

HIGH PRECISION TOOLING

For

Trumpf

C.N.C. Punching Machines



MANUFACTURED BY
F.M. TOOL & GAUGE PTY. LTD.

ABN: 91 008 262 520

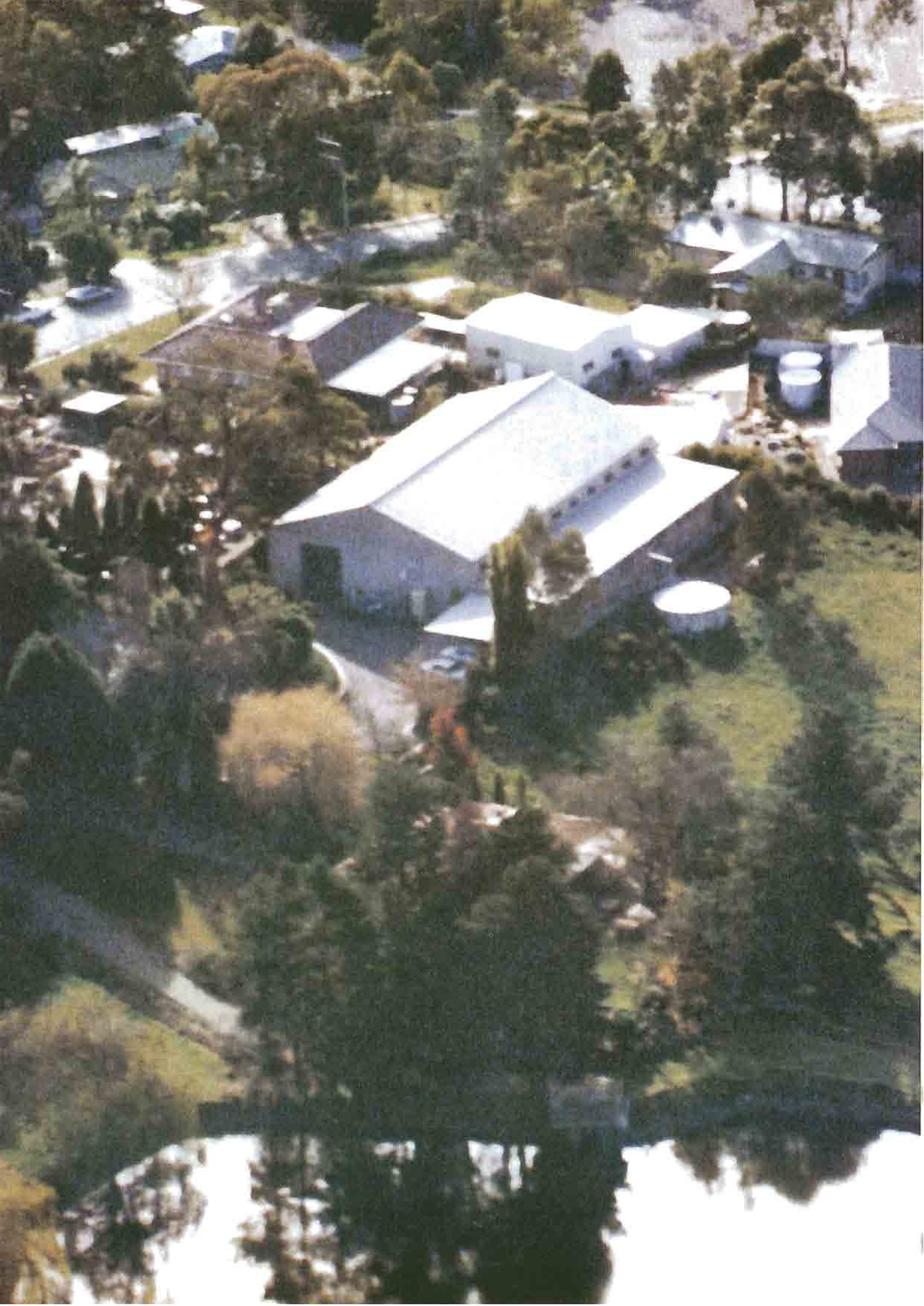
REDDEN DRIVE, CUDLEE CREEK, SOUTH AUSTRALIA 5232

PH: (08) 8389 2272 FAX: (08) 8389 2309 or (08) 8389 2478

Free Call 1800 882 993 email: sales@fmtool.com.au

www.fmtool.com.au





MAXI-PUNCH

TN OR TiCN COATED PUNCHES
CAN GIVE YOU UP TO SEVEN TIMES
NORMAL LIFE EXPECTANCY OF STANDARD TOOLING



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Section 'A'

Tooling

Manufactured by

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Punch Chucks require Recessed Alignment Rings

*For punches under 2mm dia please add 40% to the price
For punch & die sets 0.1cl and less please add 50% to the price*



Punches and Dies

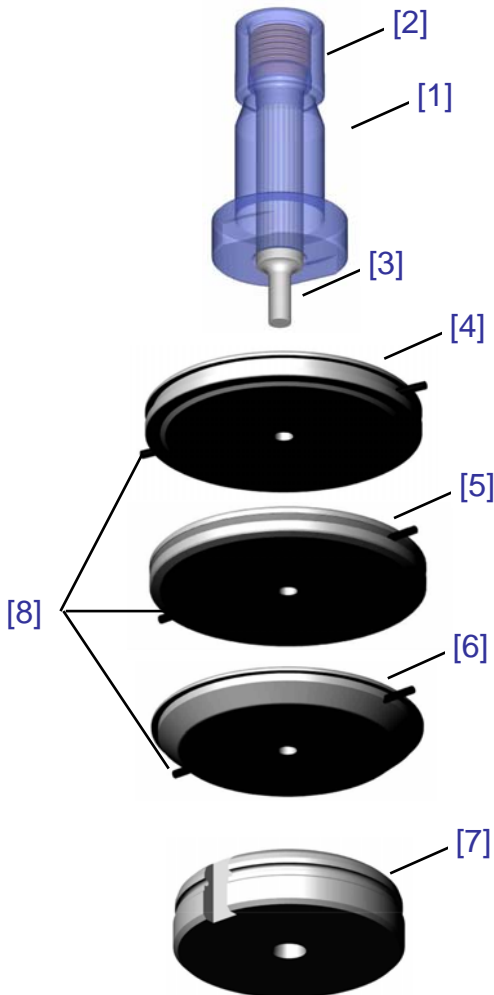
- [3] Punch (Cat.'00' 0-6mm dia)V50000-000
- [3] Punch (Cat.'0' 0-10.5mm dia)V60000-000
- [7] Die (Cat.'1' round).....V60101-000

Punch Chucks

- [1] Complete Punch Chuck (Cat. '00')....V50910-000
consisting of punch chuck & grub screw for 0-6mm
- [2] Punch Locking Screw.....V60910-001
(for Cat. '00' punch chuck)
- [1] Complete Punch Chuck (Cat. '0').....V60910-000
consisting of punch chuck & grub screw for 0-10.5mm
- [2] Punch Locking Screw.....V60910-001
(for Cat. '0' punch chuck)

Accessories

- [4] Stripper (180W & 260R series).....V60950-000
- [5] Stripper (W202 & W300, cat. 3 adapted)...V60951-000
- [6] Stripper (200R, 500R & 2000R series)V60954-000
- [8] Stripper Pins (ea)V60952-000
- [9] Recessed Alignment Ring.....V60900-000
- Die Shims.....V60101-SHIM
(pack of 4: 2 @ 0.1, 1 @ 0.2, 1 @ 0.5mm)



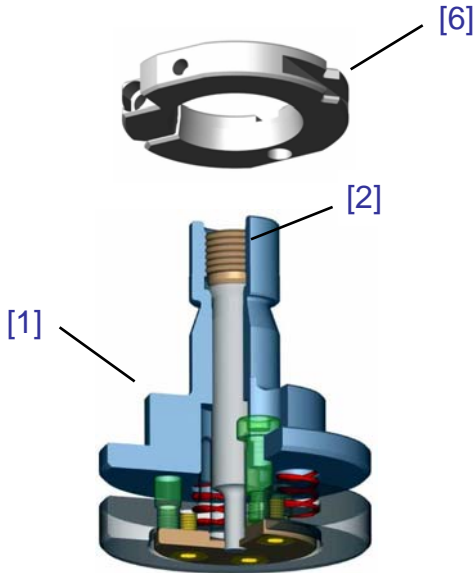
For **PRICING** and extended description of the tooling on this page log on to our web site at
www.fmtool.com.au

For Punches & Punch Chucks on this page first select **Tooling, Trumpf, Trumpf.**,
then **TRU-0**, For the Die select **TRU-1**

For Strippers & Alignment Rings etc select **TRU-6**

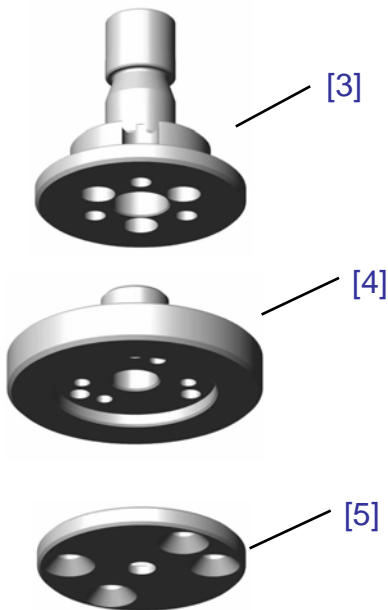
*Pricing and description for all shapes, rounds and accessories for Trumpf Tooling
is available at this site*

**Guided Chucks
For '00' & '0' Punches
(0-6mm & 0-10.5mm)
Guided Punch Chucks
40 I.D. Alignment Ring**



Category '00' Chuck

- [1] Complete Guided Assembly V50911-000
consisting of:
Punch Housing
Grub Screw
Guided Punch Retainer
- [2] Punch Locking Screw
(for punch chuck) V60910-001
- [3] Punch Housing V50911-001
- [4] Guided Punch Retainer V50911-002
- [5] Guided Stripper *(to suit punch size)* V50911-003



Category '0' Chuck

- [1] Complete Guided Assembly V60911-000
consisting of:
Punch Housing
Grub Screw
Guided Punch Retainer
- [2] Punch Locking Screw
(for punch chuck) V60910-001
- [3] Punch Housing V60911-001
- [4] Guided Punch Retainer V60911-002
- [5] Guided Stripper *(to suit punch size)* V60911-003

Accessories

- [6] 40 I.D. Alignment Ring V60903-000

For **PRICING** and extended description of the tooling on this page log on to our web site at www.fntool.com.au

For Chuck Assemblies on this page first select **Tooling, Trumpf, Trumpf.**, then **TRU-0**

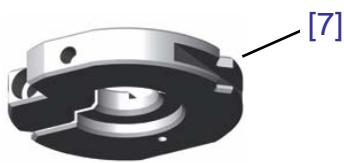
For Strippers & Alignment Rings etc select **TRU-6**

Pricing and description for all shapes, rounds and accessories for Trumpf Tooling is available at this site

Punch requires Recessed Alignment Ring

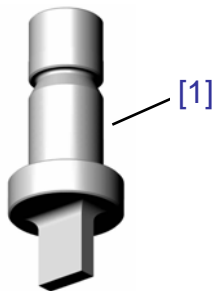
*For punches under 2mm in width or dia please add 40% to the price
For punch & die sets 0.1cl and less please add 50% to the price*

*Punches within 18mm dia will be supplied without Shear
Punches 18mm dia & over will be supplied with Whisper Shear as standard*



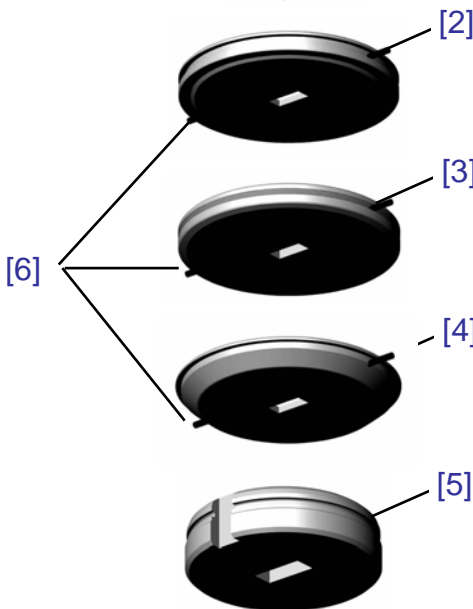
Punches & Dies

- [1] Punch (cat. 1 round—no shear)..... V60100-000
- [1] Punch (cat. 1 round—with shear)..... V60110-000
- [5] Die (round) V60101-000
- [1] Punch (cat. 1 shaped—no shear)..... V60300-XXX
- [1] Punch (cat. 1 shaped—with shear) V60310-XXX
- [5] Die (shaped-auto index single key)..... V60301-XXX
- [5] Die (shaped-multi key to suit shape)..... V60302-XXX



Accessories

- Round:*
- [2] Stripper (180W & 260R series) V60950-000
 - [3] Stripper (W202 & W300, cat. 3 adapted).. V60951-000
 - [4] Stripper (200R, 500R & 2000R series).... V60954-000
- Shaped:*
- [2] Stripper (180W & 260R series) V60950-XXX
 - [3] Stripper (W202 & W300, cat. 3 adapted).. V60951-XXX
 - [4] Stripper (200R, 500R & 2000R series).... V60954-XXX
 - [6] Stripper Pins (ea) V60952-000
 - [7] Recessed Alignment Ring..... V60900-000
 - Die Shims V60101-SHIM
(pack of 4: 2 @ 0.1, 1 @ 0.2, 1 @ 0.5mm)



For **PRICING** and extended description of the tooling on this page log on to our web site at www.fmtool.com.au

For Punches & Dies on this page first select **Tooling, Trumpf, Trumpf.**, then **TRU-1**

For Strippers & Alignment Rings etc select **TRU-6**

Pricing and description for all shapes, rounds and accessories for Trumpf Tooling is available at this site

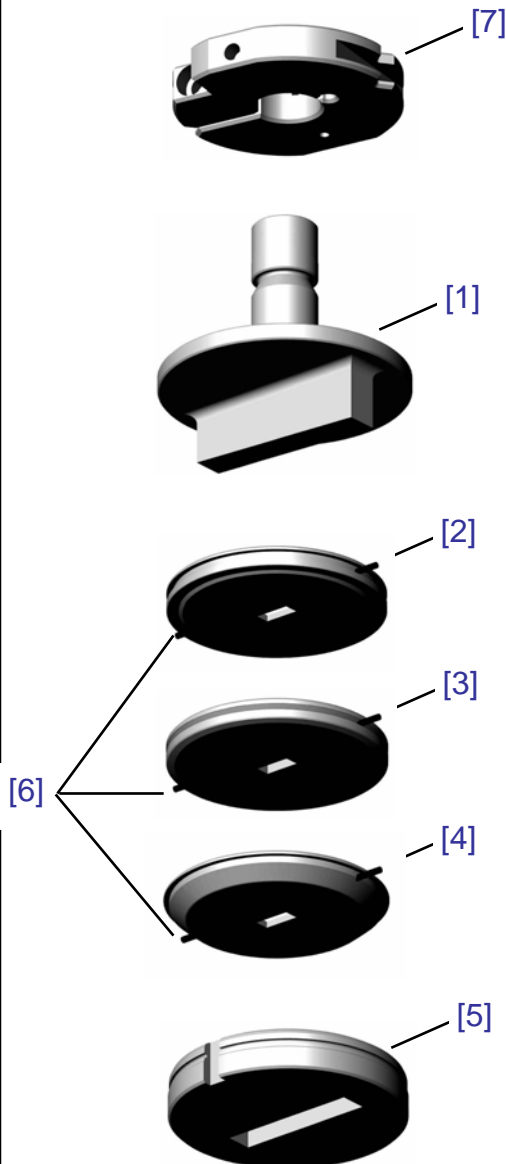
TRUMPF

Category '2'
(30mm - 76mm)

Punches up to & within 70mm dia are supplied with Whisper Shear & Punches over 70mm dia are supplied with Roof Top Shear as standard

Punches require Solid Alignment Rings

For punches under 2mm in width please add 40% to the price
For punch & die sets 0.1cl and less please add 50% to the price



Punches & Dies

- [1] Punch (round to 55mm dia).....V60400-000
- [1] Punch (round 55-76mm dia)..... V60450-000

- [5] Die (round-to 55mm dia)V60401-000
- [6] Die (round-55-76mm dia)..... V60451-000

- [1] Punch (shaped to 55mm dia)V60500-XXX
- [1] Punch (shaped 55-76mm dia) V60550-XXX

- [5] Die (shaped-to 55mm A.I. single key) V60501-XXX
- [5] Die (shaped-to 55mm multi key) V60502-XXX
- [5] Die (shaped-55-76mm A.I. single key) V60551-XXX
- [5] Die (shaped-55-76mm multi key) V60552-XXX

Accessories

- Round:
- [2] Stripper (180W & 260R series)..... V60950-000
 - [3] Stripper (W202 & W300, cat. 3 adapted) .. V60951-000
 - [4] Stripper (200R, 500R & 2000R series)..... V60954-000
- Shaped:
- [2] Stripper (180W & 260R series)..... V60950-XXX
 - [3] Stripper (W202 & W300, cat. 3 adapted) .. V60951-XXX
 - [4] Stripper (200R, 500R & 2000R series)..... V60954-XXX
- [6] Stripper Pins (ea) V60952-000
 - [7] Solid Alignment Ring V60901-000
 - Die Shims V60401-SHIM
(pack of 4: 2 @ 0.1, 1 @ 0.2, 1 @ 0.5mm)

For **PRICING** and extended description of the tooling on this page log on to our web site at www.fntool.com.au

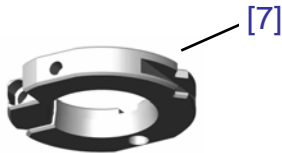
For Punches & Dies on this page first select **Tooling, Trumpf, Trumpf.**, then **TRU-2**

For Strippers & Alignment Rings etc select **TRU-6**

Pricing and description for all shapes, rounds and accessories for Trumpf Tooling is available at this site

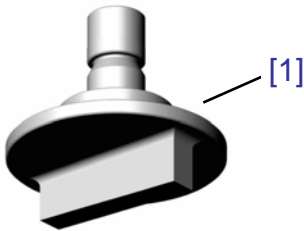
Punches up to & within 70mm dia are supplied with Whisper Shear & Punches over 70mm dia are supplied with Roof Top Shear as standard

Punches Require 40mm I.D. Alignment Rings



Punches & Dies

- [1] Punch (round to 76mm dia)..... V60430-000
- [5] Die (round-reinforced) V60431-000
- [1] Punch (shaped to 76mm dia)..... V60530-XXX
- [5] Die (shaped-reinforced A.I. single key)..... V60531-XXX
- [5] Die (shaped-reinforced multi key)..... V60532-XXX



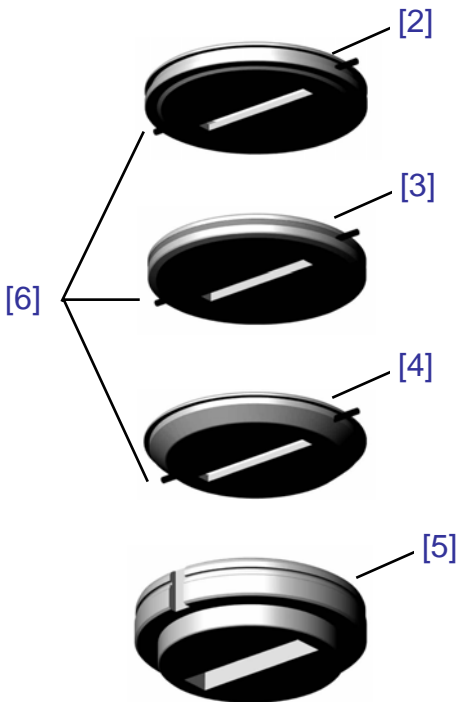
Accessories

Round:

- [2] Stripper (180W & 260R series)..... V60950-000
- [3] Stripper (W202 & W300, cat. 3 adapted) .. V60951-000
- [4] Stripper (200R, 500R & 2000R series)..... V60954-000

Shaped:

- [2] Stripper (180W & 260R series)..... V60950-XXX
- [3] Stripper (W202 & W300, cat. 3 adapted) .. V60951-XXX
- [4] Stripper (200R, 500R & 2000R series)..... V60954-XXX



- [6] Stripper Pins (ea) V60952-000
- [7] 40 I.D. Alignment Ring V60903-000
- Die Shims V60401-SHIM
(pack of 4: 2 @ 0.1, 1 @ 0.2, 1 @ 0.5mm)

For **PRICING** and extended description of the tooling on this page log on to our web site at www.fntool.com.au

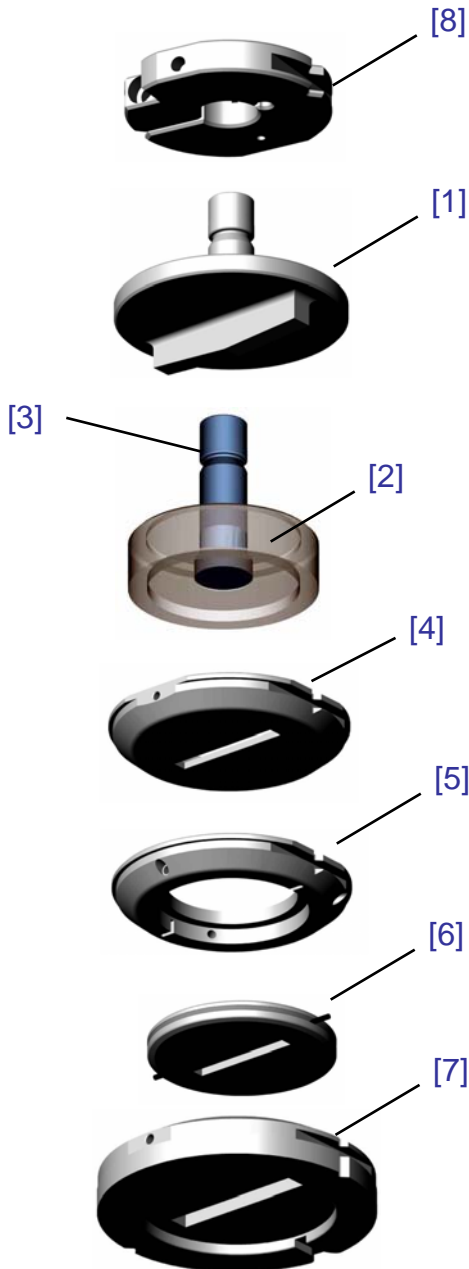
For Punches & Dies on this page first select **Tooling, Trumpf, Trumpf**, then **TRU-2**

For Strippers & Alignment Rings etc select **TRU-6**

Pricing and description for all shapes, rounds and accessories for Trumpf Tooling is available at this site

All Punches Roof Top Sheared as standard

For punches under 2mm in width please add 40% to the price
 For punch & die sets 0.1cl and less please add 50% to the price



Shapes

- [1] Punch (1 piece) V60700-XXX
- [7] Die V60701-XXX
- [4] Stripper V60970-XXX
- [6] Stripper (fits 60975 adaptor)..... V60951-XXX
 (80mm max. dia)

Rounds

- [2] Punch (requires spigot) V60600-000
- [7] Die V60601-000
- [4] Stripper V60970-000
- [6] Stripper (fits 60975 adaptor)..... V60951-000
 (80mm max. dia)

Accessories

- [3] Spigot V60600-001
- [5] Stripper Adaptor V60975-000
 (for 60951 strippers)
- [8] Solid Alignment Ring V60901-000

For **PRICING** and extended description of the tooling on this page log on to our web site at
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For Punches & Dies on this page first select **Tooling, TrumPF, TrumPF.**, then **TRU-3**

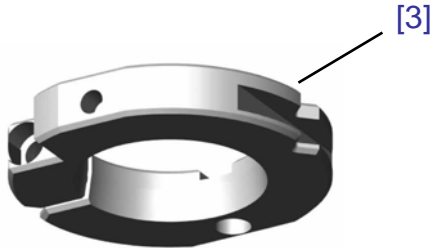
For Strippers & Alignment Rings etc select **TRU-6**

Pricing and description for all shapes, rounds and accessories for TrumPF Tooling
 is available at this site

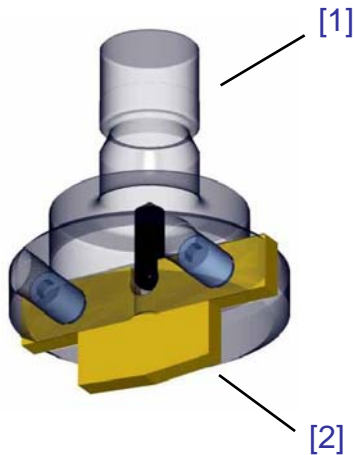
PARTING TOOL PUNCH ASSEMBLY (Style 3)

All Punches Roof Top Sheared as standard

Rectangle
Use with 40 I.D. Alignment Ring



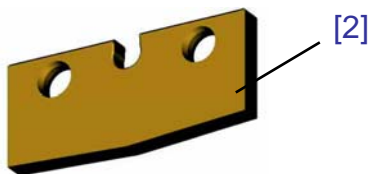
Punch Housing Complete



[1] Complete Assembly V60560-000
consisting of:
Locating Pin
Insert Retaining Screws (2 off)

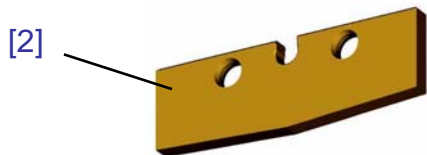
[2] Punch Insert (5 x 30mm) V60560-0530
[2] Punch Insert (5 x 56mm) V60560-0556
[2] Punch Insert (5 x 76.2mm) V60560-0576

Locating Pin V60560-001
Insert Retaining Screws (ea) V60560-002
(2 off per assembly)



Accessories

[3] 40 I.D Alignment Ring V60903-000

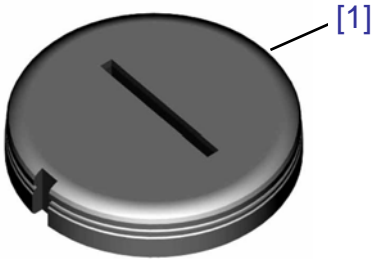


For **PRICING** and extended description of the tooling on this page log on to our web site at
www.fmtool.com.au

For Items on this page first select **Tooling, Trumf, Trumf., TRU-4**, then **TRU-4-1**
Pricing and description for all shapes, rounds and accessories for Trumf Tooling
is available at this site

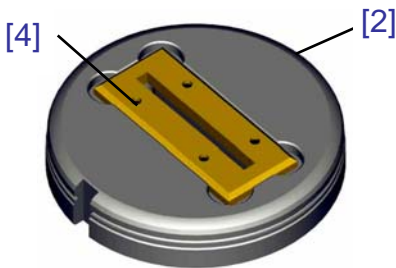
PARTING DIE ASSEMBLIES (Solid & Inserts Sold in Pairs) (Style 3) Rectangle

Extra Keying Available on Request



5 x 30mm, 5 x 56mm, 5 x 76mm

- [1] Cat. 2 Standard Die (5 x 30)..... V60561-0530
- [1] Cat. 2 Standard Die (5 x 56)..... V60561-0556
- [1] Cat. 2 Standard Die (5 x 76.2)..... V60561-0576

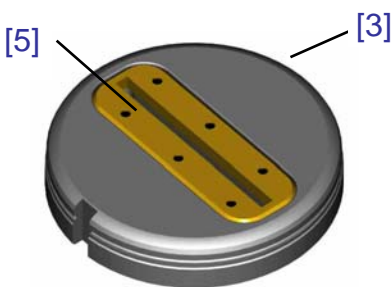


5 x 30mm, 5 x 56mm

- [2] Cat. 2 Insertable Die Base..... V60562-020
- [4] Inserts to suit Die (5 x 30)..... V60562-0530
- [4] Inserts to suit Die (5 x 56)..... V60562-0556

5 x 76mm

- [3] Cat. 2 Insertable Die Base..... V60563-020
- [5] Inserts to suit Die (5 x 76.2)..... V60563-0576



Accessories

- Die Shims V60401-SHIM
(pack of 4: 2 @ 0.1, 1 @ 0.2, 1 @ 0.5mm)

For **PRICING** and extended description of the tooling on this page log on to our web site at www.fntool.com.au

For Items on this page first select **Tooling, Trumpf, Trumpf., TRU-4**, then **TRU-4-1**

For Die Shims select **TRU-6**

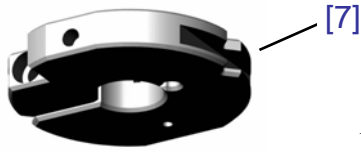
Pricing and description for all shapes, rounds and accessories for Trumpf Tooling is available at this site

PARTING TOOL PUNCH ASSEMBLY

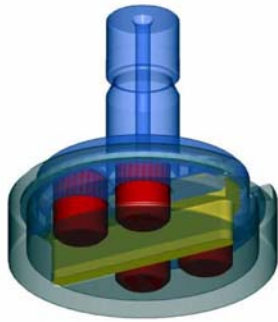
(Style 1)

Oblong

Use with Solid Alignment Ring



Punch Inserts supplied Flat (No Shear) as standard



5mm x 56mm

Complete Assembly (consisting of)..... V60570-000

Punch Insert

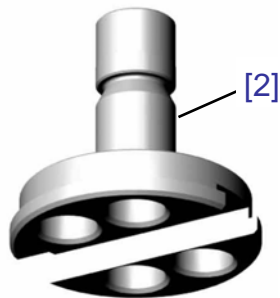
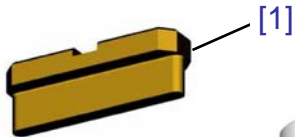
Punch Housing

Insert Retaining Screws (2 off)

Urethane Springs (4 off)

Circlip

Metal Stripper



[1] Punch Insert..... V60570-0556

[2] Punch Housing..... V60570-001

[3] Insert Retaining Screws

(2 off per assembly) V60570-002

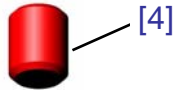
[4] Urethane Springs

(4 off per assembly) V60570-003

[5] Circlip V60570-004

[6] Metal Stripper Cap V60570-005

[3]



Accessories

[7] Solid Alignment Ring..... V60901-000



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For Items on this page first select **Tooling, Trumpf, Trumpf., TRU-4**, then **TRU-4-3**

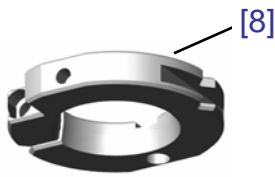
Pricing and description for all shapes, rounds and accessories for Trumpf Tooling
is available at this site

PARTING TOOL PUNCH ASSEMBLY

(Style 2)

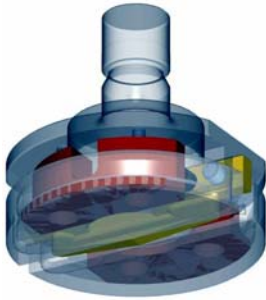
Oblong

Use with 40 I.D. Alignment Ring



Punch Inserts supplied Roof Top Shear as standard

5mm x 56mm

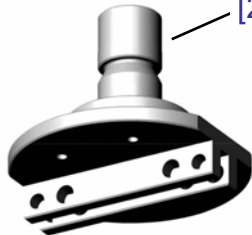


Complete Assembly (consisting of)..... V60580-000
Punch Insert
Punch Housing
Tension Pins (2 off)
Insert Retaining Screws (2 off)
Urethane Springs (2 off)
Urethane Spring Retaining Screws (4 off)
Metal Stripper Plates (2 off)

[1]



[2]



[1] Punch Insert..... V60580-0556
[2] Punch Housing..... V60580-001
[3] Tension Pins (ea)
(2 off per assembly) V60580-002
[4] Insert Retaining Screws (ea)
(2 off per assembly) V60580-003
[5] Urethane Springs (ea)
(2 off per assembly) V60580-004
[6] Urethane Spring Retaining Screws (ea)
(4 off per assembly) V60580-005
[7] Metal Stripper Plate (ea)
(2 off per assembly) V60580-006

[3]



[4]



[5]



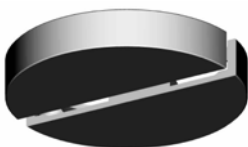
[6]



Accessories

[8] 40 I.D. Alignment Ring V60903-000

[7]



For **PRICING** and extended description of the tooling on this page log on to our web site at

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For Items on this page first select **Tooling, Trumf, Trumf., TRU-4, then TRU-4-2**

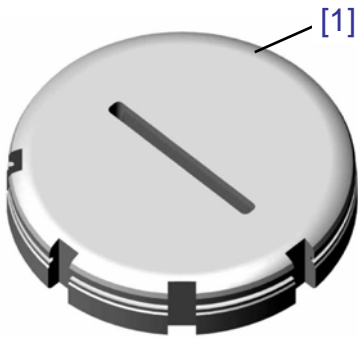
Pricing and description for all shapes, rounds and accessories for Trumf Tooling
is available at this site

PARTING DIES

For Style 1 & 2 Parting Assemblies

5 x 56mm with 1.6mm rads in the corners

Keyed 0, 45, 90, 135 deg as Standard

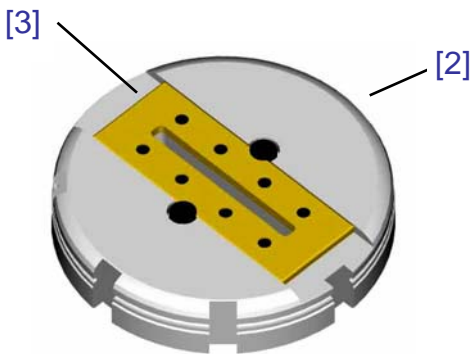


5mm x 56mm

[1] Cat 2 Die (solid).....V60581-0556

[2] Cat 2 Die (insertable die base)V60582-000

[3] Inserts to suit DieV60582-0556

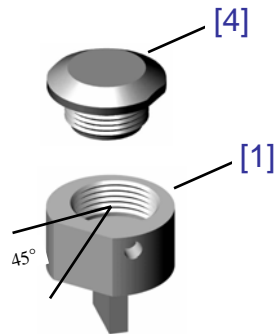


For **PRICING** and extended description of the tooling on this page log on to our web site at

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For Items on this page first select **Tooling, Trumpf, Trumpf., TRU-4, then TRU-4-2**

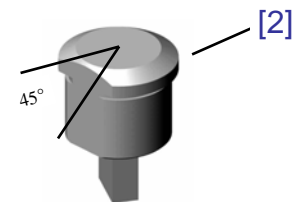
Pricing and description for all shapes, rounds and accessories for Trumpf Tooling is available at this site



4 Station @ 45 °

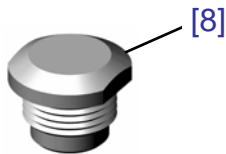
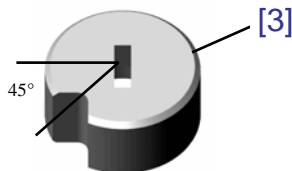
Shapes

- [1] Punch (2 piece-requires head) V64300-XXX
- [2] Punch (solid-1 piece) V64310-XXX
- [3] Die V64301-XXX
- [4] Head (for V64300 punch) V64105-000



Rounds

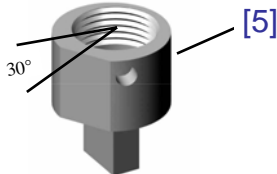
- [1] Punch (2 piece-requires head) V64100-000
- [2] Punch (solid-1 piece) V64110-000
- [3] Die V64101-000
- [4] Head (for V64100 punch) V64105-000



6 Station @ 30°

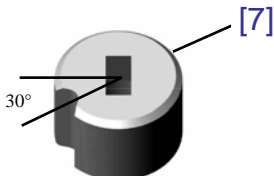
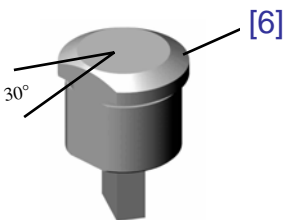
Shapes

- [5] Punch (2 piece-requires head) V66300-XXX
- [6] Punch (solid-1 piece) V66310-XXX
- [7] Die V66301-XXX
- [8] Head (for V66300 punch) V66105-000



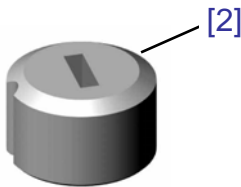
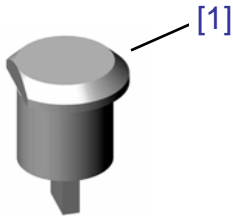
Rounds

- [5] Punch (2 piece-requires head) V66100-000
- [6] Punch (solid-1 piece) V66110-000
- [7] Die V66101-000
- [8] Head (for V66100 punch) V66105-000



For **PRICING** and extended description of the tooling on this page log on to our web site at www.fmtool.com.au

For Items on this page first select **Tooling, Trumpf, Trumpf., TRU-5**
Pricing and description for all shapes, rounds and accessories for Trumpf Tooling is available at this site



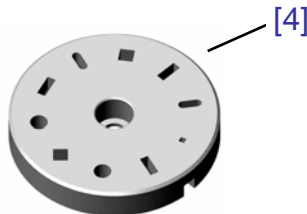
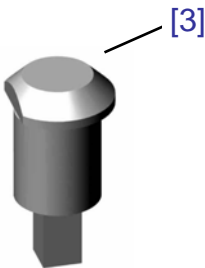
5 Station

Shapes

- [1] Punch V65310-XXX
- [2] Die V65301-XXX

Rounds

- [1] Punch V65110-000
- [2] Die V65101-000



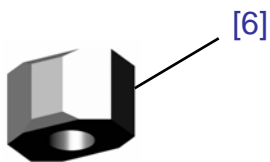
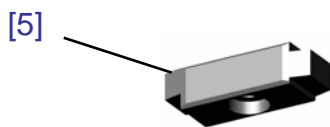
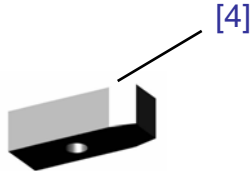
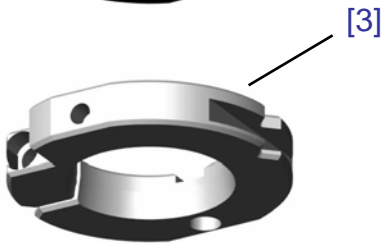
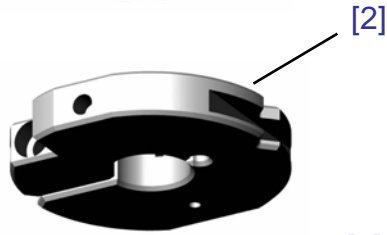
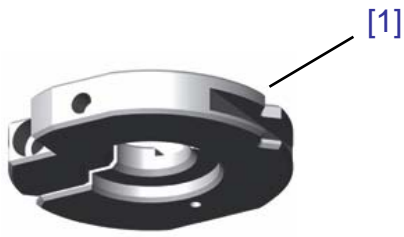
10 Station

- [3] Shaped Punch V68310-XXX
- [3] Round Punch V68110-000
- [4] Die V68301-XXX

For **PRICING** and extended description of the tooling on this page log on to our web site at www.fmtool.com.au

For Items on this page first select **Tooling, Trumpf, Trumpf., TRU-5**
Pricing and description for all shapes, rounds and accessories for Trumpf Tooling is available at this site

All Alignment Rings come complete with key and locking screw



[1] Recessed Alignment Ring Cat. 1V60900-000

[2] Solid Alignment Ring Cat. 2 & 3.....V60901-000

[3] 40 I.D Alignment RingV60903-000
(cannot be used in W202 & W300 machines)

[4] KeyV60905-000
(recessed & solid alignment rings)

[5] Key *(W202 & W300 machines only)*.....V60906-000
(recessed & solid alignment rings)

[6] KeyV60907-000
(40 I.D. alignment rings)

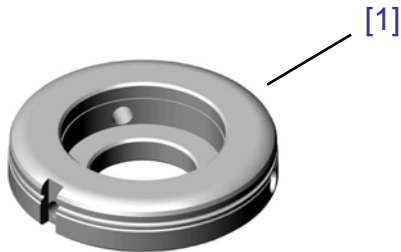
For **PRICING** and extended description of the tooling on this page log on to our web site at

www.fmtool.com.au

For Items on this page first select **Tooling, Trumpf, Trumpf.**, then **TRU-6**
Pricing and description for all shapes, rounds and accessories for Trumpf Tooling
is available at this site

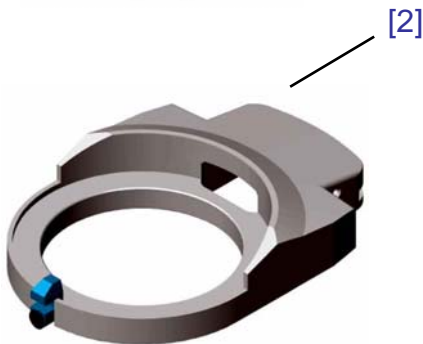
All parts hardened and precision ground

Die Adaptors



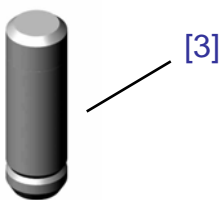
- [1] Cat.1-Cat.2 (All Machines).....V60920-000
- [1] Cat.1-Cat.3 (W202 & W300 Machines Only) V60930-000
- [1] Cat.2-Cat.3 (W202 & W300 Machines Only).... V60931-000

Die Shoes



- [2] Die Shoes (as per request)

Code Pins



- [3] Code Pin - Fixed
(180W machines only)V60770-000
- [3] Code Pin - Adjustable
(180W machines only)V60771-000

Die Shoes are available on request - Please advise machine model for availability

Fully Indexable Die Adaptors are available on request for non-indexing machines

For **PRICING** and extended description of the tooling on this page log on to our web site at www.fntool.com.au

For Items on this page first select **Tooling, Trumpf, Trumpf.**, then **TRU-6**
Pricing and description for all shapes, rounds and accessories for Trumpf Tooling is available at this site

Section 'B'

*Special Shapes &
Technical Information*

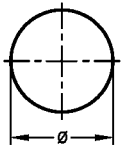




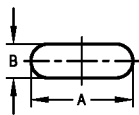
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Category 'A' Tool Selection Guide

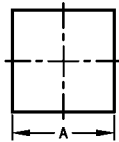
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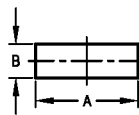
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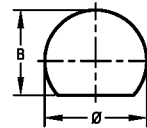
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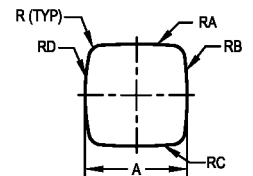
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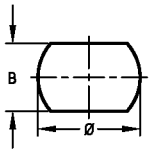
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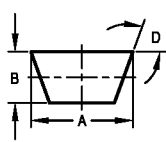
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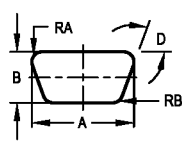
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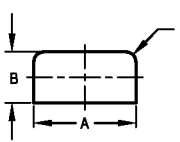
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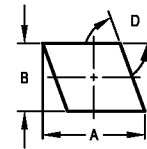
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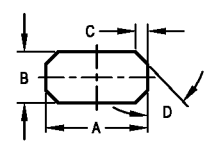
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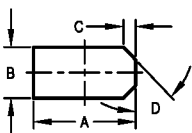
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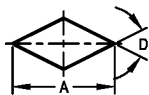
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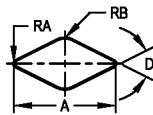
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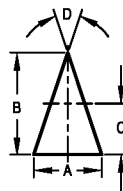
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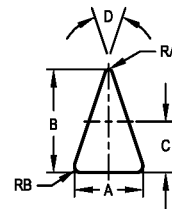
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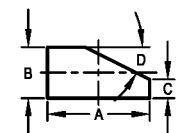
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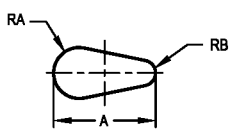
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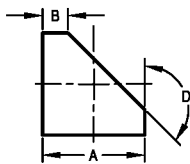
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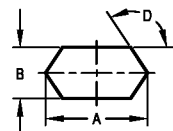
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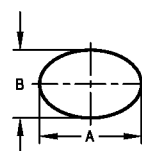
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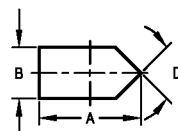
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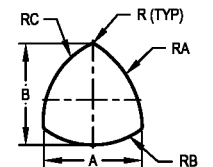
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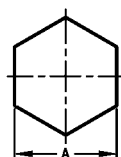
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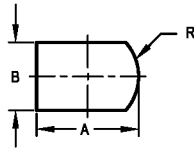
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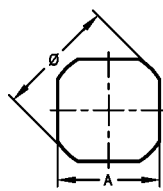
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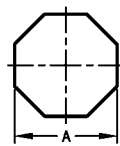
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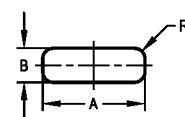
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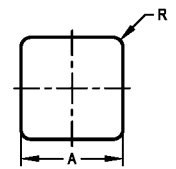
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- 850



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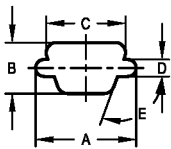




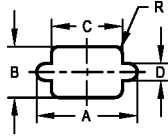
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Category 'B' Tool Selection Guide

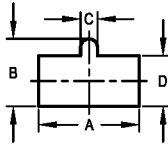
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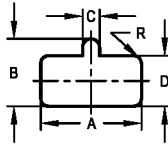
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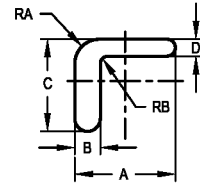
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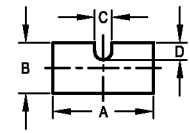
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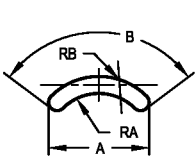
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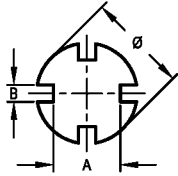
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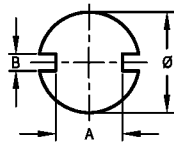
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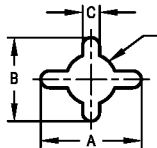
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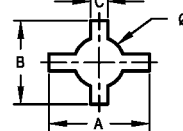
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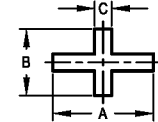
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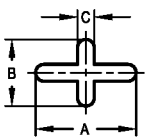
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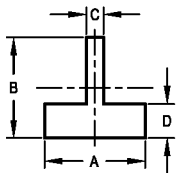
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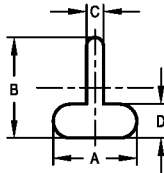
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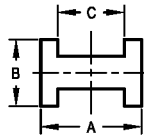
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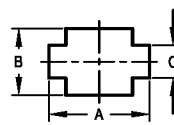
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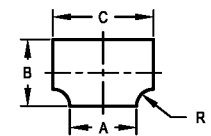
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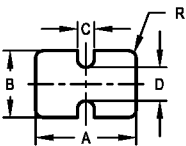
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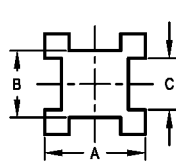
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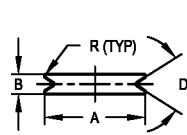
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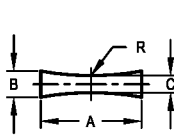
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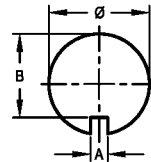
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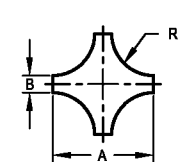
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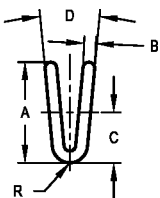
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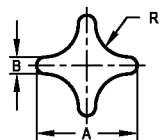
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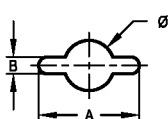
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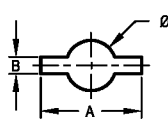
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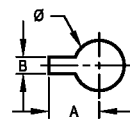
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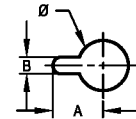
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- 780



- 790

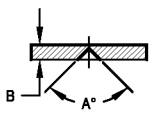




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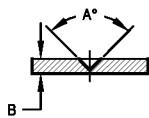
Category 'C' Tool Selection Guide

- 240



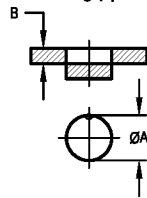
Centre Punch Up

- 241



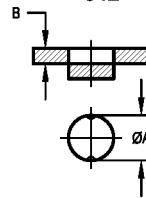
Centre Punch Down

- 541



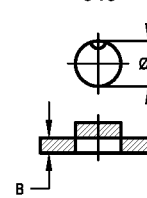
1 Tap K/Out Down

- 542



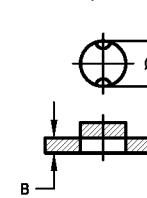
2 Tap K/Out Down

- 543



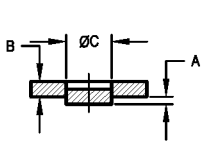
1 Tap K/Out Up

- 544



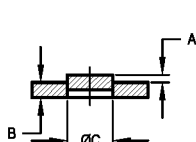
2 Tap K/Out Up

- 562



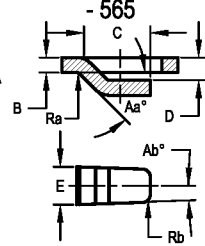
Part Shear Down

- 563



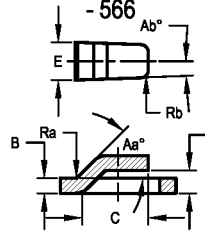
Part Shear Up

- 565



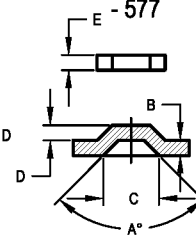
Lance & Form Down

- 566



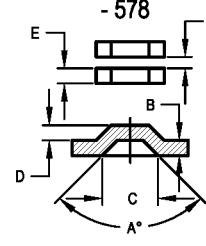
Lance & Form Up

- 577



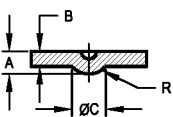
Bridge Tool Up

- 578



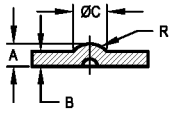
Twin Bridge Tool Up

- 645



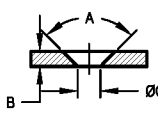
Dimple Down

- 646



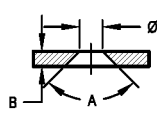
Dimple Up

- 653



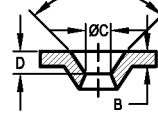
Coined C/Sink Down

- 654



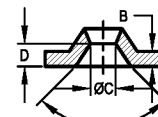
Coined C/Sink Up

- 655



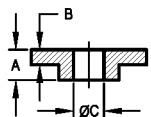
Formed C/Sink Down

- 656



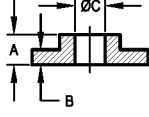
Formed C/Sink Up

- 675



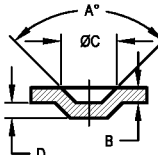
Extrusion Down

- 676



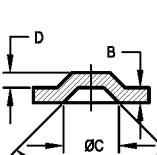
Extrusion Up

- 755



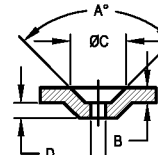
Emboss Down

- 756



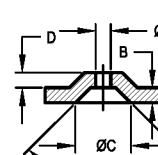
Emboss Up

- 757



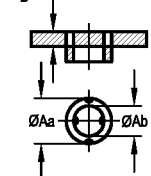
Pierced Emboss Down

- 758



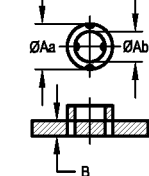
Pierced Emboss Up

- 775



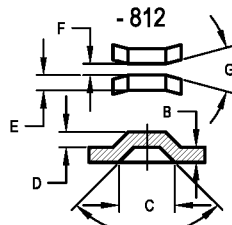
Double K/Out Down

- 776



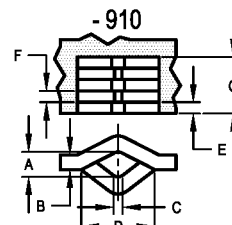
Double K/Out Up

- 812



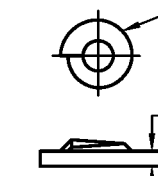
Card Holder Tool Up

- 910



Edge Fix Tool

- 920



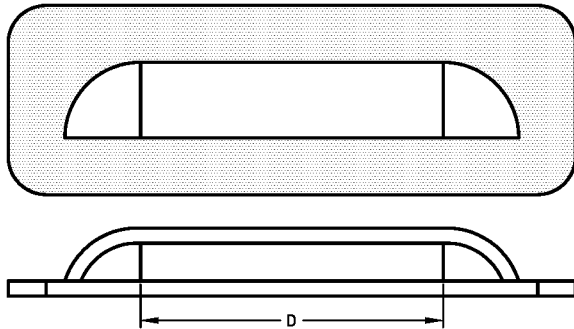
Thread Form

*A = Thread Form & Pitch

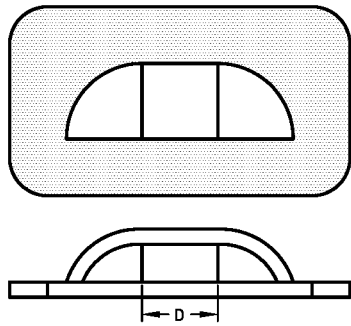
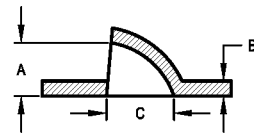


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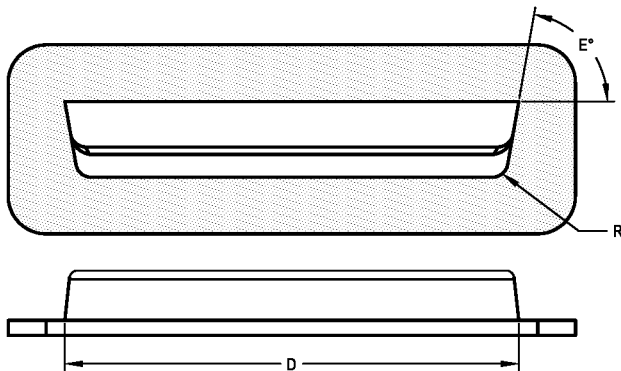
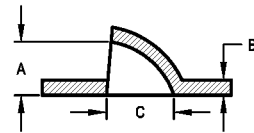
Category 'C' Tool Selection Guide



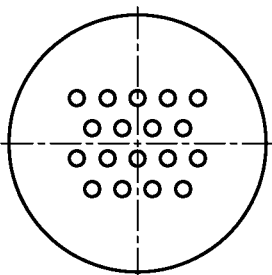
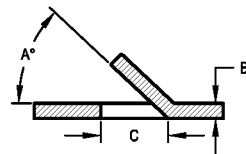
Louvre Tool Up
-999



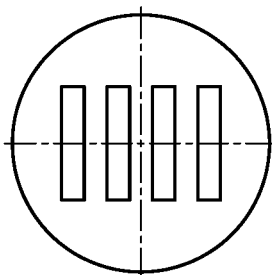
Nibble Louvre Tool Up
-995



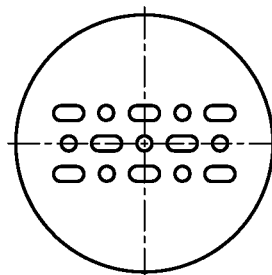
Air Louvre Tool Up
-997



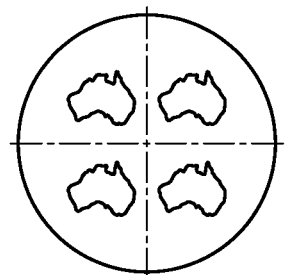
Pin Hole Cluster



Shaped Cluster



Multi Shaped Cluster



Special Shaped Cluster

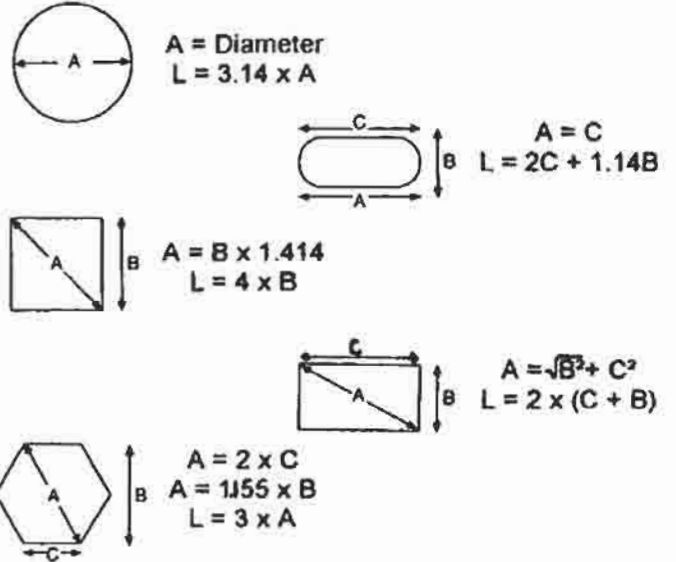
MATERIAL MULTIPLICATION FACTOR (F)

Material Description	Multiplier (F)	Material Description	Multiplier (F)
Aluminium - Soft Sheet	.30	Steel - Mild	1.00
Aluminium - Half Hard	.38	Steel - ASTM-A36	1.20
Aluminium - Hard	.50	Steel - 50 Carbon	1.40
Brass - Soft Sheet	.60	Steel - Cold Drawn	1.20
Brass - Half Hard	.70	Steel - Stainless	1.40
Copper - Rolled	.57	Spring Steel (tempered)	4.00
Based on Mild Steel Shear Strength of 50,000 P.S.I. (345 MPa)			

TOTAL CUTTING EDGE

In order to calculate the tonnage required to cut out a shape, it is necessary to work out the total length of the cutting edge, ("L").

ie. the perimeter of the shape to be cut
example:



TONNAGE CALCULATION

The tonnage required for punching any shaped hole in a material is given by the following formula:

Required Tonnage = L x G x S where:

"L" is the total length of the cutting edge

"G" is the material thickness

"S" is the shear strength of the material

Example 1: For a 50mm square in 2mm mild steel

$$L = 50 \times 4 = 200 \quad G = 2 \quad \& \quad S = 0.345$$

Hence required tonnage:

$$T = 200 \times 2 \times 0.345 = 137.95 \text{ KN}$$

Punches with Shear

The tonnage required for punching with shear is given by the formula:- $T = L \times G \times S \times F$

Where "F" is the shear factor (see "Calculating the effect of shear")

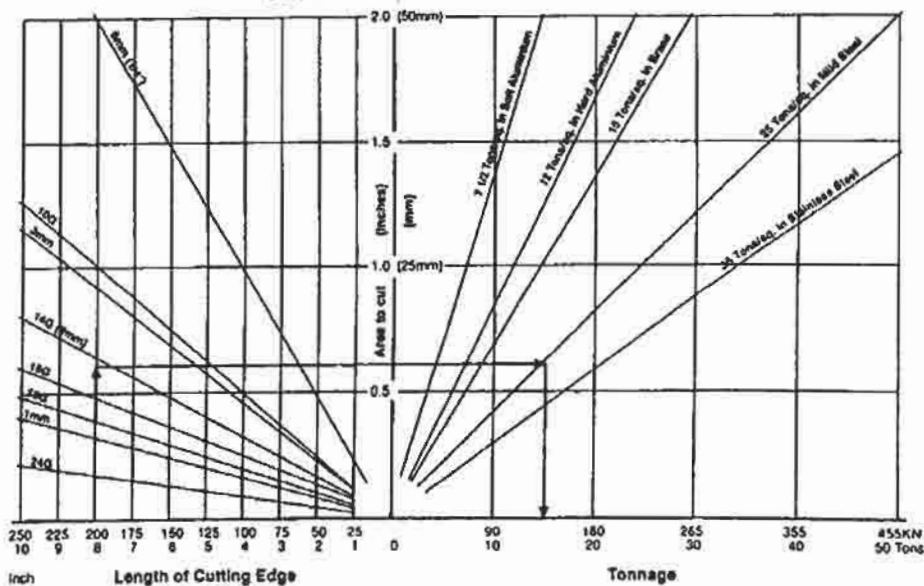
Example 2: For a 3/8" x 3" Slitting Tool with 3/16" Shear Cutting 1/4" Hard Aluminium
F = 0.63 (from graph opposite)

$$L = 2 (3/8 \times 3) = 2.25 \quad G = 0.25 \quad S = 12 \quad F = 0.63$$

Hence required tonnage:

$$T = 2.25 \times 0.25 \times 12 \times 0.63 = 4.25 \text{ tons}$$

TONNAGE CALCULATION CHART



RECOMMENDED CLEARANCES

TOTAL CLEARANCE CALCULATED

MATERIAL	% OF MATERIAL THICKNESS	MATERIAL THICKNESS					
		20G 0.9	18G 1.2	16G 1.6	14G 2.0	10G 3.0	1/4" 6.0
ALUM.	15%	0.14	0.18	0.24	0.30	0.45	0.90
MILD ST.	20%	0.18	0.24	0.32	0.40	0.60	1.20
STAIN. ST.	25%	0.23	0.30	0.40	0.50	0.75	1.50

Please note: measurements in mm

This is a recommended guide. If any problems or queries arise please contact F.M. Tool & Gauge for our expert advice.

SHEAR ON PUNCHES

Shear is used on punches to reduce tonnage and noise whilst punching. A full shear can reduce the tonnages by up to 50%.

ROOFTOP SHEAR:

- ideal when punching at high loads
- avoid excessive side loading by taking large cuts (over 75%)



INVERTED ROOFTOP:

- very effective
- easy to produce & regrind
- avoid sharp corner in centre, as this provides a stress point, making the tool more susceptible to breakage



CONCAVE:

- best for nibbling
- more difficult to regrind than inverted rooftop

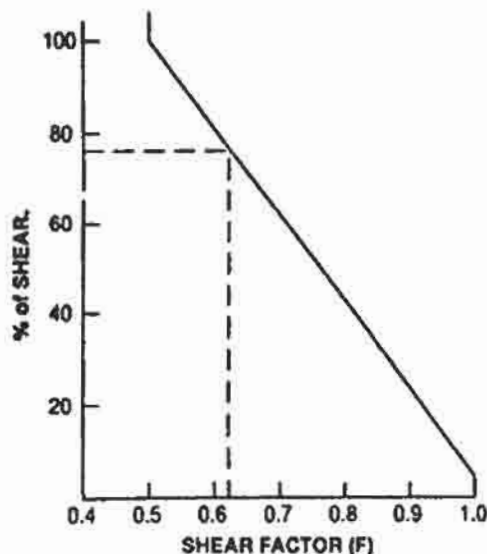


FOUR WAY SHEAR:

- ideal for large squares
- always avoid sharp inside corners, as these encourage breakage



CALCULATING THE EFFECT OF SHEAR



$$\text{Shear Factor (F)} = \frac{104 - (\text{Shear \%} \times 0.54)}{100}$$

eg. 75% Shear = 0.63
Shear Factor

$$\% \text{ of Shear} = \frac{\text{Shear depth} \times 100}{\text{Material Thickness}}$$

eg. 1/4" material with
3/16" shear on tool

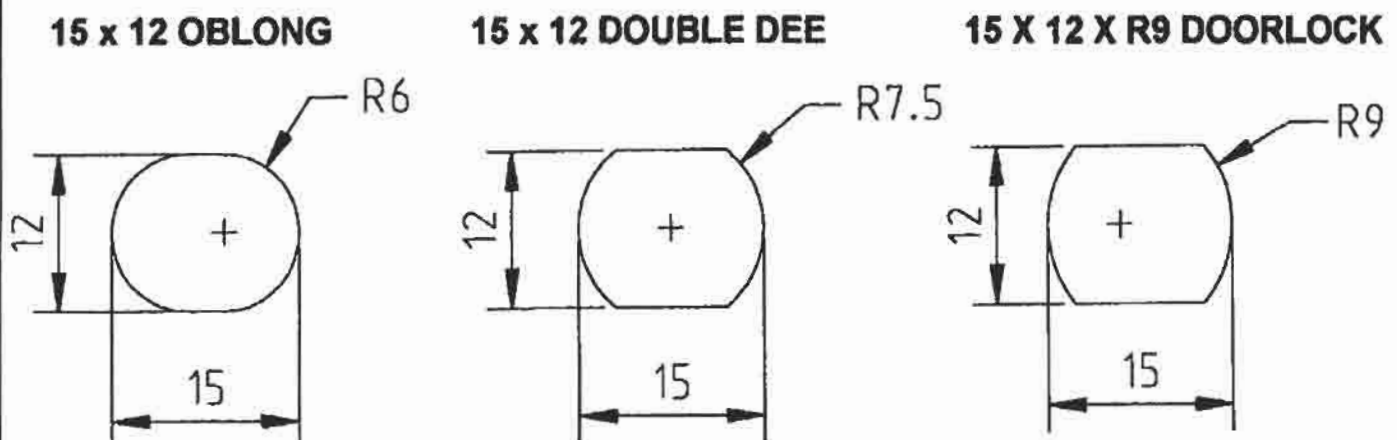
$$= \frac{0.1875 \times 100}{0.250}$$

= 75%

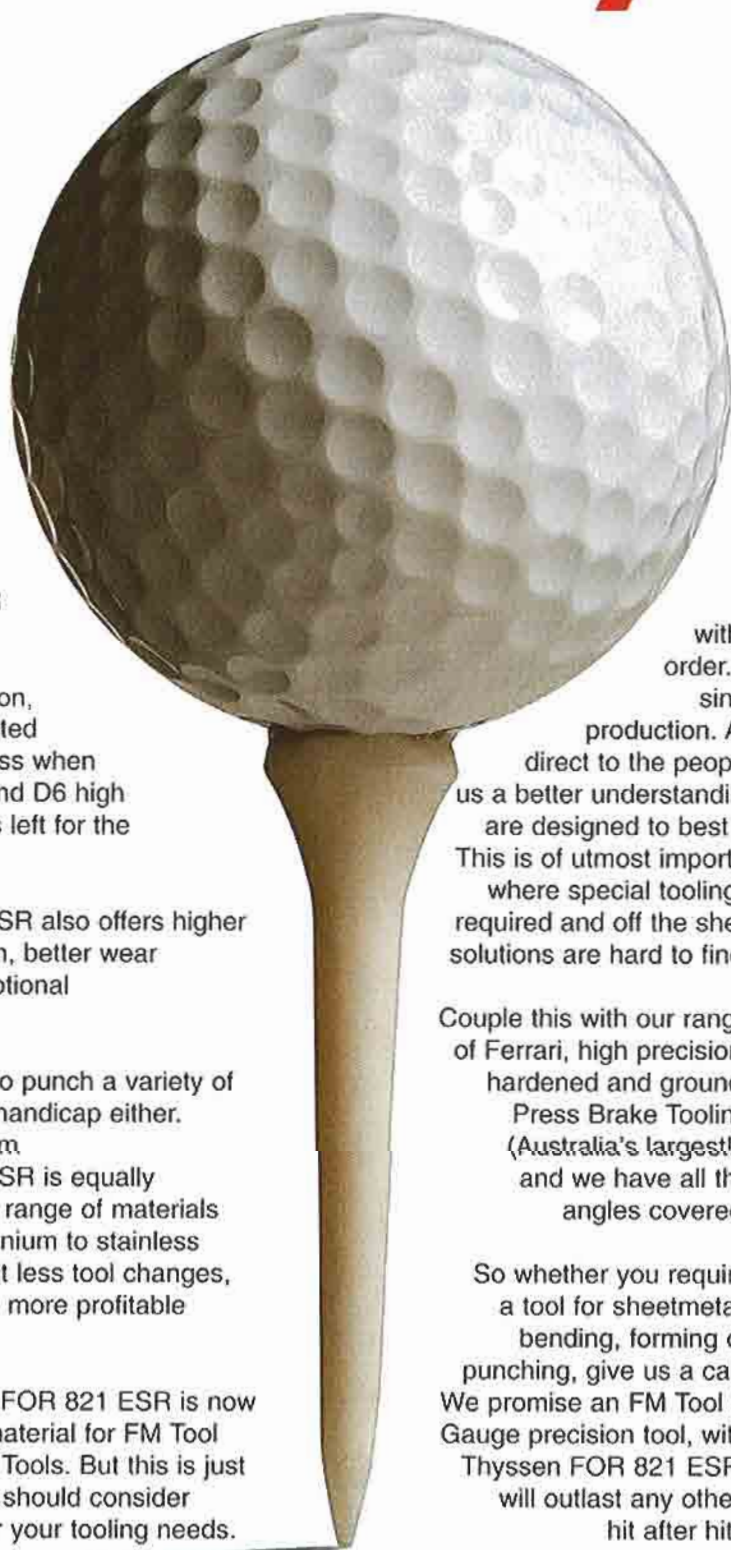
"HANDY HINTS ON ORDERING"

- ⇒ When placing orders please give as much information as possible. The greater the information given the less likely there is of a mistake or problem occurring with the order. (we will query you if we see a possible problem)
- ⇒ All relevant dimensions are required. A very common problem can occur when requesting a round ended shape. **eg: 15 x 12mm**
This can mean 1 of several shapes. (*see example below*)
- ⇒ Using part numbers helps to eliminate misunderstandings.
- ⇒ We suggest you advise material and gauge being punched.
- ⇒ Show keyways and centre lines on special shapes.
- ⇒ Standard practise is to put clearance on the die. Punch size will give you hole size and die size will give you slug size. (if you require the slug please advise)
- ⇒ Solid or re-inforced dies can be supplied on request.
- ⇒ On special shapes we recommend rads on any sharp corner, this will give added strength to your tool.
- ⇒ **TROUBLESHOOTING:-** for problems such as slug pull please ring and ask, as each situation is different. Good advise is cheap.

EXAMPLE: (from above)




Did it inspire us to choose Thyssen?



It will take a fearful pounding but is hard enough to hold its shape and resist wear. It can be belted time and again but will not chip or crack.

No, as much as we enjoy a round or two, we are not describing the perfect golf ball. We are talking about the new base material available for all FM Tool & Gauge Punch Press Tools - Thyssen FOR 821 ESR (Electro Slag Remelted) steel.

This HIGH QUALITY GERMAN manufactured steel is a new generation, cold work steel, developed and patented worldwide to provide greater toughness when compared to AISI types A2, D2, D3 and D6 high wear resistant steels. Any chipping is left for the golf course!



Thyssen FOR 821 ESR also offers higher compression strength, better wear resistance and exceptional dimensional stability.

If you require a tool to punch a variety of materials, that is no handicap either. An FM tool made from Thyssen FOR 821 ESR is equally adaptable for a wide range of materials from hardened aluminium to stainless steel. You can expect less tool changes, less downtime and a more profitable production line.

No wonder Thyssen FOR 821 ESR is now the preferred base material for FM Tool Gauge Punch Press Tools. But this is just one reason why you should consider FM Tool & Gauge for your tooling needs.

We are Australia's leading, dedicated manufacturer of Punch Press Tools.

All of our Punch Press Tools are designed and manufactured at Cudlee Creek in South Australia.

That means we can deliver to most places in Australia within 24 hours of receiving your order. A comforting thought when a single broken tool can stop your production. And, when you order, you talk direct to the people who make the tools, giving us a better understanding of your needs so our tools are designed to best fit your particular application.

This is of utmost importance where special tooling is required and off the shelf solutions are hard to find.

Couple this with our range of Ferrari, high precision, hardened and ground, Press Brake Tooling (Australia's largest!), and we have all the angles covered.

So whether you require a tool for sheetmetal, bending, forming or punching, give us a call. We promise an FM Tool & Gauge precision tool, with Thyssen FOR 821 ESR, will outlast any other, hit after hit!



F.M. TOOL & GAUGE PTY LTD

Redden Drive, Cudlee Creek, South Australia

Ph. int.: +61 8 8389 2272 Fax int.: +61 8 8389 2309 or +61 8 8389 2478

Free Call: 1800 882 993 e-mail: sales@fmtool.com.au

All Tooling PRICES can be found at our website

www.fmtool.com.au



THE HISTORY

F.M. Tool & Gauge P/L commenced operations as a small family manufacturing business in 1978. The first four years saw the four family members (& present day Directors) manufacturing and supplying mostly Trumpf type Tooling. They began supplying two South Australian customers who are still actively purchasing their Tooling requirements today. F.M. TOOL AND GAUGE P/L is 100% Australian owned and all manufacturing is done at the very picturesque Cudlee Creek Factory.

Since 1992 the Company's work force has expanded to the present day total of 35, manufacturing all types of Turret Punch Tooling on the market. Over the years the company has invested heavily in the latest computer technologies and equipment, and is today one of Australia's finest High Precision Tooling manufacturers. From design to the final grinding and inspection stages the complete process is performed by CNC and computerized equipment. Couple this with the Inhouse Quality Assurance programme and complete final inspection, F.M. Is able to offer a 100% manufacturers guarantee on all products manufactured by the company.

One of the Company's greatest strengths is the designing and building of Special Tooling. Because F.M. started manufacturing when the first Turret Punch Machines arrived in Australia our experience and skills in this area are second to none. All orders for Special Tooling are scanned and stored on computer under the customer's order number for quick easy access and future reference. On completion all Special Tooling is put through a rigorous Inhouse Tryout procedure until the desired result is achieved. The Tryout Samples are sent with the Tooling as confirmation of Tooling performance.

Commitment and dedication to service and quality are the things that have made F.M. Tool & Gauge so successful. The mere fact that 80% of today's staff have been employed by the Company for more than 10 years indicates a consistency and reliability rarely found in Industry today. The Company and staff have made a commitment to supply the best quality Tooling in the world at the quickest possible delivery times. Couple this with friendly Sales Service and excellent free Technical Advice and you will maximize your profits when you buy a high precision, high performance F.M. Tool & Gauge Product.

TERMS AND CONDITIONS

ACCEPTANCE. Any agreement for the sale of these articles shall be on the basis of the terms and conditions on both sides of this agreement. This sale is made subject to the availability at the time of ordering any item described herein of the date hereof. As a proposal it will become void unless accepted by the purchaser within 30 days of the date hereof. Purchaser's order must be signed by a duly authorized agent, must indicate it is made with reference to this proposal and will only be accepted by F.M. TOOL & GAUGE. Any terms or conditions of the purchaser's order which are in any way in conflict with, inconsistent with, or in addition to the terms and conditions set forth herein shall not be binding on F.M. TOOL & GAUGE and shall not be applicable to the contract unless expressly agreed to in writing by F.M. TOOL & GAUGE. After acceptance, the purchaser's order or any part thereof may be terminated only upon F.M. TOOL & GAUGE'S written consent, F.M. TOOL & GAUGE specifically reserves the right to reject any order.

CREDIT F.M. TOOL & GAUGE reserves the right to approve the credit worthiness of the purchaser and to approve any credit or financing terms proposed by the purchaser and to require acceptable security or assurance of the payment of the purchase price and any acceptance or order by a purchaser, shall not be binding upon or processed unless F.M. TOOL & GAUGE has given its written approval of the purchaser's credit and credit for financing terms and has received security or assurances of payment.

PRICES Prices quoted are for tooling alone and do not include FREIGHT, INSURANCE or any OTHER CHARGES which may be incurred in transportation.

TERMS Terms are as follows: Tooling—nett 30 days from statement date. An interest charge of 10% will be charged on all past due accounts for collection purposes only if necessary.

PAYMENTS Please note: all tools remain the property of F.M. TOOL & GAUGE until full payment has been received for the tools in question.

TAXES Sales, use, excise, property or other tax or duties that may be levied on the transaction by local, state, federal or foreign governments are not included in the quoted prices. Any such taxes or duties which F.M. TOOL & GAUGE may be obliged to pay shall be for the account of the purchaser, who shall promptly reimburse F.M. TOOL & GAUGE thereof.

DELIVERIES Delivery dates are approximate. F.M. TOOL & GAUGE will have no liability for loss or damage resulting from a delay in scheduled deliveries caused by war, riot, strike, labour disputes, fire, accident, delay in receipts or shortage of parts or materials, natural disaster or any other contingency whatsoever (whether of the same class of those enumerated or otherwise) beyond its reasonable control. The Purchaser will assume all freight costs and risk of loss or delay in transit. F.M. TOOL & GAUGE'S responsibility ceases upon delivery to the carrier. Risk of loss, injury, or destruction of property shall be borne by the Purchaser and such loss, injury or destruction shall not release purchaser from payment of the Purchased price. Purchaser shall not receipt for goods that are not in accordance with the Bill of Landing or express receipt, without proper notification to the carrier, and shall make claim against such carrier for any shortage, damage or discrepancy of the shipment promptly. When partial shipments are made each shipment shall be invoiced and paid *separately in accordance with the terms hereof.*

WARRANTY TOOLING—F.M. TOOL & GAUGE warrants to the original purchaser that the tooling products will be free of defects in material and workmanship at the time of delivery. The obligation of F.M. TOOL & GAUGE under this warranty shall be exclusively limited to the repair or replacement of parts which are determined by F.M. TOOL & GAUGE to be defective.

TERMINATION In the event that the purchaser terminated an order after acceptance by F.M. TOOL & GAUGE, a termination charge will be made covering full costs incurred plus 15%.

RETURNED MATERIAL For credit to be allowed on goods returned to the factory, authority for the return must be approved by F.M. TOOL & GAUGE. A restocking charge is made by F.M. TOOL & GAUGE on all parts ordered in error and returned for credit with transportation charges prepaid by the Purchaser.

MARKINGS An extra charge will be made for any special markings.

INFRINGEMENTS The purchaser shall indemnify and hold harmless F.M. TOOL & GAUGE from all claims of infringement of any patent in the manufacture or sale of any item covered by this proposal when the said item is made according to drawings, samples or descriptions furnished and approved by the purchaser. Purchaser shall defend, at its expense, any and all actions based upon such claims of infringement.

MODIFICATIONS This proposal and the terms and conditions stated herein shall supersede all prior oral or written proposals and statements relating to the matters covered hereby of any kind whatsoever made by F.M. TOOL & GAUGE or its representatives.