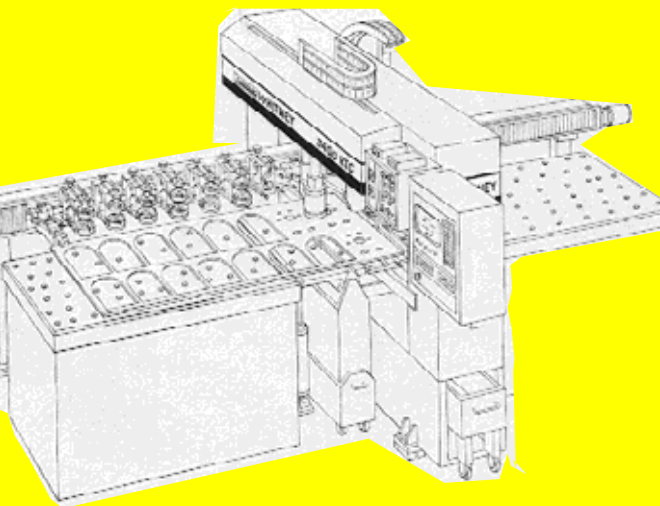


C.E. TOOLING

5

Section



Reference Section 1 For Technical Information



TOOLING FOR
WHITNEY
EUROMACH • BOCHERT •
Ironworker Oversize
Attachments
and similar machines

28XX • Roper (Non-Keyed)
36/37TC

ADDITIONAL COSTS FOR NON-STANDARD OPTIONS



RADIUS OR 45° CHAMFERS + \$.00 per corner

PUNCHES Corners 1-3 X # 4(all)

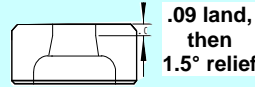
| | | |
|--|-------------|---------|
| With Length under 1.625 and any size Radius or Chamfer | # X \$10.00 | \$10.00 |
| With Length over 1.625 & .032 maximum Radius or Chamfer | # X \$10.00 | \$30.00 |
| With Length over 1.625 and Radius or Chamfer over .032(.8mm) | # X \$15.00 | \$40.00 |
| Add On To All <u>DIES</u> any size Radius or Chamfer | # X \$10.00 | \$10.00 |

No Extra Charge for STRIPPERS or GUIDES When Ordered With Set

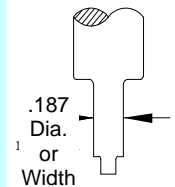
Add 25% to set price for **Clearance of .003 (.08mm) & Less.**

50% added 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 then 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 the requested size for a length of .225 + thickness to be punched. (If fitted strippers are used, + .125 to tip grind length, and use strippers .187 or > in diameter or width.)

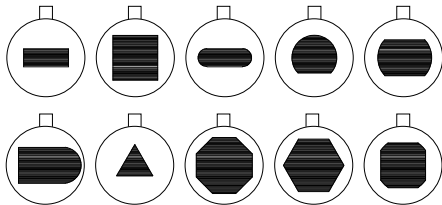
STANDARD KEYING

10 Standard Shapes plus Rounds. (RT Rectangles • SQ=Square • OB=Obround • SD=Single-D • DD=Double-D • LD=Long-D • EQ=Equilateral • OC=Octagon • HX=Hexagon • QD=Quad-D Add \$10 per set to standard price for LD & EQ

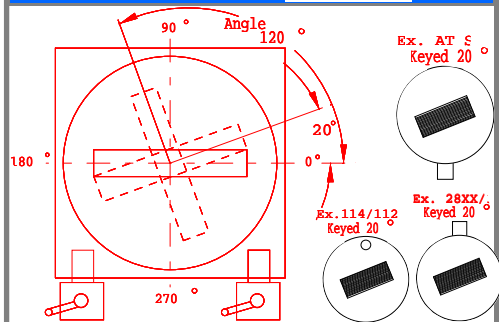
LOOKING AT TOP OF DIE

HOLDERS ARE KEYED TWO PLACES TO ALLOW 0° & 90° INDEXING.

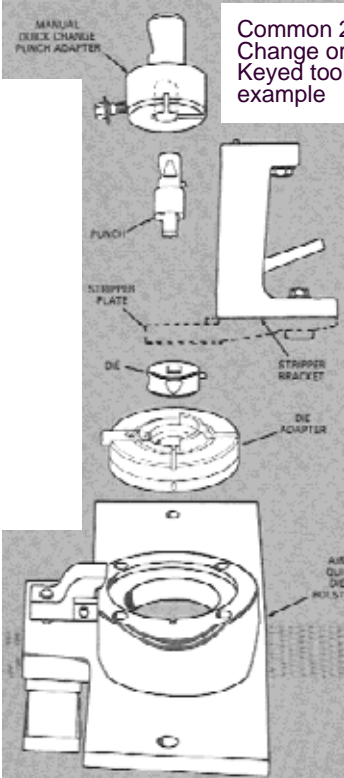
28XX & 36/37T



Shapes on Angles or Extra Key Locations. Die View

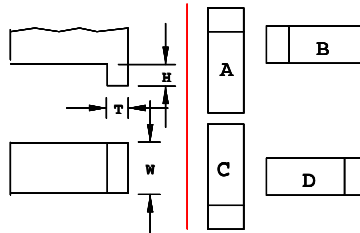


Visualize location key positioned as tool would load into turret. Start with length of shape horizontally. (Length points to 0°) **Next Rotate shape, not location key.** A sketch accompanying your order ensures keying as required! *Note: Other Manufacturers ordering diagrams may differ from C.E.'s!*



Common 28XX Quick-Change or Roper Non-Keyed tool loading example

HEEL PUNCH DIAGRAM
FACING MACHINE LOOKING DOWN AT DIE.



ADDITIONAL COST of \$75.00 FOR HEEL FROM 1/4 TO 7/16" STANDARD POSITION "A"

SPECIAL SHAPES



SHIPPED IN 1-8 days

Expediting: 3 days 20%, 2 days 35%, 1 day 50%

10 STANDARD SHAPES

RECTANGLE • SQUARE • OBROUND • Single-D • Double-D • QUAD-D • HEXAGON & OCTAGON
10% PER SET EXTRA FOR LONG-D & EQUILATERAL TRIANGLE

Guaranteed Expediting Services

FDS=Firm Delivery Service • Order by 2pm
 Same or Next day guarantee—1FDS
 Guaranteed to ship in 2 days – 2FDS

For Tool Styles: AT, AS, ST:
 1 day FDS=25% 2 day FDS=10%

For Tool Styles 36tc, 28st, Lila, 92/93
 1 day FDS=50% 2 day FDS=25%



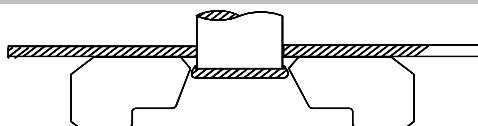
TABLE OF CONTENTS

C.E. Tooling started out in 1966 in Chicago as a tool & die shop. In the late 1970's, we directed our energies exclusively to the manufacturing of tooling for turret and duplicator presses. Through our use of the highest steel grades combined with manufacturing processes and procedures developed from over 30 years of producing punches and dies, our Quality and Value is unbeatable! We will continue to strive for excellence to earn the business of our current and future customers.



| INDEX | PAGE | DELIVERY Work Days |
|--|-------------|-------------------------------|
| Roper (Non-Keyed) Style Tools <i>Whitney, Roper Whitney +</i> | 4 | 1-4 |
| 28XX Keyed Style Tools <i>W.A. Whitney, Roper Whitney and</i> | 5 | 1-4 |
| <i>Suggested TOOLING PACKAGES for 28XX & Roper Style</i> | 6 | |
| Urethane Strippers for Whitney style punches | 7 | 1-4 |
| Corner Rounding · Trim & Parts · Shear Proofs | 7 | 5-10 |
| 36/37TC Style <i>W.A. Whitney</i> Models 647 PLUS, 647 PLUS | 8-9 | 3-5 |
| PUNCH SHEARS TONNAGE REQUIREMENTS | 10 | - |
| Forming Tools, Small Form: Half Shear • Center Point • Thread | 11 | 4-10 |
| Forming Tools, Small Form: Extrusions • Pierce & Coin | 12 | 4-7 |
| Forming Tools, Large Forms: Louvers • Card Guide • Lances • | 13 | 8-12 |
| SHEAR PROOF PUNCHES -Retractable Heels | 14 | 5-20 |
| SPECIAL SHAPE DIAGRAMS | 14 | 12 |
| TOOL SHARPENING SERVICE Pricing for returning tools for | 15 | 1-4 |
| CORNER RADIUS KIT 8 different Radius Sizes of fractional | 15 | 1-3 |

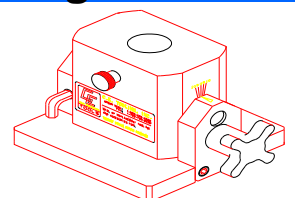
SLUG- TRAP DIES



ELIMINATE SLUG PULLING BY TRAPPING THE SLUG IN THE DIE

Punch Sharpening Fixture

Grind any type of shear safely, easily, and most importantly with out damaging





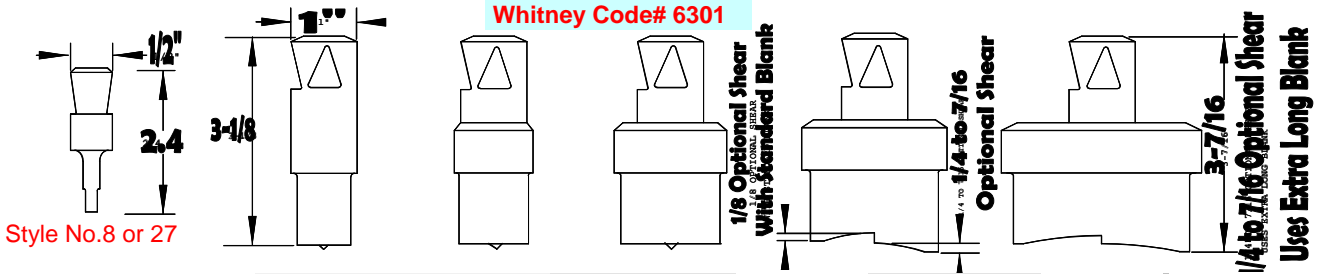
ROPER Style **NON KEYED** RP

The Following are similar machine models: *Roper*#127; 129; 130; 150; 230; 231; & 331 power presses No. 15, 816, 118, 218, 32, 34, 29, 58, 68, 134, Kick & Lever Presses *PEXTO*# 218

STANDARD PRICING IS FOR PUNCH TIP SIZES .093 (2.3MM) AND ABOVE

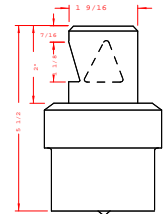
S7 TOOL STEEL
Superior Shock Proof

Whitney Code# 6301

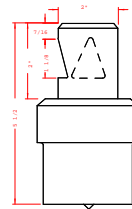


PUNCH

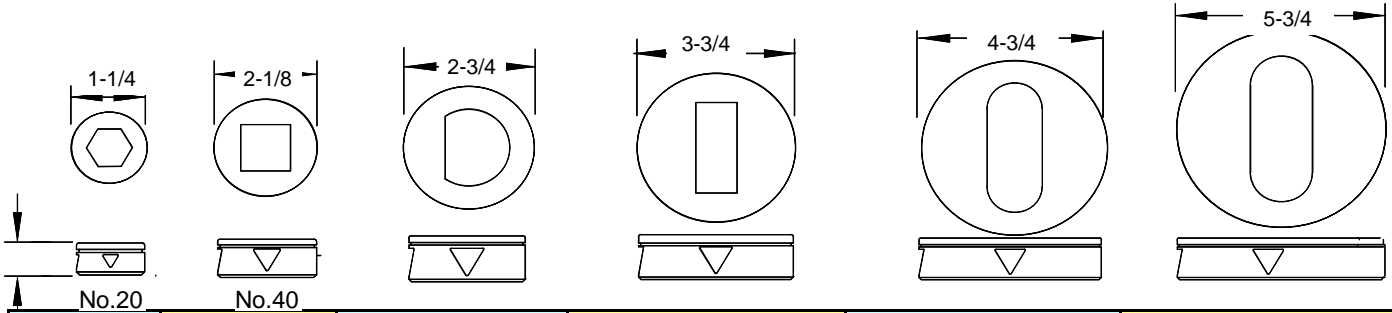
| STATION | RANGE - | ROUNDS | PRICE | SHAPED | PRICE |
|----------------------|---------------|---------|-------|---------|-------|
| Ref.No.8 or | .093 - 500 | RP8P-r | | RP8P-s | |
| A No. 28-6301 | .093 - 812 | RPAP-r | | RPAP-s | |
| B No. 28-6301 | .813 - 1.000 | RPB1P-r | | RPB1P-s | |
| | 1.001 - 1.437 | RPB2P-r | | RPB2P-s | |
| C No. 28-6301 | 1.438 - 2.000 | RPCP-r | | RPCP-s | |
| | 2.001 - 2.500 | RPD1P-r | | RPD1P-s | |
| D No. 28-6301 | 2.501 - 3.000 | RPD2P-r | | RPD2P-s | |
| | 3.001 - 3.500 | RPE1P-r | | RPE1P-s | |
| E No. 28-6301 | 3.501 - 4.000 | RPE2P-r | | RPE2P-s | |
| | 4.001 - 4.500 | RPF1P-r | | RPF1P-s | |
| F No. 28-6301 | 4.501 - 5.000 | RPF2P-r | | RPF2P-s | |
| | | | | | |
| G No. 29 | .093 - 5.000 | RPGP-r | | RPGP-s | |
| H No. 22 | .093 - 5.000 | RPHP-r | | RPHP-s | |



Style No. 29



Style No. 22



| Sta. A | Sta. B | Sta. C | Sta. D | Sta. E | Sta. F |
|--------|--------|---------|---------|---------|---------|
| 5/8" | 7/8" | 1-5/32" | 1-5/32" | 1-5/32" | 1-5/32" |

DIE

| STA. O.D. | RANGE - DIAGONALLY | ROUNDS | PRICE | SHAPED | PRICE |
|----------------------|----------------------------|----------|-------|----------|-------|
| A No.20 1-1/4 | .093 - .762 (.824 max.) | RPA D-r | | RPAD-s | |
| | .763 - 1.000 | RPB1 D-r | | RPB1 D-s | |
| B No.40 2-1/8 | 1.001 - 1.438 (1.465 max.) | RPB2 D-r | | RPB2 D-s | |
| | 1.439 - 2.000 (2.012 max.) | RPC D-r | | RPC D-s | |
| C No.28 2-3/4 | 2.001 - 2.500 | RPD1 D-r | | RPD1 D-s | |
| | 2.501 - 3.000 (3.012 max.) | RPD2 D-r | | RPD2 D-s | |
| D No.28 3-3/4 | 3.001 - 3.500 | RPE1 D-r | | RPE1 D-s | |
| | 3.501 - 4.000 (4.012 max.) | RPE2 D-r | | RPE2 D-s | |
| E No.28 4-3/4 | 4.001 - 4.500 | RPF1 D-r | | RPF1 D-s | |
| | 4.501 - 5.000 (5.012 max.) | RPF2 D-r | | RPF2 D-s | |
| J 6-3/4 | 5.001—6.000 (6.012 max.) | RPJD-r | | RPJD-s | |

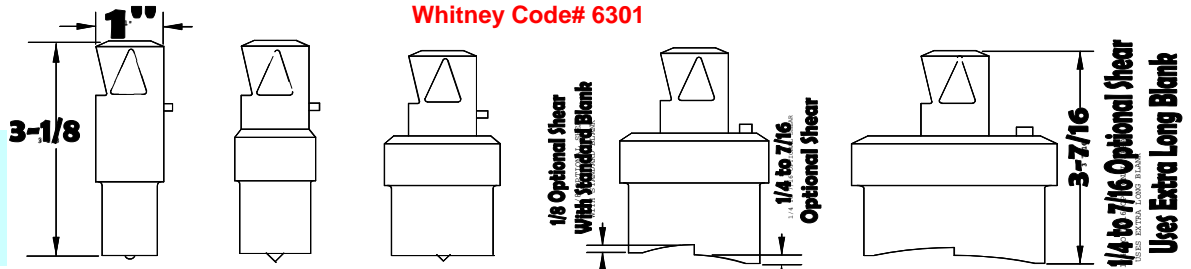


28XX QUICK CHANGE STYLE

STANDARD PRICING IS FOR PUNCH TIP SIZES .093(2.3MM) AND ABOVE

S7 TOOL STEEL
Superior Shock Proof Steel

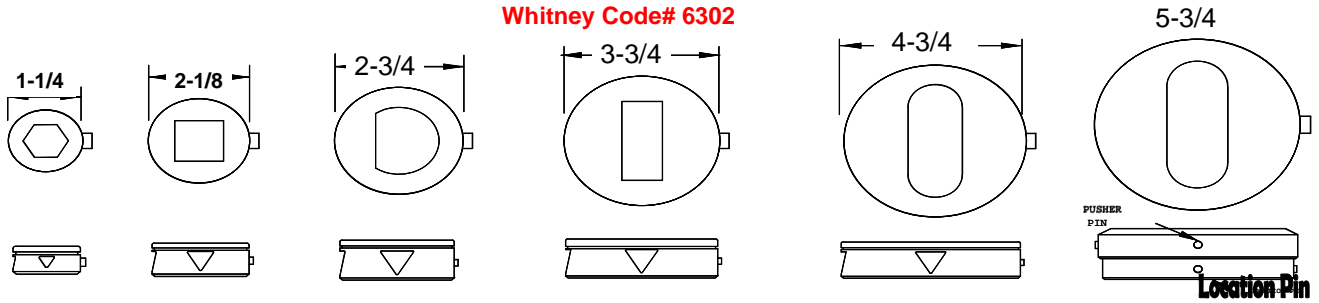
URETHANE STRIPPERS
Available for all stations,
Refer To Page 8



ICZCP

| STA. | RANGE - DIAGONALLY | ROUNDS | PRICE | SHAPED | PRICE |
|----------|--------------------|----------|-------|----------|-------|
| A | .093—.812 | 28A P-r | | 28A P-s | |
| B | .813 - 1.000 | 28B1 P-r | | 28B1 P-s | |
| | 1.001 - 1.438 | 28B2 P-r | | 28B2 P-s | |
| C | 1.439 - 2.000 | 28C P-r | | 28C P-s | |
| D | 2.001 - 2.500 | 28D1 P-r | | 28D1 P-s | |
| | 2.501 - 3.000 | 28D2 P-r | | 28D2 P-s | |
| E | 3.001 - 3.500 | 28E1 P-r | | 28E1 P-s | |
| | 3.501 - 4.000 | 28E2 P-r | | 28E2 P-s | |
| F | 4.001 - 5.000 | 28F1 P-r | | 28F1 P-s | |
| | 4.501 - 5.000 | 28F2 P-r | | 28F2 P-s | |

Whitney Code# 6302



| Sta. A | Sta. B | Sta. C | Sta. D | Sta. E | Sta. F |
|---------------|--------|---------|---------|---------|--------|
| Height = 5/8" | 7/8" | 1-5/32" | 1-5/32" | 1-5/32" | 1.85 |

D-E

| STA. O.D. | RANGE - DIAGONALLY | ROUNDS | PRICE | SHAPED | PRICE |
|----------------|----------------------------|----------|-------|----------|-------|
| A 1-1/4 | .093 - .762 (.824 max.) | 28A D-r | | 28A D-s | |
| B 2-1/8 | .751 - 1.000 | 28B1 D-r | | 28B1 D-s | |
| | 1.001 - 1.438 (1.465 max.) | 28B2 D-r | | 28B2 D-s | |
| C 2-3/4 | 1.439 - 2.000 (2.012 max.) | 28C D-r | | 28C D-s | |
| D 3-3/4 | 2.001 - 2.500 | 28D1 D-r | | 28D1 D-s | |
| | 2.501 - 3.000 (3.012 max.) | 28D2 D-r | | 28D2 D-s | |
| E 4-3/4 | 3.001 - 3.500 | 28E1 D-r | | 28E1 D-s | |
| | 3.501 - 4.000 (4.012 max.) | 28E2 D-r | | 28E2 D-s | |
| F 5-3/4 | 4.001 - 4.500 | 28F1 D-r | | 28F1 D-s | |
| | 4.501 - 5.000 (5.012 max.) | 28F2 D-r | | 28F2 D-s | |

For extra pins
at 45° increments
add 50%

Sorry, we only add extra pins at 45° increments. For other angles, order a separate tool Keyed at angle desired.

| Tip Size | 15° INCREMENTS | | OTHER THAN 15° | |
|-----------------------|----------------|-------|----------------|-------|
| | PUNCH + | DIE + | PUNCH + | DIE + |
| Up to .750" A sta. | | | | |
| .750-1.438 B sta. | | | | |
| 1.439-3.0" C & D sta. | | | | |
| 3.001-5.0" E & F sta. | | | | |





Tooling Packages 28XX, & Non-Keyed RP & 91

These prices are not valid with any other discount program.

Distributors/Dealers: limited commissions/discounts available on all these special packaged tool sets.

**C E # *ARP28PDPAR
Package "A"**

RP & 28XX 31 ROUNDS .093-.75
Punch & 1 1/4 Dies **Sta. A**

.093, .098, .125, .128, .141, .156, .172, .187, .194,
.203, .219, .234, .250, .266, .281, .312, .344, .375,
.406, .437, .469, .500, .515, .531, .562, .594, .625,
.656, .687, .719 & .750

Extra Set of Dies
C E # *ARP28DPAR

**C E # *ARP28PDPBR
Package "B"**

RP & 28 13 ROUNDS
.781-1.437" Punch & 2-1/8 Dies
Sta. B

781 .812 .844 .875 .937 1" 1.062
1.125 1.187 1.25 1.312 1.375 &
1.437

Extra Set of Dies
C E # *ARP28DPBR

**C E # *ARP28PDCPR
RP & 28
Package "C"**

**8 ROUND PUNCHES &
DIES**
Sta. C-E

1.5 1.75 2" 2.25 2.5" 2.75
3" 3.5" & 4"

Extra Set of Dies
C E # *ARP28DPCR

C E # *ARPPDPDS = ROPER STYLE
C E # *A28PDPDS = 28XX STYLE
PACKAGE "D"

19 SQ.& Rect.
Punch & Dies
Sta.A-E

SQ= .25, .313, .375, .438, .500, .531 keyed @ 45°
.75, 1" & 2"

RT=.125X.500, .187X.500 .250X.500, .125X1",
.200X1", .200X2", .250X2', .312X.750, .375X.750,
& .500X1"

EXTRA SET OF DIES
C E # *ARPPDPDS = ROPER STYLE
C E # *A28PDPDS = 28XX STYLE

**C E # *ARPPDPES = ROPER
STYLE**
C E # *28PDPES = 28XX STYLE
Package "E"

**9 Obround
Punch & Dies**

.125X.500", .187X.625", .250X.500",
.250X.750",
.250X1.000", .312X.750",
.375X.750", .437X.875"
& .500X1.000"

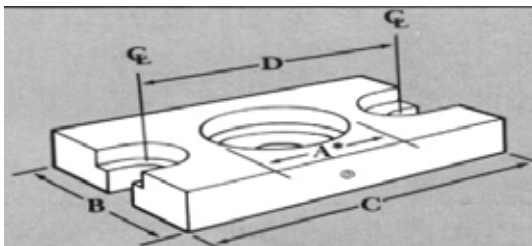
EXTRA SET OF DIES
C E # *ARPPDPES = ROPER STYLE
C E # *A28PDPES = 28XX STYLE

**C E # *ARPPDPFS = ROPER
STYLE**
**C E # *A28PDPFS = 28XX
STYLE**
PACKAGE "F"
6 OBROUND'S

Following are .01 wider &
2X Dia. of screw sizes
Punch & Die

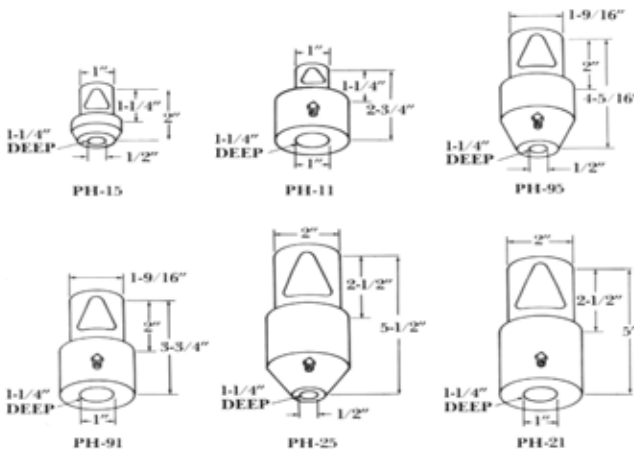
.122X.224, .148X.276,
.174X.328, .200X.380,
.226X.437 & .260X.500

Extra Set of Dies
**C E # *ARPPDPFS = ROPER
STYLE**
**C E # *A28PDPFS = 28XX
STYLE**

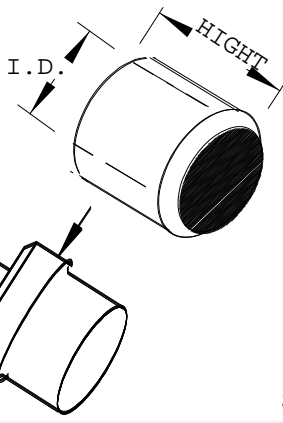


| DIE SHOES | | | | Non Keyed | Keyed |
|-----------|---|----|---|-----------|--------|
| "A" | B | C | D | Part# | Part# |
| 2-1/8 | 3 | 7 | 5 | RPBDHS | 28BDHS |
| 2 3/4 | 4 | 8 | 6 | RPCDHS | 28CDHS |
| 3 3/4 | 5 | 9 | 7 | RPDDHS | 28DDHS |
| 4 3/4 | 6 | 10 | 8 | RPEdHS | 28EDHS |

Call
For
Pricing



| Die Adapter | | Non Keyed | | Keyed | |
|-------------|-------|-----------|----|--------|----|
| "A" | "B" | Part# | \$ | Part# | \$ |
| 1-1/4 | 2-1/8 | RPBADA | | 28BADA | |
| 1-1/4 | 2-3/4 | RPCADA | | 28CADA | |
| 2-1/8 | 2-3/4 | RPCBDA | | 28CBDA | |
| 1-1/4 | 3-3/4 | RPDADA | | 28DADA | |
| 2 1/8 | 3-3/4 | RPDBDA | | 28DBDA | |
| 2 3/4 | 3-3/4 | RPDCDA | | 28DCDA | |
| 3 3/4 | 4-3/4 | RPEDDA | | 28EDDA | |



28XX & ROPER URETHANE

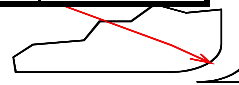
| Punch Flange | Stripper I.D. | Stripper O.D. | Stripper HEIGHT | Stripper CAT.CODE | Stripper PRICE |
|--------------|---------------|---------------|-----------------|-------------------|----------------|
| none | .495 | 1" | 1.25 | *AKSS-012114 | |
| none | .99" | 2" | 1.9" | *AUSO2-281 | |
| 1.245" | 1.24" | 2.5" | 2.15" | *AUSO2-282 | |
| 1.495" | 1.49" | 2.5" | 2.15" | *AUSO3-283 | |
| 1.745" | 1.75" | 2.5" | 2.15" | *AUS23-284 | |
| 1.995" | 2" | 2.75" | 2.12" | *AUS24-285 | |
| 2.995" | 3" | 3.75" | 2.12" | *ASU29-286 | |

Specials: *AUS___ 3.5"ID X 2-1/8 Height • *AUS___ 4"ID X 2-1/8 Height

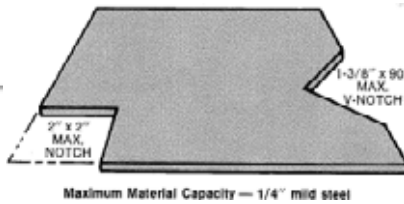
Corner Rounding Tools

For Single station machine — Stocked dies for use with 22-7gauge
(add "G" for die gauge, "H" for punch heel or "GH" for gauge & heel to the end of the following part numbers)

| RADIUS | DIE O.D. | Roper Style Part No. | 28XX Style Part No. | No Die Gauge Punch has heel | Die with Gauge & Heel on Punch |
|---------------|----------|----------------------|---------------------|-----------------------------|--------------------------------|
| Under 3/16" | 2-1/8 | *SRBPDCR_ | *S28BPDCR_ | | |
| 3/16" to 1/4" | 2-1/8 | *SRPB1PDCR_ | *S28BPDCR_ | | |
| 1/4"-1" | 2-3/4 | *SRPCPDCR_ | *S28CPDCR_ | | |
| 1"-1-1/2 | 3-3/4 | *SRPDPDCR_ | *S28DPDCR_ | | |
| 1-1/2"-2" | 4-3/4 | *SRPEPDCR_ | *S28EPDCR_ | | |



This special punch and die set is especially suitable for making small corner notches. The two adjustable gages permit fast, accurate notching up to 2" x 2" maximum. It can also be used for V-notching up thru 1-3/8" deep x 90°. This set fits into the quick change tooling setup but does require some modification to the die adapter to provide clearance for the adjustable gages.

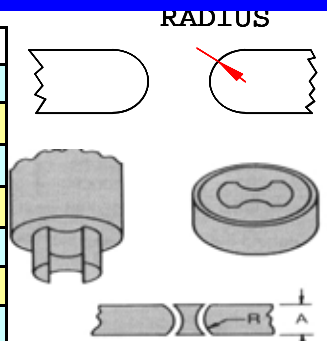


Maximum Material Capacity — 1/4" mild steel

| Punch Part# | 4 3/4OD Die W/ Gauging | Die CL. |
|---------------------|------------------------|---------|
| *A-8004-70630-31142 | *A-8003-10630-01902 | .006 |
| *A-8001-90630-31144 | *A-8002-14630-01904 | .012 |
| *A-8001-91630-31146 | *A-8001-92630-01906 | .021 |

TRIM & PART / LATTICE

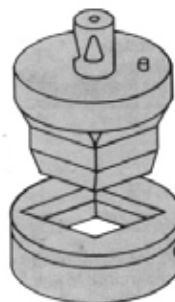
| RADIUS | DIE O.D. | Roper Style Part# | 28XX Style Part# |
|-------------------------|----------|-------------------|------------------|
| TO 5/16" • NO GAUGING | 2-1/8 | *SRPBTP | *S28BTP |
| TO 5/16" • WITH GAUGING | 2-1/8 | *SRPBTPG | *S28BTPG |
| TO 3/8" • NO GAUGING | 2-3/4 | *SRPCTP | *S28CTP |
| TO 3/8" • WITH GAUGING | 2-3/4 | *SRPCTPG | *S28CTPG |
| TO 5/8" • NO GAUGING | 3-3/4 | *SRPDTP | *S28DTP |
| To 5/8" • WITH GAUGING | 3-3/4 | *SRPDTPG | *S28DTPG |
| TO 3/4" • NO GAUGING | 4-3/4 | *SRPETP | *S28ETP |
| TO 3/4" • WITH GAUGING | 4-3/4 | *SRPETPG | *S28ETPG |



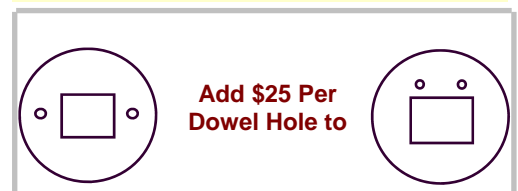
Center & Alignment Tools

Use: Die holder is loosened to allow free movement. The alignment punch is slowly lowered into the die and from pressure onto die will align and center the die. The die holder is then secured.

| | |
|----------------------|----------------------|
| Roper Style | 28XX Style |
| B Station #RPB-Align | B Station #28B-Align |
| C Station #RPC-Align | C Station #28C-Align |
| D Station #RPD-Align | D Station #28D-Align |
| E Station #RPE-Align | E Station #28E-Align |



Cost for Adding Dowel Pins In Die for SHEET LOCATION, OR GAUGING

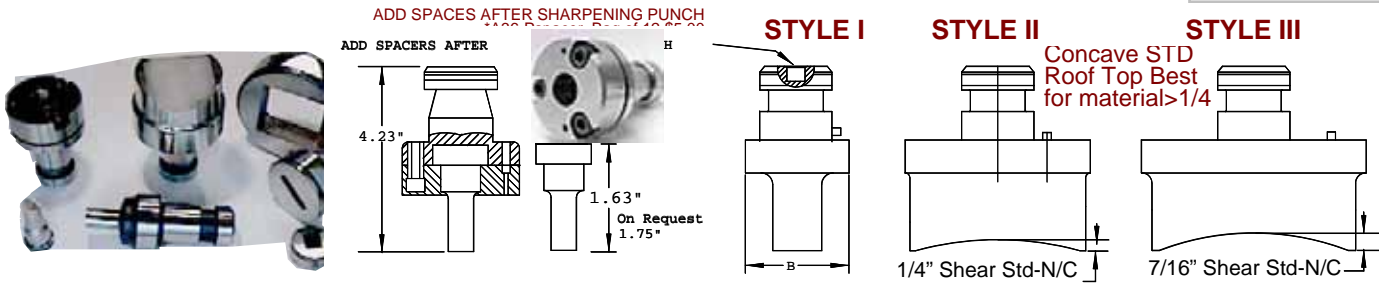




Whitney 36TC Style Tools (36)

For Models: 647PLUS, 647PLUS II, (Max. hole=3") • 661 -60,-84,-84ATC,-120•647ATC,3500ATC-30,3600ATC, 3700ATC

S7 TOOL STEEL
Superior Shock Proof

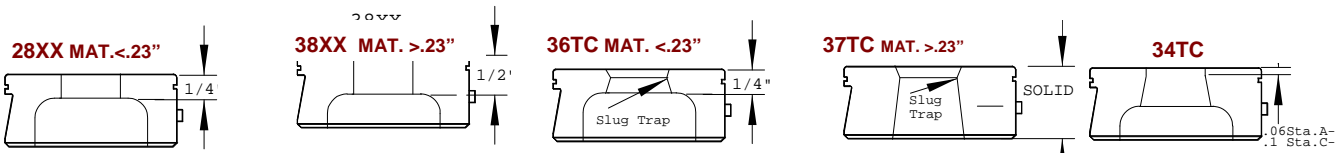
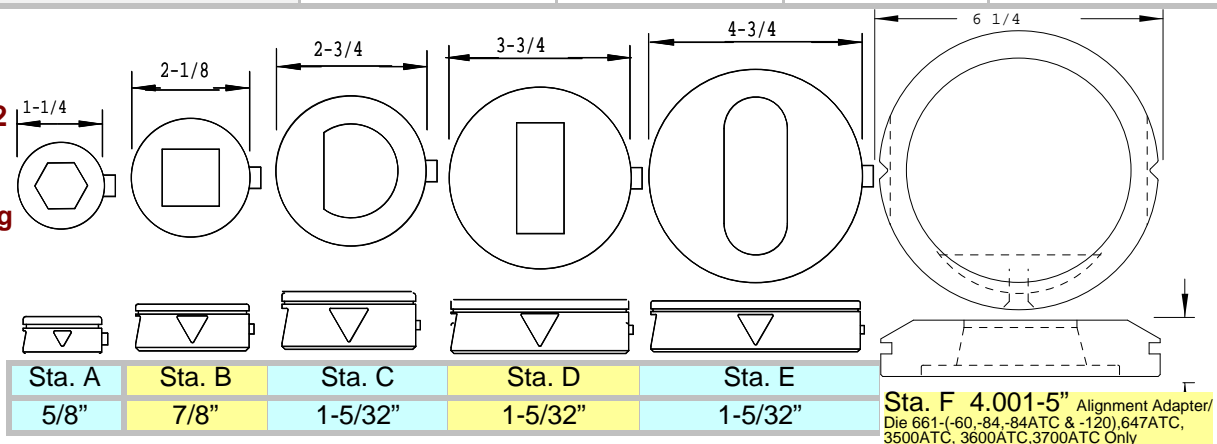


CHUCK

| MAXIMUM CAPACITY | RD CODE | ROUNDS | SH-CODE | SHAPED |
|-----------------------------------|------------|--------|-----------|--------|
| CHUCK ref.8084-79360-15000 | 36-000-H-r | | | |
| INSERTS 3101 .093-.75" | 36-0-PI -r | | | |
| INSERTS 3103-HSS .093-.75 | 36-0-PIM-r | | | |
| STYLE I .093-1.250 | 36-1a-P-r | | 36-1a-P-s | |
| STYLE I 1.251-1.719 | 36-1b-P-r | | 36-1b-P-s | |
| STYLE II 1.720-2.469 | 36-2-P-r | | 36-2-P-s | |
| STYLE III 2.47"-4" | 36-3a-P-r | | 36-3a-P-s | |
| STYLE III 4.001-5 | 36-3b-P-r | | 36-3b-P-s | |

DIE'S

Go To Page 2 for list of 10 Standard Shapes, Keying Charts + further Options

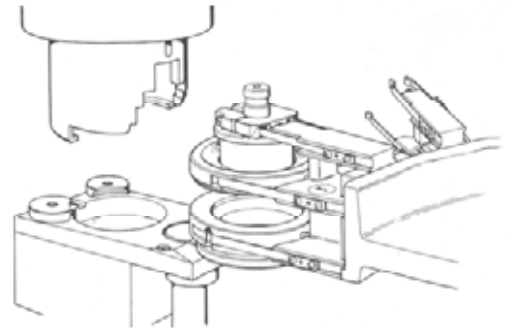
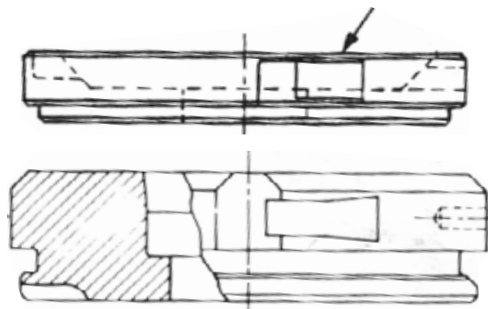
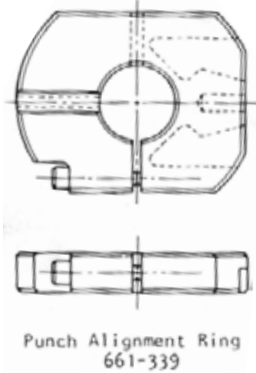


DIE

| Sta. O.D. | CAPACITY | STYLE CODE. | ROUND MATT <.23 | STYLE CODE | ROUND MATT >.23 | STYLE CODE | SHAPED |
|----------------|---------------|-------------|-----------------|-----------------|-----------------|-------------|--------|
| A 1-1/4 | .093 - .824 | 36TC 36AD-r | | 37TC 37AD-r | | 28XX 28AD-s | |
| | | 28XX 28AD-r | | 38XX 38AD-r | | 34TC 34AD-s | |
| | | 34TC 34AD-r | | | | 38XX 38AD-s | |
| B 2-1/8 | .751 - 1.465 | 36TC 36BD-r | | 37TC 37BD-r | | 28XX 28BD-s | |
| | | 28XX 28BD-r | | 38XX 38BD-r | | 34TC 34BD-s | |
| | | 34TC 34AD-r | | | | 38XX 38BD-s | |
| C 2-3/4 | 1.439 - 2.012 | 28XX 28CD-r | | 38XX 38CD-r | | 28XX 28CD-s | |
| | | 36TC 36CD-r | | 34TC 34CD-r | | 34TC 34CD-s | |
| D 3-3/4 | 2.001 - 3.012 | 28XX 28DD-r | | 38XX 38DD-r | | 28XX 28DD-s | |
| | | 36TC 36DD-r | | 34TC 37DD-r | | 34TC 34DD-s | |
| E 4-3/4 | 3.001 - 4.012 | 28XX 28ED-r | | 38XX 38ED-r | | 28XX 28ED-s | |
| | | 36TC 36ED-r | | 37TC 37ED-r | | 34TC 34ED-s | |
| F 6-1/4 | 4.013-5.037 | 36TC 36FD-r | | NOT RECOMMENDED | | 36TC 36FDs | |

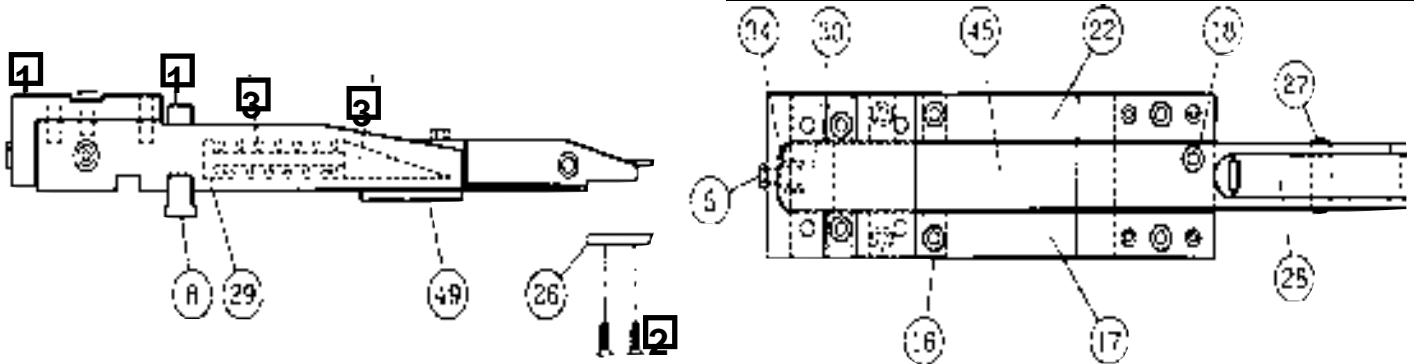
WHITNEY 36/37TC STRIPPERS & DIE ADAPTERS

| DESCRIPTION: LAST 6 DIGITS of C.E. Code = Whitney own Code | Model: 647 PLUS & 647 PlusII PART # PRICE | MODEL:661-60,-84,-84ATC,-120 PART NO. PRICE | 647ATC•3500ATC-30• 3600ATC •3700ATC PART NO. PRICE |
|--|--|--|--|
| Punch Alignment Ring | 36AL-641-110 | 36AL-641-339 3+<10% 6+<20% | 36AL-661-339 3+<10% 6+<20% |
| STRIPPER 1.000 I.D. | 36S-641-234 3+<10% 6+<20% | 36S-661-934 3+<10% 6+<20% | 36S-661-934 3+<10% 6+<20% |
| STRIPPER 1.875I.D. | 36S-641-235 3+<10% 6+<20% | 36S-640-790 3+<10% 6+<20% | 36S-661-790 3+<10% 6+<20% |
| STRIPPER 2.625I.D. | 36S-641-236 3+<10% 6+<20% | 36S-640-791 3+<10% 6+<20% | 36S-661-791 3+<10% 6+<20% |
| STRIPPER 3.125I.D. | 36S-641-535 3+<10% 6+<20% | NOT STANDARD | |
| STRIPPER 3.625I.D. | 36S-641-237 3+<10% 6+<20% | 36S-640-792 3+<10% 6+<20% | 36S-661-792 3+<10% 6+<20% |
| STRIPPER 4.125I.D. | | 36S-640-792 3+<10% 6+<20% | 36S-640-793 3+<10% 6+<20% |
| STRIPPER 5.125 I.D. | | 36S-662-906 3+<10% 6+<20% | 36S-662-906 3+<10% 6+<20% |
| DIE Adapter 1.2500.D. | 36ADAD-641-226 3+<10%6+<20% | 36ADAD-661-334 3+<10% 6+<20% | 36ADAD-661-334 3+<10% 6+<20% |
| DIE Adapter 2.1250.D. | 36BDAD-641-227 3+<10% 6+<20% | 36BDAD-661-335 3+<10% 6+<20% | 36BDAD-661-335 3+<10%6+<20 |
| DIE Adapter 2.7500.D. | 36CDAD-641-228 3+<10% 6+<20% | 36CDAD-661-336 3+<10% 6+<20% | 36CDAD=661-336 3+<10% 6+<20 |
| DIE Adapter 3.7500.D. | 36DDAD-641-229 3+<10% 6+<20% | 36DDAD-661-337 3+<10% 6+<20% | 36DDAD-661-337 3+0% 6+<20% |
| DIE Adapter 4.7500.D. | No 4.750 STA. ON THESE MODELS | 36EDAD-661-338 3+<10% 6+<20% | 36EDAD-661-338 3+<10%6+<20% |



CLAMPS: WHITNEY 647-927, 630-006

| Dwg | Part | DESCRIPTION | Price | Dwg | Part | Price |
|-----|-------------|-----------------------|-------|-----|---------------|------------------------------|
| 00 | *AMH2WCO | Complete Assembly | | 26 | *AMH2WLJ | Removable Lower Jaw/ |
| 05 | *AMH2WCP-05 | Screw, BHCS | | 28 | *AMH2WUJ | Clamp/ Top |
| 08 | *AMH2WCP-08 | Key/ T-Slot | | 29 | *AMH2WCP-29S | Piston / Shaft |
| 17 | *AMH2WCP-17 | Guide /Right | | 30 | *AMH2WCP-29EC | End Cap / Only DMC Unit |
| 18 | *AMH2WCP-18 | Spring /Nut Assembly | | 31 | *AMH2WCP-RS | Spring/Piston/Only DMC |
| 19 | *AMH2WCP-19 | Clevis Mounting Plate | | 33 | *AMH2WCP-33 | Wedge |
| 22 | *AMH2WCP-22 | Guide /Left | | 44 | *AMH2WCP-34 | Clevis |
| 25 | *AHSFS0516 | Screw, FLCS Pkg of 10 | | 45 | *AMH2WPA | Clamp Bottom / Cyl. Assembly |
| | | | | 49 | *AMH2WCP-49 | Plate / Tie |



Other Whitney clamp parts

| CE Part# | Whitney# | Description | price |
|---|----------|-------------------|-------|
| Below for models 3500, 3600 & 3700 machines | | | |
| *AMH645-606 | 645-606 | Upper Grip Insert | |
| | | | |





OPTIONAL PUNCH SHEARS

SHEARS Should be Considered for **All DIAGONAL DIMENSIONS Over 2"/50.8mm**
And a Minimum Width of **.375(9.53MM)**

Roof Top
***ARTS**
Up to 1/8 \$12
Up to 1/4 \$42
Up to 7/8 \$75

Inverted
***AIS**
\$15.00

Concave
***ACS**
Up to 1/8 \$28
Up to 1/4 \$42
Up to 7/8 \$75

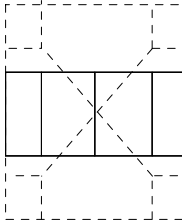
Double Inverted
***ADIS**
\$28

Whisper
(1-Way)
***AWS**
\$10

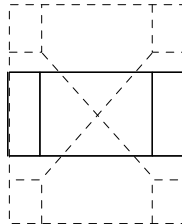
Spiracle
***ASPS**
\$10



Best all purpose shear for reducing tonnage requirement. Nibbling must be performed at 75% of punch size to avoid side loading.



An all purpose shear. Ideal for nibbling.



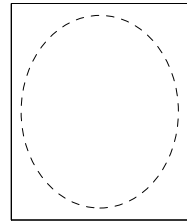
An all purpose shear. Ideal for nibbling. Used over Inverted Shear when punching heavy plate.



Best Shear for slotting tools, 3" or longer in length.



Reduces tonnage requirements while reducing slug deformation. Requires a very Ridged Press.

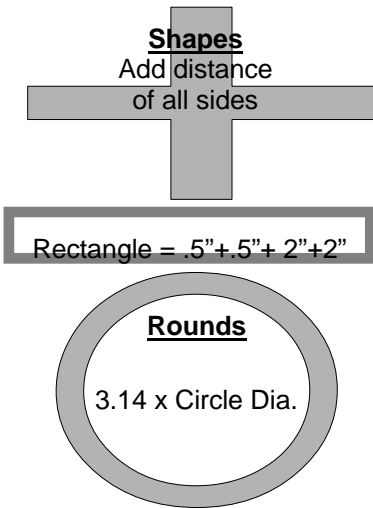


Ideal for rounds or squares < 1.18 30.m. Lessens tool side loading. "Easy to sharpen"!

Finding Tonnage Required

Does your press have the tonnage to pierce thick or tough material? Use this formula and below Shear Tonnage Reduction chart to find out.

Perimeter Distance



TONS PER SQUARE INCH

Now, by using the below chart, find the Tons per

| Type of Material | Tons per Sq. | Shear Strength |
|-------------------------|--------------|----------------|
| Aluminum (1/2 hard | 9.5 | 19,000 PSI |
| Brass (1/2 hard sheet) | 17.5 | 35,000 PSI |
| Copper (rolled) | 14.0 | 20,000 PSI |
| Steel, mild | 25.0 | 50,000 PSI |
| Steel, ASTM-A#6 | 30.0 | 60,000 PSI |
| Steel, 50 carbon | 35.0 | 70,000 PSI |
| Steel, cold drawn | 30.0 | 60,000 PSI |
| Steel, stainless (18-8) | 35.0 | 70,000 PSI |

FORMULA

Multiply
Perimeter x Tons
x Material Thickness

The answer to this formula is the required Tonnage needed.

Tonnage Reduction Chart When Shear is Used. Use the Formula above to find the tonnage required with no shear. Next, multiply that by the value found in this chart.

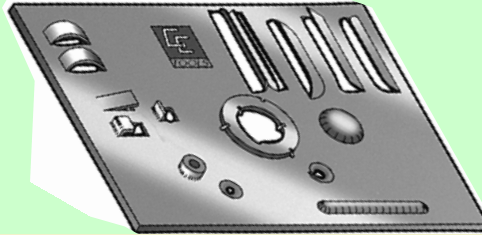
| Shear Depth | 16 Gage .060" 1,5mm | 14 Gage .075" 1,9mm | 12 Gage .105" 2,7mm | 10 Gage .135" 3,4mm | 8 Gage .165" 4,2mm | 3/16 Gage .187" 4,8mm | 1/4 Gage .250" 6,4mm | 5/16 Gage .312" 7,9mm | 3/8 Gage .375" 9,5mm |
|-------------|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|-----------------------------|----------------------------|-----------------------------|----------------------------|
| 1/16 | .5 | .58 | .72 | .78 | .83 | .86 | .90 | | |
| 3/32 | | .50 | .56 | .67 | .73 | .78 | .83 | .87 | .90 |
| 1/8 | | .46 | .51 | .56 | .62 | .63 | .74 | .85 | .95 |
| 1/4 | | | | .40 | .46 | .49 | .54 | .62 | .70 |
| 7/16 | | | | .25 | .28 | .31 | .36 | .41 | .48 |



SPECIAL APPLICATION FORMING TOOLS

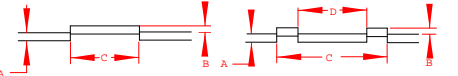
HIGHER PRODUCTIVITY THROUGH SUPERIOR ENGINEERING

Forming Overview: Use and Set Up: When setting up a form tool in a punch press, close attention must be made in setting the exact depth the punch comes down forming and literally spanking the material tightly between the form punch and die. For positive stop forms, you will need to get the precise Shut Height of your machine.

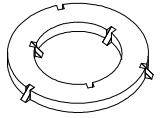


ELECTRICAL KNOCK OUTS

Single SP-60 Double SP-61



| Con-duit | Actual Size | Con-duit | Actual Size | Con-duit | Actual Size |
|----------|-------------|----------|-------------|----------|-------------|
| 1/2 | .875 | 1 1/4 | 1.750 | 2 1/2 | 3.000 |
| 3/4 | 1.125 | 1 1/2 | 2.000 | 3" | 3.625 |
| 1" | 1.375 | 2" | 2.500 | | |



FORM TOOL SET UP

- Inspect the material to be punched and make sure it is within the thickness range the tool was built for. If critical to the tools design, "Mat=(material thickness)" will be etched on tool.
place form punch in Guide Assembly, adjusting overall length to the machines Shut Height - Material Thickness.
- Single Sta. Press:** Adjust tools stoke of press to shortest depth, to assure the form will not over punch during first hit.
Turret or Whitney 36TC presses, Set the overall length of the Form Tool/Holder, to the **SHUT HEIGHT of Press -Minus Sheet Thickness.** After this is accomplished load tool into turret.
- Place the tool into the machine making sure the punch and die are aligned to each other.
- Perform a single stroke of the press and check the results. Increase machines stroke and again make a single hit by the press. Patiently repeat this procedure of increasing the machines stroke depth re testing until the correct form depth is achieved. **Don't rush and over adjust, or tool damage can occur!**

Further recommendations: To prevent poor form quality or damage to the form tool, use forming tools only on material thickness which tool was ordered, and designed for. Further, never attempt to exceed the forming height which the tool was designed for. If critical to the tools design, "F.H.=(form height)", and "Mat=(material thickness)" for which the tool was designed to perform under is etched on tool.

FORM TOOL PROGRAMMING SUGGESTIONS

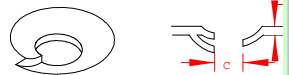
- Form tools should be the last operation performed on a sheet.
- Because a forming die is generally higher than a standard die, if using a turret machine, don't use either station adjacent to the form tool.
- With today's fast CNC presses, it is helpful to program a pause or dwell after each hit from a form tool. This gives extra time for the sheet to be stripped off tool. Further, if available program slow stroke speed.

TOOL MAINTENANCE

•C.E. Tooling offers sharpening, or refinish of form tools at very low rates, and usually 1-3 day turn around.

Look to the form tools Use & Maintenance Sheet sent with form tools. This sheet will help with the understanding of the tools design and if required for sharpening, disassembly of a form tool. Form Tools are highly susceptible to gauling. Insist that operators use a sheet lubricant such as CLM50 (page __) to help lessen galling and improve cutting edge life. If you have any questions about sharpening a particular cutting edge of a form, with tool in hand, call our engineering department (702) 736-2958 for guidance. All specials have a S-number etched on the tools. This number will allow our tool engineers to pull all information about your tool, and talk you through the process.

THREAD FORM



Inserts P= *FIP81 D=*FID81

GROUND SYMBOL



FORM DOWN

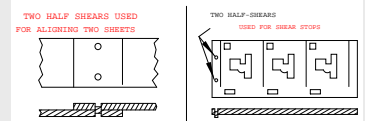
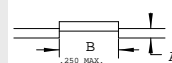
FORM UP

HALF SHEAR

FORM DOWN FORM UP

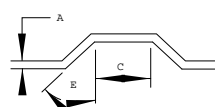
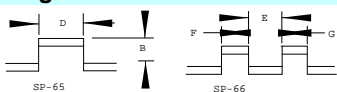
Master Unit Accepts Replaceable Half Shear Insert
.25"(6,1mm) Maximum B dimension Dedicated Quick-Set Punch Holder and Die must be used for sizes > .25"(6,1mm)

Replaceable Insert
Top *FIP51 Bottom *FID51

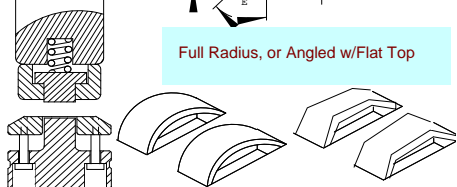


BRIDGE TOOL

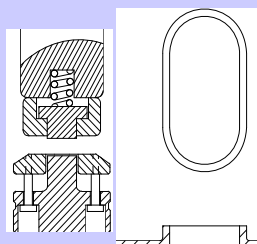
Single SP-65 Double SP-66



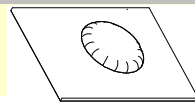
Full Radius, or Angled w/Flat Top



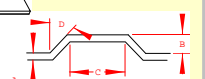
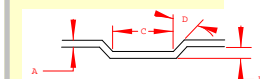
EXTRUSION



EMBOSES



Round or Shaped



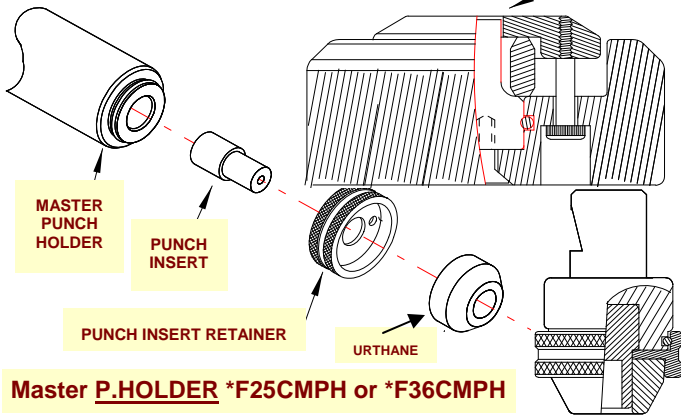
D >= 45° DIE w/No Stripper
Punch and Die Cat. Code *F28_PD-
D < 45° DIE w/Built in Stripper
Punch and Die Cat. Code *FAT_PD-D72

D >= 45° DIE w/No Stripper
Punch and Die Cat. Code *F28_PD-
D < 45° DIE w/Built in Stripper
Punch and Die Part#



Master Holders excepts various style form inserts All Whitney Tooling Styles

MASTER DIE BASE 2 3/4" O.D.*F28CDB DIE INSERT

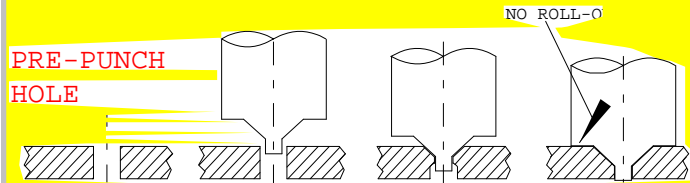


Master P.HOLDER *F25CMPH or *F36CMPH

SINGLE HIT FORM DOWN APPLICATIONS

1pc PUNCH ALLOWS PIERCE AND FORM IN ONE HIT
 Note: Without Pre-Pierce, Sheet Deformation Will Occurred.
PIERCE & COIN PIERCE & EXTRUDE

If a Single Hit Pierced and Form is Chosen, be advised that the hole quality and tool life will be greatly reduced. **Reason:** The metal being coined has no were to go but to bulge on the top of sheet (roll over), against the pilot tip and pushes below the sheet leaving a large burr. This binding of the pilot tip by the material causes rapid galling which if not constantly cleaned off can cause the pilot tip to be snapped off during the stripping cycle of the stroke.



$$\text{Minimum } C = B - (2((\text{Angle}/2)\text{Tan } X \text{ mat.thickness}))$$

COINING Process with Pre-Pierce Hole

Use Dedicated Punch, or if Coin size = or < .5"(12mm) you may use CE's Master Holder with a coin insert.

A coined hole is used to enable a flat head screw or rivet to fit flat or below the surface of the sheet. As the below diagram shows, C.E. Tooling recommends use of a pre-pierce before coining. This achieves the highest quality coined hole, with no roll-over, minimal burr, and excellent tool life.

Pre-Pierce Hole Formula. (Note, this will estimate to large size) after test hits, size may be reduced slightly to achieve best cosmetic results on material type and thickness being punched.

$$\text{Pre-Pierce Hole} = C + (B - C) / 2$$

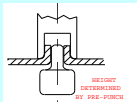
Limited success achieved forming > 80% of mat. thickness. If Coin Size is to large for the material being punched, to hold the desired "C" through hole size (with out coining past 80% of material thickness), a Nesting Die may be required so material can be formed.

Nesting Die generally +\$75 to round die.

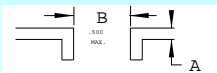
To eliminate need for nesting die, you can increase "C" through hole size with pre-pierce, and allow "B" only to center screw.

FORM DOWN FORM UP

EXTRUSION Dedicated Punch, or if Pre-Punching Hole and B dimension is .25(6,1mm) Max., Master Holder Accepting replaceable inserts can be used. Extrusions our commonly used to accept sheet metal screws or permit tapping into a deeper distance than just the material thickness. A pre-punched hole is required as a one hit pierce and extrude gives poor hole quality, and has limited adjustment on the machine. The diameter of the pre-punched hole ultimately determines the height of the extrusion. The limitation to the height is simply the metal's limit of being drawn (stretched).



FORM DOWN



FORM UP



Dedicated Punch *F__AP
 Replaceable Insert top *FIP54
 Standard Round Die

Master Holder Required
 Replaceable top Insert *FIP50
 Bottom *FID50W4

"INCH" COMMON SCREW SIZES

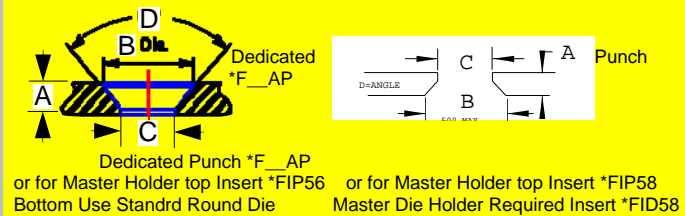
Pre-Punch Hole is Required Below is a charts of common screw sizes, Find screw, then follow row to the right matching up to material thickness.

| Material Screw | #22 | #20 | #18 | #16 | #14 | #13 | Extrusion B Pin Dia./ID | Pre-Pierce |
|----------------|------|------|------|------|------|------|-------------------------|------------|
| #4-40 | .127 | .136 | | | | | .090 | .045 |
| #5-40 | .139 | .148 | .165 | .180 | | | .102 | .051 |
| #6-32 | .144 | .153 | .171 | .185 | | | .107 | .053 |
| #8-32 | | .182 | .199 | .214 | .233 | | .136 | .064 |
| #10-24 | | | .213 | .228 | .247 | .267 | .150 | .069 |
| 1/4-20 | | | .268 | .283 | .302 | .322 | .205 | .100 |

PUNCHING SHOULDN'T BE DONE IN BLANKED AREA'S

"METRIC" COMMON SCREW SIZES

| Material | ,08 | 1,0 | 1,2 | 1,6 | 2,0 | 2,3 | Extrusion B Pin Dia./ID | Pre-Pierce |
|----------|------|-----|------|------|-----|------|-------------------------|------------|
| M2,X,4 | 2,74 | 3,0 | 3,26 | 3,78 | | | 1,7 | 0,8 |
| M2,5X,4 | 3,14 | 3,4 | 3,66 | 4,18 | | | 2,1 | 1,0 |
| M3,X,5 | 3,64 | 3,9 | 4,16 | 4,68 | | | 2,6 | 1,3 |
| M4,X,7 | | 4,7 | 4,96 | 5,48 | 6,0 | 6,39 | 3,4 | 1,6 |
| M5,X,8 | | | 5,86 | 6,38 | 6,9 | 7,29 | 4,3 | 2,0 |
| M6,X,1,0 | | | 6,66 | 7,18 | 7,7 | 8,09 | 5,1 | 2,5 |

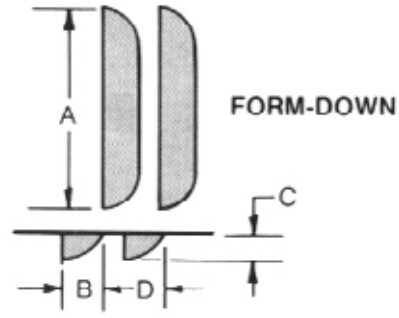
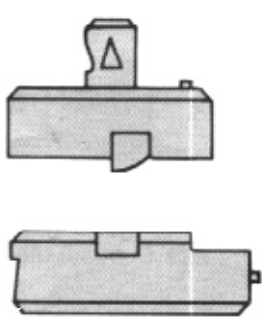
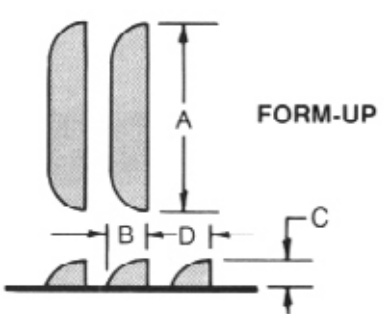
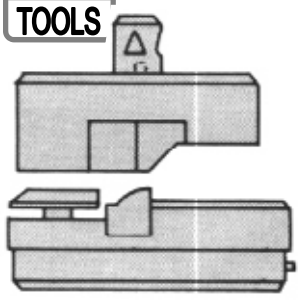


Dedicated Punch *F__AP
 or for Master Holder top Insert *FIP56 or for Master Holder top Insert *FIP58
 Bottom Use Standrd Round Die Master Die Holder Required Insert *FID58

For further information and helpful Charts go to our Section 1 Technical Reference



LOUVER & CARD GUIDE TOOLS



Common Louver Sizes • Form Up 5-3/4 Die

| Sta. | Part No. | Max. A Length | Common "B" | Common "C" | Common "D" | SET Price | Form Insert Only | Cut Insert Only |
|---------|---|---------------|------------|------------|------------|-----------|---|---|
| C 2-3/4 | Roper Style = *FRPCFUL2 28XX Style = *F28CFUL2 | 2" | 1/2" | 3/16" | 5/8" | 1251.90 | Roper Style = *FRPCFUL2 28XX Style = *F28CFUL2 | Roper Style = *FRPCFUC2 28XX Style = *F28CFUC2 |
| D 3-3/4 | Roper Style = *FRPDFUL3 28XX Style = *F28DFUL3 | 3" | 1/2" | 1/4" | 3/4" | 1332.15 | Roper Style = *FRPDFUL3 28XX Style = *F28DFUL3 | Roper Style = *FRPDFUC3 28XX Style = *F28DFUC3 |
| E 4-3/4 | Roper Style = *FRPEFUL4 28XX Style = *F28EFUL4 | 4" | 3/4" | 1/4" | 15/16" | 1439.15 | Roper Style = *FRPEFUL4 28XX Style = *F28EFUL4 | Roper Style = *FRPEFUC4 28XX Style = *F28EFUC4 |
| F 5-3/4 | Roper Style = *FRPFFUL_ 28XX Style = *F28FFUL_ | 5" | 3/4" | 5/16" | 1-1/8" | 1586.30 | Roper Style = *FRPFFUL_ 28XX Style = *F28FFUL_ | Roper Style = *FRPFFUC_ 28XX Style = *F28FFUC_ |
| | | 6" | | | | 1733.40 | | |

Common Louver Sizes FORM DOWN

| Sta. | Part No. | Max. A Length | Common "B" | Common "C" | Common "D" | SET Price | Form Insert Only |
|---------|---|---------------|------------|------------|------------|-----------|---|
| C 2-3/4 | Roper Style = *FRPCFDL2 28XX Style = *F28CFDL2 | 2" | 1/2" | 3/16" | 5/8" | 877.40 | Roper Style = *FRPCFDLI2 28XX Style = *F28CFDLI2 |
| D 3-3/4 | Roper Style = *FRPDFDL3 28XX Style = *F28DFDL3 | 3" | 1/2" | 3/16" | 3/4" | 1064.60 | Roper Style = *FRPDFDLI3 28XX Style = *F28DFDLI3 |
| E 4-3/4 | Roper Style = *FRPEFDL4 28XX Style = *F28EFDL4 | 4" | 5/8" | 1/4" | 15/16" | 1251.90 | Roper Style = *FRPEFDLI4 28XX Style = *F28EFDLI4 |
| F 5-3/4 | Roper Style = *FRPFFDL_ 28XX Style = *F28FFDL_ | 5" | 3/4" | 1/4" | 1-1/8" | 1722.70 | Roper Style = *FRPFFDLI_ 28XX Style = *F28FFDLI_ |
| | | 6" | | | | 1829.70 | |

PROGRESSIVE STIFFENING RIB

| Part Number | Part Number | Style | Std. Size | "A" | "B" | "R" |
|-------------|-------------|-------|-----------|-----|------|------|
| *F28PSRP | *F28PSRD | 28XX | | 3/8 | 3/16 | 3/16 |
| *FRPPSRP | *FRPPSRD | RP | | | | |
| *FCMPSRP | *FRPSRD | CM | | | | |

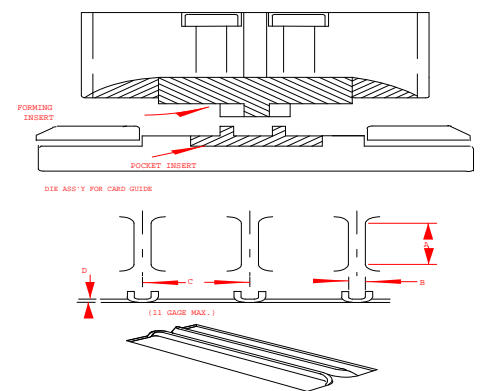
Punch is made for specific material

Unlimited Length With Nibbles

| Standard Size | "A" | "B" | "R" |
|---------------|-----|------|------|
| | 3/8 | 3/16 | 3/16 |

Tools Keyed for 0 & 90°. For 4 Way Locating 0, 90, 180 & 270° + \$80.00

For extra pins at 45° increments add 50%



LANCE & FORMS

DOUBLE BEND SP-77

OPEN STYLE

FORM OF 90 SP-78

LESS THAN 90 SP-79

DOUBLE BEND SP-80

LANCE STYLE (LE)



Replaceable Insert CHARACTER

DEDICATED MARKING UNITS Produced to stamp Logo's, Names, Part No., etc.. Contact our tooling engineers to discuss your particular application. Cad-.DXF/.IGES files are ideal for Logo's.

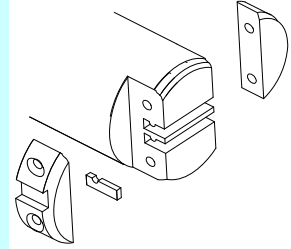
Available 1/16, 1/8, & 3/16 width X 1/4 height. 1/8 is standard • Blanks/ Spacers cost = 50% of regular character price

1/8 *ACHAR 1/8 stamps .09X.15 1/16 *ACHAR 1/16 stamps .06X.12" • 5/32 *ACHAR 5/32 stamps .125"X.19, 3/16 *ACHAR 3/16 stamps .156X.23

Spacer Kit *ASPACER includes widths of: 6 each 1/16, 1/8 & 2 Pcs of 3/16

Lengths: CE & Amada Standard Character Length=.875" WT=.750"

(WT old styl length=.572" +\$3.50ea. Insert)



Shear Proof Punches

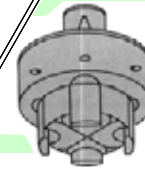
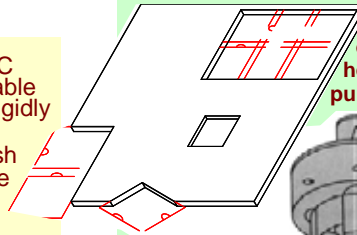
| DESCRIPTION | CAT CODE | Round | Shape |
|-------------|----------|-------|-------|
| 1" OR 25MM | 28CSP-* | | |
| 2" OR 50MM | 28DSP-* | | |

Unique Design: The heel portion of our Shear Proofs are CNC Wire EDM'ed to produce 2 locating flat sides which the retractable heels are fitted to. With this design, the retractable heels are rigidly supported throughout the entire length of the punch tip.

Maintenance: Depress the retractable heels until they are flush to the top of punch face. Lock the heels in this position with the set screws provided in the body of the punch. Know sharpen the punch just as you would a standard punch.

SHEAR PROOFS are designed for applications such as Notching or Nibbling where side loading of tools occurs.

Square or Round Shear Proofs help prevent side loading through the use of Retractable Heels. One of more heels enter into the die before the actual punching occurs. This gives ridged support and helps the tool line up through out the stroke of the press.



SPECIAL SHAPED TOOLS SHIPPED IN 3-10 DAYS

FDS "FIRM DELIVERY SERVICE" (EXPEDITING SERVICE) Guaranteed Delivery in 5-days + 10%, 4-days + 20%, 3-Days + 30%, 2-days + 40%, 1-day + 50%

NOTE: Ar, Br, Cr, means a radius value is requested. Further, a .015" Radius is always recommended on corners less than 90 degrees.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------------------------------|-------------------------------------|-------------------------------------|----------------------|------------------------|------------------------|------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------|----------------------|----------------------|---------------------|
| <p>SP-1 SINGLE "D" STD SHAPE PRICE</p> | <p>SP-2 30, 60, 90 Degree</p> | <p>SP-3 STD SHAPE HEXAGON PRICE</p> | <p>SP-4 OCTAGON STD SHAPE PRICE</p> | <p>SP-5 TEARDROP</p> | <p>SP-6 KEYWAY (1)</p> | <p>SP-7 KEYWAY (1)</p> | <p>SP-8 KEYWAY (2)</p> | <p>SP-9 KEYWAY (4)</p> | <p>SP-10 KEYHOLE (1)</p> | <p>SP-11 KEYHOLE (2)</p> | <p>SP-12 KEYHOLE (4)</p> | <p>SP-13 KEYHOLE (1)</p> | <p>SP-14 KEYHOLE (2)</p> | <p>SP-15 KEYHOLE (4)</p> | <p>SP-16 KEYHOLE (1)</p> | <p>SP-17 KEYHOLE (2)</p> | <p>SP-18 KEYHOLE (4)</p> | <p>SP-19 KEYHOLE (1)</p> | <p>SP-20 KEYHOLE (2)</p> | <p>SP-21 KEYHOLE (4)</p> | <p>SP-22 KEYHOLE (1)</p> | <p>SP-23 KEYHOLE (2)</p> | <p>SP-24 KEYHOLE (4)</p> | <p>SP-25 KEYHOLE (1)</p> | <p>SP-26 KEYHOLE (2)</p> | <p>SP-27 KEYHOLE (4)</p> | <p>SP-28 KEYHOLE (1)</p> | <p>SP-29 KEYHOLE (2)</p> | <p>SP-30 KEYHOLE (4)</p> | <p>SP-31 KEYHOLE (1)</p> | <p>SP-32 KEYHOLE (2)</p> | <p>SP-33 TO APEX</p> | <p>SP-34 KEYHOLE (1)</p> | <p>SP-35 KEYHOLE (2)</p> | <p>SP-36 KEYHOLE (4)</p> | <p>SP-37 KEYHOLE (1)</p> | <p>SP-38 KEYHOLE (2)</p> | <p>SP-39 KEYHOLE (4)</p> | <p>SP-40 KEYHOLE (1)</p> | <p>SP-41 KEYHOLE (2)</p> | <p>SP-42 KEYHOLE (4)</p> | <p>SP-43 KEYHOLE (1)</p> | <p>SP-44 KEYHOLE (2)</p> | <p>SP-45 KEYHOLE (4)</p> | <p>SP-46 KEYHOLE (1)</p> | <p>SP-47 KEYHOLE (2)</p> | <p>SP-48 KEYHOLE (4)</p> | <p>SP-49 KEYHOLE (1)</p> | <p>SP-50 BOW TIE</p> | <p>SP-51 BOW TIE</p> | <p>SP-53 75° 60°</p> | <p>SP-54 RADIUS</p> |
|--|-------------------------------|-------------------------------------|-------------------------------------|----------------------|------------------------|------------------------|------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------|----------------------|----------------------|---------------------|

BE SURE YOUR USED TOOLS ARE ALWAYS SHARPENED PROPERLY!

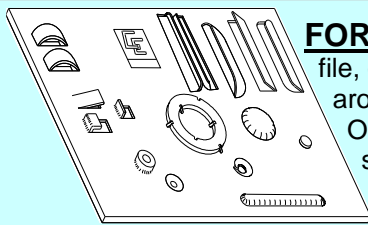
If facilities aren't available to properly care for your tooling, CE offers it's customers a tool sharpening service at low rates.

Generally a 1-2 day turn around.

Sharpening your tools generally cost approximately 1/3 the "NEW" tool cost Depending on amount of roll-over! Remember, due to back taper, you lose size on a punch and gain clearance in a die!

| PUNCH SHARPENING COST <i>FLAT (NO SHEAR)</i> | Qty 1-3 | Qty 4-10 | Qty 11-25 |
|---|------------|-------------|--------------|
| TIP DIAGONAL .063 TO 3" | | | |
| TIP DIAGONAL 3.001" TO 6" | | | |

| DIE SHARPENING COSTS | Qty 1-3 | Qty 4-10 | Qty 11-25 |
|----------------------------|------------|-------------|--------------|
| O.D. UP TO 2-3/4" DIAMETER | | | |
| O.D. OVER 2-3/4 TO 6-3/4" | | | |



FORMING TOOLS—Assure best performance. Using the tool's print which we keep on file, our tool room will sharpen, re-set and test "YOUR" form tool. We can usually turn around a Form Tool in two to three work days. We have a minimal charge to cover labor. Our primary goal of this service is to assure long term satisfaction with C.E. products & services.

CORNER RADIUS KITS

Produce eight (8) different sized radius corners equally and easily.

- *Self-Contained Unit means fast easy set-up
- *Requires a vertical hit from any type press
- *Punch material up to 13 gage mild steel

Fractional Unit:

Cat. Code *E-RK1002
1/16, 1/8, 3/16, 1/4, 5/16, 3/8, 7/16 & 1/2

Metric Unit: Cat. Code *E-RK1001
2mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm & 12mm

The Corner Radius Kit takes the "Pain" out of corner rounding. This unique, self-contained unit requires only a vertical "hit" from a mach. press, brake, etc... (soft hammer on a bench for short runs) to produce clean corner radii on sheet stock up to 13 gage mild steel. Precision self-aligning punches and dies make 30 second changeover common.

Shut ht. 3 1/8 • Base 5" x 6 1/4



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



C.E. TOOLING, INC.

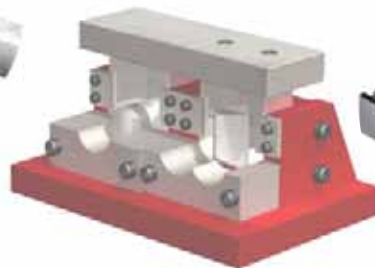
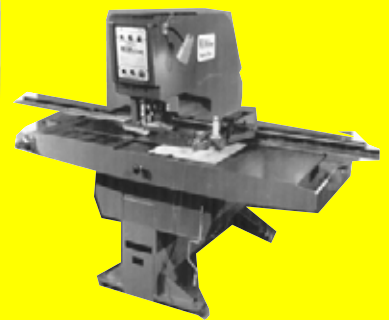
**FORMING AROUND
THE WORLD**



**MANUFACTURING TURRET PRESS
TOOLING SINCE 1966**

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