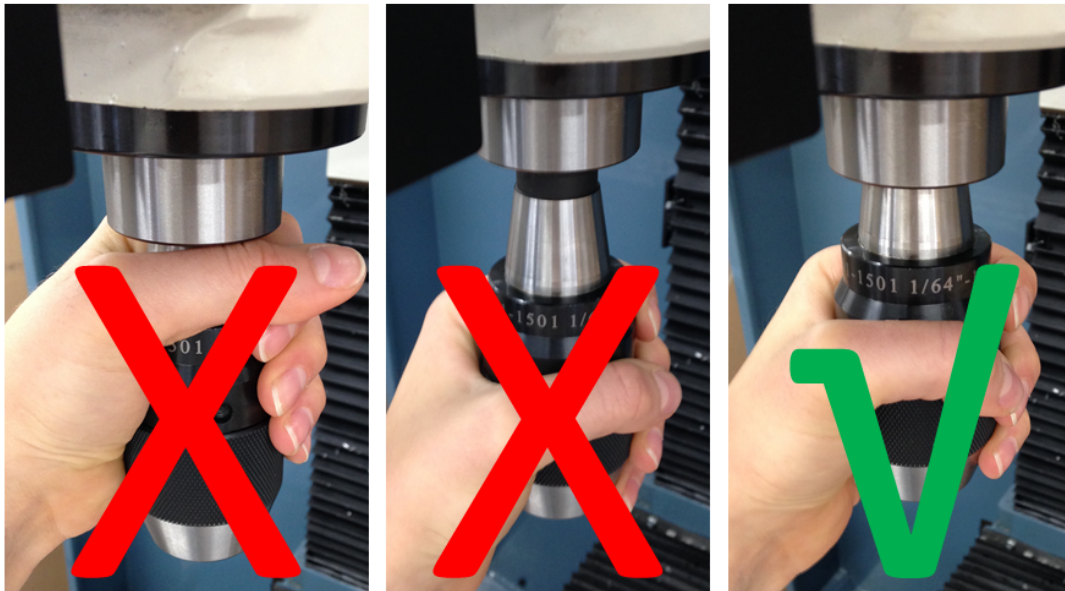


Mill Basic Operation and Control Layout

1. Powering On

- Flip the Control On/Off switch

2. Inserting a tool

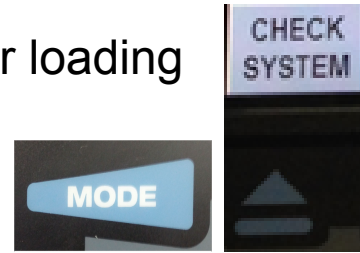


- Clear any chips or excess coolant in quill with cloth
- Insert selected tool while aligning internal spindle alignment pin with key slot
- **Push holder/collet/chuck all the way to avoid damage**

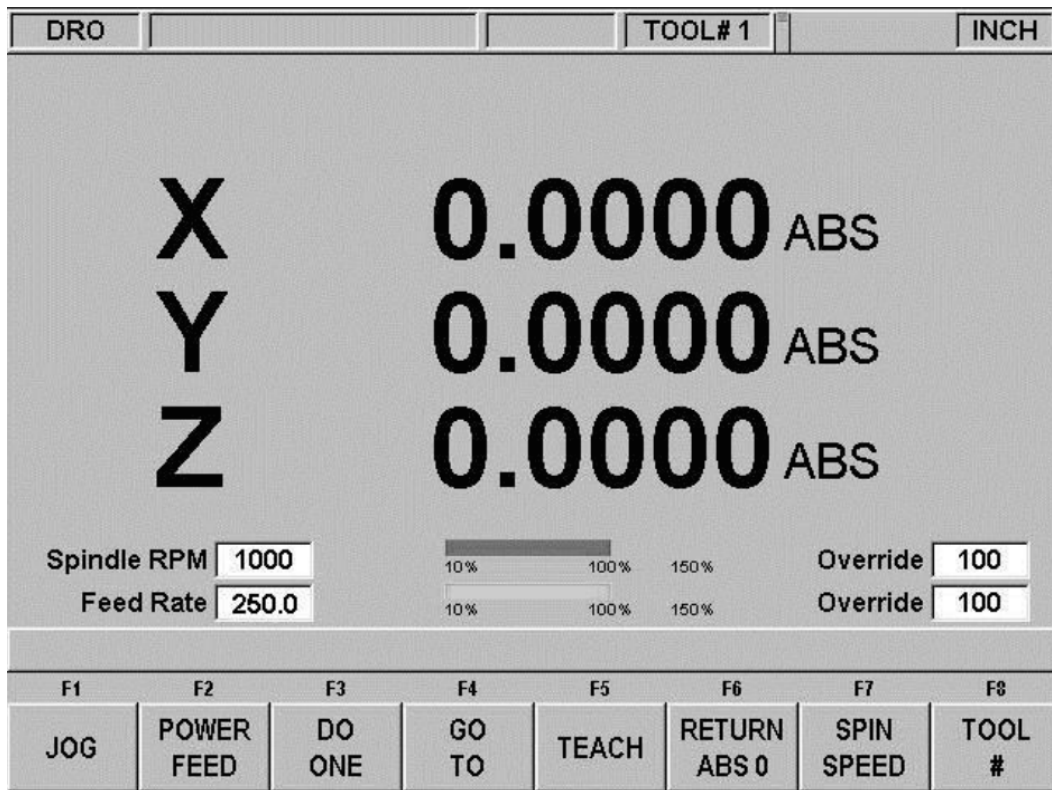
- Press the **IN** button on the tool change control. Tool is properly in place after ~1 second when you start to hear a loud series of clicks.
- **The tool taper is a potential pinch point. Keep fingers away from it**

3. Entering DRO mode

- Press **CHECK SYSTEM** soft key after loading message -OR- Press **MODE** hard key
- Press **DRO** soft key



You are now in the DRO mode. The LCD screen should look like:



4. Using Jog keys

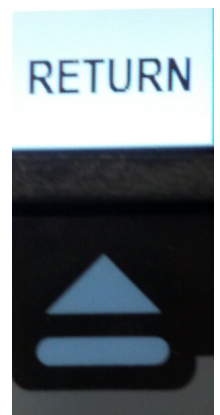
- Enter the DRO mode
- Press **JOG** soft key
- You are now in the jog mode. You will see a flashing red warning sign

CAUTION: JOG KEYS ARE ACTIVE

- To Jog the bed and head in positive X,Y, and Z directions, press **X**, **Y**, and **Z** hard keys respectively.
- To change direction of travel, press **+/-** hard key on the number pad
- Jog feed rate can be changed using the feed/speed override hard keys
 - Press **F/S** hard key till LED light on top of **F** is lit.
 - Use the **up** and **down** hard keys to change the jog feed rate



- **Be very careful with the jog mode. It is very easy to crash the mill in the jog mode**
- **EXIT THE JOG MODE using the RETURN soft key before performing any other operations**



5. Setting X and Y position

- Enter DRO mode
- Move to desired X position. You can do this using the hand wheels or by jogging.
- Press **X** hard key. **MAKE SURE YOU ARE NOT IN THE JOG MODE.**
- Enter **Absolute position** using the number pad. Use +/- hard key to toggle between positive and negative numbers
- Press **ABS SET** hard key
- **Do not forget to account for 0.1" edge finder offset. Failure to do so can result in crashing of mill in CNC**
- Repeat above steps to set Y position

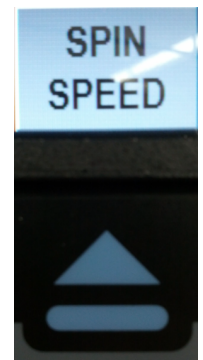


6. Setting Z position

- Enter the DRO mode
- Move to appropriate X and Y position
- Extend the Quill using the Quill feed handle
- Touch tool to a reference surface
- **Lock the quill** using the quill feed lock
- Press **Z** hard key. **MAKE SURE YOU ARE NOT IN THE JOG MODE.**
- Enter **Absolute position** using the number pad. Use **+/-** hard key to toggle between positive and negative numbers
- Press **ABS SET** hard key
- Release the quill lock, retract fully and lock in retracted position.
- **Do not forget to account for any Z offsets (eg: when using an electronic touch off indicator). Failure to do so can result in the crashing of the mill in CNC**

7. Setting spindle speed

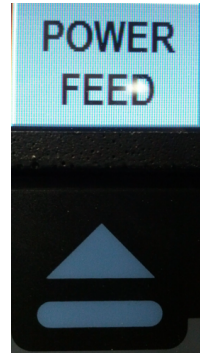
- Enter the **DRO** mode
- Select high/low speeds using the **high/low gear change handle**.
- Low speeds: 40 - 600 rpm
- High speeds: 300 - 5000 rpm
- Press **SPIN SPEED** soft key.
- Enter spindle speed using the number pad
- Press **ABS SET** hard key
- If you enter a speed outside the permissible range, the machine will warn you with a yellow sign. A spindle speed closest to the input speed will be selected. Example: Input = 5500 rpm, actual speed = 5000 rpm
- You can use the **F/S** override hard key to adjust the spindle speed



- Press the **F/S** hard key till the LED on top of **S** is lit.
- Use the **up** and **down** hard keys to adjust the spindle speed. Each press increases or decreases the speed by 5%

8. Using the Power feed

- Enter the **DRO** mode
- Move the tool to the appropriate (X,Y,Z) position. **LOCK THE QUILL**
- Enter Power feed mode by pressing **POWER FEED** soft key
- To power feed in the X direction, press the **X** hard key
- Enter the distance to be traveled using the number pad. Use the **+/-** hard keys to toggle between positive and negative numbers
- Press the **INC SET** hard key.
- Adjust the feed rate using the **F/S** hard key. The default value is 10 inch/min
- When ready, press the **GO** hard key to start power feed



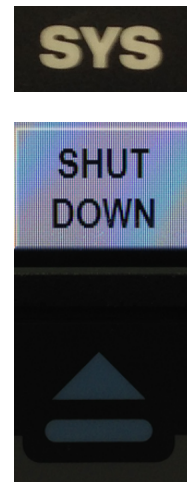
- The power feed can be stopped at any time by pressing the **STOP** hard key
- The tool can similarly be power fed in Y and Z directions

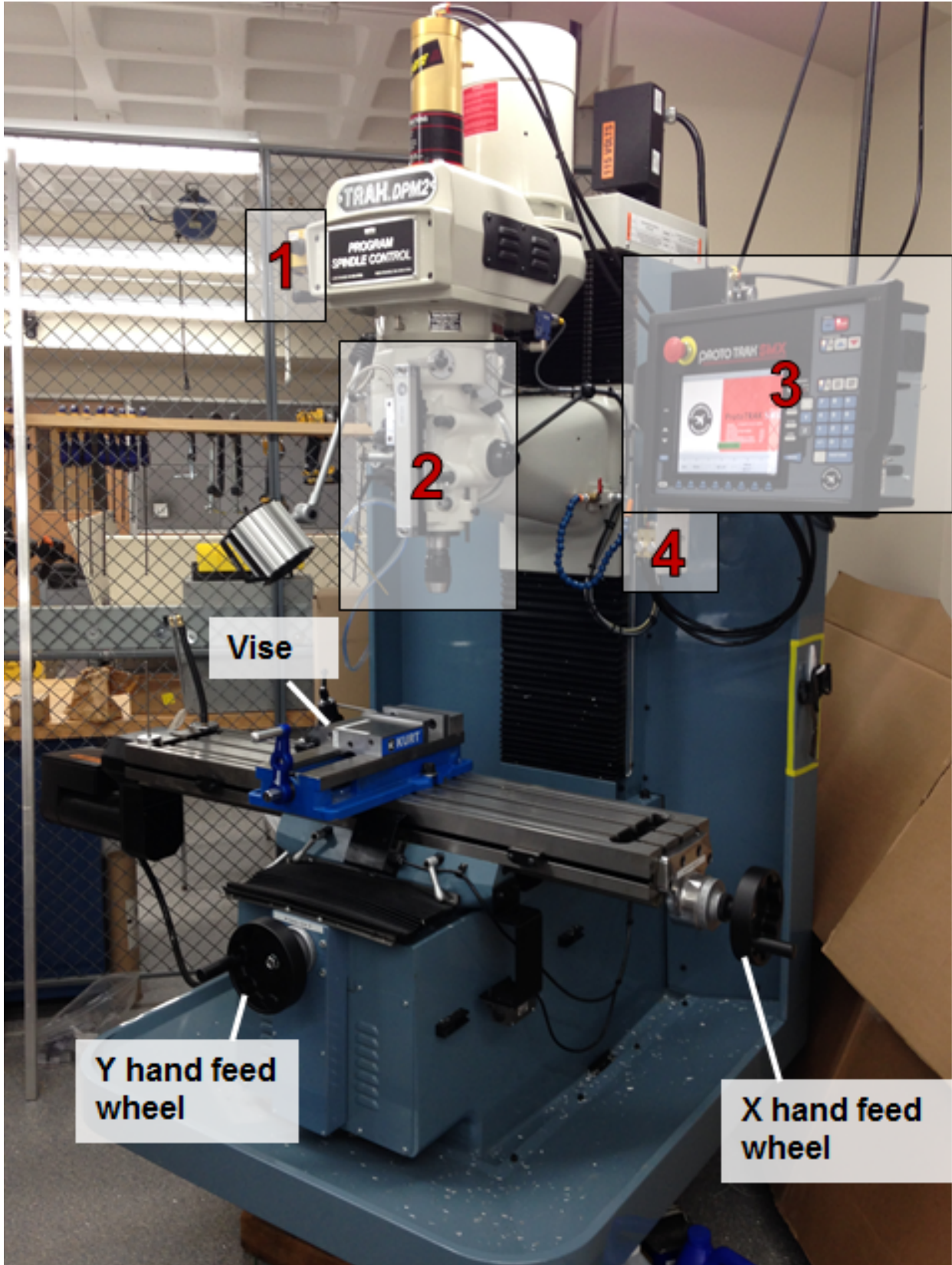
9. Removing a tool

- Retract the Quill completely
- Hold the tool holder at the base
- If the tool is held in a collet, hold both collet and tool
- Press **OUT** button on the pneumatic tool changer
 - **This will be loud.**

10. Powering Down

- Press **SYS** hard key
- Press **SHUT DOWN** soft key
- Press **YES** soft key
- Flip Control On/Off switch





1

2

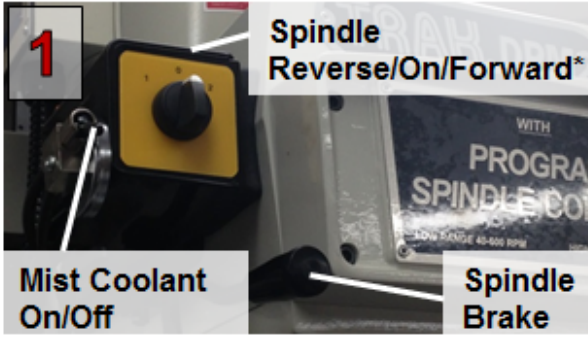
3

4

Vise

Y hand feed wheel

X hand feed wheel



*High gear	Low gear
1 – reverse	1 – forward
0 – off	0 – off
2 – forward	2 – reverse

