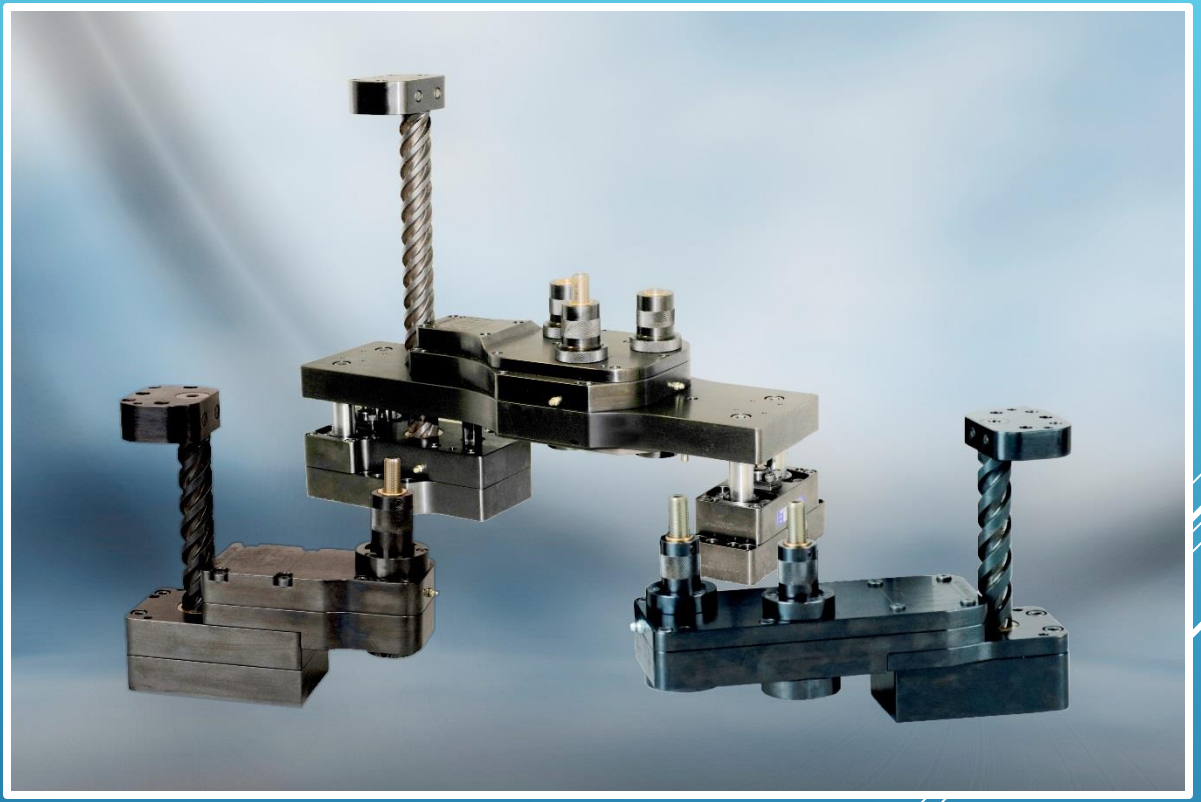
IN-DIE TAPPING 101 TRAINING

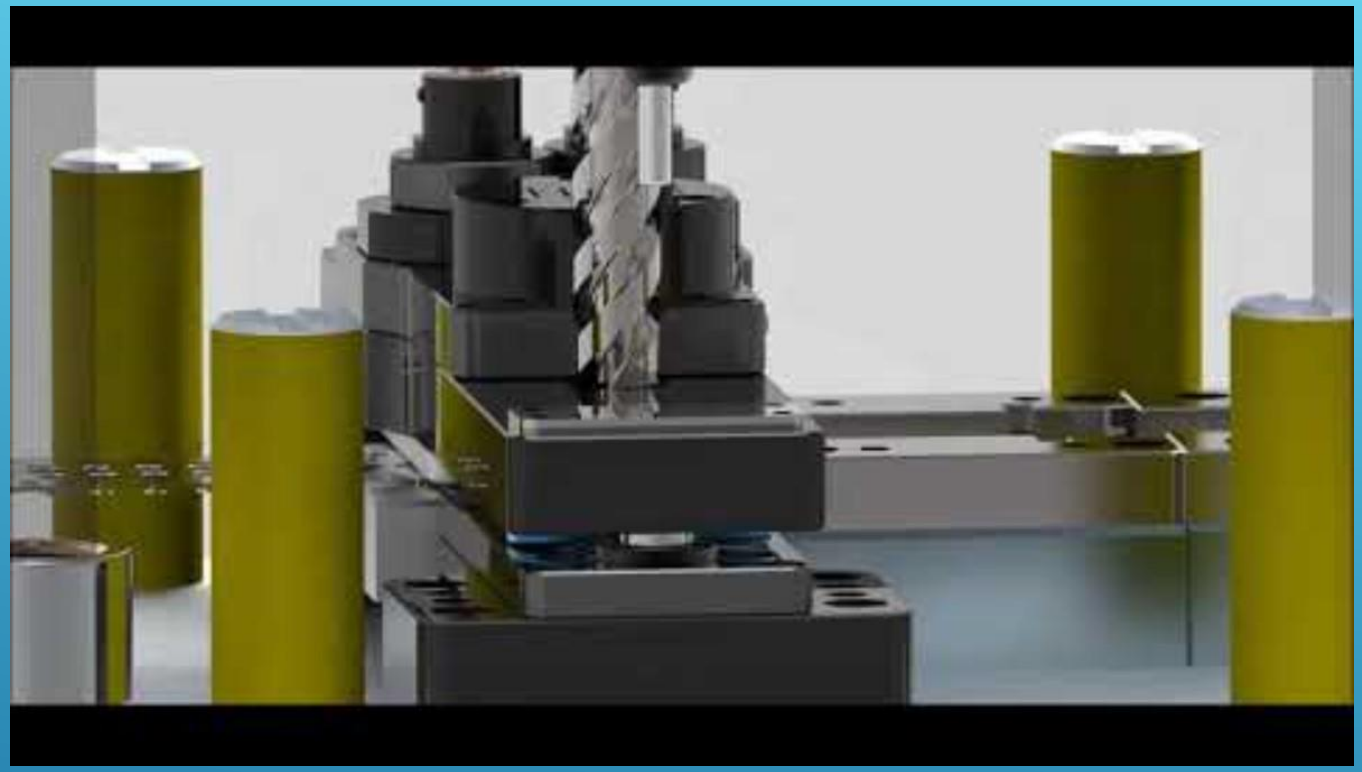
WHY IN-DIE TAPPING?

- Eliminate Double Handling
- Eliminate Extra Floor Space
- Eliminate Cost of Secondary Equipment
- Eliminate Labor Costs
- Reduce Delivery Time to customers
- Eliminate Untapped Parts
- **Eliminate Costly Secondary Tapping Operations**

UNIT STYLES

- Follow Along
- Standard Top Down
- Specialty
- ▶Servo





FOLLOW ALONG TAPPING HEAD VIDEO

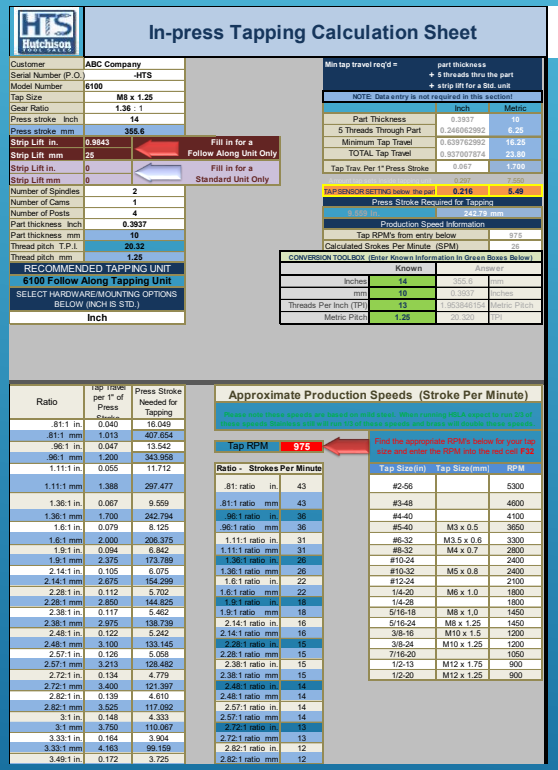
IN-DIE TAPPING CALCULATOR

- Press stroke needed for tapping
- Production speeds in SPM
- Link to online In-die Tapping Calculator
- https://www.hutchisontool.com/in-die-tapping-resources/

FOLLOW ALONG SAMPLE PARAMETERS

- Tap Size: M8 x 1.25
- Material Thickness(including extrusion): 10mm
- Strip Lift: 25mm
- Press Stroke: 14”
- Material: HSLA
- # of Holes: 2
- Tapping Calculator Spreadsheet

IN-DIE TAPPING CALCULATOR EXAMPLE



In-press Tapping Calculation Sheet

Customer	ABC Company
Serial Number (P.O.)	-HTS
Model Number	6100
Tap Size	M8 x 1.25
Gear Ratio	1.36 : 1
Press stroke Inch	14
Press stroke mm	355.6
Strip Lift in.	0.9843
Strip Lift mm	25
Strip Lift in.	0
Strip Lift mm	0
Number of Spindles	2
Number of Cams	1
Number of Posts	4
Part thickness Inch	0.3937
Part thickness mm	10
Thread pitch T.P.I.	20.32
Thread pitch mm	1.25
RECOMMENDED TAPPING UNIT	
6100 Follow Along Tapping Unit	
SELECT HARDWARE/MOUNTING OPTIONS BELOW (INCH IS STD.)	
Inch	

Fill in for a Follow Along Unit Only

Fill in for a Standard Unit Only

Min tap travel req'd = part thickness + 5 threads thru the part + strip lift for a Std. unit

NOTE: Data entry is not required in this section!

	Inch	Metric
Part Thickness	0.3937	10
5 Threads Through Part	0.246062992	6.25
Minimum Tap Travel	0.639762992	16.25
TOTAL Tap Travel	0.937007874	23.80
Tap Trav. Per 1° Press Stroke	0.067	1.700
TAP SENSOR SETTING below the part	0.216	5.49

Press Stroke Required for Tapping

9.559 in. 242.79 mm

Production Speed Information

Tap RPM's from entry below	975
Calculated Strokes Per Minute (SPM)	28

CONVERSION TOOLBOX (Enter Known Information in Green Boxes Below)

	Known	Answer	
Inches	14	355.6	mm
mm	10	0.3937	Inches
Threads Per Inch (TPI)	13	1.953846154	Metric Pitch
Metric Pitch	1.25	20.320	TPI

Ratio	Tap Travel per 1° of Press Stroke	Press Stroke Needed for Tapping
.81:1 in.	0.040	16.049
.81:1 mm	1.013	407.654
.96:1 in.	0.047	13.542
.96:1 mm	1.200	343.958
1.11:1 in.	0.055	11.712
1.11:1 mm	1.388	297.477
1.36:1 in.	0.067	9.559
1.36:1 mm	1.700	242.794
1.6:1 in.	0.079	8.125
1.6:1 mm	2.000	206.375
1.9:1 in.	0.094	6.842
1.9:1 mm	2.375	173.789
2.14:1 in.	0.105	6.075
2.14:1 mm	2.675	154.299
2.28:1 in.	0.112	5.702
2.28:1 mm	2.850	144.825
2.38:1 in.	0.117	5.462
2.38:1 mm	2.975	138.739
2.48:1 in.	0.122	5.242
2.48:1 mm	3.100	133.145
2.57:1 in.	0.126	5.058
2.57:1 mm	3.213	128.482
2.72:1 in.	0.134	4.779
2.72:1 mm	3.400	121.397
2.82:1 in.	0.139	4.610
2.82:1 mm	3.525	117.092
3:1 in.	0.148	4.333
3:1 mm	3.750	110.067
3.33:1 in.	0.164	3.904
3.33:1 mm	4.163	99.159
3.49:1 in.	0.172	3.725

Approximate Production Speeds (Stroke Per Minute)

Please note these speeds are based on mild steel. When running 6SLA expect to run 2/3 of these speeds. Stainless will run 1/3 of these speeds and brass will double these speeds.

Tap RPM 975

Find the appropriate RPM's below for your tap size and enter the RPM into the red cell F32

Ratio -	Strokes Per Minute
.81: ratio in.	43
.81:1 ratio mm	43
.96:1 ratio in.	36
.96:1 ratio mm	36
1.11:1 ratio in.	31
1.11:1 ratio mm	31
1.36:1 ratio in.	26
1.36:1 ratio mm	26
1.6:1 ratio in.	22
1.6:1 ratio mm	22
1.9:1 ratio in.	18
1.9:1 ratio mm	18
2.14:1 ratio in.	16
2.14:1 ratio mm	16
2.28:1 ratio in.	15
2.28:1 ratio mm	15
2.38:1 ratio in.	15
2.38:1 ratio mm	15
2.48:1 ratio in.	14
2.48:1 ratio mm	14
2.57:1 ratio in.	14
2.57:1 ratio mm	14
2.72:1 ratio in.	13
2.72:1 ratio mm	13
2.82:1 ratio in.	12
2.82:1 ratio mm	12

Tap Size(in)	Tap Size(mm)	RPM
#2-56		5300
#3-48		4600
#4-40		4100
#5-40	M3 x 0.5	3650
#6-32	M3.5 x 0.6	3300
#8-32	M4 x 0.7	2800
#10-24		2400
#10-32	M5 x 0.8	2400
#12-24		2100
1/4-20	M6 x 1.0	1800
1/4-28		1800
5/16-18	M8 x 1.0	1450
5/16-24	M8 x 1.25	1450
3/8-16	M10 x 1.5	1200
3/8-24	M10 x 1.25	1200
7/16-20		1050
1/2-13	M12 x 1.75	900
1/2-20	M12 x 1.25	900

PRESS FEED ANGLE CALCULATION

Press Stroke needed for tapping(1.36:1 ratio): 9.559”

Total press stroke: 14”

Press stroke available for feeding: 14” – 9.559”= 4.441”

Percentage of stroke needed for feeding: 4.441”/14”= .3172 (31.72%)

Feed angle as percentage of press stroke: 180 degrees x .3172= 57.096 degrees

Feed window available not to interfere with tapping cycle: 360 degrees – 57.096 degrees=302.904 deg

Feed window between 302.904 and 57.096 degrees

Feed window with safety built in: 310-50 degrees

QUESTIONS & DISCUSSION