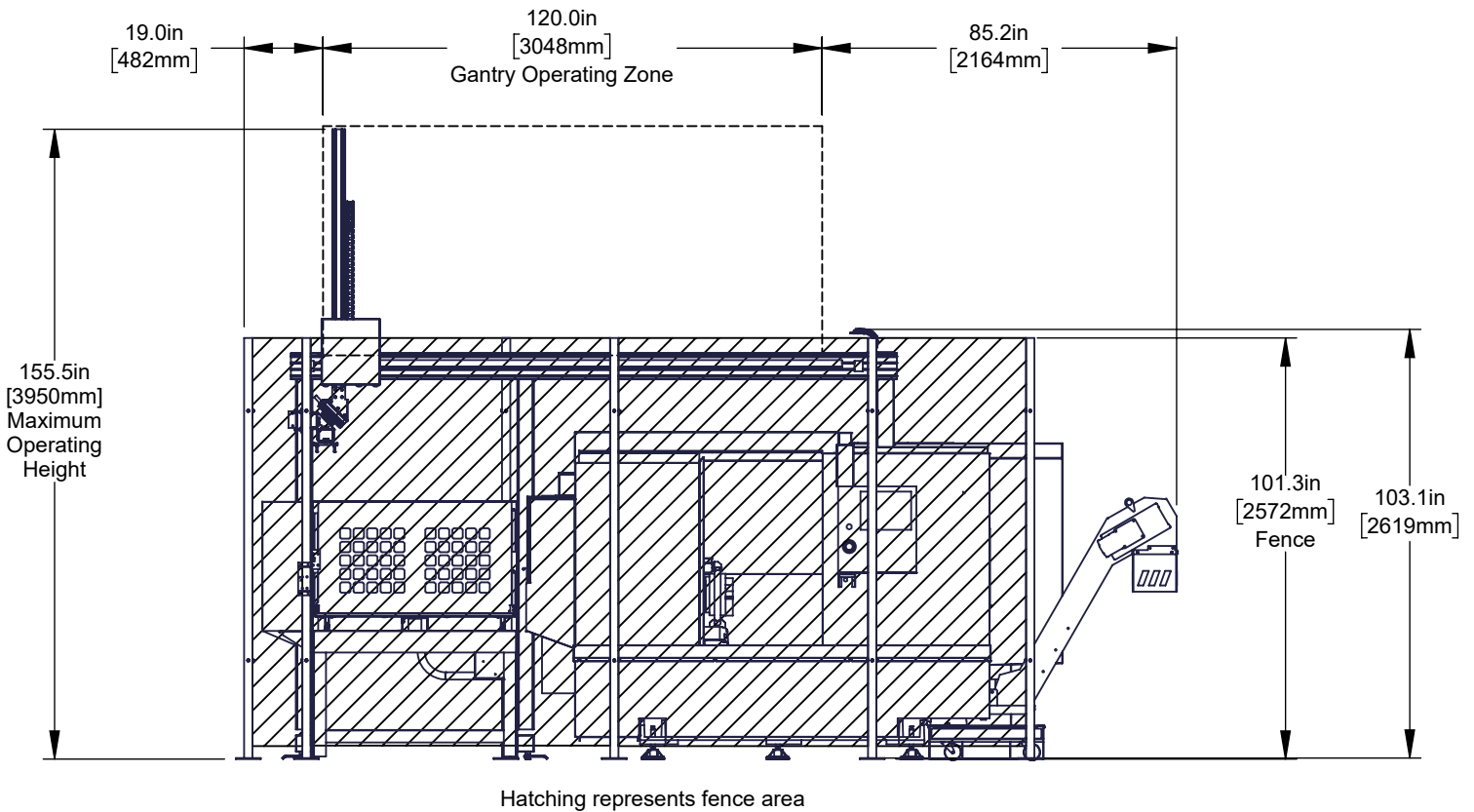
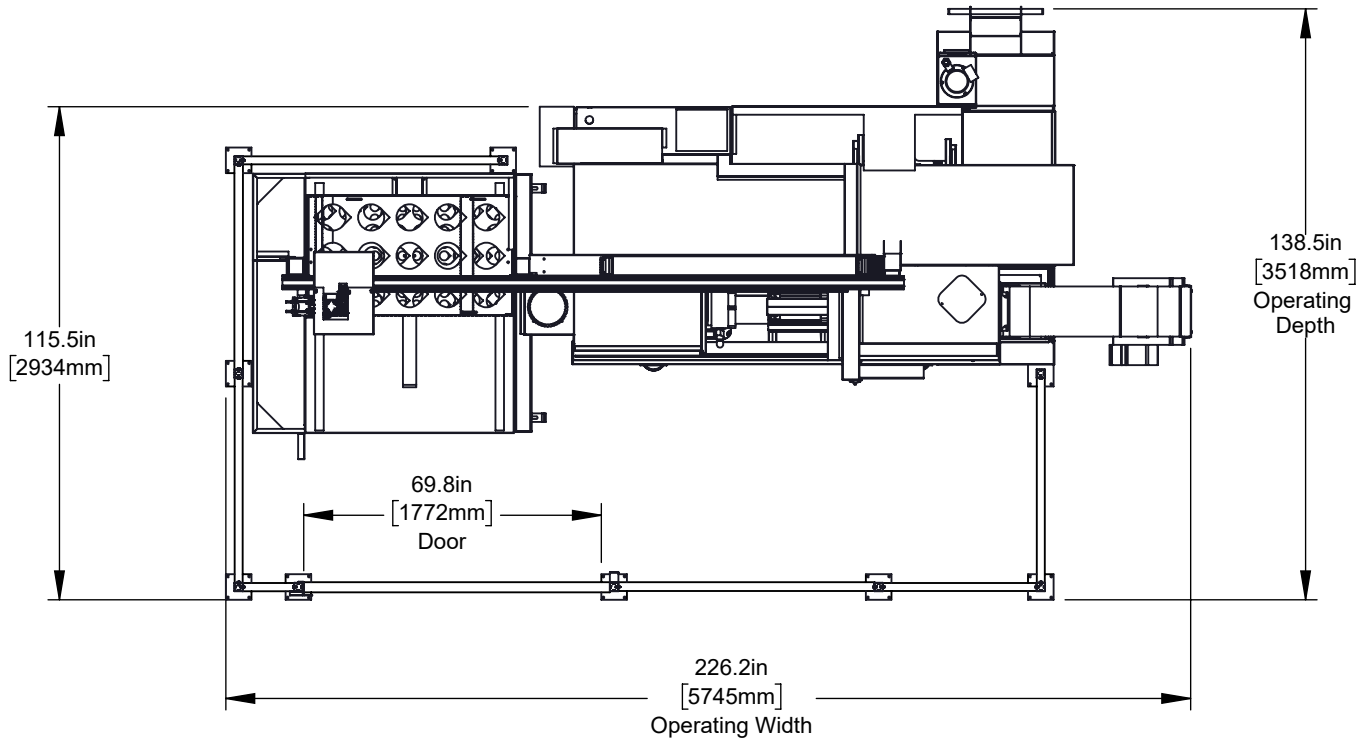


Hatching represents fence area

Operating Layout Only  
See the model specific layout drawing for service clearance requirements of the lathe

All dimensions based on stackup of sheetmetal, subject to variation of 1/2" ( 13 mm)

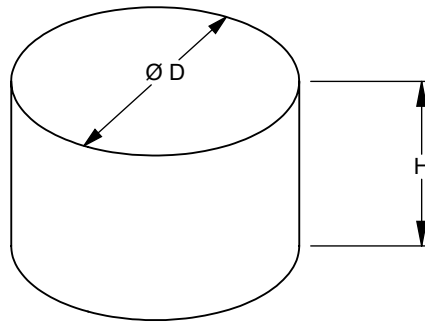


Operating Layout Only  
See the model specific layout drawing for service clearance requirements of the lathe

All dimensions based on stackup of sheetmetal, subject to variation of 1/2" ( 13 mm)

## Slug Maximum Part Size

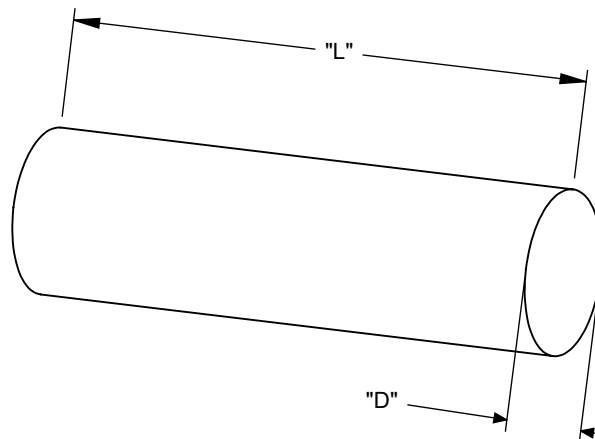
**	Machine	
	ST-10/15	ST-20/25
"H" ≤	5.0in [127mm]	5.0in [127mm]*
"D" ≤	5.8in [147mm]	5.8in [147mm]
Weight	≤10lbs [4.6kg] Per Part	



\*When indexing between the finished and raw part grippers during reloading, parts over 2.0" long may require the gantry to index over the APL table

## Bar Maximum Part Size

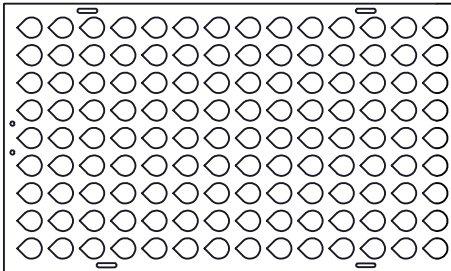
**	Machine	
	ST-10/15	ST-20/25
"L" ≤	16.0in [406mm]	21.0in [533mm]
"D" ≤	4.0in [102mm]	4.0in [102mm]
Weight	≤10lbs [4.6kg] Per Part	



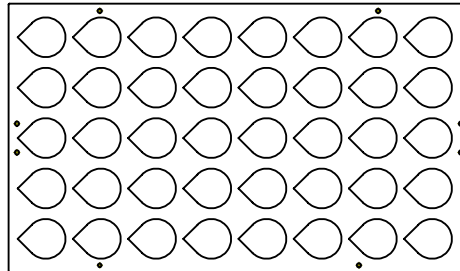
\*\*Depending on the machine size, turret style, and part-specific tooling used, 1 - 3 turret stations may be required to be empty to allow Gantry clearance. Please review your specific application with an Application Engineer at your local HFO if there is any doubt regarding your application's compatibility

# Standard Slug Templates

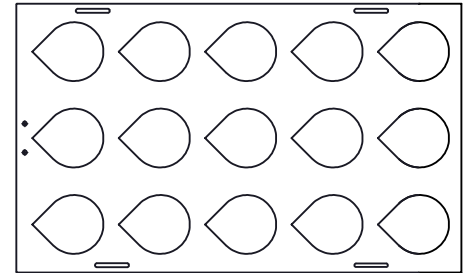
Haas Standard Slug Patterns				
Template	Diameter Range	Rows	Columns	Max Parts
Small Slug	0.97 – 2.1in [24.6 – 53.3mm]	9	14	126
Medium Slug	2.0 – 4.1in [50 – 104mm]	5	8	40
Large Slug	4.0 – 5.9in [100 – 150mm]	3	5	15
Custom	Custom**			



Small



Medium



Large

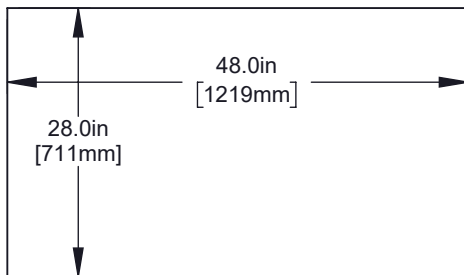


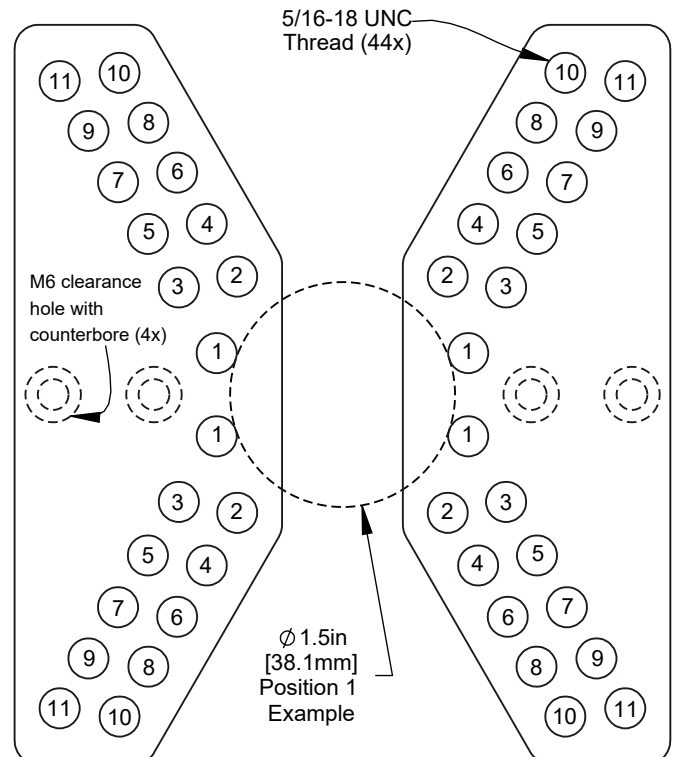
Table Space available for Custom Template

\*\*Custom templates can be made by the user with the following requirements

1. Allow adequate space between rows and columns for gripper clearance
2. All rows must have equal spacing
3. All columns must have equal spacing (but can be different than row spacing)

Puck Grippers (Inch)		
Position	Min Ø	Max Ø
1	0.97	1.69
2	1.66	2.1
3	2.06	2.68
4	2.61	3.03
5	3	3.56
6	3.53	3.95
7	3.92	4.45
8	4.43	4.84
9	4.83	5.34
10	5.33	5.74
11	5.72	6.22

Puck Grippers (mm)		
Position	Min Ø	Max Ø
1	24.6	42.9
2	42.2	53.3
3	52.3	68.1
4	66.3	76.9
5	76.2	90.4
6	89.7	100.3
7	99.6	113
8	112.5	112.9
9	122.7	135.6
10	135.4	145.8
11	145.3	158



# Standard Bar Templates

Haas Standard Bar Patterns				
Template	Diameter Range	Length Range	Rows	Columns
Small Bar	.86–1.5in [21.6–38.1mm]	ST-10/15 <16" [406mm]* ST-20/25 <21" [533mm]* *Limited by weight	10	Varies with length
Medium Bar	1.5–2.75in [38.1–70mm]		7	
Large Bar	2.75–4.0in [70–102mm]		5	
Custom	Custom**			

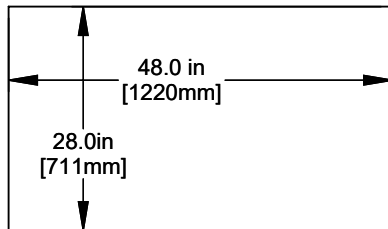
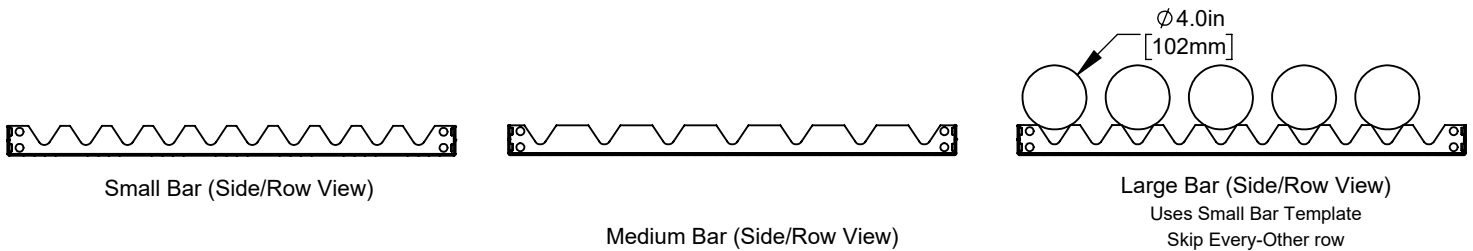
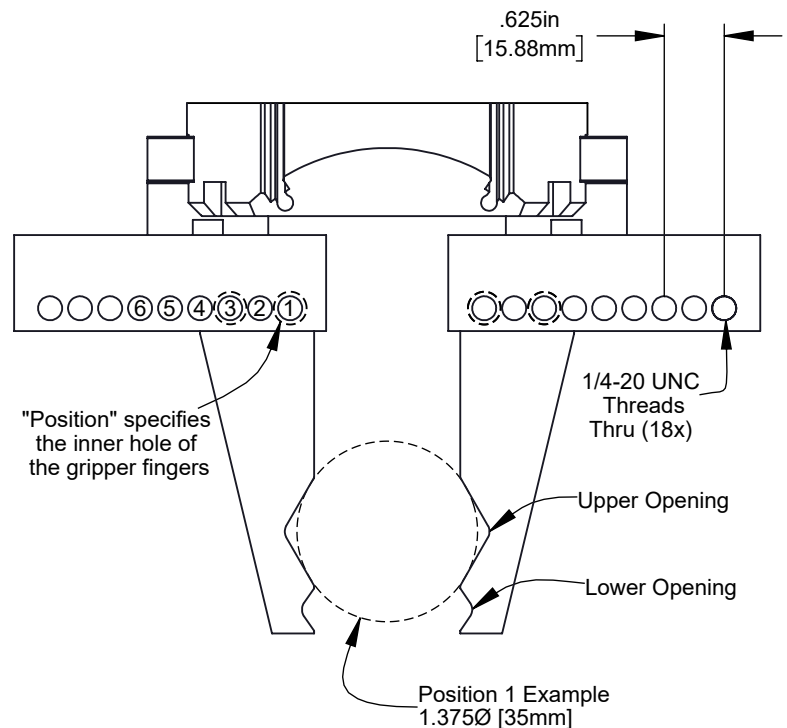


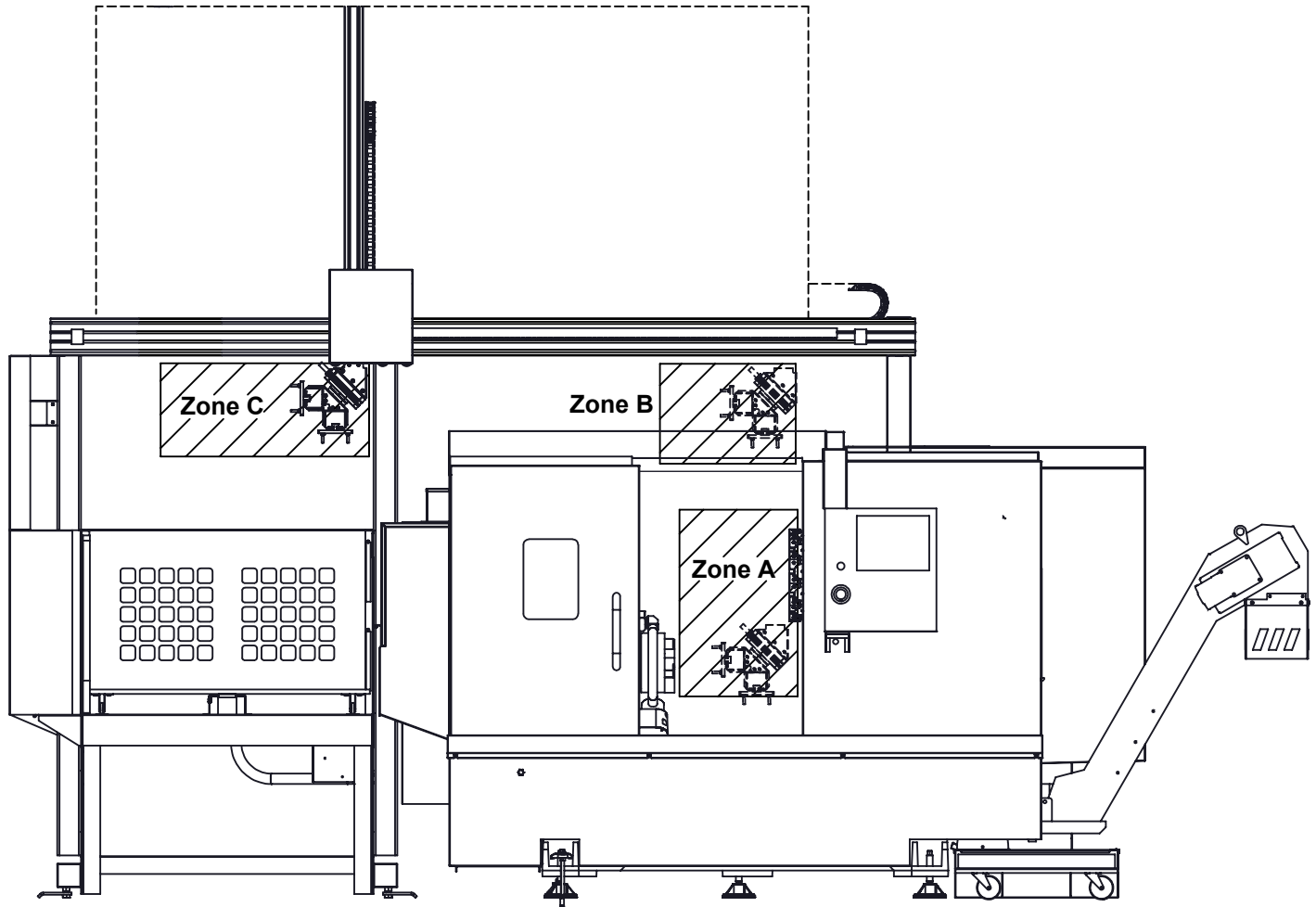
Table Space available for Custom Template

- \*\*Custom templates can be made by the user with the following requirements
1. Allow adequate space between rows and columns for gripper clearance
  2. All rows must have equal spacing
  3. All columns must have equal spacing (but can be different than row spacing)

Gripper Finger Range			
	Lower Opening	Upper Opening	Both Openings
Position	Min Ø (Inch)	Min Ø (Inch)	Max Ø (Inch)
1	0.86	1.19	1.52
2	1.43	1.76	2.15
3	2.03	2.28	2.65
4	2.65	2.84	3.4
5	3.26	3.42	4.02
6	3.88	4.02	4.25

Gripper Finger Range (Metric)			
	Lower Opening	Upper Opening	Both Openings
Position	Min Ø (mm)	Min Ø (mm)	Max Ø (mm)
1	21.76	30.45	38.65
2	36.3	44.83	54.53
3	51.63	57.95	67.22
4	67.22	72.18	86.28
5	82.91	86.99	102.15
6	98.66	102.11	107.95





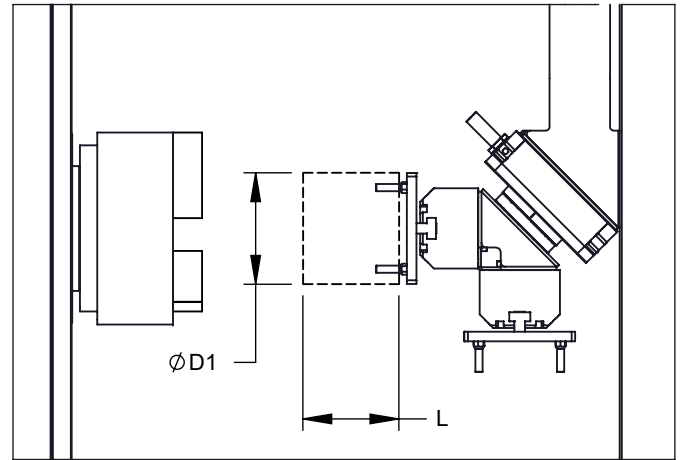
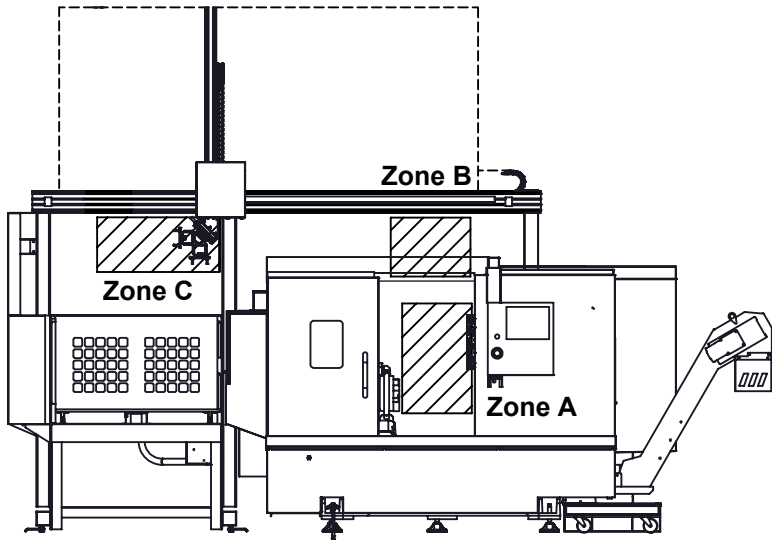
The APL can rotate from the Raw gripper to the Finished gripper in 3 zones - A, B or C. Choose a rotate zone that does not interfere with any machine components.

### **APL Gripper Rotate Zones**

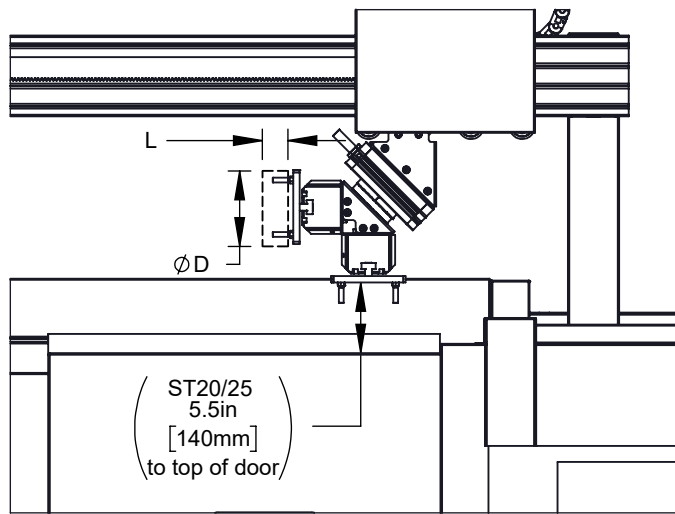
**Zone A** - Inside Machine

**Zone B** - Above Door (ST-10 / ST-15 only)

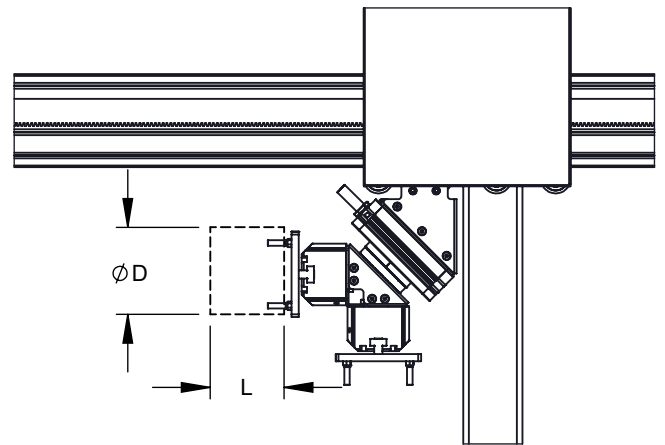
**Zone C** - Over APL Table



Zone A Detail



Zone B Detail

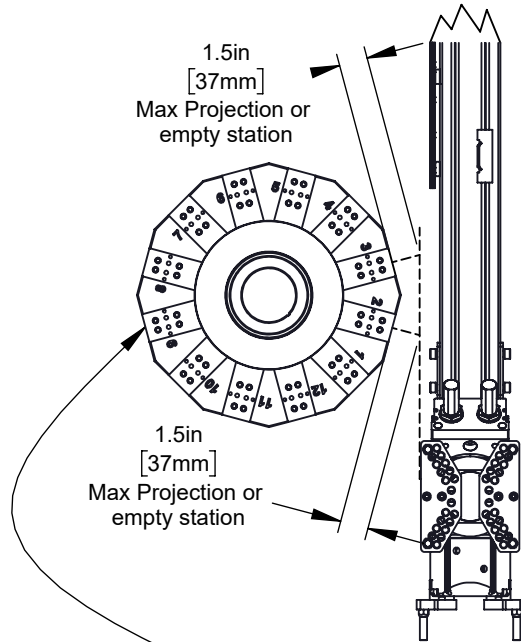


Zone C Detail

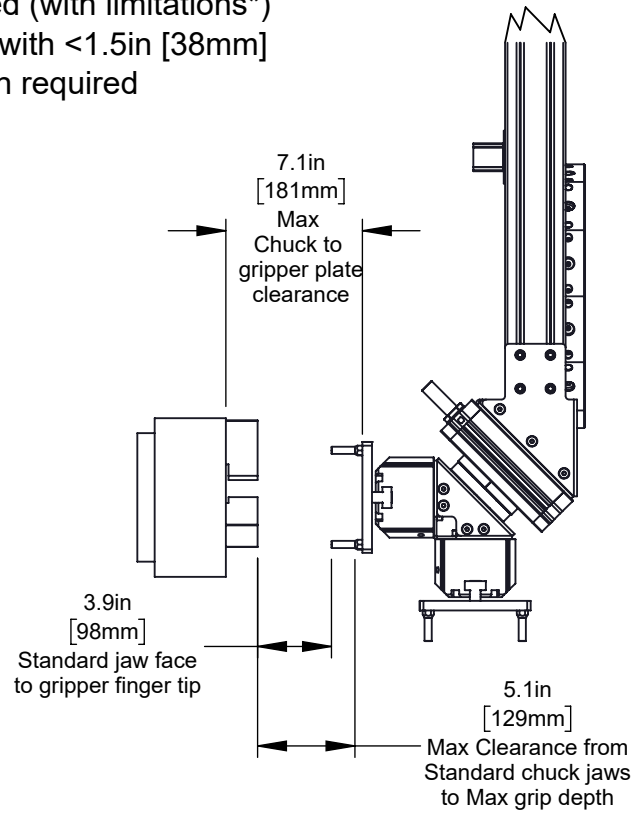
Zone	ST10/15/Y		ST20/25/Y	
	$\phi D$ Maximum	L Maximum	$\phi D$ Maximum	L Maximum
A	5.8in [147mm]	4.5in [127mm]	5.8in [147mm]	5.0in [127mm]
B	5.8in [147mm]	5.0in [127mm]	5.8in [147mm]	<b>2.0in [51mm]</b>
C	5.8in [147mm]	5.0in [127mm]	5.8in [147mm]	5.0in [127mm]

**ST-10/15  
BOT Turret**

0 Empty stations required (with limitations\*)  
\*Stick Tool in 2 Stations with <1.5in [38mm] turret projection required

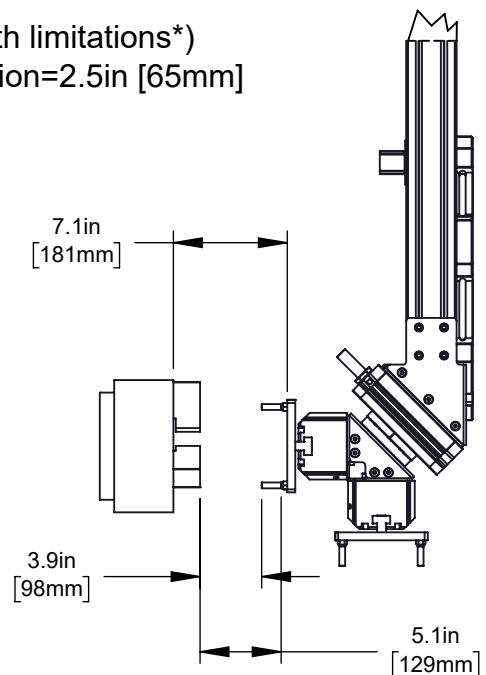
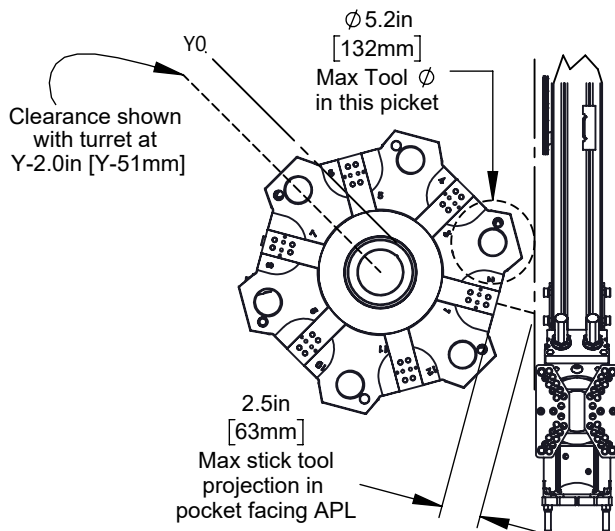


All other stations -  
No APL-Specific tool restrictions.  
See Machine Layout Drawing for work envelope



**ST-10Y/15Y  
Hybrid Turret**

0 Empty Stations Required (with limitations\*)  
\*Stick tool facing APL Max Projection=2.5in [65mm]

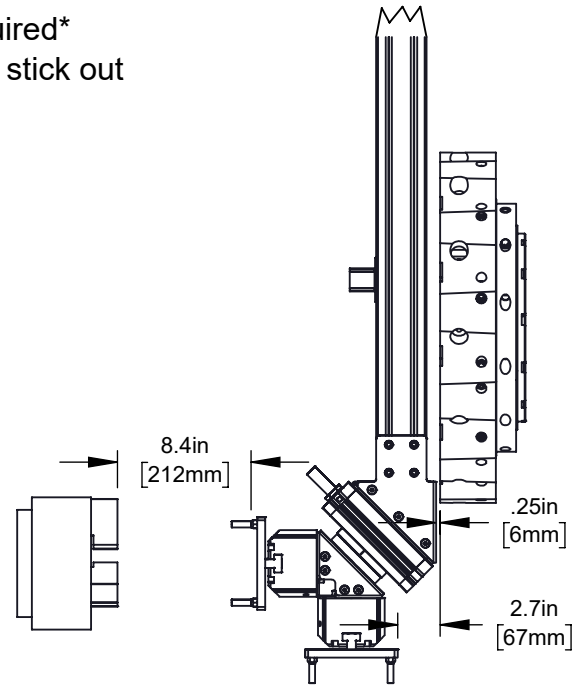
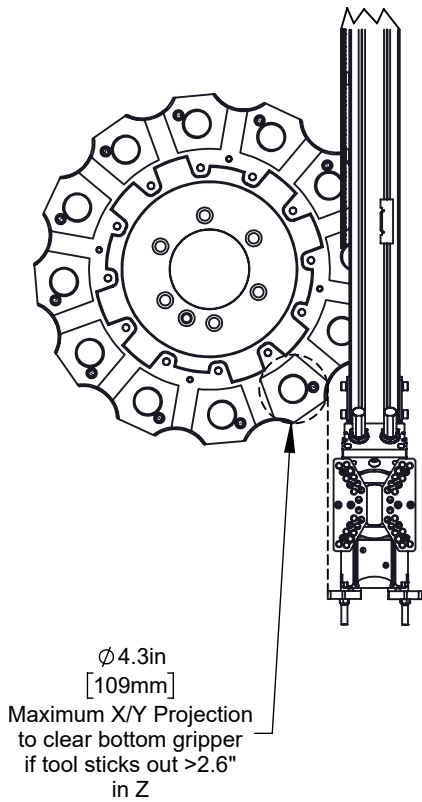


**\*Note** - Depending on part size, tool layout, part stickout, and work holding, it may be possible to move the APL arm closer to the chuck during the load/unload sequence and gain enough clearance to utilize all turret stations. Due to the large number of variables to account for, Haas cannot make a general statement about which conditions will allow all stations to be used. If there is any doubt about the usability of the 3 stations closest to the APL arm, please review your specific application with your local HFO Applications team. This applies to all turret types.



**ST20/25  
VDI Turret**

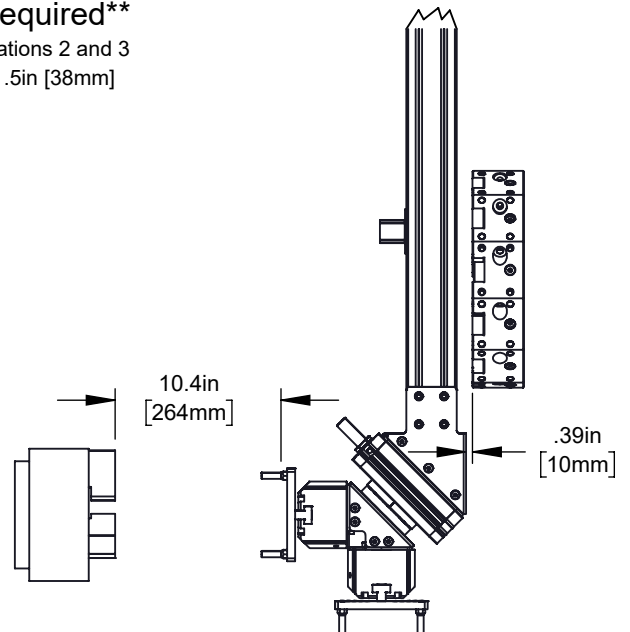
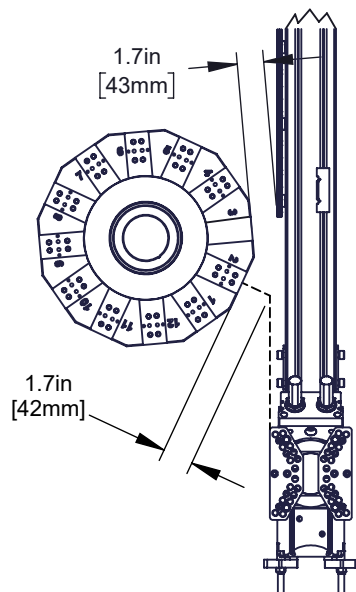
3 Empty Stations Required\*  
Plus Limitation on 4th tool stick out



**ST20/25  
BOT Turret**

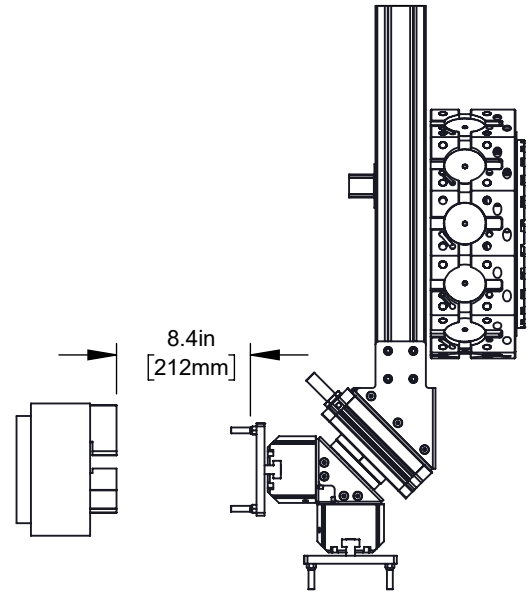
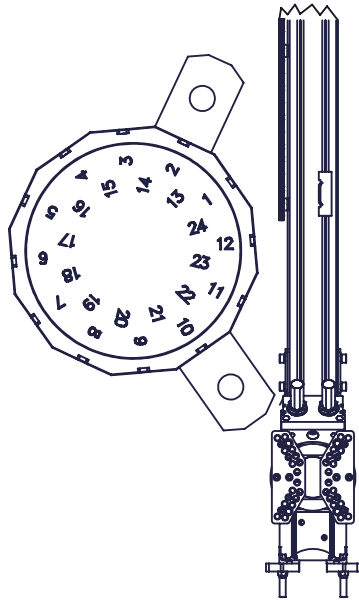
No Empty Stations Required\*\*

(\*\*As long as the stick tool in stations 2 and 3  
does not stick out more than 1.5in [38mm])

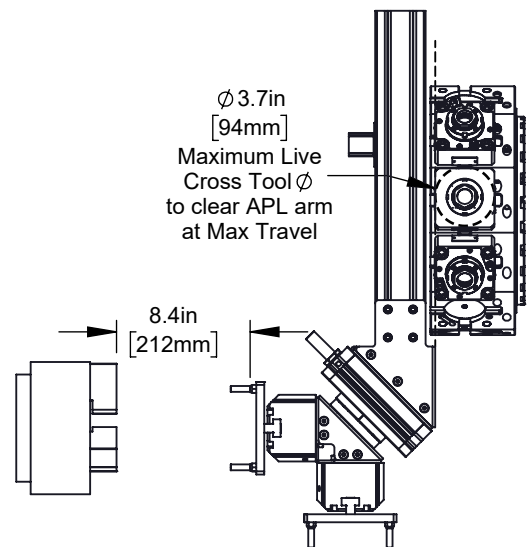
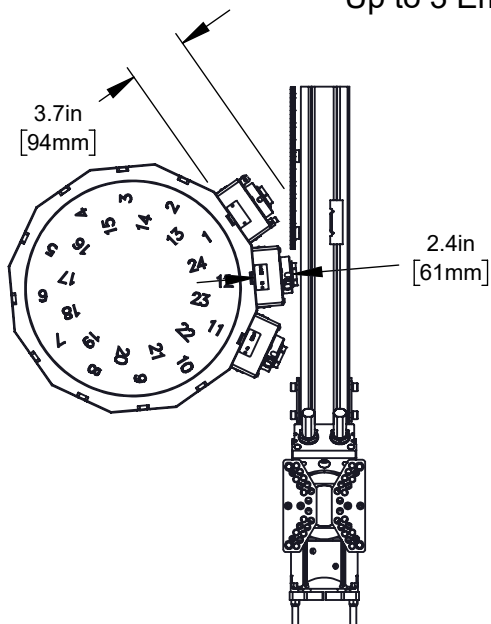


**\*Note** - Depending on part size, tool layout, part stickout, and work holding, it may be possible to move the APL arm closer to the chuck during the load/unload sequence and gain enough clearance to utilize all turret stations. Due to the large number of variables to account for, Haas cannot make a general statement about which conditions will allow all stations to be used. If there is any doubt about the usability of the 3 stations closest to the APL arm, please review your specific application with your local HFO Applications team. This applies to all turret types.

ST-20/25  
BMT65 Non-Y Axis Turret  
Up to 3 Empty Stations May Be Required\*  
(\*see note below)



ST-20/25  
BMT65 Y Axis Turret  
Up to 3 Empty Stations May Be Required\*  
(\*see note below)



**\*Note** - Depending on part size, tool layout, part stickout, and work holding, it may be possible to move the APL arm closer to the chuck during the load/unload sequence and gain enough clearance to utilize all turret stations. Due to the large number of variables to account for, Haas cannot make a general statement about which conditions will allow all stations to be used. If there is any doubt about the usability of the 3 stations closest to the APL arm, please review your specific application with your local HFO Applications team. This applies to all turret types.