

QUALITY & SERVICE SINCE 1946

Royal

PINS PUNCHES PERFORATORS

& SPECIALIZED
COMPONENTS
for DIES and
MOLDS

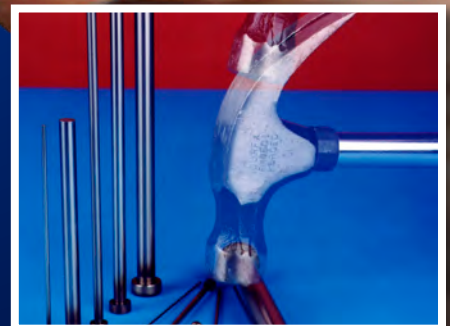
PRECISION



QUALITY



PERFORMANCE



Precision Crafted Pins, Punches, Perforators, & Specialized Components for Dies and Molds



Our modern plant in Warren, RI and our large investment in highly specialized equipment ensures all our customers receive the highest quality Punches, Pins, and Perforators available in the world today.

THE ROYAL FAMILY of PUNCHES and PINS



ROYAL Diversified Products Inc. was founded in 1946 and was one of the pioneers of the economical 60 degree bevel headed punch. ROYAL offers a wide variety of Pins, Punches, and Perforators for use in the Stamping, Molding, and related industries.

MATERIALS & COATINGS



ROYAL uses only the highest quality steels for pins and punches. A variety of coatings are available including: Ion nitriding, TiN, Black Oxide, and Tungsten DiSulfide (WS₂) coating. All of these and other coatings offered per quotation.



EXPERT HEAT TREATMENT

Along with traditional methods, ROYAL's in-house heat treatment department utilizes computer regulated vacuum furnaces pre-programmed with a proprietary heat treating process.

This results in M-2 High Speed Steel with remarkable tensile strength combined with high hardness. This strength and flexibility is found ONLY in ROYAL Pins (see photo on the right).



ROYAL SERVICE

ROYAL ships more punches and perforators the same day, from stock, than anyone else. In most cases, customer orders received before 3pm E.S.T. are shipped the same day.



PREMIUM / EXPEDITED SERVICES

When you order non-standard or special pins, we make every effort to get them to you as soon as we can. However, ROYAL recognizes that sometimes you need to receive delivery earlier than our estimated shipment date.

When this is the case, please call us. Usually we can offer other options to speed up delivery.

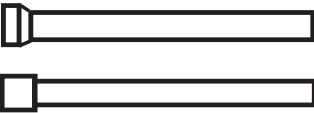
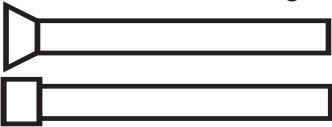
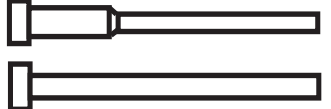
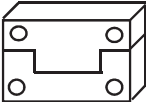
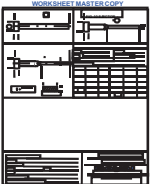


ROYAL DIVERSIFIED PRODUCTS

287 MARKET STREET WARREN, RHODE ISLAND 02885 | PHONE: 401-245-6900 | FAX: 401-247-2231

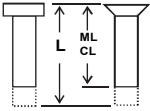
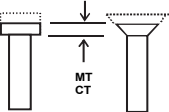
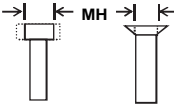
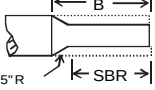
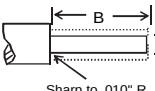
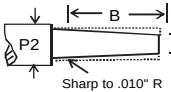
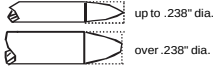
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CUSTOM MODIFICATIONS

The modifications shown below are only those most frequently requested and do not represent the limit of our capabilities with regards to size ranges and tolerances. Also, please refer to the worksheet templates provided on pages 25-27.

Modification	Type	Description	Tolerances	How To Order: Examples
	ML	REDUCED OVERALL LENGTH Stock removal from front-end. Lengths under 0.500" per special quote only.	+0.015"/-0.000" [+0.5/-0.0]	SQD .230 ML = 1.063 HSS B-1 .030 ML = 1.750 RQA .056 ML = 1.500
	CL	PRECISION OVERALL LENGTH Same as above except closer tolerance held.	+/-0.001" [+/-0.03]	RQB .175 CL=2.157 RCX-9 CL=5.312 PT-5-1/2 CL=4.093
	MT	REDUCED HEAD THICKNESS Shorter head than standard. Stock removal from back of head shortens overall length.	+0.010"/-0.000" [+0.3/-0.0]	SQD .157 X2-1/2 TS, MT=.094 RC-17 L-3, MT=.156
	CT	PRECISION HEAD THICKNESS Same as above except closer tolerance held.	+/-0.001" [+/-0.03]	SQD .204 X 2 1/2 HSS, CT=.118 RQB .090 X 2-1/2, CT=.090 RQA .130 X 6, CT=.083
	MH	REDUCED HEAD DIAMETER Minimum head diameter equals "D". Does not change head thickness on an RQA.	+0.000/-0.010" [+0.0/-0.3]	RQB .240 X 4, MH=.280 SQD .370 X 2-1/2 HSS, MH=.437
	PH	PRECISION HEAD DIAMETER Same as above except closer tolerance held.	+/-0.001" [+/-0.03]	PT-11 L-6, PH=.250
	PS	PUNCH STEP "B" = .750" Max. Specify "B" or "SBR" and "P" including tolerance.	B +.06" -.00" SBR +.06" -.00"	RQB-PS .125 X 2-1/2, P=.093 +.0003/-0, B=.500 CPB-PS-12 X 2-1/2, P=.109+.0005/-0, B=.625 PPB-PS 37 X 3, P=.290 +.0002/-0, SBR=.437 AB-20-PS .312 X 3-1/2, P=.255 +.0003/-0, B=.500
	CS	CORE PIN STEP - STRAIGHT "B" = .750" Max. Should be ordered in conjunction with "CL" modification and "CT" if required. Specify "B", "P", "CL" and "CT" if required.	B +/-0.001" CL +/-0.001" CT +/-0.001" P1 +.001"/-0 P - Specify	RQB-CS .067, CL=.940, B=.210, P=.050 RCX-13-CS, CL=2.590, B=.700, P=.157 PT-10-CS, CL=3.750, B=.730, P=.133
	CSD	CORE PIN STEP - DRAFT "B" = .750" Max. Should be ordered in conjunction with "CL" modification and "CT" if required. Specify "B", "P1", "P2", "CL" and "CT" if required.	B +/-0.001" CL +/-0.001" CT +/-0.001" P1 +.001"/-0 P2 +.001"/-0	RCX-19 -CSD, CL=2.187, B=.431, P1=.255, P2=.263 RQB-CSD .236, CL=.870, B=.575, P1=.197, P2=.207, CT = .125
	PN	PILOT NOSE Pilot nose is included in the overall length. Pilot is manufactured with .119 radius.	Standard	SQF-PN .250 X 2-1/2 HSS B-15-PN .238 X 3 RQA-PN .136 X 2-1/2
	SR	SPHERICAL RADIUS Radius is half the diameter. Also specify "ML" or "CL" AND "CT" if required.	Standard	RQB-SR .060 X 2-1/2 AB-7-SR .125 X 2 RCX-11-SR L-3
Special Hardness	HD	ANNEALED HEADS Induction annealing for improved strength.		RQB-HD .125 x 2-1/2
		SPECIAL HARDNESS For hardnesses other than catalog-standard.	Specify hardness range required.	SQD .187 x 2-1/2 TS, Rc 45-50
Coatings	TiN	TITANIUM NITRIDE COATING PVD wear-resistant thin film coating. TiN is an excellent coating for wear part applications demanding resistance to abrasive and adhesive wear. Typical coating thickness is .00005" to .00010" per side.	Specified diameter tolerances are only guaranteed before coating.	RQB .075 X 4 TiN
	WS2	PERMANENT DRY-LUBE TREATMENT A Tungsten Disulfide coating that provides a thin barrier between opposing metal surfaces and prevents metal to metal contact to improve lubricity. Applied at room temperature and unaffected by the heat of the molding process, it extends the life of the pins while providing fail-safe protection from galling and seizing. Tungsten disulfide does not migrate to the molded surface. Typical coating thickness is .000020" per side.	Specified diameter tolerances are only guaranteed before coating.	RX-25 L-10 (WS2) PT-5-2 L-6 (WS2)

[] DENOTES TOLERANCES HELD ON METRIC PARTS



PERFORATORS/CORE PIN BLANKS

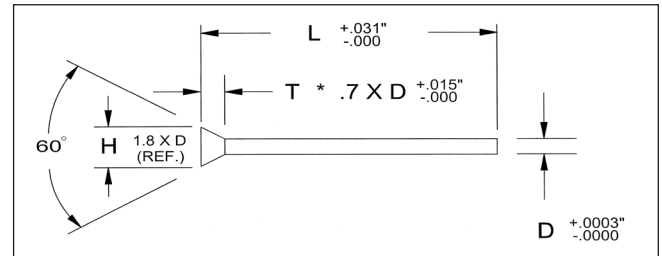
MATERIAL: M-2 HIGH SPEED STEEL

HARDNESS: 60-63 RC

HOW TO ORDER: EXAMPLES				
Qty.	Type	Dia	X	Length
25	RQA	.1875	X	4
50	RQA	.197	X	2-1/2

PRECISION
FORM-GROUND

The following fractional diameters are included in the price tables below:
1/32, 3/64, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, & 3/8



*NOTE: 5/32" MAX. HEAD THICKNESS ON PUNCHES OVER .224" DIA.

D DIAMETER .001" INCREMENTS	NET PRICE EACH PER QTY. (US\$)				
	L-LENGTH				
	2"				
	50-99	25-49	10-24	5-9	1-4
.010-.014	4.80	5.27	5.92	8.04	9.64
.015-.019	4.01	4.40	4.91	6.70	8.04
.020-.029	3.20	3.52	3.94	5.40	6.47

Q = Price Per Quotation

D DIAMETER .001" INCREMENTS	NET PRICE EACH PER QUANTITY (US\$)														
	L - LENGTH														
	2-1/2"					4"					6"				
	50-99	25-49	10-24	5-9	1-4	50-99	25-49	10-24	5-9	1-4	50-99	25-49	10-24	5-9	1-4
.030-.055	2.54	2.80	3.17	4.30	5.17	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
.056-.087	2.75	3.00	3.37	4.57	5.51	5.93	6.50	7.30	11.48	18.50	10.74	11.75	13.19	17.89	24.94
.088-.131	3.06	3.35	3.77	5.15	6.16	5.46	5.99	6.70	10.84	17.86	10.26	11.26	12.60	17.26	24.29
.132-.179	3.20	3.52	3.94	5.40	6.47	5.62	6.13	6.92	11.05	18.10	10.43	11.40	12.79	17.47	24.50
.180-.225	3.71	4.06	4.54	6.18	7.40	6.12	6.68	7.45	11.66	18.68	10.88	11.93	13.39	18.12	25.15
.226-.250	4.19	4.57	5.12	6.98	8.39	6.55	7.20	8.06	12.30	19.34	11.36	12.47	13.96	18.76	25.76
.251-.336	4.68	5.10	5.74	7.81	9.36	7.07	7.70	8.64	12.94	19.97	11.88	12.98	14.59	19.43	26.46
.337-.375	5.08	5.53	6.20	8.46	10.15	7.46	8.16	9.16	13.50	20.52	12.25	13.44	15.06	19.94	26.98
STANDARD						NON-STANDARD									

Diameters in .0001" Increments Can Be Made to Order - Call for Pricing

QUANTITY DISCOUNTS

Based on one size, one shipment and one destination
100 pieces - Less 7%
Over 300 pieces - Call for pricing



PERFORATORS/CORE PIN BLANKS

MATERIAL: M-2 HIGH SPEED STEEL

HARDNESS: 60-63 RC

D DIAMETER .001" INCREMENTS	H HEAD DIA.	T HEAD THICK.	NET PRICE EACH PER QUANTITY (US \$)				
			L - LENGTH				
			2"				
			50-99	25-49	12-24	5-11	1-4
.010-.014	1/32	1/16	4.90	5.34	6.02	8.20	9.84
.015-.019	1/32	1/16	4.09	4.46	5.02	6.84	8.20
.020-.029	3/64	1/16	3.28	3.59	4.03	5.50	6.23

PRECISION FORM-GROUND

The following fractional diameters are included in the price tables below: 1/32, 3/64, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, & 3/8

Q = Price Per Quotation

D DIAMETER .001" INCREMENTS	H HEAD DIA.	T HEAD THICK.	NET PRICE EACH PER QUANTITY (US \$)									
			L - LENGTH									
			2-1/2"					3"				
			50-99	25-49	12-24	5-11	1-4	50-99	25-49	12-24	5-11	1-4
.030-.036	1/16	1/16										
.037-.046	5/64	1/16	2.63	2.86	3.20	4.39	5.29	Q	Q	Q	Q	Q
.0469-.055	3/32	3/32										
.056-.064	7/64	3/32										
.065-.0781	1/8	3/32	2.81	3.08	3.44	4.68	5.62	3.24	3.52	3.96	5.42	6.50
.079-.087	9/64	3/32										
.088-.099	5/32	3/32										
.100-.120	11/64	3/32	3.08	3.42	3.83	5.21	6.25	3.59	3.92	4.40	6.00	7.19
.121-.131	3/16	1/8										
.132-.147	13/64	1/8										
.148-.163	7/32	1/8	3.28	3.59	4.03	5.50	6.59	3.78	4.13	4.62	6.32	7.55
.164-.179	15/64	1/8										
.180-.194	1/4	1/8										
.195-.210	17/64	1/8	3.78	4.13	4.62	6.32	7.55	4.34	4.75	5.33	7.26	8.70
.211-.225	9/32	1/8										
.226-.241	19/64	1/8										
.242-.250	5/16	3/16	4.34	4.75	5.33	7.26	8.70	5.00	5.46	6.13	8.35	10.03
.251-.256	5/16	3/16										
.257-.272	21/64	3/16	4.34	4.75	5.33	7.26	8.70	5.00	5.46	6.13	8.35	10.03
.273-.288	11/32	3/16										
.289-.304	23/64	3/16										
.305-.320	3/8	3/16	4.87	5.32	5.95	8.12	9.72	5.58	6.12	6.84	11.11	18.41
.321-.336	25/64	3/16										
.337-.352	13/32	3/16										
.353-.368	27/64	3/16	5.28	5.77	6.47	8.81	10.56	6.04	6.64	7.44	11.78	19.07
.369-.380	7/16	3/16										
.381-.396	29/64	3/16										
.397-.411	15/32	3/16	6.16	6.72	7.55	10.30	12.35	7.06	7.75	8.68	13.15	20.50
.412-.427	31/64	3/16										
.428-.443	1/2	3/16										
.444-.458	33/64	3/16	6.97	7.62	8.56	11.66	14.00	8.02	8.81	9.84	14.44	21.78
.459-.474	17/32	3/16										
.475-.489	35/64	3/16										
.490-.505	9/16	3/16	7.81	8.54	9.59	13.09	15.70	8.96	9.84	11.02	15.70	23.08
STANDARD								NON-STANDARD				

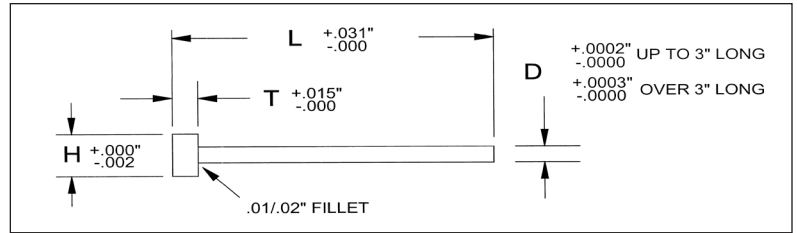
Diameters in .0001" Increments, Optional T = 3/16 Can Be Made to Order - Call for Pricing

QUANTITY DISCOUNTS

Based on one size, one shipment and one destination
100 pieces - Less 7%
Over 300 pieces - Call for pricing



HOW TO ORDER: EXAMPLE				
Qty.	Type	Dia.	X	Length
50	RQB	.128	X	2-1/2



Q = Price Per Quotation

NET PRICE EACH PER QUANTITY (US \$)														
L - LENGTH														
4"					6"					8"				
50-99	25-49	12-24	5-11	1-4	50-99	25-49	12-24	5-11	1-4	50-99	25-49	12-24	5-11	1-4
Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
6.04	6.64	7.43	11.70	18.85	11.15	12.23	13.68	18.58	25.88	Q	Q	Q	Q	Q
5.58	6.10	6.85	11.05	18.20	10.67	11.69	13.07	17.92	25.22	15.78	17.29	19.40	30.37	48.79
5.84	6.40	7.18	11.47	18.77	10.82	11.84	13.30	18.18	25.46	15.95	17.47	19.58	30.56	49.00
6.36	6.94	7.76	12.12	19.42	11.30	12.37	13.90	18.84	26.10	16.46	18.02	20.20	31.24	49.66
6.90	7.55	8.46	12.94	20.28	11.90	13.04	14.63	19.66	27.04	16.82	18.41	20.65	31.66	49.88
6.90	7.55	8.46	12.94	20.28	THIS SIZE RANGE IS AVAILABLE PER QUOTATION									
7.43	8.09	9.07	13.58	20.94										
7.81	8.54	9.59	14.15	21.52										
9.49	10.38	11.64	16.40	23.75										
11.17	12.24	13.69	18.65	26.02										
12.02	13.15	14.75	19.76	27.13										
NON-STANDARD														
Length and Diameter Modifications on the NON-STANDARD pins (above) are AVAILABLE PER QUOTATION														



QUILL PUNCHES/CORE PIN BLANKS

MATERIAL: OIL HARDENING TOOL STEEL (TS)
M-2 HIGH SPEED STEEL (HSS)

HARDNESS: 58-60 RC (TS)
60-63 RC (HSS)

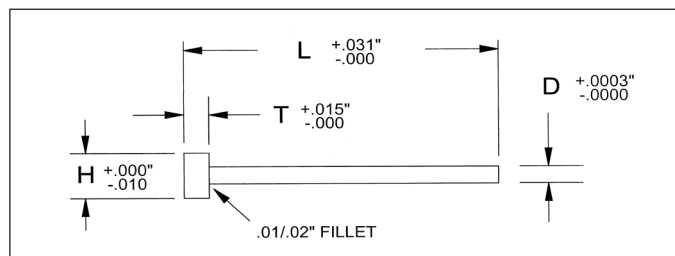
HEADS: DRAWN (TS)

PRECISION FORM-GROUND

SQF TYPE: FRACTIONAL DIAMETERS

SQD TYPE: DECIMAL DIAMETERS

HOW TO ORDER: EXAMPLES					
Qty.	Type	Dia.	X	Length	Steel
50	SQF	.0937	X	2-1/2	TS
100	SQD	.136	X	2-1/2	HSS



SQF TYPE: FRACTIONAL BLANKS

D BODY DIA. FRACTIONAL	H HEAD DIA.	T HEAD THICK.	L OVERALL LENGTH	NET PRICE EACH PER QUANTITY (US \$)									
				TOOL STEEL					HIGH SPEED STEEL				
				100	50-99	25-49	10-24	1-9	100	50-99	25-49	10-24	1-9
.0625"	*3/32	1/8	2-1/2"										
.0937"	5/32	1/8	2-1/2"	2.36	2.64	2.93	3.66	5.09	3.06	3.38	3.76	4.62	6.26
.1250"	3/16	1/8	2-1/2"										
.1562"	7/32	1/8	2-1/2"	2.53	2.80	3.14	3.89	5.33	3.28	3.58	3.98	4.86	6.53
.1875"	1/4	1/8	2-1/2"										
.2187"	9/32	1/8	2-1/2"	2.80	3.07	3.41	4.16	5.65	3.58	3.89	4.30	5.17	6.89
.2500"	5/16	1/8	2-1/2"										
.3125"	7/16	3/16	2-1/2"	3.44	3.71	4.06	4.90	6.44	4.80	5.10	5.58	6.56	8.41
.3750"	1/2	3/16	2-1/2"	3.61	3.86	4.27	5.10	6.66	5.10	5.42	5.88	6.89	8.81

* Optional Head Diameter of 1/8 can be made to order. Price upon quotation.

SQD TYPE: DECIMAL DIAMETERS IN .001" INCREMENTS**

D BODY DIA. DECIMAL	H HEAD DIA.	T HEAD THICK.	L OVERALL LENGTH	NET PRICE EACH PER QUANTITY (US \$)									
				TOOL STEEL					HIGH SPEED STEEL				
				100	50-99	25-49	10-24	1-9	100	50-99	25-49	10-24	1-9
.030"-.062"	*3/32	1/8	2-1/2"										
.063"-.093"	5/32	1/8	2-1/2"	2.80	3.18	3.61	4.67	6.19	3.67	4.10	4.61	5.87	7.63
.094"-.124"	3/16	1/8	2-1/2"										
.126"-.156"	7/32	1/8	2-1/2"	3.00	3.35	3.79	4.90	6.44	3.89	4.32	4.81	6.11	7.91
.157"-.187"	1/4	1/8	2-1/2"										
.188"-.218"	9/32	1/8	2-1/2"	3.44	3.80	4.27	5.38	6.97	4.39	4.80	5.34	6.66	8.53
.219"-.249"	5/16	1/8	2-1/2"										
.251"-.312"	7/16	3/16	2-1/2"	3.98	4.34	4.82	6.01	7.66	5.21	5.62	6.19	7.60	9.53
.313"-.374"	1/2	3/16	2-1/2"	4.14	4.52	5.00	6.22	7.88	5.51	5.92	6.52	7.94	9.94

* Optional Head Diameter of 1/8 can be made to order. Price upon quotation.

** Diameters in .0001" increments can be made to order. Price upon quotation.

QUANTITY DISCOUNTS
Based on one size, one shipment and one destination Over 300 pieces - Call for pricing

B AND AB TYPES



Royal

PERFORATORS/CORE PIN BLANKS

MATERIAL: M-2 HIGH SPEED STEEL

HARDNESS: 60-63 RC

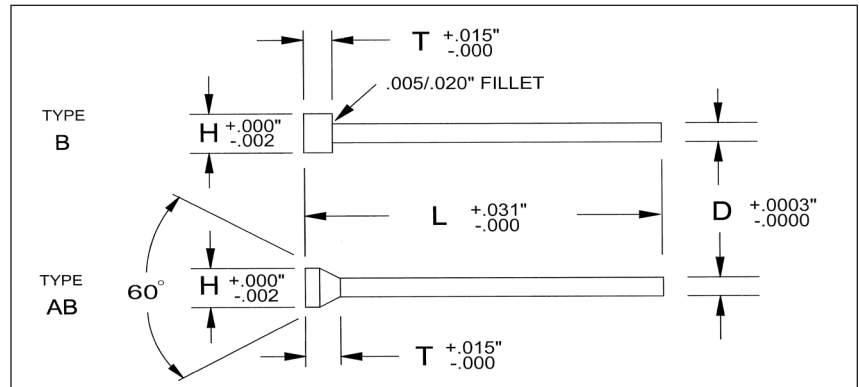
PRECISION FORM-GROUND

The following fractional diameters are included in the price tables below: 1/32, 3/64, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, & 3/8

TYPE B: STANDARD

TYPE AB: NON-STANDARD. ABOVE .250 DIA. PER QUOTE

Ideal for tight center to center spacing in dies and molds



HOW TO ORDER: EXAMPLES				
Qty.	Cat No.	Dia.	X	Length
25	AB-4	.078	X	2-1/2
60	B-17	.269	X	3

CATALOG NO.		D	H	T	L		NET PRICE EACH PER QUANTITY (US \$)					
AB TYPE	B TYPE	BODY DIA. IN .001" INCREMENTS	HEAD DIA.	HEAD THICK.	OVERALL LENGTH		100	50-99	25-49	10-24	5-9	1-4
1/0	1/0	.025-.029	.060	3/32	2"		4.90	5.24	5.83	6.89	8.57	9.96
1	1	.030-.040	.070	3/32	2"	2-1/2"	4.42	4.74	5.27	6.23	7.75	9.36
2	2	.041-.055	.085	3/32	2"	2-1/2"	4.25	4.49	5.05	5.96	7.40	8.81
3	3	.056-.070	.100	3/32	2"	2-1/2"	3.97	4.20	4.66	5.51	6.83	8.20
4	4	.071-.085	.115	3/32	2"	2-1/2"						
5	5	.086-.100	.130	3/32	2"	2-1/2"						
6	6	.101-.115	.145	3/32		2-1/2"						
7	7	.116-.130	.160	3/32		2-1/2"	4.25	4.52	5.05	5.96	7.40	8.81
8	8	.131-.145	.175	3/32		2-1/2"						
9	9	.146-.160	.190	3/32		2-1/2"						
10	10	.161-.175	.205	1/8		2-1/2"	4.52	4.80	5.34	6.35	7.87	9.25
11	11	.176-.190	.220	1/8		2-1/2"						
12	12	.191-.205	.235	1/8		2-1/2"	4.63	4.93	5.50	6.52	8.10	9.49
13	13	.206-.220	.250	1/8		2-1/2"						
14	14	.221-.235	.265	1/8		2-1/2"	4.90	5.17	5.80	6.88	8.57	9.96
15	15	.236-.250	.280	1/8		2-1/2"						
16*	16	.251-.265	.295	1/8		2-1/2"	5.28	5.75	6.52	7.54	9.13	10.51
17*	17	.266-.280	.310	1/8		3"						
18*	18	.281-.295	.325	1/8		3"						
19*	19	.296-.310	.340	1/8		3"	5.57	6.02	6.84	7.93	9.61	10.98
20*	20	.311-.325	.355	3/16		3"						
21*	21	.326-.340	.370	3/16		3"	5.93	6.38	7.16	8.40	10.28	11.69
22*	22	.341-.355	.385	3/16		3"	6.22	6.67	7.49	8.77	10.75	11.92
23*	23	.356-.370	.400	3/16		3"	6.50	6.77	7.82	9.16	11.22	12.60
24*	24	.371-.385	.415	3/16		3"	6.77	7.06	8.12	9.52	11.69	13.07

* Price upon quotation.

QUANTITY DISCOUNTS
Based on one size, one shipment and one destination Over 300 pieces - Call for pricing

Please see PAGE 1 for a complete list of modifications that are available for any of the ROYAL Family of Pins and Punches

CPB AND PPB TYPES



Royal

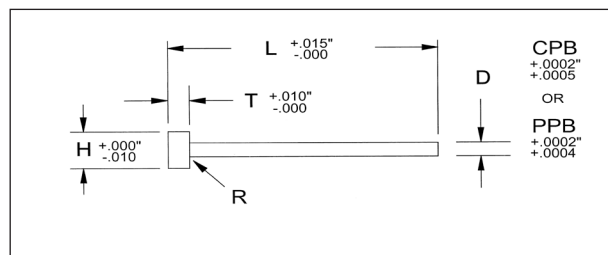
PUNCH BLANKS

MATERIAL: M-2 HIGH SPEED STEEL

HARDNESS: 60-63 RC

HEADS: DRAWN TO 45-55 RC

PRECISION FORM-GROUND



HOW TO ORDER: EXAMPLES				
Qty.	Cat No.	Dia.	X	Length
12	CPB-25	1/4	X	2-1/2
6	PPB-75	3/4	X	3

CPB (COMMERCIAL TOLERANCES) D: +.0002" / -.0005"

CATALOG NUMBER	D	H	T	L				NET PRICE EACH PER QUANTITY (US \$)			
	BODY DIA.	HEAD DIA.	HEAD THICK.	OVERALL LENGTH				50+	25-49	10-24	1-9
CPB-12	1/8	1/4	1/8	2"	2-1/2"			8.03	8.92	10.14	11.62
CPB-15	5/32	9/32	1/8	2"	2-1/2"						
CPB-18	3/16	5/16	1/8	2"	2-1/2"						
CPB-25	1/4	3/8	1/8	2"	2-1/2"	3"		8.99	9.90	11.29	12.89
CPB-31	5/16	7/16	1/8	2"	2-1/2"	3"					
CPB-37	3/8	1/2	3/16	2"	2-1/2"	3"		10.31	11.47	13.00	14.88
CPB-43	7/16	9/16	3/16	2"	2-1/2"	3"	3-1/2"				
CPB-50	1/2	5/8	3/16	2"	2-1/2"	3"	3-1/2"				
CPB-62	5/8	3/4	1/4	2"	2-1/2"	3"	3-1/2"	14.60	16.15	18.35	21.12
CPB-75	3/4	7/8	1/4		2-1/2"	3"	3-1/2"	19.56	21.74	24.70	28.26
CPB-87	7/8	1	1/4		2-1/2"	3"	3-1/2"	32.70	36.20	41.15	47.16
CPB-100	1	1-1/8	1/4		2-1/2"	3"	3-1/2"				

PPB (PRECISION TOLERANCES) D: +.0002" / +.0004"

CATALOG NUMBER	D	H	T	L				NET PRICE EACH PER QUANTITY (US \$)			
	BODY DIA.	HEAD DIA.	HEAD THICK.	OVERALL LENGTH				50+	25-49	10-24	1-9
PPB-12	1/8	1/4	1/8	2"	2-1/2"			8.99	9.90	11.29	12.89
PPB-15	5/32	9/32	1/8	2"	2-1/2"						
PPB-18	3/16	5/16	1/8	2"	2-1/2"						
PPB-25	1/4	3/8	3/16	2"	2-1/2"	3"		10.03	10.99	12.58	14.42
PPB-31	5/16	7/16	3/16	2"	2-1/2"	3"					
PPB-37	3/8	1/2	3/16	2"	2-1/2"	3"		11.63	12.76	15.23	16.69
PPB-43	7/16	9/16	3/16	2"	2-1/2"	3"	3-1/2"				
PPB-50	1/2	5/8	3/16	2"	2-1/2"	3"	3-1/2"				
PPB-62	5/8	3/4	3/16		2-1/2"	3"	3-1/2"	15.70	17.95	19.67	22.70
PPB-75	3/4	7/8	3/16		2-1/2"	3"	3-1/2"	21.81	24.21	27.57	31.53
PPB-87	7/8	1	3/16		2-1/2"	3"	3-1/2"	36.55	40.56	45.89	52.75
PPB-100	1	1-1/8	3/16		2-1/2"	3"	3-1/2"				

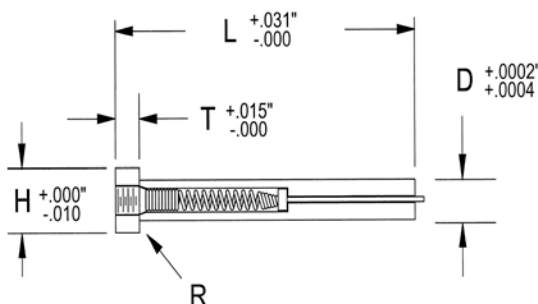
EB SLUG EJECTOR PUNCHES (WITH PPB DIMENSIONS)

CATALOG NUMBER	D	H	T	L				COMPONENT SET
	BODY DIA.	HEAD DIA.	HEAD THICK.	OVERALL LENGTH				
EB-12	1/8	1/4	1/8	2"	2-1/2"			CS-2A
EB-15	5/32	9/32	1/8	2"	2-1/2"			CS-3
EB-18	3/16	5/16	1/8	2"	2-1/2"			CS-3
EB-25	1/4	3/8	3/16	2"	2-1/2"			CS-3
EB-31	5/16	7/16	3/16	2"	2-1/2"	3"		CS-4
EB-37	3/8	1/2	3/16	2"	2-1/2"	3"		CS-6
EB-43	7/16	9/16	3/16	2"	2-1/2"	3"	3-1/2"	CS-6
EB-50	1/2	5/8	3/16	2"	2-1/2"	3"	3-1/2"	CS-6

Technical drawing of a bolt assembly. The drawing shows a side view of a bolt with a spring washer and a nut. Dimensions are indicated with arrows and text: L is the overall length of the bolt, D is the head diameter, H is the head height, T is the thread length, and R is the radius of the head. Tolerances are provided for each dimension: L (+.031", -.000"), D (+.0002", +.0004"), H (+.000", -.010"), T (+.015", -.000").

**PRICE
PER
QUOTE**

UPON
AVAILABILITY



PRICE PER QUOTE
*
UPON AVAILABILITY

MQA AND MQB TYPES



Royal

METRIC PERFORATORS/CORE PIN BLANKS

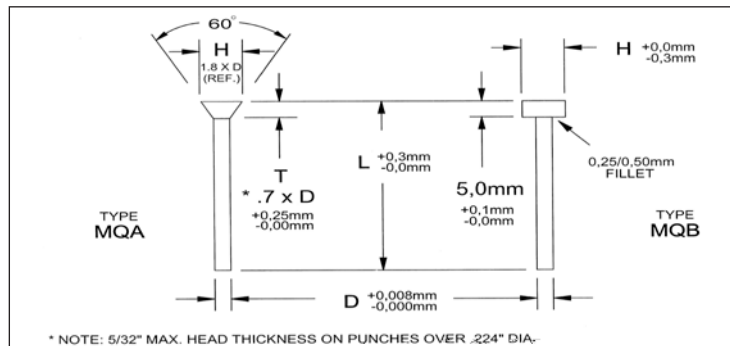
MATERIAL: M-2 HIGH SPEED STEEL

HARDNESS: RC 60-63

LENGTH: 63MM

PRECISION FORM-GROUND

MADE TO ORDER (10 PC. MINIMUM)



HOW TO ORDER: EXAMPLES				
Qty.	Type	Dia.	X	Length
50	MQA	0.95	X	63
25	MQB	6.55	X	63

D DIAMETER RANGE IN 0.01mm INCREMENTS			NET PRICE EACH PER QUANTITY (US \$)								MQB TYPE
			MQA				MQB				H
			100+	50-99	25-49	10-24	100+	50-99	25-49	10-24	
0.80mm	-	1.60mm	2.80	3.55	4.93	8.53	4.21	5.14	7.22	13.94	3
1.61mm	-	2.00mm	2.96	3.70	5.11	8.74	4.72	5.74	8.03	15.41	4
2.01mm	-	3.00mm	3.29	4.04	5.64	9.10	4.72	5.74	8.03	15.41	5
3.01mm	-	4.00mm	3.46	4.21	5.80	9.28	4.97	6.06	8.44	16.33	6
4.01mm	-	5.00mm	3.79	4.64	6.06	9.82	5.14	6.23	8.71	16.90	7
5.01mm	-	6.00mm	4.31	5.14	6.60	10.37	5.14	6.23	8.71	16.90	8
6.01mm	-	7.00mm	4.72	5.64	7.14	11.00	5.39	6.56	9.24	17.78	9

MPB TYPE



Royal

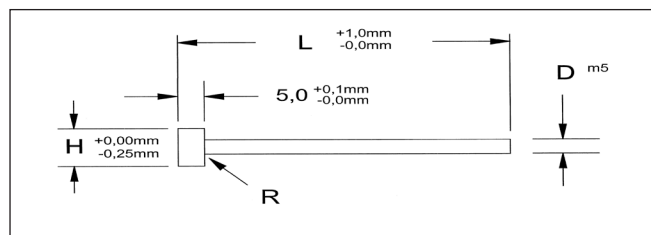
METRIC PUNCH BLANKS

MATERIAL: M-2 HIGH SPEED STEEL

HARDNESS: RC 60-63

PRECISION FORM-GROUND

MADE TO ORDER (10 PC. MINIMUM)



HOW TO ORDER: EXAMPLE			
Qty.	CAT No.	X	Length
50	MPB-3	X	63

CATALOG NUMBER	D BODY DIA. (mm)		H HEAD DIA. (mm)	NET PRICE EACH PER QUANTITY (US \$)											
				L-LENGTH (mm)											
	NOMINAL DIA.	M ⁵ TOLERANCE		50, 56, & 63			71 & 80			90 & 100			125		
				50+	25-49	10-24	50+	25-49	10-24	50+	25-49	10-24	50+	25-49	10-24
MPB-3	3	+0.009 +0.004	5.0	7.79	9.05	10.50	8.68	10.09	11.70	10.86	12.62	14.59	Q	Q	Q
MPB-4	4	+0.009 +0.004	7.0	7.97	9.26	10.72	9.08	10.54	12.20	11.58	13.46	15.61	13.76	15.97	18.50
MPB-5	5	+0.009 +0.004	8.0	9.24	10.74	12.44	9.97	11.57	13.42	11.64	13.50	15.72	13.91	16.15	18.72
MPB-6	6	+0.009 +0.004	9.0	10.68	12.41	14.40	11.29	12.95	15.10	11.74	13.64	15.82	15.58	18.08	20.95
MPB-8	8	+0.012 +0.006	11.0	11.32	13.15	15.24	11.72	13.74	16.20	12.30	14.28	16.58	16.06	18.64	21.60

Please see PAGE 1 for a complete list of modifications that are available for any of the ROYAL Family of Pins and Punches

BEVEL HEADED PUNCHES

MATERIAL: OIL HARDENING TOOL STEEL (TS)

M-2 HIGH SPEED STEEL (HSS)

HARDNESS : 58-60 RC (TS)

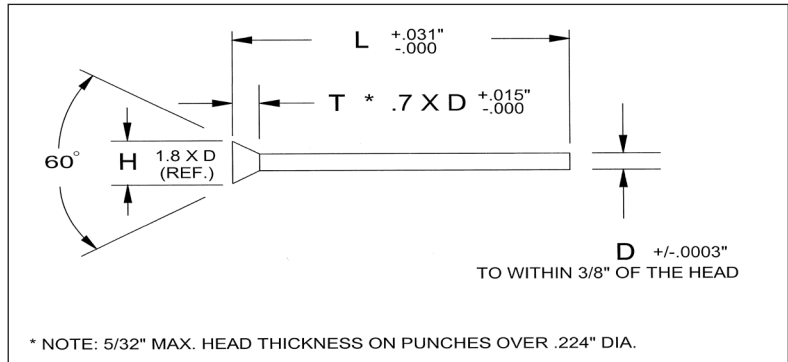
60-63 RC (HSS)

HEADS: DRAWN (TS)

Used by tool, die, stamping, and mold manufacturers as perforators, punches, knock-out pins, gauge pins, ejectors and core pins.

Special lengths can be made to order with prompt delivery.

When closer tolerance and better wear resistance is desired, please refer to Type RQA found on page 2. RQA perforators/core pin blanks are form-ground to $\pm .0003$ "/-0" diameter tolerance, and are offered in M-2 HSS in diameter increments from .010" through .375".



HOW TO ORDER: EXAMPLES

Qty.	Type	Dia.	X	Length	Steel
100	BH	.062	X	2	TS
50	BH	.136	X	2-1/2	HSS

D STANDARD DIAMETERS .001" INCREMENTS	L LENGTH	NET PRICE EACH PER QUANTITY (US \$)									
		TOOL STEEL					HIGH SPEED STEEL				
		100	50-99	25-49	10-24	1-9	100	50-99	25-49	10-24	1-9
.020" - .029"	2"	0.82	1.08	1.32	1.70	2.30	1.27	1.43	1.66	1.99	2.64
	2-1/2"	1.06	1.31	1.50	1.98	2.36	1.37	1.55	1.75	2.08	2.70
.030" - .039"	2"	0.79	1.04	1.30	1.68	2.22	1.19	1.38	1.61	1.93	2.54
	2-1/2"	1.02	1.27	1.45	1.92	2.34	1.28	1.48	1.68	2.03	2.66
.040" - .0625" (1/16)	2"	0.72	0.98	1.19	1.55	2.16	1.10	1.30	1.50	1.81	2.44
	2-1/2"	0.97	1.18	1.39	1.80	2.28	1.15	1.36	1.56	1.91	2.52
.063" - .0781" (5/64)	2"	0.72	0.98	1.19	1.55	2.16	1.10	1.30	1.50	1.81	2.44
	2-1/2"	0.97	1.18	1.39	1.80	2.28	1.15	1.36	1.56	1.91	2.52
.079" - .0937" (3/32)	2"	0.72	0.98	1.19	1.55	2.16	1.10	1.30	1.50	1.81	2.44
	2-1/2"	0.97	1.18	1.39	1.80	2.28	1.15	1.36	1.56	1.91	2.52
.094" - .1094" (7/64)	2"	0.86	1.12	1.38	1.75	2.50	1.54	1.69	1.91	2.28	2.94
	2-1/2"	1.12	1.40	1.64	2.06	2.66	1.58	1.78	2.00	2.36	3.01
.110" - .125" (1/8)	2"	0.86	1.12	1.38	1.75	2.50	1.54	1.69	1.91	2.28	2.94
	2-1/2"	1.12	1.40	1.64	2.06	2.66	1.58	1.78	2.00	2.36	3.01
.126" .127" .128"	2"	1.07	1.31	1.58	1.98	2.72	1.85	2.04	2.28	2.70	3.36
	2-1/2"	1.32	1.58	1.85	2.26	3.02	1.93	2.14	2.35	2.75	3.43
⊙ .129"	2"	1.57	1.85	2.14	2.53	3.34	2.33	2.51	2.77	3.16	3.91
	2-1/2"	1.82	2.10	2.36	2.83	3.58	2.38	2.58	2.83	3.28	4.02
.130"	2"	1.07	1.31	1.58	1.98	2.72	1.85	2.04	2.28	2.70	3.36
	2-1/2"	1.32	1.58	1.85	2.26	3.02	1.93	2.14	2.35	2.75	3.43
⊙ .131" - .134"	2"	1.57	1.85	2.14	2.53	3.34	2.33	2.51	2.77	3.16	3.91
	2-1/2"	1.82	2.10	2.36	2.83	3.58	2.38	2.58	2.83	3.28	4.02
.135"	2"	1.07	1.31	1.58	1.98	2.72	1.85	2.04	2.28	2.70	3.36
	2-1/2"	1.32	1.58	1.85	2.26	3.02	1.93	2.14	2.35	2.75	3.43
⊙ .136" - .139"	2"	1.57	1.85	2.14	2.53	3.34	2.33	2.51	2.77	3.16	3.91
	2-1/2"	1.82	2.10	2.36	2.83	3.58	2.38	2.58	2.83	3.28	4.02
.140" .1406" (9/64)	2"	1.07	1.31	1.58	1.98	2.72	1.85	2.04	2.28	2.70	3.36
	2-1/2"	1.32	1.58	1.85	2.26	3.02	1.93	2.14	2.35	2.75	3.43
⊙ .141" - .156"	2"	1.57	1.85	2.14	2.53	3.34	2.33	2.51	2.77	3.16	3.91
	2-1/2"	1.82	2.10	2.36	2.83	3.58	2.38	2.58	2.83	3.28	4.02
.1562" (5/32)	2"	1.07	1.31	1.58	1.98	2.72	1.85	2.04	2.28	2.70	3.36
	2-1/2"	1.32	1.58	1.85	2.26	3.02	1.93	2.14	2.35	2.75	3.43

⊙ Denotes Form-Ground Diameters



BEVEL HEADED PUNCHES

D STANDARD DIAMETERS .001" INCREMENTS	L LENGTH	NET PRICE EACH PER QUANTITY (US \$)									
		TOOL STEEL					HIGH SPEED STEEL				
		100	50-99	25-49	10-24	1-9	100	50-99	25-49	10-24	1-9
⊙ .157" - .171"	2"	1.57	1.85	2.14	2.53	3.34	3.04	3.25	3.52	3.96	4.79
	2-1/2"	1.82	2.10	2.36	2.83	3.58	3.07	3.30	3.56	4.04	4.88
.1719" (11/64)	2"	1.07	1.31	1.58	1.98	2.72	2.60	2.80	3.02	3.47	4.27
	2-1/2"	1.32	1.58	1.85	2.26	3.02	2.65	2.84	3.10	3.53	4.30
⊙ .172" - .187"	2"	1.57	1.85	2.14	2.53	3.34	3.04	3.25	3.52	3.96	4.79
	2-1/2"	1.82	2.10	2.36	2.83	3.58	3.07	3.30	3.56	4.04	4.88
.1875" (3/16)	2"	1.07	1.31	1.58	1.98	2.72	2.60	2.80	3.02	3.47	4.27
	2-1/2"	1.32	1.58	1.85	2.26	3.02	2.65	2.84	3.10	3.53	4.30
⊙ .188" - .203"	2"	1.82	2.10	2.38	2.83	3.66	3.07	3.30	3.56	4.04	4.88
	2-1/2"	2.09	2.34	2.66	3.10	4.01	3.13	3.37	3.64	4.12	4.96
.2031" (13/64)	2"	1.32	1.58	1.85	2.26	3.06	2.65	2.84	3.10	3.53	4.30
	2-1/2"	1.57	1.85	2.14	2.54	3.34	2.69	2.89	3.17	3.61	4.38
⊙ .204" - .218"	2"	1.82	2.10	2.38	2.83	3.66	3.07	3.30	3.56	4.04	4.88
	2-1/2"	2.09	2.34	2.66	3.10	4.01	3.13	3.37	3.64	4.12	4.96
.2187" (7/32)	2"	1.32	1.58	1.85	2.26	3.06	2.65	2.84	3.10	3.53	4.30
	2-1/2"	1.57	1.85	2.14	2.54	3.34	2.69	2.89	3.17	3.61	4.38
⊙ .219" - .234"	2"	1.82	2.10	2.38	2.83	3.66	3.07	3.30	3.56	4.04	4.88
	2-1/2"	2.09	2.34	2.66	3.10	4.01	3.13	3.37	3.64	4.12	4.96
.2344" (15/64)	2"	1.32	1.58	1.85	2.26	3.06	2.65	2.84	3.10	3.53	4.30
	2-1/2"	1.57	1.85	2.14	2.54	3.34	2.69	2.89	3.17	3.61	4.38
⊙ .235" - .249"	2"	1.82	2.10	2.38	2.83	3.66	3.07	3.30	3.56	4.04	4.88
	2-1/2"	2.09	2.34	2.66	3.10	4.01	3.13	3.37	3.64	4.12	4.96
.250" (1/4)	2"	1.32	1.58	1.85	2.26	3.06	2.65	2.84	3.10	3.53	4.30
	2-1/2"	1.57	1.85	2.14	2.54	3.34	2.69	2.89	3.17	3.61	4.38
⊙ .251" - .2812" (9/32)	2"	2.10	2.34	2.66	3.10	4.01	3.22	3.46	3.68	4.21	5.06
	2-1/2"	2.45	2.75	3.04	3.53	4.44	3.28	3.50	3.77	4.27	5.09
⊙ .282" - .3125" (5/16)	2"	2.26	2.53	2.83	3.31	4.16	3.40	3.61	3.90	4.38	5.22
	2-1/2"	2.63	2.94	3.20	3.73	4.66	3.46	3.66	3.96	4.42	5.32
⊙ .313" - .3437" (11/32)	2"	2.34	2.60	2.88	3.40	4.30	3.61	3.86	4.09	4.64	5.51
	2-1/2"	2.68	2.99	3.28	3.77	4.74	3.67	3.90	4.20	4.68	5.57
⊙ .344" - .375" (3/8)	2"	2.34	2.60	2.88	3.40	4.30	3.94	4.20	4.46	5.03	5.98
	2-1/2"	2.68	2.99	3.28	3.77	4.74	4.01	4.25	4.56	5.10	6.05
⊙ .3906" (25/64) .4062" (13/32) .4219" (27/64) .4375" (7/16)	2"	Items in this size range are available per quotation									
	2-1/2"										
⊙ .4531" (29/64) .4688" (15/32) .4844" (31/64) .5000" (1/2)	2"										
	2-1/2"										

⊙ Denotes Form-Ground Diameters

QUANTITY DISCOUNTS
Based on one size, one shipment and one destination 500 Pieces - Less 10% 1,000 Pieces - Less 15%

Please see PAGE 1 for a complete list of modifications that are available for any of the ROYAL Family of Pins and Punches

BH SERIES

BEVEL HEADED PUNCHES

MATERIAL: OIL HARDENING TOOL STEEL

HARDNESS: 58-60 RC

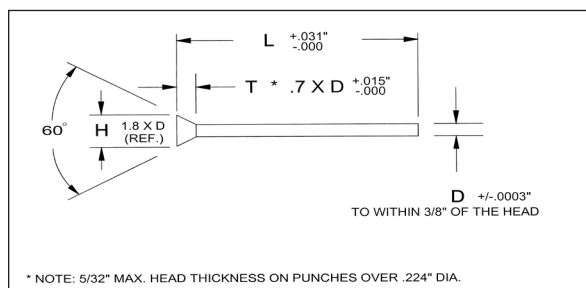
HEADS: DRAWN

Used by tool, die, stamping, and mold manufacturers as perforators, punches, knock-out pins, gauge pins, ejectors and core pins.

When closer tolerance and better wear resistance is desired, please refer to Type RQA found on page 2. RQA Perforators/Core Pin Blanks are form-ground to $\pm .0003$ " / -0" diameter tolerance, and are offered in M-2 HSS in diameter increments from .010" through .375".



Royal



HOW TO ORDER: EXAMPLES					
Qty.	Type	Dia.	X	Length	Steel
100	BH	5/32	X	6	TS
50	BH	15/64	X	4	TS

FRACTIONAL DIAMETERS TOOL STEEL ONLY FOR FRACTIONAL DIAMETERS IN M-2 HSS PLEASE REFER TO RQA TYPE ON PAGE 2						
D DIAMETERS	L LENGTH	NET PRICE PER EACH (US \$)				
		TOOL STEEL				
		100	50-99	25-49	10-24	1-9
1/16, 5/64	4"	1.84	2.15	2.74	3.43	4.49
	6"	2.34	2.66	3.25	4.09	5.23
3/32, 7/64	4"	1.82	2.11	2.63	3.30	4.27
	6"	2.33	2.60	3.19	3.92	5.00
1/8	4"	1.60	1.85	2.32	2.88	3.73
	6"	1.88	2.11	2.60	3.20	4.07
9/64, 5/32	4"	1.62	1.88	2.35	2.92	3.74
	6"	1.91	2.16	2.63	3.25	4.10
11/64, 3/16	4"	1.72	1.92	2.40	3.01	3.85
	6"	1.94	2.21	2.68	3.30	4.15
13/64, 7/32	4"	2.35	2.60	3.10	3.73	4.66
	6"	2.89	3.11	3.65	4.30	5.29
15/64, 1/4	4"	2.51	2.71	3.22	3.91	4.81
	6"	3.04	3.29	3.82	4.49	5.51
17/64, 9/32	4"	3.92	4.15	4.72	5.50	6.59
	6"	4.44	4.68	5.27	6.06	7.22
19/64, 5/16	4"	4.03	4.27	4.85	5.60	6.72
	6"	4.57	4.80	5.41	6.24	7.38
21/64, 11/32	4"	4.42	4.66	5.26	6.05	7.20
	6"	4.94	5.20	5.83	6.65	7.83
23/64, 3/8	4"	4.75	4.96	5.60	6.40	7.58
	6"	5.27	5.54	6.14	7.00	8.24
STANDARD						

DECIMAL DIAMETERS TOOL STEEL ONLY FOR DECIMAL DIAMETERS IN M-2 HSS PLEASE REFER TO RQA TYPE ON PAGE 2 (10 PC. MINIMUM)				
D DIAMETERS	NET PRICE PER EACH (US \$)			
	TOOL STEEL			
	100	50-99	25-49	10-24
0.47" - .078"	3.90	4.78	7.26	14.02
	Q	Q	Q	Q
.079" - .109"	3.77	4.51	6.79	12.79
	4.33	5.60	8.50	14.76
.110" - .124"	3.30	3.97	5.99	11.28
	3.54	4.54	6.91	12.04
.126" - .156"	3.41	4.10	6.06	11.39
	3.62	4.68	7.03	12.17
.157" - .187"	3.54	4.21	6.19	11.77
	3.77	5.27	9.06	14.32
.188" - .218"	3.97	4.68	6.66	12.28
	4.42	5.92	9.76	15.12
.219" - .249"	4.21	4.88	6.91	12.55
	4.54	6.04	9.89	15.20
.251" - .281"	5.95	6.73	9.06	15.54
	6.84	8.32	12.25	17.76
.282" - .312"	6.08	6.85	9.20	15.70
	7.07	8.52	12.50	18.04
.313" - .343"	6.48	7.25	9.61	16.14
	7.38	8.89	12.86	18.42
.344" - .374"	6.73	7.51	9.89	16.44
	7.62	9.11	13.10	18.70
NON-STANDARD				

Q = Price Per Quotation

QUANTITY DISCOUNTS
Based on one size, one shipment and one destination
500 Pieces - Less 10% 1,000 Pieces - Less 15%

Please see PAGE 1 for a complete list of modifications that are available for any of the ROYAL Family of Pins and Punches



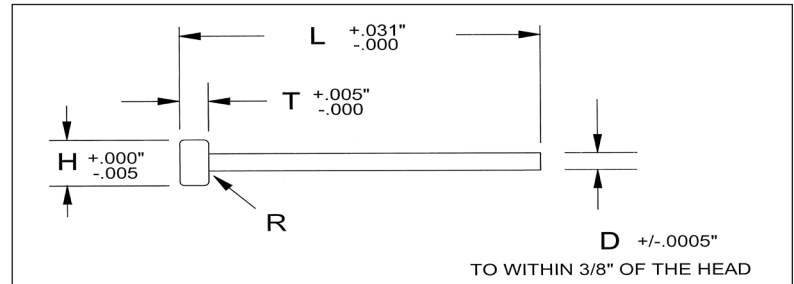
DIE KICKER PINS - FORGED HEADS

MATERIAL: OIL HARDENING TOOL STEEL

HARDNESS: 58-62 RC,

HEADS: ANNEALED

This series is not recommended for molding or die casting applications. Please refer to pages 14-22 for ejector pins and core pins for use in molding and die casting.



HOW TO ORDER: EXAMPLE

Qty.	Type	Dia.	X	Length
24	EP-9	1/8	X	6

CATALOG NUMBER	D BODY DIA.	H HEAD DIA.	T HEAD THICK.	NET PRICE EACH PER QUANTITY (US \$)								
				L-LENGTH								
				4"			6"			10"		
				100	50-99	1-49	100	50-99	1-49	100	50-99	1-49
EP-5	1/16	7/64	3/64	3.22	3.71	4.39	4.22	4.72	5.52	Q	Q	Q
EP-6	5/64	9/64	3/64	3.01	3.43	4.07	3.94	4.39	5.11	Q	Q	Q
EP-7	3/32	5/32	5/64	2.87	3.30	3.92	3.78	4.22	4.94	Q	Q	Q
EP-8	7/64	3/16	5/64	3.01	3.43	4.07	3.89	4.37	5.09	Q	Q	Q
EP-9	1/8	7/32	3/32	2.68	3.00	3.55	3.42	3.83	4.46	4.62	5.14	5.89
EP-10	9/64	1/4	7/64	2.68	3.00	3.55	3.42	3.83	4.46	4.62	5.14	5.89
EP-11	5/32	17/64	1/8	2.68	3.00	3.55	3.42	3.83	4.46	4.62	5.14	5.89
EP-12	11/64	5/16	1/8	2.80	3.18	3.74	3.56	4.02	4.63	4.79	5.27	6.07
EP-13	3/16	5/16	9/64	2.80	3.18	3.74	3.56	4.02	4.63	4.79	5.27	6.07
EP-14	13/64	11/32	5/32	3.07	3.46	4.06	3.68	4.12	4.78	4.93	5.42	6.23
EP-15	7/32	3/8	5/32	3.32	3.72	4.34	3.96	4.39	5.09	5.22	5.72	6.55
EP-16	15/64	13/32	11/64	3.42	3.83	4.46	4.22	4.68	5.39	5.34	5.88	6.74
EP-17	1/4	7/16	3/16	3.42	3.83	4.46	4.22	4.68	5.39	5.34	5.88	6.74
EP-18	17/64	7/16	1/4	4.07	4.54	5.23	4.49	4.96	5.68	5.50	6.02	6.88
EP-19	9/32	7/16	1/4	4.07	4.54	5.23	4.49	4.96	5.68	5.50	6.02	6.88
EP-20	19/64	1/2	1/4	4.36	4.82	5.52	4.62	5.05	5.83	5.77	6.32	7.19
EP-21	5/16	1/2	1/4	4.36	4.82	5.52	4.62	5.05	5.83	5.77	6.32	7.19
EP-22	21/64	9/16	1/4	4.49	4.96	5.71	4.87	5.38	6.16	6.53	7.08	8.06
EP-23	11/32	9/16	1/4	4.49	4.96	5.71	4.87	5.38	6.16	6.53	7.08	8.06
EP-24	23/64	5/8	1/4	4.62	5.05	5.83	5.17	5.68	6.46	7.10	7.70	8.74
EP-25	3/8	5/8	1/4	4.62	5.05	5.83	5.17	5.68	6.46	7.10	7.70	8.74

Q = Price Per Quotation

QUANTITY DISCOUNTS

Based on one size, one shipment and one destination
 500 Pieces - Less 10% 1,000 Pieces - Less 15%

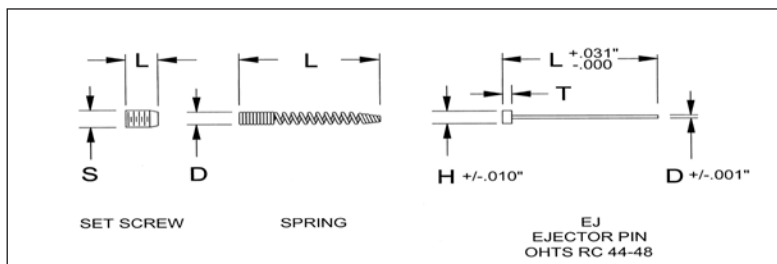
Please see PAGE 1 for a complete list of modifications that are available for any of the ROYAL Family of Pins and Punches



SLUG EJECTOR COMPONENTS

Replacement slug ejector components for shoulder head and ball-lock type ejector punches.

HOW TO ORDER: EXAMPLES	
Qty.	Cat No.
20	EJ-3
50	CS-6



PINS ONLY (10 PC. MINIMUM)

CATALOG NUMBER	D	H	T	L	NET PRICE EACH PER QUANTITY (US \$)			
	BODY DIA.	HEAD DIA.	HEAD THICK.	LENGTH	100	50-99	25-49	10-24
EJ-2	.015"	.048"	.031"	1.11"	3.38	3.88	4.92	6.05
EJ-2A	.020"	.048"	.031"	1.11"	1.75	2.30	3.30	4.42
EJ-3	.027"	.078"	.047"	1.38"	1.67	2.23	3.17	4.30
EJ-4	.041"	.094"	.062"	1.94"	1.67	2.23	3.17	4.30
EJ-6	.058"	.125"	.062"	1.94"	1.67	2.23	3.17	4.30
EJ-9	.089"	.156"	.094"	2.22"	1.75	2.30	3.30	4.42
EJ-12	.120"	.188"	.094"	2.22"	2.41	3.12	4.50	6.04

COMPONENT SETS (10 PC. MINIMUM)

(INCLUDES PINS, SPRINGS, & SET SCREWS)

CATALOG NUMBER	SPRING		SET SCREW		NET PRICE EACH PER QUANTITY (US \$)			
	D	L	S	L				
	DIA.	LENGTH	THREAD	LENGTH	100	50-99	25-49	10-24
CS-2	.062"	2"	2-56	.125"	4.92	5.38	6.55	7.68
CS-2A	.062"	2"	2-56	.125"	3.29	3.85	4.93	6.05
CS-3	.093"	2-1/2"	5-40	.125"	3.20	3.76	4.80	5.93
CS-4	.093"	2-1/2"	6-32	.125"	3.20	3.76	4.80	5.93
CS-6	.125"	3"	8-32	.125"	3.20	3.76	4.80	5.93
CS-9	.187"	3"	1/4-20	.250"	3.29	3.85	4.93	6.05
CS-12	.187"	3"	1/4-20	.250"	3.92	4.66	6.13	7.67

*Also available with 1/4-28 set screw at same price. Please specify when ordering.

QUANTITY DISCOUNTS
Apply to EJ & CS, Based on one size, one shipment and one destination Over 500 Pieces - Call for Pricing

SPRING ONLY (10 PC. MINIMUM)

CATALOG NUMBER	D	L	NET PRICE EA. (US \$)
	DIA.	LENGTH	
S-2A	.062"	2"	.92
S-3	.093"	2-1/2"	.92
S-4	.093"	2-1/2"	.92
S-6	.125"	3"	.92
S-9	.187"	3"	.92
S-12	.187"	3"	.92

SET SCREW ONLY (10 PC. MINIMUM)

CATALOG NUMBER	S	L	NET PRICE EA. (US \$)
	THREAD	LENGTH	
SS-2A	2-56	.125"	.73
SS-3	5-40	.125"	.73
SS-4	6-32	.125"	.73
SS-6	8-32	.125"	.73
SS-9	1/4-20	.250"	.73
SS-12	1/4-20	.250"	.73

MPT TYPE



Royal

METRIC M-2 TRUE-HARD™ SERIES EJECTOR PINS

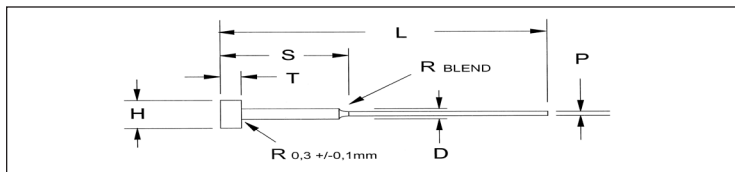
NON-STANDARD

MATERIAL: M-2 HIGH SPEED STEEL

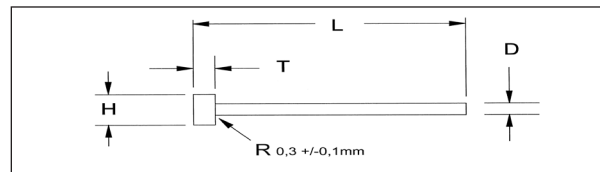
HARDNESS: THROUGH-HARDENED TO 60-63 RC

HEADS: DRAWN TO 40-55 RC (SIZES 4.0 - 6.0 ONLY)

SHOULDER STYLE



STRAIGHT STYLE



TOLERANCES (METRIC ISO)

P	D	H	T	L
-0.002 mm	+0.00 mm	+0.00 mm	+0.00 mm	+1 mm
-0.008 mm	-0.02 mm	-0.2 mm	-0.05 mm	-0 mm

TOLERANCES (METRIC ISO)

	D	H	Y	L
0 to 3	-0.002 mm -0.008 mm	+0.00 mm -0.2 mm	+0.00 mm -0.05 mm	+1 mm -0 mm
3.5 to 6	-0.004 mm -0.012 mm			

HOW TO ORDER: EXAMPLES

Qty.	Cat No.	Length
24	MPT-10-50	L-150
48	MPT-20-75	L-150

HOW TO ORDER: EXAMPLE

Qty.	Cat. No.	Length
24	MPT-35	L-150

D	H	T	P	S	CATALOG NUMBER	NET PRICE EA. (US \$)	PKG. QTY.
SHLD. DIA.	HEAD DIA.	HEAD THICK.	PIN DIA.	SHLD. LGTH.		LENGTH (mm)	
						L-150	L-200
2	4	2	0.8	50	MPT-08-50	16.31	Q
				75	MPT-08-75	16.31	Q
			0.9	50	MPT-09-50	16.31	Q
				75	MPT-09-75	16.31	Q
			1.0	35	MPT-10-35	16.31	Q
				50	MPT-10-50	16.31	19.75
				75	MPT-10-75	15.89	17.24
			1.1	50	MPT-11-50	16.31	17.15
				75	MPT-11-75	15.89	16.31
			1.2	50	MPT-12-50	16.31	17.15
				75	MPT-12-75	15.89	16.31
			1.3	50	MPT-13-50	14.98	16.99
				75	MPT-13-75	14.54	16.15
			1.4	50	MPT-14-50	14.98	16.82
				75	MPT-14-75	14.54	15.97
3	6	3	1.5	35	MPT-15-35	13.28	17.34
				50	MPT-15-50	13.28	14.78
				75	MPT-15-75	12.88	13.96
			1.6	50	MPT-16-50	12.71	14.64
				75	MPT-16-75	12.62	13.80
			1.7	50	MPT-17-50	12.52	14.46
				75	MPT-17-75	12.46	13.63
			1.8	50	MPT-18-50	12.28	14.32
				75	MPT-18-75	12.19	13.46
			1.9	50	MPT-19-50	11.86	14.12
				75	MPT-19-75	11.80	13.28
			2.0	50	MPT-20-50	11.35	13.80
				75	MPT-20-75	11.28	12.96
			2.2	50	MPT-22-50	11.03	13.46
				75	MPT-22-75	10.93	12.62
			2.5	35	MPT-25-35	10.61	14.54
				50	MPT-25-50	10.61	12.88
				75	MPT-25-75	10.52	12.04

D	H	T	CATALOG NUMBER	NET PRICE EA. (US \$)		PKG. QTY.
SHLD. DIA.	HEAD DIA.	HEAD THICK.		LENGTH (mm)		
				L-150	L-200	
2.0	4	2	MPT-20	11.11	19.50	12
2.5	5	2	MPT-25	10.61	16.82	
3.0	6	3	MPT-30	8.00	13.28	
3.5	7	3	MPT-35	8.08	13.37	
4.0	8	3	MPT-40	8.08	13.37	
5.0	10	3	MPT-50	10.33	15.14	
6.0	12	5	MPT-60	10.33	15.14	

QUANTITY DISCOUNTS

Based on one shipment and one destination.

Apply to all MPT's in catalog and are combinable with
PT, RHX, RX, ME, RC, and
RCX Ejector Pins and Core Pins.

300 Pcs. (ONE SIZE) - Less 5%
500 Pcs. (CUMULATIVE) - Less 5%
1200 Pcs. (CUMULATIVE) - Less 7%

Q = Price Per Quotation

Please see PAGE 1 for a complete list of modifications that are available for any of the ROYAL Family of Pins and Punches

PT AND PTD TRUE-HARD™ SERIES



Royal

M-2 EJECTOR/CORE PINS

MATERIAL: M-2 HIGH SPEED STEEL

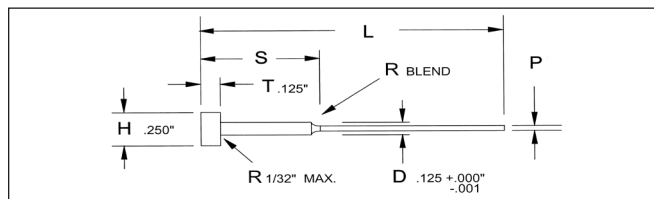
HARDNESS: THROUGH-HARDENED TO 60-63 RC

Royal TRUE-HARD™ Ejector/Core Pins are made from superior quality, wear resistant M-2 high speed steel, through hardened and double tempered to 60-63 RC in our specially developed vacuum heat treating equipment which is computer regulated to produce maximum toughness and durability. The diameters are precision ground after hardening to insure the high accuracy and finish.

TIGHTEST TOLERANCE IN THE INDUSTRY (.0003")

TOLERANCES				
P		H	T	L
PT	-.0005" -.0008"	PTD +.0000" -.0003"	+.000" -.002"	+.375" -.000"

SHOULDER STYLE



HOW TO ORDER: EXAMPLES			
Qty.	Type	Length	P (If PTD)
12	PT-5-3	L-8	
36	PTD-7-2	L-6	P= .0925

PT TYPE STANDARD FRACTIONAL DIAMETERS 12 PINS PER PACKAGE						PTD TYPE NON-STANDARD DECIMAL DIAMETERS .0001" INCREMENTS													
P	-.0005" -.0008"	S	CAT. NO.	L-6"	L-8"	P	+ .0000" -.0003"	S	CAT. NO.	NET PRICE EACH PER QUANTITY (US \$)									
NOM. PIN DIA.	ACTUAL PIN DIA.	SHL. LGTH.		STD. DIA.	STD. DIA.	DIA. RANGE	SHL. LGTH.	L-6"					L-8"						
										50-99	25-49	10-24	5-9	1-4	50-99	25-49	10-24	5-9	1-4
1/32	.0308" .0305"	1/2"	PT-2-1/2	11.42	Q	UNDER .0312"	1/2"	PTD-2-1/2	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
		2"	PT-2-2	10.51	11.28		2"	PTD-2-2	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
		3"	PT-2-3	Q	11.28		3"	PTD-2-3	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
		4"	PT-2-4	Q	9.60		4"	PTD-2-4	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	
3/64	.0464" .0461"	1/2"	PT-3-1/2	7.25	Q	.0313" THRU .0469"	1/2"	PTD-3-1/2	10.18	12.29	18.84	23.16	28.40	Q	Q	Q	Q	Q	Q
		2"	PT-3-2	7.08	9.14		2"	PTD-3-2	10.03	12.14	18.67	22.99	28.21	13.80	15.92	23.44	27.94	33.19	
		3"	PT-3-3	Q	9.14		3"	PTD-3-3	Q	Q	Q	Q	Q	13.80	15.92	23.44	27.94	33.19	
		4"	PT-3-4	Q	8.22		4"	PTD-3-4	Q	Q	Q	Q	Q	12.95	15.08	22.43	26.90	32.15	
1/16	.0620" .0617"	1/2"	PT-5-1/2	6.25	11.58	.0470" THRU .0625"	1/2"	PTD-5-1/2	9.25	11.36	17.75	22.02	27.25	Q	Q	Q	Q	Q	Q
		2"	PT-5-2	6.01	8.22		2"	PTD-5-2	9.06	11.16	17.51	21.77	26.99	12.95	15.08	22.43	26.90	32.15	
		3"	PT-5-3	Q	8.22		3"	PTD-5-3	Q	Q	Q	Q	Q	12.95	15.08	22.43	26.90	32.15	
		4"	PT-5-4	Q	7.46		4"	PTD-5-4	Q	Q	Q	Q	Q	12.24	14.36	21.60	26.03	31.27	
5/64	.0776" .0773"	1/2"	PT-6-1/2	6.25	11.58	.0626" THRU .0781"	1/2"	PTD-6-1/2	9.25	11.36	17.75	22.02	27.25	Q	Q	Q	Q	Q	Q
		2"	PT-6-2	6.01	8.22		2"	PTD-6-2	9.06	11.16	17.51	21.77	26.99	12.95	15.08	22.43	26.90	32.15	
		3"	PT-6-3	Q	8.22		3"	PTD-6-3	Q	Q	Q	Q	Q	12.95	15.08	22.43	26.90	32.15	
		4"	PT-6-4	Q	7.46		4"	PTD-6-4	Q	Q	Q	Q	Q	12.24	14.36	21.60	26.03	31.27	
3/32	.0933" .0930"	1/2"	PT-7-1/2	5.78	9.14	.0782" THRU .0938"	1/2"	PTD-7-1/2	8.86	10.94	17.26	21.49	26.74	Q	Q	Q	Q	Q	Q
		2"	PT-7-2	5.54	7.14		2"	PTD-7-2	8.63	10.74	17.00	21.23	26.48	11.96	14.08	21.25	25.68	30.92	
		3"	PT-7-3	Q	7.14		3"	PTD-7-3	Q	Q	Q	Q	Q	11.96	14.08	21.25	25.68	30.92	
		4"	PT-7-4	Q	6.76		4"	PTD-7-4	Q	Q	Q	Q	Q	11.68	13.80	20.93	25.33	30.58	
7/64	.1089" .1086"	1/2"	PT-8-1/2	5.78	9.14	.0939" THRU .1094"	1/2"	PTD-8-1/2	8.86	10.94	17.26	21.49	26.74	Q	Q	Q	Q	Q	Q
		2"	PT-8-2	5.54	7.14		2"	PTD-8-2	8.63	10.74	17.00	21.23	26.48	11.96	14.08	21.25	25.68	30.92	
		3"	PT-8-3	Q	7.14		3"	PTD-8-3	Q	Q	Q	Q	Q	11.96	14.08	21.25	25.68	30.92	
		4"	PT-8-4	Q	6.76		4"	PTD-8-4	Q	Q	Q	Q	Q	11.68	13.80	20.93	25.33	30.58	
Q = Price Per Quotation						.1095" THRU .1245"	1/2"	PTD-9-1/2	6.68	8.77	14.68	18.79	24.02	Q	Q	Q	Q	Q	Q
							2"	PTD-9-2	6.46	8.63	14.41	18.53	23.76	10.61	12.73	19.68	24.02	29.28	
							3"	PTD-9-3	Q	Q	Q	Q	Q	10.61	12.73	19.68	24.02	29.28	
							4"	PTD-9-4	Q	Q	Q	Q	Q	10.33	12.44	19.36	23.68	28.92	



M-2 EJECTOR/CORE PINS

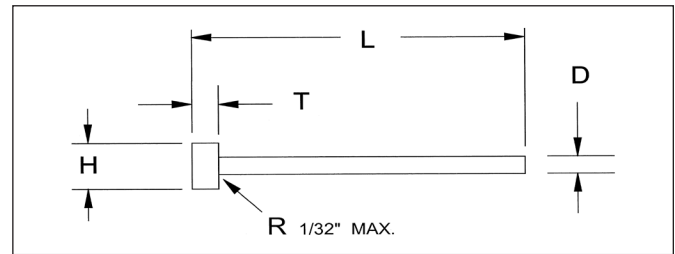
MATERIAL: M-2 HIGH SPEED STEEL

HARDNESS: THROUGH-HARDENED TO 60-63 RC

HEADS: DRAWN TO 40-55 RC (PT-11 THROUGH PT-17)

Royal **TRUE-HARD™** Ejector/Core Pins are made from superior quality, wear resistant M-2 high speed steel, through hardened and double tempered to 60-63 RC in our specially developed vacuum heat treating equipment which is computer regulated to produce maximum toughness and durability. The diameters are precision ground after hardening to insure the high accuracy and finish.

STRAIGHT STYLE



TIGHTEST TOLERANCE IN THE INDUSTRY (.0003")

TOLERANCES				
D		H	T	L
PT	-.0005" -.0008"	PTD +.0000" -.0003"	+.000" -.010"	+.000" -.002"
				+.375" -.000"

HOW TO ORDER: EXAMPLES			
Qty.	Type	Length	D (If PTD)
12	PT-9	L-8	
36	PTD-5	L-6	D= .0595

PT TYPE STANDARD FRACTIONAL DIAMETERS 12 PINS PER PACKAGE							PTD TYPE NON-STANDARD DECIMAL DIAMETERS .0001" INCREMENTS													
D -.0005" -.0008"		H	T	CAT. NO.	L-6"	L-8"	D +.0000" -.0003"	H	T	CAT. NO.	NET PRICE EACH PER QUANTITY (US \$)									
NOM. PIN DIA.	ACTUAL PIN DIA.	HD. DIA.	HD. TK.		STD. DIA.	STD. DIA.	DIA. RANGE	HD. DIA.	HD. TK.		L-6"					L-8"				
											50-99	25-49	10-24	5-9	1-4	50-99	25-49	10-24	5-9	1-4
1/32"	.0308" .0305"	1/4	1/8	PT-2	11.42	Q	UNDER .0312"	1/4	1/8	PTD-2	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
3/64"	.0464" .0461"			PT-3	7.25	Q	.0313" - .0469"			PTD-3	10.60	12.73	19.75	24.10	29.35	Q	Q	Q	Q	Q
1/16"	.0620" .0617"			PT-5	6.25	11.58	.0470" - .0625"			PTD-5	9.77	11.88	18.65	22.99	28.21	16.98	19.12	27.47	37.39	54.84
5/64"	.0776" .0773"			PT-6	6.25	11.58	.0626" - .0781"			PTD-6	9.77	11.88	18.65	22.99	28.21	16.98	19.12	27.47	37.39	54.84
3/32"	.0933" .0930"			PT-7	5.78	9.14	.0782" - .0938"			PTD-7	9.20	11.32	18.08	22.37	27.60	14.58	16.69	24.61	34.42	51.89
7/64"	.1089" .1086"			PT-8	5.78	9.14	.0939" - .1094"			PTD-8	9.20	11.32	18.08	22.37	27.60	14.58	16.69	24.61	34.42	51.89
1/8"	.1245" .1242"			PT-9	3.92	6.16	.1095" - .1250"			PTD-9	7.01	9.13	15.41	19.57	24.82	11.47	13.57	20.93	30.58	48.05
9/64"	.1401" .1398"			PT-10	4.06	6.53	.1251" - .1406"			PTD-10	7.01	9.13	15.49	19.66	24.90	11.53	13.67	21.02	30.66	48.13
5/32"	.1558" .1555"	9/32	5/32	PT-11	4.06	7.61	.1407" - .1562"	9/32	5/32	PTD-11	7.01	9.13	15.49	19.66	24.90	11.53	13.67	21.02	30.66	48.13
11/64"	.1714" .1711"	11/32	3/16	PT-12	5.33	7.61	.1563" - .1719"	11/32	3/16	PTD-12	8.86	10.97	17.59	21.84	27.10	13.10	15.20	22.87	32.59	50.06
3/16"	.1870" .1867"	3/8	3/16	PT-13	5.33	7.61	.1720" - .1875"	3/8	3/16	PTD-13	8.86	10.97	17.59	21.84	27.10	13.10	15.20	22.87	32.59	50.06
13/64"	.2026" .2023"	3/8	3/16	PT-14	5.33	7.61	.1876" - .2031"	3/8	3/16	PTD-14	8.86	10.97	17.59	21.84	27.10	13.10	15.20	22.87	32.59	50.06
7/32"	.2183" .2180"	13/32	3/16	PT-15	5.33	7.61	.2032" - .2187"	13/32	3/16	PTD-15	8.86	10.97	17.59	21.84	27.10	13.10	15.20	22.87	32.59	50.06
15/64"	.2339" .2336"	13/32	3/16	PT-16	5.33	7.61	.2188" - .2343"	13/32	3/16	PTD-16	8.86	10.97	17.59	21.84	27.10	13.10	15.20	22.87	32.59	50.06
1/4"	.2495" .2492"	7/16	3/16	PT-17	5.33	7.61	.2344" - .2500"	7/16	3/16	PTD-17	8.86	10.97	17.59	21.84	27.10	13.10	15.20	22.87	32.59	50.06

Q = Price Per Quotation

QUANTITY DISCOUNTS		
One Shipment and One Destination		
Apply to PT only and are combinable with RHX, RX, RC, RCX, ME and MPT Ejector and Core Pins		
300 Pieces (ONE SIZE) - Less 5%	500 Pieces (CUMULATIVE) - Less 5%	1200 Pieces. (CUMULATIVE) - Less 7%

H-13 “THROUGH-HARDENED” HOTWORK EJECTOR PINS

MATERIAL: H-13 HOTWORK DIE STEEL

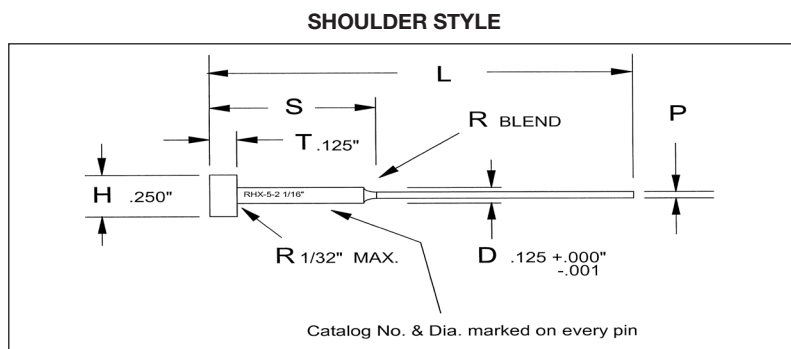
CORE: THROUGH-HARDENED TO 50-55 RC

SURFACE: ION NITRIDED TO 65-74 RC

HEADS: ANNEALED

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

HOW TO ORDER: EXAMPLES			
Qty.	Cat No.	(IF .005" O.S.)	Length
24	RHX-7-1/2	+.005	L-10
48	RHX-3-2		L-6



CATALOG NUMBER	P		S	NET PRICE EACH PER QUANTITY (US \$)					PKG. QTY.
	PIN DIA.		SHOULDER LENGTH	L-6"	L-10"		L-14"		
	NOMINAL DIA.	DECIMAL EQUIV.		STANDARD DIA.	STANDARD DIA.	+.005" OVERSIZED DIA.	STANDARD DIA.	+.005" OVERSIZED DIA.	
RHX-2-1/2	1/32	0.03125	1/2"	7.35	Q	Q	Q	Q	12
RHX-2-2			2"	7.25	Q	Q	Q	Q	
RHX-2-3			3"	Q	9.15	10.10	Q	Q	
RHX-2-4			4"	Q	9.15	10.10	Q	Q	
RHX-3-1/2	3/64	0.0469	1/2"	4.25	Q	Q	Q	Q	
RHX-3-2			2"	4.05	4.65	5.40	Q	Q	
RHX-3-3			3"	Q	5.10	6.15	Q	Q	
RHX-3-4			4"	Q	5.70	6.15	Q	Q	
RHX-5-1/2	1/16	0.0625	1/2"	3.95	4.90	5.60	Q	Q	
RHX-5-2			2"	3.85	4.50	5.40	6.20	7.15	
RHX-5-3			3"	Q	4.75	5.85	Q	Q	
RHX-5-4			4"	Q	5.30	6.45	Q	Q	
RHX-6-1/2	5/64	0.0781	1/2"	3.95	4.90	5.70	Q	Q	
RHX-6-2			2"	3.85	4.50	5.10	6.20	7.15	
RHX-6-3			3"	Q	4.75	5.85	Q	Q	
RHX-6-4			4"	Q	5.30	6.45	Q	Q	
RHX-7-1/2	3/32	0.0938	1/2"	3.60	4.55	5.10	Q	Q	
RHX-7-2			2"	3.40	4.30	4.90	5.80	6.75	
RHX-7-3			3"	Q	4.30	5.35	Q	Q	
RHX-7-4			4"	Q	4.75	5.85	Q	Q	
RHX-8-1/2	7/64	0.1094	1/2"	3.60	4.55	5.10	Q	Q	
RHX-8-2			2"	3.40	4.05	4.60	5.80	6.75	
RHX-8-3			3"	Q	4.30	5.35	Q	Q	
RHX-8-4			4"	Q	4.75	5.85	Q	Q	

Q = Price Per Quotation

Please see PAGE 1 for a complete list of modifications that are available for any of the ROYAL Family of Pins and Punches

H-13 "THROUGH-HARDENED" HOTWORK EJECTOR PINS

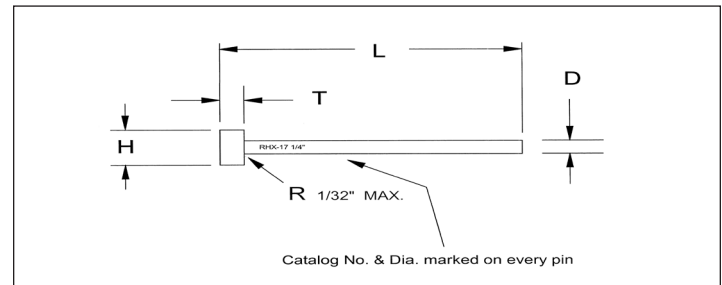
MATERIAL: H-13 HOTWORK DIE STEEL

CORE: THROUGH-HARDENED TO 50-55 RC

SURFACE: ION NITRIDED TO 65-74 RC

HEADS: ANNEALED

STRAIGHT STYLE



TIGHTEST TOLERANCE IN THE INDUSTRY (.0003")

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

HOW TO ORDER: EXAMPLES			
Qty.	Cat No.	(IF .005" O.S.)	Length
24	RHX-13	+.005	L-10
48	RHX-9		L-10

CAT. NO.	D		H	T	NET PRICE EACH PER QUANTITY (US \$)					PKG. QTY.
	PIN DIA.		HEAD DIA.	HEAD THICK.	L-6"	L-10"		L-14"		
	NOMINAL DIA.	DECIMAL EQUIV.			STANDARD DIA.	STANDARD DIA.	+.005" OVERSIZED DIA.	STANDARD DIA.	+.005" OVERSIZED DIA.	
RHX-3	3/64	0.0469	1/4	1/8	4.30	Q	Q	Q	Q	12
RHX-5	1/16	0.0625			4.05	4.75	5.30	Q	Q	
RHX-6	5/64	0.0781			4.05	4.75	5.30	Q	Q	
RHX-7	3/32	0.0938			3.65	4.10	4.85	Q	Q	
RHX-8	7/64	0.1094			3.65	4.10	4.85	Q	Q	
RHX-9	1/8	0.1250			1.95	2.15	2.25	2.50	2.80	
RHX-10	9/64	0.1406			2.15	2.35	3.15	3.05	Q	
RHX-11	5/32	0.1563	9/32	5/32	2.05	2.30	2.40	2.80	3.05	
RHX-12	11/64	0.1719	11/32	3/16	2.30	2.50	3.35	3.05	Q	
RHX-13	3/16	0.1875	3/8	3/16	2.10	2.45	2.55	3.10	3.30	
RHX-14	13/64	0.2031	3/8	3/16	2.55	2.70	Q	3.25	Q	
RHX-15	7/32	0.2188	13/32	3/16	2.30	2.70	2.95	3.35	Q	
RHX-16	15/64	0.2344	13/32	3/16	2.85	3.00	Q	3.70	Q	
RHX-17	1/4	0.2500	7/16	3/16	2.45	3.00	3.10	3.70	4.00	
RHX-18	17/64	0.2656	7/16	1/4	3.25	3.35	Q	4.05	Q	
RHX-19	9/32	0.2813	7/16	1/4	2.75	3.45	3.55	4.20	Q	
RHX-20	19/64	0.2969	1/2	1/4	3.65	3.80	Q	4.70	Q	
RHX-21	5/16	0.3125	1/2	1/4	3.05	3.80	3.90	4.75	5.25	
RHX-22	21/64	0.3281	9/16	1/4	4.00	4.20	Q	5.30	Q	
RHX-23	11/32	0.3438	9/16	1/4	3.40	4.30	4.55	5.50	Q	
RHX-24	23/64	0.3594	5/8	1/4	4.40	4.75	Q	5.95	Q	
RHX-25	3/8	0.3750	5/8	1/4	3.65	4.85	5.05	6.00	6.35	
RHX-26	25/64	0.3906	37/64	1/4	5.35	5.90	Q	Q	Q	
RHX-27	13/32	0.4063	11/16	1/4	4.00	5.30	5.70	6.90	Q	
RHX-28	27/64	0.4219	11/16	1/4	5.25	6.75	Q	Q	Q	
RHX-29	7/16	0.4375	11/16	1/4	4.35	5.90	6.15	7.60	8.40	
RHX-30	29/64	0.4531	45/64	1/4	5.70	7.05	Q	Q	Q	
RHX-31	15/32	0.4688	3/4	1/4	5.10	6.45	6.85	9.30	Q	
RHX-32	31/64	0.4844	3/4	1/4	6.20	8.15	Q	Q	Q	
RHX-33	1/2	0.5000	3/4	1/4	5.15	6.95	7.45	9.15	9.75	

Q = Price Per Quotation

QUANTITY DISCOUNTS		
Apply to all standard RHX, and are combinable with PT, RX, RC, RCX, MPT, and ME Ejector and Core Pins		
300 Pieces (ONE SIZE) - Less 5%	500 Pieces (CUMULATIVE) - Less 5%	1200 Pieces (CUMULATIVE) - Less 7%

H-13 HOTWORK EJECTOR PINS

MATERIAL: H-13 HOTWORK DIE STEEL

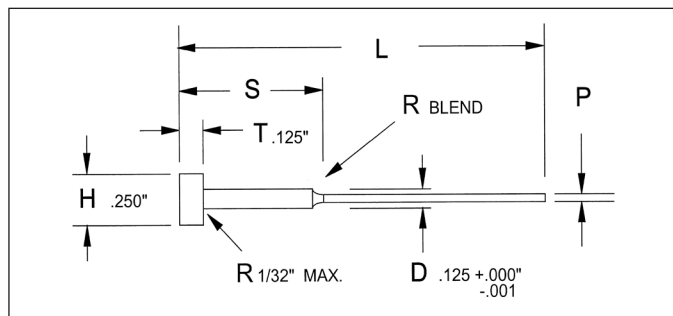
CORE: THROUGH-HARDENED TO 41-45 RC

SURFACE: ION NITRIDED TO 65-74 RC

HEADS: ANNEALED

Royal **KNIGHTRIDE™** Series Ejector Pins are precision crafted from the finest grade of H-13 thermal shock resistant hotwork die steel. The heads are hot forged and stress relieved for uniform grain flow and high tensile strength. The core is through hardened to 41-45 RC and the surface is ion nitrided to 65-74 RC in a proprietary process, designed to create a diffusion layer between the nitrided case and the hardened core. The process produces the ideal combination of toughness and long life and it also prevents surface nicking and flaking which may be a problem with other nitrided pins. The diameters are precision ground to a high surface finish (5-10 Ra) and tight tolerance (.0003") which reduces friction and increases pin life.

SHOULDER STYLE



TIGHTEST TOLERANCE IN THE INDUSTRY (.0003")

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

HOW TO ORDER: EXAMPLES			
Qty.	Cat No.	(IF .005" O.S.)	Length
24	RX-3-2		L-6
48	RX-5-1/2	+.005	L-10

P		S	CATALOG NUMBER	L-4"	L-6"	L-10"		L-14"	PKG. QTY.
NOMINAL DIA.	DECIMAL EQUIV.	SHOULDER LENGTH		STANDARD DIA.	STANDARD DIA.	STANDARD DIA.	+.005" OVERSIZED DIA.	STANDARD DIA.	
1/32	.0308" .0305"	1/2"	RX-2-1/2	Q	6.51	Q	Q	Q	12
		2"	RX-2-2	Q	6.41	Q	Q	Q	
		3"	RX-2-3	Q	Q	8.04	Q	Q	
		4"	RX-2-4	Q	Q	8.04	Q	Q	
3/64	.0464" .0461"	1/2"	RX-3-1/2	3.89	3.94	4.99	5.68	6.94	
		2"	RX-3-2	3.86	3.91	4.69	5.47	6.72	
		3"	RX-3-3	Q	Q	4.69	Q	Q	
		4"	RX-3-4	Q	Q	4.69	Q	Q	
1/16	.0620" .0617"	1/2"	RX-5-1/2	3.52	3.56	4.56	5.36	6.40	
		2"	RX-5-2	3.43	3.48	4.35	5.15	6.04	
		3"	RX-5-3	Q	Q	4.18	Q	Q	
		4"	RX-5-4	Q	Q	4.35	Q	Q	
5/64	.0776" .0773"	1/2"	RX-6-1/2	3.52	3.56	4.56	5.36	6.40	
		2"	RX-6-2	3.43	3.48	4.35	5.15	6.04	
		3"	RX-6-3	Q	Q	4.18	Q	Q	
		4"	RX-6-4	Q	Q	4.35	Q	Q	
3/32	.0933" .0930"	1/2"	RX-7-1/2	3.16	3.21	4.14	4.92	6.07	
		2"	RX-7-2	3.08	3.12	3.93	4.70	5.92	
		3"	RX-7-3	Q	Q	3.76	Q	Q	
		4"	RX-7-4	Q	Q	3.93	Q	Q	
7/64	.1089" .1086"	1/2"	RX-8-1/2	3.16	3.21	4.14	4.92	6.07	
		2"	RX-8-2	3.08	3.12	3.93	4.70	5.80	
		3"	RX-8-3	Q	Q	3.76	Q	Q	
		4"	RX-8-4	Q	Q	3.93	Q	Q	

Q = Price Per Quotation

QUANTITY DISCOUNTS		
Apply to all standard RX, and are combinable with PT, RHX, RC, RCX, MPT, and ME Ejector and Core Pins		
300 Pieces (ONE SIZE) - Less 5%	500 Pieces (CUMULATIVE) - Less 5%	1200 Pieces (CUMULATIVE) - Less 7%

Please refer to pages 15 and 16 for our M-2 High Speed Steel **TRUE-HARD™** Series Ejector/Core Pins. The **TRUE-HARD™** pins are stocked in standard fractional diameters, up to 1/4" (PT Type) and are available for quick delivery in .0001" increment diameters (PTD TYPE)

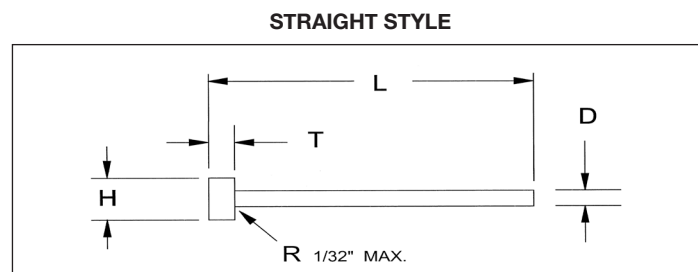
Please see PAGE 1 for a complete list of modifications that are available for any of the ROYAL Family of Pins and Punches

H-13 HOTWORK EJECTOR PINS

TIGHTEST TOLERANCE IN THE INDUSTRY (.0003")

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

HOW TO ORDER: EXAMPLES			
Qty.	Cat No.	(IF .005" O.S.)	Length
25	RX-13	+.005	L-10
50	RX-5		L-10



D		H	T	CATALOG NUMBER	L-4"	L-6"	L-10"		L-14"		L-18"		L-25"	L-36"	PKG. QTY.
PIN DIA. NOMINAL DIA.	DECIMAL EQUIV.	HEAD DIA.	HEAD THICK.		STD DIA.	STD DIA.	STD DIA.	+.005" DIA.	STD DIA.	+.005" DIA.	STD DIA.	+.005" DIA.	STD DIA.	STD DIA.	
1/32	0.0313	1/4	1/8	RX-2	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	12
3/64	0.0469			RX-3	3.82	3.87	Q	Q	Q	Q	Q	Q	Q	Q	
1/16	0.0625			RX-5	3.56	3.65	5.17	6.02	Q	Q	Q	Q	Q	Q	
5/64	0.0781			RX-6	3.56	3.65	4.83	6.02	Q	Q	Q	Q	Q	Q	
3/32	0.0938			RX-7	3.20	3.30	3.75	4.75	Q	Q	Q	Q	Q	Q	
7/64	0.1094			RX-8	3.20	3.30	3.75	4.75	Q	Q	Q	Q	Q	Q	
1/8	0.1250			RX-9	1.73	1.79	1.99	2.36	2.61	2.80	6.06	Q	Q	Q	
9/64	0.1406			RX-10	Q	2.19	2.23	2.54	3.04	Q	5.77	Q	Q	Q	
5/32	0.1563	9/32	5/32	RX-11	1.81	1.87	2.09	2.46	2.81	3.10	3.99	Q	Q	Q	
11/64	0.1719	11/32	3/16	RX-12	2.18	2.24	2.50	2.89	3.32	Q	Q	Q	Q	Q	
3/16	0.1875	3/8	3/16	RX-13	1.90	1.95	2.39	2.69	3.10	3.50	4.28	Q	6.12	Q	12
13/64	0.2031			RX-14	Q	Q	2.74	Q	3.52	Q	Q	Q	Q	Q	
7/32	0.2188	13/32	3/16	RX-15	2.13	2.18	2.73	3.06	3.62	Q	Q	Q	6.63	Q	
15/64	0.2344			RX-16	Q	Q	3.00	Q	3.88	Q	Q	Q	Q	Q	
B	0.2380	7/16	3/16	RX-B	Q	Q	4.39	Q	Q	Q	Q	Q	Q	Q	
C	0.2420			RX-C	Q	Q	4.49	Q	Q	Q	Q	Q	Q	Q	
D	0.2460			RX-D	Q	Q	4.59	Q	Q	Q	Q	Q	Q	Q	
1/4	0.2500			RX-17	2.24	2.29	2.98	3.34	3.86	4.27	4.95	5.60	7.13	Q	
F	0.2570			RX-F	Q	Q	4.64	Q	Q	Q	Q	Q	Q	Q	
G	0.2610	7/16	1/4	RX-G	Q	Q	4.69	Q	Q	Q	Q	Q	Q	Q	
17/64	0.2656			RX-18	Q	Q	3.52	Q	4.21	Q	Q	Q	7.55	Q	
I	0.2720			RX-I	Q	Q	4.85	Q	Q	Q	Q	Q	Q	Q	
J	0.2770			RX-J	Q	Q	4.90	Q	Q	Q	Q	Q	Q	Q	
9/32	0.2813			RX-19	2.77	2.87	3.65	3.75	4.35	Q	5.80	Q	8.05	Q	
L	0.2900	1/2	1/4	RX-L	Q	Q	5.20	Q	Q	Q	Q	Q	Q	Q	12
M	0.2950			RX-M	Q	Q	5.25	Q	Q	Q	Q	Q	Q	Q	
19/64	0.2969			RX-20	Q	Q	3.86	Q	4.85	Q	Q	Q	Q	Q	
N	0.3020			RX-N	Q	Q	5.36	Q	Q	Q	Q	Q	Q	Q	
5/16	0.3125			RX-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	RX-P	Q	Q	5.66	Q	Q	Q	Q	Q	Q	Q	
21/64	0.3281			RX-22	Q	Q	4.35	Q	5.64	Q	Q	Q	9.37	Q	
Q	0.3320			RX-Q	Q	Q	5.87	Q	Q	Q	Q	Q	Q	Q	
R	0.3390			RX-R	Q	Q	5.97	Q	Q	Q	Q	Q	Q	Q	
11/32	0.3438			RX-23	3.51	3.56	4.55	4.70	5.73	Q	Q	Q	9.70	Q	
23/64	0.3594	5/8	1/4	RX-24	Q	Q	4.85	Q	6.13	Q	Q	Q	Q	Q	
U	0.3680			RX-U	Q	Q	6.48	Q	Q	Q	Q	Q	Q	Q	
3/8	0.3750			RX-25	3.71	3.75	5.05	5.24	6.19	6.77	8.35	9.18	11.88	31.61	
V	0.3770			RX-V	Q	Q	6.63	Q	Q	Q	Q	Q	Q	Q	
W	0.3860			RX-W	Q	Q	6.63	Q	Q	Q	Q	Q	Q	Q	
X	0.3970	11/16	1/4	RX-X	Q	Q	6.99	Q	Q	Q	Q	Q	Q	Q	6
Y	0.4040			RX-Y	Q	Q	7.14	Q	Q	Q	Q	Q	Q	Q	
13/32	0.4063			RX-27	4.11	4.15	5.63	5.90	7.28	Q	9.60	Q	13.82	Q	
7/16	0.4375			RX-29	4.46	4.55	6.19	6.43	7.87	8.62	10.70	Q	15.45	34.31	
15/32	0.4688			RX-31	5.73	5.83	6.78	7.02	11.29	Q	11.82	Q	17.58	Q	
1/2	0.5000	3/4	1/4	RX-33	5.29	5.44	7.37	7.71	9.69	10.29	12.80	Q	19.02	37.98	
9/16	0.5625			RX-35	Q	6.72	9.17	Q	11.68	Q	15.25	Q	21.82	Q	
5/8	0.6250	7/8	1/4	RX-37	Q	7.79	10.76	Q	13.56	Q	17.60	Q	24.63	Q	6
11/16	0.6875	15/16	1/4	RX-39	Q	10.26	12.69	Q	17.89	Q	25.76	Q	28.75	Q	
3/4	0.7500	1	1/4	RX-41	Q	10.86	14.58	Q	18.55	Q	26.76	Q	32.69	Q	
7/8	0.8750	1-1/8	1/4	RX-45	Q	23.30	27.40	Q	46.55	Q	65.75	Q	84.85	Q	4
1	1.0000	1-1/4	1/4	RX-47	Q	24.40	27.40	Q	53.95	Q	69.80	Q	90.35	Q	2

Q=Price Per Quotation

See previous page for Custom Modification information and Quantity Discounts.

METRIC KNIGHTRIDE™ SERIES H-13 HOTWORK EJECTOR PINS

MATERIAL: H-13 HOTWORK DIE STEEL

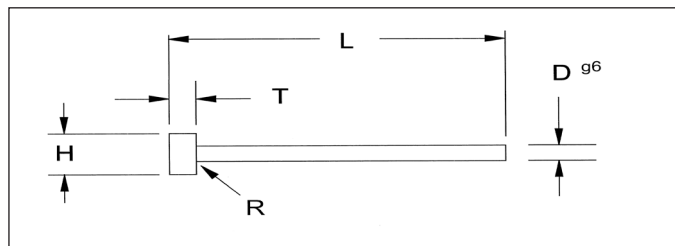
CORE: THROUGH-HARDENED TO 41-45 RC

SURFACE: ION NITRIDED TO 65-74 RC

HEADS: ANNEALED

TOLERANCES (METRIC ISO)				
PIN DIA. (D)g6		R	Head Dia. (H)	+0.0mm -0.2mm
SIZE	TOLERANCE			
0 to 3 mm	-.002 mm -.008 mm	0.3 mm	Head Thick. (T)	+0.00 mm -0.05 mm
3.5 to 6 mm	-.004 mm -.012 mm	0.3 mm		
6.5 to 10 mm	-.005 mm -.014 mm	0.5 mm	Length (L)	+2.0 mm -0.0 mm
11 to 18 mm	-.006 mm -.017 mm	0.8 mm		
20 to 25 mm	-.007 mm -.020 mm	0.8 mm		

STRAIGHT STYLE



HOW TO ORDER: EXAMPLE		
Qty.	Cat No.	Length
24	ME-2.5	L-160

CATALOG NUMBER	D	H	T	NET PRICE EACH (US \$)				PKG. QTY.
				LENGTH (mm)				
	PIN DIA.	HEAD DIA.	HEAD THICK.	L-160	L-250	L-315	L-400	
ME-2.0	2.0	4	2	3.32	3.42	Q	Q	12
ME-2.5	2.5	5	2	3.37	3.67	4.28	Q	
ME-3.0	3.0	6	3	2.60	3.83	4.08	4.56	
ME-3.5	3.5	7	3	3.98	4.69	5.66	Q	
ME-4.0	4.0	8	3	2.81	4.18	4.49	5.30	
ME-4.5	4.5	8	3	4.39	5.51	6.27	Q	
ME-5.0	5.0	10	3	3.01	3.88	4.95	6.14	
ME-5.5	5.5	10	3	4.64	5.87	6.73	Q	
ME-6.0	6.0	12	5	3.77	5.41	6.27	7.88	
ME-6.5	6.5	12	5	5.15	7.19	8.31	Q	
ME-7.0	7.0	12	5	5.51	7.85	8.98	Q	
ME-8.0	8.0	14	5	4.90	7.19	8.52	10.61	
ME-9.0	9.0	14	5	6.63	10.10	11.63	Q	
ME-10.0	10.0	16	5	5.76	8.67	10.15	12.50	
ME-11.0	11.0	16	5	8.77	13.46	15.91	Q	
ME-12.0	12.0	18	7	6.78	9.79	13.46	Q	
ME-12.5	12.5	18	7	8.26	11.73	15.35	Q	
ME-14.0	14.0	22	7	8.57	12.65	Q	Q	6
ME-16.0	16.0	22	7	9.59	14.59	Q	Q	
ME-18.0	18.0	24	7	Q	19.18	Q	Q	
ME-20.0	20.0	26	8	Q	22.44	Q	Q	4
ME-25.0	25.0	32	10	Q	39.22	Q	Q	2

Q = Price Per Quotation

QUANTITY DISCOUNTS		
Apply to all standard ME Pins, and are combinable with PT, RHX, RC, RCX, MPT, and RX Ejector and Core Pins - One shipment, one destination		
300 Pieces (ONE SIZE) - Less 5%	500 Pieces (CUMULATIVE) - Less 5%	1200 Pieces (CUMULATIVE) - Less 7%

Please see PAGE 1 for a complete list of modifications that are available for any of the ROYAL Family of Pins and Punches

RC AND RCX TYPES

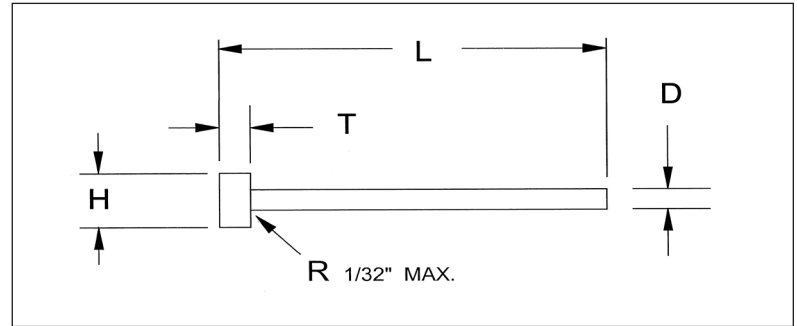
Royal

STANDARD H-13 CORE PINS

HARDNESS: 30-35 RC (RC TYPE)

50-55 RC (RCX TYPE)

HEADS: ANNEALED (RCX TYPE)



HOW TO ORDER: EXAMPLES		
Qty.	Cat No.	Length
24	RC-9	L-6
12	RCX-13	L-3

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

Q = Price Per Quotation

TOLERANCES		
D	PIN DIA.	+0.001" -0.000"
H	HEAD DIA.	+0.000" -0.010"
T	HEAD THICK.	+0.000" -0.002"
L	OVERALL LENGTH	+0.375" -0.000"

QUANTITY DISCOUNTS	
Based on one shipment and one destination	
Apply to all standard RC and RCX pins, and are combinable with PT, RX, ME, RHX, and MPT Ejector pins.	
300 Pcs. (ONE SIZE) - Less 5%	
500 Pcs. (CUMULATIVE) - Less 5%	
1200 Pcs. (CUMULATIVE) - Less 7%	

*Decimal diameters can be made to order for prompt delivery. Also, please refer to pages 2, 3, 4, 5, & 6 for core pin blanks stocked in .001" increments from 0.010" diameter.

KNIGHTRIDE™ SERIES H-13 HOTWORK EJECTOR SLEEVES

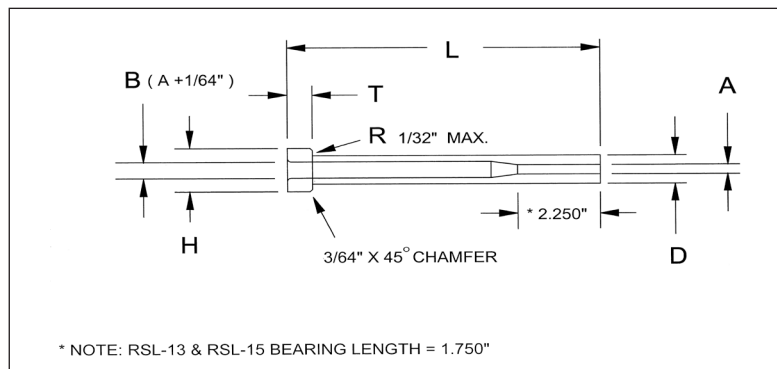
MATERIAL: H-13 HOTWORK DIE STEEL

HARDNESS: I.D. & O.D. NITRIDED TO 65-74 RC

NITRIDED O.D. & I.D.

TOLERANCES				
A	D	H	T	L
I.D.	O.D.	HEAD DIA.	HEAD TK.	O.A.L.
+0.0005" -0.0000"	-.0003" -.0008"	+0.000" -.010"	+0.000" -.002"	+.125" -.000"

HOW TO ORDER: EXAMPLES		
QTY	Cat. No.	Length
10	RSL-15	L-4
6	RSL-29	L-7



CATALOG NUMBER	A	D	H	T	NET PRICE EACH PER QUANTITY (US \$)									
	I.D.	O.D.	HEAD DIA.	HEAD THICK.	L-3"		L-4"		L-5"		L-6"		L-7"	
					1-24	25+	1-24	25+	1-24	25+	1-24	25+	1-24	25+
RSL-13	3/32	3/16	3/8	3/16	26.35	25.03	28.65	27.22	31.45	29.88	33.95	32.25	37.00	35.15
RSL-15	1/8	7/32	13/32	3/16	25.10	23.85	27.90	26.51	30.90	29.36	33.45	31.78	36.50	34.68
RSL-17	5/32	1/4	7/16	3/16	Q	Q	21.30	20.24	22.30	21.19	24.10	22.90	26.35	25.03
RSL-21	3/16	5/16	1/2	1/4	Q	Q	21.80	20.71	23.05	21.90	25.10	23.85	27.65	26.27
RSL-23	7/32	11/32	9/16	1/4	Q	Q	22.05	20.95	23.60	22.42	25.60	24.32	28.40	26.98
RSL-25	1/4	3/8	5/8	1/4	Q	Q	22.55	21.42	24.10	22.90	26.35	25.03	28.90	27.46
RSL-29	5/16	7/16	11/16	1/4	Q	Q	23.05	21.90	25.60	24.32	28.15	26.74	30.90	29.36
RSL-33	3/8	1/2	3/4	1/4	Q	Q	23.60	22.42	27.90	26.51	30.40	28.88	33.45	31.78
RSL-37	7/16	5/8	7/8	1/4	Q	Q	25.35	24.08	30.40	28.88	35.50	33.73	38.50	36.58
RSL-39	1/2	11/16	15/16	1/4	Q	Q	26.60	25.27	31.45	29.88	37.00	35.15	40.55	38.52
RSL-41	9/16	3/4	1	1/4	Q	Q	33.00	31.35	36.50	34.68	40.00	38.00	44.00	41.80
RSL-45	5/8	7/8	1-1/8	1/4	Q	Q	37.50	35.63	41.00	38.95	45.00	42.75	49.00	46.55
RSL-47	3/4	1	1-1/4	1/4	Q	Q	41.50	39.43	45.50	43.23	49.50	47.03	54.00	51.30

CATALOG NUMBER	A	D	H	T	NET PRICE EACH PER QUANTITY (US \$)									
	I.D.	O.D.	HEAD DIA.	HEAD THICK.	L-8"		L-9"		L-10"		L-11"		L-12"	
					1-24	25+	1-24	25+	1-24	25+	1-24	25+	1-24	25+
RSL-17	5/32	1/4	7/16	3/16	28.90	27.46	31.95	30.35	36.00	34.20	Q	Q	Q	Q
RSL-21	3/16	5/16	1/2	1/4	30.40	28.88	33.45	31.78	37.50	35.63	41.50	39.43	46.50	44.18
RSL-23	7/32	11/32	9/16	1/4	31.45	29.88	35.50	33.73	39.05	37.10	Q	Q	Q	Q
RSL-25	1/4	3/8	5/8	1/4	31.95	30.35	36.00	34.20	40.05	38.05	44.50	42.28	49.50	47.03
RSL-29	5/16	7/16	11/16	1/4	34.45	32.73	38.50	36.58	42.55	40.42	47.50	45.13	52.50	49.88
RSL-33	3/8	1/2	3/4	1/4	37.00	35.15	44.05	41.85	45.60	43.32	50.50	47.98	56.00	53.20
RSL-37	7/16	5/8	7/8	1/4	42.55	40.42	46.60	44.27	51.20	48.64	56.50	53.68	62.00	58.90
RSL-39	1/2	11/16	15/16	1/4	44.60	42.37	49.15	46.69	54.20	51.49	59.50	56.53	65.00	61.75
RSL-41	9/16	3/4	1	1/4	48.00	45.60	53.00	50.35	57.50	54.63	63.00	59.85	68.50	65.08
RSL-45	5/8	7/8	1-1/8	1/4	53.50	50.83	58.50	55.58	63.50	60.33	69.50	66.03	75.00	71.25
RSL-47	3/4	1	1-1/4	1/4	58.50	55.58	64.00	60.80	69.50	66.03	75.00	71.25	81.50	77.43

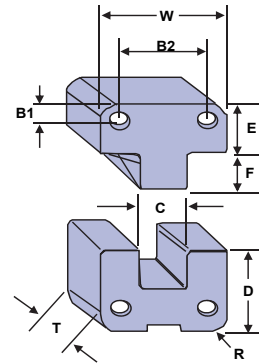
Q = Price Per Quotation

SIDE LOCKS

Royal

MALE - MATERIAL: Tool Steel With Black Oxide
 FEMALE - MATERIAL: D2 With Titanium Nitride Coating
 HARDNESS: 58-62 RC

CATALOG NUMBER	W +.0000" -.0004"	T +.000" -.002"	C	E +.000" -.002"	F +.000" -.010"	OVERALL HEIGHT	B1 +.010" -.010"	B2 +.010" -.010"	D +.000" -.002"	RADIUS +.010" -.000"	SHCS (4)	PRICE
SL-100	1.0000	.375	.500	.875	.530	2.000	.250	.500	1.125	.187	10-32x1/2	123.50
SL-125	1.2500	.500	.500	.875	.660	2.000	.250	.750	1.125	.187	8-32x5/8	134.45
SL-150	1.5000	.500	.563	.875	.560	1.175	.250	1.000	.875	.187	8-32x5/8	136.42
SL-200	2.0000	.500	.750	.875	.660	2.250	.312	1.375	1.375	.250	10-32x5/8	146.40
SL-300	3.0000	.750	1.250	.875	1.130	2.750	.375	2.250	1.875	.250	1/4-20x1	190.25
SL-400	4.0000	1.000	1.500	1.375	1.130	3.750	.500	3.000	2.375	.500	3/8-16x1-1/4	235.95
SL-500	5.0000	1.250	2.0000	1.375	1.630	4.250	.625	3.750	2.875	.500	1/2-13x1-1/2	292.75
SL-600	6.0000	1.500	2.500	1.375	1.630	4.250	.625	4.750	2.875	.500	1/2-13x1-3/4	383.35



*UPON AVAILABILITY

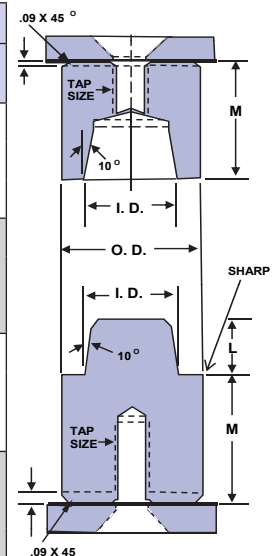
TAPERED INTERLOCKS (ROUND)

Royal

MATERIAL: D2
 HARDNESS: 58-62 RC

FEMALE					
CAT. NO.	PRICE	O.D. +.0000" -.0005"	I.D.	M +.015" -.020"	TAP SIZE
TIF-051	21.99	.5000	.312	.875	10-24
TIF-052	22.35			1.187	
TIF-053	22.55			1.375	
TIF-071	22.18	.7500	.500	.875	1/4-20
TIF-072	22.29			1.187	
TIF-073	22.37			1.375	
TIF-101	23.32	1.0000	.625	.875	1/4-20
TIF-102	23.47			1.187	
TIF-103	23.70			1.375	
TIF-150	29.88	1.5000	1.000	1.125	5/16-18
TIF-151	30.30			1.375	
TIF-152	30.75			1.625	

MALE					
CAT. NO.	PRICE	O.D. +.0000" -.0005"	I.D.	L	M +.015" -.000"
TIM-051	20.66	.5000	.312	.312	.875
TIM-052	20.99				1.187
TIM-053	21.15				1.375
TIM-071	20.80	.7500	.500	.281	.875
TIM-072	20.90				1.187
TIM-073	21.00				1.375
TIM-101	22.05	1.0000	.625	.343	.875
TIM-102	22.25				1.187
TIM-103	22.40				1.375
TIM-150	28.50	1.5000	1.000	.500	1.125
TIM-151	28.88				1.375
TIM-152	29.31				1.625



*UPON AVAILABILITY

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Special Punches and Perforators

FIG.NO.1, STRAIGHT -

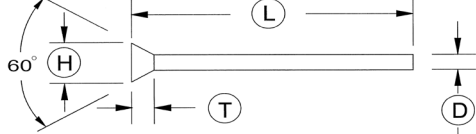


FIG.NO.1A, STRAIGHT PILOT NOSE -

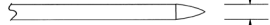


FIG.NO.1B, STEPPED -

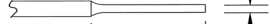


FIG.NO.1C, STEPPED PILOT NOSE -



FIG.NO.2, STRAIGHT -

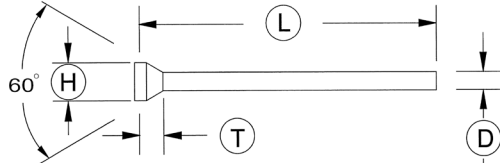


FIG.NO.2A, STRAIGHT PILOT NOSE -



FIG.NO.2B, STEPPED -



FIG.NO.2C, STEPPED PILOT NOSE -



FIG.NO.3, STRAIGHT -

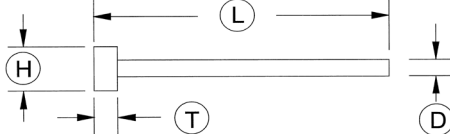


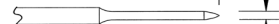
FIG.NO.3A, STRAIGHT PILOT NOSE -



FIG.NO.3B, STEPPED -



FIG.NO.3C, STEPPED PILOT NOSE -



Core Pins

FIG.NO.5, CORE PIN STRAIGHT -

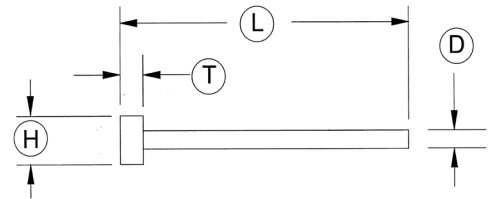


FIG.NO.5A, CORE PIN STRAIGHT SPHERICAL RADIUS -

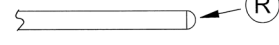


FIG.NO.6, CORE PIN STEPPED -

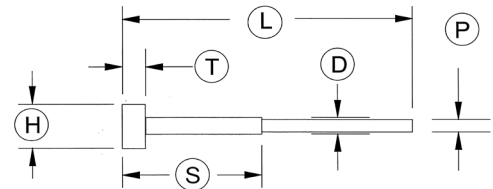


FIG.NO.6A CORE PIN STEPPED SPHERICAL RADIUS -



FIG.NO.7, CORE PIN STEPPED DRAFT -

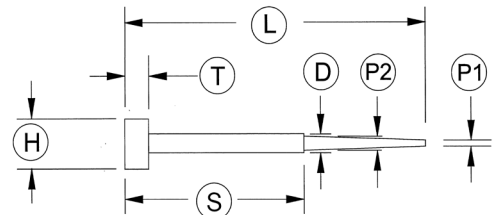


FIG.NO.7A CORE PIN STEPPED DRAFT SPHERICAL RADIUS -



Please specify required tolerances on all dimensions

FIG. _____ QTY. _____
 MATL. _____ HARD/ RC _____
 Modify Standard Catalog No. _____
 COMMENTS: _____

DIM.	SIZE	TOL.	DIM.	SIZE	TOL.
D			P		
H			P1		
T			P2		
L			B		
S			R		

Company Name _____

Address _____

City, State, Zip _____

Phone _____ Fax _____

Contact _____

E-Mail Address _____

Request for Quote No. _____

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ROYAL DIVERSIFIED PRODUCTS, INC.
 287 MARKET ST. PO BOX 444, WARREN, RI 02885
 PHONE (401) 245-6900 FAX (401) 247-2231
 ORDERS@ROYALPINS.COM

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FIG.NO.9, EJECTOR STRAIGHT -

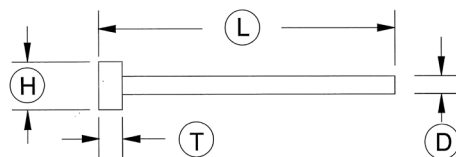


FIG.NO.10. EJECTOR SHOULDER -

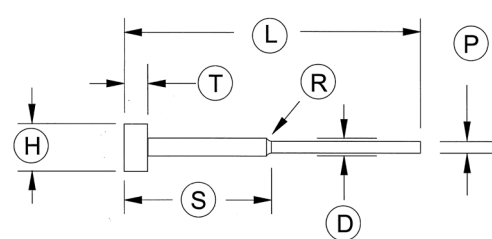
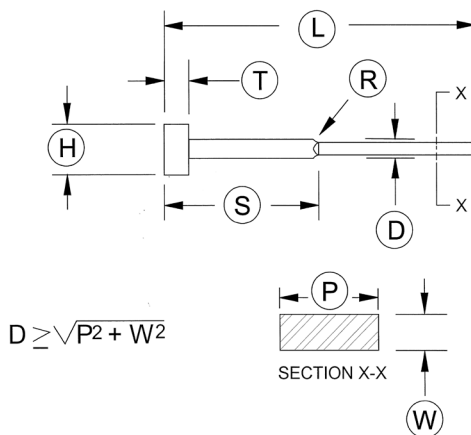


FIG.NO.11. EJECTOR BLADE



Please specify required tolerances on all dimensions

FIG. _____ QTY. _____

MATL. _____ **HARD/ RC** _____

Modify Standard Catalog No. _____

COMMENTS: _____

DIM.	SIZE	TOL.	DIM.	SIZE	TOL.
D			S		
H			S1		
T			R		
L			W		
P					

FIG. 8 SPECIAL TO YOUR SKETCH

[illegible]

Company Name _____

Address _____

City, State, Zip _____

Phone _____ Fax _____

Contact _____

E-Mail Address _____

Request for Quote No. _____

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FIG. 12 SPECIAL TO YOUR SKETCH

SPECIAL EJECTOR SLEEVES

FIG.NO.13, EJECTOR SLEEVE STRAIGHT -

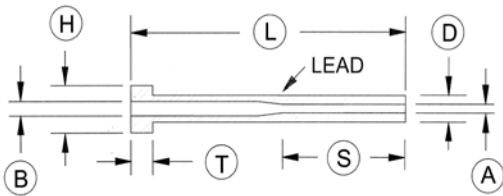
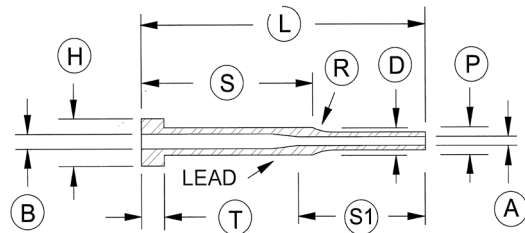


FIG.NO.14, EJECTOR SLEEVE STEPPED -



Please specify required tolerances on all dimensions

FIG. _____ QTY. _____

MATL. _____ HARD/ RC _____

Modify Standard Catalog No. _____ COMMENTS: _____

DIM.	SIZE	TOL.	DIM.	SIZE	TOL.
D			P		
H			S1		
T			A		
L			B		
S			R		

Company Name _____

Address _____

City, State, Zip _____

Phone _____ Fax _____

Contact _____

E-Mail Address _____

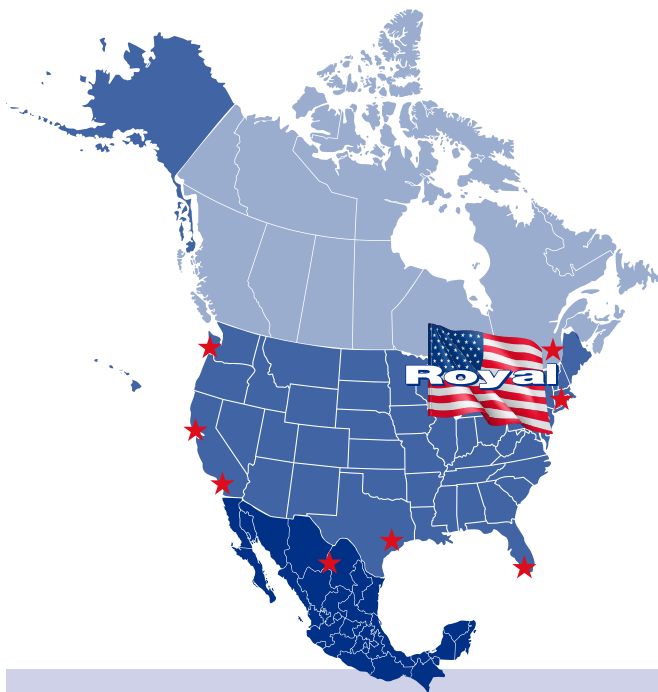
Request for Quote No. _____

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ROYAL DISTRIBUTORSHIP

Here at ROYAL we pride ourselves on being associated with well informed and knowledgeable distributors. It has become a ROYAL tradition to sell our line of products through local distributorships who stock large supplies of ROYAL pins. By doing this, a ROYAL distributor can quickly fill your molding or stamping product needs.

If you are interested in becoming a ROYAL distributor, or if you are a ROYAL customer and would like one of your vendors to become a stocking ROYAL distributor, PLEASE CALL US at 401-245-6900. We can help! Most of our existing distributors were referred to us by satisfied customers of ROYAL DIVERSIFIED PRODUCTS!

Terms: Net 30 days. 1-1/2% monthly late charge

Prices: Subject to change without notice.

Minimum Billing: \$35 (Excluding Shipping costs)

Shipments: F.O.B. Shipping Point. Unless otherwise instructed by customer, shipping will be via UPS or the least expensive carrier. We cannot assume charges or responsibility due to transportation difficulties.

Please Note We use the finest materials in the manufacture of our products. Our products are DFARS, RoHS, REACH, and Prop 65 Compliant.

Quotations: Valid for 90 days only, except by special arrangement. We reserve the right to advise the customer of any change in price upon receipt of order. Quotes for premium and expedited parts are valid for 48 hours.

Confirmation/acknowledgments

Standard Catalog Products: Since orders for catalog standard products can be shipped before receipt of an acknowledgment, ROYAL's policy on telephone orders is a verbal "read back" by our representative.

Non-Standard Products: Orders containing non-standard products are acknowledged within 24 hours from the time it is entered into our system. It is the customer's responsibility to check the acknowledgment for correctness of billing and shipping address, terms, shipping instructions, order quantities, size and description and pricing of item(s) ordered.

The customer is to report any discrepancies immediately.

Otherwise ROYAL will assume order to be correct as acknowledged and will proceed accordingly.

Cancellations: Cancellations on Standard items will be subject to a charge of \$10 plus any applicable material and labor costs for work in progress. We do not ship partially finished goods on canceled orders. Non-standard items and premium services are non-cancellable or changeable.

Part numbers: We are not responsible for converting from other manufacturers part numbers/nomenclature, it is the responsibility of the customer to assure that the part quoted/ordered matches their requirement.

Returns: Prior approval must be obtained within 10 days of shipment receipt date for all returns. When permission is granted, there is a 15% re-stocking charge with a \$10 minimum. Return shipping is the customer's responsibility. If the return proves to be the fault of ROYAL, the return shipping cost will be credited back to the customer. **Unless** there is a manufacturing discrepancy, specials **are not** returnable.

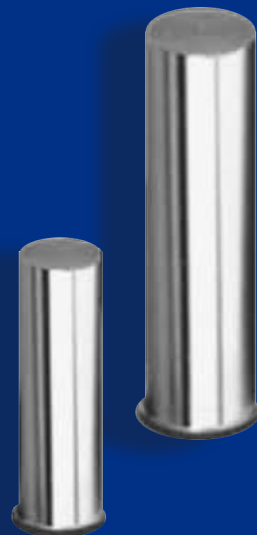
The following are not standard stock items and are not returnable:

- ☞ RQA TYPE PINS, 4" LENGTH AND OVER
- ☞ RQB TYPE PINS, 3" LENGTH AND OVER OR WITH "OPTIONAL T" HD. THK. OF 3/16"
- ☞ AB STYLE PINS
- ☞ MQA and MQB TYPE PINS
- ☞ MPB TYPE PINS
- ☞ BH SERIES PINS, 4" AND 6" LENGTHS, ALL DECIMAL DIAS.
- ☞ PTD TYPE PINS
- ☞ MPT TYPE PINS
- ☞ ANY PRODUCTS WITH CUSTOM MODIFICATIONS
- ☞ ANY PIN WITH 4 PLACE DECIMAL DIAMETER
- ☞ ANY PRODUCT SUPPLIED IN LARGER QUANTITIES THAN NORMALLY STOCKED

Over/Under Shipments: ROYAL reserves the right to over ship or under ship up to 10% of non-standard products. If an exact quantity is desired "DO NOT OVER OR UNDER SHIP" must be specified **when the quotation is requested.**

Warranty: ROYAL proudly guarantees that all of our products will conform to your requested physical specifications.

IT IS AGREED BY THE BUYER IN PURCHASING MATERIAL HEREUNDER THAT THE LIABILITY OF ROYAL SHALL BE LIMITED SOLELY TO THE REPAIR OR REPLACEMENT OF THE MATERIAL SOLD. ROYAL SHALL NOT OTHERWISE INCUR LIABILITY FOR ANY DIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OR EXPENSES.



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or an intricate, high-precision special pin,

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