped into the hole for station 1. If necessary, use the pulsewheel to move the indexer slightly to get the lock pin to drop.
8. Determine position **P1** as follows:  
Carefully move the indexer (against the lock pin) by turning the pulsewheel to the LEFT while watching the force (F xx%) display; the force will climb slowly at first, then very rapidly; stop at F 20%. Be careful not to cause a Fault by applying too much force. Record the position:  
v5.65 or before: Manually record the position shown (SL xx.xxxx r) as P1  
v5.70 or after: Press the '1' key on the keypad to automatically save P1
9. Determine position **P2** as follows:  
Carefully move the indexer (against the lock pin) by turning the pulsewheel to the RIGHT while watching the force (F xx%) display; the force will drop at first, then climb slowly, then very rapidly; stop at F 20%. Be careful not to cause a Fault by applying too much force. Record the position:  
v5.65 or before: Manually record the position shown (SL xx.xxxx r) as P2  
v5.70 or after: Press the '2' key on the keypad to automatically save P2
10. Determine the average position **P** as follows:

v5.65 or before: Manually calculate  $P = (P1 + P2) / 2$

v5.70 or after: After saving both P1 and P2, the third line will show the difference between P1 and P2. Press the '.' key on the keypad to toggle the third line to show the average position P.

11. Carefully move the indexer towards the average position by turning the pulsewheel (initially to the LEFT) while watching the position (SL xx.xxxx r) display; continue until the position **P** is shown on the screen. The force (F xx%) display should be low indicating that the indexer is not pushing against the lock pin in either direction.

12. Press the <ENTER> key, which saves the position and (re)initiates the locate process.

13. Finish by 'locating' the tool turret indexer axis.