AW PRECISION LTD

Metric Punch and Die

www.awprecision.com

AW METRIC PUNCH & DIE CATALOGUE VERSION 2012.A1 REVISED

OUR UK SALES & MANUFACTURING FACILITY

A Company Introduction

AW PRECISION is one of Europe's largest producers of punches, dies and Die Sets. Along with an extensive selection of Tooling Accessories, Kaller® Gas Springs, Cam Units, Urethane and Guide Elements we are your 'One-Stop' shop for all your tooling requirements.

AW PRECISION can offer…

Short, consistent delivery times on most standard and non-standard products helping you to maintain a continuous level of production.

Broad range of products

AW Precision's vast product range simplifies the process of purchasing tools for the increasingly busy tool maker.

NEW PRODUCTS FOR 2012

30° Headed Punches (See pages 61,62)

Dome Headed Punches (See pages 63,64)

Heavy Duty True Strip Retainers (See page 52)

Slug Gripper on dies now available to order (See page 69)

Thread Form Punches & Dies Available (See page 76,77)

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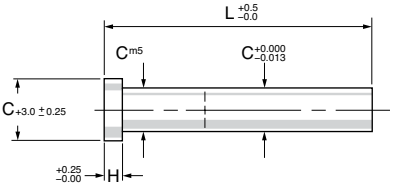
Standard Punch Blanks



*HA = 5mm Head Please Specify

L = Standard Overall Lengths 50 - 125 in 5mm increments.

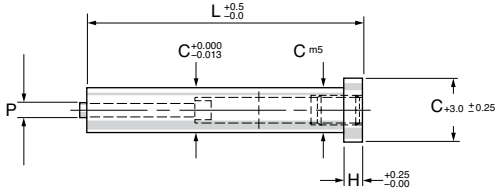
Any alternative dimensions to the above can be specified.

Symbol Numbers	Shank Dia. ø C	Standard Head H	Alt. Head HA
M3	3	4.2	*5.0
M4	4	4.2	*5.0
M5	5	4.2	*5.0
M6	6	5.0	
M7	7	5.0	
M8	8	5.0	
M10	10	5.0	
M12	12	5.0	
M13	13	5.0	
M14	14	5.0	
M16	16	5.0	
M18	18	5.0	
M19	19	6.4	*5.0
M20	20	6.4	*5.0
M22	22	6.4	*5.0
M25	25	6.4	*5.0
M28	28	6.4	*5.0
M30	30	6.4	*5.0
M32	32	6.4	*5.0
M35	35	6.4	*5.0
M40	40	6.4	*5.0
M45	45	6.4	*5.0

Example order:

12 off M10 x 70 lg

Heads 40/55 HRC



*HA = 5mm Head Please Specify

L = Standard Overall Lengths 50 - 125 in 5mm increments.

Any alternative dimensions to the above can be specified.

Symbol Numbers	Shank Dia. C	Standard Head H	Alt. Head HA	Pin Dia. P
MPE1	5	4.2	*5.0	0.5
MPE5	5	4.2	*5.0	1.0
MPE6	6	5.0		1.0
MPE7	7	5.0		1.0
MPE8	8	5.0		1.0
MPE10	10	5.0		1.5
MPE12	12	5.0		1.5
MPE13	13	5.0		1.5
MPE16	16	5.0		2.4
MPE18	18	5.0		2.4
MPE19	19	6.4	*5.0	2.4
MPE20	20	6.4	*5.0	2.4
MPE22	22	6.4	*5.0	2.4
MPE25	25	6.4	*5.0	2.4
MPE28	28	6.4	*5.0	2.4
MPE30	30	6.4	*5.0	2.4
MPE32	32	6.4	*5.0	2.4
MPE35	35	6.4	*5.0	2.4
MPE40	40	6.4	*5.0	2.4

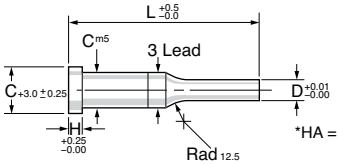
Example order:

6 off MPE10 x 70 lg

Ejector components see page 23

Heads 40/55 HRC

Standard Punches



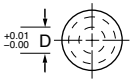
*HA = 5mm Head Please Specify

L = Standard Overall Lengths 50 - 125 in 5mm increments.

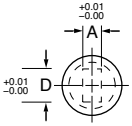
Headless Punches available

Any alternative dimensions to the above can be specified.

Symbol Numbers								
Round	Rect or Square	Flatted	Oval	Long Life	Shank Dia C	Standard Head H	Alt. Head *HA	Min. Piercing D
MT3	MR3	MF3	MW3	ML3	3	4.2	*5.0	1.5
MT4	MR4	MF4	MW4	ML4	4	4.2	*5.0	1.5
MT5	MR5	MF5	MW5	ML5	5	4.2	*5.0	1.5
MT6	MR6	MF6	MW6	ML6	6	5.0		1.5
MT7	MR7	MF7	MW7	ML7	7	5.0		1.5
MT8	MR8	MF8	MW8	ML8	8	5.0		2.3
MT10	MR10	MF10	MW10	ML10	10	5.0		3.2
MT12	MR12	MF12	MW12	ML12	12	5.0		3.2
MT13	MR13	MF13	MW13	ML13	13	5.0		3.2
MT14	MR14	MF14	MW14	ML14	14	5.0		4.0
MT16	MR16	MF16	MW16	ML16	16	5.0		4.8
MT18	MR18	MF18	MW18	ML18	18	5.0		5.0
MT19	MR19	MF19	MW19	ML19	19	6.4	*5.0	5.0
MT20	MR20	MF20	MW20	ML20	20	6.4	*5.0	5.0
MT22	MR22	MF22	MW22	ML22	22	6.4	*5.0	5.0
MT25	MR25	MF25	MW25	ML25	25	6.4	*5.0	5.0
MT28	MR28	MF28	MW28	ML28	28	6.4	*5.0	5.0
MT30	MR30	MF30	MW30	ML30	30	6.4	*5.0	5.0
MT32	MR32	MF32	MW32	ML32	32	6.4	*5.0	5.0
MT35	MR35	MF35	MW35	ML35	35	6.4	*5.0	5.0
MT40	MR40	MF40	MW40	ML40	40	6.4	*5.0	5.0
MT45	MR45	MF45	MW45	ML45	45	6.4	*5.0	5.0



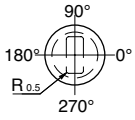
MT
ROUND



MR
RECTANGLE
OR
SQUARE

MF
FLATTED

MW
OVAL



ML
LONG LIFE

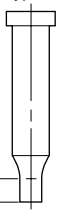
Example order:

6 off MT6C 3.5 60 lg
6 off MR28D 20.0 x 14.60 80 lg

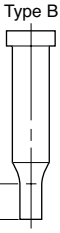
Location Flats if required see page 68
NS shapes available see pages 32, 33

Heads 40/55 HRC

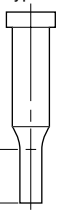
Type A



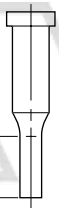
Type B



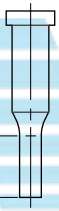
Type C



Type D

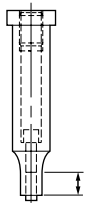


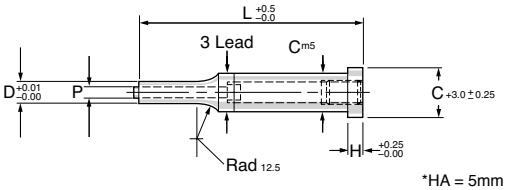
Type AL



ALTERNATIVE
LENGTH SPECIFY

Type A



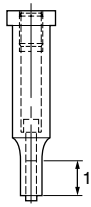


*HA = 5mm Head Please Specify

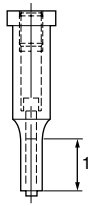
L = Standard Overall Lengths 50 - 100 in 5mm increments.

Any alternative dimensions to the above can be specified.

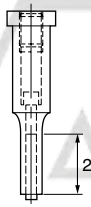
Type B



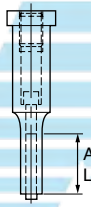
Type C



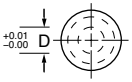
Type D



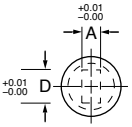
Type AL



Symbol Numbers									
Round	Rect or Square	Flatted	Oval	Long Life	Shank Dia. C	Standard Head H	Alt. Head *HA	Pin Hole P	Min Width A/D
MET5	MER5	MEF5	MEW5	MEL5	5	4.2	*5.0	1.0	2.5
MET6	MER6	MEF6	MEW6	MEL6	6	5.0		1.0	2.5
MET7	MER7	MEF7	MEW7	MEL7	7	5.0		1.0	3.0
MET8	MER8	MEF8	MEW8	MEL8	8	5.0		1.0	3.0
MET10	MER10	MEF10	MEW10	MEL10	10	5.0		1.5	4.8
MET12	MER12	MEF12	MEW12	MEL12	12	5.0		1.5	4.8
MET13	MER13	MEF13	MEW13	MEL13	13	5.0		1.5	4.8
MET14	MER14	MEF14	MEW14	MEL14	14	5.0		1.5	4.8
MET16	MER16	MEF16	MEW16	MEL16	16	5.0		2.4	5.5
MET18	MER18	MEF18	MEW18	MEL18	18	5.0		2.4	5.5
MET19	MER19	MEF19	MEW19	MEL19	19	6.4	*5.0	2.4	5.5
MET20	MER20	MEF20	MEW20	MEL20	20	6.4	*5.0	2.4	5.5
MET22	MER22	MEF22	MEW22	MEL22	22	6.4	*5.0	2.4	5.5
MET25	MER25	MEF25	MEW25	MEL25	25	6.4	*5.0	2.4	5.5
MET28	MER28	MEF28	MEW28	MEL28	28	6.4	*5.0	2.4	5.5
MET30	MER30	MEF30	MEW30	MEL30	30	6.4	*5.0	2.4	5.5
MET32	MER32	MEF32	MEW32	MEL32	32	6.4	*5.0	2.4	5.5
MET35	MER35	MEF35	MEW35	MEL35	35	6.4	*5.0	2.4	5.5
MET38	MER38	MEF38	MEW38	MEL38	38	6.4	*5.0	2.4	5.5
MET40	MER40	MEF40	MEW40	MEL40	40	6.4	*5.0	2.4	5.5
MET45	MER45	MEF45	MEW45	MEL45	45	6.4	*5.0	2.4	5.5



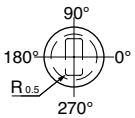
MET
ROUND



MER
RECTANGLE
OR
SQUARE

MEF
FLATTED

MEW
OVAL



MEL
LONG LIFE

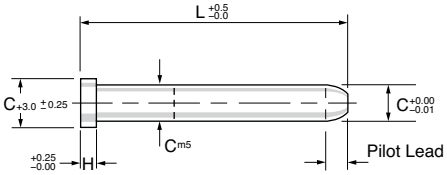
Example order:

2 off MEF35D 30.0 x 22.0 75 lg. HA = 5
6 off MET13C 9.50 80 lg.

Location Flats if required see page 68
Ejector components see page 23
NS shapes available see pages 32, 33

Heads 40/55 HRC

Parallel Pilots



*HA = 5mm Head Please Specify

L = Overall lengths up to 125mm

Any alternative dimensions can be specified.

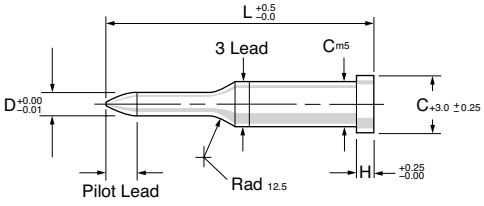
Symbol No.	Shank Dia. C	Standard Head H	Alt. Head HA
MPP3	3	4.2	*5.0
MPP4	4	4.2	*5.0
MPP5	5	4.2	*5.0
MPP6	6	5.0	
MPP7	7	5.0	
MPP8	8	5.0	
MPP10	10	5.0	
MPP12	12	5.0	
MPP13	13	5.0	
MPP14	14	5.0	
MPP16	16	5.0	
MPP18	18	5.0	
MPP19	19	6.4	*5.0
MPP20	20	6.4	*5.0
MPP22	22	6.4	*5.0
MPP25	25	6.4	*5.0
MPP28	28	6.4	*5.0
MPP30	30	6.4	*5.0
MPP32	32	6.4	*5.0
MPP35	35	6.4	*5.0
MPP40	40	6.4	*5.0
MPP45	45	6.4	*5.0

Dia C Range	Pilot Lead
2.3–6.0	4
6.01–10.0	6
10.01–13.0	8
13.01–18.0	10
18.01–25.0	13
25.01–45.0	16

Example order:

10 off MPP16 x 90 lg

Heads 40/55 HRC



*HA = 5mm Head Please Specify

L = Overall lengths up to 125mm

Any alternative dimensions can be specified.

Symbol Numbers	Shank Dia. C	Standard Head H	Alt. Head HA	Pilot Dia. D
MP3	3	4.2	*5.0	2.3–2.95
MP4	4	4.2	*5.0	2.3–3.95
MP5	5	4.2	*5.0	2.3–4.95
MP6	6	5.0		2.3–5.95
MP7	7	5.0		3.2–6.95
MP8	8	5.0		3.2–7.95
MP10	10	5.0		3.2–9.95
MP12	12	5.0		5.3–11.95
MP13	13	5.0		6.3–12.95
MP14	14	5.0		6.3–13.95
MP16	16	5.0		9.5–15.95
MP18	18	5.0		9.5–17.95
MP19	19	6.4	*5.0	9.5–18.95
MP20	20	6.4	*5.0	12.0–19.95
MP22	22	6.4	*5.0	15.0–21.95
MP25	25	6.4	*5.0	18.0–24.95
MP28	28	6.4	*5.0	22.0–27.95
MP30	30	6.4	*5.0	25.0–29.95
MP32	32	6.4	*5.0	27.0–31.95
MP35	35	6.4	*5.0	30.0–34.95
MP40	40	6.4	*5.0	33.0–39.95
MP45	45	6.4	*5.0	38.0–44.95

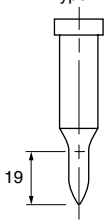
Dia D Range	Pilot Lead
2.3–6.0	4
6.01–10.0	6
10.01–13.0	8
13.01–18.0	10
18.01–25.0	13
25.01–45.0	16

Example order:

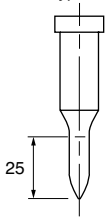
12 off MP18C 12.0 90 lg

Heads 40/55 HRC

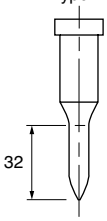
Type B



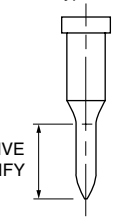
Type C



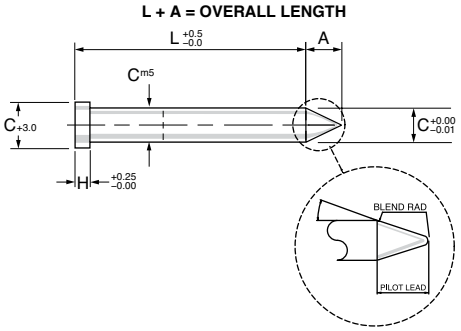
Type D



Type AL



Angular Parallel Pilot Punches



*HA = 5mm Head Please Specify

L = Overall lengths up to 125

Any alternative dimensions can be specified.

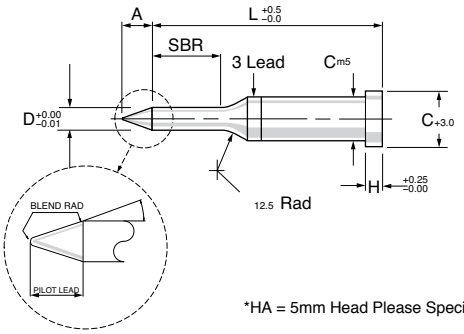
Symbol Numbers	Shank Dia. C	Standard Head H	Alt. Head HA	A
AMPP3	3	4.2	*5.0	6.0
AMPP4	4	4.2	*5.0	6.0
AMPP5	5	4.2	*5.0	8.0
AMPP6	6	5.0		8.0
AMPP7	7	5.0		8.0
AMPP8	8	5.0		8.0
AMPP10	10	5.0		10.0
AMPP12	12	5.0		10.0
AMPP13	13	5.0		15.0
AMPP14	14	5.0		15.0
AMPP16	16	5.0		20.0
AMPP18	18	5.0		20.0
AMPP19	19	6.4	*5.0	25.0
AMPP20	20	6.4	*5.0	25.0
AMPP22	22	6.4	*5.0	25.0
AMPP25	25	6.4	*5.0	30.0
AMPP28	28	6.4	*5.0	30.0
AMPP30	30	6.4	*5.0	30.0
AMPP32	32	6.4	*5.0	30.0

Example order:

6 off AMPP10 x 100 L = 100 + A

Heads 40/55 HRC

L + A = OVERALL LENGTH



*HA = 5mm Head Please Specify

L = Overall lengths up to 125

Any alternative dimensions can be specified.

Symbol Numbers	Shank Dia. C	Standard Head H	Alt. Head HA	Pilot Dia D	A
AMP10	10	5.0		4.5 - 10.0	8
AMP13	13	5.0		6.0 - 13.0	10
AMP16	16	5.0		10.0 - 16.0	15
AMP20	20	6.4	*5.0	13.5 - 20.0	20
AMP25	25	6.4	*5.0	17.5 - 25.0	25
AMP32	32	6.4	*5.0	20.5 - 32.0	30

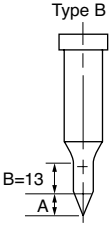
Example order:

AMP16B 4 off 13.5 x 100

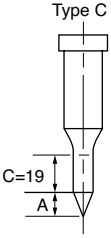
L = 100 + A

Heads 40/55 HRC

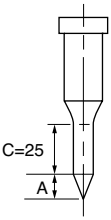
Type B



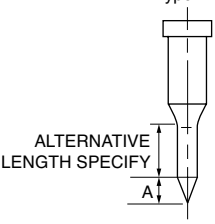
Type C



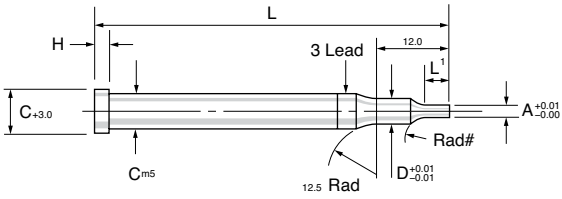
Type D



Type AL



Plunged Hole Punches



*HA = 5mm Head Please Specify

#Specify if Angle required instead of Radius

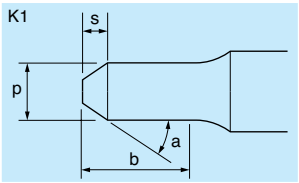
Any alternative dimensions to the above can be specified

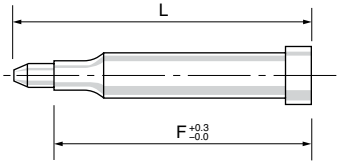
Symbol Numbers	Screw Thread	Dia. A	Dia. C	Dia. D	Dim. L1	Standard Head H	Alt. Head HA	Dim. L
PH2	M2	1.1	3.0	1.65	1.5	4.2	*5.0	
PH2.5	M2.5	1.5	3.0	2.1	2.0	4.2	*5.0	S
PH3	M3	1.8	3.0	2.55	2.5	4.2	*5.0	P
PH4	M4	2.3	4.0	3.35	3.0	4.2	*5.0	E
PH5	M5	3.0	5.0	4.25	3.0	4.2	*5.0	C
PH6	M6	3.5	6.0	5.1	3.0	5.0		I
PH8	M8	4.9	8.0	6.85	4.0	5.0		F
								Y

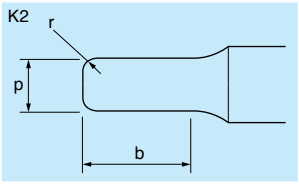
Example order:

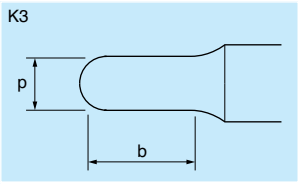
6 off PH4 75 lg

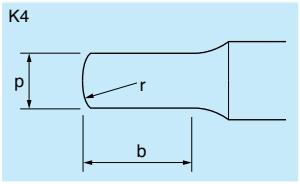
Heads 40/55 HRC

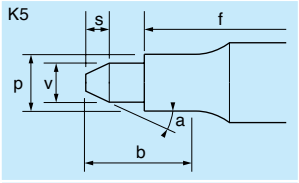


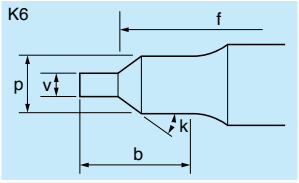


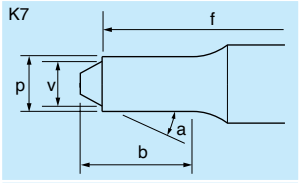


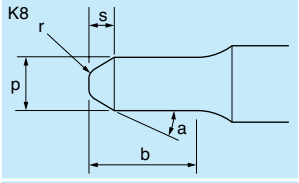


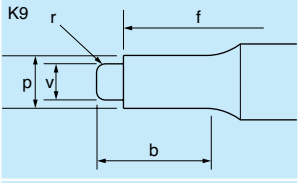


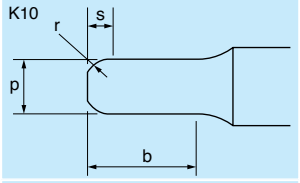


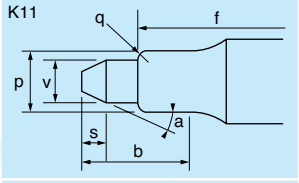


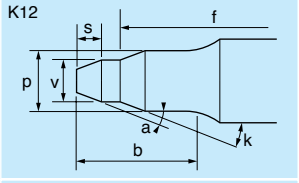


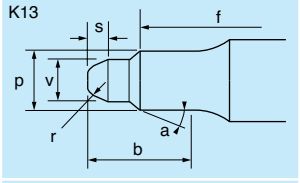


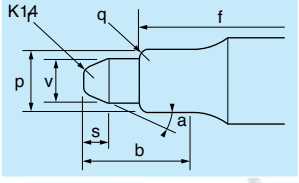


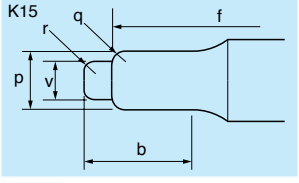


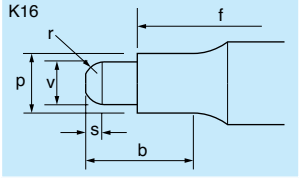












To order specify:

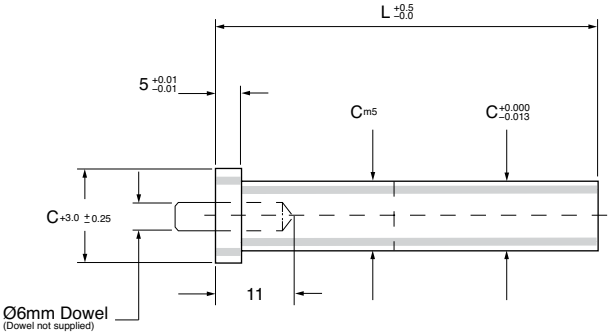
- Symbol Numbers
- Dimensions
- Punch Blank required
- Overall Length
- See pages 6, 7 for P or M symbols
- Other Forms available

Example order:

6 off M8 K3 80

P = 6.4 b = 19.0

Standard Centre Dowel Punch Blanks



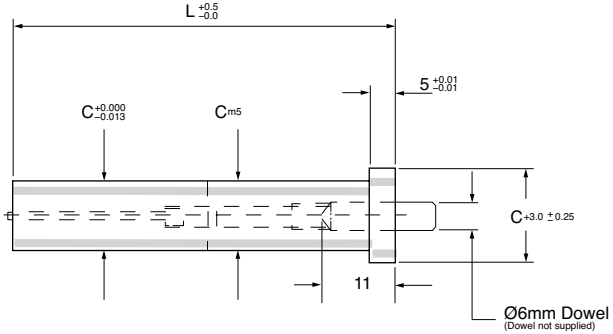
Any alternative dimensions can be specified.

Symbol Numbers	Shank Dia. C	L Overall Length						
LM10	10	56	63	71	80	90	100	125
LM13	13	56	63	71	80	90	100	125
LM16	16	56	63	71	80	90	100	125
LM20	20	56	63	71	80	90	100	125
LM25	25	56	63	71	80	90	100	125
LM32	32	56	63	71	80	90	100	125

Example order:

6 off LM10 x 80

Standard Centre Dowel Ejector Punch Blanks



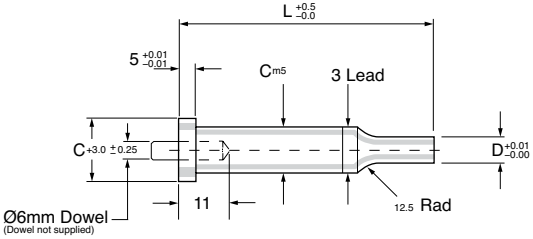
Any alternative dimensions can be specified.

Symbol Numbers	Shank Dia. C	L Overall Length						
LME10	10	56	63	71	80	90	100	125
LME13	13	56	63	71	80	90	100	125
LME16	16	56	63	71	80	90	100	125
LME20	20	56	63	71	80	90	100	125
LME25	25	56	63	71	80	90	100	125
LME32	32	56	63	71	80	90	100	125

Example order:

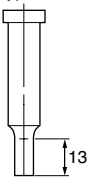
6 off LME10 x 80

Standard Centre Dowel Punches

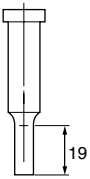


Type A

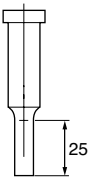
Type B



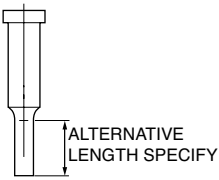
Type C



Type D



Type AL



L = Overall Standard Lengths 50 up to 125 in 5mm increments

Any alternative dimensions can be specified.

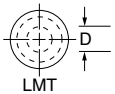
Symbol Numbers						
Round	Rect or Square	Flatted	Oval	Long Life	Shank Dia C	Min. Piercing D
LMT10	LMR10	LMF10	LMW10	LML10	10	3.2
LMT13	LMR13	LMF13	LMW13	LML13	13	3.2
LMT16	LMR16	LMF16	LMW16	LML16	16	4.8
LMT20	LMR20	LMF20	LMW20	LML20	20	5.0
LMT25	LMR25	LMF25	LMW25	LML25	25	5.0
LMT32	LMR32	LMF32	LMW32	LML32	32	5.0

Example order:

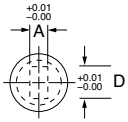
6 off LMR32D x 20 x 14.6 x 80

Alternative shapes. See pages 32, 33

Location flats if required see page 68



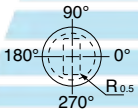
LMT
ROUND



LMR
RECTANGLE
OR
SQUARE

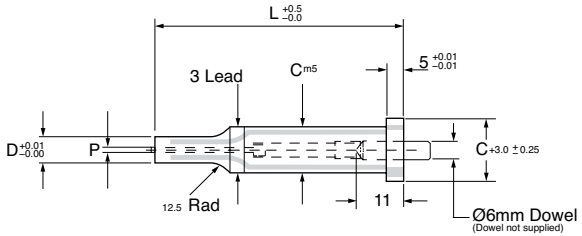
LMF
FLATTED

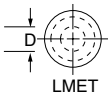
LMW
OVAL



LML
LONG LIFE

Standard Centre Dowel Ejector Punches

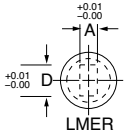




LMET
ROUND

L = Standard Overall Standard Lengths 50 up to 125 in 5mm increments

Any alternative dimensions can be specified.

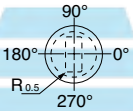


LMER
RECTANGLE
OR
SQUARE

Symbol Numbers							
Round	Rect or Square	Flatted	Oval	Long Life	Shank Dia C	Pin Hole P	Min. Width A/D
LMET10	LMER10	LMEF10	LMEW10	LMEL10	10	1.5	4.8
LMET13	LMER13	LMEF13	LMEW13	LMEL13	13	1.5	4.8
LMET16	LMER16	LMEF16	LMEW16	LMEL16	16	2.4	5.5
LMET20	LMER20	LMEF20	LMEW20	LMEL20	20	2.4	5.5
LMET25	LMER25	LMEF25	LMEW25	LMEL25	25	2.4	5.5
LMET32	LMER32	LMEF32	LMEW32	LMEL32	32	2.4	5.5

LMEF
FLATTED

LMEW
OVAL



LMEL
LONG LIFE

Example order:

6 off LMR32D x 20 x 14.6 x 80

NS shapes. See pages 32, 33

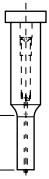
Location flats if required see page 68

Type A

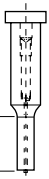
Type B

Type C

Type D

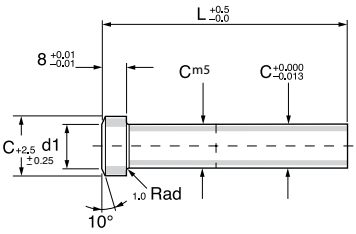


Type AL

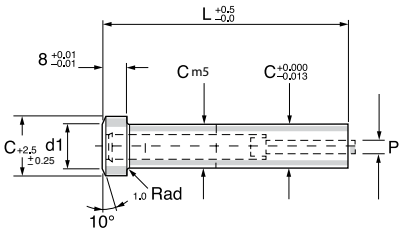


ALTERNATIVE
LENGTH SPECIFY

Heavy Duty Punch Blanks



HM



HEM

L = Overall Standard Lengths 50 up to 125

Any alternative dimensions can be specified.

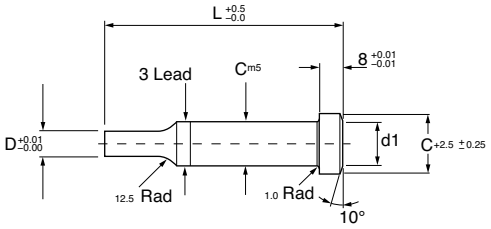
Symbol Numbers	Shank Dia. C	d1
HM8	8	8
HM10	10	10
HM12	12	12
HM13	13	13
HM14	14	14
HM16	16	16
HM18	18	18
HM19	19	19
HM20	20	20
HM22	22	22
HM25	25	25
HM28	28	28
HM30	30	30
HM32	32	32
HM35	35	35
HM40	40	40
HM45	45	45

Symbol Numbers	Shank Dia. C/d1	Pin Dia P
HEM8	8	1
HEM10	10	1.5
HEM12	12	1.5
HEM13	13	1.5
HEM14	14	1.5
HEM16	16	2.4
HEM18	18	2.4
HEM19	19	2.4
HEM20	20	2.4
HEM22	22	2.4
HEM25	25	2.4
HEM28	28	2.4
HEM30	30	2.4
HEM32	32	2.4
HEM35	35	2.4
HEM40	40	2.4
HEM45	45	2.4

Example order:

6 off HM13 x 95

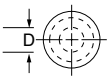
4 off HEM10 x 80



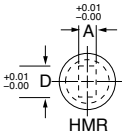
L = Overall Standard Lengths 50 up to 125

Any alternative dimensions can be specified.

Symbol Numbers							
Round	Rect or Square	Flatted	Oval	Long Life	Shank Dia C	d1	Min. Piercing A/D
HMT8	HMR8	HMF8	HMW8	HML8	8	8	2.3
HMT10	HMR10	HMF10	HMW10	HML10	10	10	1.5
HMT12	HMR12	HMF12	HMW12	HML12	12	12	1.5
HMT13	HMR13	HMF13	HMW13	HML13	13	13	1.5
HMT14	HMR14	HMF14	HMW14	HML14	14	14	1.5
HMT16	HMR16	HMF16	HMW16	HML16	16	16	2.3
HMT18	HMR18	HMF18	HMW18	HML18	18	18	3.2
HMT19	HMR19	HMF19	HMW19	HML19	19	19	3.2
HMT20	HMR20	HMF20	HMW20	HML20	20	20	3.2
HMT22	HMR22	HMF22	HMW22	HML22	22	22	4.0
HMT25	HMR25	HMF25	HMW25	HML25	25	25	4.8
HMT28	HMR28	HMF28	HMW28	HML28	28	28	5.0
HMT30	HMR30	HMF30	HMW30	HML30	30	30	5.0
HMT32	HMR32	HMF32	HMW32	HML32	32	32	5.0
HMT35	HMR35	HMF35	HMW35	HML35	35	35	5.0
HMT40	HMR40	HMF40	HMW40	HML40	40	40	5.0
HMT45	HMR45	HMF45	HMW45	HML45	45	45	5.0



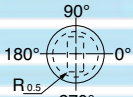
HMT
ROUND



HMR
RECTANGLE
OR
SQUARE

HMF
FLATTED

HMW
OVAL



HML
LONG LIFE

Example Order:

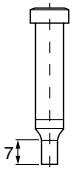
6 off HMT13D x 10.1 x 95

6 off HMF20C x 12.4 x 18 x 90 SF

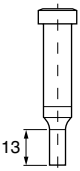
NS shapes. See pages 32, 33

Location flats & dowel slots if required see page 68

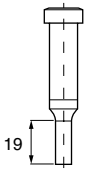
Type A



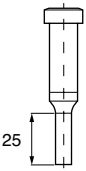
Type B



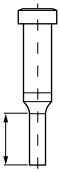
Type C



Type D

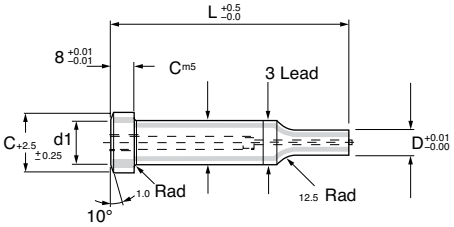


Type AL



ALTERNATIVE
LENGTH SPECIFY

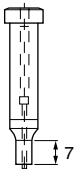
Heavy Duty Ejector Punches



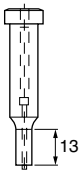
L = Overall Standard Lengths 50 up to 125

Any alternative dimensions can be specified.

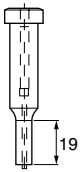
Type A



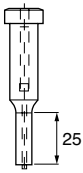
Type B



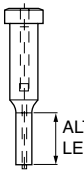
Type C



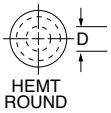
Type D



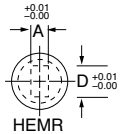
Type AL



Symbol Numbers							
Round	Rect or Square	Flatted	Oval	Long Life	Shank Dia C	d1	Min. Piercing A/D
HEMT8	HEMR8	HEMF8	HEMW8	HEML8	8	8	2.3
HEMT10	HEMR10	HEMF10	HEMW10	HEML10	10	10	3.2
HEMT12	HEMR12	HEMF12	HEMW12	HEML12	12	12	3.2
HEMT13	HEMR13	HEMF13	HEMW13	HEML13	13	13	3.2
HEMT14	HEMR14	HEMF14	HEMW14	HEML14	14	14	4.0
HEMT16	HEMR16	HEMF16	HEMW16	HEML16	16	16	4.8
HEMT18	HEMR18	HEMF18	HEMW18	HEML18	18	18	5.0
HEMT19	HEMR19	HEMF19	HEMW19	HEML19	19	19	5.0
HEMT20	HEMR20	HEMF20	HEMW20	HEML20	20	20	5.0
HEMT22	HEMR22	HEMF22	HEMW22	HEML22	22	22	5.0
HEMT25	HEMR25	HEMF25	HEMW25	HEML25	25	25	5.0
HEMT28	HEMR28	HEMF28	HEMW28	HEML28	28	28	5.0
HEMT30	HEMR30	HEMF30	HEMW30	HEML30	30	30	5.0
HEMT32	HEMR32	HEMF32	HEMW32	HEML32	32	32	5.0
HEMT35	HEMR35	HEMF35	HEMW35	HEML35	35	35	5.0
HEMT40	HEMR40	HEMF40	HEMW40	HEML40	40	40	5.0
HEMT45	HEMR45	HEMF45	HEMW45	HEML45	45	45	5.0



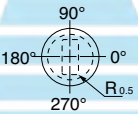
HEMT
ROUND



HEMR
RECTANGLE
OR
SQUARE

HEMF
FLATTED

HEMW
OVAL



HEML
LONG LIFE

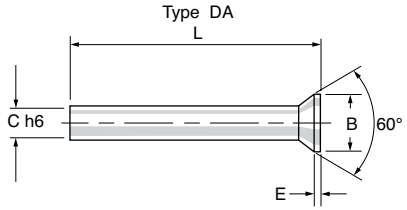
Example Order:

6 off HEMT13D x 10.1 x 95
6 off HEMF20C x 12.4 x 18 x 90 SF

NS shapes. See pages 32, 33

Location flats & dowel slots if required see page 68

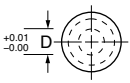
Countersunk Headed Punches DIN 9861



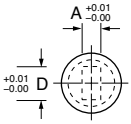
Stock lengths up to 100 mm

Any alternative dimensions to the above can be specified

Shank Size C	Head Dia. B	Head Thk E
1.0–1.1	1.8	0.5
1.15–1.3	2.0	0.5
1.35–1.5	2.2	0.5
1.55–1.7	2.5	0.5
1.75–1.9	2.8	0.5
1.95–2.0	3.0	0.5
2.05–2.2	3.2	0.5
2.25–2.5	3.5	0.5
2.55–2.95	4.0	0.5
3.0–3.4	4.5	0.5
3.5–3.9	5.0	0.5
4.0–4.4	5.5	0.5
4.5–4.9	6.0	0.5
5.0–5.4	6.5	0.5
5.5–5.9	7.0	0.5
6.0–6.4	8.0	0.5
6.5–7.4	9.0	1.0
7.5–8.4	10.0	1.0
8.5–9.4	11.0	1.0
9.5–10.4	12.0	1.0
10.5–11.4	13.0	1.0
11.5–12.4	14.0	1.0
12.5–13.4	15.0	1.0
13.5–14.4	16.0	1.0
14.5–15.4	17.0	1.0



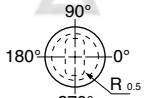
DAT
ROUND



DAR
RECTANGLE
OR
SQUARE

DAF
FLATTED

DAW
OVAL



DAL
LONG LIFE

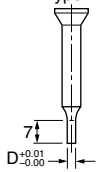
Example order:

6 off DAT10C x 5.5 x 70 lg
5 off DAW13A x 10.0 x 4.0 x 7.0 lg
10 off DA6 x 100 lg BLANK

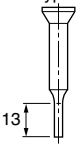
NS shapes available – see pages 32, 33

Punch Quills see page 22

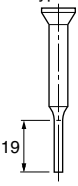
Type A



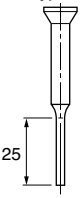
Type B



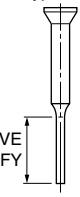
Type C



Type D

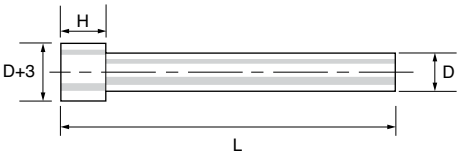


Type AL



ALTERNATIVE
LENGTH SPECIFY

MAP Punches



*HA = 5mm Head Please Specify

Any length up to 125mm and Alternative Head Thickness readily available

MAP – Metric Sizes

Symbol Numbers	Dia D $^{+.01}_{-.00}$ Increments 0.01	Standard Head H	Alt. Head HA
MAP	1.00–5.99	5.0	
MAP	6.00–18.00	5.0	
MAP	18.01–OVER	6.4	*5.0

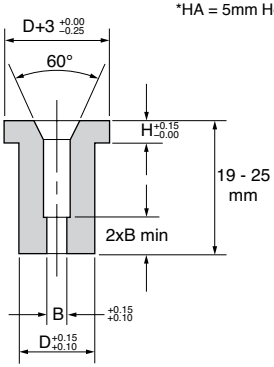
Example order:

For 19.45mm dia Punch 100 long

= MAP19.45 x 100 lg

Punch Quills

*HA = 5mm Head Please Specify



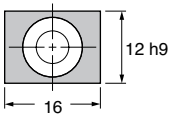
Symbol Numbers	Bore Dia. B	Standard Head H	Alt. Head HA	Dia. D
MPQ6	1.5–3.0	3	*5.0	6.0
MPQ8	3.0–5.0	3	*5.0	8.0
MPQ10	3.0–6.0	3	*5.0	10.0
MPQ13	5.0–8.0	3	*5.0	13.0

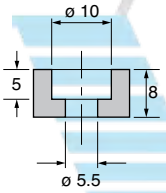
Example order:

6 off MPQ8 x 3.6 x 25

Die Bush Clamps

Symbol Number
BR - 1





Material Din 6880
BS 4235 Keybar

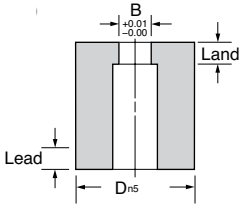
See Page 68 for location flats

Rapid Metric Dies

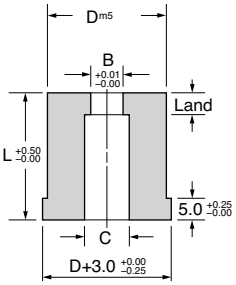
Material H.S.S.

Symbol Numbers			Bore Size				L
Headless	Headed	Dia D	Dia. C	Min	Max	Land	20–25–32
RMD6	RMHD6	6	2	1.2	1.5	3	20–25–32
			3	1.51	2.0	3	20–25–32
RMD8	RMHD8	8	3	1.5	2.0	3	20–25–32
			4	2.01	3.0	3	20–25–32
RMD10	RMHD10	10	4	2.0	3.0	5	20–25–32
			5	3.01	4.5	5	20–25–32
RMD13	RMHD13	13	6	3.0	5.0	5	20–25–32
			8	5.01	7.0	5	20–25–32
RMD16	RMHD16	16	8	5.0	7.0	5	20–25–32
			10	7.01	9.0	5	20–25–32
RMD20	RMHD20	20	10	7.0	9.0	8	20–25–32
			12	9.0	11.0	8	20–25–32
			14	11.01	13.0	8	20–25–32
RMD25	RMHD25	25	13	9.0	12.0	8	20–25–32
			15.5	12.01	14.5	8	20–25–32
			18	14.51	17.0	8	20–25–32

Type: **RMD**



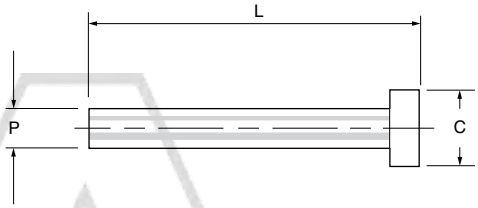
Type: **RMHD**



Example order:

6 off RMD13 3.6 x 25 lg

Ejector Components - Pins

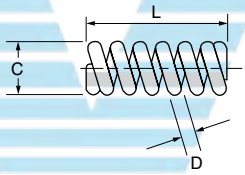


Symbol	Pin Dia.	Head Dia.	Length
No.	P	C	L
EPO2	.51	1.2	51
EPO3	.80	1.8	51
EPO4	1.0	2.4	51
EPO6	1.5	3.0	51
EPO9	2.4	4.0	51

Example order:

30 off EP09

Ejector Components - Springs

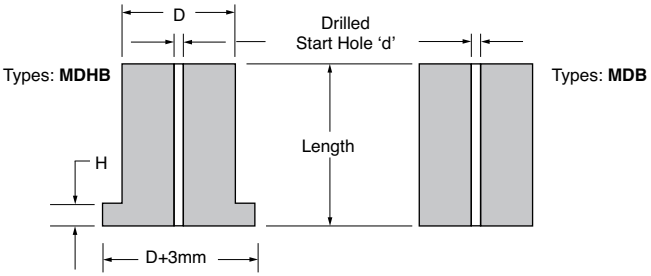


Symbol	O/Dia.	Wire Dia.	Length
No.	C	D	L
ES08	2.0	.40	51
ES11	2.8	.50	51
ES15	3.8	.6	51

Example order:

30 off ES15

EDM Die Blanks



Head Thickness H	5 $^{+0.25}_{-0}$
Length	12 to 32

Symbol Numbers		Dia. D +.015 +.010	Dia. d
MDB5	MDHB5	5	1.3
MDB6	MDHB6	6	
MDB8	MDHB8	8	
MDB10	MDHB10	10	
MDB13	MDHB13	13	
MDB16	MDHB16	16	
MDB19	MDHB19	19	1.6
MDB20	MDHB20	20	
MDB22	MDHB22	22	
MDB25	MDHB25	25	
MDB28	MDHB28	28	
MDB32	MDHB32	32	
MDB35	MDHB35	35	2.0
MDB38	MDHB38	38	
MDB40	MDHB40	40	
MDB42	MDHB42	42	
MDB45	MDHB45	45	
MDB50	MDHB50	50	

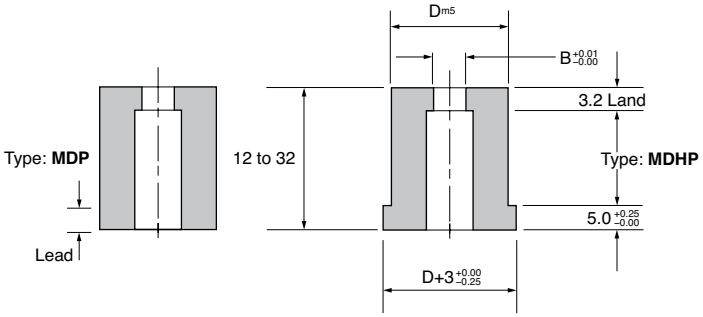
Example order:

12 off MDHB20 25 lg

Alternative Body and Bore size available

Location Flats if required see page 68

Dia d available at 1.0



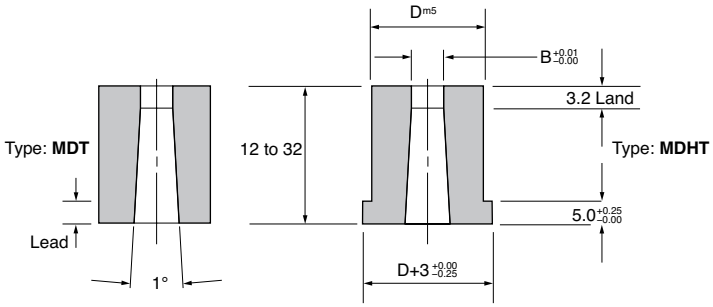
Alternative body diameter, overall length and land lengths readily available - see page 69

Symbol Numbers			
Headless	Headed	Dia. D	Bore Size B
MDP5	MDHP5	5	1.5–3.0
MDP6	MDHP6	6	1.5–4.0
MDP8	MDHP8	8	2.0–5.0
MDP10	MDHP10	10	2.0–6.5
MDP13	MDHP13	13	3.0–8.5
MDP16	MDHP16	16	6.0–10.5
MDP19	MDHP19	19	6.0–11.5
MDP20	MDHP20	20	8.0–13.5
MDP22	MDHP22	22	8.0–15.0
MDP25	MDHP25	25	12.0–17.0
MDP28	MDHP28	28	12.0–22.0
MDP32	MDHP32	32	12.0–26.0
MDP35	MDHP35	35	12.0–28.0
MDP38	MDHP38	38	12.0–30.0
MDP40	MDHP40	40	16.0–32.0
MDP42	MDHP42	42	16.0–33.0
MDP45	MDHP45	45	16.0–34.0
MDP50	MDHP50	50	16.0–36.0

Example order:

12 off MDHP10 5.0 19 lg

Round Die Bush Taper Recess

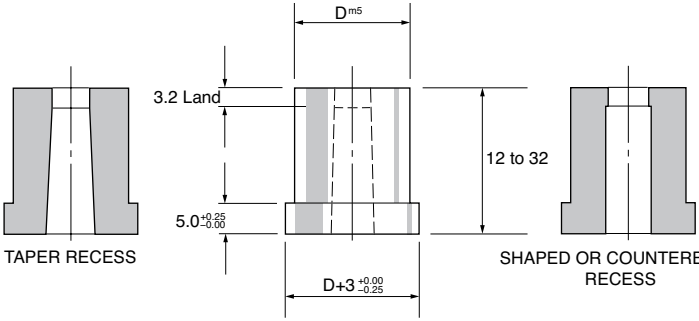


Alternative body diameter, overall length and land lengths readily available - see page 69

Symbol Numbers		Dia.	Bore Size
Headless	Headed	D	B
MDT5	MDHT5	5	2.0–3.0
MDT6	MDHT6	6	2.0–4.0
MDT8	MDHT8	8	2.0–5.0
MDT10	MDHT10	10	2.0–6.5
MDT13	MDHT13	13	3.0–8.5
MDT16	MDHT16	16	6.0–10.5
MDT19	MDHT19	19	6.0–11.5
MDT20	MDHT20	20	8.0–13.5
MDT22	MDHT22	22	8.0–15.0
MDT25	MDHT25	25	12.0–17.0
MDT28	MDHT28	28	12.0–22.0
MDT32	MDHT32	32	12.0–26.0
MDT35	MDHT35	35	12.0–28.0
MDT38	MDHT38	38	12.0–30.0
MDT40	MDHT40	40	16.0–32.0
MDT42	MDHT42	42	16.0–33.0
MDT45	MDHT45	45	16.0–34.0
MDT50	MDHT50	50	16.0–36.0

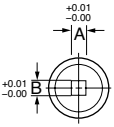
Example order:

12 off MDHT10 5.0 19 lg



Alternative body diameter, overall length and land lengths readily available - see page 69

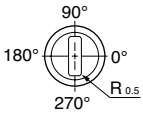
Symbol Numbers								
Headless Dies				Headed Dies				
Rect/Sq.	Flatted	Oval	Long Life	Rect/Sq.	Flatted	Oval	Long Life	Dia. D
MDR8	MDF8	MDW8	MDL8	MDHR8	MDHF8	MDHW8	MDHL8	8
MDR10	MDF10	MDW10	MDL10	MDHR10	MDHF10	MDHW10	MDHL10	10
MDR13	MDF13	MDW13	MDL13	MDHR13	MDHF13	MDHW13	MDHL13	13
MDR16	MDF16	MDW16	MDL16	MDHR16	MDHF16	MDHW16	MDHL16	16
MDR19	MDF19	MDW19	MDL19	MDHR19	MDHF19	MDHW19	MDHL19	19
MDR20	MDF20	MDW20	MDL20	MDHR20	MDHF20	MDHW20	MDHL20	20
MDR22	MDF22	MDW22	MDL22	MDHR22	MDHF22	MDHW22	MDHL22	22
MDR25	MDF25	MDW25	MDL25	MDHR25	MDHF25	MDHW25	MDHL25	25
MDR28	MDF28	MDW28	MDL28	MDHR28	MDHF28	MDHW28	MDHL28	28
MDR32	MDF32	MDW32	MDL32	MDHR32	MDHF32	MDHW32	MDHL32	32
MDR35	MDF35	MDW35	MDL35	MDHR35	MDHF35	MDHW35	MDHL35	35
MDR38	MDF38	MDW38	MDL38	MDHR38	MDHF38	MDHW38	MDHL38	38
MDR40	MDF40	MDW40	MDL40	MDHR40	MDHF40	MDHW40	MDHL40	40
MDR42	MDF42	MDW42	MDL42	MDHR42	MDHF42	MDHW42	MDHL42	42
MDR45	MDF45	MDW45	MDL45	MDHR45	MDHF45	MDHW45	MDHL45	45
MDR50	MDF50	MDW50	MDL50	MDHR50	MDHF50	MDHW50	MDHL50	50



R
RECTANGLE/ SQUARE

F
FLATTED

W
OVAL



MDHL
LONG LIFE

Example order:

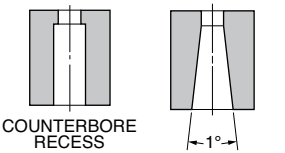
4 off MDW16 3.0 x 5.0 25 lg
6 off MDHR20 5.5 x 7.5 32 lg

Taper Recess supplied as standard unless specified otherwise.

Locations if required please specify as shown on page 68

NS shapes see pages 32, 33

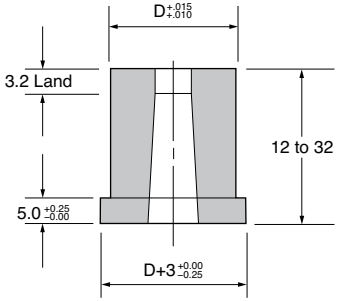
HEADLESS DIES

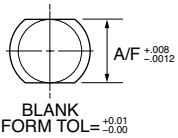


COUNTERBORE RECESS

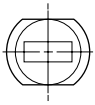
TAPER RECESS

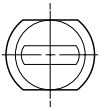
Die Bushes SPLIT

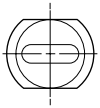


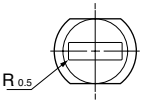


SQUARE


RECTANGLE


FLATTED


OVAL



Alternative shapes, body dia, overall length and land lengths readily available - see page 67

Symbol Numbers	Dia. D
MGD8	8.0
MGD10	10.0
MGD13	13.0
MGD16	16.0
MGD19	19.0
MGD20	20.0
MGD22	22.0
MGD25	25.0
MGD32	32.0
MGD35	35.0
MGD38	38.0
MGD40	40.0
MGD42	42.0
MGD45	45.0
MGD50	50.0

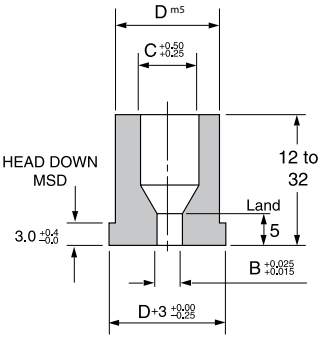
To order specify:

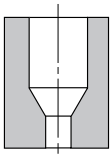
Symbol, type, shape and size and length

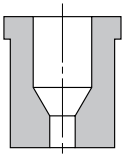
Note: Head Flats are Standard on Split Dies

Example order:

MGD25 Rect 10.25 x 12.25 32 lg



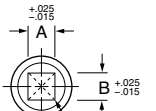

HEADLESS
MS


HEAD UP
MSU

Alternative shapes, body dia, overall length and land lengths available.

Symbol Numbers			Body	Dia	Dia
Head Down	Headless	Head Up	Dia D	Range B	C
MSD*6	MS*6	MSU*6	6	1.5–3.0	3.0
MSD*8	MS*8	MSU*8	8	2.0–4.5	4.5
MSD*10	MS*10	MSU*10	10	3.0–6.0	6.0
MSD*13	MS*13	MSU*13	13	4.0–8.0	8.0
MSD*16	MS*16	MSU*16	16	5.0–9.0	9.0
MSD*19	MS*19	MSU*19	19	7.0–11.0	11.0
MSD*20	MS*20	MSU*20	20	7.0–12.0	12.0
MSD*22	MS*22	MSU*22	22	8.0–14.0	14.0
MSD*25	MS*25	MSU*25	25	8.0–17.0	17.0
MSD*32	MS*32	MSU*32	32	8.0–22.0	22.0
MSD*35	MS*35	MSU*35	35	9.0–25.0	25.0
MSD*38	MS*38	MSU*38	38	9.0–28.0	28.0

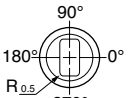
T
ROUND



R
RECTANGLE
OR
SQUARE

F
FLATTED

W
OVAL



L
LONG LIFE

***insert the shape code**

Example order:

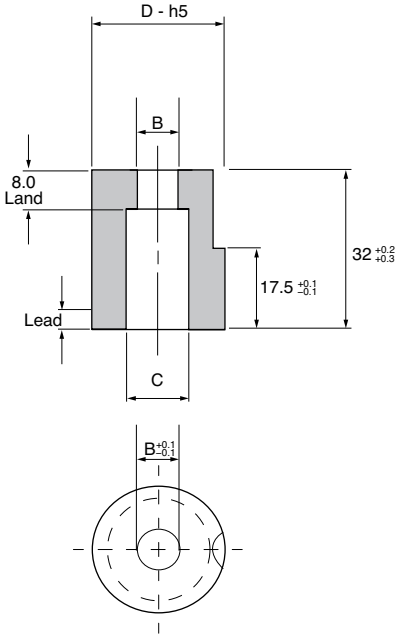
6 off MSUR10 3.0 x 4.0 18 lg
8 off MSDW25 8.0 x 12.5 32 lg

If Location Flats are required, then please specify as shown on page 68

Note: Diagonal B must not exceed dia C

Views are from the dia C end

Die Bushes Round (Clamping)



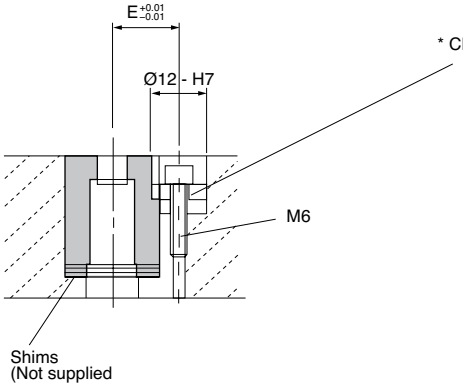
Symbol Numbers	ø D	ø C	E centres	Bore Size ø B
SMDP16	16	8	11.5	3 - 7
SMDP20	20	10	13.5	7 - 9
SMDP25	25	17	16	9 - 16
SMDP32	32	22	19.5	16 - 21
SMDP40	40	26	23.5	21 - 25
SMDP50	50	38	28.5	25 - 37

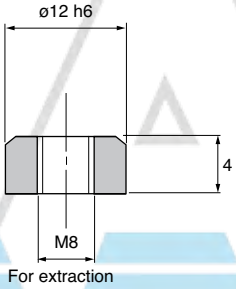
Example Order:

6 off SMDP20 x 7.8

6 off FMDP

TYPICAL ASSEMBLY
AFTER REGRIND

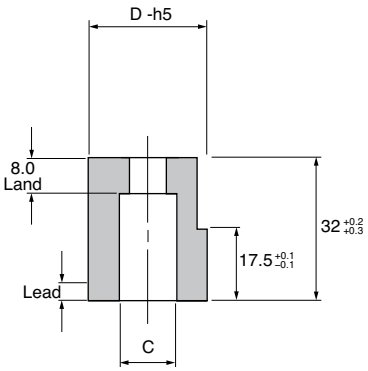




*** Die Clamp must be ordered if required.**

Cap head screw not supplied

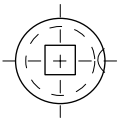
Die Bushes Shaped (Clamping)



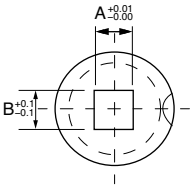
Symbol Numbers	ø D	ø C	E centres
SMD*16	16	8	11.5
SMD*20	20	10	13.5
SMD*25	25	17	16
SMD*32	32	22	19.5
SMD*40	40	26	23.5
SMD*50	50	38	28.5

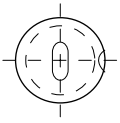
* = insert shape code

Example Order:
6 off SMDR20 4.0 x 6.0
6 off FMDP



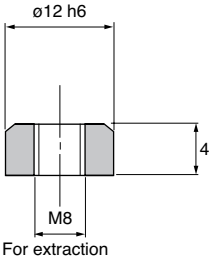
* SMDR
Rectangle
or Square



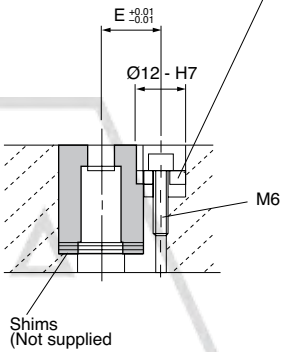


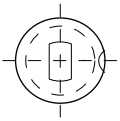
* SMDW
Oval

* Clamp - FMDP

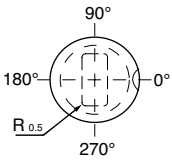


TYPICAL ASSEMBLY
AFTER REGRIND





* SMDF
Flatted



* SMDL
Long Life

*** Die Clamp must be ordered if required.**

Cap head screw not supplied

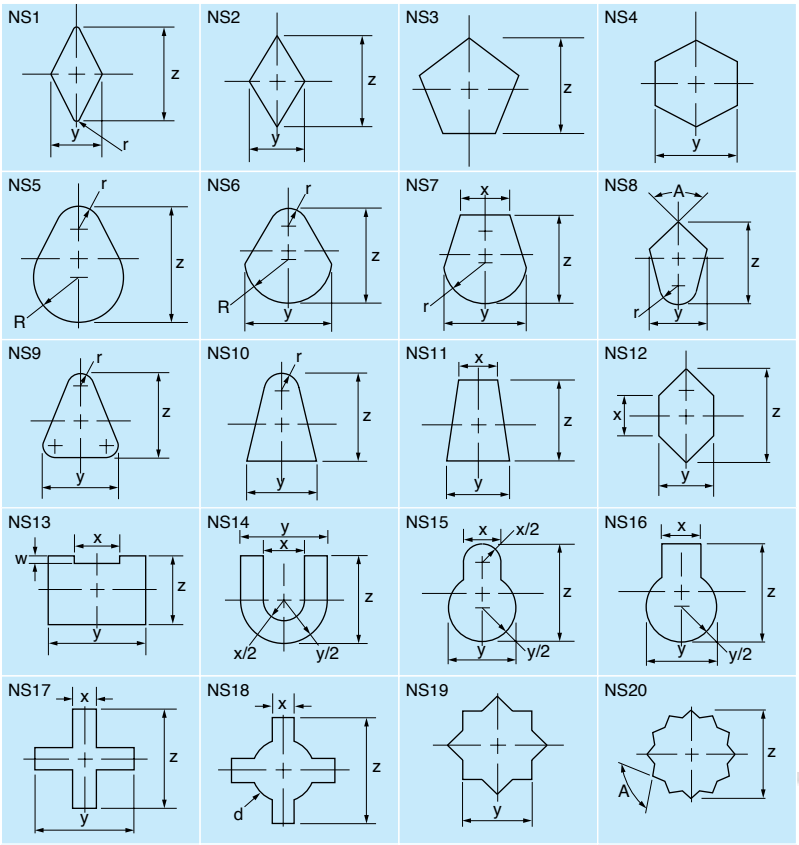
NS shapes available,
see pages 32, 33

Non Standard Punch & Die Shapes

Unless stated otherwise the Y and Z dimensions are equal about the centrelines of Punch or Die Body

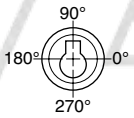
90°

180° 0°



Example die order
MDHB16 NS4 25
Y = 6.7 Taper Recess

DIE VIEW



270°

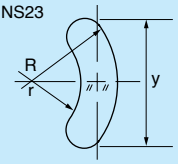
To order Dies please specify the following form dimensions;

- Diameter
- Length of Land
- Shaped, Round or Tapered Recess
- Overall Length

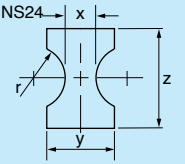
Location Flats Standard on split dies only, if required on solid dies please specify as shown on page 67 + 68

90°

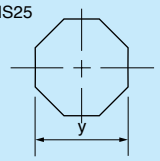
NS23



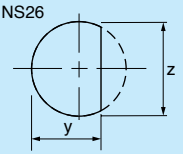
NS24



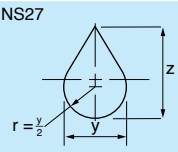
NS25



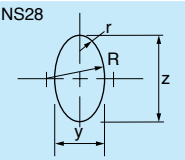
NS26



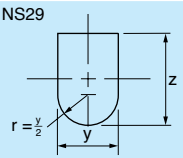
NS27



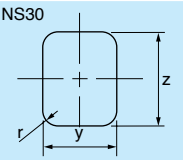
NS28



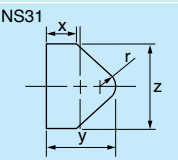
NS29



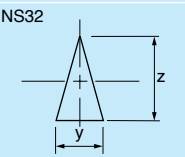
NS30



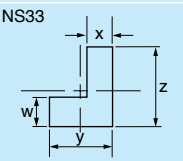
NS31



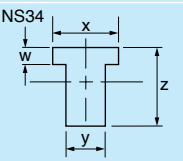
NS32



NS33

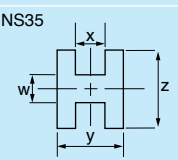


NS34

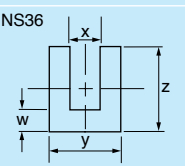


180°

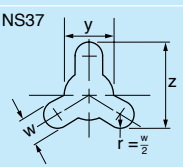
NS35



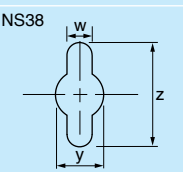
NS36



NS37

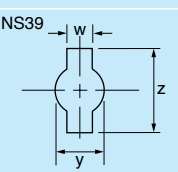


NS38

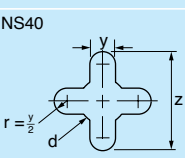


0°

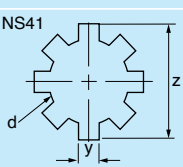
NS39



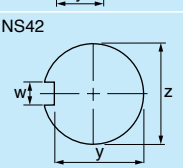
NS40



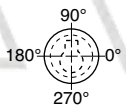
NS41



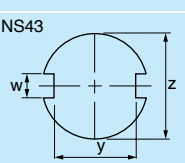
NS42



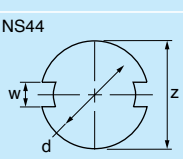
PUNCH VIEW



NS43



NS44



Example Punch order

6 off
MIOB NS38 80
Z = 7.4 Y = 3.0 W = 1.7

270°

To order Punches please specify the following form dimensions;

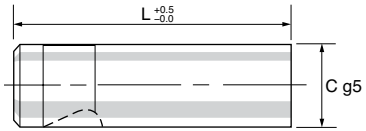
Shank Diameter

Length of form excluding radius

Overall Length

If Location Flat required, then please specify as shown on page 67 + 68

Ball Lock Punch Blanks



Solid

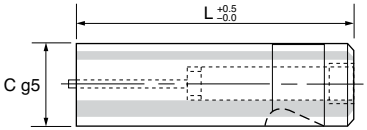
L = 56 63 71 80 90 100 125

Solid			
Light Duty Solid	Shank Size C	Heavy Duty Solid	Shank Size C
LAW	6		
LAW	10	HAW	10
LAW	13	HAW	13
LAW	16	HAW	16
LAW	20	HAW	20
LAW	25	HAW	25
LAW	32	HAW	32
		HAW	40

Example order:

10 off LAW16 80 lg

Any alternative dimensions can be specified.



Ejector

L = 56 63 71 80 90 100 125

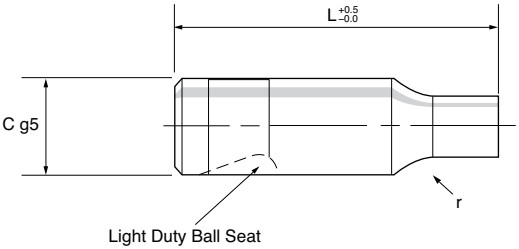
Ejector			
Light Duty Ejector	Shank Size C	Heavy Duty Ejector	Shank Size C
LEW	6		
LEW	10	HEW	10
LEW	13	HEW	13
LEW	16	HEW	16
LEW	20	HEW	20
LEW	25	HEW	25
LEW	32	HEW	32
		HEW	40

Example order:

8 off HEW16 80 lg

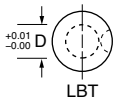
Any alternative dimensions can be specified.

Light Duty Ball Lock Punches

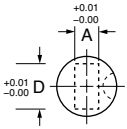


L = Overall standard lengths 50 up to 125

Light Duty Symbol Numbers					Shank Size C	Min. Piercing Dia. D	Min. Width A
LBT	LBR	LBF	LBW	LBL			
6	6	6	6	6	6	2.5	2.5
10	10	10	10	10	10	3.2	3.2
13	13	13	13	13	13	3.2	3.2
16	16	16	16	16	16	4.8	4.8
20	20	20	20	20	20	5.0	5.0
25	25	25	25	25	25	5.0	5.0
32	32	32	32	32	32	5.0	6.0
38	38	38	38	38	38	8.0	6.0



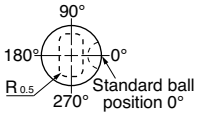
LBT
ROUND



LBR
RECTANGLE/
SQUARE

LBF
FLATTED

LBW
OVAL



LBL
LONG LIFE

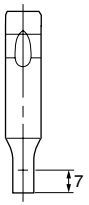
Example order:

6 off LBF13B x 4 x 9 x 60 lg Specify Ball Seat position

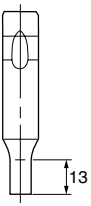
NS shapes available see pages 32, 33

0°= Standard Ball Seat Position

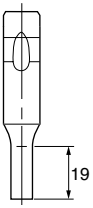
Type A



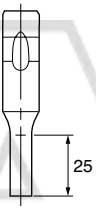
Type B



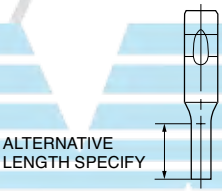
Type C



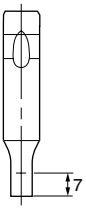
Type D

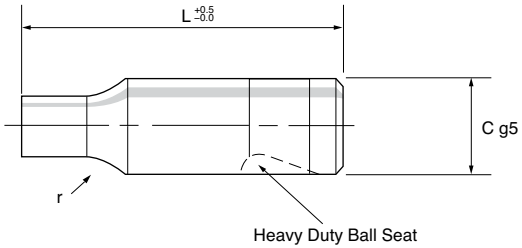


Type AL

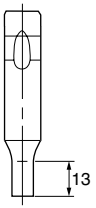


Type A





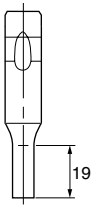
Type B



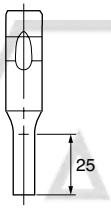
L = Overall standard lengths 50 up to 125

Heavy Duty Symbol Numbers					Shank Size C	Min. Piercing Dia. D	Min. Width A
HBT	HBR	HBF	HBW	HBL			
10	10	10	10	10	10	3.2	3.2
13	13	13	13	13	13	3.2	3.2
16	16	16	16	16	16	4.8	4.8
20	20	20	20	20	20	5.0	5.0
25	25	25	25	25	25	5.0	5.0
32	32	32	32	32	32	5.0	6.0
40	40	40	40	40	40	8.0	8.0

Type C



Type D



Type AL

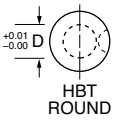
ALTERNATIVE LENGTH SPECIFY

Example order:

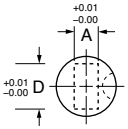
6 off HBF13B x 4 x 9 x 60 lg Specify Ball Seat position

NS shapes available see pages 32, 33

0°= Standard Ball Seat Position



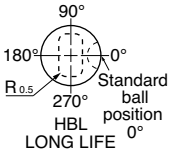
HBT ROUND



HBR RECTANGLE/ SQUARE

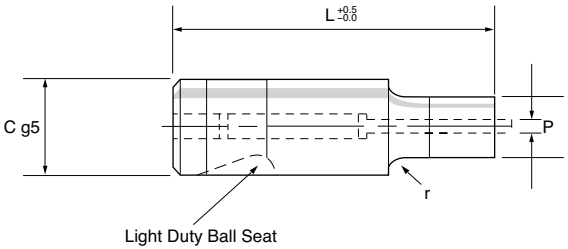
HBF FLATTED

HBW OVAL

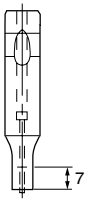


HBL LONG LIFE

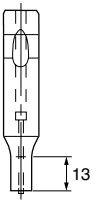
Light Duty Ejector Ball Lock Punches



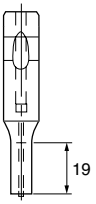
Type A



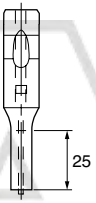
Type B



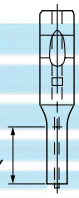
Type C



Type D

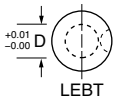


Type AL

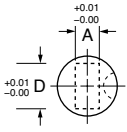


L = Overall standard lengths 50 up to 125

Light Duty Symbol Numbers					Shank Size C	Min. Piercing Dia. D	Min. Width A	Pin Hole P
LEBT	LEBR	LEBF	LEBW	LEBL				
10	10	10	10	10	10	3.2	3.2	1.5
13	13	13	13	13	13	3.2	3.2	1.5
16	16	16	16	16	16	4.8	4.8	2.4
20	20	20	20	20	20	5.0	5.0	2.4
25	25	25	25	25	25	5.0	5.0	2.4
32	32	32	32	32	32	5.0	6.0	2.4



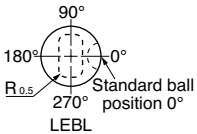
LEBT
ROUND



LEBR
RECTANGLE/
SQUARE

LEBF
FLATTED

LEBW
OVAL



LEBL
LONG LIFE

Example order:

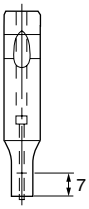
6 off LEBF13B x 4 x 9 x 60 lg Specify Ball Seat position

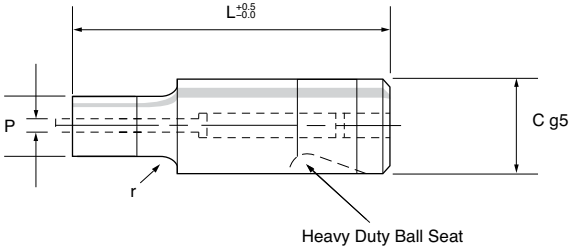
NS shapes available see pages 32, 33

Ejector components see page 23

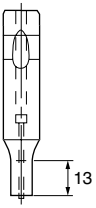
0°= Standard Ball Seat Position

Type A





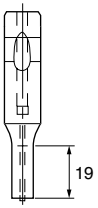
Type B



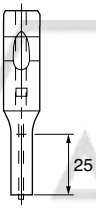
L = Overall standard lengths 50 up to 125

Heavy Duty Symbol Numbers					Shank Size C	Min. Piercing Dia. D	Min. Width A	Pin Hole P
HEBT	HEBR	HEBF	HEBW	HEBL				
10	10	10	10	10	10	3.2	3.2	1.5
13	13	13	13	13	13	3.2	3.2	1.5
16	16	16	16	16	16	4.8	4.8	2.4
20	20	20	20	20	20	5.0	5.0	2.4
25	25	25	25	25	25	5.0	5.0	2.4
32	32	32	32	32	32	5.0	6.0	2.4
40	40	40	40	40	40	8.0	8.0	2.4

Type C



Type D



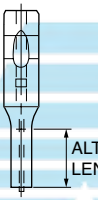
Example order:

6 off HEBF13B x 4 x 9 x 60 lg Specify Ball Seat position

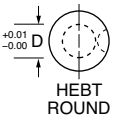
NS shapes available see pages 32, 33

Ejector components see page 23

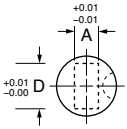
Type AL



0°= Standard Ball Seat Position



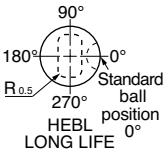
HEBT
ROUND



HEBR
RECTANGLE/
SQUARE

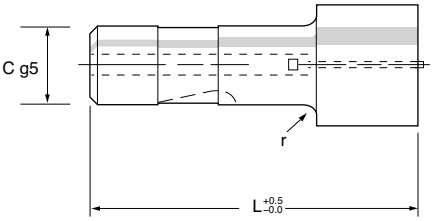
HEBF
FLATTED

HEBW
OVAL



HEBL
LONG LIFE

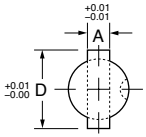
Light Duty Ejector Ball Lock Punches (Point Larger Than Shank)



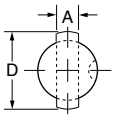
AELT
ROUND

L = Overall length 50 up to 125

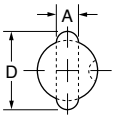
Symbol Numbers						Point Range		
Light Duty Ejector								
Round	Rect/ Square	Flatted	Oval	Long Life	Shank Dia. C	(min) A		(max) D
AELT10	AELR10	AELF10	AELW10	AELL10	10	10.00	-	24.00
AELT13	AELR13	AELF13	AELW13	AELL13	13	10.00	-	32.00
AELT16	AELR16	AELF16	AELW16	AELL16	16	10.00	-	38.00
AELT20	AELR20	AELF20	AELW20	AELL20	20	10.00	-	38.00
AELT25	AELR25	AELF25	AELW25	AELL25	25	15.00	-	45.00
AELT32	AELR32	AELF32	AELW32	AELL32	32	15.00	-	45.00



AELR
RECTANGLE
OR
SQUARE



AELF
FLATTED



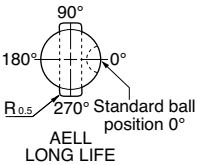
AELW
OVAL

Example order:

AELR16C 8.4 x 21.60 x 80 BS 35°

NS shapes available see pages 32, 33

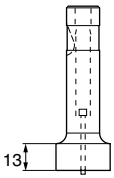
Ejector components see page 23



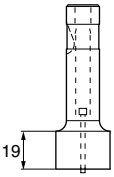
AELL
LONG LIFE

0°= Standard Ball Seat Position

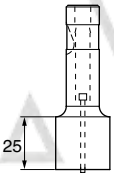
Type B



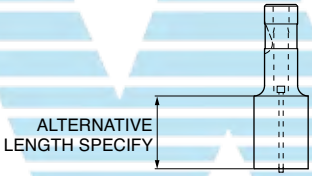
Type C



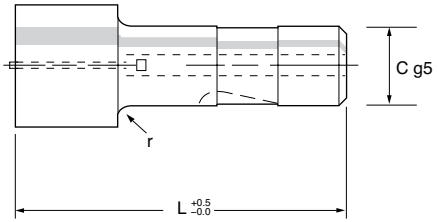
Type D



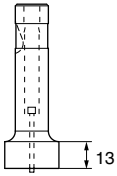
Type AL



Heavy Duty Ejector Ball Lock Punches (Point Larger Than Shank)

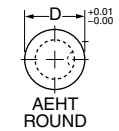


Type B



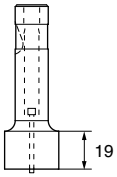
L = Overall length 50 up to 125

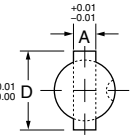
Symbol Numbers					Point Range		
Heavy Duty Ejector							
Round	Rect/ Square	Flatted	Oval	Long Life	Shank Dia. C	(min) A	(max) D
AEHT10	AEHR10	AEHF10	AEHW10	AEHL10	10	10.00 -	24.00
AEHT13	AEHR13	AEHF13	AEHW13	AEHL13	13	10.00 -	32.00
AEHT16	AEHR16	AEHF16	AEHW16	AEHL16	16	10.00 -	38.00
AEHT20	AEHR20	AEHF20	AEHW20	AEHL20	20	10.00 -	38.00
AEHT25	AEHR25	AEHF25	AEHW25	AEHL25	25	15.00 -	45.00
AEHT32	AEHR32	AEHF32	AEHW32	AEHL32	32	15.00 -	45.00
AEHT40	AEHR40	AEHF40	AEHW40	AEHL40	40	15.00 -	50.00



AEHT
ROUND

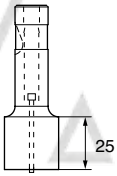
Type C

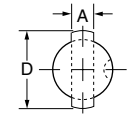




AEHR
RECTANGLE
OR
SQUARE

Type D





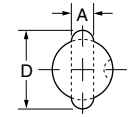
AEHF
FLATTED

Example order:

AEHR16C 8.4 x 21.60 x 80 BS 0°

NS shapes available see pages 32, 33

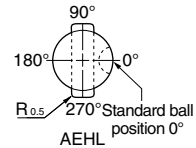
Ejector components see page 23



AEHW
OVAL

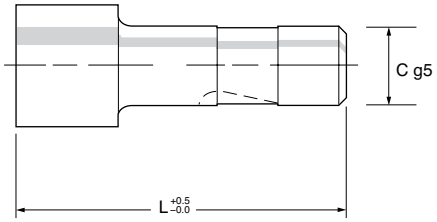
Type AL

0°= Standard Ball Seat Position



AEHL
LONG LIFE

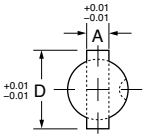
Light Duty Ball Lock Punches (Point Larger Than Shank)



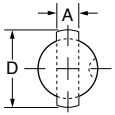
ALT
ROUND

L = Overall length 50 up to 125

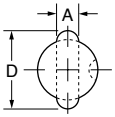
Symbol Numbers					Point Range		
Light Duty							
Round	Rect/ Square	Flatted	Oval	Long Life	Shank Dia. C	(min) A	(max) D
ALT10	ALR10	ALF10	ALW10	ALL10	10	5.00 -	24.00
ALT13	ALR13	ALF13	ALW13	ALL13	13	5.00 -	32.00
ALT16	ALR16	ALF16	ALW16	ALL16	16	6.00 -	38.00
ALT20	ALR20	ALF20	ALW20	ALL20	20	8.00 -	38.00
ALT25	ALR25	ALF25	ALW25	ALL25	25	10.00 -	45.00
ALT32	ALR32	ALF32	ALW32	ALL32	32	12.00 -	45.00



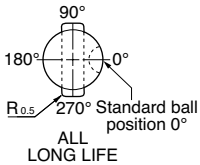
ALR
RECTANGLE
OR
SQUARE



ALF
FLATTED



ALW
OVAL



ALL
LONG LIFE

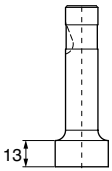
Example order:

ALL20 C 8.6 x 21.3 x 90 BS 90°

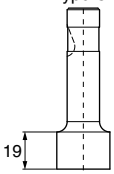
NS shapes available see pages 32, 33

0°= Standard Ball Seat Position

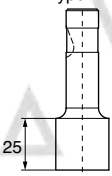
Type B



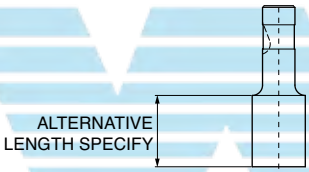
Type C



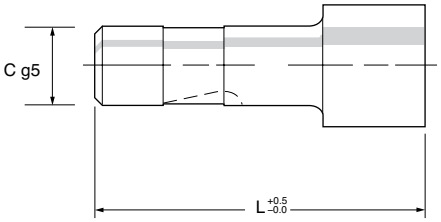
Type D



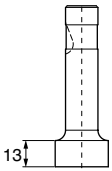
Type AL

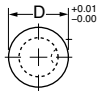


Heavy Duty Ball Lock Punches (Point Larger Than Shank)



Type B



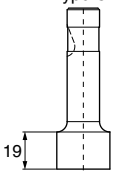


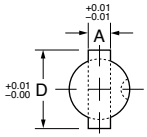
AHT
ROUND

L = Overall length 50 up to 125

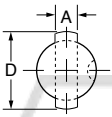
Symbol Numbers					Point Range		
Heavy Duty							
Round	Rect/ Square	Flatted	Oval	Long Life	Shank Dia. C	(min) A	(max) D
AHT10	AHR10	AHF10	AHW10	AHL10	10	5.00 -	24.00
AHT13	AHR13	AHF13	AHW13	AHL13	13	5.00 -	32.00
AHT16	AHR16	AHF16	AHW16	AHL16	16	6.00 -	38.00
AHT20	AHR20	AHF20	AHW20	AHL20	20	8.00 -	38.00
AHT25	AHR25	AHF25	AHW25	AHL25	25	10.00 -	45.00
AHT32	AHR32	AHF32	AHW32	AHL32	32	12.00 -	45.00
AHT40	AHR40	AHF40	AHW40	AHL40	40	15.00 -	50.00

Type C





AHR
RECTANGLE
OR
SQUARE

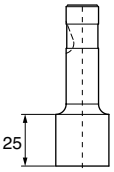


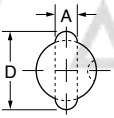
AHF
FLATTED

Example order:

AHR16C 8.4 x 21.60 x 80

Type D

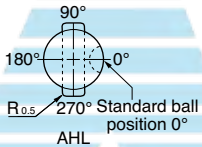




AHW
OVAL

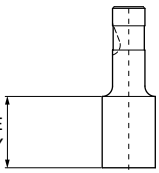
NS shapes available see pages 32, 33

0°= Standard Ball Seat Position

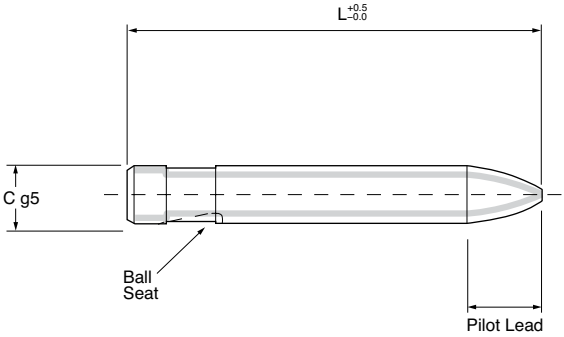


AHL
LONG LIFE

Type AL



Ball Lock Parallel Pilots



L = Overall Standard Lengths 50 up to 125

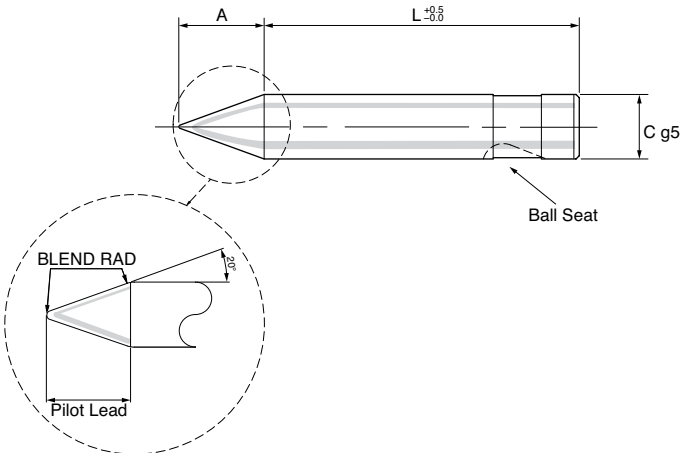
Light Duty		
Symbol Numbers	Shank Size C	Pilot Lead
LBPP6	6	4
LBPP10	10	6
LBPP13	13	8
LBPP16	16	8
LBPP20	20	10
LBPP25	25	13
LBPP32	32	13

Heavy Duty		
Symbol Numbers	Shank Size C	Pilot Lead
HBPP10	10	6
HBPP13	13	8
HBPP16	16	8
HBPP20	20	10
HBPP25	25	13
HBPP32	32	13
HBPP40	40	16

Example Order:

6 off HBPP13 x 60 lg
6 off LBPP 20 x 84

L + A = OVERALL LENGTH



L = Overall Standard Lengths 50 up to 125

Light Duty Ball Seat		
Symbol Numbers	Shank Dia C	A
LBAP10	10	8
LBAP13	13	10
LBAP16	16	15
LBAP20	20	20
LBAP25	25	25
LBAP32	32	30
LBAP38	38	35

Heavy Duty Ball Seat		
Symbol Numbers	Shank Dia C	A
HBAP10	10	8
HBAP13	13	10
HBAP16	16	15
HBAP20	20	20
HBAP25	25	25
HBAP32	32	30
HBAP40	40	40

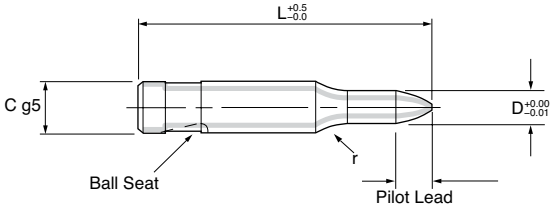
Example Order:

6 off LBAP10 x 90 L = 90 + A
4 off HBAP32 x 110

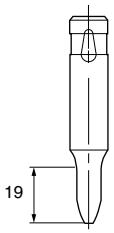
THIS RANGE TO BE DISCONTINUED DECEMBER 2012

PLEASE SEE PAGE 47 FOR REPLACEMENT ARTICLE

Ball Lock Pilot Points



Type B



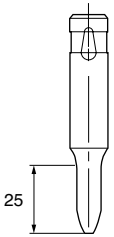
L = Overall Standard Lengths 56 up to 125

Pilot Lead	Dia Range D
4	2.3 - 6.0
6	6.01 - 10.0
8	10.01 - 13.0
10	13.01 - 18.0
13	18.01 - 25.0
16	25.01 - 40.0

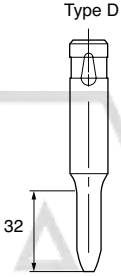
Light Duty	
Symbol Numbers	Shank Size C
LBP6	6
LBP10	10
LBP13	13
LBP16	16
LBP20	20
LBP25	25
LBP32	32
LBP38	38

Heavy Duty	
Symbol Numbers	Shank Size C
HBP10	10
HBP13	13
HBP16	16
HBP20	20
HBP25	25
HBP32	32
HBP40	40

Type C



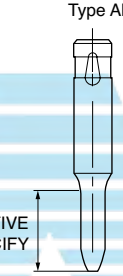
Type D



Example Order:

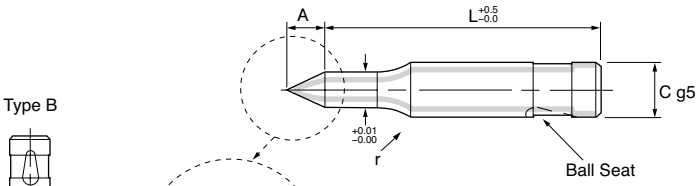
6 off HBP13B x 9 x 60 lg

Type AL

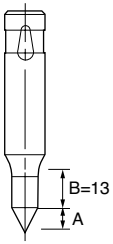


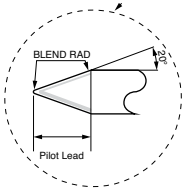
Ball Lock Angular Pilot Points

L + A = OVERALL LENGTH



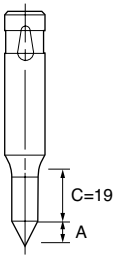
Type B





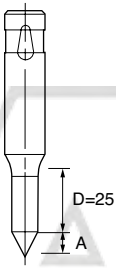
L = Overall length from 56-125

Type C



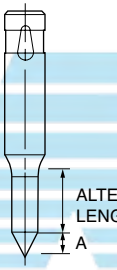
Heavy Duty Ball Seat			
Symbol Numbers	Size C	Point Dia D	A
HBAPP10	10	5.0 - 10.0	8
HBAPP13	13	9.0 - 13.0	10
HBAPP16	16	12.0 - 16.0	15
HBAPP20	20	15.0 - 20.0	20
HBAPP25	25	19.0 - 25.0	25
HBAPP32	32	24.0 - 32.0	30
HBAPP40	40	30.0 - 40.0	40

Type D



Light Duty Ball Seat			
Symbol Numbers	Size C	Point Dia D	A
LBAPP10	10	5.0 - 10.0	8
LBAPP13	13	9.0 - 13.0	10
LBAPP16	16	12.0 - 16.0	15
LBAPP20	20	15.0 - 20.0	20
LBAPP25	25	19.0 - 25.0	25
LBAPP32	32	24.0 - 32.0	30
LBAPP38	38	24.0 - 38.0	35

Type AL

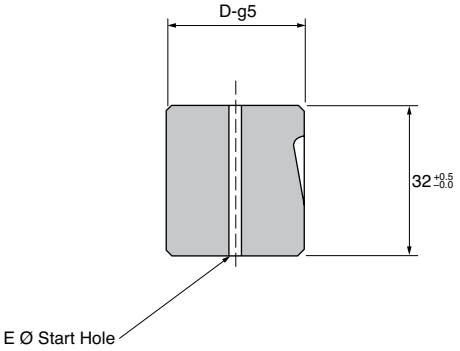


Example Order:

6 off LBAPP13D X 10.1 X 80 L = 80 + A

6 off HBAPP16C x 15.5 x 100 L = 100 + A

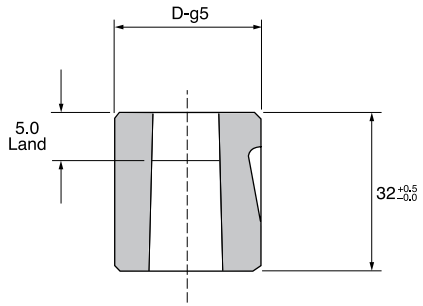
Light Duty Ball Lock Die Blanks

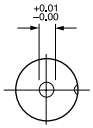


Symbol Numbers	dia. D	E ø StartHole
LBDB13	13	1.6
LBDB16	16	1.6
LBDB20	20	1.6
LBDB25	25	2.0
LBDB32	32	2.0

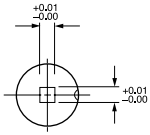
Example Order:

6 off LBDB13 x 32





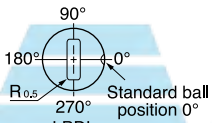
LBDT
ROUND



LBDR
RECTANGLE

LBDF
FLATTED

LBDW
OVAL



LBDL
LONG LIFE

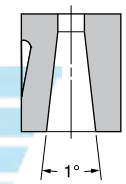
Symbol Numbers					
Round	Rect or Square	Flatted	Oval	Long Life	Dia D
LBDT13	LBDR13	LBDF13	LBDW13	LBDL13	13
LBDT16	LBDR16	LBDF16	LBDW16	LBDL16	16
LBDT20	LBDR20	LBDF20	LBDW20	LBDL20	20
LBDT25	LBDR25	LBDF25	LBDW25	LBDL25	25
LBDT32	LBDR32	LBDF32	LBDW32	LBDL32	32

Example Order:

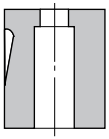
6 off LBDT13 x 5.01 x 32
6 off LBDR38 x 8.0 x 15 x 32

Alternative land lengths readily available
NS available, see pages 32, 33
Taper recess supplied unless specified otherwise.

0°= Standard Ball Seat Position



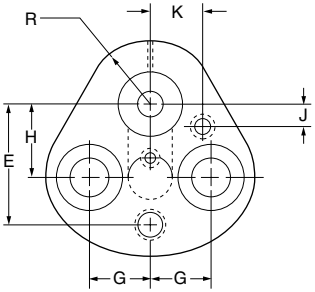
TAPER RECESS

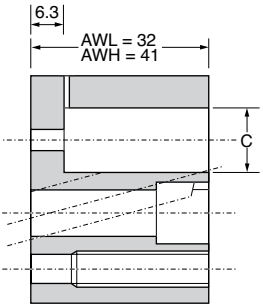


COUNTERBORE
RECESS

Ball Lock Retainers

Manufactured under Patent No.'s 0351395, 5357835 International Patents Pending





Light Duty

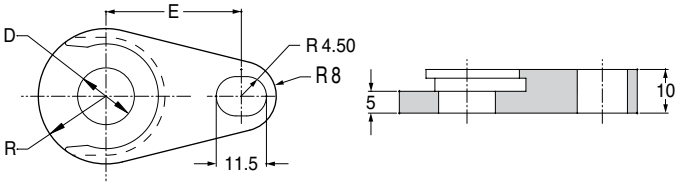
Symbol Numbers	Shank Dia. C	E	G	R	H	J	K	Screw Size
AWL-06	06	23.000	11.10	8.0	19.00	9.00	8.00	M6
AWL-10	10	26.924	11.12	9.5	19.05	7.50	9.00	M8
AWL-13	13	29.972	14.27	12.7	19.05	6.50	12.00	M8
AWL-16	16	31.750	15.87	14.3	19.05	6.00	13.50	M8
AWL-20	20	33.528	17.47	17.5	19.05	5.00	16.50	M10
AWL-25	25	40.640	19.84	22.2	23.82	7.00	22.00	M12
AWL-32	32	40.640	19.84	22.2	23.82	7.00	22.00	M12

Heavy Duty

Symbol Numbers	Shank Dia.C	E	G	R	H	J	K	Screw Size
AWH-10	10	26.924	11.12	9.5	19.05	7.50	9.00	M8
AWH-13	13	29.972	14.27	12.7	19.05	6.50	12.00	M8
AWH-16	16	31.750	15.87	14.3	19.05	6.00	13.50	M8
AWH-20	20	33.528	17.47	17.5	19.05	5.00	16.50	M10
AWH-25	25	40.640	19.84	22.2	23.82	7.00	22.00	M12
AWH-32	32	40.640	19.84	22.2	23.82	7.00	22.00	M12
AWH-40	40	43.993	24.00	26.00	27.00	10.00	26.00	M12

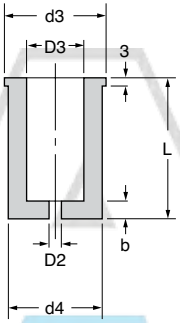
Example order:

5 off AWH-13



Retainer Plate	D	R	E
AWR-10	10	13	28
AWR-13	13	15.5	31
AWR-16	16	18	32.9
AWR-20	20	20.5	34.8
AWR-25	25	24	39.8
AWR-32	32	31	41.3
AWR-40	40	36	45

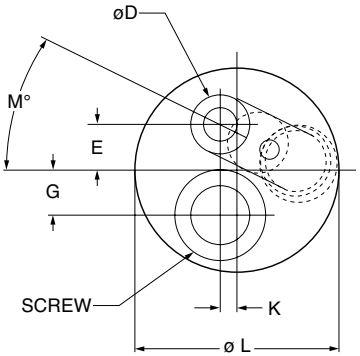
Set consists of: Retaining Plate and M8 x 20 Socket Head Cap Screw.

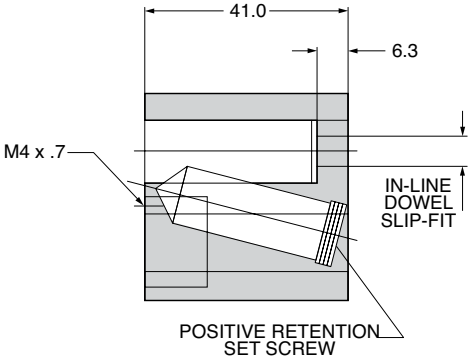


Stripper Catalog Number	Punch Shank	Press Fit D3	d4	L	d3	D2	b
AWS10-44	10	9.75	18	43	21	1.6	6
AWS10-54	10	9.75	18	52	21	1.6	6
AWS10-64	10	9.75	18	63	21	1.6	6
AWS10-74	10	9.75	18	72	21	1.6	6
AWS13-44	13	12.75	23	43	26	3.0	6
AWS13-54	13	12.75	23	52	26	3.0	6
AWS13-64	13	12.75	23	63	26	3.0	6
AWS13-74	13	12.75	23	72	26	3.0	6
AWS16-44	16	15.75	28	43	31	3.0	6
AWS16-54	16	15.75	28	52	31	3.0	6
AWS16-64	16	15.75	28	63	31	3.0	6
AWS16-74	16	15.75	28	72	31	3.0	6
AWS20-44	20	19.75	33	43	36	3.0	7
AWS20-54	20	19.75	33	52	36	3.0	7
AWS20-64	20	19.75	33	63	36	3.0	7
AWS20-74	20	19.75	33	72	36	3.0	7
AWS25-44	25	24.75	40	43	43	3.0	7
AWS25-54	25	24.75	40	52	43	3.0	7
AWS25-64	25	24.75	40	63	43	3.0	7
AWS25-74	25	24.75	40	72	43	3.0	7
AWS32-44	32	31.70	50	43	55	3.0	7
AWS32-54	32	31.70	50	52	55	3.0	7
AWS32-64	32	31.70	50	63	55	3.0	7
AWS32-74	32	31.70	50	72	55	3.0	7
AWS40-44	40	39.70	60	43	65	3.0	8
AWS40-64	40	39.70	60	63	65	3.0	8

Urethane Hardness 90-95 Shore A

NEW



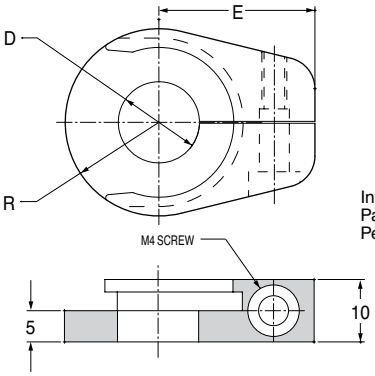


Symbol Numbers	øD	øL	E	G	K	M	Screw Size	In-Line Dowel
ARH-10	10	26.924	11.12	9.5	19.05	7.50	9.00	M8
ARH-13	13	29.972	14.27	12.7	19.05	6.50	12.00	M8
ARH-16	16	31.750	15.87	14.3	19.05	6.00	13.50	M8
ARH-20	20	33.528	17.47	17.5	19.05	5.00	16.50	M10
ARH-25	25	40.640	19.84	22.2	23.82	7.00	22.00	M12
ARH-32	32	40.640	19.84	22.2	23.82	7.00	22.00	M12
ARH-40	40	43.993	24.00	26.00	27.00	10.00	26.00	M12

Example order:

10 off ARH-16

Retainer Strippers



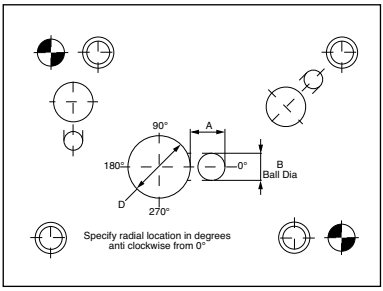
International Patents Pending.

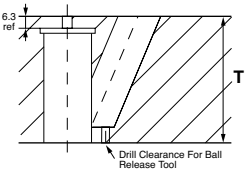
Retainer Backing Plate Set	D	R	E
ARR-10	10	13	22.5
ARR-13	13	15.5	25
ARR-16	16	18	27.5
ARR-20	20	20.5	30
ARR-25	25	24	35.5
ARR-32	32	31	37.5
ARR-40	40	36	42.3

Example order:

4 off ARR-25

Ball Lock Multi Hole Retainer





AWML = 32
AWMH = 41

Light Duty

Symbol Number	D	A	B	T
AWML6	6	12	6	32
AWML10	10	13	8	32
AWML13	13	13	8	32
AWML16	16	13	8	32
AWML20	20	13	8	32
AWML25	25	13	8	32
AWML32	32	13	8	32

Heavy Duty

Symbol Number	D	A	B	T
AWMH10	10	15	10	41
AWMH13	13	17	12	41
AWMH16	16	17	12	41
AWMH20	20	17	12	41
AWMH25	25	17	12	41
AWMH32	32	17	12	41
AWMH40	40	17	12	41

Punch Shape	Class Ball Hole	Radial Tolerance
Round	R	±5°
Shaped	F	±0°5'

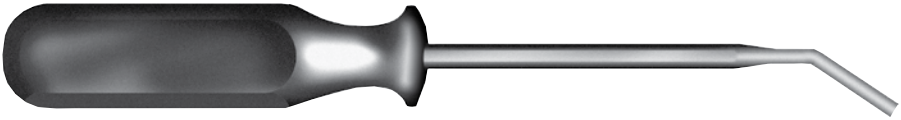
Standard Tolerances	
Outside edges	± 0.5mm
Dowel Hole Locations	± 0.01mm
Screw Hole Locations	± 0.1mm
Component Hole Locations	± 0.01mm

Class R Supplied unless otherwise specified

Example Order:

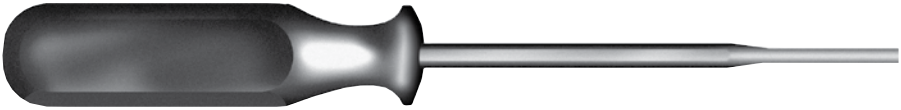
AWML10F (Light Duty Shaped punch holder) To Customer Drawing

Ball Lock Angle Tool



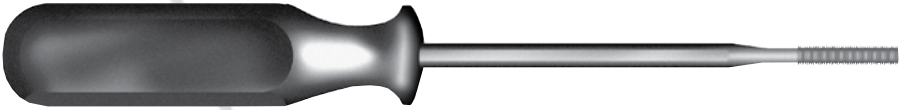
Order Code: 818038

Ball Lock Straight Tool



Order Code: 818046

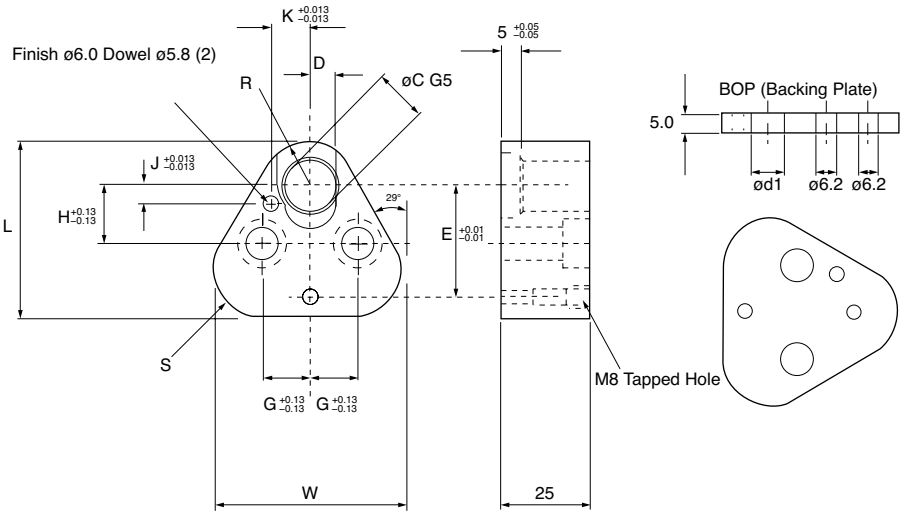
Ball Lock Threaded Tool



Order Code: 269999

Example order:
6 off 818046

Headed Punch Retainer (Shaped)



Symbol Numbers	C	L	W	D	G	H	R	S	E	K	J	Screw Size
HHS10	10	44.5	43.7	5.0	11.12	19.0	9.5	12.0	26.925	9.0	7.5	M8
HHS13	13	50.8	50.0	6.5	14.27	19.0	12.7	15.2	29.970	12.0	6.5	M8
HHS16	16	54.0	53.2	8.0	15.87	19.0	14.3	16.8	31.750	13.5	6.0	M8
HHS20	20	60.3	59.6	10.0	17.47	19.0	17.5	20.0	33.530	16.5	5.0	M10
HHS25	25	69.9	69.1	12.5	19.84	23.8	22.2	24.7	40.640	22.0	7.0	M12
HHS32	32	69.9	69.1	16.0	19.84	23.8	22.2	24.7	40.640	22.0	7.0	M12

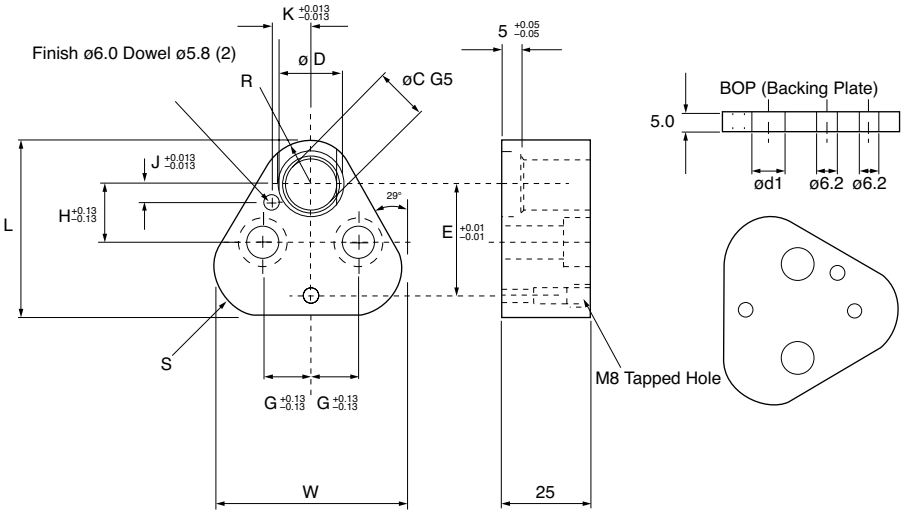
Backing Plate	ød1
BOP10	10
BOP13	10
BOP16	10
BOP20	12
BOP25	14
BOP32	14

TO SUIT A 5MM PUNCH HEAD ONLY
BOP SOLD SEPARATELY

Example order:

12 off HHS13
12 off BOP13

Headed Punch Retainer (Round)



Symbol Numbers	C	L	W	D	G	H	R	S	E	K	J	Screw Size
HHR10	10	44.5	43.7	14.0	11.12	19.0	9.5	12.0	26.925	9.0	7.5	M8
HHR13	13	50.8	50.0	17.0	14.27	19.0	12.7	15.2	29.970	12.0	6.5	M8
HHR16	16	54.0	53.2	20.0	15.87	19.0	14.3	16.8	31.750	13.5	6.0	M8
HHR20	20	60.3	59.6	24.0	17.47	19.0	17.5	20.0	33.530	16.5	5.0	M10
HHR25	25	69.9	69.1	29.0	19.84	23.8	22.2	24.7	40.640	22.0	7.0	M12
HHR32	32	69.9	69.1	36.0	19.84	23.8	22.2	24.7	40.640	22.0	7.0	M12

Backing Plate	ød1
BOP10	10
BOP13	10
BOP16	10
BOP20	12
BOP25	14
BOP32	14

TO SUIT A 5MM PUNCH HEAD ONLY
BOP SOLD SEPARATELY

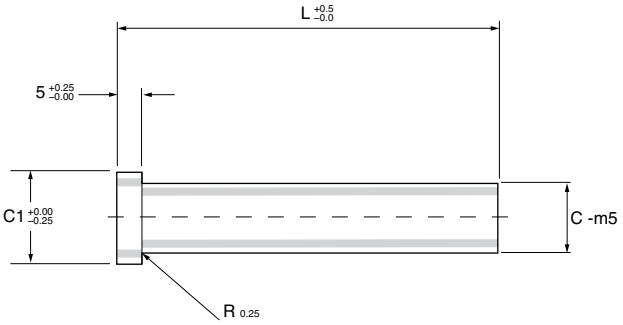
Example order:

12 off HHR13

12 off BOP13

ISO Punch Blanks

ISO 8020



Material M2

Heads 45 ± 5 RC

Shank 60/63 RC

Any alternative dimensions can be specified.

Symbol Numbers	Shank Dia. C	Head Dia C1	L Overall Length								
			50	56	60	63	71	80	90	100	125
PB4	4	7	*	*	*	*	*	*	*		
PB5	5	8	*	*	*	*	*	*	*	*	
PB6	6	9	*	*	*	*	*	*	*	*	
PB8	8	11	*	*	*	*	*	*	*	*	*
PB10	10	13	*	*	*	*	*	*	*	*	*
PB13	13	16	*	*	*	*	*	*	*	*	*
PB16	16	19	*	*	*	*	*	*	*	*	*
PB20	20	23	*	*	*	*	*	*	*	*	*
PB25	25	28	*	*	*	*	*	*	*	*	*
PB32	32	35	*	*	*	*	*	*	*	*	*

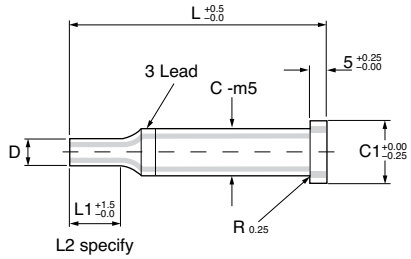
Alternative sizes on request

Example order:

6 off PB5 x 71

6 off PB16 x 80

ISO 8020



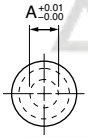
Material M2

Heads 45 + 5 RC

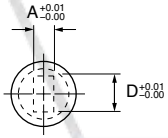
Shank 60/63 RC Any alternative dimensions can be specified.

Symbol Numbers					Shank Dia. C	Head Dia C1	Min Pierce D	L Overall Length									L1 std	L2 Alt
Round	Rect or Square	Oval	Flatted	Long Life				50	56	60	63	71	80	90	100	125		
PT4	PR4	PW4	PF4	PL4	4	7	2.3	*	*	*	*	*	*	*			16	SPECIFY
PT5	PR5	PW5	PF5	PL5	5	8	2.3	*	*	*	*	*	*	*	*		16	
PT6	PR6	PW6	PF6	PL6	6	9	2.3	*	*	*	*	*	*	*	*		16	
PT8	PR8	PW8	PF8	PL8	8	11	3.0	*	*	*	*	*	*	*	*		20	
PT10	PR10	PW10	PF10	PL10	10	13	4.8	*	*	*	*	*	*	*	*		20	
PT13	PR13	PW13	PF13	PL13	13	16	4.8	*	*	*	*	*	*	*	*		25	
PT16	PR16	PW16	PF16	PL16	16	19	5.5	*	*	*	*	*	*	*	*		25	
PT20	PR20	PW20	PF20	PL20	20	23	5.5	*	*	*	*	*	*	*	*		25	
PT25	PR25	PW25	PF25	PL25	25	28	5.5	*	*	*	*	*	*	*	*		25	
PT32	PR32	PW32	PF32	PL32	32	35	5.5	*	*	*	*	*	*	*			32	

Location flats if required see page 68, 69



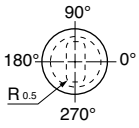
PT
ROUND



PR
RECTANGLE

PF
FLATTED

PW
OVAL



PL
LONG LIFE

Example order:

6 off PT5 x 3.08 71
6 off PW16 x 12 x 8 x 80 L2 = 25

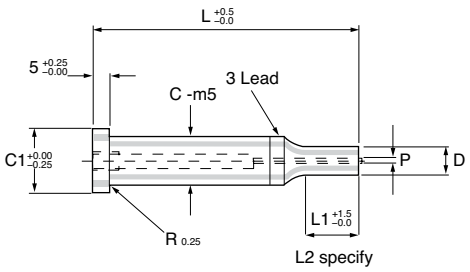
Non standard point lengths should be specified as

eg: PW16(35) 12 x 8 x 80

NS shapes available see pages 32, 33
For dowel & location flats see page 68

ISO Round / Shaped Ejector Punches

ISO 8020



Material M2

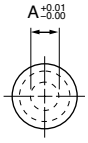
Heads 45 + 5 RC

Shank 60/63 RC

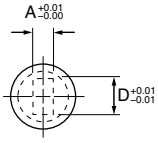
Any alternative dimensions can be specified.

Symbol Numbers					Shank Dia. C	Head Dia C1	Pin Dia P	Min Pierce D	L Overall Length								L1 std	L2 Alt
Round	Rect or Square	Oval	Flatted	Long Life					50	56	60	63	71	80	90	100		
PET5	PER5	PEW5	PEF5	PEL5	5	8	1.0	2.5	*	*	*	*	*	*	*	*	16	
PET6	PER6	PEW6	PEF6	PEL6	6	9	1.0	2.5	*	*	*	*	*	*	*	*	16	
PET8	PER8	PEW8	PEF8	PEL8	8	11	1.0	3.0	*	*	*	*	*	*	*	*	20	SPECIFY
PET10	PER10	PEW10	PEF10	PEL10	10	13	1.5	4.8	*	*	*	*	*	*	*	*	20	
PET13	PER13	PEW13	PEF13	PEL13	13	16	1.5	4.8	*	*	*	*	*	*	*	*	25	
PET16	PER16	PEW16	PEF16	PEL16	16	19	2.4	5.5	*	*	*	*	*	*	*	*	25	
PET20	PER20	PEW20	PEF20	PEL20	20	23	2.4	5.5	*	*	*	*	*	*	*	*	25	
PET25	PER25	PEW25	PEF25	PEL25	25	28	2.4	5.5	*	*	*	*	*	*	*	*	25	
PET32	PER32	PEW32	PEF32	PEL32	32	35	2.4	5.5	*	*	*	*	*	*	*	*	32	

Location flats if required see page 66



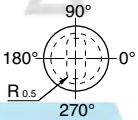
PET
ROUND



PER
RECTANGLE

PEF
FLATTED

PEW
OVAL



PEL
LONG LIFE

Example order:

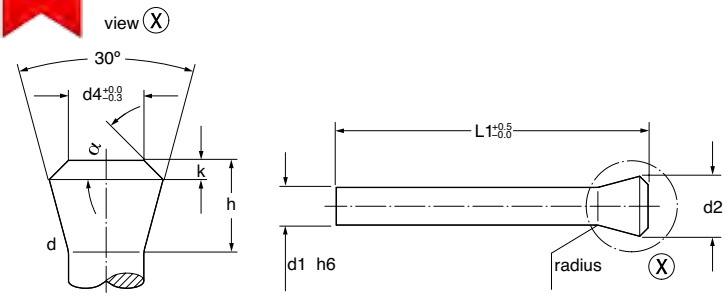
6 off PET5 x 3.08 71

Non standard point lengths should be specified as

6 off PEW16 L2 = 26 12 x 8 x 80
eg: PEW16 L2 = 35 12 x 8 x 80

NS shapes available see pages 32, 33
For dowel & location flats see page 68

NEW



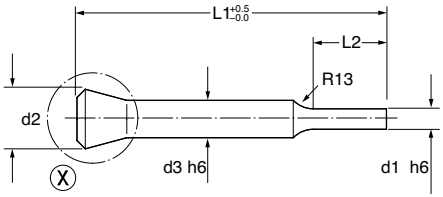
Ejectors available on request

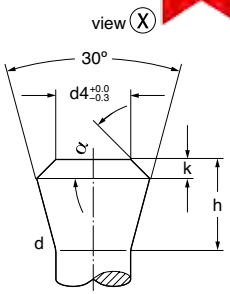
Symbol Code	d1	d2	d4	h	k	□ +/-1°	L1			
							71	80	100	120
TFF5.5	5.5	8.98	5.5	7.5	1	30	*	*	*	*
TFF6	6	9.75	6	8	1	28	*	*	*	*
TFF8	8	12.8	8	10	1	22.5	*	*	*	*
TFF9	9	14.4	9	11	1	20	*	*	*	*
TFF10	10	15.9	10	12	1	19	*	*	*	*
TFF12	12	18.7	12	14	1.5	24	*	*	*	*
TFF14	14	21.8	14	16	1.5	21	*	*	*	*
TFF16	16	24.6	16	18	2	25	*	*	*	*

Example order:
TFF 6 x 80 (6 off)

30° Headed Punches Pointed

NEW





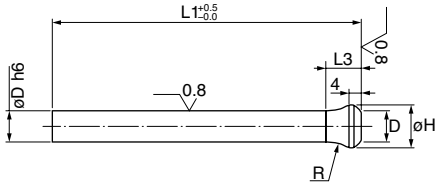
Ejectors available on request

Symbol Code	d3	d2	d4	h	k	α +/-1°	L1				L2		
							71	80	100	120	13	19	25
TFP5.5	5.5	8.98	5.5	7.5	1	30	*	*	*	*	*	*	*
TFP6	6	9.75	6	8	1	28	*	*	*	*	*	*	*
TFP8	8	12.8	8	10	1	22.5	*	*	*	*	*	*	*
TFP9	9	14.4	9	11	1	20	*	*	*	*	*	*	*
TFP10	10	15.9	10	12	1	19	*	*	*	*	*	*	*
TFP12	12	18.7	12	14	1.5	24	*	*	*	*	*	*	*
TFP14	14	21.8	14	16	1.5	21	*	*	*	*	*	*	*
TFP16	16	24.6	16	18	2	25	*	*	*	*	*	*	*

Example order:

TFP 6 (13) 4.2 x 100 (6 off)

NEW



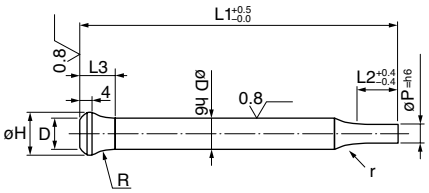
Ejectors available on request

Symbol Code	ØD	ØH	R	L3	L1			
					71	80	100	125
TFB5	5	7	10	8.36	*	*	*	*
TFB6	6	9	10	9.27	*	*	*	*
TFB8	8	11	12	9.81	*	*	*	*
TFB10	10	14	15	11.48	*	*	*	*
TFB13	13	17	15	11.48	*	*	*	*
TFB16	16	20	15	11.48	*	*	*	*
TFB20	20	25	15	12.29	*	*	*	*

Example order:
TFB 8 x 100 (6 off)

Dome Headed Punches Pointed

NEW

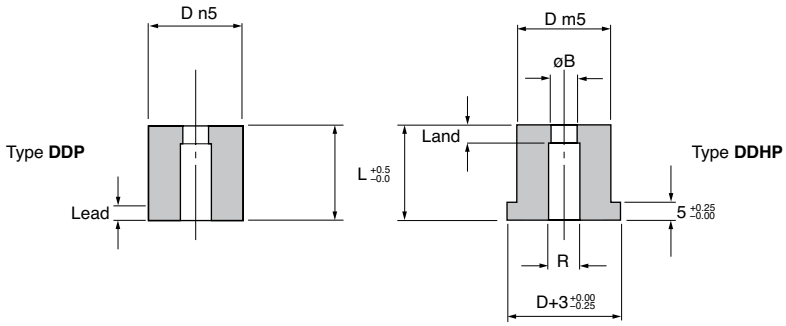


Ejectors available on request

Symbol Code	ØD	ØH	ØP	R	L3	L2					L1			
						10	13	16	20	25	71	80	100	125
TFS5	5	7	0.8 - 4.9	10	8.36	*	*	*	*	*	*	*	*	*
TFS6	6	9	1.5 - 5.9	10	9.27	*	*	*	*	*	*	*	*	*
TFS8	8	11	2.5 - 7.9	12	9.81	*	*	*	*	*	*	*	*	*
TFS10	10	14	4.5 - 9.9	15	11.48	*	*	*	*	*	*	*	*	*
TFS13	13	17	6.5 - 12.9	15	11.48		*	*	*	*	*	*	*	*
TFS16	16	20	9.5 - 15.9	15	11.48		*	*	*	*	*	*	*	*
TFS20	20	25	12.5 - 19.9	15	12.29			*	*	*	*	*	*	*

Example order:
TFS 6 (13) 4.2 x 100 (6 off)

ISO 8977



Symbol Numbers						L Overall Length							
Headless	Headed	D Dia m5	Land	R Max	ø B H8	19	20	25	28	30	32	35	40
DDP8	DDHP8	8	3	4.0	1.60 - 3.20	*	*	*	*	*	*	*	
DDP10	DDHP10	10	3	5.8	1.60 - 5.00	*	*	*	*	*	*	*	
DDP13	DDHP13	13	3	8.0	3.00 - 7.00	*	*	*	*	*	*	*	
DDP16	DDHP16	16	5	9.5	3.00 - 8.80	*	*	*	*	*	*	*	
DDP20	DDHP20	20	5	11.9	3.00 - 11.00	*	*	*	*	*	*	*	
DDP22	DDHP22	22	5	14.7	3.00 - 14.00	*	*	*	*	*	*	*	
DDP25	DDHP25	25	5	17.4	3.00 - 17.00	*	*	*	*	*	*	*	
DDP32	DDHP32	32	7	20.6	3.00 - 20.00	*	*	*	*	*	*	*	
DDP38	DDHP38	38	7	27.0	3.00 - 26.00	*	*	*	*	*	*	*	
DDP45	DDHP45	45	7	36.0	3.00 - 35.00		*	*	*	*	*	*	*
DDP50	DDHP50	50	7	41.0	3.00 - 40.00		*	*	*	*	*	*	*

For dowel & location flats, see page 68

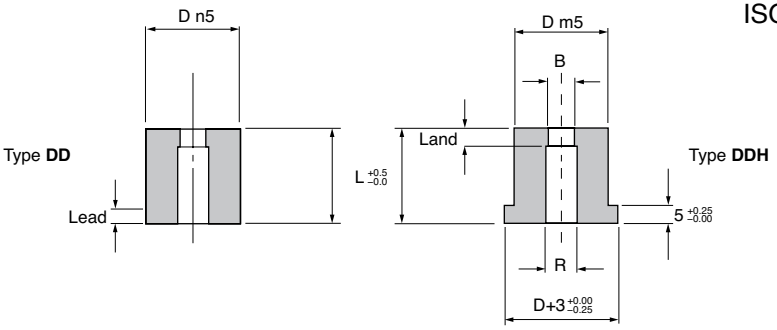
Example Order:

1 off DDP10 x 6.1 x 30

1 off DDHP10 x 6.1 x 30

Shaped Dies Counterbore Recess

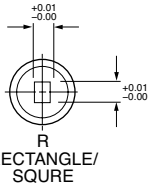
ISO 8977-1

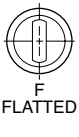


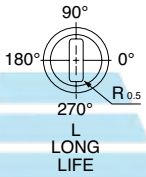
Symbol Numbers Headless				Headed				D	Land	R	L Overall Length							
Rect	Flatted	Oval	Long Life	Rect	Flatted	Oval	Long Life	Dia		Max	19	20	25	28	30	32	35	40
DDR8	DDF8	DDW8	DDL8	DDHR8	DDHF8	DDHW8	DDHL8	8	3	3.5	*	*	*	*	*	*	*	
DDR10	DDF10	DDW10	DDL10	DDHR10	DDHF10	DDHW10	DDHL10	10	3	5	*	*	*	*	*	*	*	
DDR13	DDF13	DDW13	DDL13	DDHR13	DDHF13	DDHW13	DDHL13	13	3	7	*	*	*	*	*	*	*	
DDR16	DDF16	DDW16	DDL16	DDHR16	DDHF16	DDHW16	DDHL16	16	5	9	*	*	*	*	*	*	*	*
DDR20	DDF20	DDW20	DDL20	DDHR20	DDHF20	DDHW20	DDHL20	20	5	11	*	*	*	*	*	*	*	*
DDR25	DDF25	DDW25	DDL25	DDHR25	DDHF25	DDHW25	DDHL25	25	5	16	*	*	*	*	*	*	*	*
DDR32	DDF32	DDW32	DDL32	DDHR32	DDHF32	DDHW32	DDHL32	32	7	20	*	*	*	*	*	*	*	*
DDR38	DDF38	DDW38	DDL38	DDHR38	DDHF38	DDHW38	DDHL38	38	7	27	*	*	*	*	*	*	*	*
DDR45	DDF45	DDW45	DDL45	DDHR45	DDHF45	DDHW45	DDHL45	45	7	36			*	*	*	*	*	*
DDR50	DDF50	DDW50	DDL50	DDHR50	DDHF50	DDHW50	DDHL50	50	7	41			*	*	*	*	*	*

For dowel & location flats, see page 68

NS shapes available, see pages 32, 33







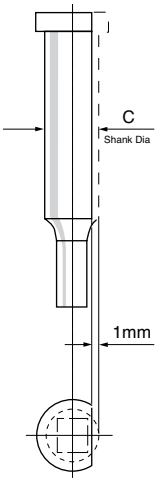
Example Order:

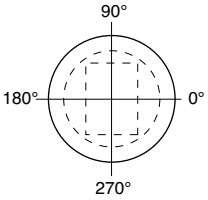
1 off DDR10 x 6.1 x 5.1 x 20

1 off DDHW20 x 9.1 x 5.2 x 32

Punches

Code BF1mm



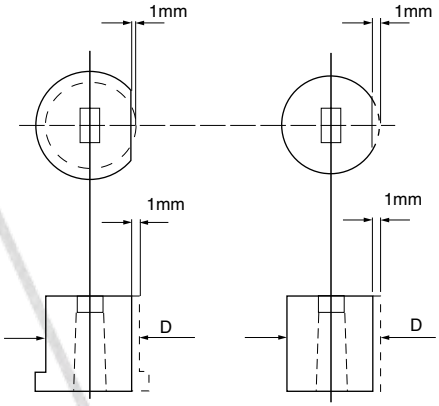


Body flats supplied as standard at 0° unless otherwise specified

Body Flat = C - 1mm

Dies & Stripper Bushes

Code BF1mm



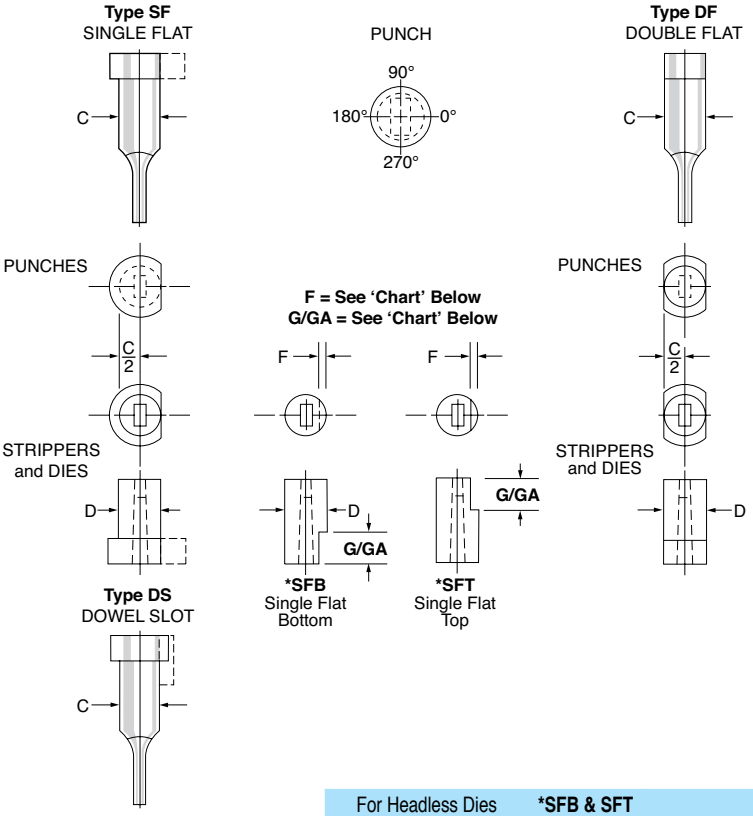
Example Order:-
MR10D 4 x 8 x 90 BF1

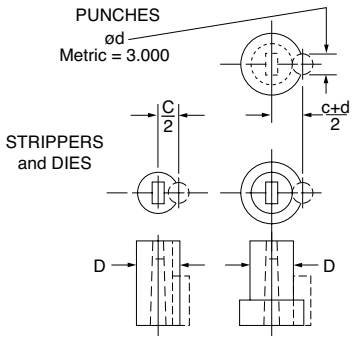
Alternative
BF1 = 1mm (standard)
BF* = Specify

Body Flat = D - 1 mm

Example Order:-
MDW20 8 x 4 x 25 BF1

Standard Locations





For Headless Dies	*SFB & SFT Metric			
Shank Dia.	5–8	10–16	18–25	28+
F	0.50	1.00	1.50	2.00
G	6.35	6.35	6.35	6.35
GA	Alternative please specify			

Example order:

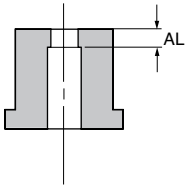
MW10B 8.0 x 4.0 60SF
MDW16 4.3 x 6.8 25DS

Standard Dowel Slot Alternatives

DS3 = 3mm Dowel
DS4 = 4mm Dowel
DS5 = 5mm Dowel
DS6 = 6mm Dowel

Locations Supplied as Standard at 0˚ unless otherwise specified.

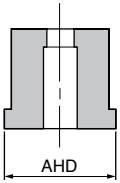
Die Bushes Alternative Land



Specify Land Required - AL = *

Example order:
MDHP10 x 6.1 x 30 AL = 5.0
MDHT10 x 6.1 x 30 AL = 8.0
MDHW32 x 15 x 20 x 30 AL = 7.0

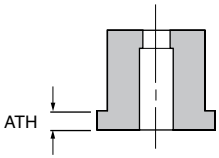
Die Bushes Alternative Head Diameter



Specify Head DIA Required - AHD = *

Example order:
MDHP10 x 6.1 x 30 AHD = 16.0
MDHT10 x 6.1 x 30 AHD = 14.0
MDHW32 x 15 x 20 x 30 AHD = 33.0

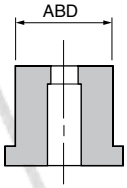
Die Bushes Alternative Thickness Head



Specify Head Thick Required - ATH = *

Example order:
MDHP10 x 6.1 x 30 ATH = 8.0
MDHT10 x 6.1 x 30 ATH = 8.0
MDHW32 x 15 x 20 x 30 ATH = 15.0

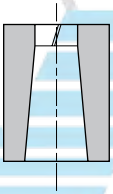
Die Bushes Alternative Body Diameter



Specify Body DIA Required = * ABD

Example order:
MDHP11ABD x 6.1 x 30
MDHT11ABD x 6.1 x 30
MDHW33ABD x 15 x 20 x 30

Slug Control * Advise material thickness and die clearance per side at time of order

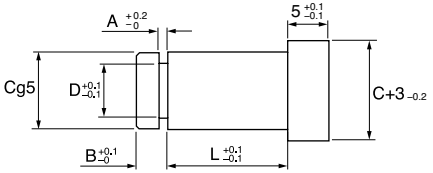


Specify Slug Control Required = * ASG

Example order:
MDHP11ASG x 6.1 x 30
MDHP11ASG x 6.1 x 30
MDHW33ASG x 15 x 20 x 30

Non Standard Strip Lifters

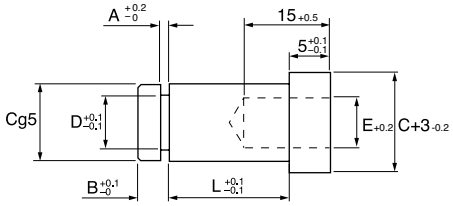
Type "A"



Symbol No.	C	A 0.5 INCREMENTS	D	B	L
SLXA6	6	2.0–3.0	3.6	7	SPECIFY "L" LENGTH
SLXA8	8	2.0–3.0	5.0	7	
SLXA10	10	2.0–3.0	6.0	7	
SLXA13	13	2.0–4.0	7.0	7	
SLXA16	16	2.0–6.0	8.0	12	
SLXA20	20	3.0–6.0	10.0	12	

Example order: 10 off SLA8 x 2.0 x 40

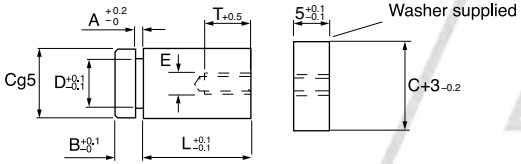
Type "B"



Symbol No.	C	A 0.5 INCREMENTS	D	B	E	L
SLXB16	16	2.0–6.0	8.0	12	10	SPECIFY "L" LENGTH
SLXB20	20	3.0–6.0	10.0	12	12.5	
SLXB22	22	3.0–6.0	12.0	12	16	

Example order: 6 off SLB16 x 2.0 x 40

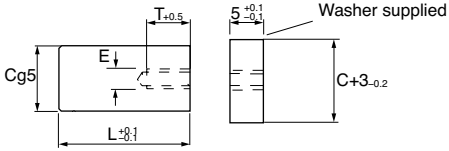
Type "C"



Symbol No.	C	A 0.5 INCREMENTS	D	B	E	T	L
SLXC8	8	2.0–3.0	5.0	7	M4	8	SPECIFY "L" LENGTH
SLXC10	10	2.0–3.0	6.0	7	M4		
SLXC13	13	2.0–4.0	7.0	7	M6	12	
SLXC16	16	2.0–6.0	8.0	12	M6		
SLXC20	20	3.0–6.0	10.0	12	M6		

Example order: 8 off SLC8 x 2.0 x 40

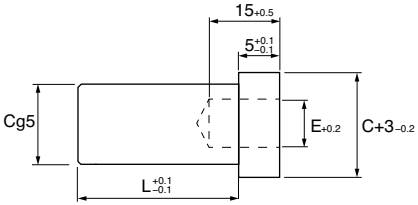
Type “D”



Symbol No.	C	E	T	L
SLD8	8	M4	8	SPECIFY “L” LENGTH
SLD10	10	M4		
SLD13	13	M6	12	
SLD16	16	M6		
SLD20	20	M6		

Example order: 8 off x SLD8 x 40

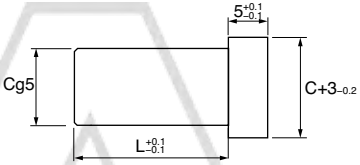
Type “E”



Symbol No.	C	E	L
SLE16	16	10	SPECIFY “L” LENGTH
SLE20	20	10	
SLE22	22	10	

Example order: 12 off x SLE16 x 40

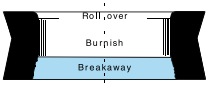
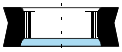
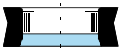
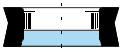
Type “F”



Symbol No.	C	L
SLF6	6	SPECIFY “L” LENGTH
SLF8	8	
SLF10	10	
SLF13	13	
SLF16	16	
SLF20	20	
SLF22	22	

Example order: 4 off x SLF16 x 40

Punch & Die Clearances

Hole Type & Variation Dependant on Clearance	Tight Clearance	Normal Clearance	Optimum Clearance	Maximum Clearance (Extended tool life)
				
			Use with ejector punches	
Aluminium, Hard	1 - 2%	4 - 8%	12 - 15%	16 - 20%
Aluminium, Soft	1 - 2%	10 - 12%	18 - 20%	25 - 28%
Brass, 1/2 Hard	1 - 3%	4 - 6%	12 - 16%	16 - 20%
Brass, Annealed	3 - 5%	6 - 10%	12 - 16%	18 - 22%
Bronze, 1/2 Hard	1 - 3%	7 - 10%	20 - 24%	25 - 27%
Copper, 1/2 Hard	2 - 4%	6 - 10%	12 - 16%	18 - 22%
Copper, Annealed	1 - 2%	4 - 8%	10 - 14%	16 - 18%
Magnesium	1 - 2%	3 - 6%	7 - 9%	10 - 14%
Stainless, Annealed	2 - 4%	6 - 10%	18 - 22%	25 - 27%
Steel, High Carbon	5 - 10%	22 - 25%	26 - 32%	33 - 36%
Steel, Low Carbon	2 - 4%	10 - 14%	16 - 20%	16 - 23%

All above clearances are total % allowance of material thickness

Formula for Calculating Blanking Pressure.

Blanking Pressure in tons: P = LTS÷1000kgs

L = Length of Cut
T = Thickness of material
S = Shear strength of material

Stripping Pressure

Stripping pressure will not normally exceed 10% of Blanking pressure under normal conditions.

	Material Group	High Carbon Steel Hard Bronze Spring Steel	Stainless Steel Medium Carbon Steel	Low Carbon Steel Hard Aluminium Hard Brass	Soft Brass Aluminium Copper
Shear Strength	lb/in$_2$ kg/cm$_2$	100,000 - 200,000 7000 - 14000	60,000 - 100,000 4200 - 7000	40,000 - 60,000 2800 - 4200	30,000 - 40,000 2100 - 2800

These are guide lines only. A W Precision Ltd accepts no liability.

	External dimensions (shafts) Nominal dimensions in .m = 1/1000 mm							Internal dimensions (bores) Nominal dimensions in .m = 1/1000 mm						
Symbol	1 up to 3	over 3 up to 6	over 6 up to 10	over 10 up to 18	over 18 up to 30	over 30 up to 50	Symbol	1 up to 3	over 3 up to 6	over 6 up to 10	over 10 up to 18	over 18 up to 30	over 30 up to 50
e 8	−14 −28	−20 −38	−25 −47	−32 −59	−40 −73	−50 −89	E 8	+28 +14	+38 +20	+47 +25	+59 +32	+73 +40	+89 +50
g 5	−2 −6	−4 −9	−5 −11	−6 −14	−7 −16	−9 −20	F 7	+16 +6	+22 +10	+28 +13	+34 +16	+41 +20	+50 +25
g 6	−2 −8	−4 −12	−5 −14	−6 −17	−7 −20	−9 −25	G 6	+8 +2	+12 +4	+14 +5	+17 +6	+20 +7	+25 +9
h 3	0 −2	0 −2,5	0 −2,5	0 −3	0 −4	0 −4	G 7	+12 +2	+16 +4	+20 +5	+24 +6	+28 +7	+34 +9
h 5	0 −4	0 −5	0 −6	0 −8	0 −9	0 −11	H 5	+4 0	+5 0	+6 0	+8 0	+9 0	+11 0
h 6	0 −6	0 −8	0 −9	0 −11	0 −13	0 −16	H 6	+6 0	+8 0	+9 0	+11 0	+13 0	+16 0
h 8	0 −14	0 −18	0 −22	0 −27	0 −33	0 −39	H 7	+10 0	+12 0	+15 0	+18 0	+21 0	+25 0
h 9	0 −25	0 −30	0 −36	0 −43	0 −52	0 −62	H 8	+14 0	+18 0	+22 0	+27 0	+33 0	+39 0
h 10	0 −40	0 −48	0 −58	0 −70	0 −84	0 −100	H 9	+25 0	+30 0	+36 0	+43 0	+52 0	+62 0
h11	0 −60	0 −75	0 −90	0 −110	0 −130	0 −160	H 10	+40 0	+48 0	+58 0	+70 0	+84 0	+100 0
j 6	+4 −2	+6 −2	+7 −2	+8 −3	+9 −4	+11 −5	H 11	+60 0	+75 0	+90 0	+106 0	+130 0	+160 0
js 6	+3 −3	+4 −4	+4,5 −4,5	+5,5 −5,5	+6,5 −6,5	+8 −8	H 12	+100 0	+120 0	+150 0	+180 0	+210 0	+250 0
js 7	+5 −5	+6 −6	+7,5 −7,5	+9 −9	+10,5 −10,5	+12,5 −12,5	J 6	+2 −4	+5 −3	+5 −4	+6 −5	+8 −5	+10 −6
js 8	+7 −7	+9 −9	+11 −11	+13,5 −13,5	+16,5 −16,5	+19,5 −19,5	J 7	+4 −6	+6 −6	+8 −7	+10 −8	+12 −9	+14 −11
js 9	+12,5 −12,5	+15 −15	+18 −18	+21,5 −21,5	+26 −26	+31 −31	JS 5	+2 −2	+2,5 −2,5	+3 −3	+4 −4	+4,5 −4,5	+5,5 −5,5
js 13	+70 −70	+90 −90	+110 −110	+135 −135	+165 −165	+195 −195	K 6	0 −6	+2 −6	+2 −7	+2 −9	+2 −11	+3 −13
js 14	+125 −125	+150 −150	+180 −180	+215 −215	+260 −260	+310 −310	K 7	0 −10	+3 −9	+5 −10	+6 −12	+6 −15	+7 −18
k 6	+6 0	+9 +1	+10 +1	+12 +1	+15 +2	+18 +2	K 8	0 −14	+5 −13	+6 −16	+8 −19	+10 −23	+12 −27
k7	+10 0	+13 +1	+16 +1	+19 +1	+23 +2	+27 +2	M 6	−2 −8	−1 −9	−3 −12	−4 −15	−4 −17	−4 −20
m 4	+5 +2	+8 +4	+10 +6	+12 +7	+14 +8	+16 +9	M 7	−2 −62	0 −12	0 −15	0 −18	0 −21	0 −25
m 5	+6 +2	+9 +4	+12 +6	+15 +7	+17 +8	+20 +9	N 7	−4 −14	−4 −16	−4 −19	−5 −23	−7 −28	−8 −33
n 6	+10 +4	+16 +8	+19 +10	+23 +12	+28 +15	+33 +17	P 7	−6 −16	−8 −20	−9 −24	−11 −29	−14 −35	−17 −42

As an ongoing development and expansion of our product range we reserve the right to amend this catalogue without notice. 2012

Materials & Coatings

Our products are available in.

Unless specified AW Precision reserve the right to use either D2 or **HSS / M2**

A2 -1.2363 Tough, resistance to abrasion, an excellent steel for general punch & die applications

D2 -1.2379 A good quality tool steel for punching and forming

M2 -1.3343 For applications where high speed piercing, highly abrasive materials such as stainless and other special steels. Our preferred material choice.

PM A special high speed steel manufactured by a powder metallurgy method. A combination of high wear resistance and toughness make it a good choice for improved quality

Powder Tool
Steel - ASP, CPM, Vanadis

Punch Heads Drawn 45hrc - 55hrc
Please specify your material choice

BENEFITS OF RECOMMENDED COATINGS

- Longer service life & higher press stroke rates
- Decreased down time to replace parts
- Less lubricants, thus making them more environmentally friendly
- Prevention of cold welding
- Minimises friction thus requiring less stripping pressure

Coating Material	Microhardness* (HV 0.05)	Friction coefficient* against steel (dry)	Max. service temperature (°C)	Coating colour
TiN (Balinit ® A)	2,300	0.4	600	gold-yellow
TiCN (Balinit ® B)	3,000	0.4	400	blue-grey
CrN (Balinit ® D)	1,750	0.5	700	silver-grey
TiAlN (Balinit ® Futura Nano)	3,300	0.30 - 0.35	900	violet-grey
DLC (a-C:H) (Balinit ® Triton)	2,500	0.5	350	black-grey
AlCrN (Balinit ® Alcrona Pro)	3,200	0.35	1100	light-grey

Example Order:

MT6B 5.5 x 70 HSS TIN

Other coatings available contact sales for advice.

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2008

This is to certify that:

A W Precision Ltd
Cosford Lane
Swift Valley Industrial Estate
Rugby
CV21 1QN
United Kingdom

Holds Certificate No: **Q 09086**
and operates a Quality Management System which complies with the requirements of ISO 9001:2008 for the following scope:

The manufacture and supply of press tooling. Sub-contract machining services.

For and on behalf of BSI:

Chair, Certification Body Management Committee.

Originally registered: **01/12/1989** Latest Issue: **14/11/2011** Expiry Date: **10/12/2014**

Page: 1 of 1

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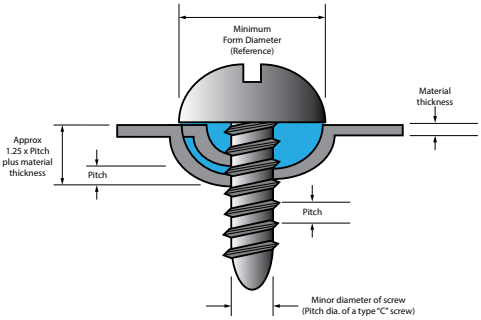
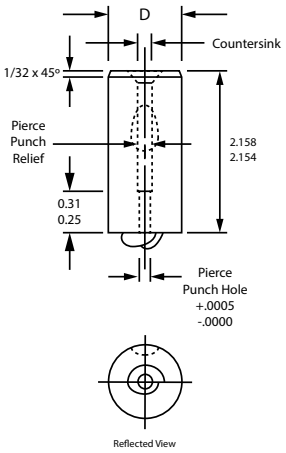
Thread Form Punch & Die

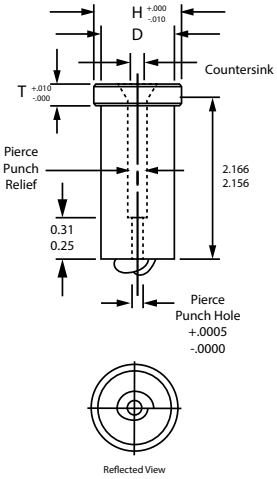


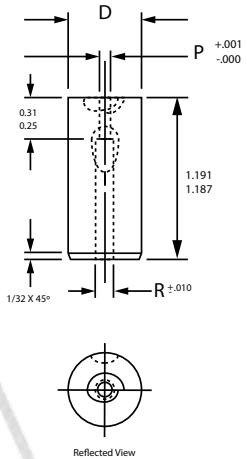
Thread Size	Material Thickness	Pitch (Ref.)	Max. Minor Dia. Of Screw	Minimum Form Dia,
TYPE "A" SCREWS				
6 - 18	.020 - .030	.0556	.102	.276
8 - 15	.025 - .040	.0667	.123	.306
10 - 12	.030 - .045	.0833	.133	.352
12 - 11	.035 - .054	.0909	.162	.406
14 - 10	.038 - .060	.1000	.185	.442
20 - 9	.050 - .060	.1111	.234	.556
TYPE "B" AND "A" SCREWS				
6 - 20	.020 - .030	.0500	.104	.208
8 - 18	.020 - .030	.0556	.122	.296
10 - 16	.020 - .030	.0625	.141	.374
12 - 14	.030 - .040	.0714	.164	.400
1/4 - 14	.030 - .040	.0714	.192	.400
5/16 - 12	.030 - .040	.0833	.244	.552
TYPE "C" SCREWS (MACHINE SCREWS)				
6 - 32	.010 - .020	.0313	.118	.290
8 - 32	.010 - .020	.0313	.144	.324
10 - 24	.015 - .025	.0417	.163	.370
10 - 32	.010 - .020	.0313	.170	.348
1/4 - 20	.020 - .030	.0500	.218	.478
5/16 - 18	.020 - .030	.0556	.276	.490

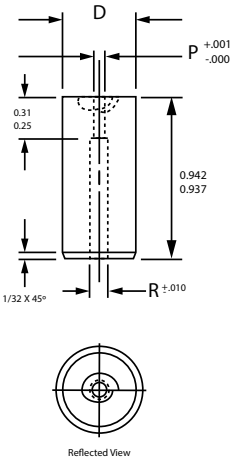
Metric Conversion

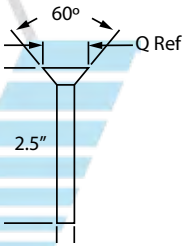
All screw sizes are shown in inch diemensions. Most metric sheet metal screws, however, are standard inch sizes converted into millimeter dimensions. If screws cannot be found in metric sizes, the equivalent inch sizes can be used.


D
Countersink
1/32 x 45°
Pierce
Punch
Relief
2.158
2.154
0.31
0.25
Pierce
Punch Hole
+.0005
-.0000
Reflected View


H +.000 -.010
D
Countersink
T +.010 -.000
Pierce
Punch
Relief
2.166
2.156
0.31
0.25
Pierce
Punch Hole
+.0005
-.0000
Reflected View


D
P +.001 -.000
0.31
0.25
1.191
1.187
1/32 X 45°
R ±.010
Reflected View


D
P +.001 -.000
0.31
0.25
0.942
0.937
1/32 X 45°
R ±.010
Reflected View


60°
Q Ref
2.5″

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