

# BOY 22A INJECTION MOLDING QUICK START GUIDE

## Basic Operation

VERSION 2.0

4/16/2019

# TABLE OF CONTENTS

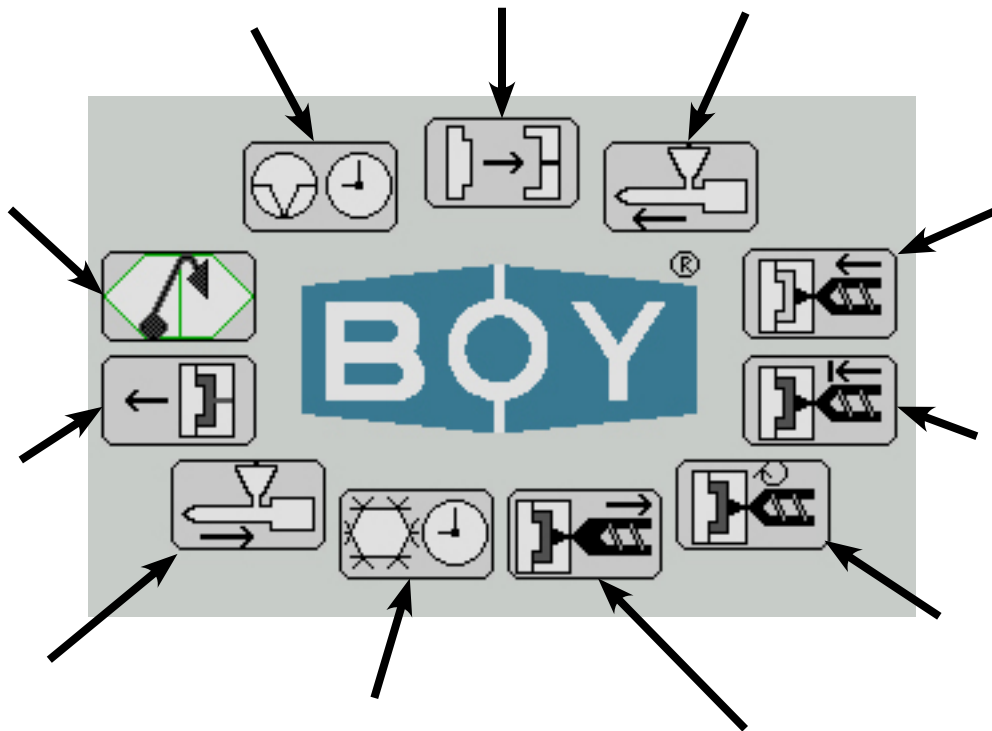
CLICK/TAP TO JUMP TO SECTION

# CONTROL PANEL - SIDE BUTTONS



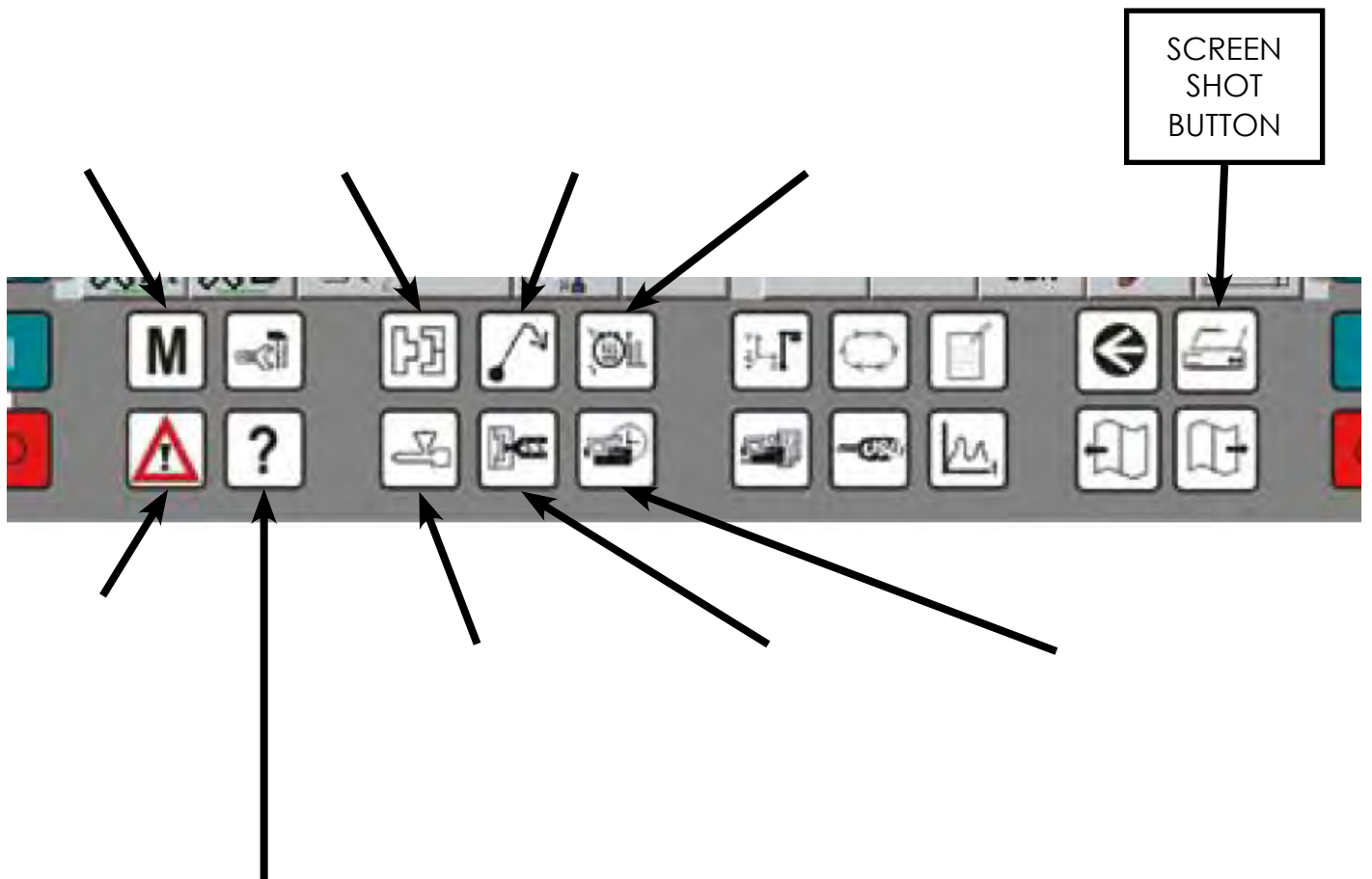
# MAIN SCREEN CYCLE DIRECT SELECTION BUTTONS

CLICK/TAP CALLOUT FOR MORE INFORMATION



# CONTROL PANEL-BOTTOM BUTTONS

CLICK/TAP CALLOUT FOR MORE INFORMATION

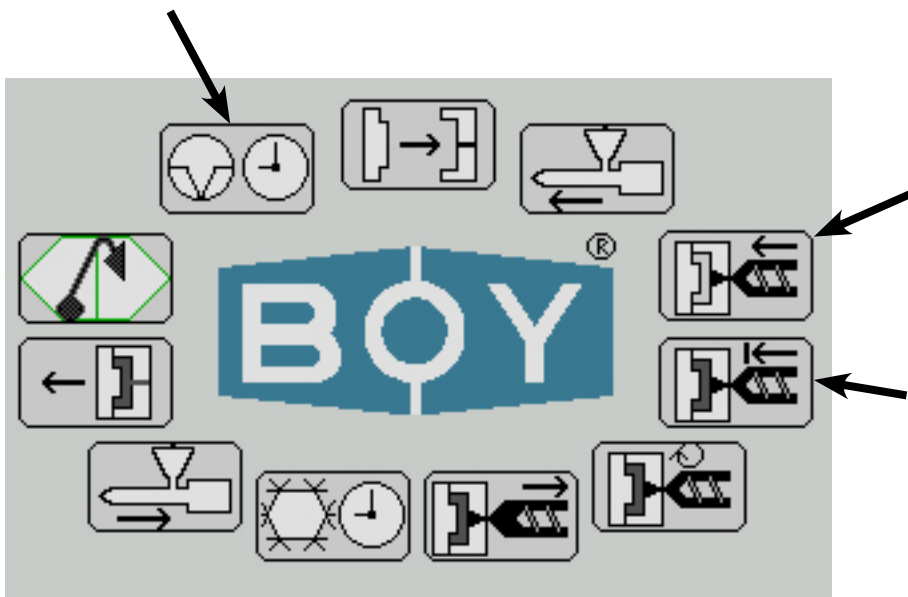


# ICON LEGEND

	Pressure limitation		Direction of rotation left
	Position		Direction of rotation right
	Speed		Pressure after moving out core
	Force/Pressure		Pressure after moving in core
	Time		Turn out core
	Repeats		Turn in core
	Close mold		Core pulled
	Clamping force		Set Core
	Mold safety		Pulses
	Ejector		Alternating core pull unit
	Corepull		Delay time
	Open mold		Cavity pressure
	Air ejection valve 1		Inject
	Air ejection duration		External signal
	Air ejection delay		Hydraulic pressure
	Temperature set-up value		Holding pressure
	Temperature +tolerance		Feed
	Temperature -tolerance		Intrusion
	Temperature actual value		Decompression
	Cooling time		Switch on duration
	Recycle time		
	Cycle time		

# PARAMETERS TO ADJUST

CLICK/TAP CALLOUT FOR MORE INFORMATION

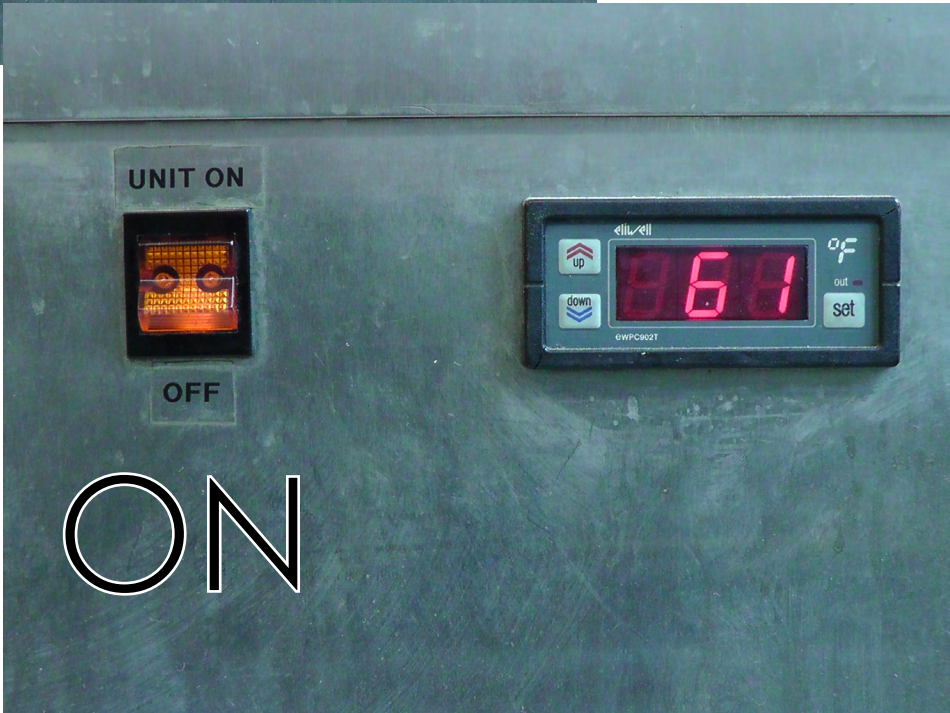
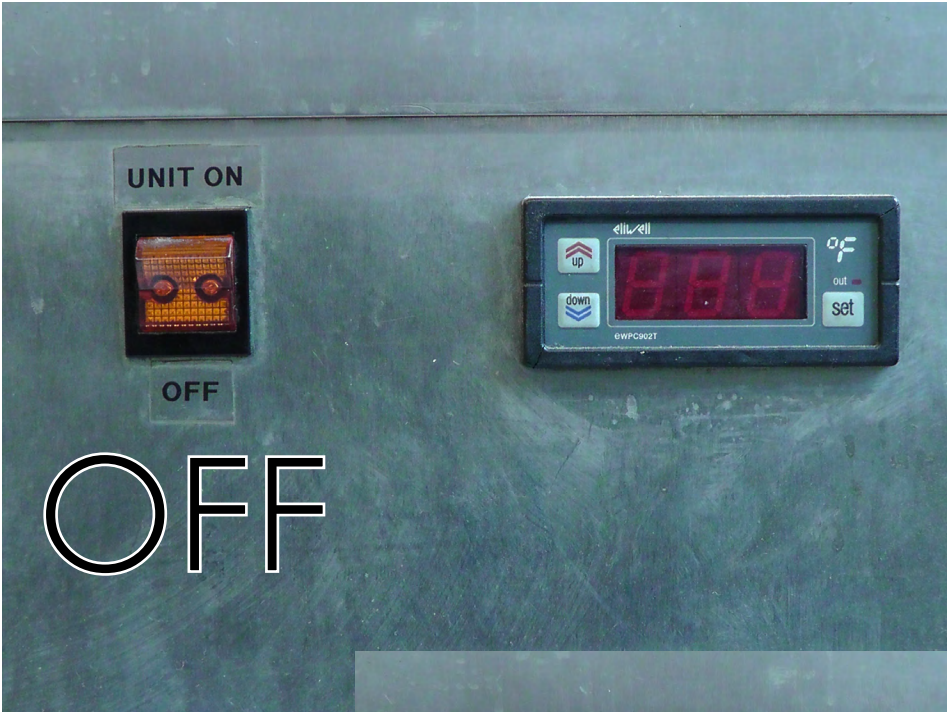


# MAIN GUIDE

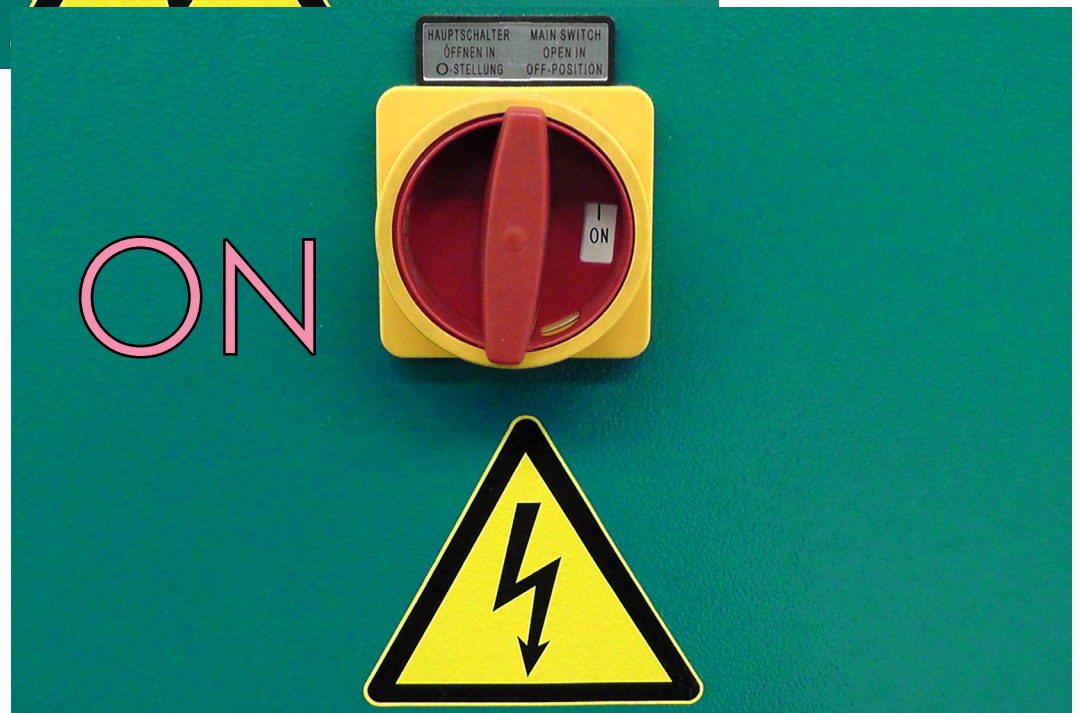
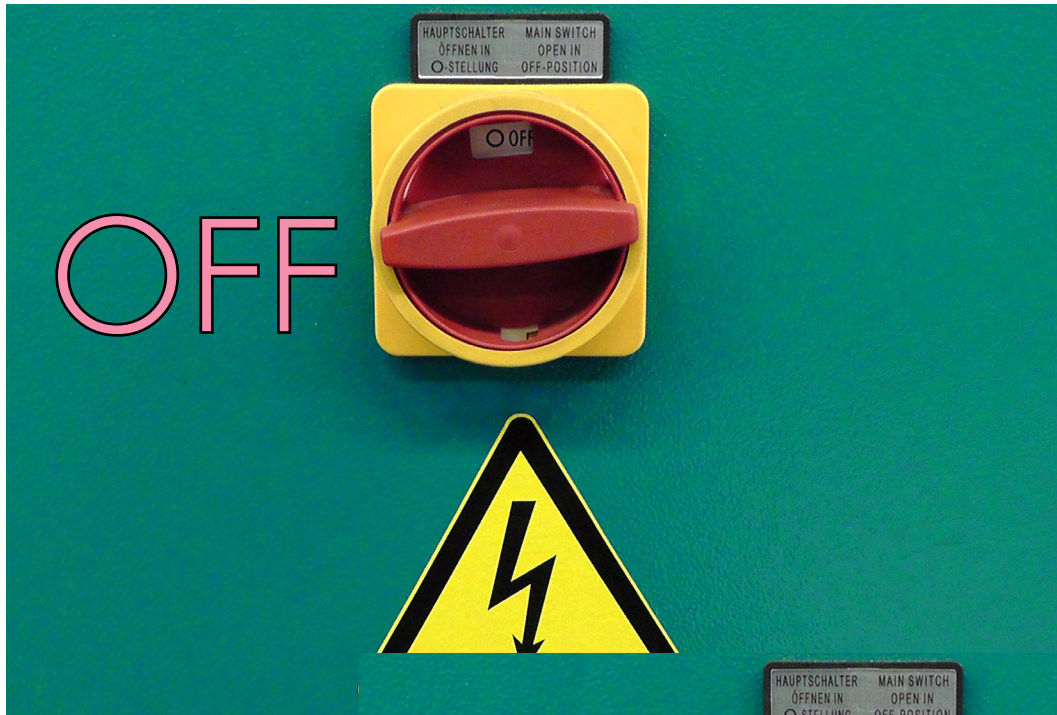




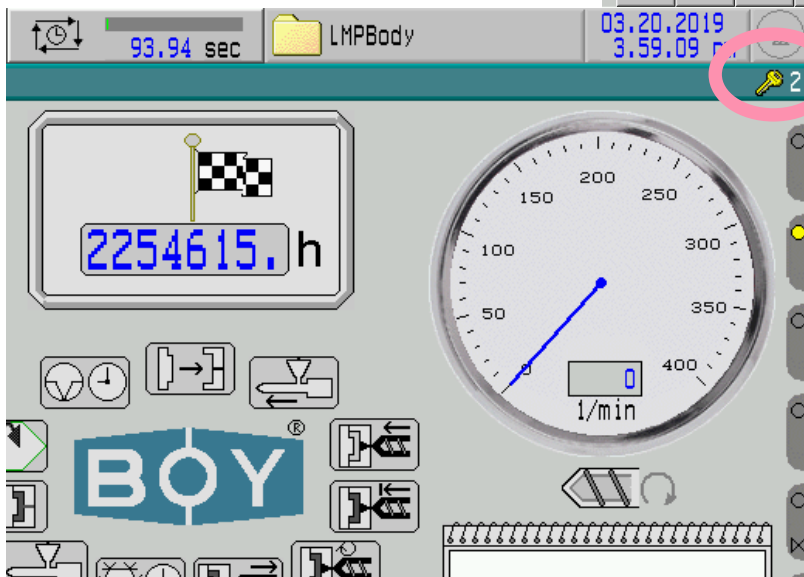
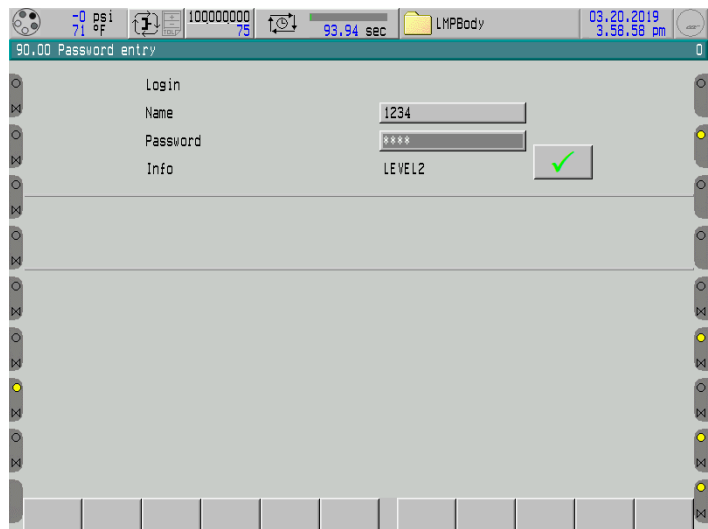
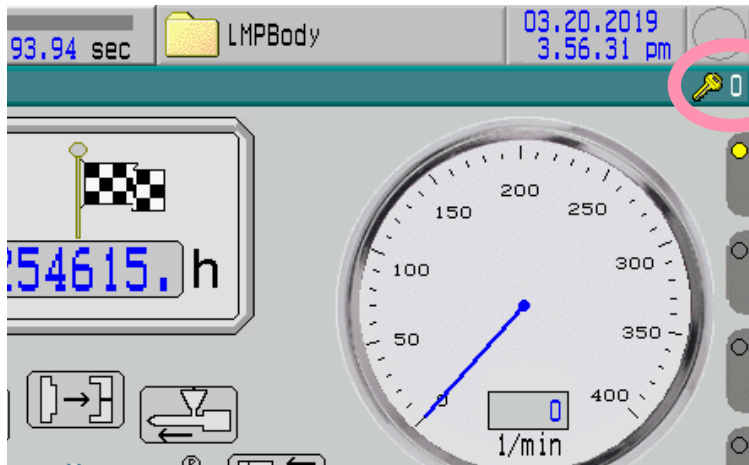
1. Turn on Chiller (Side of machine)



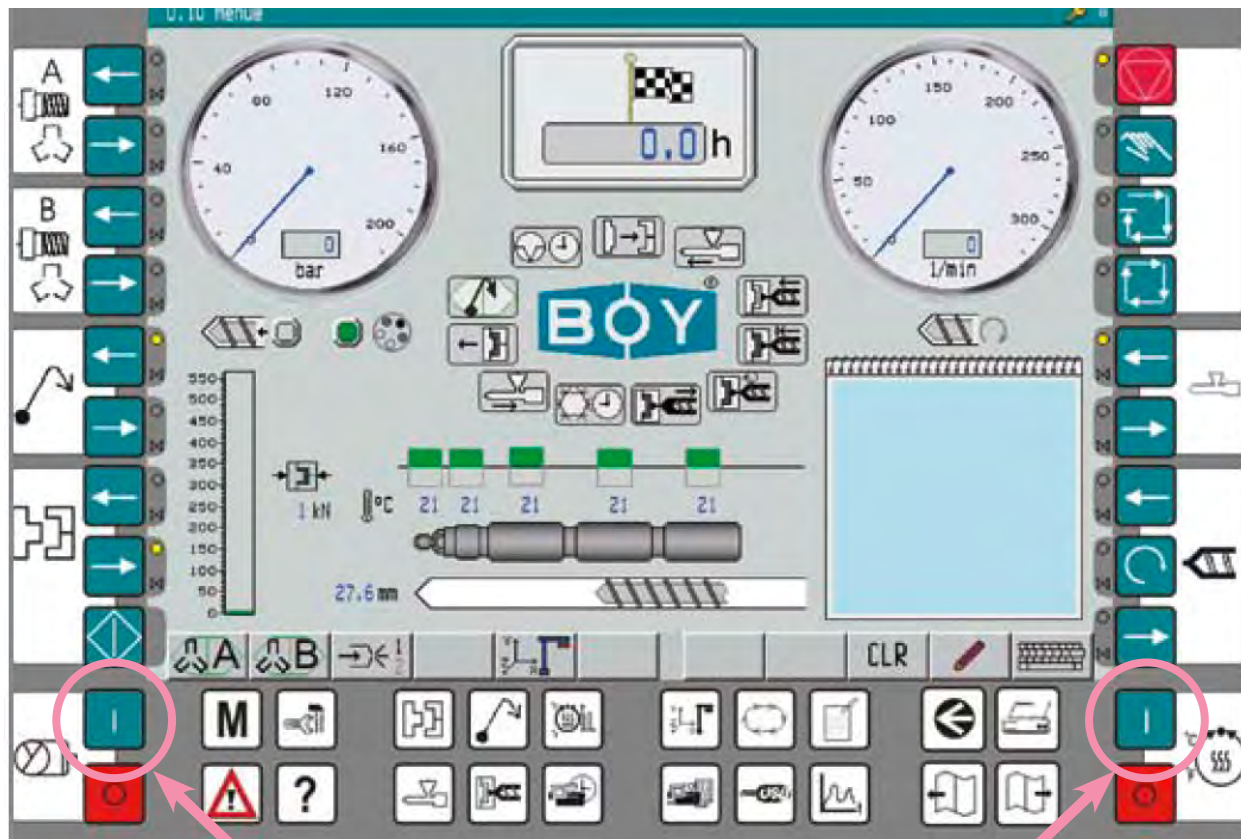
2. Turn on Main power (Front)



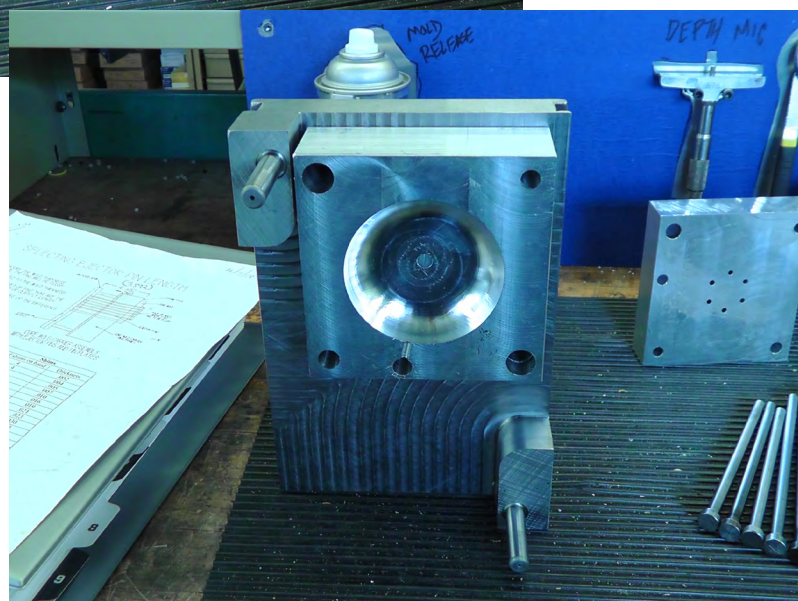
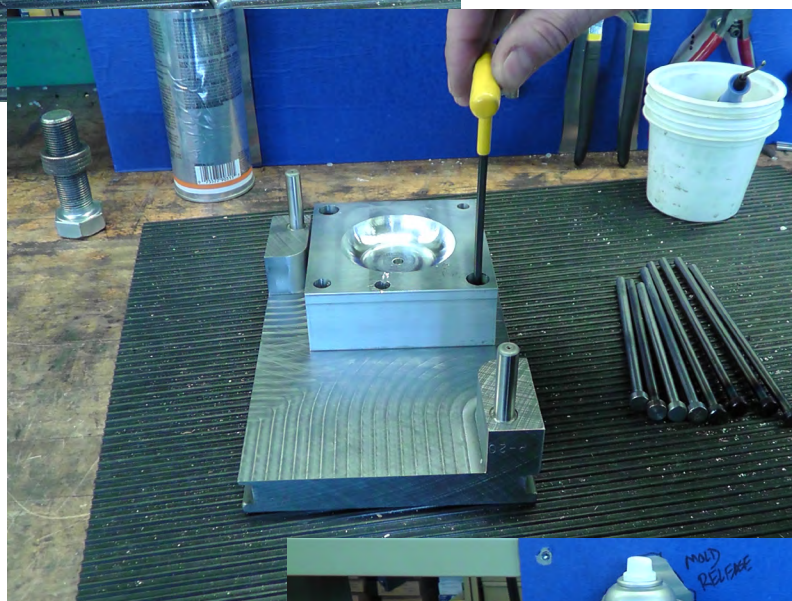
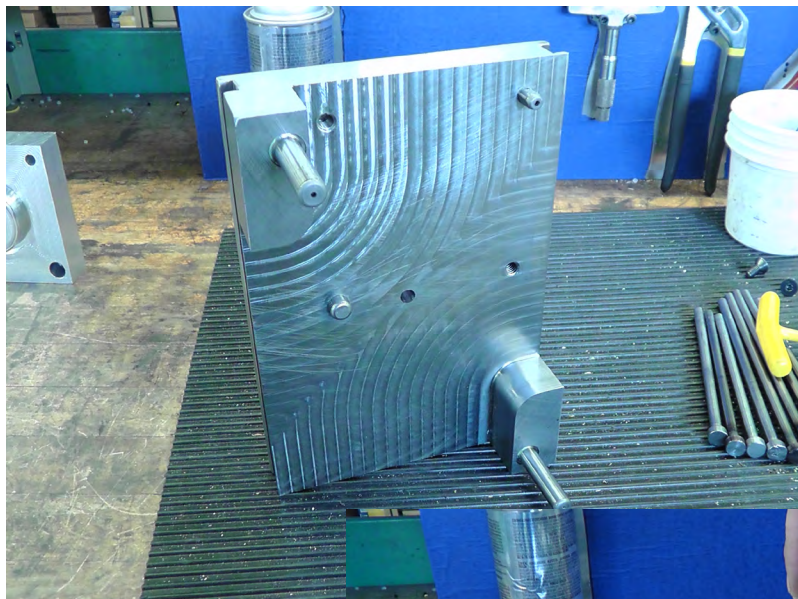
3. Press KEY Icon to sign in as a Level 2 User
  - a. User Name: 1234
  - b. Password: 1234



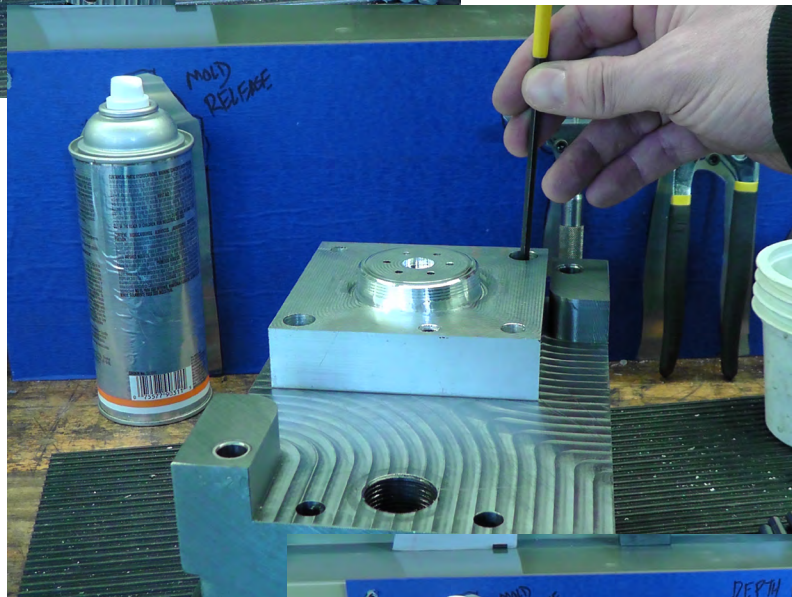
4. Turn on both Heaters and let them reach operating temp. Note: this process takes a while and is normal. You can observe the process by pressing the HEATING ZONE button at the bottom of the Control Panel



5. Install the Cavity mold on the MUD insert. (Remember not to force it!)



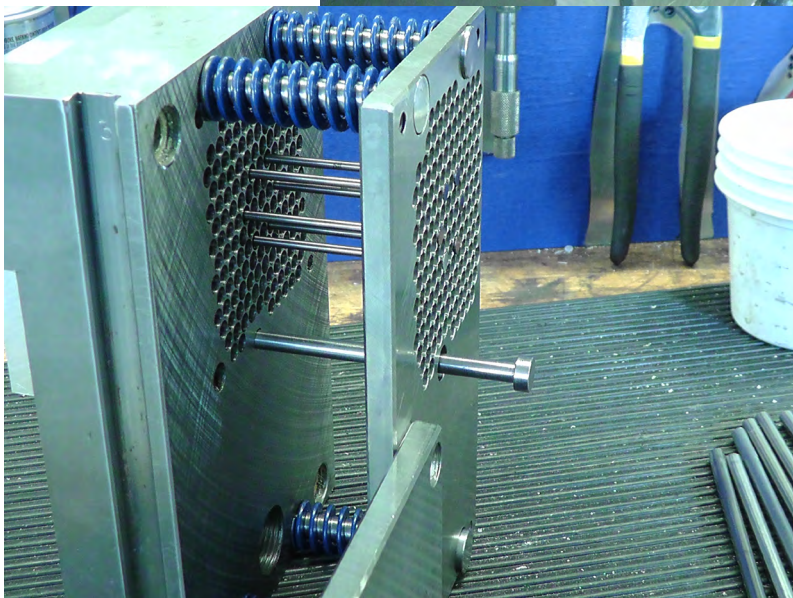
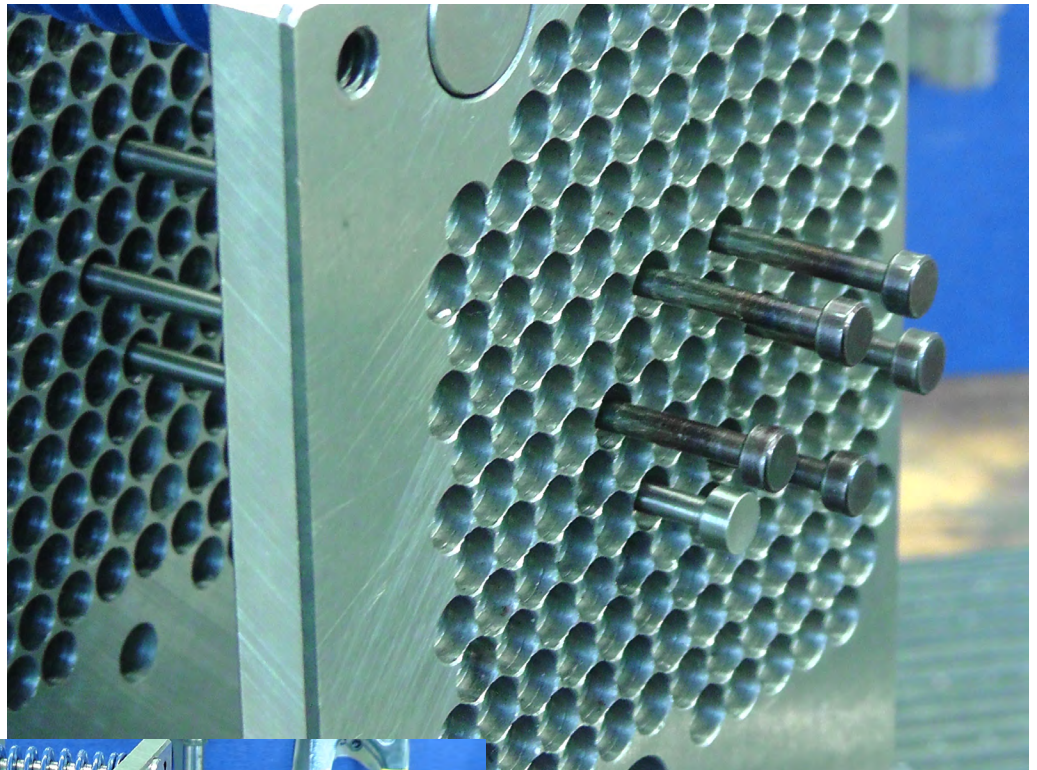
6. Install the Core mold on the MUD insert



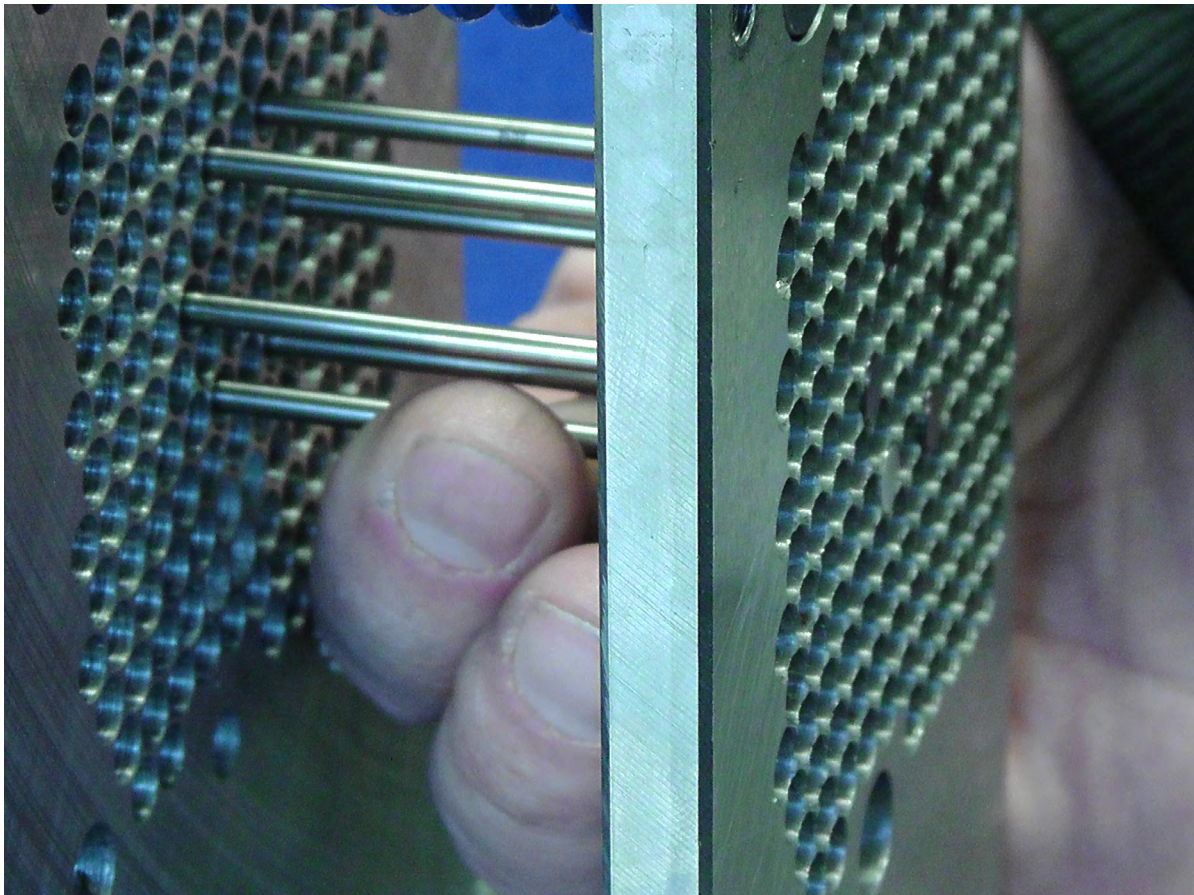
## 7. Install Ejector Pins

a. To help do this, you may want to shine a light through the other side to help with placement, or even put the pins in from the other side to ensure they are located properly

b. Also, don't forget the sprue ejector pin!



8. Remember to spin each pin with your fingers so as to test to see if they bind. If they do not spin once inserted, change them out as they may be bent

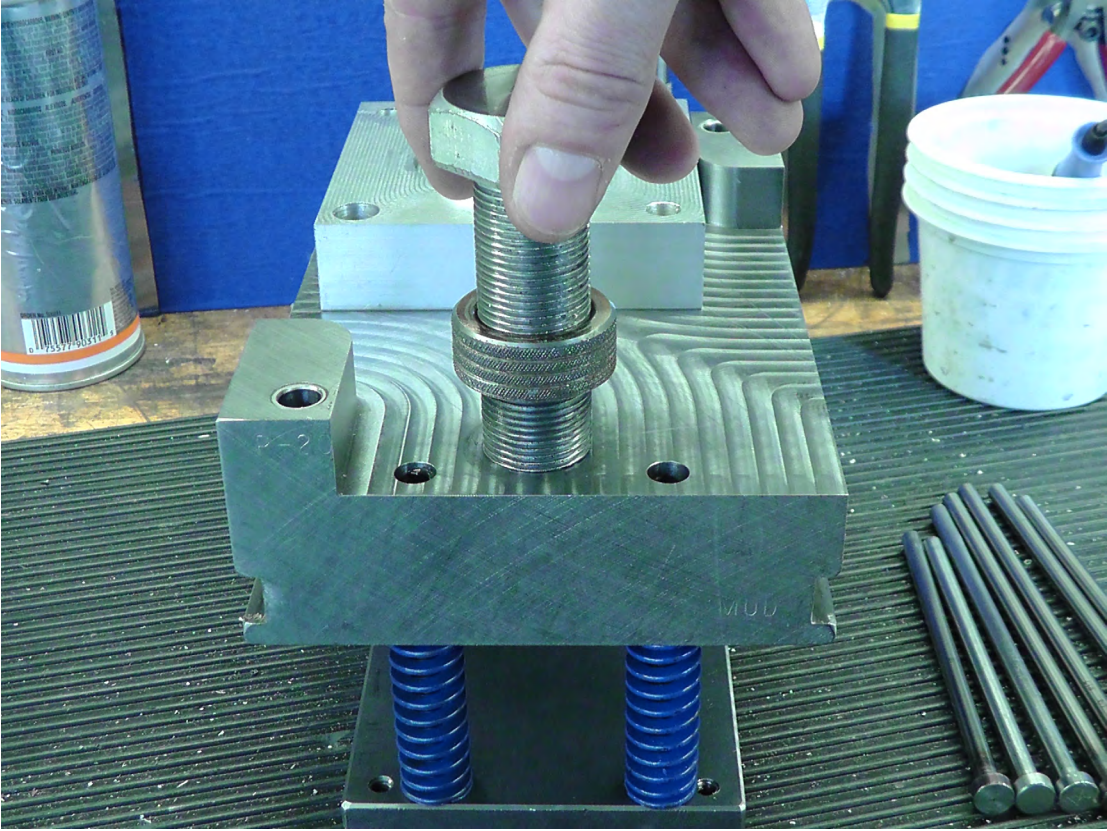




9. Attach the back push-plate

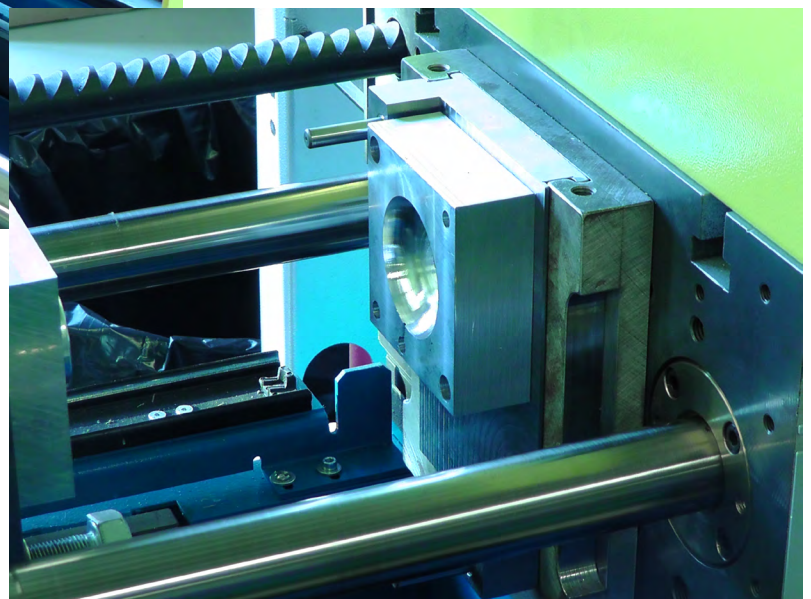
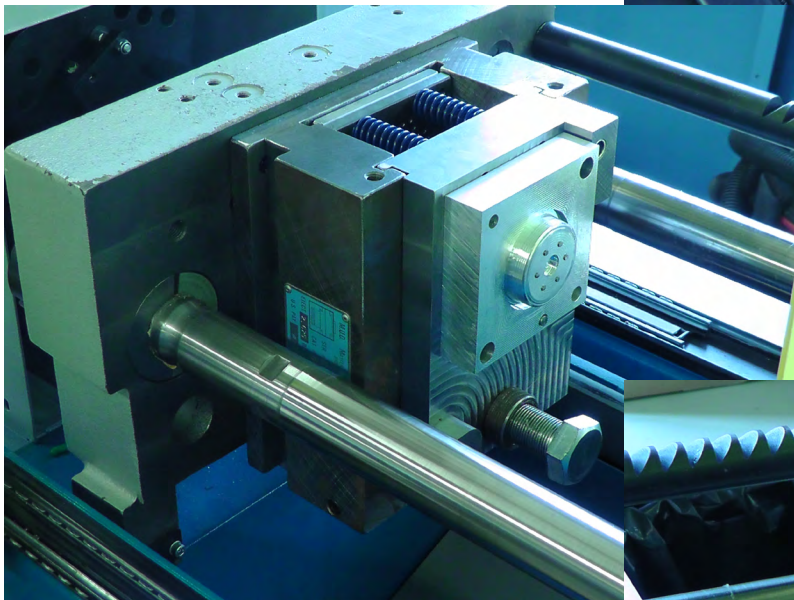
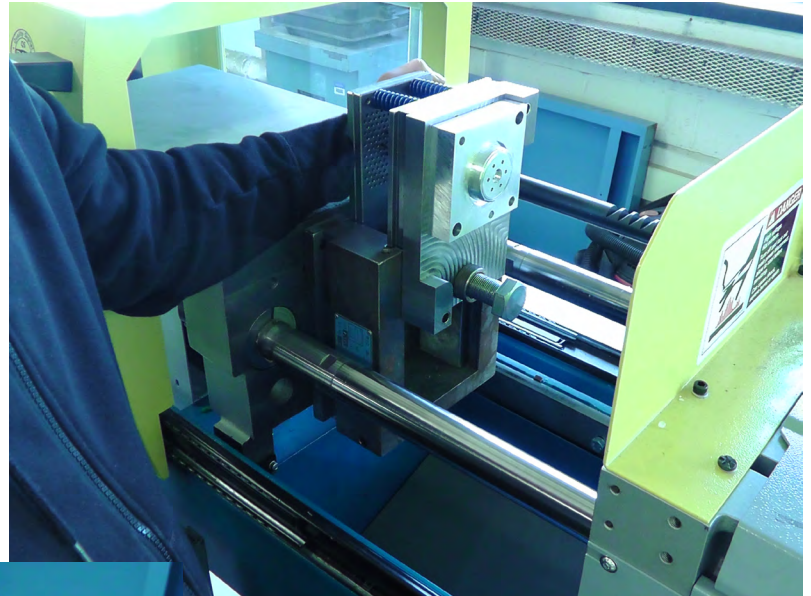


10. Install the large bolt onto the Core MUD insert

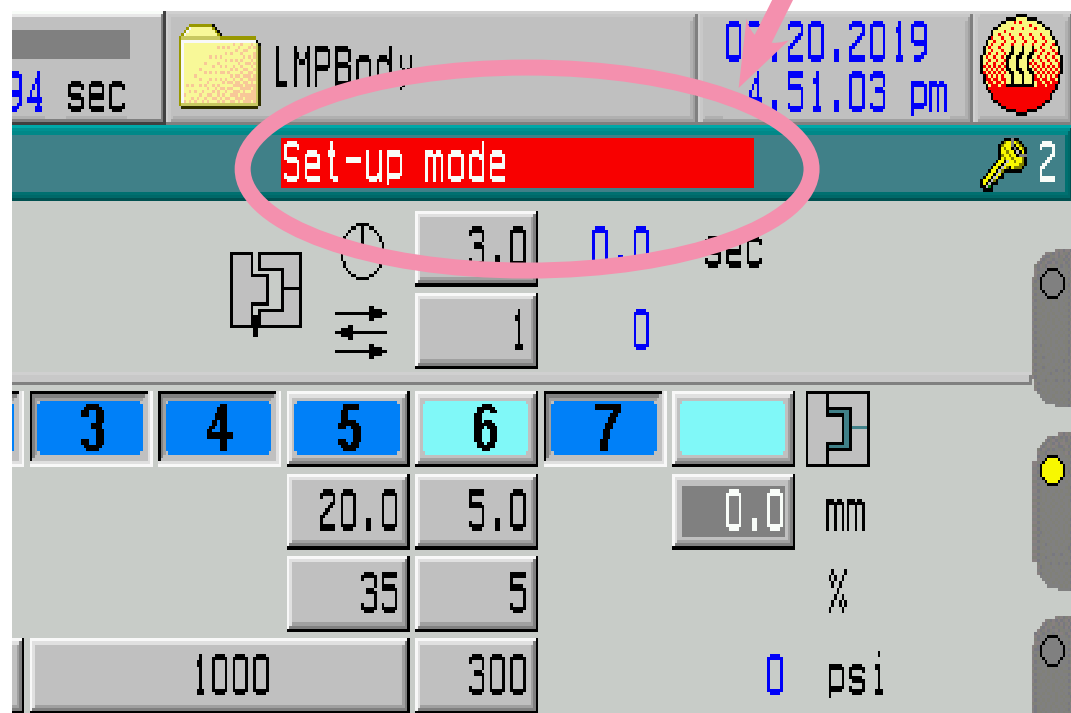
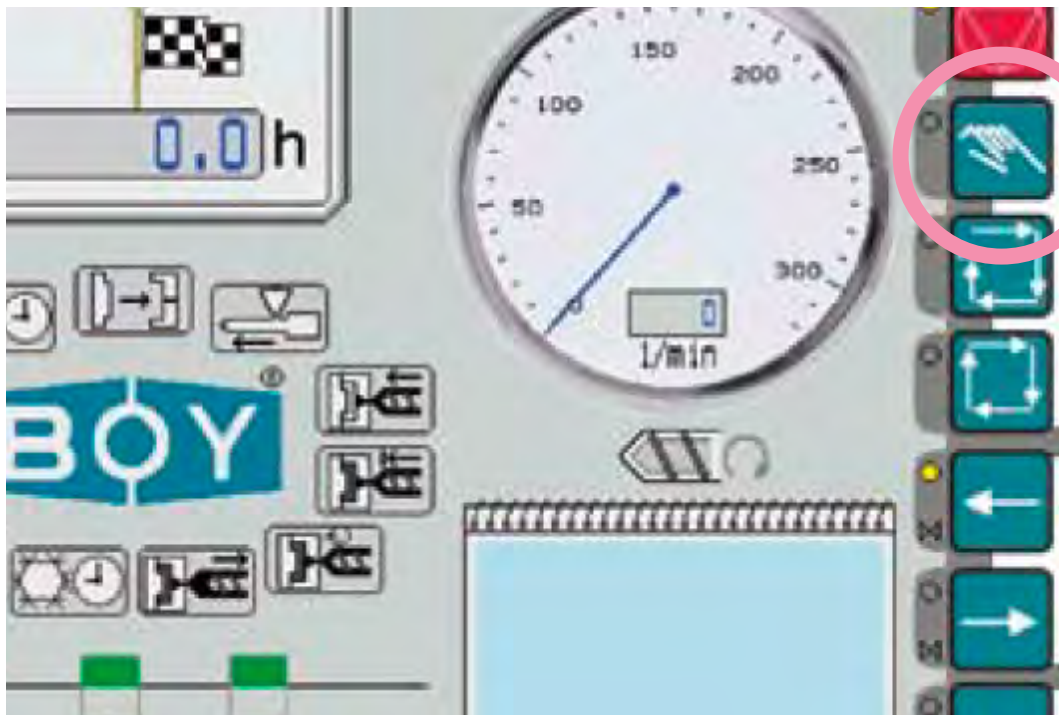


11. Load the MUD inserts into the MUD Frame within the machine

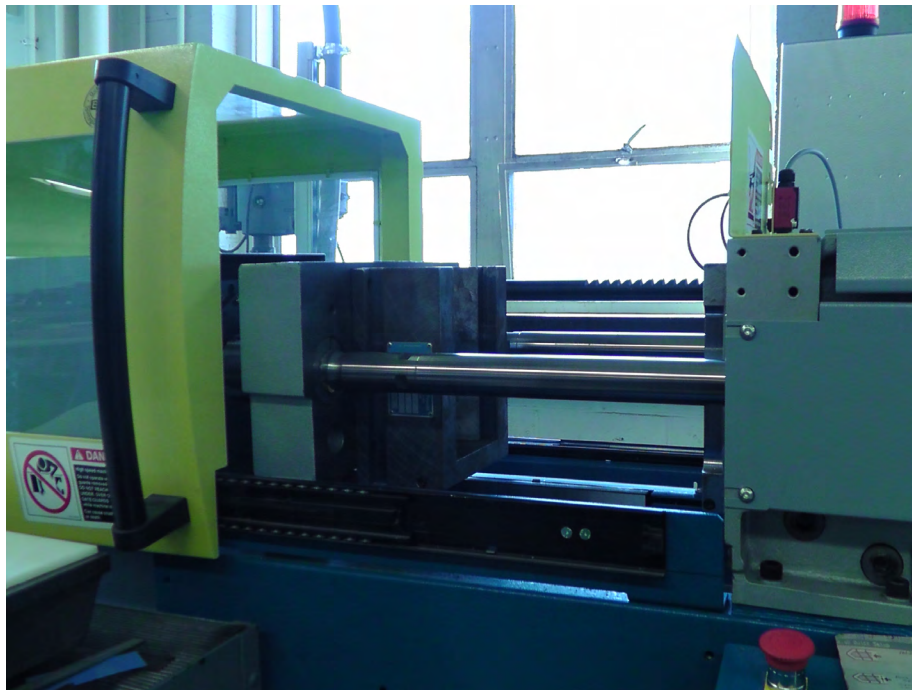
a. Remember: if the inserts start to bind and don't move easily, remove them, take a breath, and start again



12. Press and hold the Manual Mode Button for more than 3 seconds. (You should see a progress bar fill, followed by “SET-UP MODE” at the top-right of the screen)



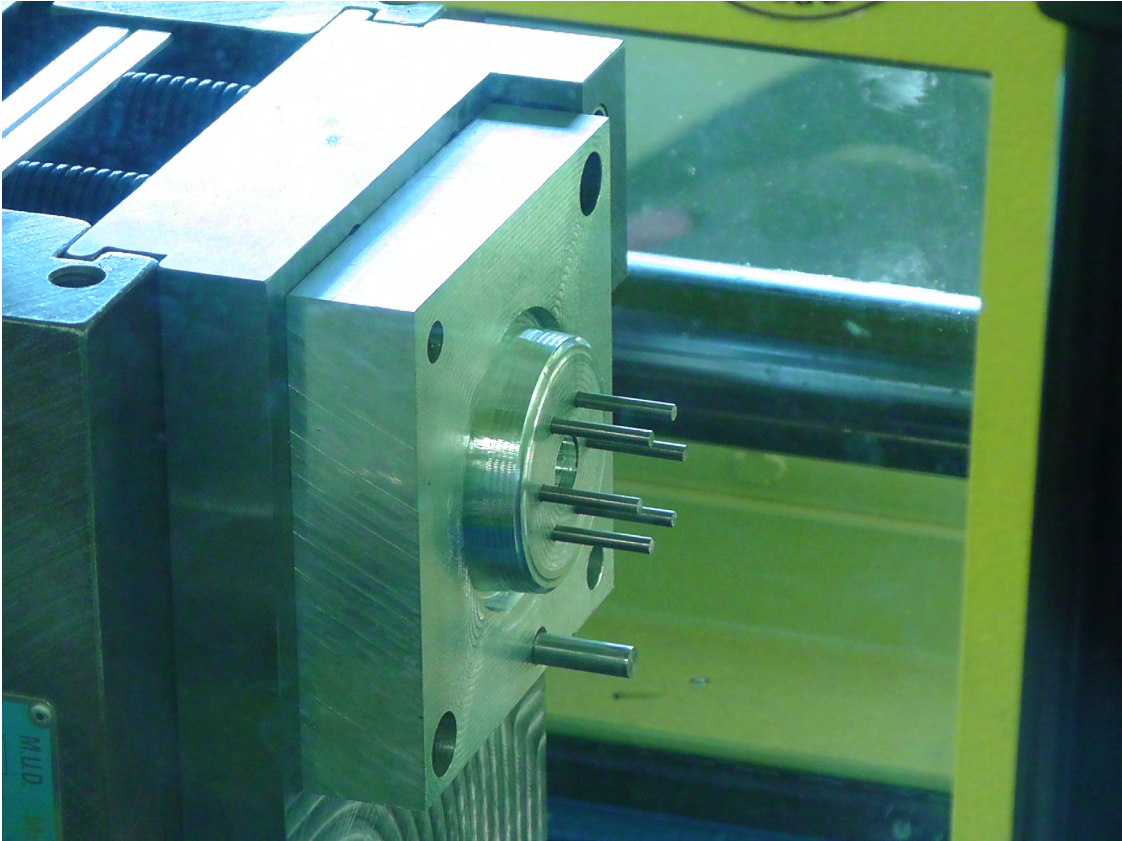
### 13. Close the Safety Gate



14. Test the ejector pins by pressing the

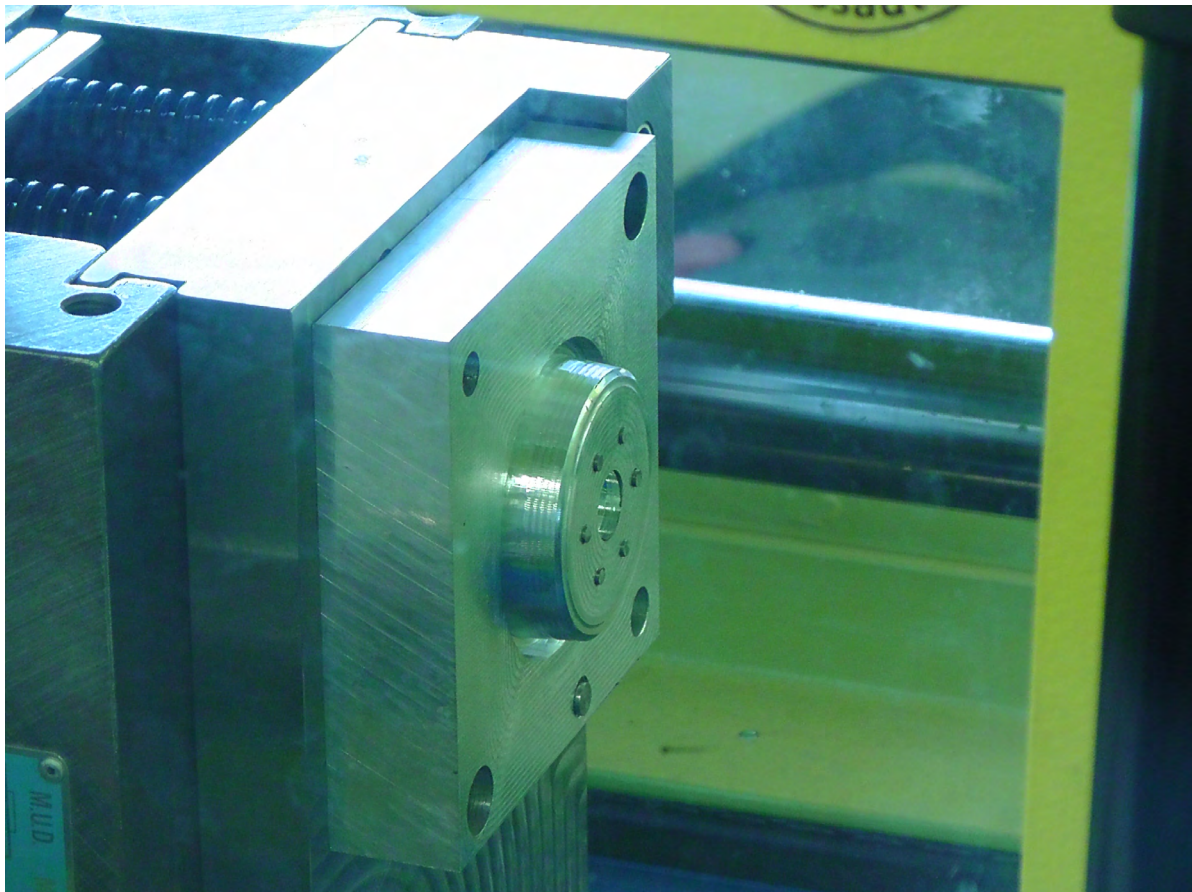



Ejector button.



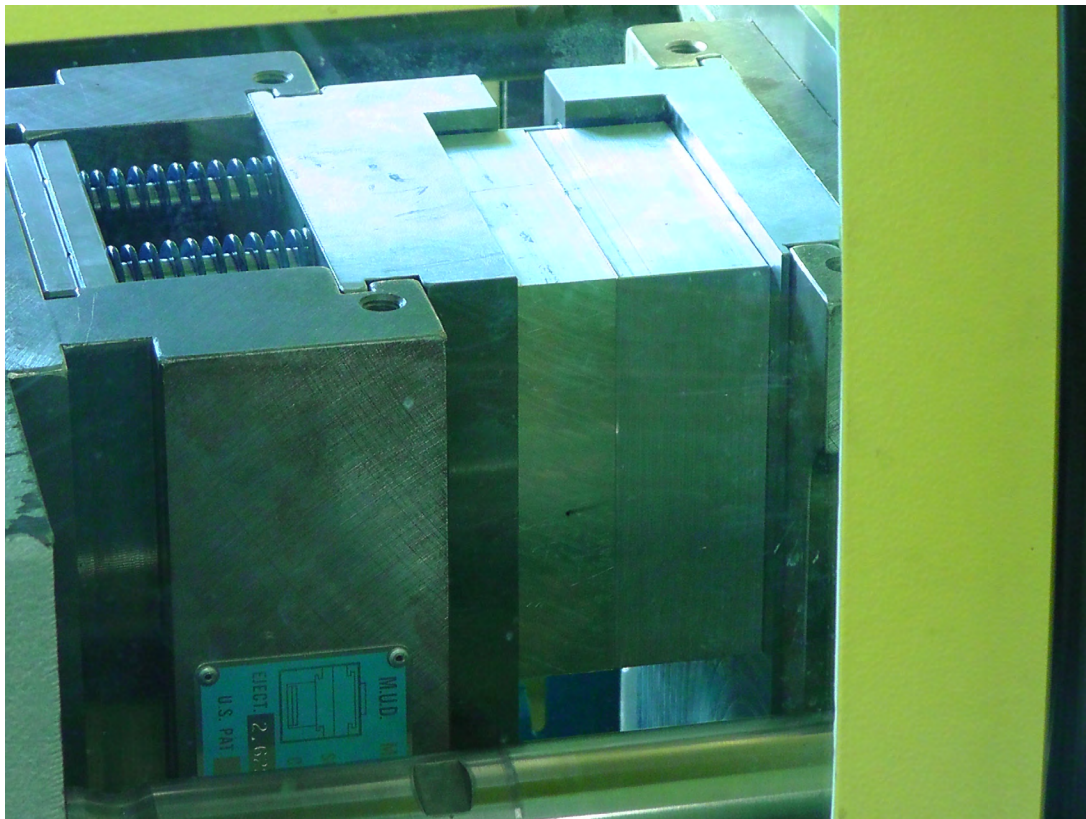
15. Retract the ejector pins by pressing the  Ejector button.

a. This process is done to check that you have installed all the necessary ejector pins and the sprue pin, that they all properly eject, and that they still move somewhat freely in the mold. If your ejector pins are not all ejecting properly, remove the MUD insert and confirm you've followed the proper steps to set up the mold.



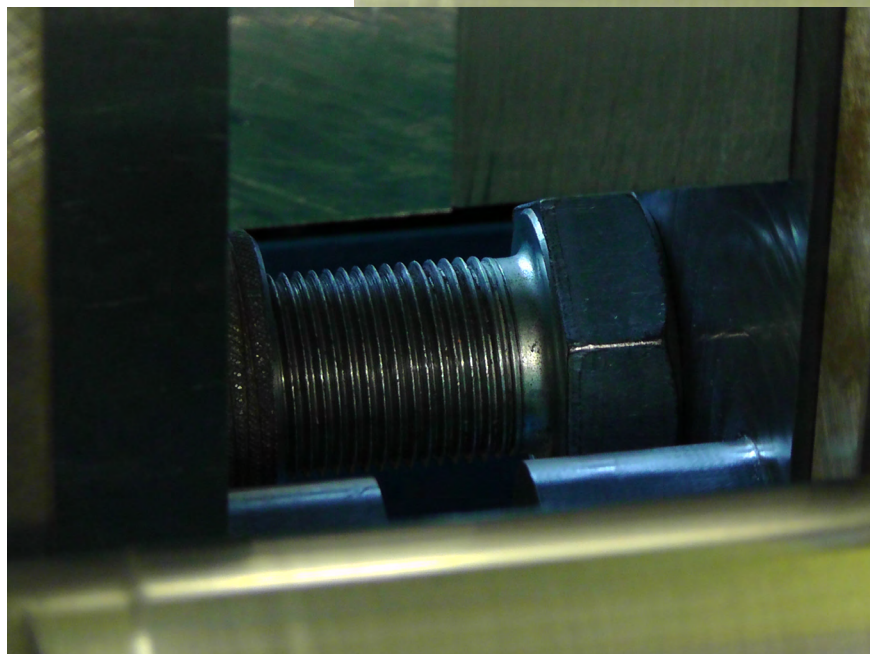
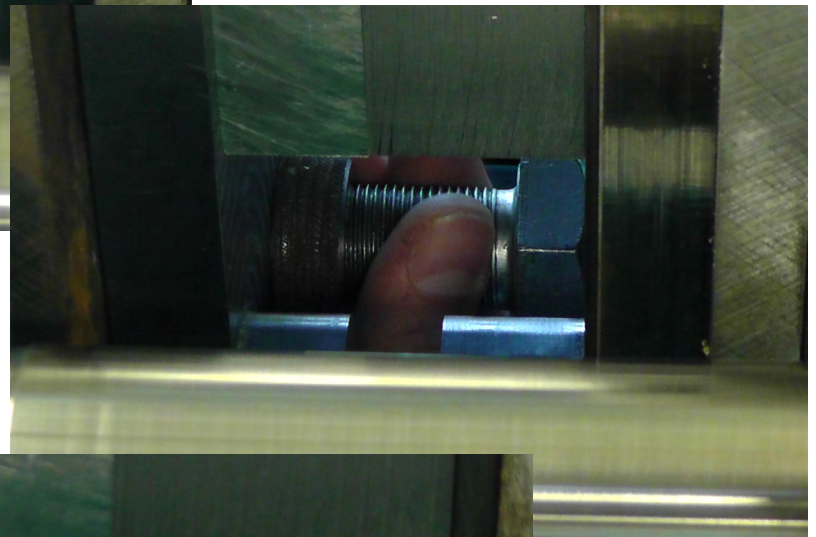
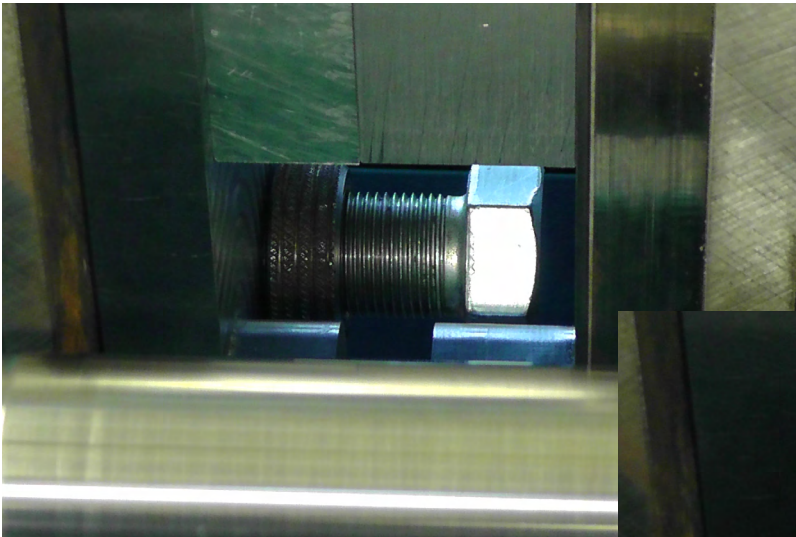
16. While still in SETUP MODE, press the  Clamping Unit Button to close the mold fully closed.

(The mold should move slowly during this process)





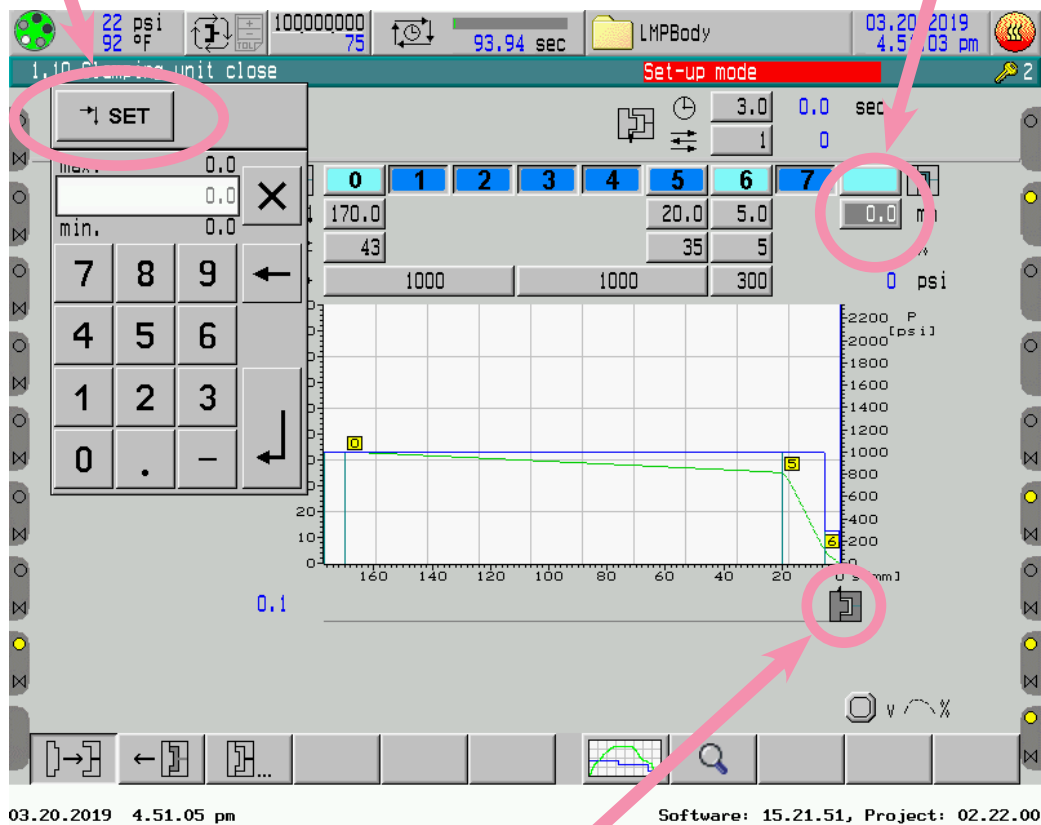
17. While the molds are closed, open the safety gate and turn the large bolt on the core insert counter clockwise until it reaches the surface of the cavity insert. Turn the locking nut clockwise until it is tight against the core insert, thus locking the bolt in place. This step will ensure the mold inserts will not “yawn” and create flash at the top of the mold



18. After the bolt is tightened against the cavity, set the position of the mold to zero by pressing the SET button on the pop-up number pad.

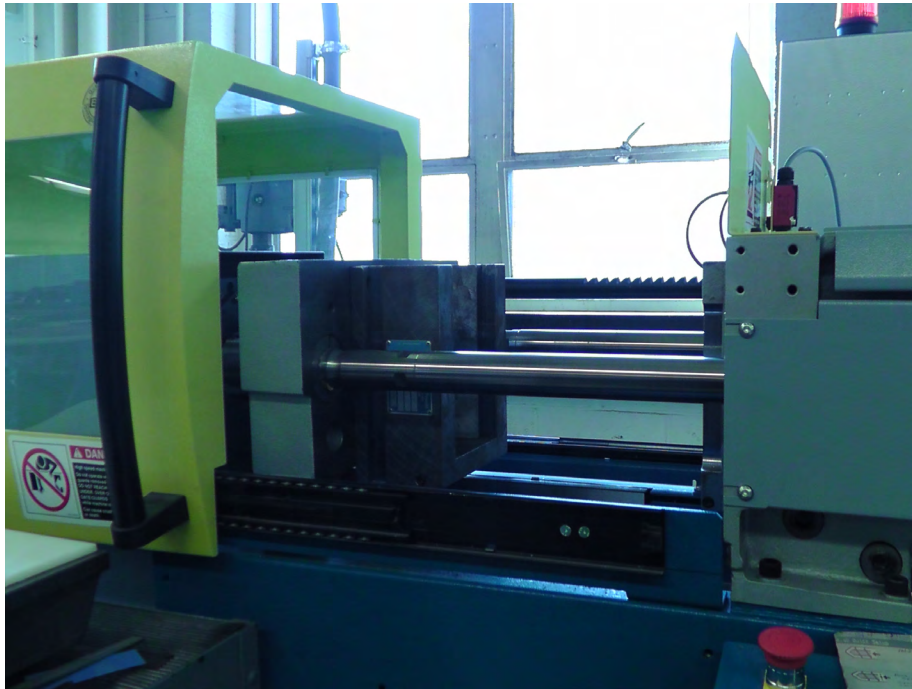
2. THEN SET ZERO  
SECOND HERE

1. PRESS HERE  
FIRST

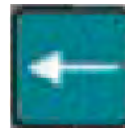


NOTE: THE  
GRAPHIC  
SHOULD DISPLAY  
A "CLOSED"  
MOLD CLAMP

19. Close the safety gate

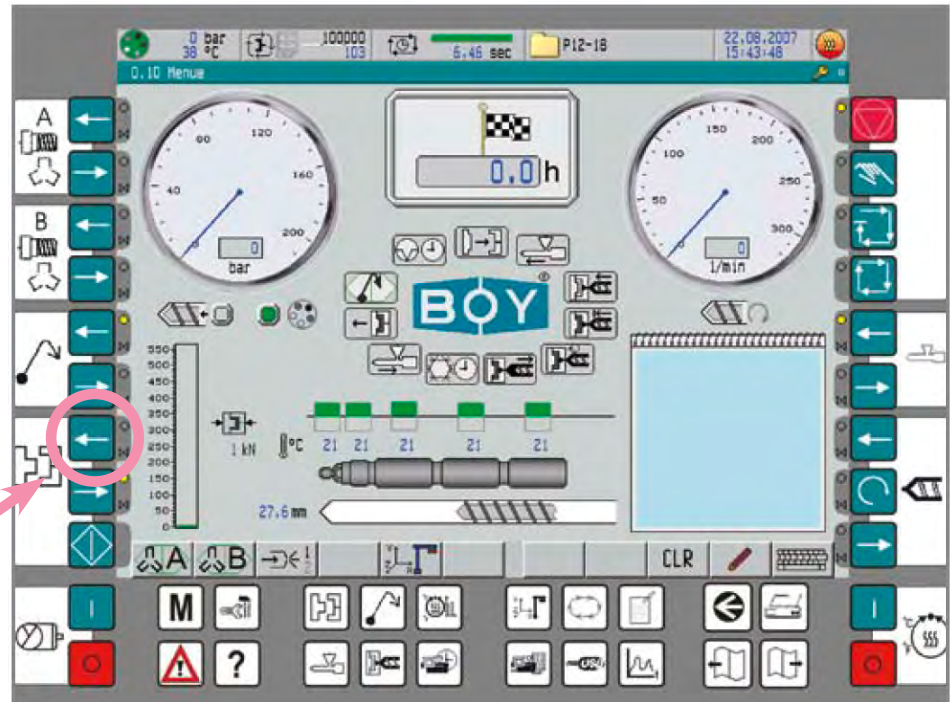


20. Retract the mold by pressing the button

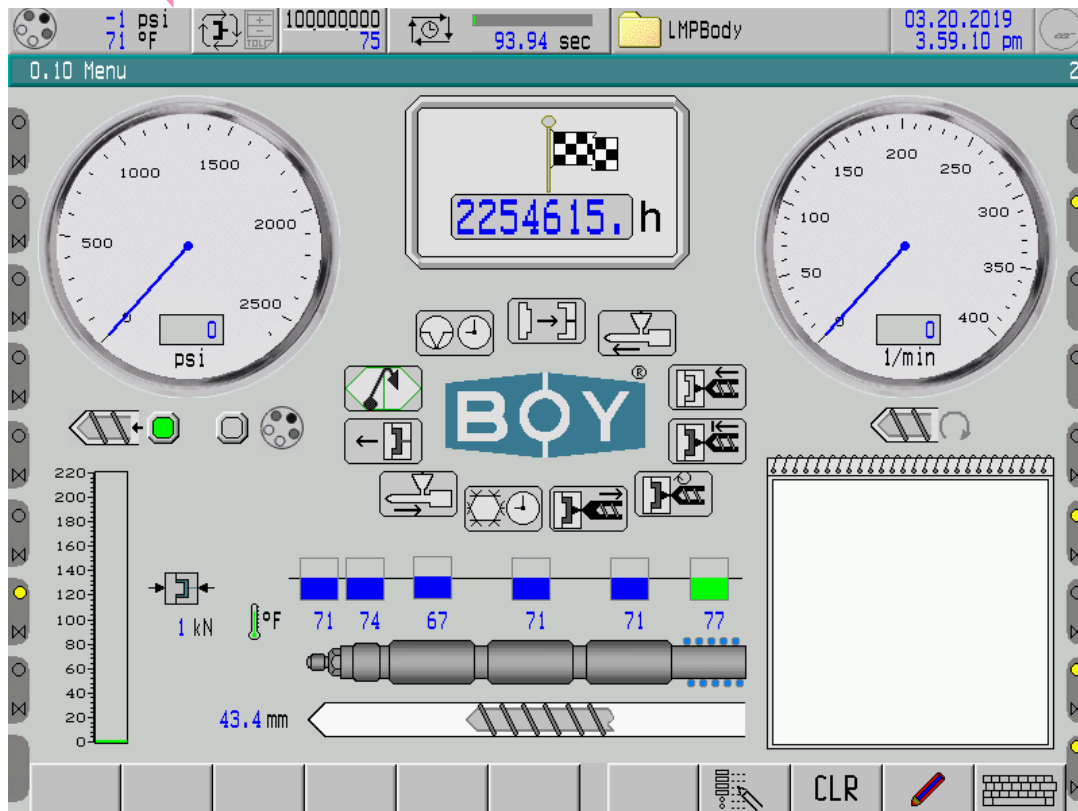


Clamping Unit

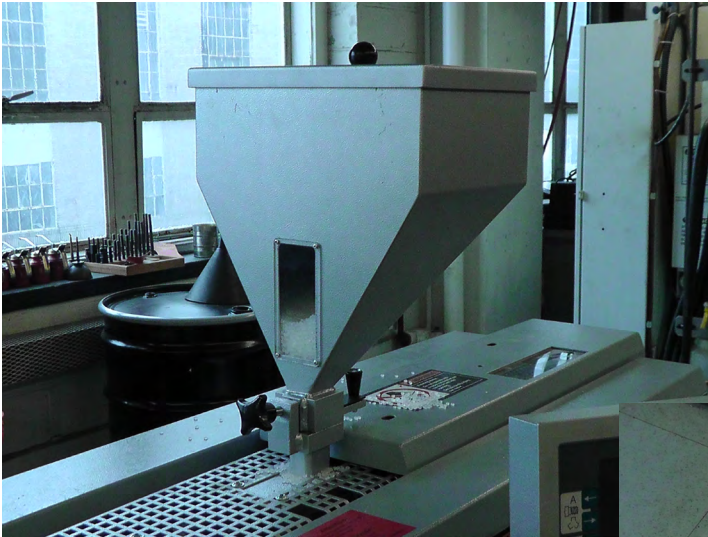
MOLD  
RETRACTED  
AND FULLY  
OPEN



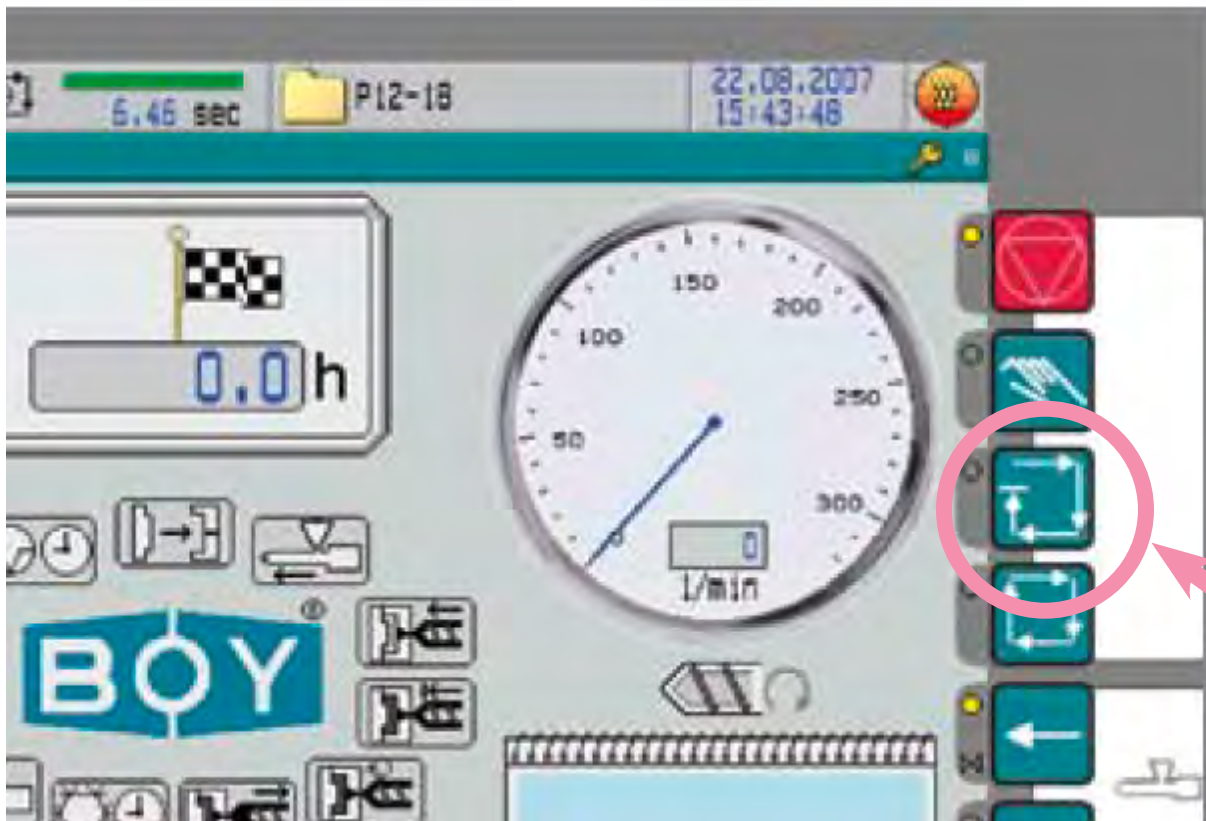
21. To return to the Main screen, press the  button on the bottom of the control panel



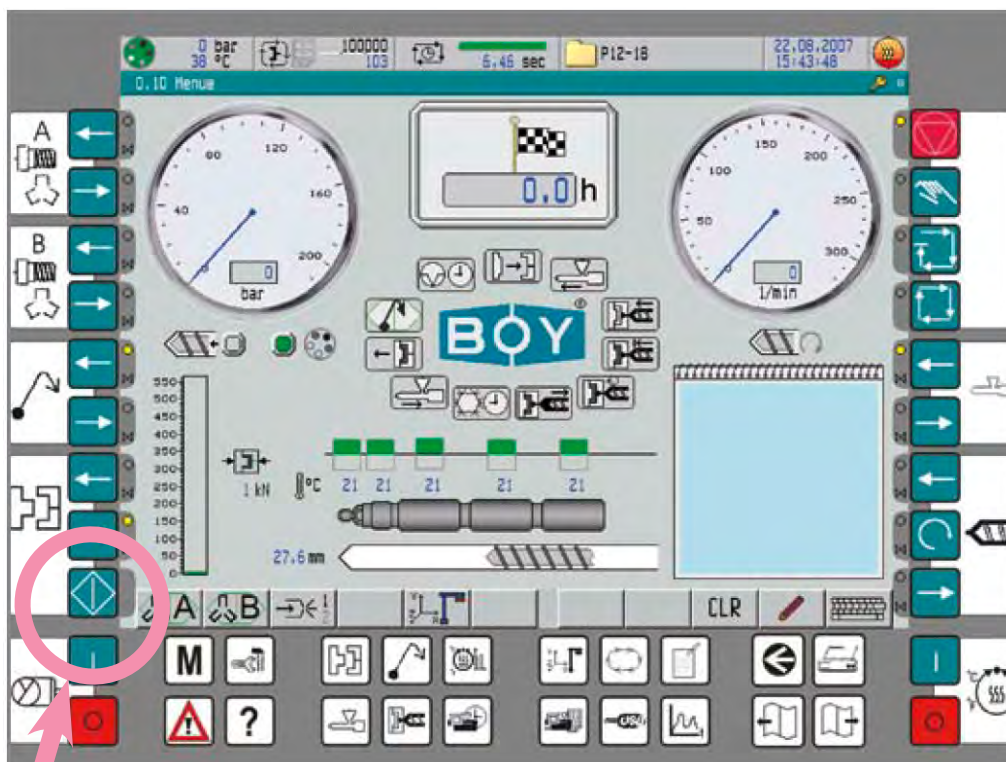
22. Check the Resin Hopper, (located on top of the machine body) to make sure enough resin is available. Add more if needed by removing the lid and adding about 1 coffee can of resin



23. Press the "SEMI-AUTO" button

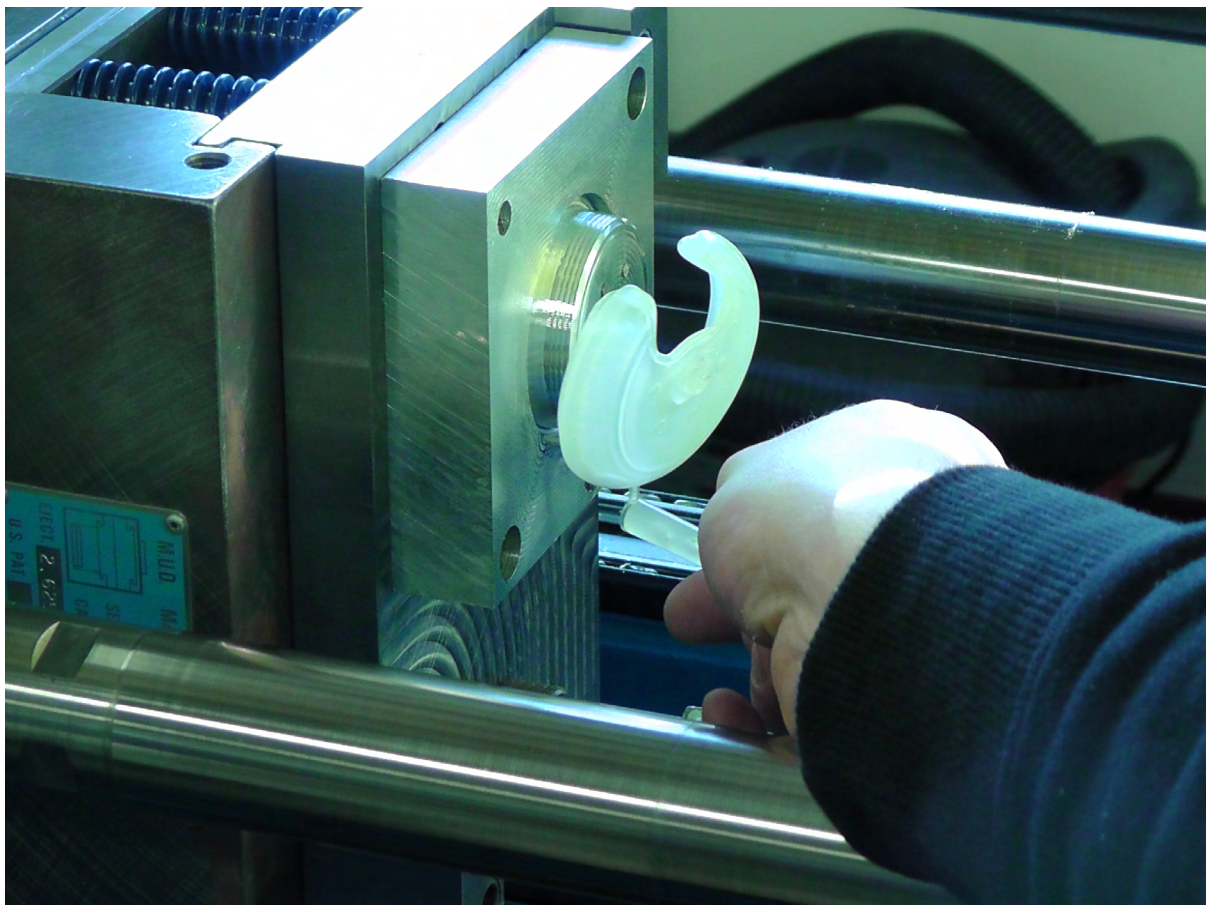


24. Press the START button, (or open and close safety gates) to begin the run cycle.





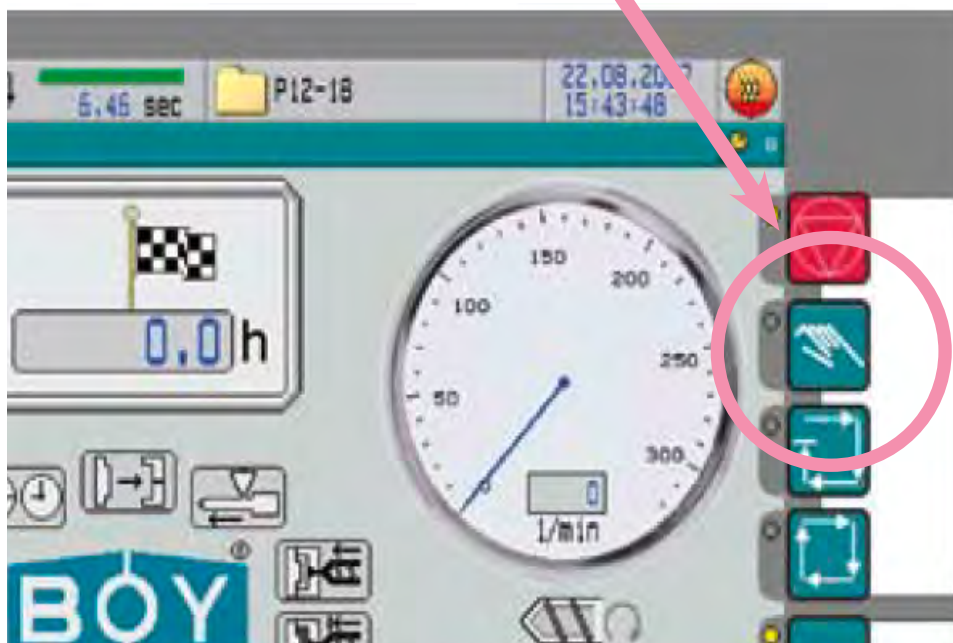
25. After cycle is complete, open safety gate and remove part



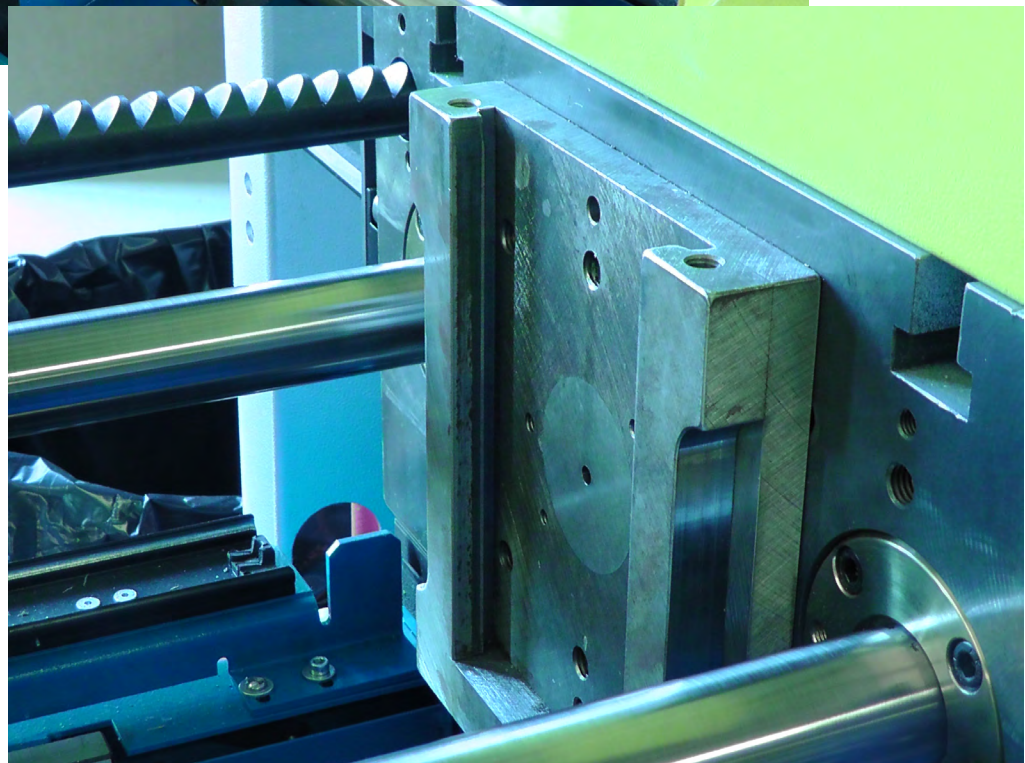
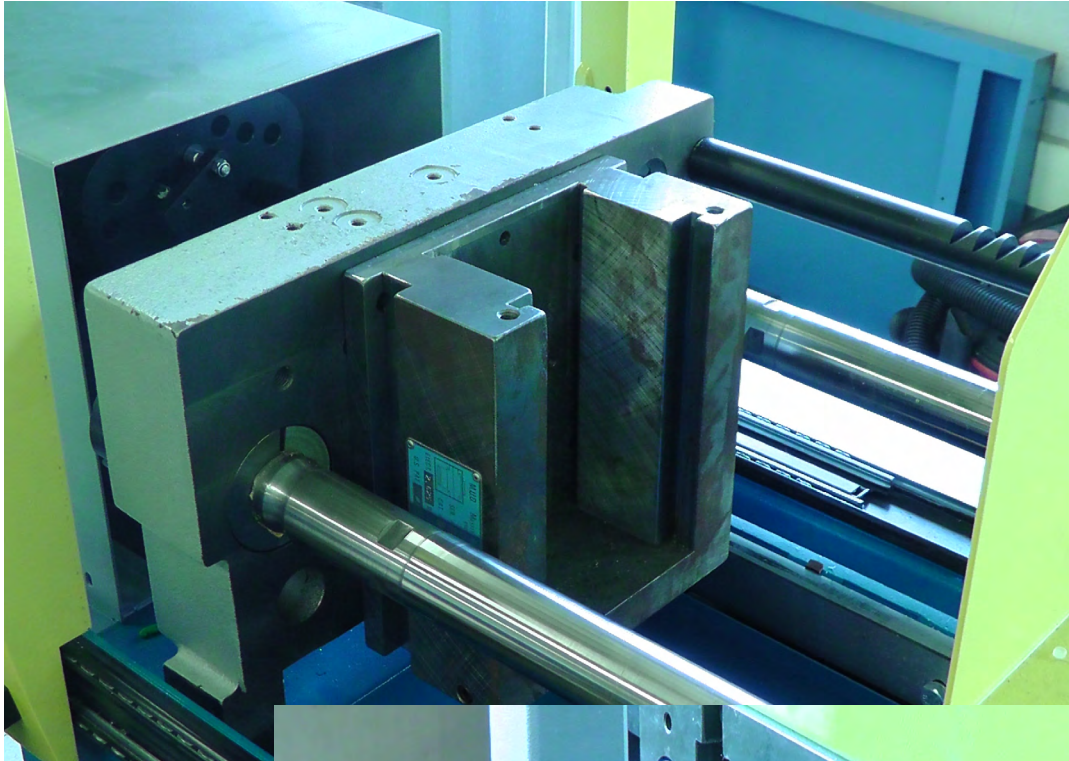
26. Close safety gate to create a new part OR return to Manual mode to change parameters by pressing the MANU-AL button



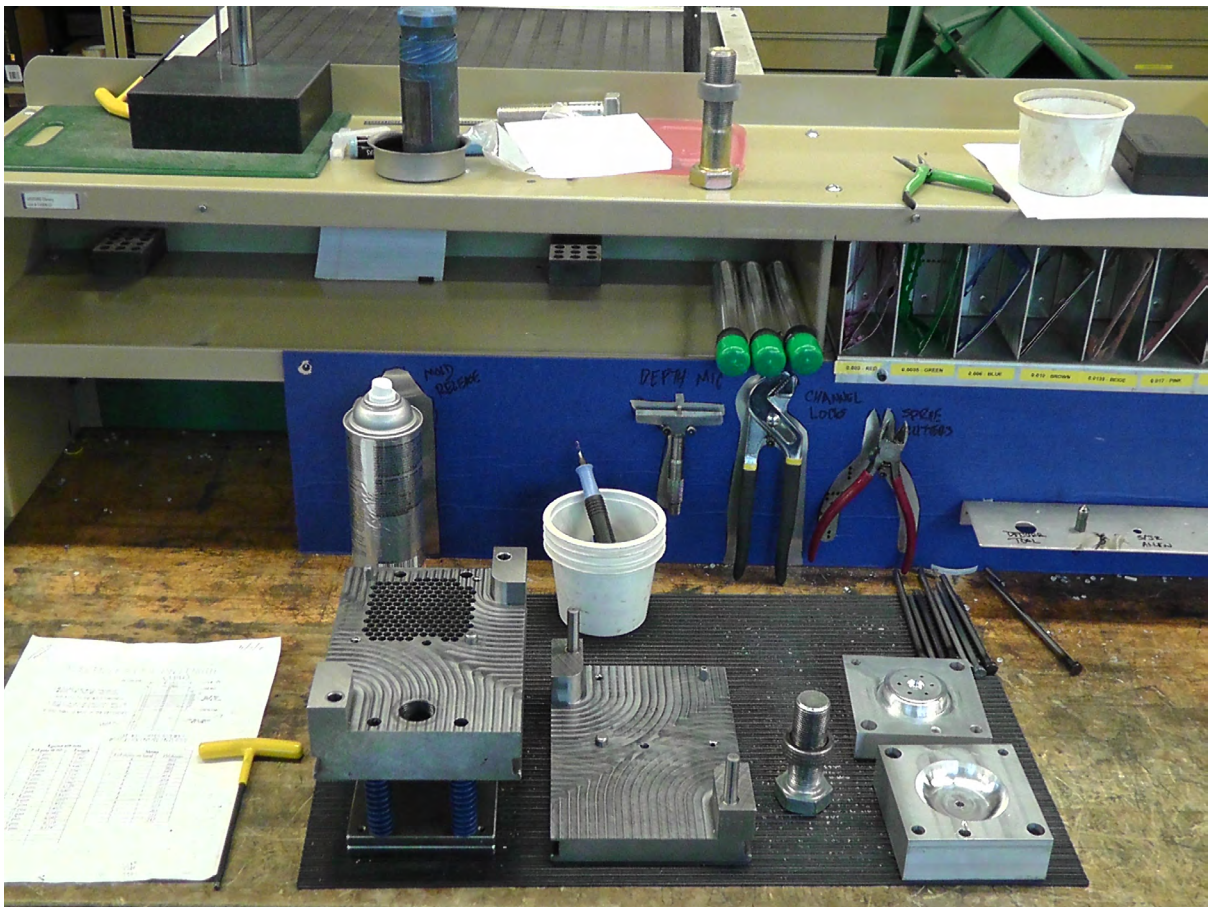
OR



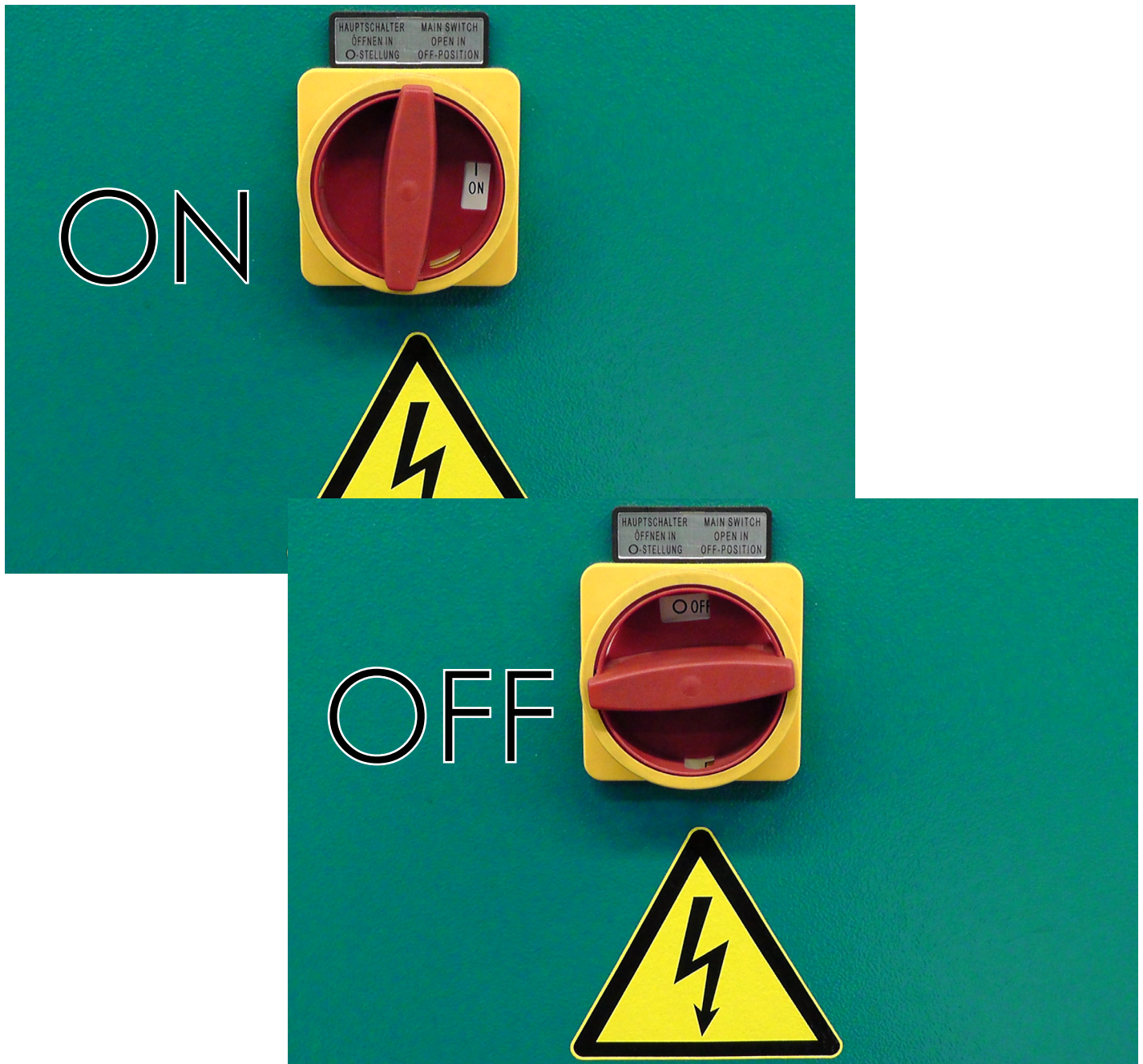
27. When finished with the run, remove all parts, make sure ejector pins are fully retracted, make sure clamping system (mold) is fully open, and finally, remove MUD inserts



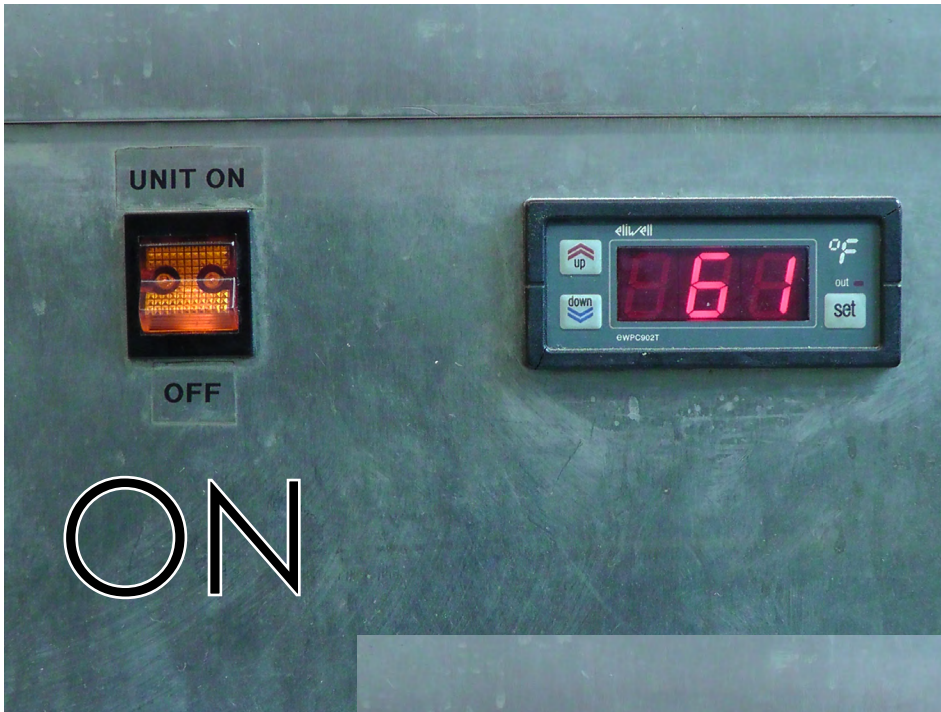
28. Disassemble mold and return all ejector pins, shims, screws, and anything else used in this process to its proper home.

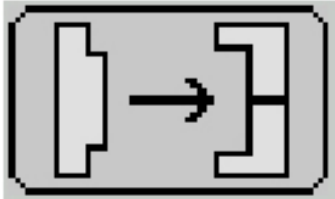


## 29. Turn off Main power

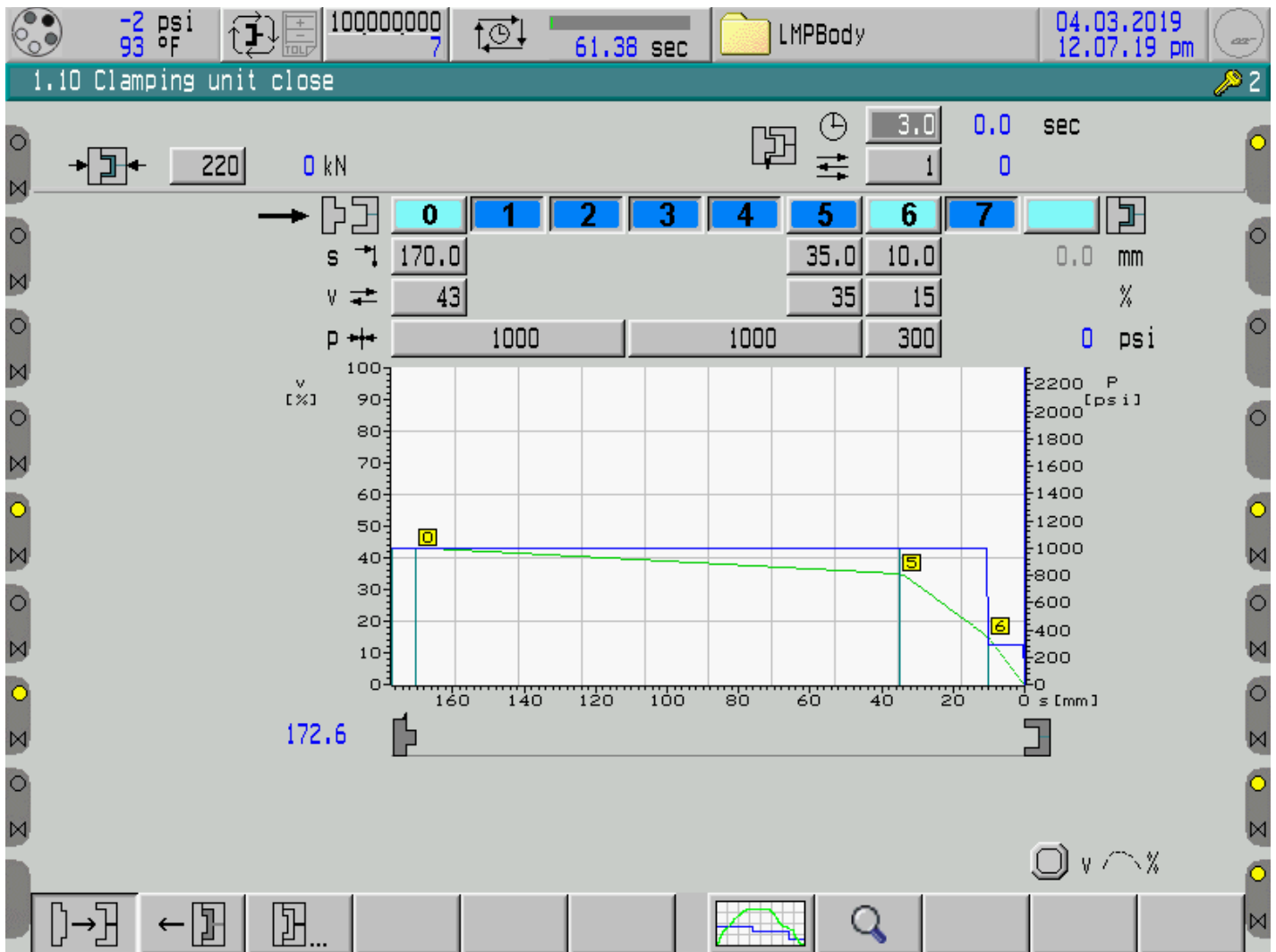


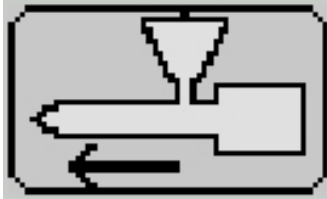
30. Turn off chiller





# 1. CLAMPING UNIT CLOSE





## 2. PLASTICIZING UNIT (NOZZLE ADVANCE)

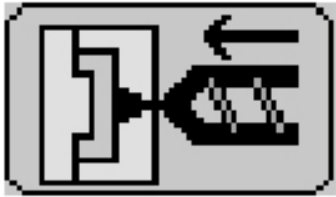
3.10 Plasticizing unit

in contact

s	0.0	0.2 mm	39.1 mm gap
v	50	%	
p	1160	psi	
p	1600	psi	Parallel high and nozzle contact pressure
t	0.20	sec	

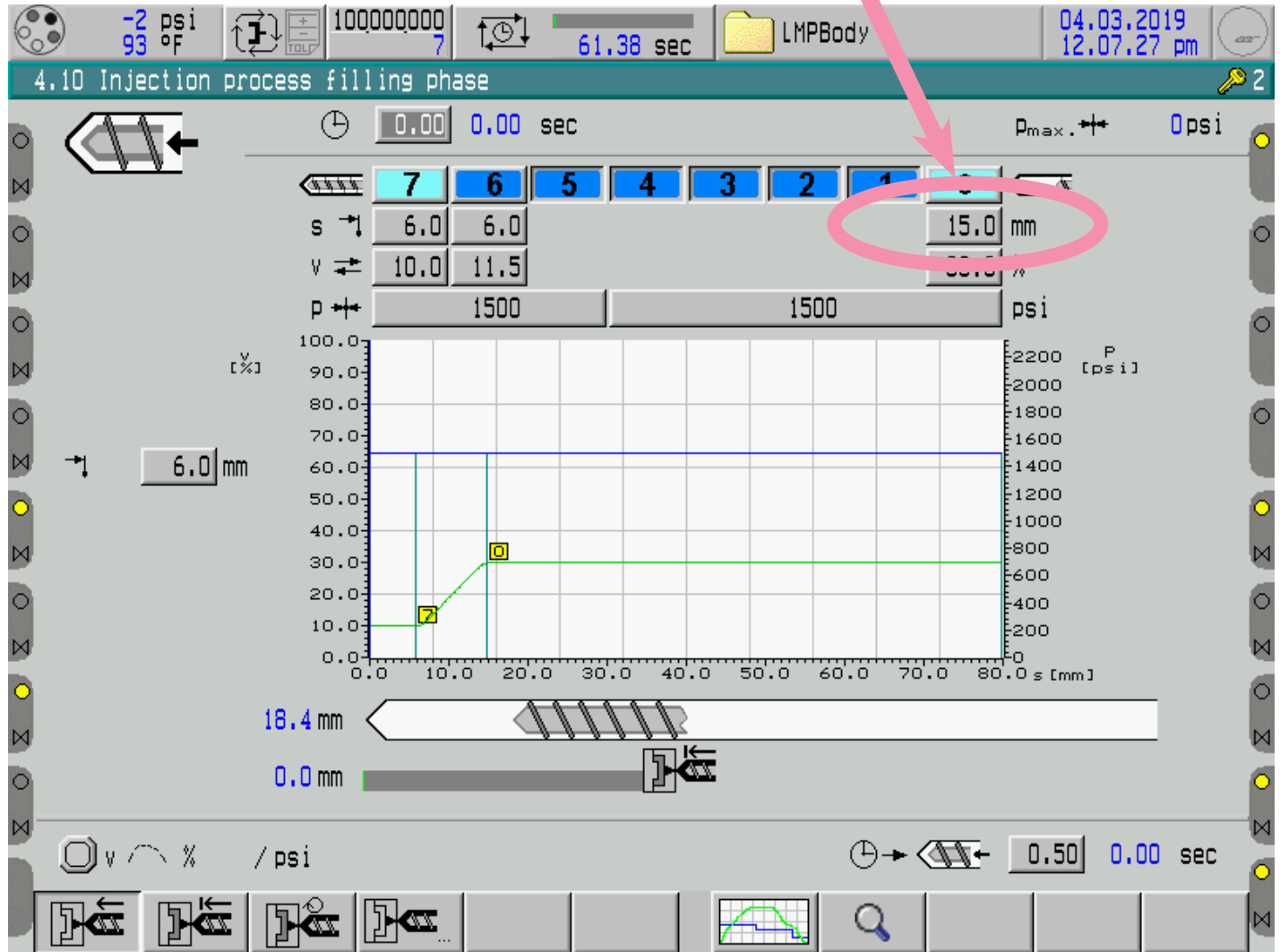
The 3D model shows a yellow nozzle on the right and a grey plasticizing unit on the left. The nozzle is positioned to advance into the plasticizing unit. A blue line indicates the contact point between the nozzle and the unit.





### 3. INJECTION PROCESS (FILLING PHASE)

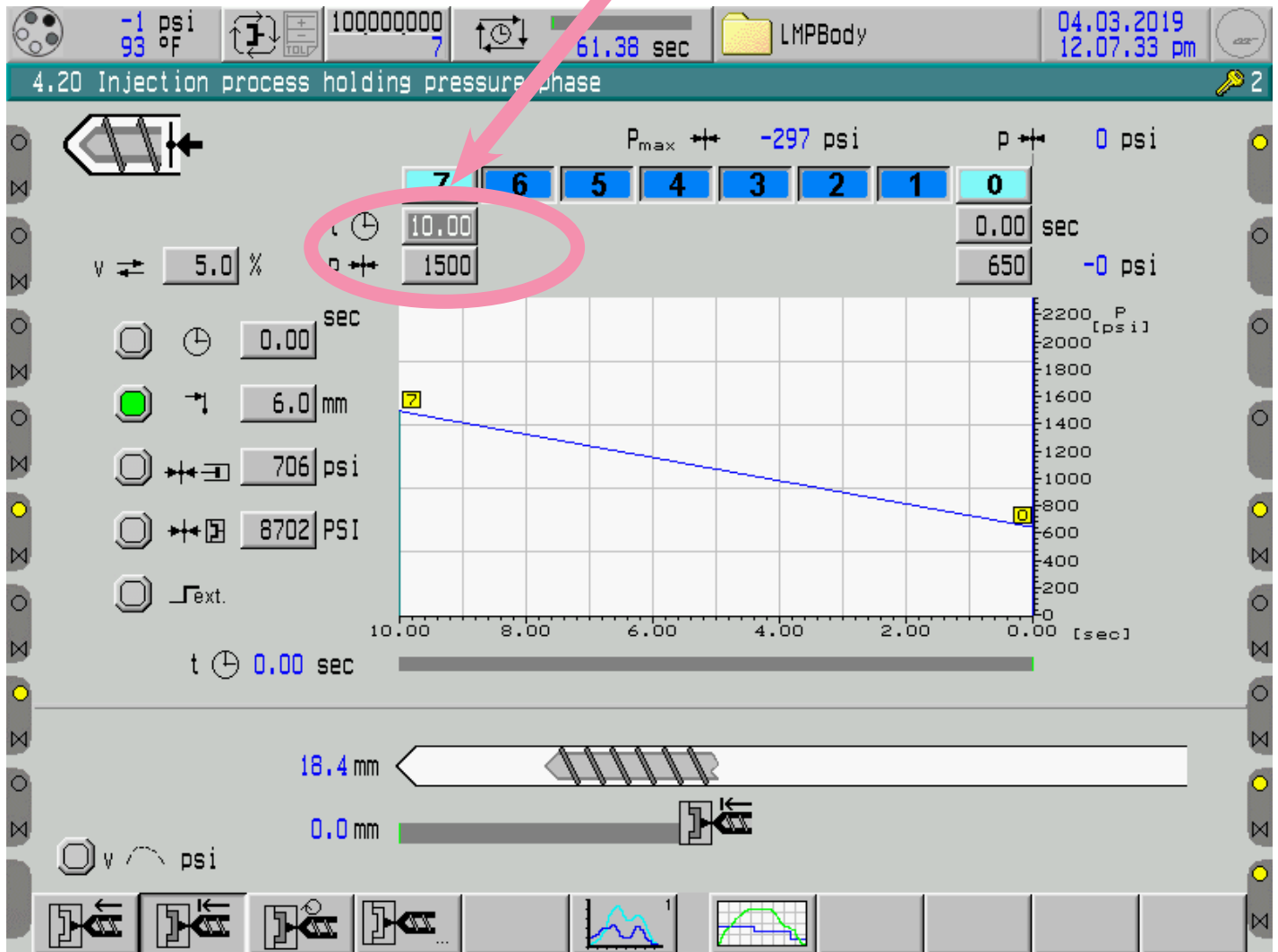
TO CHANGE SHOT SIZE, PRESS THIS BUTTON AND ADJUST ACCORDINGLY





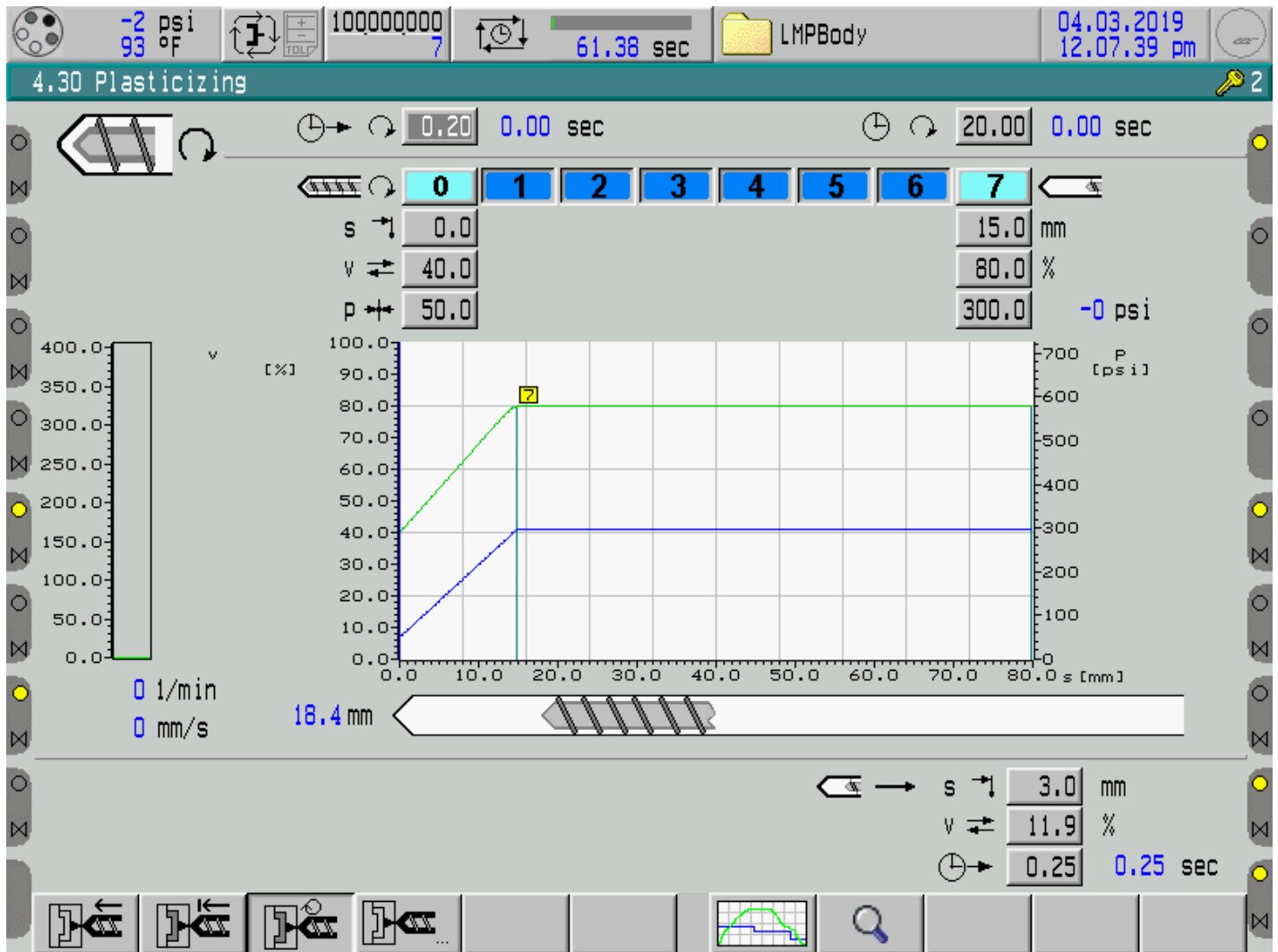
## 4. INJECTION PROCESS (HOLDING PRESSURE PHASE)

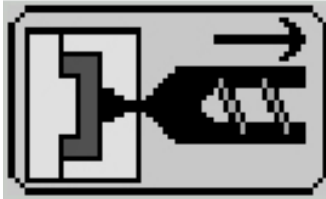
TO CHANGE HOLDING TIME AND PRESSURE, PRESS THESE BUTTONS AND ADJUST ACCORDINGLY



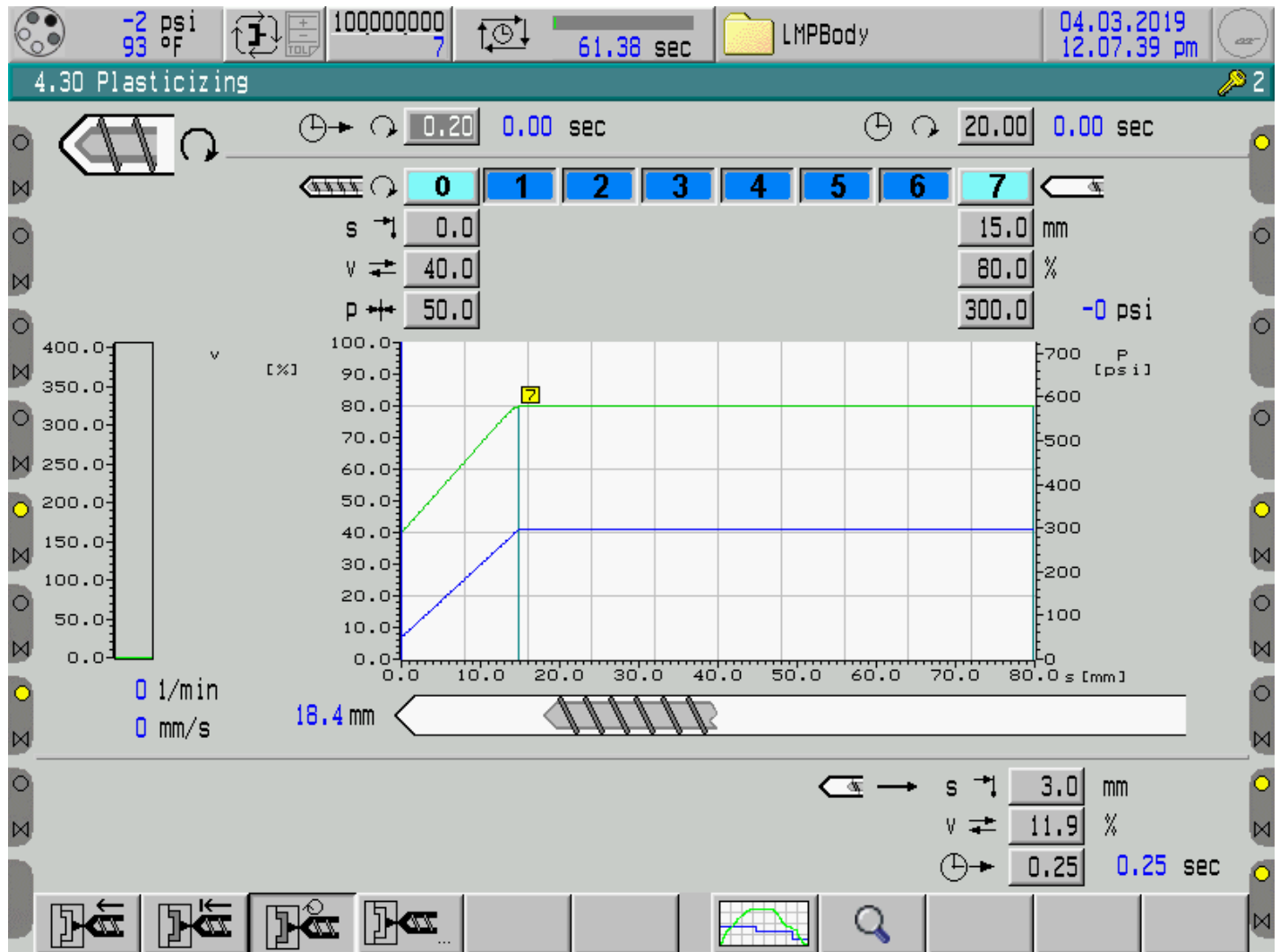


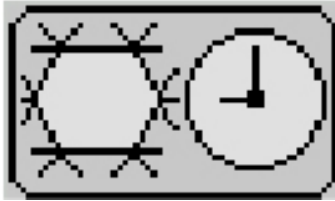
## 5. PLASTICIZING





## 6. PLASTICIZING (DECOMPRESSION)

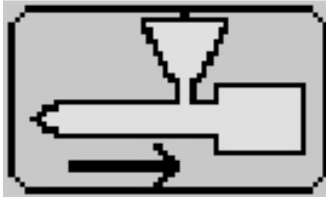




## 7. CYCLE TIME ANALYSIS (COOLING TIME)

TO CHANGE COOLING TIME, PRESS THIS BUTTON AND ADJUST ACCORDINGLY

The screenshot displays a software interface for cycle time analysis. At the top, there is a status bar with various parameters: -1 psi of, 100000, 61.38 sec, LMPBody, and 04.03.2019 12.07.53 pm. Below this, a green header bar reads "8.30 Cycle time analysis". The main area contains several rows of cycle time settings, each with an icon and a numerical value followed by "sec". The second row, with a value of "25.0", is circled in pink and has a pink arrow pointing to it from the text above. Other settings include 200.0, 1.0, and 3.0. Below these are three rows of icons representing different mold actions, each with a "0.00 sec" value. In the bottom right, a large digital display shows "1968.70 h" and "882.79 h". At the bottom, there is a toolbar with buttons for "Start/Stop", "Quick Setup", and other functions.



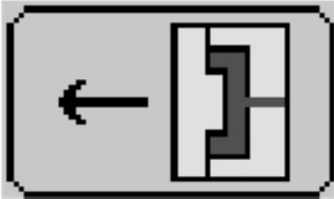
## 8. PLASTICIZING UNIT (RETRACT NOZZLE)

3.10 Plasticizing unit

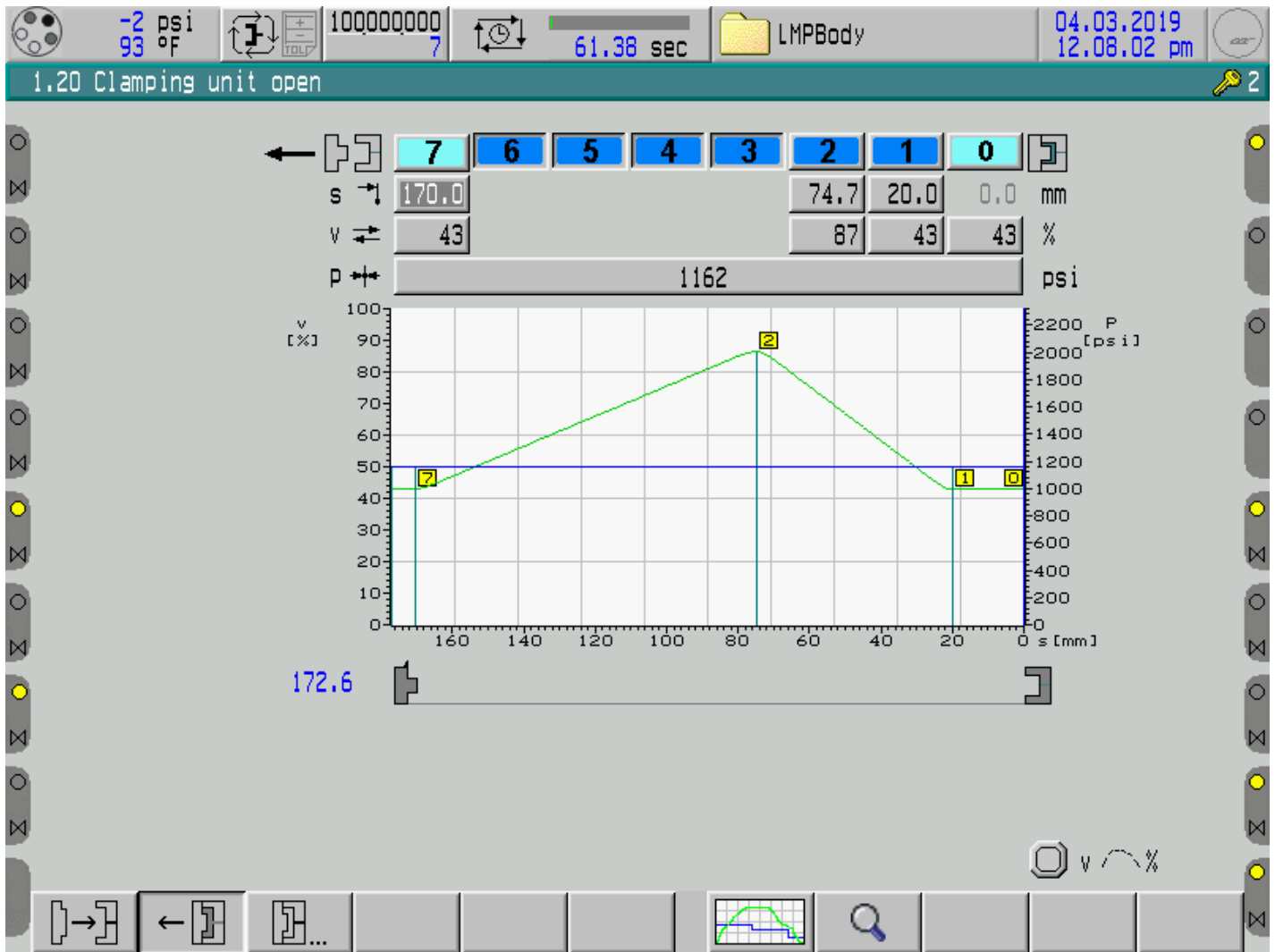
in contact

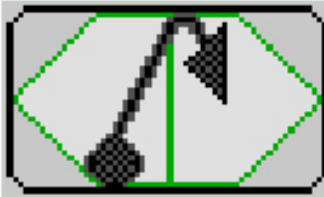
s	0	1	0.2 mm	39.1 mm gap
v	50		%	
p	1160		psi	
p	1600		psi	Parallel high and nozzle contact pressure
t	0.20		sec	

The 3D model shows a nozzle assembly with a retracted nozzle. The nozzle is yellow and textured, and the assembly is shown in a perspective view.



## 9. CLAMPING UNIT OPEN





## 10. EJECTOR (ADVANCE-RETURN EJECTOR)

2.10 Ejector

Standard

Ejector start during mould opening

←	0	1	2	→	0	1	2
s	0.0			s	79.7	-0.0 mm	0.3
v	49			v	61	%	
p	1500			p	1165	psi	
t	0.0			t	0.0	0.0 sec	

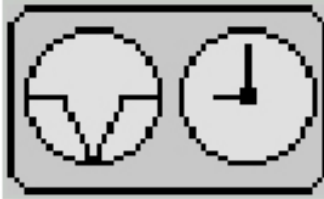
172.6 mm

172.6 mm

04.03.2019 12.08.13 pm

Software: 15.21.51, Project: 02.22.00





# 11. CYCLE TIME ANALYSIS (END OF CYCLE)

8.30 Cycle time analysis

	-2 93 psi of		100000000 7		61.38 sec		LMPBody		04.03.2019 12.08.16 pm
	200.0	0.00 sec							
	25.0	0.0 sec							
	1.0	0.0 sec							
	3.0	0.0 sec							
		0.00 sec							
		0.00 sec							
		0.00 sec							

1968.71 h  
882.79 h

Start Stop Quick Setup



# ALARM REPORTS

04.03.2019 12.08.27 pm      LMPBody      61.38 sec      100000000      7      -1 psi of      93      04.03.2019 12.08.27 pm

0.00 Fault signals, current

00161 04.03.2019 11.56.38 am  
Monitoring of heating (Monitoring time expired)

Logbook



# INFO/ONLINE MANUAL

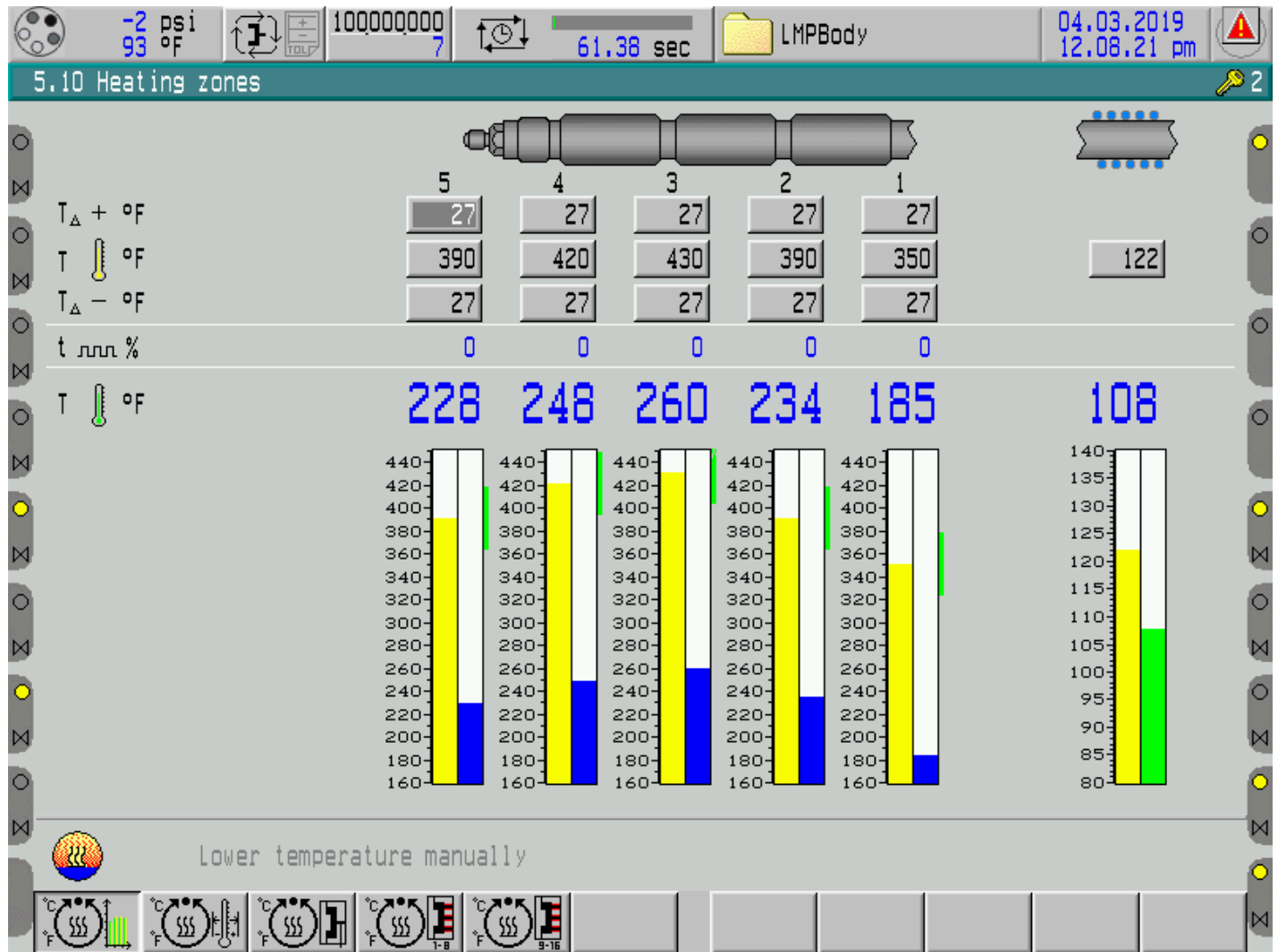
The screenshot shows a control panel interface with a status bar at the top. The status bar includes a pressure gauge showing -2.93 psi, a counter showing 100000000, a timer showing 61.38 sec, a folder icon labeled 'LMPBody', and a date/time display showing 04.03.2019 12.09.00 pm. Below the status bar is a 'Help' menu with a key icon and the number 2. The main content area is titled 'Screen page "0.10 Menu"' and features the BOY logo (Spritzgiessautomaten). The text explains that the key turns green when a function is active. A list of menu items is provided:

- 5 Cycle time BOY-Logo: Press on the BOY logo (transparent key) to call up the first page of the table of contents. From there, all screen pages can be selected.
- 6 Display clamping force: Here, the current clamping force is shown as a bar graph and numerically in kN (Kilo-Newton).
- 7 Display cylinder temperature: Here, the graphic image of the cylinder temperature zones and the water-cooled feed throat zone is indicated, if the selector switch "feed throat zone cooling ring" is switched on at the screen page 14.22. If the selector switch "Rubber / Thermostat processing" is switched on there, the graphic image of the cylinder temperature zones is masked out. The current temperature actual values are shown numerically. In addition, the temperatures are also shown graphically and the temperature range is marked by colors:
  - blue under-temperature
  - green temperature within the working area
  - red over-temperature

At the bottom of the screen, there is a 'Contents' button and four navigation arrows (up, down, left, right).



# HEATING ZONE SCREEN



# INFO/ONLINE MANUAL

The screenshot shows a control interface with a grey top bar containing various status indicators: a pressure gauge icon, '-2 93 psi of', a 'TOLF' icon, '100000000 7', a clock icon, '61.38 sec', a folder icon labeled 'LMPBody', and a date/time stamp '04.03.2019 12.09.00 pm'. A 'Help' bar is visible below the top bar, with a key icon and the number '2'. The main content area is titled 'Screen page "0.10 Menu"' and features the BOY logo (Spritzgiessautomaten). The text explains that the key icon changes color (green for active, red for error) and provides instructions for navigating through the menu. A table of contents is shown at the bottom of the screen, with 'Contents' highlighted.

Screen page "0.10 Menu"

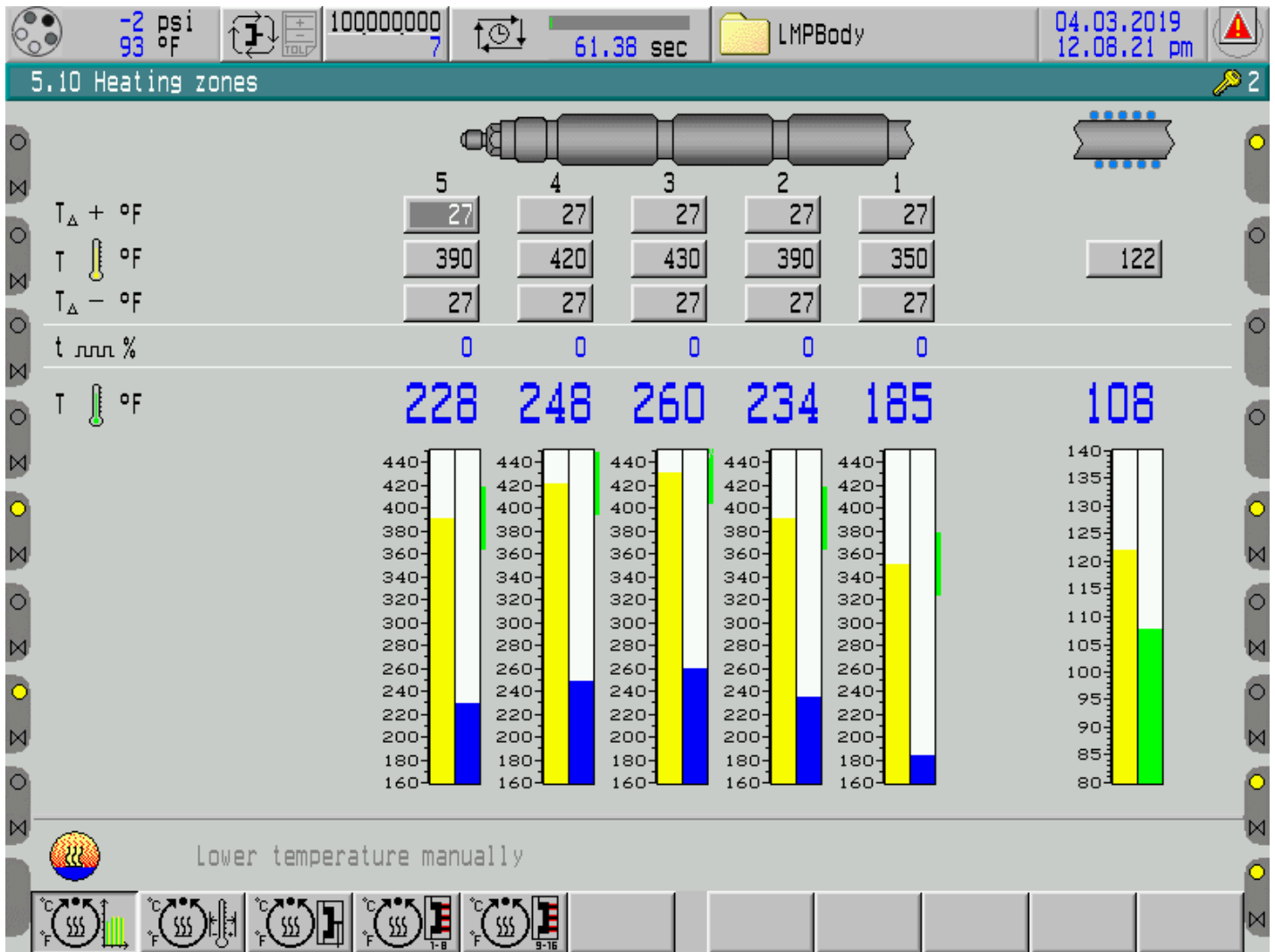
**BOY**  
Spritzgiessautomaten

By color change, the key itself shows green if the associated function in the cycle is active. If the cycle stops unexpectedly, this is the first indication for locating a problem.

5	Cycle time BOY-Logo	Press on the BOY logo (transparent key) to call up the first page of the table of contents. From there, all screen pages can be selected.
6	Display clamping force	Here, the current clamping force is shown as a bar graph and numerically in kN (Kilo-Newton).
7	Display cylinder temper- ature	Here, the graphic image of the cylinder temperature zones and the water-cooled feed throat zone is indicated, if the selector switch "feed throat zone cooling ring" is switched on at the screen page 14.22. If the selector switch "Rubber / Thermostat processing" is switched on there, the graphic image of the cylinder temperature zones is masked out. The current temperature actual values are shown numerically. In addition, the temperatures are also shown graphically and the temperature range is marked by colors: - blue under-temperature - green temperature within the working area - red over-temperature

Contents

# HEATING ZONE SCREEN

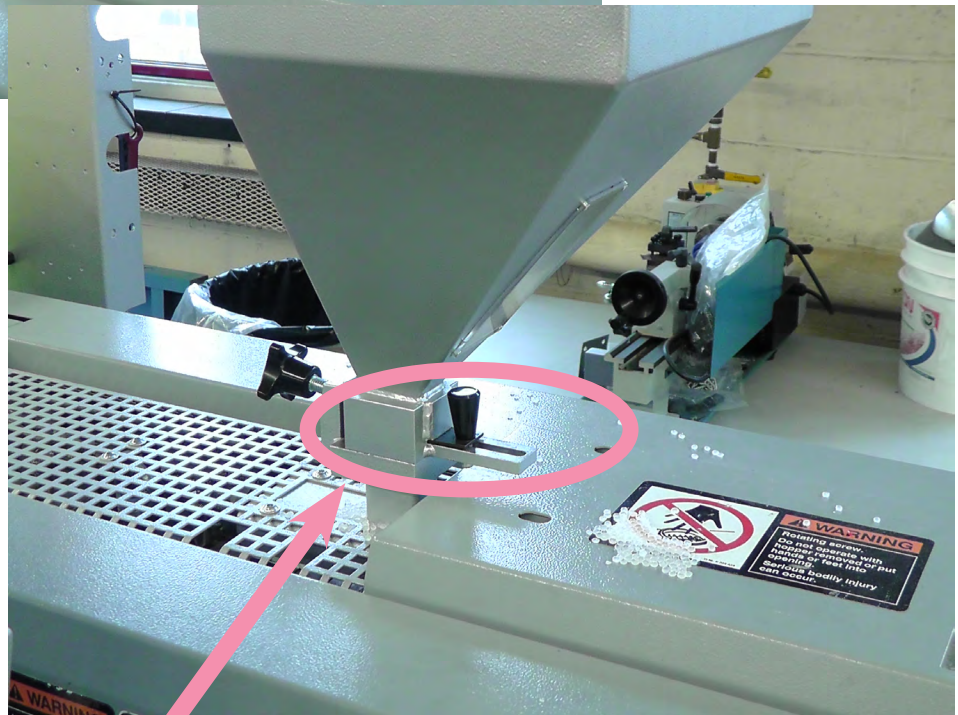
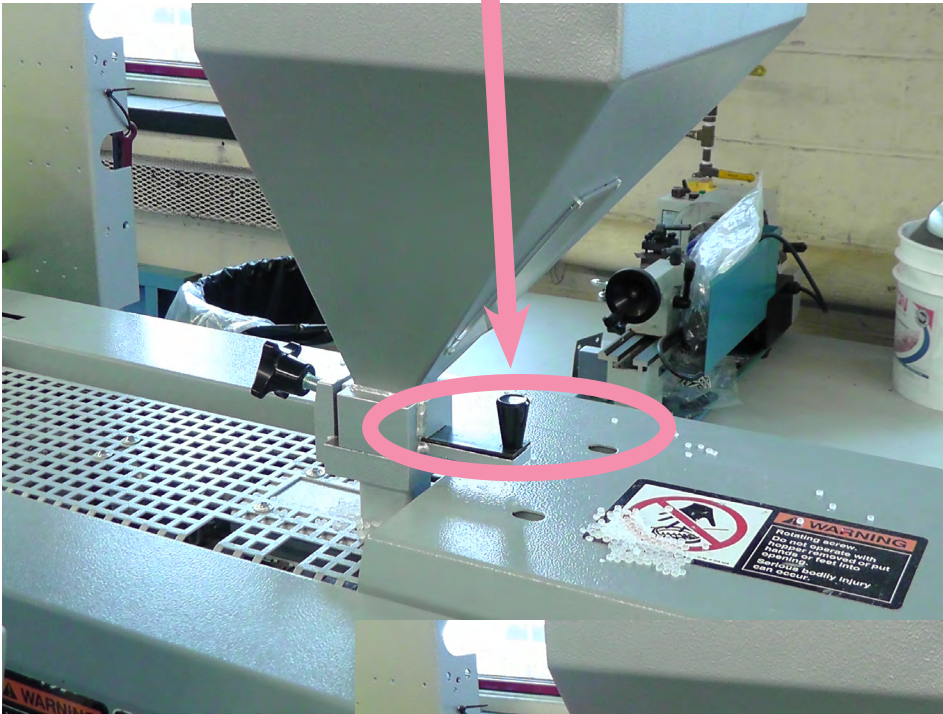


# COLOR CHANGING GUIDE



1. Close shut-off gate on the hopper

OPEN



CLOSED



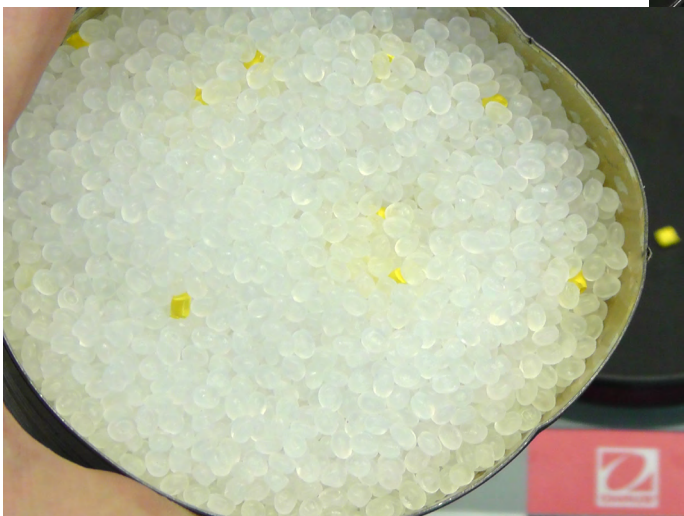
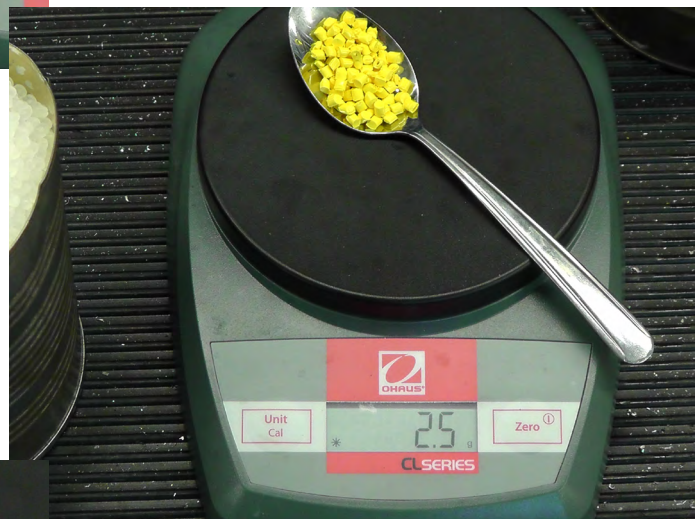
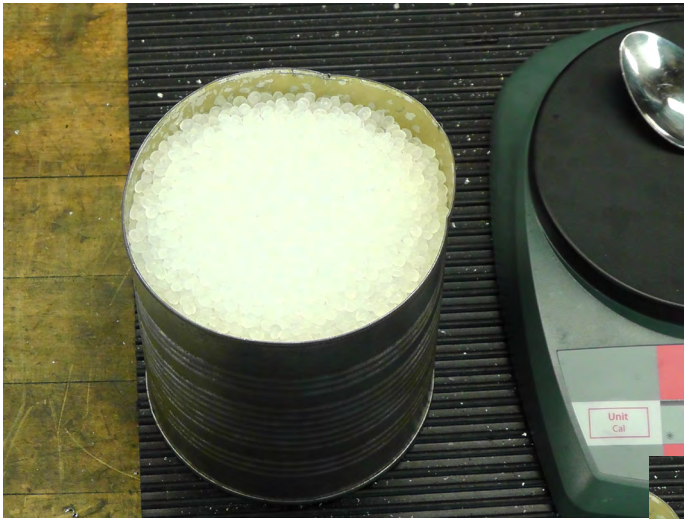
2. Remove resin hopper by unscrewing the bolt and dump all clean resin into Clear resin bucket



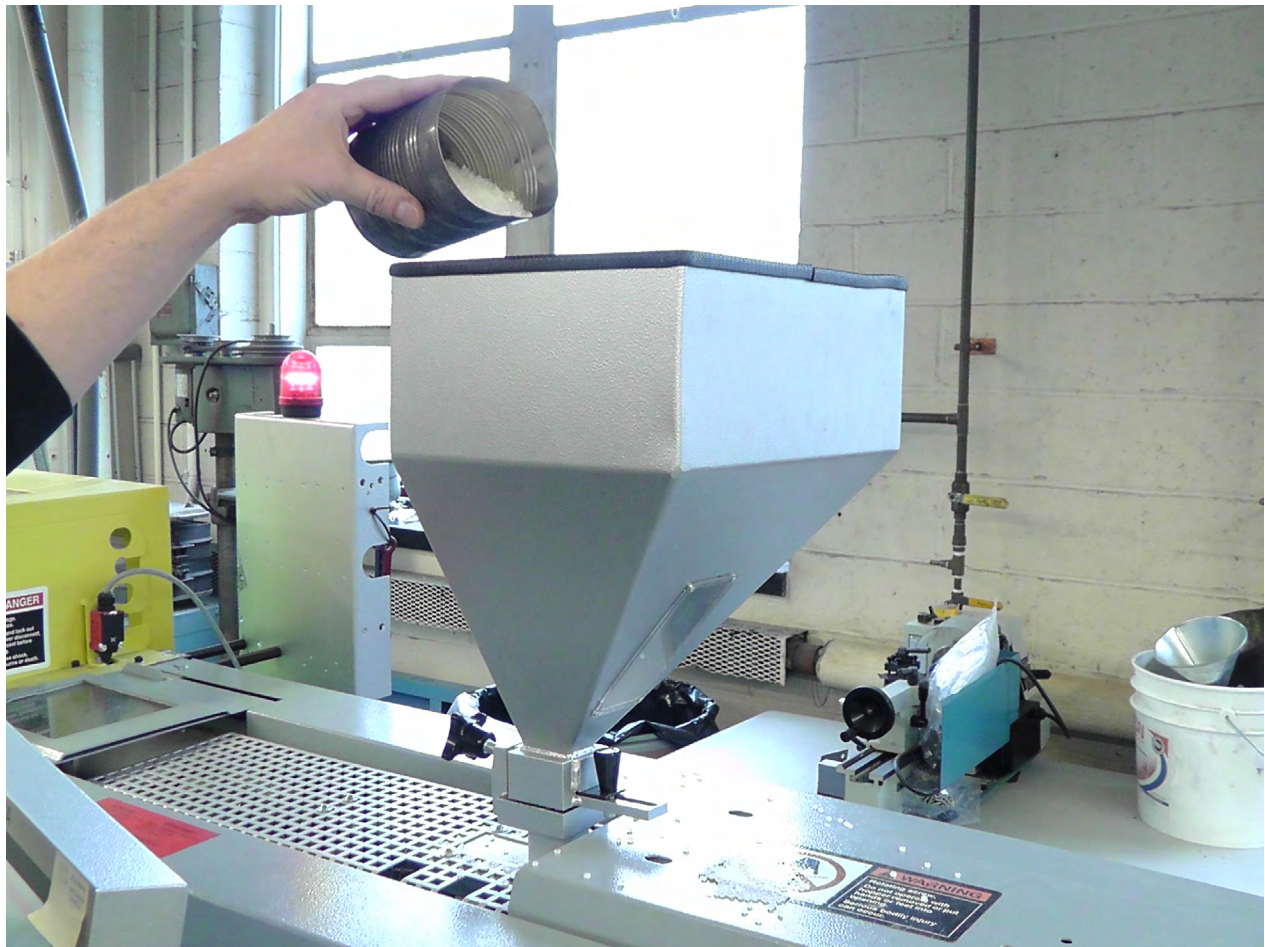
### 3. Replace hopper onto machine



4. Mix the color:
  - a. Ratio
    - i. 1 coffee can or 500 grams of clear resin
    - ii. 1 teaspoon or 2.5 grams of colored resin
  - b. Combine the colors in a mixing container and shake and mix appropriately. You want the colored resin to be distributed evenly throughout the clear polypropylene.

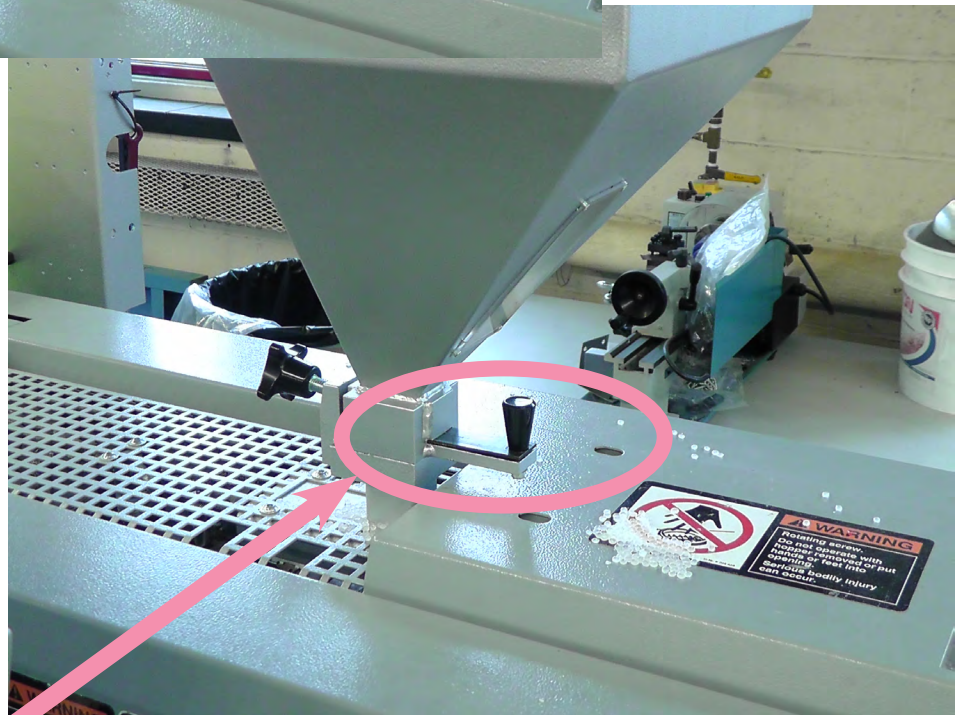
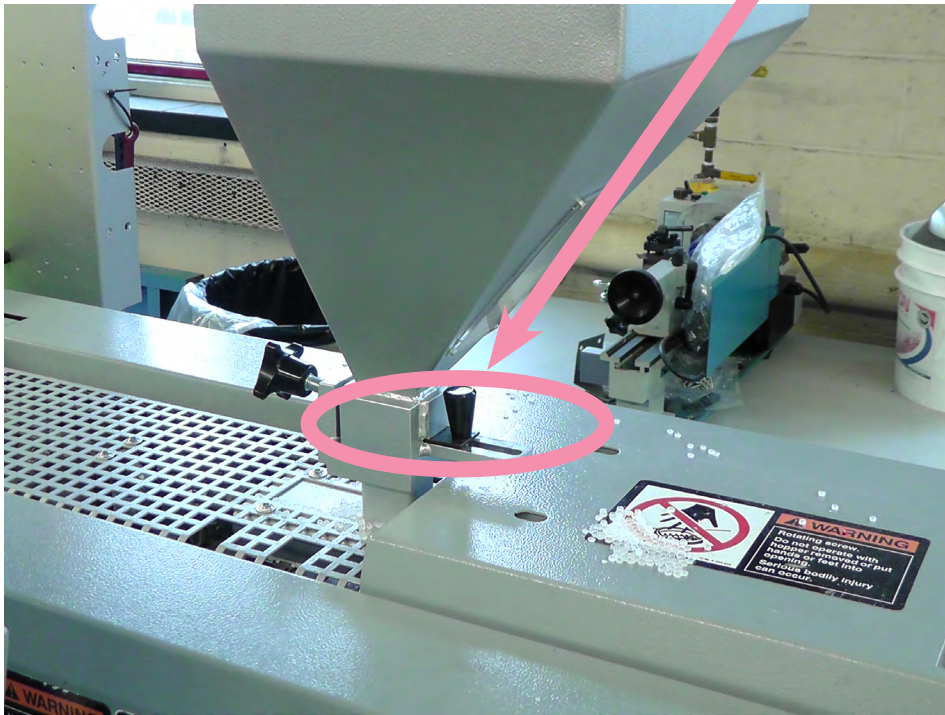


5. Pour the colored mixture into the hopper



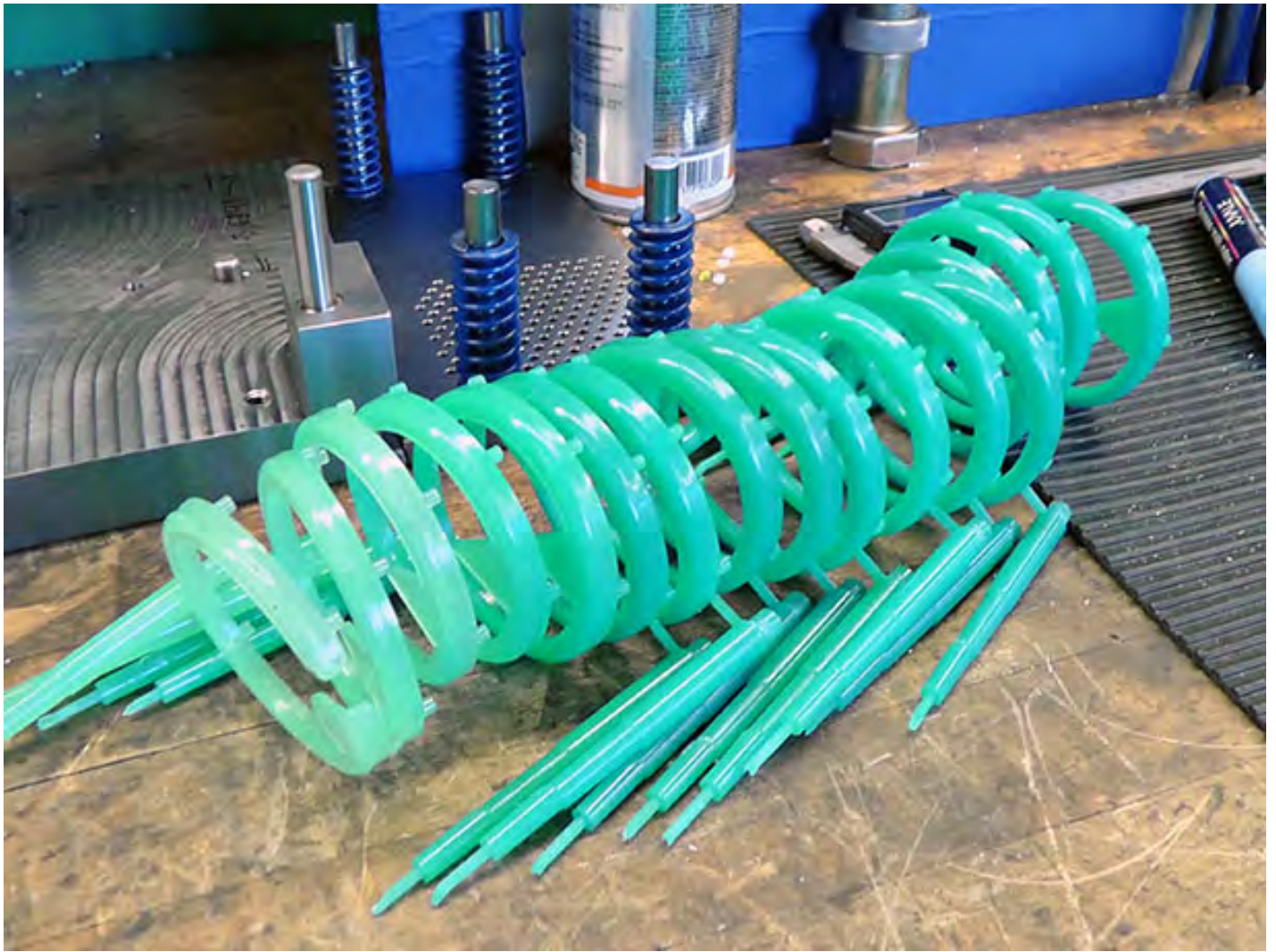
6. Open shut-off gate on the hopper

CLOSED



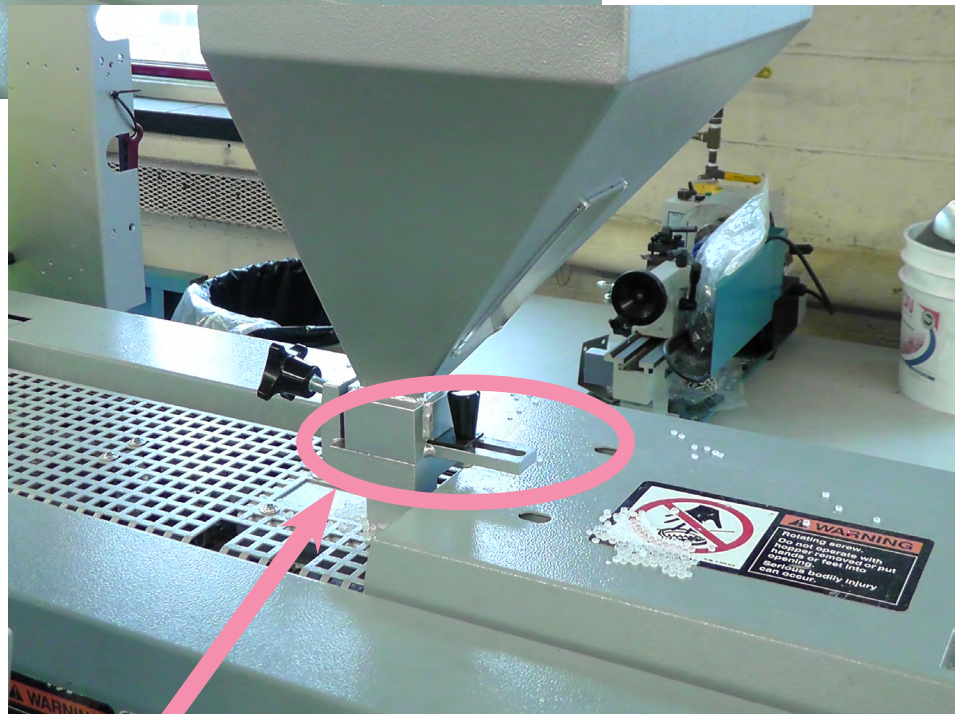
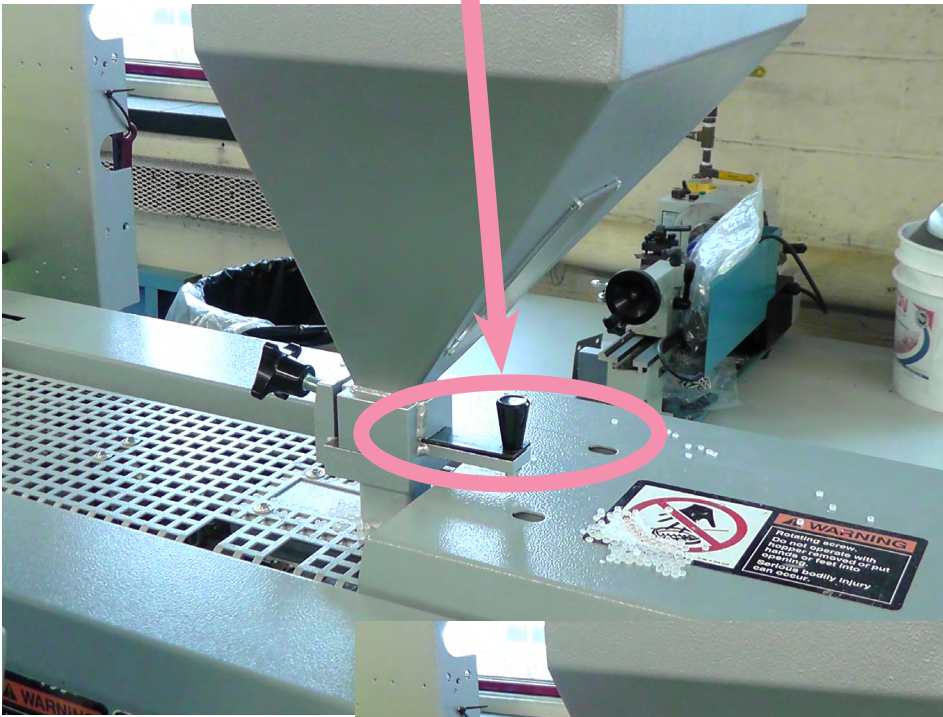
OPEN

*AFTER YOUR RUN...*



1. Close the hopper shut-off gate

OPEN



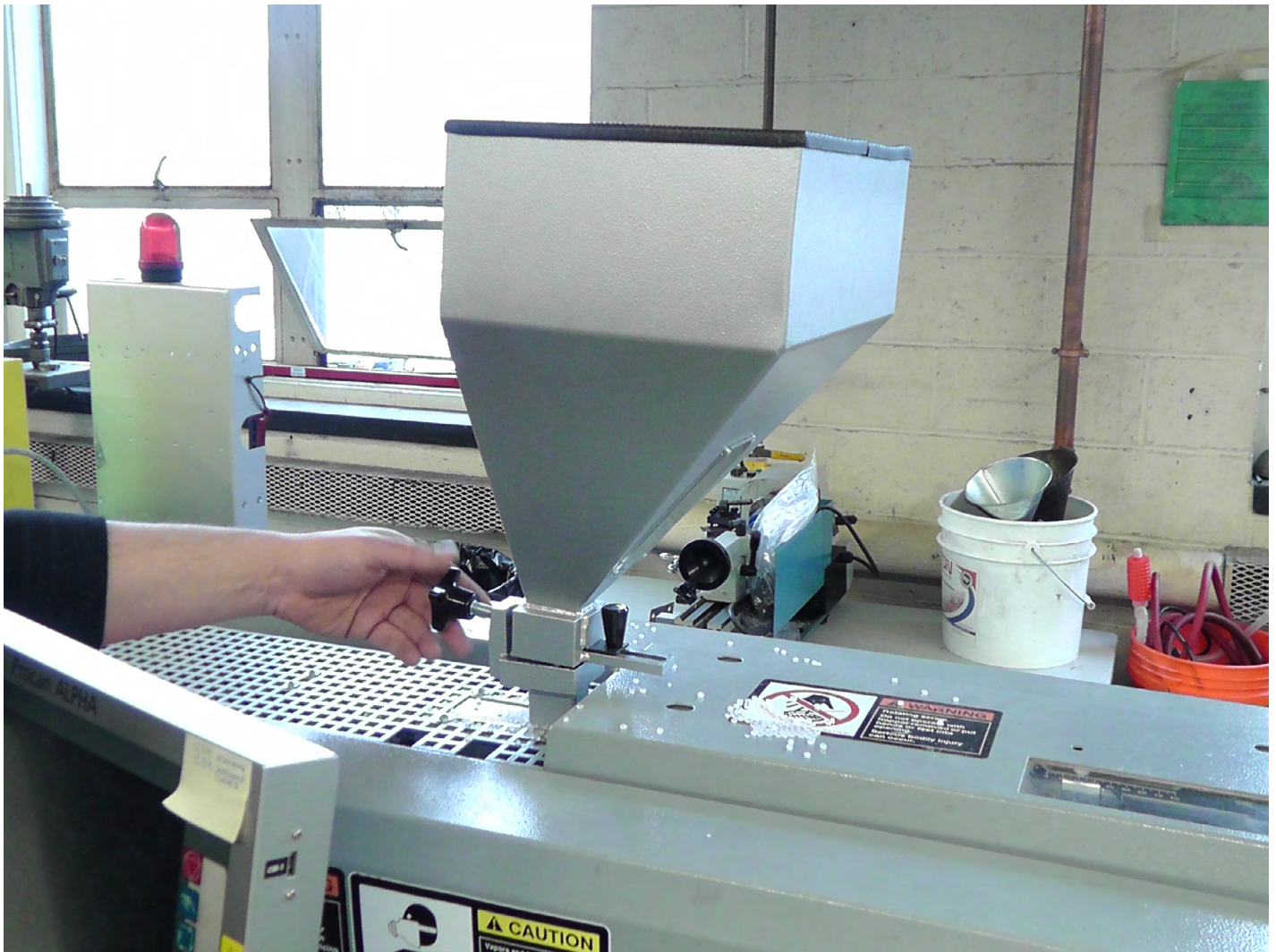
CLOSED

2. Remove the hopper and dump all contents into the bucket labeled "TYE DYE"





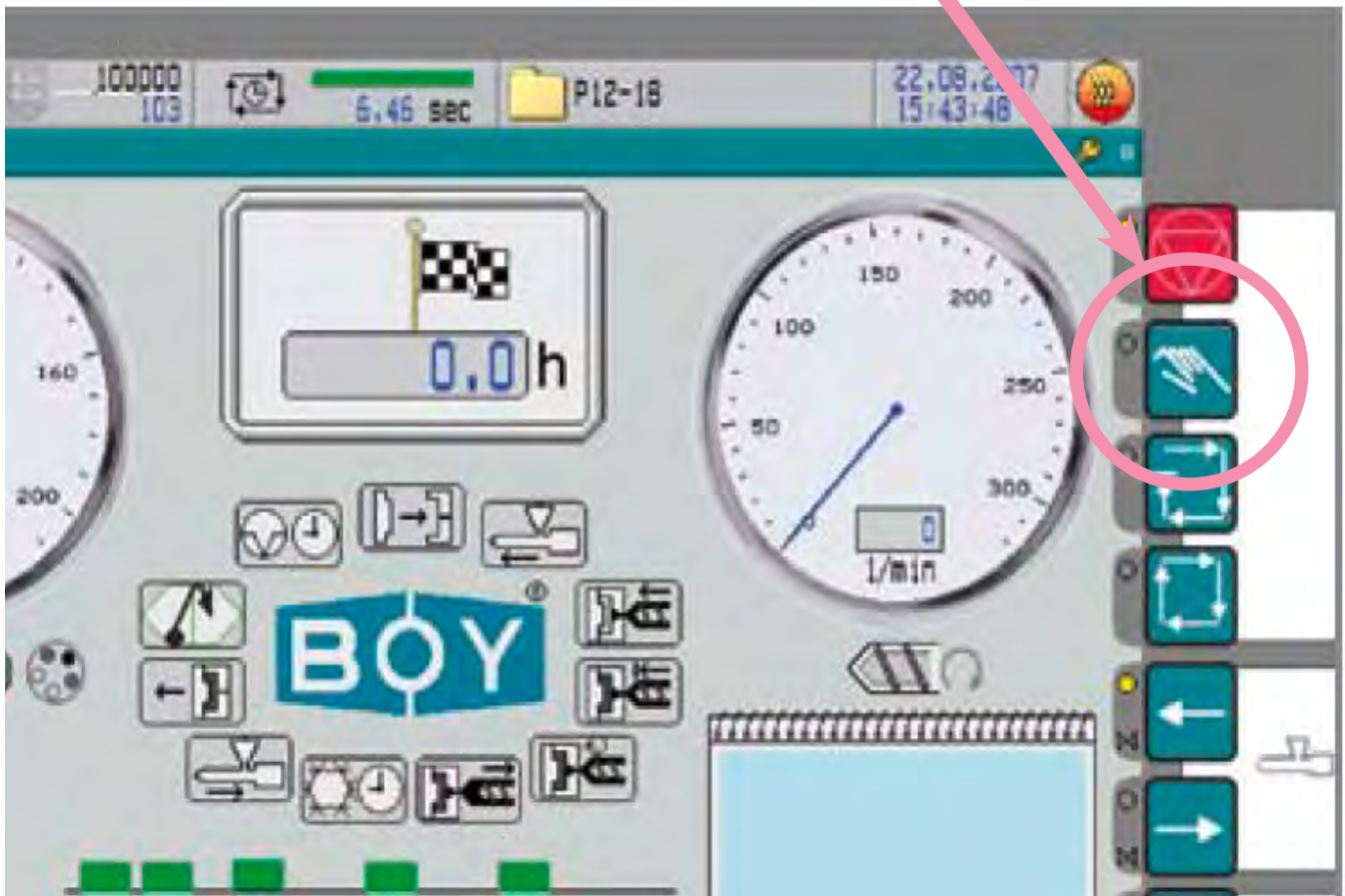
3. Replace the hopper (Remember to tighten the bolt on the side!)



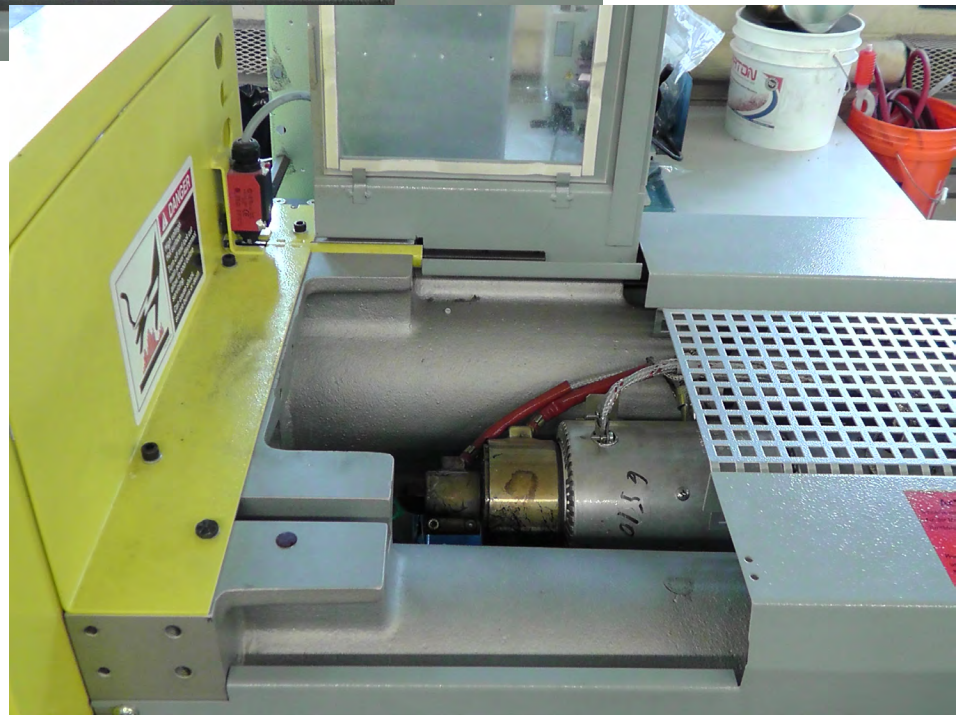
4. Dump about ½ coffee can of Dyna-purge into the hopper



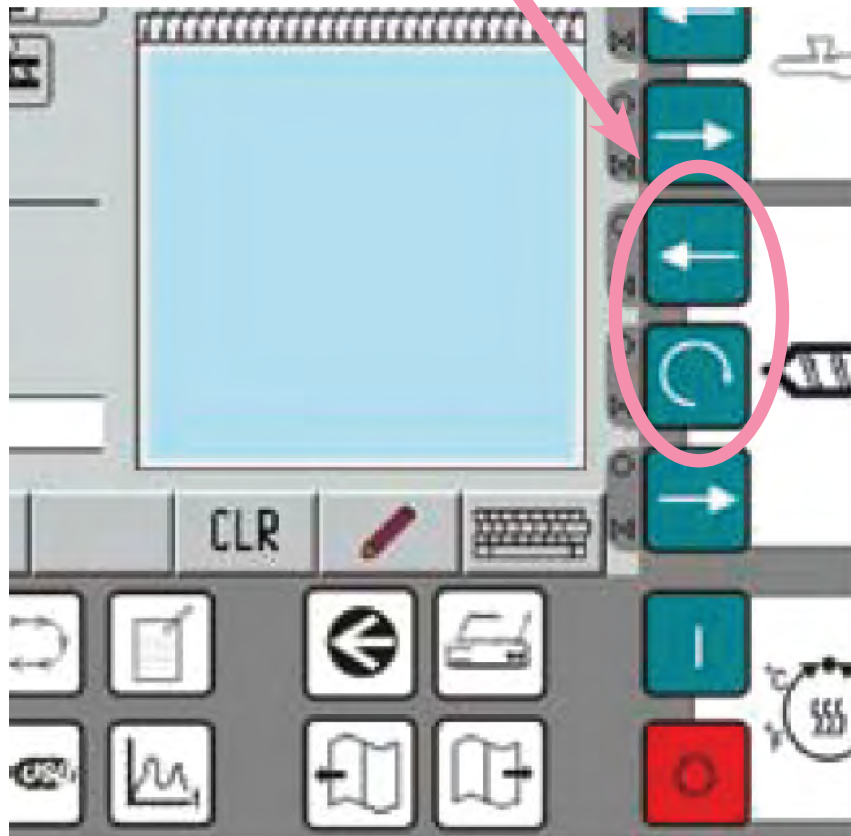
5. Go into "manual" mode by pressing the (HAND) button



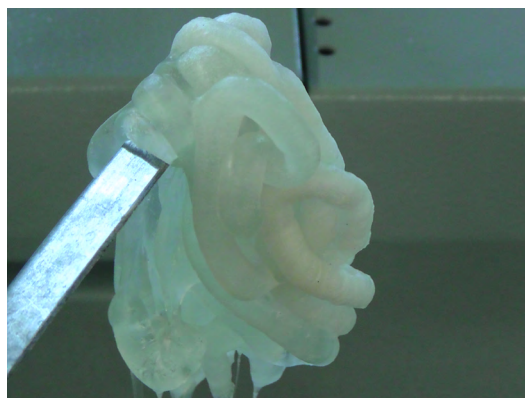
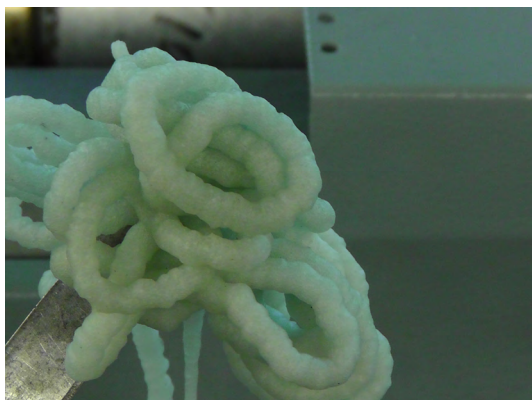
## 6. Retract the PLASTICIZING NOZZLE



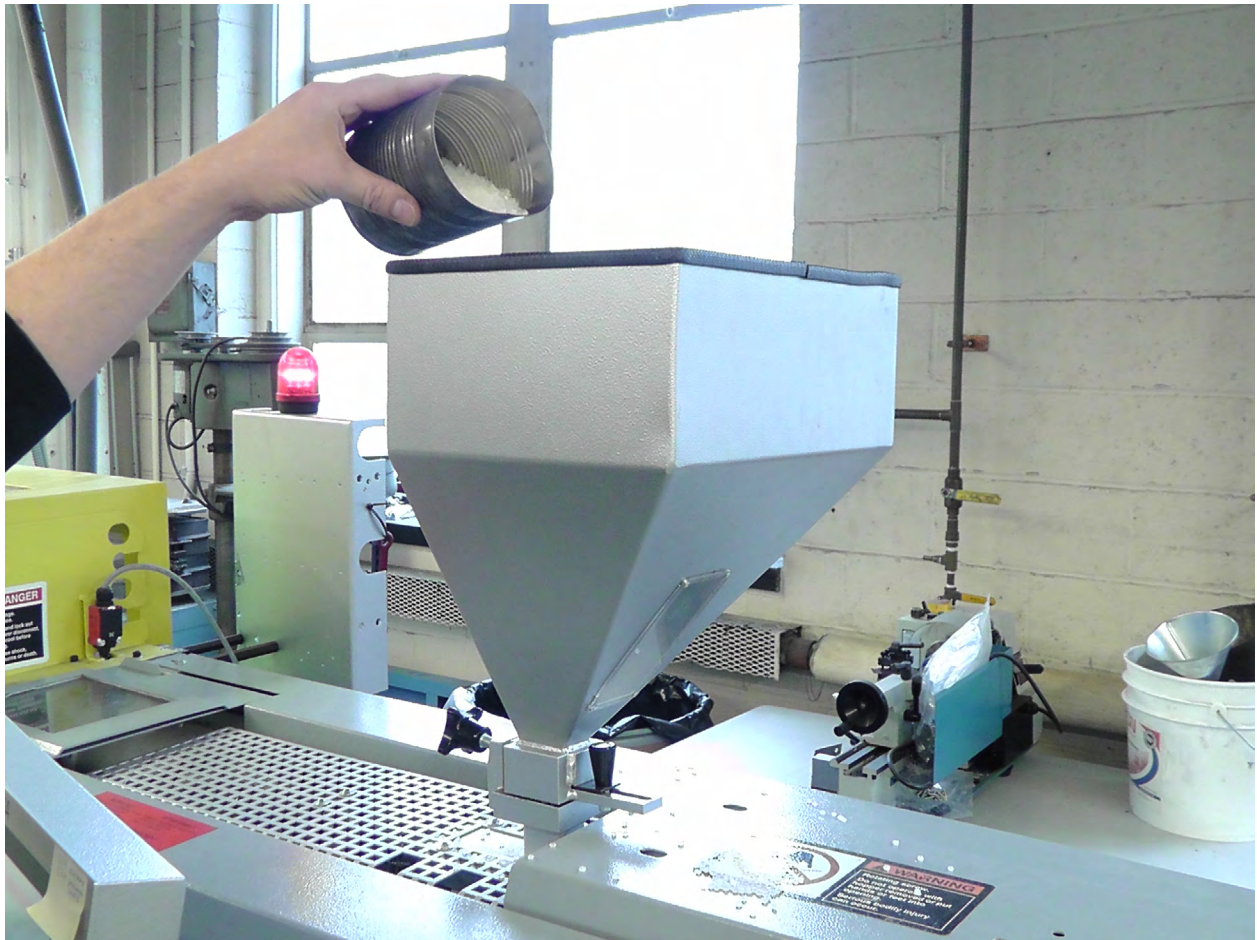
7. Extrude all the Dyna-Purge in the hopper by repeatedly pressing the  and  buttons



8. After every 1-2 extrudes, open the Nozzle Protection Door and remove the extruded plastic from the Nozzle using the knife. Be careful! The plastic may still be hot!



9. After the Dyna-Purge is finished, add about a ½ coffee can of clear resin to the hopper



10. Extrude the clear resin until it no longer has any color by repeating step #7.

Remember to clean the extruded plastic like in step 8!





11. When the plastic is finally clear, go into the “Setup” mode by pressing and holding the (HAND) button for longer than 3 seconds (SEE STEP #12 IN MAIN GUIDE), then move PLASTICIZING UNIT back to operating position

