

**THORSEN'S  
PRECISION GRINDING**

## **Ejector Pins**

*M-2 HSS  
Hardened-Through  
Standard Inch & Metric*

*H-13 Hotwork Steel  
Hardened-Through  
Standard Inch*

*H-13 Hotwork Steel  
Nitrided  
Standard Inch & Metric*

## **Core Pins**

*H-13 Hotwork Steel  
Standard Hardness & High Hardness*

## **Sleeves**

*H-13 Hotwork Steel  
Nitrided I.D. & O.D.  
Standard Inch*

## **Ejector Blades**

*H-13 Hotwork Steel  
Hardened-Through  
Standard Inch*

**THORSEN'S  
PRECISION  
GRINDING INC.**

20 E. Sixth Street, Gate 1, P.O. Box 71  
Waynesboro, PA 17268  
Tel. 717-765-9090 Fax 717-749-0300  
E-Mail: [thorsensgrinding@aol.com](mailto:thorsensgrinding@aol.com)  
Web Site: [www.thorsensgrinding.com](http://www.thorsensgrinding.com)

**Consumer Net Prices**



# Hardened-Through HSS Shoulder Ejector Pins

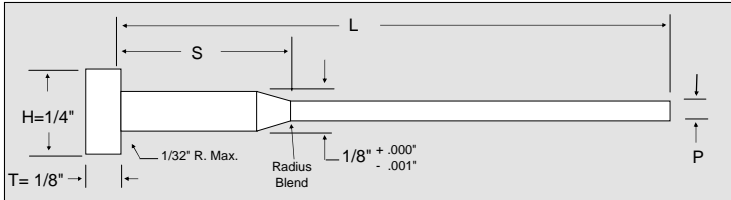
.0003" Diameter Tolerance



Type **STANDARD INCH FRACTIONAL DIAMETERS**

MATERIAL: M-2 HIGH SPEED STEEL, 60-63 Rc  
HARDENED THROUGH 60-63 Rc

Heads drawn for maximum toughness and easy machining

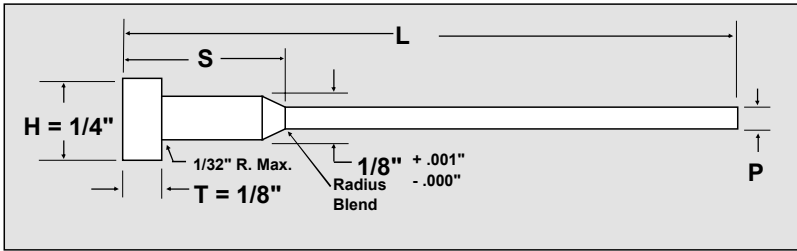


TOLERANCES			
P	H	T	L
-.0005" -.0008" (See actual diameter below)	+.000" -.010"	+.000" -.002"	+.375" -.000"

HOW TO ORDER: <i>Specify</i>		
Quantity	Cat. No.	Length
12	TT-5-2	L-6"
6	TT-8-1/2	L-8"

P		S	CATALOG NO.	NET PRICE EACH (US\$)	
NOMINAL PIN DIA.	ACTUAL PIN DIA.	SHOULDER LENGTH		L-6"	L-8"
1/32"	.0308" .0305"	1/2"	TT-2-1/2	8.64	-
		2"	TT-2-2	7.95	8.53
		3"	TT-2-3	-	8.53
		4"	TT-2-4	-	7.26
3/64"	.0464" .0461"	1/2"	TT-3-1/2	5.48	-
		2"	TT-3-2	5.36	6.92
		3"	TT-3-3	-	6.92
		4"	TT-3-4	-	6.22
1/16"	.0620" .0617"	1/2"	TT-5-1/2	4.72	8.76
		2"	TT-5-2	4.55	6.22
		3"	TT-5-3	-	6.22
		4"	TT-5-4	-	5.64
5/64"	.0776" .0773"	1/2"	TT-6-1/2	4.72	8.76
		2"	TT-6-2	4.55	6.22
		3"	TT-6-3	-	6.22
		4"	TT-6-4	-	5.64
3/32"	.0933" .0930"	1/2"	TT-7-1/2	4.38	6.92
		2"	TT-7-2	4.20	5.41
		3"	TT-7-3	-	5.41
		4"	TT-7-4	-	5.18
7/64"	.1089" .1086"	1/2"	TT-8-1/2	4.38	6.92
		2"	TT-8-2	4.20	5.41
		3"	TT-8-3	-	5.41
		4"	TT-8-4	-	5.18

## TTO / TTD Types **OVERSIZED AND FOUR-PLACE DECIMAL DIAMETERS**



Thorsen's M-2 High Speed Steel Hardened-Through Ejector Pins are now available from stock in the oversized diameters of +.0005", +.001", +.002", and +.005". Diameters are held to within .0003" total tolerance (-.0005"/-.0008" from the corresponding nominal oversize diameter). Non-Standard diameters in .0001" increments from .0309" shown in price table below are made to order. Call for delivery.

Diameters in .0001" increments under .0309" can also be made to order. Price and delivery upon request.

TOLERANCES				
P		H	T	L
STOCK OVERSIZED DIAMETERS	NON-STANDARD OVERSIZED .0001" DIAMETERS	+.000" -.010"	+.000" -.002"	+.375" -.000"
-.0005" -.0008" (See actual dia. below)	+.0000" -.0003"			

P	S	STOCK STANDARD OVERSIZED DIAMETERS					MADE-TO-ORDER NON-STANDARD .0001" INCREMENT DIAMETERS					
		CAT. NO.	ACTUAL PIN DIAMETER				NET PRICE EACH (US\$)		CAT. NO.	D +.0000" -.0003"	NET PRICE EACH (US\$)	
			+.0005"	+.001"	+.002"	+.005"	L-6"	L-8"			DIA. RANGE	L-6"
1/32"	1/2"	TTO-2					\$ 16.00	-	TTD-2	.0309" - .0463"	\$ 16.25	-
	2"		.0313"	.0318"	.0328"	.0358"	\$ 15.90	\$ 18.75			\$ 16.15	\$ 18.75
	3"		.0310"	.0315"	.0325"	.0355"	-	\$ 18.75			-	\$ 18.75
	4"						-	\$ 18.15			-	\$ 18.15
3/64"	1/2"	TTO-3					\$ 15.35	\$ 30.45	TTD-3	.0465" - .0619"	\$ 15.60	\$ 30.45
	2"		.0469"	.0474"	.0484"	.0514"	\$ 15.20	\$ 18.15			\$ 15.45	\$ 18.15
	3"		.0466"	.0471"	.0481"	.0511"	-	\$ 18.15			-	\$ 18.15
	4"						-	\$ 17.65			-	\$ 17.65
1/16"	1/2"	TTO-5					\$ 15.35	\$ 30.45	TTD-5	.0621" - .0775"	\$ 15.60	\$ 30.45
	2"		.0625"	.0630"	.0640"	.0670"	\$ 15.20	\$ 18.15			\$ 15.45	\$ 18.15
	3"		.0622"	.0627"	.0637"	.0667"	-	\$ 18.15			-	\$ 18.15
	4"						-	\$ 17.65			-	\$ 17.65
5/64"	1/2"	TTO-6					\$ 15.05	\$ 28.75	TTD-6	.0777" - .0932"	\$ 15.30	\$ 28.75
	2"		.0781"	.0786"	.0796"	.0826"	\$ 14.90	\$ 17.45			\$ 15.15	\$ 17.45
	3"		.0778"	.0783"	.0793"	.0823"	-	\$ 17.45			-	\$ 17.45
	4"						-	\$ 17.25			-	\$ 17.25
3/32"	1/2"	TTO-7					\$ 15.05	\$ 28.75	TTD-7	.0934" - .1088"	\$ 15.30	\$ 28.75
	2"		.0938"	.0943"	.0953"	.0983"	\$ 14.90	\$ 17.45			\$ 15.15	\$ 17.45
	3"		.0935"	.0940"	.0950"	.0980"	-	\$ 17.45			-	\$ 17.45
	4"						-	\$ 17.25			-	\$ 17.25
7/64"	1/2"	TTO-8					\$ 13.50	\$ 26.65	TTD-8	.1090" - .1244"	\$ 13.75	\$ 26.65
	2"		.1094"	.1099"	.1109"	.1139"	\$ 13.35	\$ 16.50			\$ 13.60	\$ 16.50
	3"		.1091"	.1096"	.1106"	.1136"	-	\$ 16.50			-	\$ 16.50
	4"						-	\$ 16.30			-	\$ 16.30

**How to order:**

Cat. No.-Shoulder +.0005 or +.001 or .002 or +.005 Length

Cat. No.-Shoulder D=.xxxx Length

**Examples**

TTO-5-3 +.0005 L-8

TTD-2-1/2 P=.0400 L-6

### Quantity Discounts

(LARGER QUANTITIES PER QUOTATION)

STOCK STANDARD OVERSIZED DIAMETERS						NON-STANDARD .0001" INCREMENT DIAMETERS					
100 +	50 - 99	25 - 49	10 - 24	5 - 9	1 - 4 pcs.	100 +	50 - 99	25 - 49	10 - 24	5 - 9	1 - 4 pcs.
Per Quote	-\$9.00	-\$7.50	-\$5.00	-\$3.00	Net	Per Quote	-\$9.00	-\$7.50	-\$5.00	-\$3.00	Net



# Hardened-Through HSS Straight Ejector Pins



Type

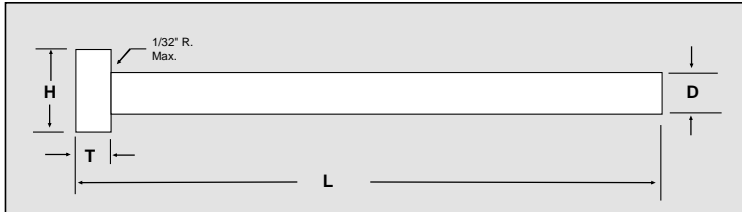
STANDARD INCH FRACTIONAL DIAMETERS

.0003" Tolerance

**MATERIAL: M-2 HIGH SPEED STEEL**

**HARDENED THROUGH 60-63 Rc**

Heads drawn for maximum toughness and easy machining



TOLERANCES			
D	H	T	L
-.0005"/-.0008" (See actual dia. below)	+.000" -.010"	+.000" -.002"	+.375" -.000"

How to order: Specify		
Qty.	Cat. No.	Length
12	TT-9	L-6
6	TT-13	L-8

D		H	T	CAT. NO.	NET PRICE EACH (US\$)				
NOMINAL PIN DIA.	ACTUAL PIN DIA.	HEAD DIA.	HEAD THICK.		L-6"	L-8"	L-10"		
1/32"	.0308" .0305"	1/4"	1/8"	TT-2	8.64	-	-		
3/64"	.0464" .0461"			TT-3	5.48	-	-		
1/16"	.0620" .0617"			TT-5	4.73	8.76	-		
5/64"	.0776" .0773"			TT-6	4.73	8.76	-		
3/32"	.0933" .0930"			TT-7	4.38	6.92	-		
7/64"	.1089" .1086"			TT-8	4.38	6.92	-		
1/8"	.1245" .1242"			TT-9	2.97	4.66	-		
9/64"	.1401" .1398"			TT-10	3.07	4.94	-		
5/32"	.1558" .1555"			9/32"	5/32"	TT-11	3.07	5.76	-
11/64"	.1714" .1711"			11/32"	3/16"	TT-12	4.03	5.76	-
3/16"	.1870" .1867"	3/8"	TT-13	4.03		5.76	8.07		
13/64"	.2026" .2023"	13/32"	TT-14	4.03		5.76	8.01		
7/32"	.2183" .2180"		TT-15	4.03		5.76	8.25		
15/64"	.2339" .2336"		TT-16	4.03		5.76	8.25		
1/4"	.2495" .2492"		7/16"	TT-17		4.03	5.76	9.18	
9/32"	.2807" .2804"	7/16"	1/4"	TT-19		6.88	10.20	13.74	
5/16"	.3120" .3117"	1/2"		TT-21		6.50	9.60	12.99	
11/32"	.3433" .3430"	9/16"		TT-23		8.00	11.40	15.99	
3/8"	.3745"	5/8"		TT-25		8.75	13.11	17.49	
	.3742"								

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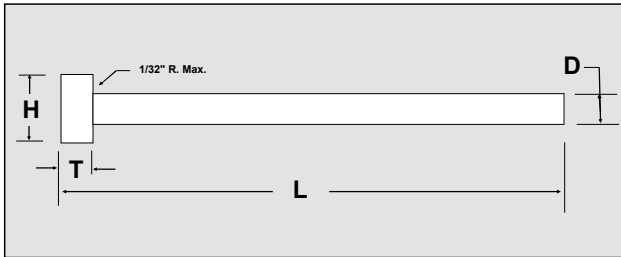


# Straight Ejector Pins

**Hardened-Through HSS .0003" Tolerance**

# TTO / TTD

**Types OVERSIZED AND FOUR-PLACE DECIMAL DIAMETERS**



TOLERANCES				
D		H	T	L
STOCK OVERSIZED DIAMETERS	NON-STANDARD OVERSIZED .0001" DIAMETERS	+ .000" - .010"	+ .000" - .002"	+ .375" - .000"
- .0005" - .0008" (See actual dia. below)	+ .0000" - .0003"			

D	H	T	STOCK STANDARD OVERSIZED DIAMETERS						MADE-TO-ORDER NON-STANDARD .0001" INCREMENT OVERSIZED DIAMETERS								
			CAT. NO.	ACTUAL PIN DIAMETER				NET PRICE EACH			CAT. NO.	D + .0000" - .0003" DIA. RANGE	NET PRICE EACH				
NOMINAL PIN DIA.	HEAD DIA.	HEAD THICK		+ .0005"	+ .001"	+ .002"	+ .005"	L-6"	L-8"	L-10"			DIA. RANGE	L-6"	L-8"	L-10"	
1/32"	1/4"	1/8"	TTO-2	.0313" .0310"	.0318" .0315"	.0328" .0325"	.0358" .0355"	\$ 16.50	-	-	TTD-2	.0309" - .0463"	\$ 16.50	-	-		
3/64"			TTO-3	.0469" .0466"	.0474" .0471"	.0484" .0481"	.0514" .0511"	\$ 15.90	\$ 31.00	-	TTD-3	.0465" - .0619"	\$ 15.90	\$ 31.00	-		
1/16"			TTO-5	.0625" .0622"	.0630" .0627"	.0640" .0637"	.0670" .0667"	\$ 15.90	\$ 31.00	-	TTD-5	.0621" - .0775"	\$ 15.90	\$ 31.00	-		
5/64"			TTO-6	.0781" .0778"	.0786" .0783"	.0796" .0793"	.0826" .0823"	\$ 15.50	\$ 29.30	-	TTD-6	.0777" - .0932"	\$ 15.50	\$ 29.30	-		
3/32"			TTO-7	.0938" .0935"	.0943" .0940"	.0953" .0950"	.0983" .0980"	\$ 15.50	\$ 29.30	-	TTD-7	.0934" - .1088"	\$ 15.50	\$ 29.30	-		
7/64"			TTO-8	.1094" .1091"	.1099" .1096"	.1109" .1106"	.1139" .1136"	\$ 13.95	\$ 27.10	-	TTD-8	.1090" - .1244"	\$ 13.95	\$ 27.10	-		
1/8"			TTO-9	.1250" .1247"	.1255" .1252"	.1265" .1262"	.1295" .1292"	\$ 13.95	\$ 27.15	-	TTD-9	.1246" - .1400"	\$ 13.95	\$ 27.15	-		
9/64"			TTO-10	.1406" .1403"	.1411" .1408"	.1421" .1418"	.1451" .1448"	\$ 13.95	\$ 27.15	-	TTD-10	.1402" - .1557"	\$ 13.95	\$ 27.15	-		
5/32"			9/32"	5/32"	TTO-11	.1563" .1560"	.1568" .1565"	.1578" .1575"	.1608" .1605"	\$ 15.25	\$ 28.25	-	TTD-11	.1559" - .1713"	\$ 15.25	\$ 28.25	-
11/64"			11/32"	3/16"	TTO-12	.1719" .1716"	.1724" .1721"	.1734" .1731"	.1764" .1761"	\$ 15.25	\$ 28.25	-	TTD-12	.1715" - .1869"	\$ 15.25	\$ 28.25	-
3/16"	3/8"	TTO-13	.1875" .1872"		.1880" .1877"	.1890" .1887"	.1920" .1917"	\$ 15.25	\$ 28.25	\$ 36.00	TTD-13	.1871" - .2025"	\$ 15.25	\$ 28.25	\$ 36.00		
13/64"	13/32"	TTO-14	.2031" .2028"		.2036" .2033"	.2046" .2043"	.2076" .2073"	\$ 15.25	\$ 28.25	\$ 36.00	TTD-14	.2027" - .2182"	\$ 15.25	\$ 28.25	\$ 36.00		
7/32"		TTO-15	.2188" .2185"		.2193" .2190"	.2203" .2200"	.2233" .2230"	\$ 15.25	\$ 28.25	\$ 36.00	TTD-15	.2184" - .2338"	\$ 15.25	\$ 28.25	\$ 36.00		
15/64"	7/16"	TTO-16	.2344" .2341"		.2349" .2346"	.2359" .2356"	.2389" .2386"	\$ 15.25	\$ 28.25	\$ 36.00	TTD-16	.2340" - .2494"	\$ 15.25	\$ 28.25	\$ 36.00		
1/4"		TTO-17	.2500" .2497"		.2505" .2502"	.2515" .2512"	.2545" .2542"	\$ 15.25	\$ 28.25	\$ 37.00	TTD-17	.2496" - .2544"	\$ 15.25	\$ 28.25	\$ 37.00		
9/32"	7/16"	1/4"	TTO-19		.2812" .2809"	.2817" .2814"	.2827" .2824"	.2857" .2854"	\$ 18.00	-	\$ 38.00	TTD-19	.2808" - .2856"	\$ 18.00	-	\$ 38.00	
5/16"	1/2"		TTO-21		.3125" .3122"	.3130" .3127"	.3140" .3137"	.3170" .3167"	\$ 18.00	-	\$ 38.00	TTD-21	.3121" - .3169"	\$ 18.00	-	\$ 38.00	
11/32"	9/16"		TTO-23		.3438" .3435"	.3443" .3440"	.3453" .3450"	.3483" .3480"	\$ 19.00	-	\$ 39.00	TTD-23	.3434" - .3482"	\$ 19.00	-	\$ 39.00	
3/8"	5/8"		TTO-25		.3750" .3747"	.3755" .3752"	.3765" .3762"	.3795" .3792"	\$ 19.00	-	\$ 39.00	TTD-25	.3746" - .3794"	\$ 19.00	-	\$ 39.00	

**How to order:**

Cat. No. +.0005", or +.001", or +.002", or +.005

Cat. No. D= .xxxx Length

**Examples**

TTO-9 +.0005 L-8

TTD-11 D= .1575 L-6

**Quantity Discounts**

Larger quantities per quotation

**STOCK OVERSIZED DIAMETERS**

**NON-STANDARD .0001" INCREMENT DIAMETERS**

	100 +	50 - 99	24 - 49	10 - 24	5 - 9	1 - 4 pcs.		100 +	50 - 99	25 - 49	10 - 24	5 - 9	1 - 4
6" Length	Per quote	- \$9.00	- \$7.50	- \$5.00	- \$3.00	Net	Per quote	- \$9.00	- \$7.50	- \$5.00	- \$3.00	Net	
8" Length		- \$19.00	- \$17.50	- \$15.00	- \$10.00			- \$19.00	- \$17.50	- \$15.00	- \$10.00		
10" Length		- \$19.00	- \$17.50	- \$15.00	- \$10.00			- \$19.00	- \$17.50	- \$15.00	- \$10.00		

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# Shoulder Ejector Pins

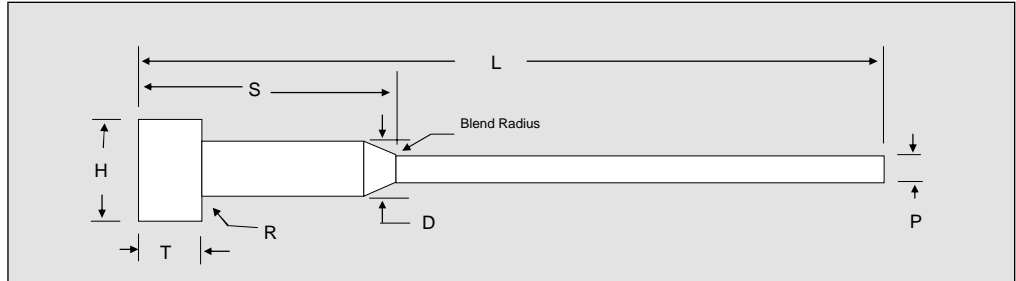
Hardened-Through HSS

MTT Type

*Euro Metric*

M-2 HIGH SPEED STEEL  
HARDENED THROUGH 60-63 Rc

Heads drawn for maximum  
toughness and easy machining



HOW TO ORDER Specify:		
Quantity.	Cat. No.	Length
25	MTT-10-50	L-150
50	MTT-20-75	L-150

D	H	T	P	S	CATALOG NO.	NET PRICE EACH (US\$)	
						LENGTHS	
						L-150	L-200
SHOULDER DIA. +0mm -0.1mm	HEAD DIA. +0mm -0.2mm	HEAD THICK. +0mm -0.05mm	PIN DIA. -.002mm -.008mm	SHOULDER LENGTH -1mm -2mm		+1mm -0mm	+1mm -0mm
2.0	4.0	2.0	0.8	50	MTT- 08 - 50	9.70	-
				75	MTT- 08 - 75	9.70	-
			0.9	50	MTT- 09 - 50	9.70	-
				75	MTT- 09 - 75	9.70	-
			1.0	35	MTT- 10 - 35	9.70	-
				50	MTT- 10 - 50	9.70	11.75
				75	MTT- 10 - 75	9.45	10.25
			1.1	50	MTT- 11 - 50	9.70	10.20
				75	MTT- 11 - 75	9.45	9.70
			1.2	50	MTT- 12 - 50	9.70	10.20
				75	MTT- 12 - 75	9.45	9.70
			1.3	50	MTT- 13 - 50	8.90	10.10
				75	MTT- 13 - 75	8.65	9.60
			1.4	50	MTT- 14 - 50	8.90	10.00
75	MTT- 14 - 75	8.65		9.50			
3.0	6.0	3.0	1.5	35	MTT- 15 - 35	7.90	10.30
				50	MTT- 15 - 50	7.90	8.80
				75	MTT- 15 - 75	7.65	8.30
			1.6	50	MTT- 16 - 50	7.55	8.70
				75	MTT- 16 - 75	7.50	8.20
			1.7	50	MTT- 17 - 50	7.45	8.60
				75	MTT- 17 - 75	7.40	8.10
			1.8	50	MTT- 18 - 50	7.30	8.50
				75	MTT- 18 - 75	7.25	8.00
			1.9	50	MTT- 19 - 50	7.05	8.40
				75	MTT- 19 - 75	7.00	7.90
			2	50	MTT- 20 - 50	6.75	8.20
				75	MTT- 20 - 75	6.70	7.70
			2.2	50	MTT- 22 - 50	6.55	8.00
				75	MTT- 22 - 75	6.50	7.50
			2.5	35	MTT- 25 - 35	6.30	8.65
				50	MTT- 25 - 50	6.30	7.65
				75	MTT- 25 - 75	6.25	7.15

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# Straight Ejector Pins

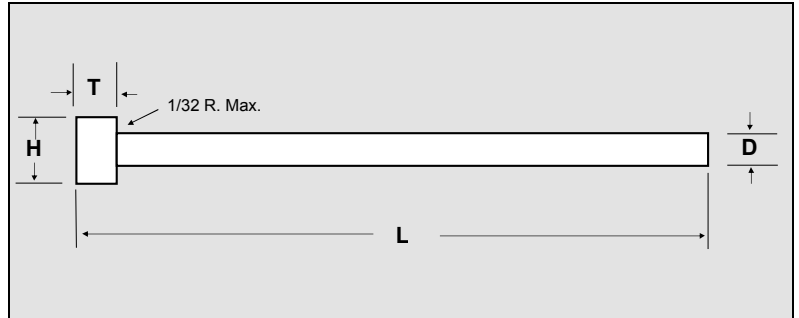
**Hardened-Through HSS**

**MTT** Type **Euro Metric**

**MATERIAL: M-2 HIGH SPED STEEL (1.3343)**

**HARDENED-THROUGH 60-63 Rc**

*Heads drawn for maximum toughness and easy machining*



TOLERANCES (METRIC ISO)		
PIN DIA. (D) g6		R
SIZE	TOLERANCE	
0 to 3 mm	- 0.002 mm - 0.008 mm	0.3 mm
3.5 to 6 mm	- 0.004 mm - 0.012 mm	0.3 mm
8.0 to 10 mm	- 0.002 mm - 0.008 mm	0.5 mm

HOW TO ORDER: Specify		
Quantity	Cat. No.	Length
60	MTT-5.0	L-160
12	MTT-1.5	L-125

D		H	T	CATALOG NO.	NET PRICE EACH (US\$)				
PIN DIA. g6 <small>(See table above for actual tolerances)</small>		HEAD DIA.	HEAD THICK.		LENGTHS + 2.0 mm - 0.0 mm				
NOMINAL SIZE mm	INCH CONVERSION	+ 0.0 mm - 0.2 mm	+ 0.0 mm - 0.5 mm		L-100	L-125	L-160	L-200	L-250
1.5	0.0591	3.0	1.5	<b>MTT-1.5</b>	3.20	3.60	3.99	5.59	-
2.0	0.0787	4.0	2.0	<b>MTT-2.0</b>	3.60	3.99	4.39	5.59	7.01
2.2	0.0866	4.0	2.0	<b>MTT-2.2</b>	4.13	4.39	4.69	5.85	10.78
2.5	0.0984	5.0	2.0	<b>MTT-2.5</b>	4.13	4.39	4.69	5.85	10.78
3.0	0.1181	6.0	3.0	<b>MTT-3.0</b>	4.06	4.29	4.52	5.62	10.78
3.2	0.1260	6.0	3.0	<b>MTT-3.2</b>	4.59	4.79	5.41	7.01	9.82
3.5	0.1378	8.0	3.0	<b>MTT-3.5</b>	4.59	4.79	5.41	7.01	9.82
4.0	0.1575	8.0	3.0	<b>MTT-4.0</b>	4.79	5.02	5.61	7.01	9.82
4.2	0.1654	8.0	3.0	<b>MTT-4.2</b>	5.02	5.54	5.94	7.24	9.82
4.5	0.1772	8.0	3.0	<b>MTT-4.5</b>	5.21	5.61	6.01	7.24	10.29
5.0	0.1969	10.0	3.0	<b>MTT-5.0</b>	5.21	5.61	6.01	7.24	10.29
5.2	0.2047	10.0	3.0	<b>MTT-5.2</b>	5.61	5.81	6.20	7.47	10.52
5.5	0.2165	10.0	3.0	<b>MTT-5.5</b>	5.61	5.81	6.20	7.47	11.67
6.0	0.2362	12.0	5.0	<b>MTT-6.0</b>	5.61	5.81	6.20	7.47	13.06
8.0	0.3150	14.0	5.0	<b>MTT-8.0</b>	8.42	8.61	9.01	9.60	16.01
9.0	0.3543	14.0	5.0	<b>MTT-9.0</b>	11.62	12.80	14.78	17.19	20.00
10.0	0.3937	16.0	5.0	<b>MTT-10.0</b>	11.19	11.62	12.41	14.94	19.21

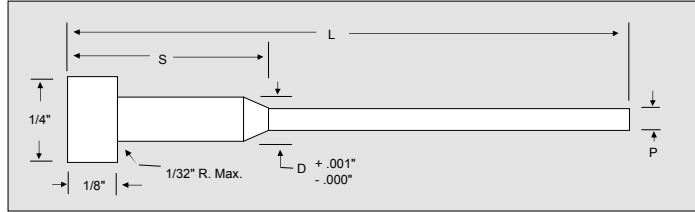
**THORSEN'S PRECISION GRINDING INC.**

20 E. Sixth Street, Gate 1, P.O. Box 71, Waynesboro, PA 17268

Tel. 717-765-9090 Fax 717-749-0300 thorsensgrinding@earthlink.net www.thorsensgrinding.com

## ERHX Type H-13 Hardened-Through

MATERIAL: H-13 HOTWORK DIE STEEL  
 CORE: HARDENED THROUGHOUT TO 50-55 Rc  
 SURFACE: ION NITRIDED TO 65-74 Rc  
 HEADS ANNEALED FOR EASY MACHINING



TOLERANCES			
P	H	T	L
-.0005"	+.000"	+.000"	+.375"
-.0008"	-.010"	-.002"	-.000"

HOW TO ORDER				
Specify:	Quantity	Catalog Number	If Oversize	Length
Examples:	24	ERHX-7-1/2		L-6"
	48	ERHX--5-2	+.005"	L-10"

P	S	CAT. NO.	NET PRICE EACH (US\$)					Pkg. Qty.
			L-6"	L-10"	L-14"			
NOMINAL PIN DIA.	ACTUAL PIN DIA.	SHOULDER LENGTH	STANDARD DIA.	STANDARD DIA.	+.005" DIA.	STANDARD DIA.	+.005" DIA.	
1/32"	.0308" .0305"	1/2"	ERHX-2-1/2	7.35	-	-	-	-
		2"	ERHX-2-2	7.25	-	-	-	-
		3"	ERHX-2-3	-	9.15	8.59	-	-
		4"	ERHX-2-4	-	9.15	8.59	-	-
3/64"	.0464" .0461"	1/2"	ERHX-3-1/2	4.25	-	-	-	-
		2"	ERHX-3-2	4.05	4.65	5.40	-	-
		3"	ERHX-3-3	-	5.10	6.15	-	-
		4"	ERHX-3-4	-	5.70	6.15	-	-
1/16"	.0620" .0617"	1/2"	ERHX-5-1/2	3.95	4.90	5.60	-	-
		2"	ERHX-5-2	3.85	4.50	5.40	6.20	7.15
		3"	ERHX-5-3	-	4.75	5.85	-	-
		4"	ERHX-5-4	-	5.30	6.45	-	-
5/64"	.0776" .0773"	1/2"	ERHX-6-1/2	3.95	4.90	5.70	-	-
		2"	ERHX-6-2	3.85	4.50	5.10	6.20	7.15
		3"	ERHX-6-3	-	4.75	5.85	-	-
		4"	ERHX-6-4	-	5.30	6.45	-	-
3/32"	.0933" .0930"	1/2"	ERHX-7-1/2	3.60	4.55	5.10	-	-
		2"	ERHX-7-2	3.40	4.30	4.90	5.80	6.75
		3"	ERHX-7-3	-	4.30	5.35	-	-
		4"	ERHX-7-4	-	4.75	5.85	-	-
7/64"	.1089" .1086"	1/2"	ERHX-8-1/2	3.60	4.55	5.10	-	-
		2"	ERHX-8-2	3.40	4.05	4.60	5.80	6.75
		3"	ERHX-8-3	-	4.30	5.35	-	-
		4"	ERHX-8-4	-	4.75	5.85	-	-

### THORSEN'S PRECISION GRINDING INC.

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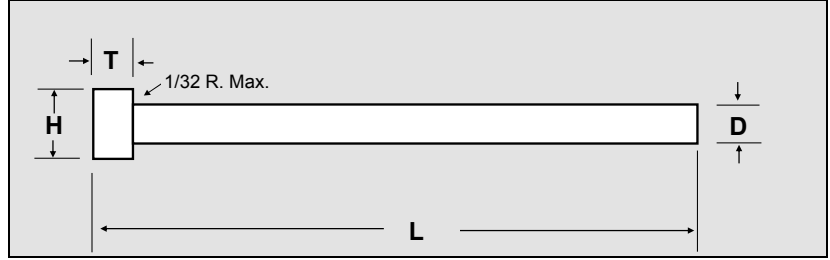


## ERHX Type H-13 Hardened-Through

MATERIAL: H-13 HOTWORK DIE STEEL  
 CORE: HARDENED THROUGH TO 50-55 RC  
 SURFACE: ION NITRIDED TO 65-74 RC  
 HEADS ANNEALED FOR EASY MACHINING

TOLERANCES			
D	H	T	L
-.0005"	+.000"	+.000"	+.375"
-.0008"	-.010"	-.002"	-.000"

HOW TO ORDER: Specify			
Quantity	Cat. No.	(If .005" O.S.)	Length
60	ERHX-25	+.005"	L-10"
12	ERHX-9		L-6"

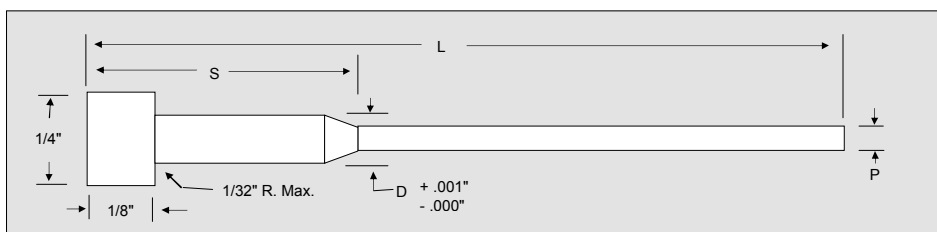


D		H	T	CAT. NO.	NET PRICE EACH (US\$)					PKG. QTY.
					L-6"	L-10"		L-14"		
NOMINAL SIZE	DECIMAL EQUIV.	HEAD DIA.	HEAD THICK.		STANDARD DIA.	STANDARD DIA.	+.005" OVERSIZE DIA.	STANDARD DIA.	+.005" OVERSIZE DIA.	
					3/64	0.0469	1/4	1/8	ERHX-3	
1/16	0.0625	ERHX-5	4.05	4.75	5.3	-			-	
5/64	0.0781	ERHX-6	4.05	4.75	5.30	-			-	
3/32	0.0938	ERHX-7	3.65	4.10	4.85	-			-	
7/64	0.1094	ERHX-8	3.65	4.10	4.85	-			-	
1/8	0.1250	ERHX-9	1.95	2.15	2.25	2.5			2.8	
9/64	0.1406	ERHX-10	2.15	2.35	3.15	3.05			-	
5/32	0.1563	9/32	5/32	ERHX-11	2.05	2.30	2.40	2.80	3.05	
11/64	0.1719	11/32	3/16	ERHX-12	2.30	2.50	3.35	3.05	-	
3/16	0.1875	3/8	3/16	ERHX-13	2.10	2.45	2.55	3.10	3.30	
13/64	0.2031	3/8	3/16	ERHX-14	2.55	2.70	-	3.25	-	
7/32	0.2188	13/32	3/16	ERHX-15	2.30	2.70	2.95	3.35	-	
15/64	0.2344	13/32	3/16	ERHX-16	2.85	3.00	-	3.70	-	
1/4	0.2500	7/16	3/16	ERHX-17	2.45	3.00	3.10	3.70	4.00	
17/64	0.2656	7/16	1/4	ERHX-18	3.25	3.35	-	4.05	-	
9/32	0.2813	7/16	1/4	ERHX-19	2.75	3.45	3.55	4.20	-	
19/64	0.2969	1/2	1/4	ERHX-20	3.65	3.80	-	4.70	-	
5/16	0.3125	1/2	1/4	ERHX-21	3.05	3.80	3.90	4.75	5.25	
21/64	0.3281	9/16	1/4	ERHX-22	4.00	4.20	-	5.30	-	
11/32	0.3438	9/16	1/4	ERHX-23	3.40	4.30	4.55	5.50	-	
23/64	0.3594	5/8	1/4	ERHX-24	4.40	4.75	-	5.95	-	
3/8	0.3750	5/8	1/4	ERHX-25	3.65	4.85	5.05	6.00	6.35	
25/64	0.3906	37/64	1/4	ERHX-26	5.35	5.90	-	-	-	
13/32	0.4063	11/16	1/4	ERHX-27	4.00	5.30	5.70	6.90	-	
27/64	0.4219	11/16	1/4	ERHX-28	5.25	6.75	-	-	-	
7/16	0.4375	11/16	1/4	ERHX-29	4.35	5.90	6.15	7.60	8.40	
29/64	0.4531	45/64	1/4	ERHX-30	5.70	7.05	-	-	-	
15/32	0.4688	3/4	1/4	ERHX-31	5.10	6.45	6.85	9.30	-	
31/64	0.4844	3/4	1/4	ERHX-32	6.20	8.15	-	-	-	
1/2	0.5000	3/4	1/4	ERHX-33	5.15	6.95	10.20	9.15	9.75	

### THORSEN'S PRECISION GRINDING INC.

## ERX TYPE H-13 Nitrided

MATERIAL: H-13 HOTWORK DIE STEEL  
 CORE: HARDENED THROUGHOUT TO 41-45 Rc  
 SURFACE: ION NITRIDED TO 65-74 Rc



Thorsen's ERX Nitrided Ejector Pins are made from the finest grade of H-13 hotwork die steel. The heads are hot forged and stress relieved for uniform grain flow and high tensile strength. The core is hardened through to 41-45 Rc and the surface is ion nitrided to 65-74 Rc. Diameters are precision ground to a high surface finish (6-10 rms) and .0003" tolerance.

TOLERANCES			
P	H	T	L
-.0005"	+.000"	+.000"	+.375"
-.0008"	-.010"	-.002"	-.000"

HOW TO ORDER				
Specify:	Quantity	Catalog Number	If Oversize	Length
Examples:	24	ERX-5-2		L-6"
	48	ERX-3-2	+.005"	L-10"

### STANDARD FRACTIONAL & .005" OVERSIZE DIAMETERS

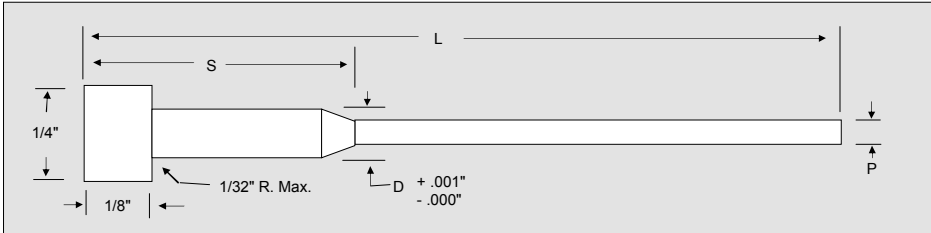
P	S	CATALOG NO.	NET PRICE EACH (US\$)					Pkg. Qty.	
			L-4"	L-6"	L-10"		L-14"		
NOMINAL PIN DIA.	ACTUAL PIN DIA.	SHOULDER LENGTH	STANDARD DIA.	STANDARD DIA.	STANDARD DIA.	+.005" DIA.	STANDARD DIA.		
1/32"	.0308" .0305"	1/2"	ERX-2-1/2	-	7.23	-	-	-	12
		2"	ERX-2-2	-	7.12	-	-		
		3"	ERX-2-3	-	-	8.93	-	-	
		4"	ERX-2-4	-	-	8.93	-	-	
3/64"	.0464" .0461"	1/2"	ERX-3-1/2	4.15	4.20	5.42	5.98	6.94	
		2"	ERX-3-2	4.06	4.11	4.79	5.76	6.72	
		3"	ERX-3-3	-	-	4.79	-	-	
		4"	ERX-3-4	-	-	4.79	-	-	
1/16"	.0620" .0617"	1/2"	ERX-5-1/2	3.91	3.96	5.07	5.64	6.53	
		2"	ERX-5-2	3.81	3.87	4.83	5.42	6.17	
		3"	ERX-5-3	-	-	4.64	-	-	
		4"	ERX-5-4	-	-	4.83	-	-	
5/64"	.0776" .0773"	1/2"	ERX-6-1/2	3.91	3.96	5.07	5.64	6.62	
		2"	ERX-6-2	3.81	3.87	4.83	5.42	6.27	
		3"	ERX-6-3	-	-	4.64	-	-	
		4"	ERX-6-4	-	-	4.83	-	-	
3/32"	.0933" .0930"	1/2"	ERX-7-1/2	3.51	3.57	4.60	5.18	6.27	
		2"	ERX-7-2	3.42	3.47	4.37	4.95	6.02	
		3"	ERX-7-3	-	-	4.18	-	-	
		4"	ERX-7-4	-	-	4.37	-	-	
7/64"	.1089" .1086"	1/2"	ERX-8-1/2	3.51	3.57	4.60	5.18	6.27	
		2"	ERX-8-2	3.42	3.47	4.37	4.95	5.90	
		3"	ERX-8-3	-	-	4.18	-	-	
		4"	ERX-8-4	-	-	4.37	-	-	

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## ERX TYPE H-13 Nitrided

MATERIAL: H-13 HOTWORK DIE STEEL  
 CORE: HARDENED THROUGHOUT TO 41-45 Rc  
 SURFACE: ION NITRIDED TO 65-74 Rc



Thorsen's ERX Nitrided Ejector Pins are made from the finest grade of H-13 hotwork die steel. The heads are hot forged and stress relieved for uniform grain flow and high tensile strength. The core is hardened through to 41-45 Rc and the surface is ion nitrided to 65-74 Rc. Diameters are precision ground to a high surface finish (6-10 rms) and .0003" tolerance.

TOLERANCES			
P	H	T	L
-.0005"	+.000"	+.000"	+.375"
-.0008"	-.010"	-.002"	-.000"

HOW TO ORDER				
Specify:	Quantity	Catalog Number	If Oversize	Length
Examples:	24	ERX-5-2		L-6"
	48	ERX-3-2	+.005"	L-10"

### STANDARD FRACTIONAL & .005" OVERSIZE DIAMETERS

P		S	CAT. NO.	NET PRICE EACH (US\$)					Pkg. Qty.
				L-4"	L-6"	L-10"		L-14"	
NOMINAL PIN DIA.	ACTUAL PIN DIA.	SHOULDER LENGTH	STANDARD DIA.	STANDARD DIA.	STANDARD DIA.	+.005" DIA.	STANDARD DIA.		
1/32"	.0308" .0305"	1/2"	ERX-2-1/2	-	7.23	-	-	-	12
		2"	ERX-2-2	-	7.12	-	-	-	
		3"	ERX-2-3	-	-	8.93	-	-	
		4"	ERX-2-4	-	-	8.93	-	-	
3/64"	.0464" .0461"	1/2"	ERX-3-1/2	4.15	4.20	5.42	5.98	6.94	
		2"	ERX-3-2	4.06	4.11	4.79	5.76	6.72	
		3"	ERX-3-3	-	-	4.79	-	-	
		4"	ERX-3-4	-	-	4.79	-	-	
1/16"	.0620" .0617"	1/2"	ERX-5-1/2	3.91	3.96	5.07	5.64	6.53	
		2"	ERX-5-2	3.81	3.87	4.83	5.42	6.17	
		3"	ERX-5-3	-	-	4.64	-	-	
		4"	ERX-5-4	-	-	4.83	-	-	
5/64"	.0776" .0773"	1/2"	ERX-6-1/2	3.91	3.96	5.07	5.64	6.62	
		2"	ERX-6-2	3.81	3.87	4.83	5.42	6.27	
		3"	ERX-6-3	-	-	4.64	-	-	
		4"	ERX-6-4	-	-	4.83	-	-	
3/32"	.0933" .0930"	1/2"	ERX-7-1/2	3.51	3.57	4.60	5.18	6.27	
		2"	ERX-7-2	3.42	3.47	4.37	4.95	6.02	
		3"	ERX-7-3	-	-	4.18	-	-	
		4"	ERX-7-4	-	-	4.37	-	-	
7/64"	.1089" .1086"	1/2"	ERX-8-1/2	3.51	3.57	4.60	5.18	6.27	
		2"	ERX-8-2	3.42	3.47	4.37	4.95	5.90	
		3"	ERX-8-3	-	-	4.18	-	-	
		4"	ERX-8-4	-	-	4.37	-	-	

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# Straight Ejector Pins

Standard Inch .0003" Tolerance

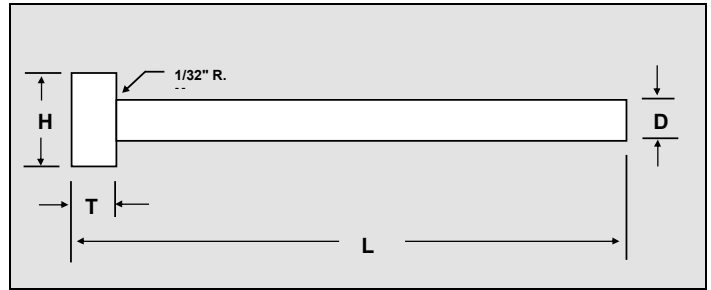
STANDARD FRACTIONAL, .005" OVERSIZE, AND LETTER SIZE DIAMETERS

## ERX TYPE *Nitrided*

MATERIAL: H-13 HOTWORK DIE STEEL  
 CORE: HARDENED THROUGHOUT TO 41-45 Rc  
 SURFACE: ION NITRIDED TO 65-74 Rc

TOLERANCES				
D		H	T	L
UP TO 1/2" DIA. & 14" LONG	-.0005" -.0008"	+.000"	+.000"	+.375"
OVER 1/2" DIA. & 14" LONG	-.0003" -.0008"	-.010"	-.002"	-.000"

HOW TO ORDER			
Specify:	Quantity	Cat. No.	Length
	60	ERX-17	L-6"
	12	ERX-25	L-10"



D		H	T	CATALOG NUMBER	L-4"	L-6"	L-10"	L-14"	L-18"	L-25"	L-36"	Pkg. Qty.		
NOMINAL SIZE	DECIMAL EQUIV.	HEAD DIA.	HEAD THICK.		STD. DIA.	STD. DIA.	STD. DIA.	+0.005" DIA.	STD. DIA.	+0.005" DIA.	STD. DIA.		STD. DIA.	
1/32	0.0313	1/4	1/8	ERX-2	-	-	-	-	-	-	-	12		
3/64	0.0469			ERX-3	4.24	4.30	-	-	-	-	-		-	
1/16	0.0625			ERX-5	3.95	4.00	5.17	6.02	-	-	-		-	
5/64	0.0781			ERX-6	3.95	4.00	4.83	6.02	-	-	-		-	
3/32	0.0938			ERX-7	3.56	3.61	4.06	5.28	-	-	-		-	
7/64	0.1094			ERX-8	3.56	3.61	4.06	5.28	-	-	-		-	
1/8	0.1250			ERX-9	1.90	1.96	2.20	2.48	2.75	2.95	6.38		-	-
9/64	0.1406			ERX-10	-	2.30	2.35	2.67	3.20	-	6.07		-	-
5/32	0.1563			ERX-11	1.99	2.05	2.30	2.59	2.96	3.26	4.13		-	-
11/64	0.1719			11/32	3/16	ERX-12	2.39	2.45	2.50	2.84	3.32		-	-
3/16	0.1875	3/8	3/16	ERX-13	2.05	2.10	2.45	2.76	3.26	3.50	4.28	6.12	-	
13/64	0.2031	3/8	3/16	ERX-14	-	-	2.74	-	3.52	-	-	-	-	
7/32	0.2188	13/32	3/16	ERX-15	2.19	2.24	2.73	3.06	3.62	-	-	6.63	-	
15/64	0.2344	13/32	3/16	ERX-16	-	-	3.00	-	3.88	-	-	-	-	
B	0.2380	7/16	3/16	ERX-B	-	-	4.39	-	-	-	-	-	-	
C	0.2420	7/16	3/16	ERX-C	-	-	4.44	-	-	-	-	-	-	
D	0.2460	7/16	3/16	ERX-D	-	-	4.59	-	-	-	-	-	-	
1/4	0.2500	7/16	3/16	ERX-17	2.34	2.39	2.98	3.34	3.86	4.27	4.95	5.60	7.13	-
F	0.2570	7/16	3/16	ERX-F	-	-	4.64	-	-	-	-	-	-	-
G	0.2610	7/16	1/4	ERX-G	-	-	4.69	-	-	-	-	-	-	-
17/64	0.2656	7/16	1/4	ERX-18	-	-	3.52	-	4.21	-	-	-	7.55	-
I	0.2720	7/16	1/4	ERX-I	-	-	4.85	-	-	-	-	-	-	-
J	0.2770	7/16	1/4	ERX-J	-	-	4.90	-	-	-	-	-	-	-
9/32	0.2813	7/16	1/4	ERX-19	2.77	2.87	3.65	3.75	4.35	-	5.80	-	8.05	-
L	0.2900	1/2	1/4	ERX-L	-	-	5.20	-	-	-	-	-	-	-
M	0.2950	1/2	1/4	ERX-M	-	-	5.25	-	-	-	-	-	-	-
19/64	0.2969	1/2	1/4	ERX-20	-	-	3.86	-	4.85	-	-	-	-	-
N	0.3020	1/2	1/4	ERX-N	-	-	5.36	-	-	-	-	-	-	-
5/16	0.3125	1/2	1/4	ERX-21	3.06	3.16	4.06	4.15	4.85	5.40	6.38	6.99	8.66	32.13
P	0.3230	9/16	1/4	ERX-P	-	-	5.66	-	-	-	-	-	-	-
21/64	0.3281	9/16	1/4	ERX-22	-	-	4.35	-	5.65	-	-	-	9.37	-
Q	0.3320	9/16	1/4	ERX-Q	-	-	5.87	-	-	-	-	-	-	-
R	0.3390	9/16	1/4	ERX-R	-	-	5.97	-	-	-	-	-	-	-
11/32	0.3438	9/16	1/4	ERX-23	3.51	3.56	4.55	4.70	5.73	-	-	-	9.70	-
23/64	0.3594	5/8	1/4	ERX-24	-	-	4.85	-	6.13	-	-	-	-	-
U	0.3680	5/8	1/4	ERX-U	-	-	6.48	-	-	-	-	-	-	-
3/8	0.3750	5/8	1/4	ERX-25	3.71	3.75	5.05	5.24	6.19	6.77	8.35	9.18	11.88	31.61
V	0.3770	5/8	1/4	ERX-V	-	-	6.63	-	-	-	-	-	-	-
W	0.3860	5/8	1/4	ERX-W	-	-	6.63	-	-	-	-	-	-	-
X	0.3970	11/16	1/4	ERX-X	-	-	6.99	-	-	-	-	-	-	-
Y	0.4040	11/16	1/4	ERX-Y	-	-	7.14	-	-	-	-	-	-	-
13/32	0.4063	11/16	1/4	ERX-27	4.11	4.15	5.63	5.90	7.28	-	9.60	-	13.82	-
7/16	0.4375	11/16	1/4	ERX-29	4.46	4.55	6.19	6.43	7.87	8.62	10.70	-	15.45	34.31
15/32	0.4688	3/4	1/4	ERX-31	5.73	5.83	6.78	7.02	11.29	-	11.82	-	17.58	-
1/2	0.5000	3/4	1/4	ERX-33	5.29	5.44	7.37	7.71	9.69	10.29	12.80	-	19.02	37.98
9/16	0.5625	13/16	1/4	ERX-35	-	6.72	9.17	-	11.68	-	15.25	-	21.82	-
5/8	0.6250	7/8	1/4	ERX-37	-	7.79	10.76	-	13.56	-	17.60	-	24.63	-
11/16	0.6875	15/16	1/4	ERX-39	-	10.26	12.69	-	17.89	-	20.76	-	28.75	-
3/4	0.7500	1	1/4	ERX-41	-	10.86	14.58	-	18.55	-	23.76	-	32.69	-
7/8	0.8750	1-1/8	1/4	ERX-45	-	23.30	27.40	-	46.55	-	65.75	-	84.85	-
1	1.0000	1-1/4	1/4	ERX-47	-	24.40	27.40	-	53.95	-	69.80	-	90.35	-

### THORSEN'S PRECISION GRINDING INC.

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Tel. 717-765-9090 Fax 717-749-0300 thorsensgrinding@earthlink.net www.thorsensgrinding.com

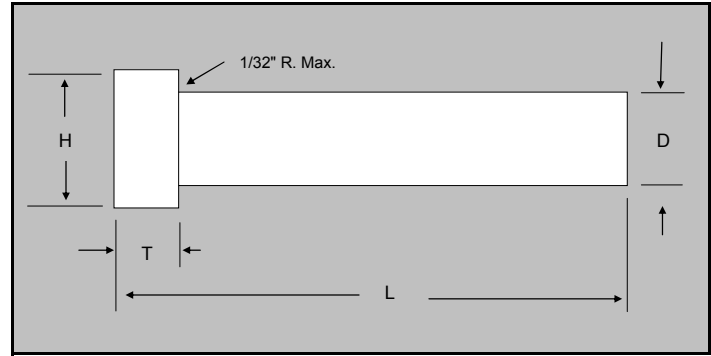


# STANDARD H-13 CORE PINS

**ERC Type** STANDARD HARDNESS 30-35 Rc

**ERCX Type** HIGH HARDNESS 50-55 Rc

30 STANDARD FRACTIONAL DIAMETERS



HOW TO ORDER			
Specify:	Qty.	Catalog No.	L-Length
Examples:	24	ERC--19	L-6"
	12	ERCX-17	L-3"

STANDARD HARDNESS				D	H	T	HIGH HARDNESS				PKG. QTY.
30-35 Rc							50-55 Rc				
CAT. NO.	NET PRICE EACH (US\$)			BODY DIA.	HEAD DIA.	HEAD DIA.	CAT. NO.	NET PRICE EACH (US\$)			
	L-3"	L-6"	L-10"					L-3"	L-6"	L-10"	
ERC- 3	4.90	5.51	-	3/64	1/4	1/8	ERCX- 3	5.10	5.76	-	12 PINS
ERC- 5	4.64	5.15	-	1/16	1/4	1/8	ERCX- 5	4.85	5.41	-	
ERC- 6	4.23	4.64	-	5/64	1/4	1/8	ERCX- 6	4.44	4.90	-	
ERC- 7	3.62	3.72	4.34	3/32	1/4	1/8	ERCX- 7	3.83	3.98	4.69	
ERC- 8	3.72	3.88	4.59	7/64	1/4	1/8	ERCX- 8	3.93	4.08	4.90	
ERC- 9	2.24	2.30	3.06	1/8	1/4	1/8	ERCX- 9	2.40	2.50	3.21	
ERC- 10	2.24	2.35	3.06	9/64	1/4	1/8	ERCX- 10	2.40	2.60	3.21	
ERC- 11	2.30	2.40	3.11	5/32	9/32	5/32	ERCX- 11	2.50	2.60	3.21	
ERC- 12	2.30	2.40	3.21	11/64	11/32	3/16	ERCX- 12	2.55	2.65	3.42	
ERC- 13	2.35	2.45	3.26	3/16	3/8	3/16	ERCX- 13	2.55	2.70	3.42	
ERC- 14	2.40	2.50	3.32	13/64	3/8	3/16	ERCX- 14	2.60	2.75	3.57	
ERC- 15	2.45	2.60	3.42	7/32	13/32	3/16	ERCX- 15	2.65	2.81	3.57	
ERC- 16	3.42	3.98	-	15/64	13/32	3/16	ERCX- 16	3.62	4.23	-	
ERC- 17	2.65	2.75	3.67	1/4	7/16	3/16	ERCX- 17	2.86	3.01	3.88	
ERC- 18	3.67	4.23	-	17/64	7/16	1/4	ERCX- 18	3.93	4.54	-	
ERC- 19	2.91	3.01	4.03	9/32	7/16	1/4	ERCX- 19	3.16	3.32	4.34	
ERC- 20	3.98	4.54	-	19/64	1/2	1/4	ERCX- 20	4.23	4.85	-	
ERC- 21	3.21	3.32	4.44	5/16	1/2	1/4	ERCX- 21	3.47	3.62	4.79	
ERC- 22	4.23	4.85	-	21/64	9/16	1/4	ERCX- 22	4.54	5.20	-	
ERC- 23	3.47	3.62	4.79	11/32	9/16	1/4	ERCX- 23	3.77	3.98	5.30	
ERC- 24	4.64	5.25	-	23/64	5/8	1/4	ERCX- 24	4.90	5.61	-	
ERC- 25	3.88	4.03	5.30	3/8	5/8	1/4	ERCX- 25	4.13	4.39	5.81	
ERC- 27	4.34	4.54	5.76	13/32	11/16	1/4	ERCX- 27	4.64	4.95	6.32	
ERC- 29	4.69	4.85	6.32	7/16	11/16	1/4	ERCX- 29	5.00	5.20	6.94	
ERC- 31	5.20	5.41	6.89	15/32	3/4	1/4	ERCX- 31	5.56	5.97	7.60	
ERC- 33	5.56	5.76	7.40	1/2	3/4	1/4	ERCX- 33	5.87	6.27	8.21	
ERC- 35	-	6.89	9.18	9/16	13/16	1/4	ERCX- 35	-	7.50	10.00	
ERC- 37	-	8.21	10.76	5/8	7/8	1/4	ERCX- 37	-	8.77	11.88	
ERC- 39	-	13.26	-	11/16	15/16	1/4	ERCX- 39	-	14.18	-	
ERC- 41	-	11.12	14.69	3/4	1	1/4	ERCX- 41	-	12.09	16.32	

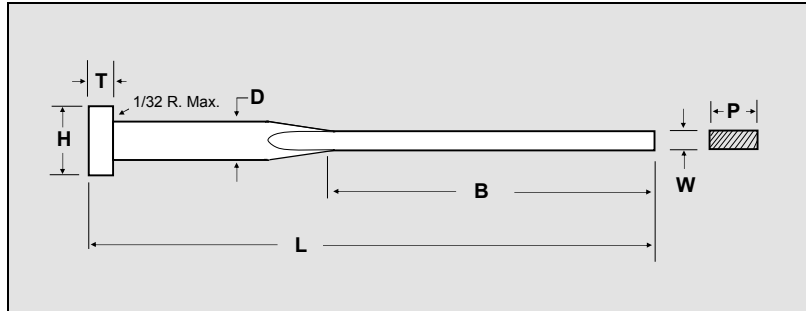
**THORSEN'S PRECISION GRINDING INC.**  
 20 E. Sixth Street, Gate 1, P.O. Box 71, Waynesboro, PA 17268  
 Tel. 717-765-9090 Fax 717-749-0300 thorsensgrinding@earthlink.net www.thorsensgrinding.com



# Ejector Blades U.S. Standard Inch

## EBE Type

MATERIAL: H-13 HOTWORK DIE STEEL  
 BLADE HARDNESS: 50-54 RC  
 HEADS ANNEALED FOR EASY MACHINING



### HOW TO ORDER: Specify

Quantity	Cat. No.	Length
60	EBE11-324 - 6	
12	EBE17-624 - 9	

CATALOG NO.	W	P	D	B	H	T	NET PRICE EACH (US\$)									
							L - STANDARD OVERALL LENGTH									
							+ .12" - .00"									
							5"	6"	6-3/8"	7-3/8"	8"	8-3/8"	9-3/8"	10-3/8"		
- 5	- 6	- 7	- 8	- 9	- 10											
	BLADE THICK.	BLADE WIDTH	PIN DIA.	BLADE LENGTH	HEAD DIA.	HEAD THICK.										
EBE9-244	.024	.100	.125	4-3/8	1/4	1/8	-	-	20.77	-	-	-	-	-	-	-
EBE9-323	.032	.100	.125	3	1/4	1/8	19.63	20.01	-	-	-	-	-	-	-	-
EBE9-324	.032	.100	.125	4-3/8	1/4	1/8	-	-	20.77	20.77	-	-	-	-	-	-
EBE9-463	.046	.100	.125	3	1/4	1/8	19.63	20.01	-	-	-	-	-	-	-	-
EBE9-464	.046	.100	.125	4-3/8	1/4	1/8	-	-	20.77	20.77	-	-	-	-	-	-
EBE11-244	.024	.140	.156	4-3/8	9/32	5/32	-	-	20.77	-	-	-	-	-	-	-
EBE11-323	.032	.140	.156	3	9/32	5/32	-	20.01	-	-	20.85	-	-	-	-	-
EBE11-324	.032	.140	.156	4-3/8	9/32	5/32	-	-	20.77	20.77	-	21.62	-	-	-	-
EBE11-463	.046	.140	.156	3	9/32	5/32	-	20.01	-	-	23.16	-	-	-	-	-
EBE11-464	.046	.140	.156	4-3/8	9/32	5/32	-	-	20.77	20.77	-	21.62	-	-	-	-
EBE13-244	.024	.172	.187	4-3/8	3/8	3/16	-	-	25.63	-	-	-	-	-	-	-
EBE13-323	.032	.172	.187	3	3/8	3/16	-	24.86	-	-	25.70	-	-	-	-	-
EBE13-324	.032	.172	.187	4-3/8	3/8	3/16	-	-	25.63	25.63	-	26.32	-	-	-	-
EBE13-463	.046	.172	.187	3	3/8	3/16	-	24.86	-	-	25.70	-	-	-	-	-
EBE13-464	.046	.172	.187	4-3/8	3/8	3/16	-	-	25.63	25.63	-	26.32	-	-	-	-
EBE13-623	.062	.172	.187	3	3/8	3/16	-	24.86	-	-	25.70	-	-	-	-	-
EBE13-624	.062	.172	.187	4-3/8	3/8	3/16	-	-	25.63	25.63	-	26.32	-	-	-	-
EBE17-323	.032	.234	.250	3	7/16	3/16	25.40	27.23	-	-	27.66	-	-	-	-	-
EBE17-324	.032	.234	.250	4-3/8	7/16	3/16	-	-	28.00	28.00	-	28.76	29.61	30.41	-	-
EBE17-463	.046	.234	.250	3	7/16	3/16	25.40	27.23	-	-	27.66	-	-	-	-	-
EBE17-464	.046	.234	.250	4-3/8	7/16	3/16	-	-	28.00	28.00	-	36.41	29.61	30.41	-	-
EBE17-623	.062	.234	.250	3	7/16	3/16	25.40	27.23	-	-	27.66	-	-	-	-	-
EBE17-624	.062	.234	.250	4-3/8	7/16	3/16	-	-	28.00	28.00	-	28.76	29.42	30.41	-	-
EBE21-324	.032	.296	.312	4-3/8	1/2	1/4	-	-	32.02	33.58	-	34.20	35.04	35.96	-	-
EBE21-464	.046	.296	.312	4-3/8	1/2	1/4	-	-	31.18	32.74	-	33.35	34.20	35.04	-	-
EBE21-624	.062	.296	.312	4-3/8	1/2	1/4	-	-	30.34	31.90	-	33.09	33.93	35.04	-	-
EBE21-784	.078	.296	.312	4-3/8	1/2	1/4	-	-	29.61	31.25	-	32.63	33.74	34.58	-	-
EBE25-324	.032	.359	.375	4-3/8	5/8	1/4	-	-	36.18	41.31	-	37.94	38.40	39.21	-	-
EBE25-464	.046	.359	.375	4-3/8	5/8	1/4	-	-	35.54	36.53	-	37.10	37.49	38.33	-	-
EBE25-624	.062	.359	.375	4-3/8	5/8	1/4	-	-	35.16	36.15	-	36.87	37.03	37.87	-	-
EBE25-784	.078	.359	.375	4-3/8	5/8	1/4	-	-	34.70	35.69	-	36.23	36.69	37.53	-	-
EBE33-625	.062	.484	.500	5-3/8	3/4	1/4	-	-	-	-	-	53.78	54.62	55.43	-	-
EBE33-785	.078	.484	.500	5-3/8	3/4	1/4	-	-	-	-	-	53.78	54.62	55.43	-	-

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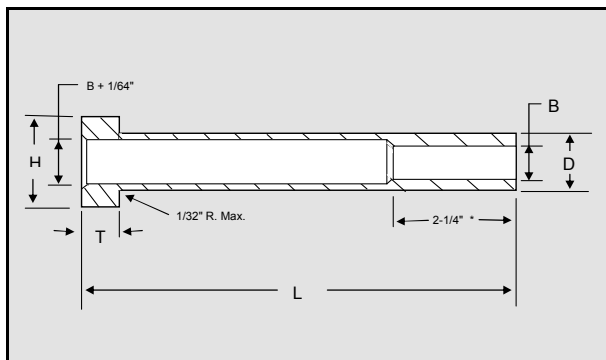
20 E. Sixth Street, Gate 1, P.O. Box 71, Waynesboro, PA 17268  
 Tel. 717-765-9090 Fax 717-749-0300 thorsensgrinding@earthlink.net www.thorsensgrinding.com

## ESL Type *Nitrided O.D. & I.D.*

Material: H-13, Nitrided O.D. & I.D. 65-74 Rc

TOLERANCES				
I.D.	O.D.	HEAD DIA.	HEAD THICK	O.A.L.
B	D	H	T	L
+0.005"	-0.003"	+0.000"	+0.000"	+0.125"
-0.0000"	-0.0008"	-0.010"	-0.002"	-0.000"

HOW TO ORDER: Specify		
Quantity	Catalog No.	Length
6	ESL-25	L-5"
24	ESL-17	L7"



CATALOG NUMBER	B	D	H	T	NET PRICE EACH (US\$)								
					I.D.	O.D.	HEAD DIA.	HEAD THICK.	LENGTHS				
									L-3"	L-4"	L-5"	L-6"	L-7"
ESL-13	3/32	3/16	3/8	3/16	26.35	28.65	31.45	33.95	37.00				
ESL-15	1/8	7/32	13/32	3/16	25.10	27.90	30.90	33.45	36.50				
ESL-17	5/32	1/4	7/16	3/16	-	21.30	22.30	24.10	26.35				
ESL-21	3/16	5/16	1/2	1/4	-	21.80	23.05	25.10	27.65				
ESL-23	7/32	11/32	9/16	1/4	-	22.05	23.60	25.60	28.40				
ESL-25	1/4	3/8	5/8	1/4	-	22.55	24.10	26.35	28.90				
ESL-29	5/16	7/16	11/16	1/4	-	23.05	25.60	28.15	30.90				
ESL-33	3/8	1/2	3/4	1/4	-	23.60	27.90	30.40	33.45				
ESL-37	7/16	5/8	7/8	1/4	-	25.35	30.40	35.50	38.50				
ESL-39	1/2	11/16	15/16	1/4	-	26.60	31.45	37.00	40.55				
ESL-41	9/16	3/4	1"	1/4	-	33.00	36.50	40.00	44.00				
ESL-45	5/8	7/8	1-1/8	1/4	-	37.50	41.00	45.00	49.00				
ESL-47	3/4	1"	1-1/4	1/4	-	41.50	45.50	49.50	54.00				

CATALOG NUMBER	B	D	H	T	NET PRICE EACH (US\$)								
					I.D.	O.D.	HEAD DIA.	HEAD THICK.	LENGTHS				
									L-8"	L-9"	L-10"	L-11"	L-12"
ESL-13	3/32	3/16	3/8	3/16	43.55	-	53.80	-	-				
ESL-15	1/8	7/32	13/32	3/16	40.25	-	49.00	-	-				
ESL-17	5/32	1/4	7/16	3/16	28.90	31.95	36.00	-	-				
ESL-21	3/16	5/16	1/2	1/4	30.40	33.45	37.50	41.50	46.50				
ESL-23	7/32	11/32	9/16	1/4	31.45	35.50	39.05	-	-				
ESL-25	1/4	3/8	5/8	1/4	31.95	36.00	40.05	44.50	49.50				
ESL-29	5/16	7/16	11/16	1/4	34.45	38.50	42.55	47.50	52.50				
ESL-33	3/8	1/2	3/4	1/4	37.00	44.05	45.60	50.50	56.00				
ESL-37	7/16	5/8	7/8	1/4	42.55	46.60	51.20	56.50	62.00				
ESL-39	1/2	11/16	15/16	1/4	44.60	49.15	54.20	59.50	65.00				
ESL-41	9/16	3/4	1"	1/4	48.00	53.00	57.50	63.00	68.50				
ESL-45	5/8	7/8	1-1/8	1/4	53.50	58.50	63.50	69.50	75.00				
ESL-47	3/4	1"	1-1/4	1/4	58.50	64.00	69.50	75.00	81.50				

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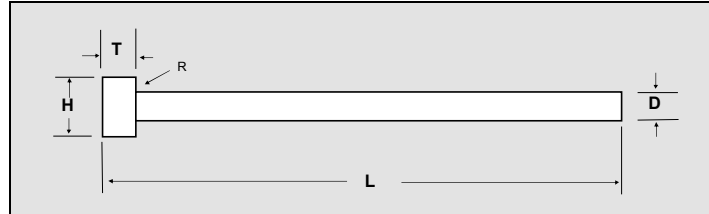
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 www.thorsensgrinding.com



# Straight Ejector Pins DIN Standard

## EME Type Nitrided Metric

MATERIAL: H-13 HOTWORK DIE STEEL (1.2344)  
 CORE: HARDENED THROUGH TO 41-45 RC  
 SURFACE: ION NITRIDED TO 65-74 RC



TOLERANCES (METRIC ISO)		
PIN DIA. (D) g6		R
SIZE	TOLERANCE	
0 to 3 mm	-.002 mm -.008 mm	0.3 mm
3.5 to 6 mm	-.002 mm -.008 mm	0.3 mm
6.5 to 10 mm	-.002 mm -.008 mm	0.5 mm
11 to 18 mm	-.006 mm -.017 mm	0.8 mm
20 to 25 mm	-.006 mm -.017 mm	0.8 mm

H	T	L
+ 0.0 mm - 0.2 mm	+ 0.0 mm - 0.5 mm	+ 2.0 mm - 0.0 mm

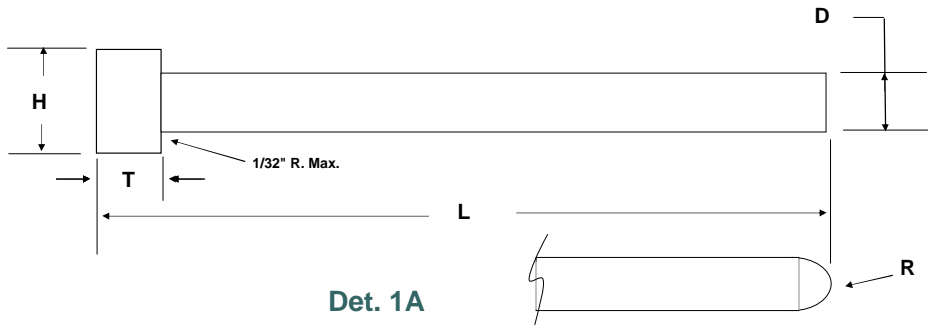
HOW TO ORDER: Specify		
Quantity	Cat. No.	Length
60	EME-2.5	L-160
12	EME-10.0	L-250

D		H	T	CAT. NO.	NET PRICE EACH (US\$)					PKG. QTY.
PIN DIA.		HEAD DIA.	HEAD THICK.		L-160	L-250	L-315	L-400	L-500	
NOMINAL SIZE	INCH CONVERSION									
2.0	0.0787	4	2	EME-2.0	3.32	3.42	-	-	-	12
2.5	0.0984	5	2	EME-2.5	3.37	3.67	4.28	-	-	
3.0	0.1181	6	3	EME-3.0	2.60	3.83	4.08	4.56	6.00	
3.5	0.1378	7	3	EME-3.5	3.98	4.69	5.66	5.19	6.30	
4.0	0.1575	8	3	EME-4.0	2.81	4.18	4.49	5.30	6.50	
4.5	0.1772	8	3	EME-4.5	4.39	5.51	6.27	6.27	7.40	
5.0	0.1969	10	3	EME-5.0	3.01	3.88	4.95	6.14	7.40	
5.5	0.2165	10	3	EME-5.5	4.64	5.87	6.73	6.42	7.70	
6.0	0.2362	12	5	EME-6.0	3.77	5.41	6.27	7.88	8.99	
6.5	0.2559	12	5	EME-6.5	5.15	7.19	8.31	8.85	11.69	
7.0	0.2756	12	5	EME-7.0	5.51	7.85	8.98	8.85	11.69	
8.0	0.3150	14	5	EME-8.0	4.90	7.19	8.52	10.61	11.86	
9.0	0.3543	14	5	EME-9.0	6.63	10.10	11.63	11.16	15.28	
10.0	0.3937	16	5	EME-10.0	5.76	8.67	10.15	12.50	15.28	
11.0	0.4331	16	5	EME-11.0	8.77	13.46	15.91	15.40	22.16	
12.0	0.4724	20	7	EME-12.0	6.78	9.79	13.46	14.41	20.68	
12.5	0.4921	20	7	EME-12.5	8.26	11.73	15.35	15.40	22.16	
14.0	0.5512	22	7	EME-14.0	8.57	12.65	18.45	26.68	-	6
16.0	0.6299	22	7	EME-16.0	9.59	14.59	19.00	27.55	-	
18.0	0.7087	26	7	EME-18.0	-	19.18	39.75	58.00	-	
20.0	0.7874	26	8	EME-20.0	-	22.44	40.50	59.45	-	4
25.0	0.9843	32	10	EME-25.0	-	39.22	56.75	83.52	-	2



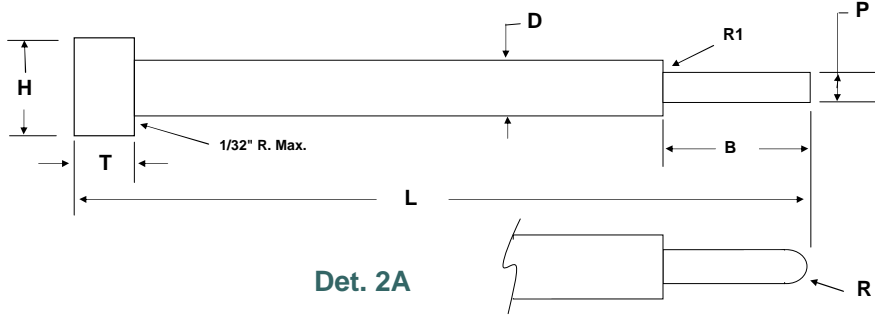
# Custom Pins & Blades

## Det. 1 Straight Pin



Det. 1A

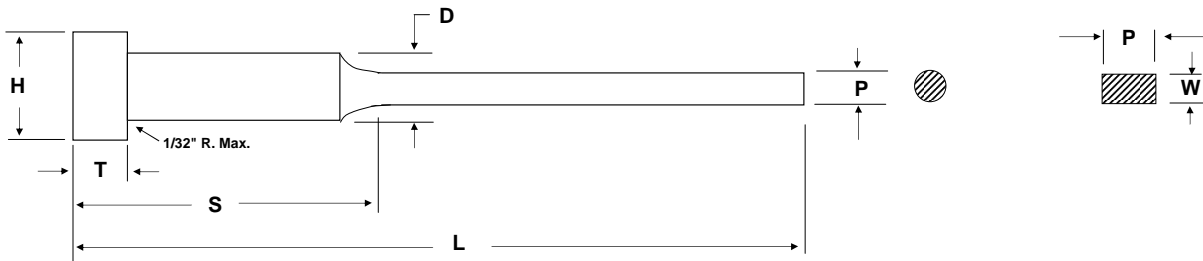
## Det. 2 Stepped Core Pin



Det. 2A

## Det. 3 Stepped Ejector Pin

## Det. 3A Ejector Blade



Qty.	Detail	Dimensions		Tolerances	
		D		+	-
		H		+	-
Material:		T		+	-
		L		+	-
Hardness:		S		+	-
		P		+	-
Modify Cat. No./Part No.	Mfr.	W		+	-
		R		+	-
Notes & Comments		R1		+	-
		B		+	-
Contact Name:		Company Name:		Address	
Phone No.		Fax No.		E-Mail Address:	
Date:					
Ref. R. F. Q No. <input type="checkbox"/> P. O. No.		Special Instructions/Requirements:			

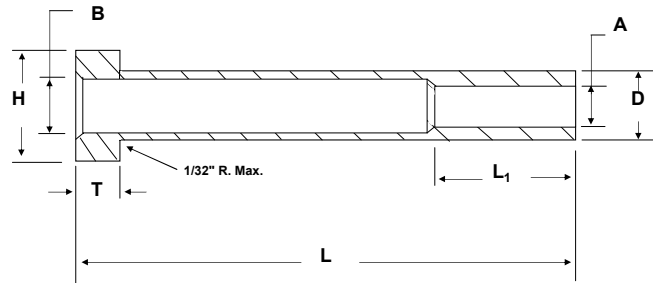


### THORSEN'S PRECISION GRINDING INC.

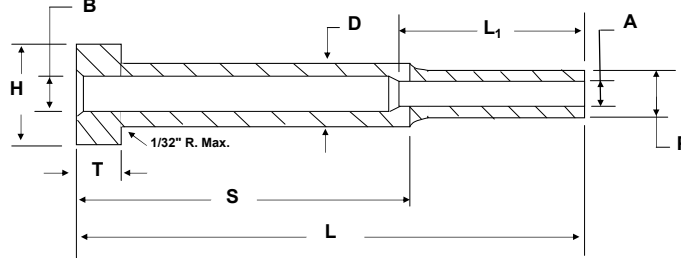
20 E. Sixth Street, Gate 1, P.O. Box 71, Waynesboro, PA 17268  
 Tel. 717-765-9090 Fax 717-749-0300 thorsensgrinding@earthlink.net  
 www.thorsensgrinding.com

# Custom Sleeves & Water-Cooled Core Pins

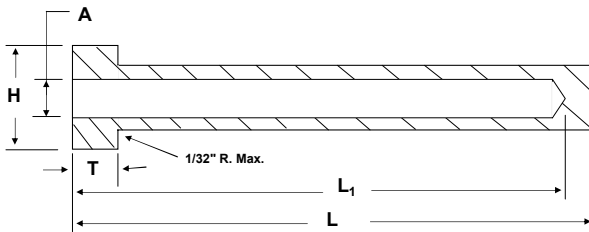
**Det. ESL-1 Straight Ejector Sleeve**



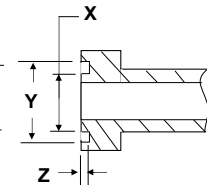
**Det. ESL-2 Stepped Ejector Sleeve**



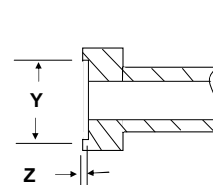
**Det. WCC Water-Cooled Core Pin**



**Det. WCC-1**



**Det. WCC-2**



Qty.	Detail	Material	Hardness	Dimensions		Tolerances	
			Rc	A		+	-
Modify Cat. No./Part No.				B		+	-
Manufacturer				D		+	-
Notes & Comments				H		+	-
				L		+	-
				L <sub>1</sub>		+	-
				P		+	-
				R		+	-
				R <sub>1</sub>		+	-
				S		+	-
				T		+	-
				X		+	-
				Y		+	-
Z		+	-				
Contact Name:			Company Name:		Address		
Phone No.		Fax No.		E-Mail Address:		Date:	
Ref. R. F. Q No. <input type="checkbox"/> P. O. No.			Special Instructions/Requirements:				



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