

C.E. TOOLING



Section

9.2

Tooling Booklet
Reference Section 1 For Technical Information

Pierce-All Perf-O-Mator



H&O Die Supply 7200 Interstate 20 Kennedale, TX 76060 www.hodie.com
Phone: 214-630-6660 Fax: 214-630-6693





ADDITIONAL COSTS FOR NON-STANDARD OPTIONS

RADIUS OR 45°CHAMFER, Punch Add On, per corner	
	ners 1-3 # x 4(all)
With Length under 1.625 and any size Radius or Chamfer	#x \$10.00 \$10.00
With Length over 1.625 & .032 maximum Radius or Chamfer	#x \$10.00 \$30.00
With Length over 1.625 & Radius or Chamfer over .032(.8mm)	#x \$15.00 \$40.00
Add On To All Dies any size Radius or Chamfer	#x \$10.00 \$10.00
No Extra Charge for Strippers or Guides When Ordered With Set	

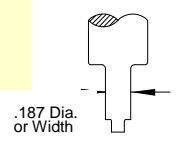
Add 25% to set price for Clearance of .003 (.08mm) & under

Add 50% to die price for Solid Dies.

Widths or Dia. Under .093(2,36mm) Add 30% to set price
 Widths or Dia. Under .062(1,57mm) Add 50% to set price
 Widths or Dia. Under .046(1,2mm) Add 100% to set price



Optional STUBBY PUNCH



Included in add on cost; Dies are produced with .090 land, than a 1.5° relief is given to prevent multiple slugs from stacking ,causing excessive pressure on punch. Further, Punches can be produced with Stubby Punch Design at **no additional charge**. A Stubby Punch has it's tip (diameter or width) first ground to a size of .187 then a tip is ground to requested size for a length of .225+thickness to be punched. (If fitted strippers are to be used, +.125 to tip grind length, and use .187 or > in diameter or width.)

DELIVERIES for Pierce-All Perf-O-Mator Tools

10 STANDARD SHAPES SHIPPED IN 3-5 DAY
 OBRound • SQUARE • RECTANGLE • SINGLE-D • DOUBLE-D • QUAD-D • HEXAGON • OCTAGON
 ADD \$10 PER SET FOR LONG-D & EQUILATERAL

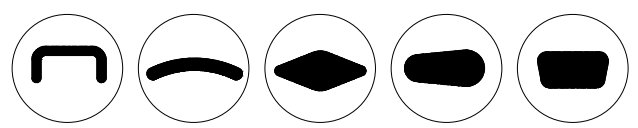
EXPEDITING SERVICES

1FDS • ORDER BY 1pm, Order Ships The Next or Possibly The Same Work Day. **Add 25%**

2FDS • ORDER BY 1pm, Order Ships In 1-2 Work Days **Add 10%**



SPECIAL SHAPES SHIPPED IN 3-8 days



Guaranteed Delivery(Expediting)
3FDS "FIRM DELIVERY SERVICE"
 Order By 1pm, to ship in 3 Work Days
 Add 30% to order
5FDS "FIRM DELIVERY SERVICE"
 Order by 1pm, to ship in 5 Work Days
 Add 10% to order

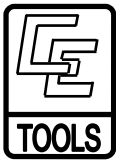
SLUG- TRAP DIES

ELIMINATE SLUG PULLING BY TRAPPING THE SLUG IN THE DIE

Shapes on Angles or Extra Key

Visualize location key of tool as it would load into turret. Start with length of shape horizontal Length points to 0°
Rotate shape, not location key.
 A sketch accompanying your order ensures keying as required! Note: Other Manufactures ordering diagrams may differ from C.E.'s!





Choosing Proper Die CLEARANCE

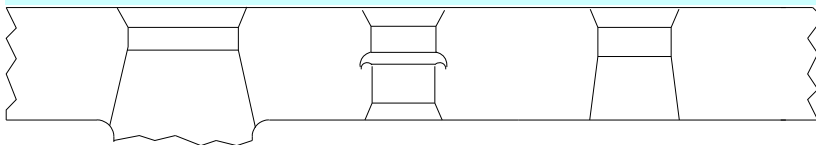


In order to receive optimum performance from a punch and die, it is necessary that the proper clearance be provided in the die in accordance with the material to be punched (pierced). Hole quality (edge roll, and burr), tool life, and slug pulling are results from die clearance.

- Excessive clearance, although achieves longer tool life, will leave more burr, and leads to slug pulling problems.
- Insufficient clearance will leave little to no burr, but lessen tool life, and can cause a secondary break.

Note: Increasing die clearance when holes are close to edge of the sheet will minimize distortion of sheet edge.

EXCESSIVE CLEARANCE INSUFFICIENT CLEARANCE PROPER CLEARANCE



Figure

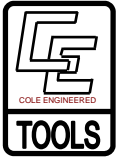
A

Type of Material	% of Material		
	Min	Best	Max
Aluminum, Soft	5	10	15
Brass, 1/2 Hard	6	11	16
Copper, 1/2 Hard	8	12	16
Mild Steel Galvanize	10	15	20
Steel D.50C	12	18	24
Stainless Steel	15	22	30

Matt. Thickness X % = Clearance

There are many factors that may change the optimum clearance value such as:
RIGIDITY OF PRESS, MATERIAL GRADE & SPEED OF THE STROKE.

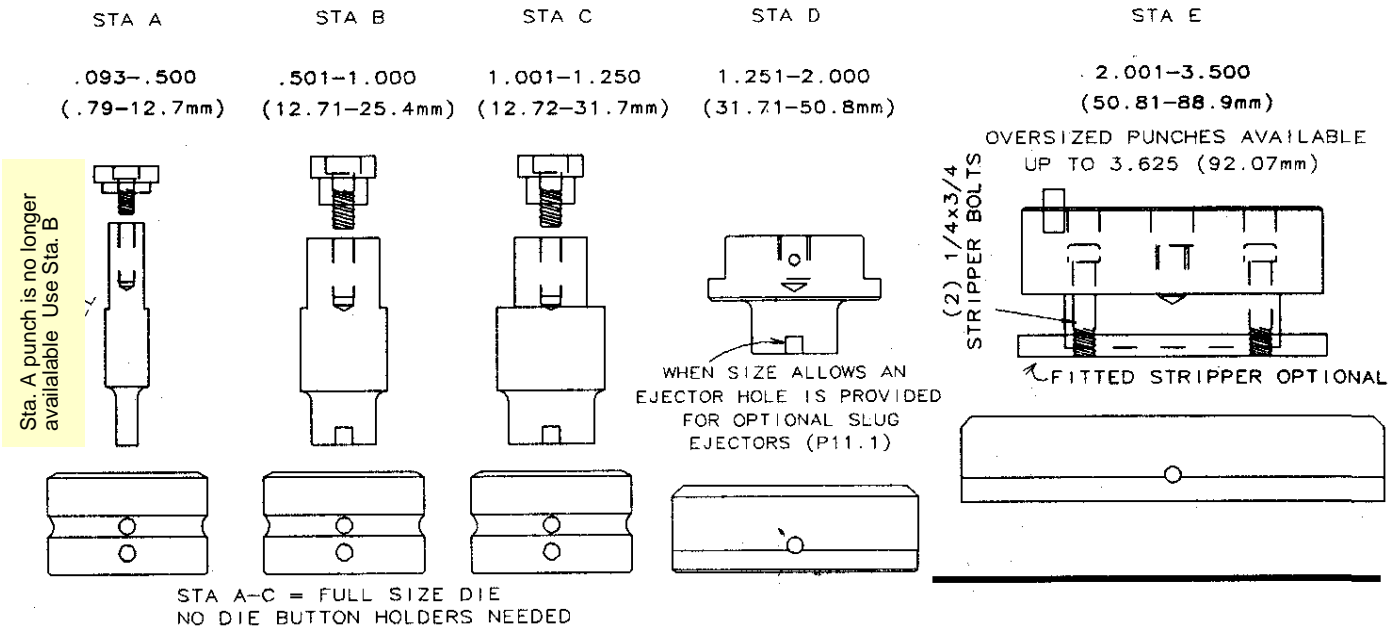
MATERIAL →			Mild STEEL		ALUMINUM		STAINLESS		BRASS		COPPER		STEEL d.50C	
INCH	MM	GAU	INCH"	MM	INCH"	MM	INCH"	MM	INCH"	MM	INCH"	MM	INCH"	MM
.010	.25	32	.0015	.03	.0015	.03	.002	.05	.0015	.03	.0015	.03	.002	.05
.015	.38	28	.0025	.06	.0015	.03	.003	.08	.002	.05	.002	.05	.003	.08
.018	.45	26	.003	.08	.002	.05	.004	.09	.002	.05	.0025	.06	.004	.09
.024	.60	24	.004	.10	.003	.06	.005	.13	.003	.08	.003	.03	.003	.03
.030	.76	22	.005	.11	.003	.08	.007	.17	.0035	.09	.004	.10	.006	.14
.036	.91	20	.006	.14	.004	.10	.008	.20	.004	.10	.005	.11	.007	.17
.048	1,2	18	.007	.18	.005	.13	.010	.27	.006	.14	.006	.15	.009	.22
.054	1,4	17	.008	.20	.006	.14	.012	.30	.006	.15	.007	.17	.010	.25
.062	1,6	16	.009	.23	.006	.15	.014	.35	.007	.18	.008	.20	.011	.30
.067	1,7	15	.010	.25	.007	.18	.015	.37	.008	.19	.008	.20	.012	.30
.075	1,9	14	.011	.28	.008	.19	.017	.42	.008	.22	.009	.23	.014	.35
.090	2,3	13	.014	.34	.009	.23	.020	.50	.010	.25	.011	.30	.015	.40
.105	2,7	12	.016	.40	.011	.27	.023	.60	.012	.30	.015	.38	.029	.56
.120	3,1	11	.018	.46	.012	.30	.026	.70	.013	.33	.016	.40	.024	.62
.135	3,4	10	.020	.51	.014	.34	.030	.75	.015	.38	.018	.46	.027	.70
.150	3,8	9	.023	.57	.015	.38	.033	.85	.017	.42	.020	.50	.025	.60
.164	4,2	8	.025	.60	.017	.42	.036	.90	.018	.46	.021	.55	.032	.80
.179	4,6	7	.027	.68	.018	.46	.039	1,0	.020	.50	.023	.60	.035	.90
.194	5,0	6	.029	.70	.020	.50	.043	1,1	.021	.54	.025	.65	.038	.95
.209	5,3	5	.031	.80	.021	.55	.046	1,2	.023	.58	.027	.70	.040	1,0
.239	6,1	3	.036	.91	.024	.60	.053	1,4	.026	.70	.029	.75	.043	1,1
.250	6,4	1/4	.038	.95	.025	.60	.055	1,4	.028	.70	.030	.76	.045	1,2
.312	8	5/16	.048	1,2	.031	.79	.070	1,8	.035	.89	.038	1,0	.056	1,5
.375	9,5	3/8	.056	1,4	.037	1,0	.082	2,1	.041	1,1	.045	1,2	.068	1,8
.500	12,7	1/2	.075	1,9	.050	1,3	.120	2,8	.055	1,4	.060	1,5	.090	2,3



Pierce-All Perf-O-Mator Tooling

Delivery for this tooling style is 3-5 days for all standard shapes

Pricing is for Punch Tip Sizes .093 (2.3mm) and Above



Note: Below punches are for use in Pierce-All Guide Assemblies. Note that For Sta. A-C, Pierce-All machines can use standard Stripit or Amada Thin tools.

Station	Max Diagonal	ROUNDS	SHAPES
A .500	.500 /12,7mm	Not Available	Not Available
B 1.000	1.000 /25,4mm	PABP-r	PABP-s
C 1.250	1.250 /31,7mm	PACP-r	PACP-s
D 2.000	2.000 /50,8mm	PADP-r	PADP-s
E 3.500	3.500 /88,9mm	PAEP-r	PAEP-s
oversized	3.625 /92,0mm	PAEPo-r	PAEP-s
F 5.000	5.000 /127,mm	PAFP-r	PAFP-s

PUNCH HEAD		
Includes Bolt		
Sta.	Cat. Code	Price
A	PAAPH	\$14.50
B	PACPH	\$16.50
C		

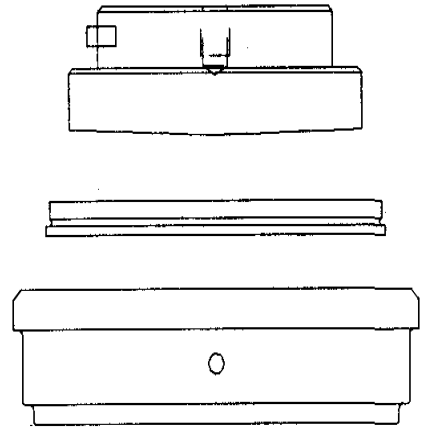
Being Discontinued
Call to check availability!

A .500	.500 /12,7mm		
B 1.000	1.000 /25,4mm	PACD-r	STCD-s
C 1.250	1.250 /31,7mm		
D 2.000	2.000 /50,8mm	PADD-r	PADD-s
E 3.500	3.625 /92,0mm	PAED-r	PAED-s
F 5.000	5.000 /127,mm	PAFD-r	PAFD-s

Dowel pins on Sta. A-C dies are 1/4" from bottom. If old style Pierce-All die shoe is used that requires pin to be ___" from bottom, order as PACD-* and add \$10.00 to price

50 TON MACHINE ONLY
STA F

3.501-5.000
(88.91-127mm)



	3.625 /92,0mm	PAES-r	PAES-s
E 3.500	Strippers MUST be ordered with Punch		
F 5.000	5.000 /127,mm	PAFS-r	PAFS-s





H&O Die Supply 7200 Interstate 20 Kennedale, TX 76060 www.hodie.com
 Phone: 214-630-6660 Fax: 214-630-6693

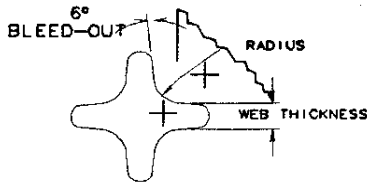
**SHAPES LOCATED ON ANGLES
 OTHER THAN 0 - 90 DEGREES**
 LOOK TO P 1.1 FOR DIAGRAM USED FOR
 ORDERING SHAPES ON ANGLES

STA.	15° INCREMENTS			OTHER THAN 15° INC.		
	PUNCH	DIE	STRIPPER	PUNCH	DIE	STRIPPER
.500	\$ 10.00	\$ 10.00	NA	\$ 15.00	\$ 15.00	NA
1.000	\$ 10.00	\$ 10.00	NA	\$ 15.00	\$ 15.00	NA
1.250	\$ 18.00	\$ 18.00	NA	\$ 22.00	\$ 22.00	NA
2.000	\$ 30.00	\$ 30.00	NA	\$ 40.00	\$ 40.00	NA
3.500	\$ 40.00	\$ 40.00	\$ 25.00	\$ 50.00	\$ 50.00	\$ 35.00
5.000	\$ 55.00	\$ 55.00	NA	\$ 65.00	\$ 65.00	NA

EXTRA PINS OR KEYS
 A PRINT SHOWING LOCATION OF EXTRA KEYS
 IN DIE IN RELATIONSHIP TO SHAPE IS
 REQUIRED

STA.	45° INCREMENTS			OTHER THAN 45° INC.		
	PUNCH	DIE	STRIPPER	PUNCH	DIE	STRIPPER
.500	\$ 20.00		NA	NA	NA	NA
1.000	\$ 20.00		NA	NA	NA	NA
1.250	\$ 24.00	\$ 16.50	NA	NA	NA	NA
2.000	\$ 45.00	\$ 20.00	NA	NA	NA	NA
3.500	\$ 45.00	\$ 20.00	NA	\$ 40.00	\$ 40.00	NA
5.000	\$ 60.00	\$ 25.00	NA	\$ 55.00	\$ 55.00	NA

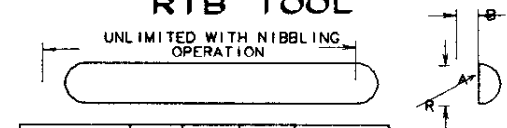
4-WAY CORNER ROUNDING



RADIUS	STA.	WEB THICKNESS		PRICE
		200	250	
1/16 .062	1-1/4	.262	.312	\$ 244.00
1/8 .125	1-1/4	.325	.375	
3/16 .187	1-1/4	.387	.437	
1/4 .250	1-1/4	.450	.500	
3/8 .375	2 OR 3-1/2	.575	.625	\$ 442.00
1/2 .500	3-1/2	.700	.750	
3/4 .750	3-1/2	.950	1.000	
1.000	3-1/2	1.200	1.250	

IF YOUR REQUIRED RADIUS IS NOT LISTED
 LOOK TO PAGE 8.4 (SPECIAL SHAPES) SP-44.

**PROGRESSIVE STIFFENING
 RIB TOOL**



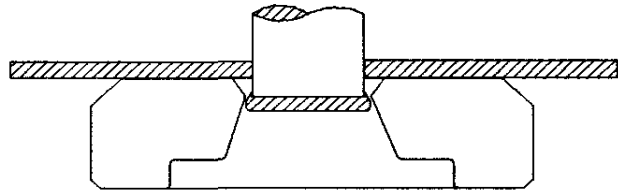
1/4 STA.	A	B	R	PRICE
PUNCH	3/8	3/16	3/16	\$135.00
DIE				\$140.00

OTHER SIZES AVAILABLE
 PRICE ON APPLICATION

Punch is made for specific material thickness

OPTIONAL "SLUG-TRAP" DIES

Eliminate slug pulling with a second taper
 on the die land which traps the slug in the die

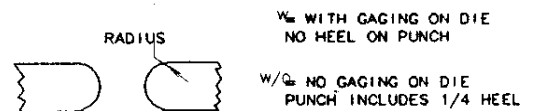


	DIE SIZES RANGE 0 - 1.500	RANGE 1.501 AND OVER
	ROUNDS	DOUBLE DIE COST
SHAPES	ADD 50% TO DIE COST	ADD 40% TO DIE COST

LIMITATIONS

Punch must be set to penetrate Die a minimum of .080.
 Die Clearance must be set for following percent of
 material thickness, 15% for Aluminum, 20% for Mild
 Steel (CRS), 25% for Stainless Steel.
 Reduce each clearance by 3% for material over 11 Gage

TRIM & PART



RADIUS	STA.	GAGING	
		W	W/O
UNDER 3/32	1-1/4	\$330.00	\$300.00
3/32-1/8-5/32-3/16		\$280.00	\$240.00
1/4-5/16-3/8		\$290.00	\$250.00
7/16-1/2-9/16-5/8	3-1/2	\$410.00	\$380.00
11/16-3/4-7/8-1"		\$460.00	\$420.00

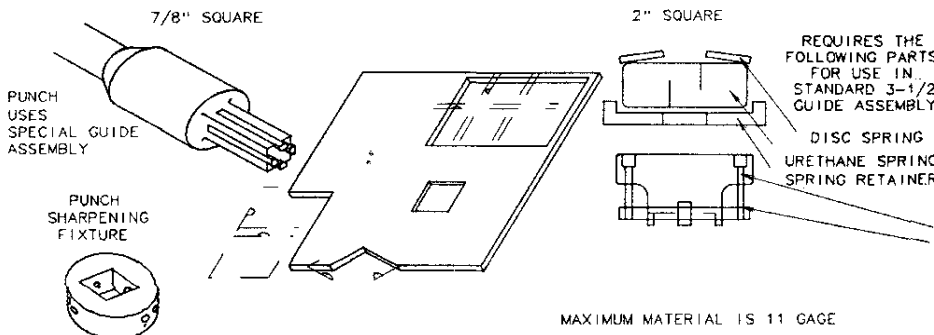
CORNER ROUNDING



RADIUS	STA.	GAGING	
		W	W/O
Under 1/8	1-1/4	\$260.00	\$235.00
1/8-3/16-1/4-3/8-1/2		\$230.00	\$195.00
3/4-7/8	3-1/2	\$385.00	\$350.00
1"-1-1/2		\$435.00	\$395.00
2"		\$465.00	\$420.00

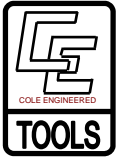
For any radius not listed add \$30.00

SHEAR PROOFS



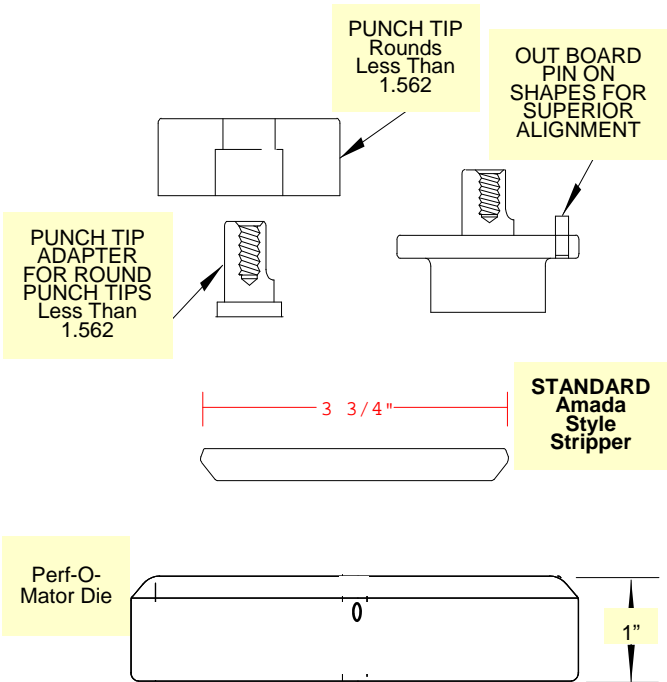
7/8" SQUARE	CAT. CODE	PRICE
PUNCH ASSEMBLY	STCSPPA	\$285.
PUNCH ONLY W/Sharpening Fixture	STCSPP	\$230.50
GUIDE ONLY	STC3PG	\$ 40.00
DIE ONLY (O2 TOOL STEEL)	STCD02	\$ 40.00
SPRING (PREMIUM STEEL)	STCSP	\$ 5.50
ADJUSTABLE PUNCH HEAD	STCPH	\$ 3.75
PUNCH RETAINER	STCCC	\$ 2.30

2" SQUARE	CAT. CODE	PRICE
PUNCH	PAESP-P	\$430.00
STRIPPER PLATE	PAESP-S	\$ 68.00
DISC SPRING 70x35x3	PAEDSP	\$ 6.00
URETHANE STRIPPER SPRING	PAEUS	\$ 48.00
SPRING RETAINER	PAESR	\$ 45.00



Strippit®/Amada Thin Style Tools for Pierce-All Perf-O-Mator 3-1/2" Station.

For Holders excepting standard Strippit or Amada Thin Punches, Amada Thin Stripper Plate. Standard Pierce-All 3-1/2" Dies are still used.



DESCRIPTION ROUND	C.E. Tool Code No.	AESI Code No.	Strippit® Code No.	Price Round
PUNCH 1.250-1.562	STE-P-r	41105	86717-000	
PUNCH TIP ADAPTER	STE-P-RET		86723-000	
PUNCH TIP 1.563-2.250	STE-PTS-r	411106	48684-000	
PUNCH TIP 2.251-2.875	STE-PTM-r	411107	48684-000	
PUNCH TIP 2.876-3.500	STE-PTL-r	411108	48684-000	
STRIPPER PLATE	ASD-S-r	51105	n/a	
DIE	PA-E-D-r	21105		
DIE W/SLUG TRAP	PA-E-D-st-r			

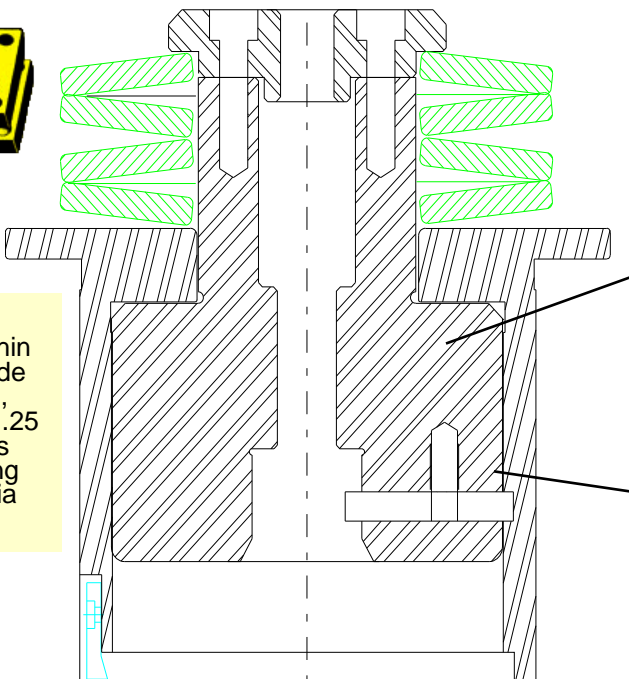
DESCRIPTION SHAPED	C.E. Tool Code No.	AESI Code No.	Strippit® Code No.	Price Round
PUNCH Under 1.500	STE-PS-s	n/a	86718-XXX	
PUNCH 1.501-2.500	STE-PM-s	n/a	49076-XXX	
PUNCH 2.501-3.500	STE-PL-s	n/a	49077-XXX	
STRIPPER PLATE	ASD-S-s	52105	n/a	
DIE	PAE-D-s	22105		
DIE W/ Slug Trap™	PAE-Dst-s			

Modified Amada "OLD Style" Guide Ass'y

For use in Pierce-All Perf-O-Mator Single Station Press. C.E.Tooling manufactures tools To be fully interchangeable for use with standard Strippit or Amada thin Punches, Amada Thin Stripper Plate. Current Pierce-All 3-1/2" Dies are still used.
Note: Customer requested to give C.E. I.D. of their holder bore, plus size of location pin or slot that is also in bore.



Modified Thin Turret Guide
 4.125OD,
 4.37flange .25
 wide keys
 Disc Spring
 100mm dia



DESCRIPTION	C.E. Tool Code No.	PRICE SHAPE
GUIDE ASSEMBLY	PA-ASD1-GA	
PUNCH HEAD	ASD-PH	
S.H.C.S. (M8X20)	ASCDE-6X20	
SPRING DISC (7)	STE-UNSPRG	
PUNCH DRIVER	ASD-PD	
Draw Bolt $i=1/2"$ or $m=M12 X50$	ASD-DB_X50	
GUIDE Keyed 0,90°	ASD-G2	
STRIPPER CLIPS w/SCREWS	AS-D-SC	
KEY <small>C.E. Driver Only</small> (W/ FH) External Locates P.Driver To Guide .512 to .25 X 1/4"	ASDce-Ke	
KEY <small>C.E. Driver Only</small> (W/ FH) Internal Locates Punches W/.250 keyway	STEPBKl	



CHARACTER MARKING TOOLS

DEDICATED MARKING UNITS Produced to stamp Logo's, Names, Part No., etc..
Contact our tooling engineers to discuss your particular application. Camera Ready Art
Work or Cad-.DXF/.IGES files are required for Logo's. Dedicated form tools can be
produced to *stamp Logo's, Names, Part No., etc..*

REPLACEABLE CHARACTER STAMPS HOLDERS

Sizes Available: (Height of engraving) • (1/16) blk=.0625X.25 *ACHAR1/16 • (3/32) blk=.093X.25 *ACHAR3/32 •
(1/8) blk=.125X.25 *ACHAR1/8 • (3/16) blk=.1875X.25 *ACHAR3/16 • *Other sizes available on special orders.*
Cost of Blanks @ 50% of Above • Spacer Kit Includes 4-.062, 4-.093, 4-.125, 2-.187 wide blanks *A-SPACER

For use in all Thin Turret machines
Strippit®, Amada, Finpower, etc...

1 1/4
Sta.B
Single
Row

	Catalog	Price	Catalog	Price
SET	*FSTC-SSU		*FSTC-SSD	
PUNCH	*FSTS-PSU		*FSTC-PSD	
Cartridge	N/A	N/A	N/A	N/A
Die	*FSTC-SDU		*FSTC-SDD	

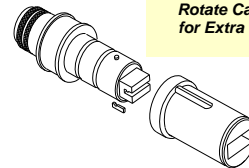
Character Width	1/16	3/32	1/8	3/16	1/16	3/32	1/8	3/16
Qty Per Row	20	12	10	6	16	10	8	5

1 1/4
Sta.B
Double
Row

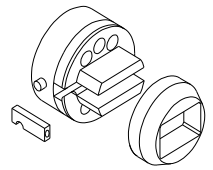
	Catalog	Price	Catalog	Price
SET	*FSTC-SDU		*FSTC-SDD	
PUNCH	*FSTC-PDU		*FSTC-PDD	
Die	*FSTC-DDU		STC-D-s-0	

Character Width	1/16	3/32	1/8	3/16	1/16	3/32	1/8	3/16
Qty Per Row	20	13	10	6	16	10	8	5

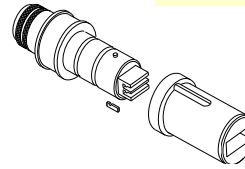
FORM UP FORM DOWN



FORM DOWN
Rotate Cartridge
for Extra Keying

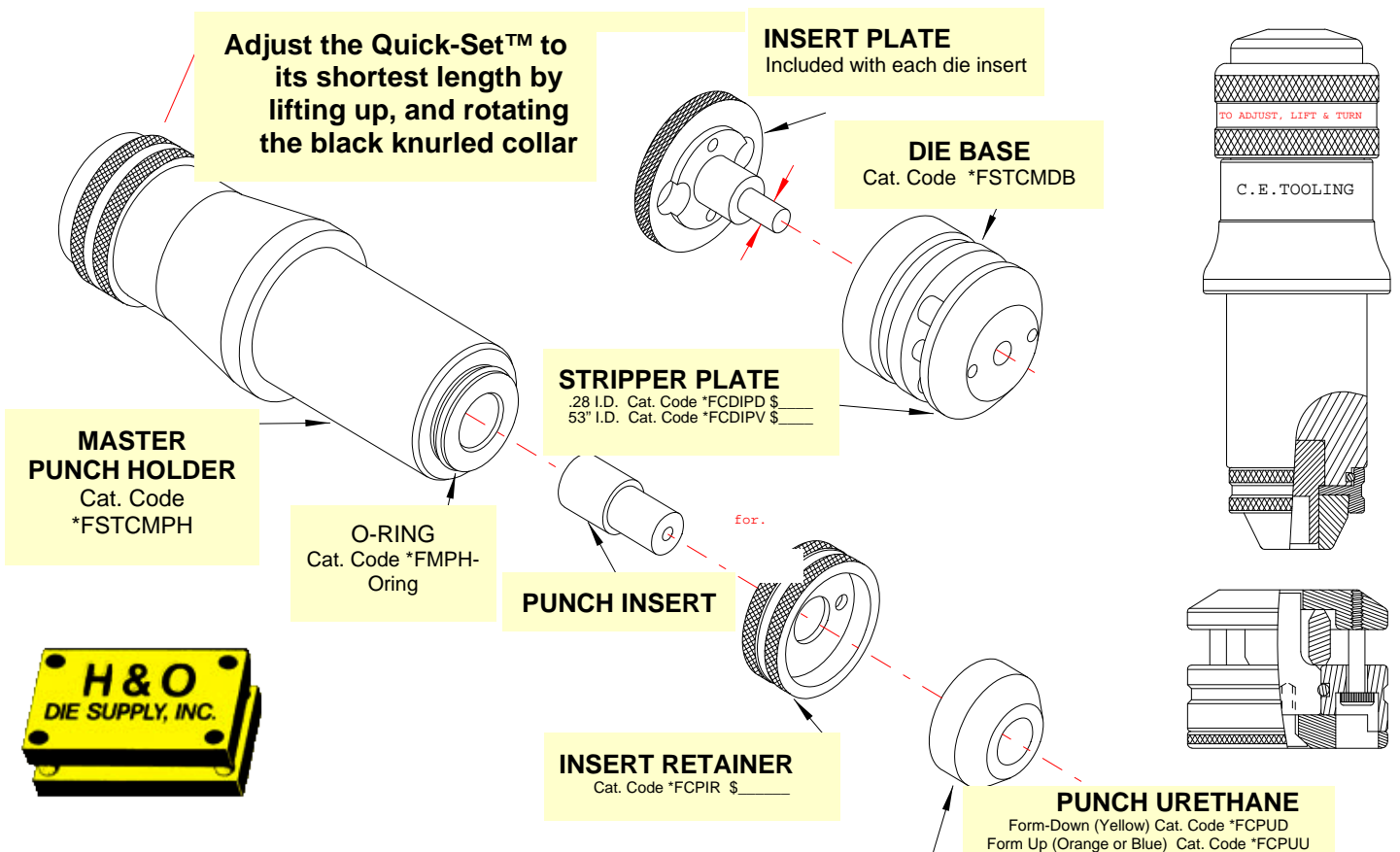


FORM DOWN
Keyed 4 plc.



FORM Up
Keyed 0 & 180°

Master Holder Accepts Inserts to Perform Many Forming Applications



FABRICATING TOOLS
and Accessories for most
Punching, Bending and
Shearing Equipment

C.E. TOOLING, INC.

FORMING AROUND THE WORLD

MANUFACTURING TURRET PRESS TOOLING SINCE 1966

www.cetooling.com

C.E. TOOLING, INC.

Die-Set, Brake Press, Iron Worker, Shears, C-Frame, Tube&Pipe
Specializing in tooling and machine parts for:
 Amada, Behrens, Boschert, Chassis Maker, Di-Acro[®],
 Ehrt, Euromach, Finnpower, Haco, Murata Wiedemann,
 Nisshinbo, Omes, Pullmax, Rainer, Roper Whitney,
 Salvagnini, Simasv, Strippit[®], Trumpf, Raskin, W.A. Whitney
 and similar presses



H&O Die Supply 7200 Interstate 20 Kennedale, TX 76060 www.hodie.com
 Phone: 214-630-6660 Fax: 214-630-6693