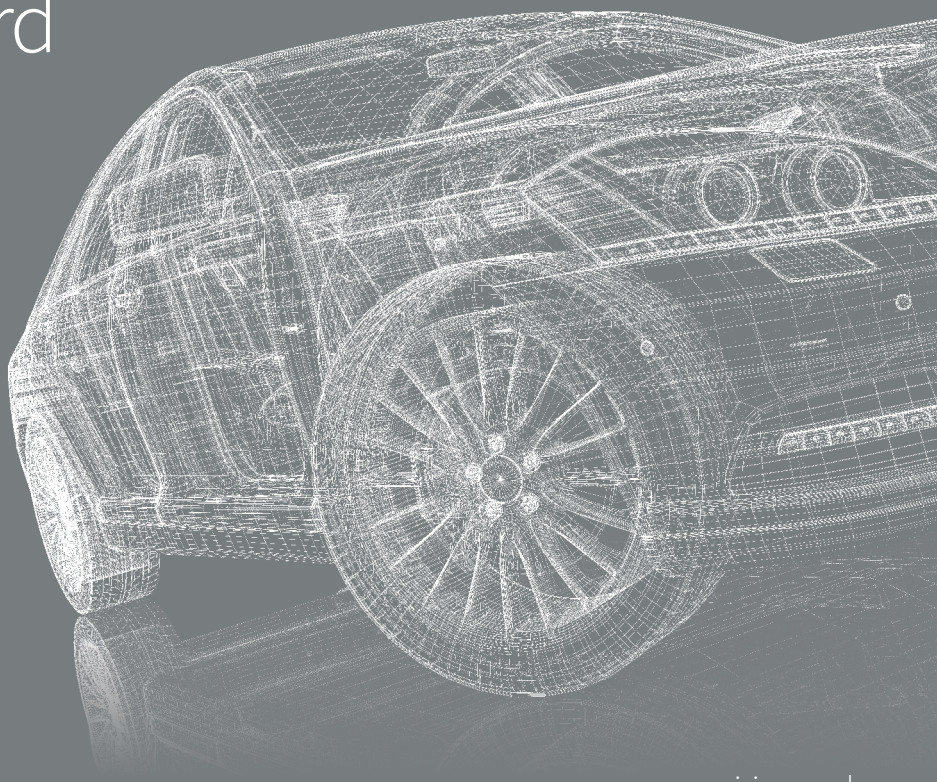
AW PRECISION

Special is our standard



ISO 9001:2015 Quality Management

Certificate No. Q09086

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MADE IN BRITAIN

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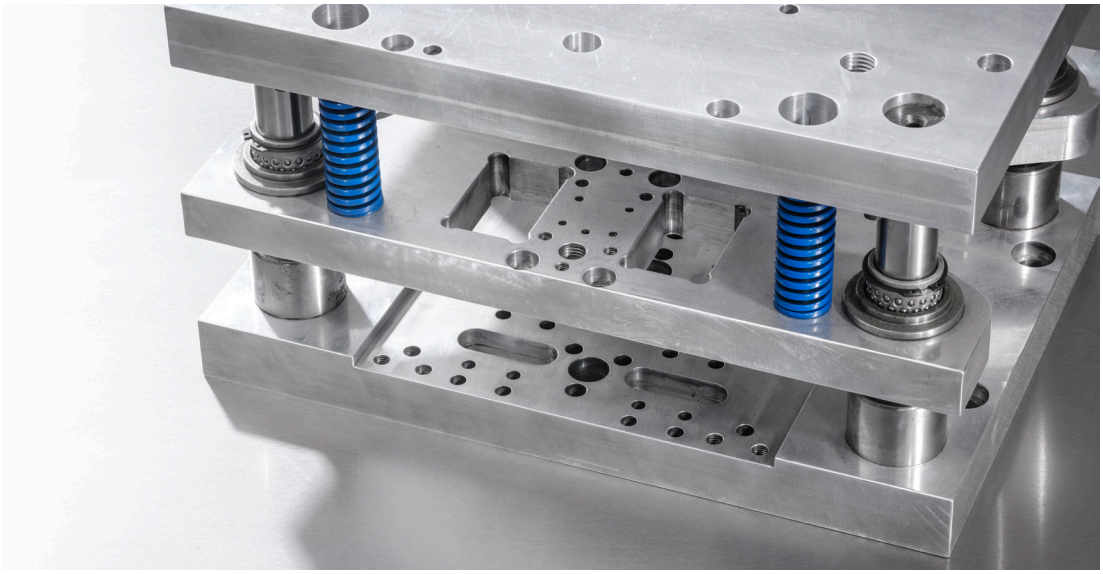

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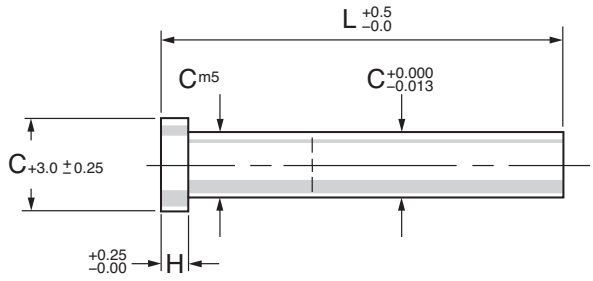


PRODUCT INFORMATION

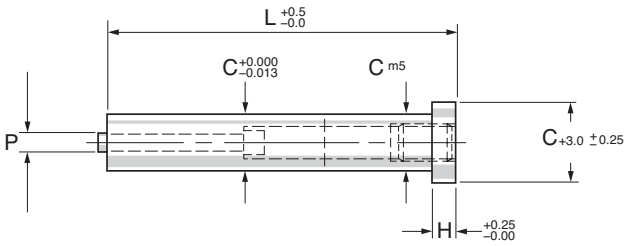
L = Standard Overall Lengths 50 – 125 in 5mm increments.
Any alternative dimensions to the above can be specified.

Example order:
⌖ 12 off M10 x 70 lg
Heads 40/55 HRC (only on punches 50 mm long and above).

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

HA = 5mm Head Please Specify

Ejector Punch Blanks



PRODUCT INFORMATION

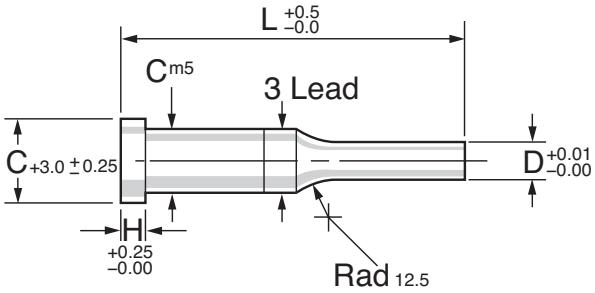
L = Standard Overall Lengths 50 – 125 in 5mm increments.
Any alternative dimensions to the above can be specified.

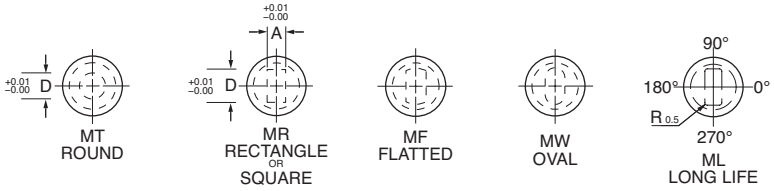
Example order:
⌖ 6 off MPE10 x 70 lg
Ejector components see page XX. Heads 40/55 HRC.

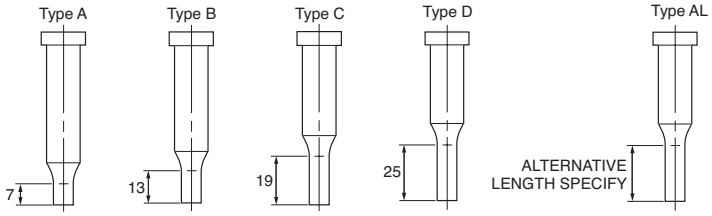
Symbol Numbers	Shank Dia. C	Standard Head H	Alt. Head HA	Pin Dia. P
MPE1	5	4.2	*5.0	0.5
MPE5	5	4.2	*5.0	1.0
MPE6	6	5.0		1.0
MPE7	7	5.0		1.0
MPE8	8	5.0		1.0
MPE10	10	5.0		1.5
MPE12	12	5.0		1.5
MPE13	13	5.0		1.5
MPE16	16	5.0		2.4
MPE18	18	5.0		2.4
MPE19	19	6.4	*5.0	2.4
MPE20	20	6.4	*5.0	2.4
MPE22	22	6.4	*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

HA = 5mm Head Please Specify

Standard Punches







PRODUCT INFORMATION

L = Standard Overall Lengths, 50-125mm in 5mm increments. Headless Punches available. Any alternative dimensions to the above can be specified.

Example order:

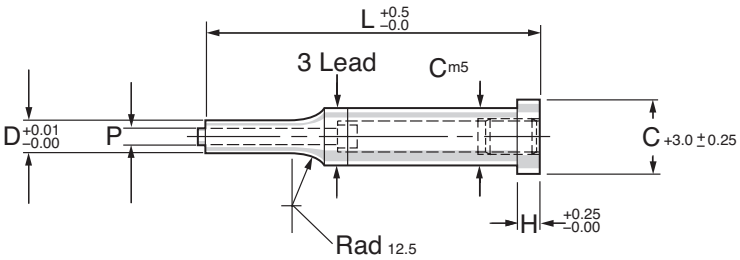
- 6 off MT6C 3.5 60 lg
- 6 off MR28D 20.0 x 14.60 80 lg

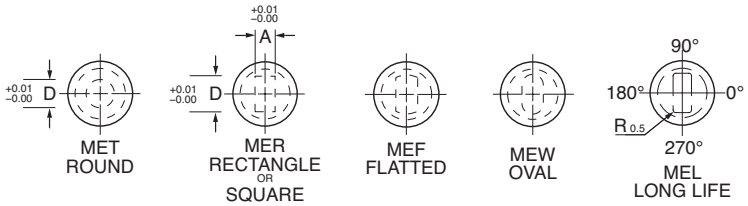
- Location Flats if required see page X.
- NS shapes available see pages X-X.
- Heads 40/55 HRC (only on punches 50mm long and above).
- Maximum form length on small sizes.

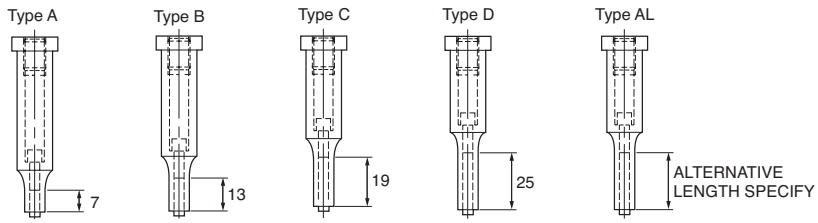
SYMBOL NUMBERS								
Round	Rect or Square	Flatted	Oval	Long Life	Shank Dia C	Standard Head H	Alt. Head *HA	Min. Piercing D
MT3	MR3	MF3	MW3	ML3	3	4.2	*5.0	1.5
MT4	MR4	MF4	MW4	ML4	4	4.2	*5.0	1.5
MT5	MR5	MF5	MW5	ML5	5	4.2	*5.0	1.5
MT6	MR6	MF6	MW6	ML6	6	5.0		1.5
MT7	MR7	MF7	MW7	ML7	7	5.0		1.5
MT8	MR8	MF8	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

**HA = 5mm Head Please Specify*

Standard Ejector Punches







PRODUCT INFORMATION

L = Standard Overall Lengths 50-100mm in 5mm increments.
Any alternative dimensions to the above can be specified.

Example order:

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

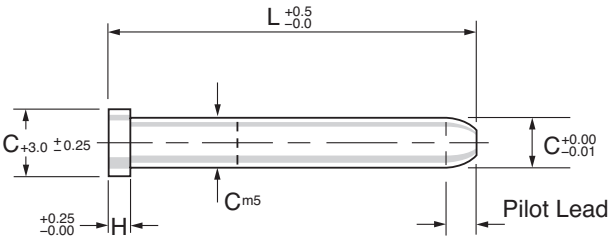
- Location Flats if required see page X.
- Ejector components see page X.
- NS shapes available see pages X-X.
- Heads 40/55 HRC (only on punches 50mm long and above).
- Maximum form length on small sizes.

?

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

**HA = 5mm Head Please Specify*

Parallel Pilots



PRODUCT INFORMATION

L = Overall lengths up to 125mm
Any alternative dimensions can be specified.

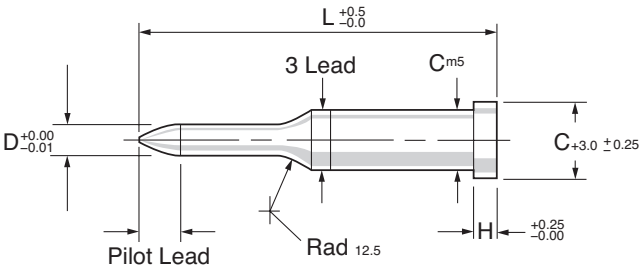
Example order:
⌖ 10 off MPP16 x 90 lg
Heads 40/55 HRC.

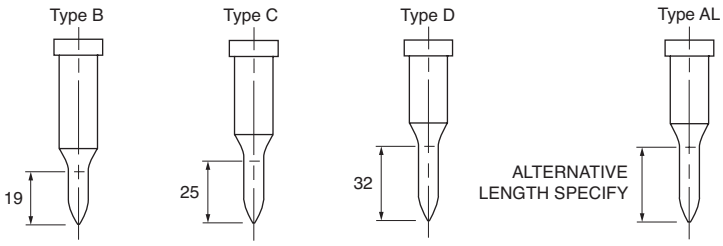
Symbol No.	Shank Dia. C	Standard Head H	Alt. Head HA
MPP3	3	4.2	*5.0
MPP4	4	4.2	*5.0
MPP5	5	4.2	*5.0
MPP6	6	5.0	
MPP7	7	5.0	
MPP8	8	5.0	
MPP10	10	5.0	
MPP12	12	5.0	
MPP13	13	5.0	
MPP14	14	5.0	
MPP16	16	5.0	
MPP18	18	5.0	
MPP19	19	6.4	*5.0
MPP20	20	6.4	*5.0
MPP22	22	6.4	*5.0
MPP25	25	6.4	*5.0
MPP28	28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

HA = 5mm Head Please Specify

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

Pointed Pilot Punches





PRODUCT INFORMATION

L = Overall lengths up to 125mm.
Any alternative dimensions can be specified.

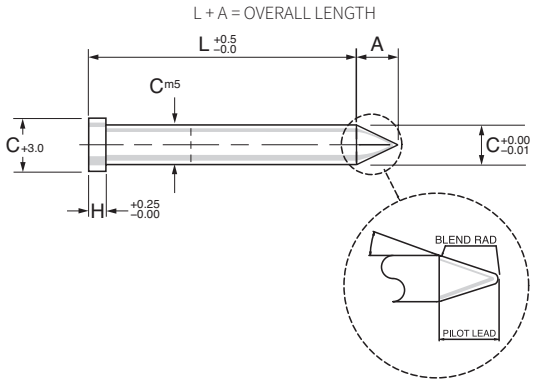
Example order:
⊕ 12 off MP18C 12.0 90 lg
Heads 40/55 HRC.

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

**HA = 5mm Head Please Specify*

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

Angular Parallel Pilot Punches



PRODUCT INFORMATION

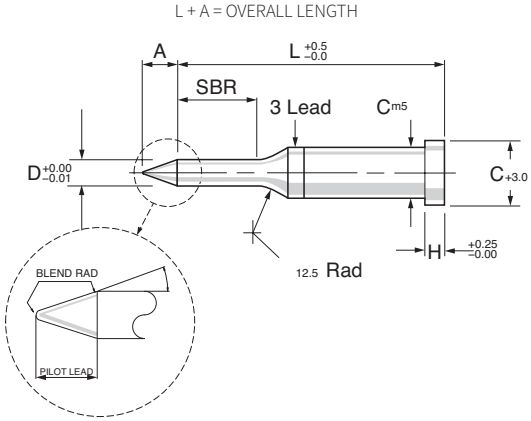
L = Overall lengths up to 125.
Any alternative dimensions can be specified.

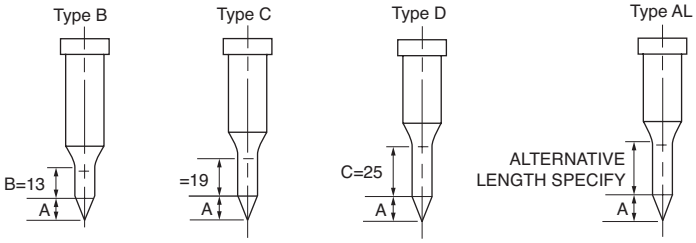
Example order:
⌖ 6 off AMPP10 x 100 L = 100 + A
Heads 40/55 HRC.

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

HA = 5mm Head Please Specify

Angular Pilot Punches





PRODUCT INFORMATION

L = Overall lengths up to 125.
Any alternative dimensions can be specified.

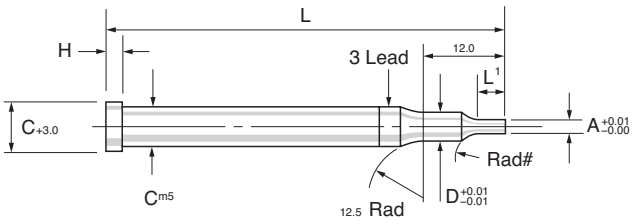
Example order:
- AMP16B 4 off 13.5 x 100
- L = 100 + A

Heads 40/55 HRC.

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

HA = 5mm Head Please Specify

Plunged Hole Punches



PRODUCT INFORMATION

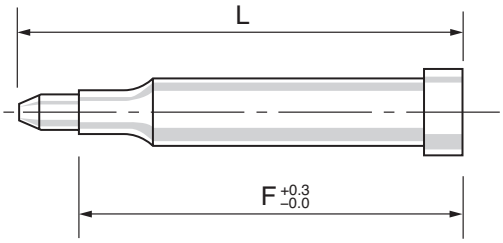
Specify if Angle required instead of Radius.
Any alternative dimensions to the above can be specified.

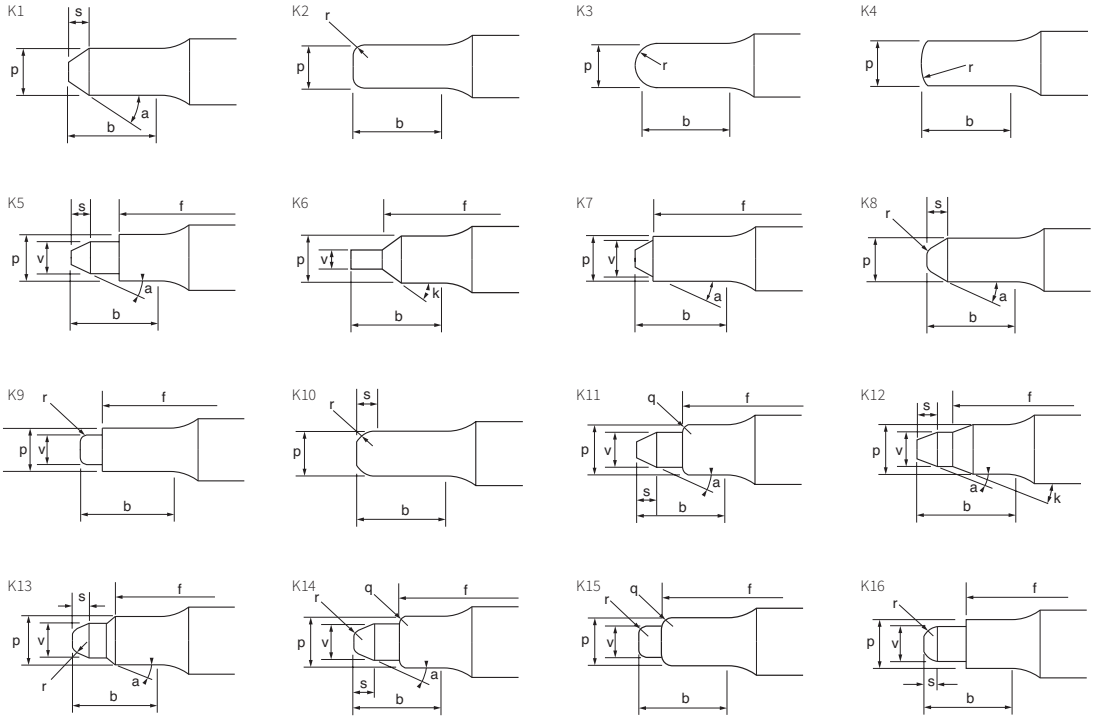
Example order:
⌖ 6 off PH4 75 lg
Heads 40/55 HRC.

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	SPECIFY
PH2.5	M2.5	1.5	3.0	2.1	2.0	4.2	*5.0	
PH3	M3	1.8	3.0	2.55	2.5	4.2	*5.0	
PH4	M4	2.3	4.0	3.35	3.0	4.2	*5.0	
PH5	M5	3.0	5.0	4.25	3.0	4.2	*5.0	
PH6	M6	3.5	6.0	5.1	3.0	5.0		
PH8	M8	4.9	8.0	6.85	4.0	5.0		

**HA = 5mm Head Please Specify*

Standard Drawing Punches





PRODUCT INFORMATION

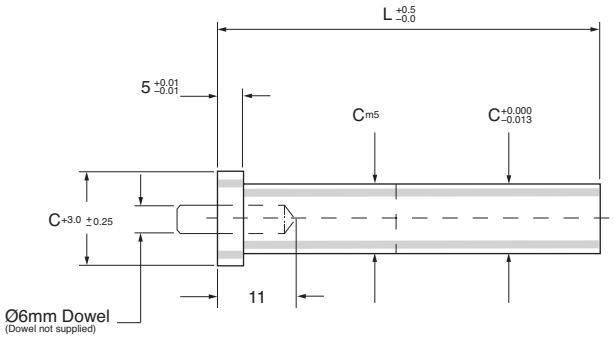
To order specify:

- Symbol Numbers
- Dimensions
- Punch Blank required ?
- Overall Length
- See pages X, X 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



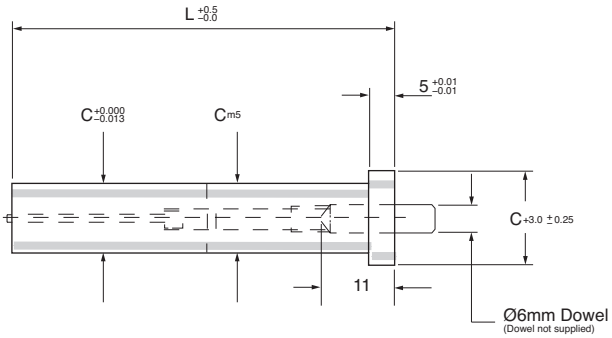
PRODUCT INFORMATION

Any alternative dimensions can be specified.

Example order:
- 6 off LM10 x 80

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

Standard Centre Dowel Ejector Punch Blanks



PRODUCT INFORMATION

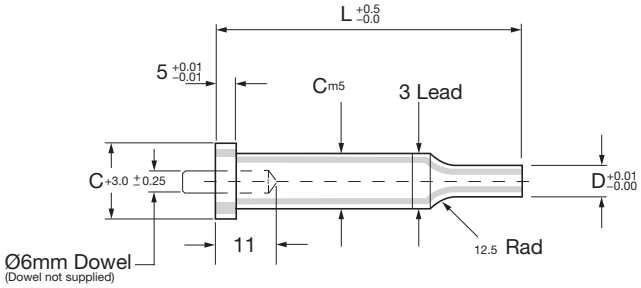
Any alternative dimensions can be specified.

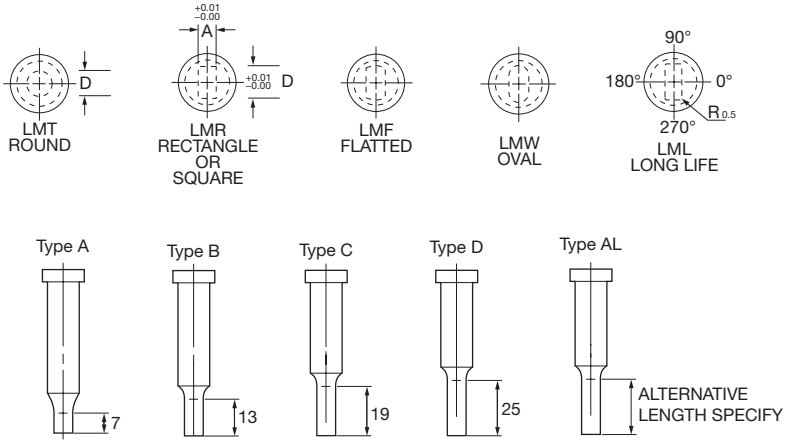
Example order:

- 6 off LME10 x 80

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

Standard Centre Dowel Punches





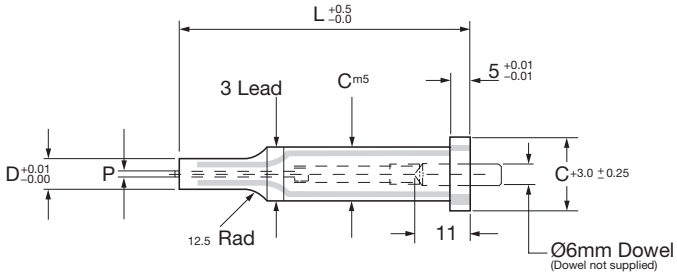
PRODUCT INFORMATION

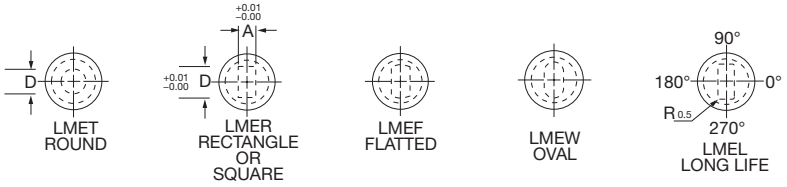
L = Overall Standard Lengths 50 up to 125 in 5mm increments.
Any alternative dimensions can be specified.

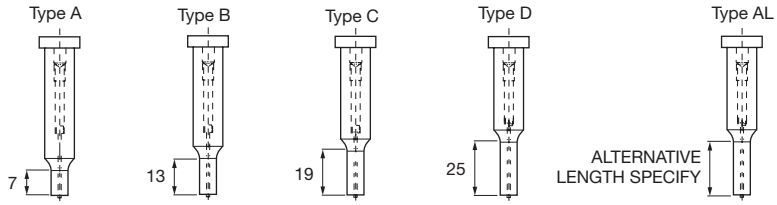
Example order:
⊕ 6 off LMR32D x 20 x 14.6 x 80
Alternative shapes. See pages X, X.
Location flats if required see page X. ?

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

Standard Centre Dowel Ejector Punches







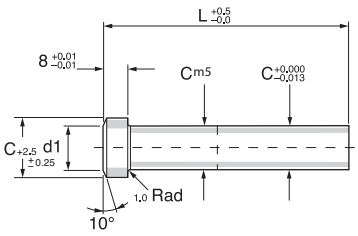
PRODUCT INFORMATION

L = Overall Standard Lengths 50 up to 125 in 5mm increments.
Any alternative dimensions can be specified.

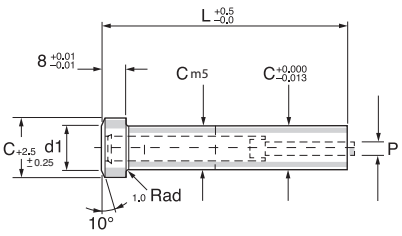
Example order:
⊕ 6 off LMR32D x 20 x 14.6 x 80
NS shapes. See pages X, X.
Location flats if required see page X. ?

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

Heavy Duty Punch Blanks



HM



HEM

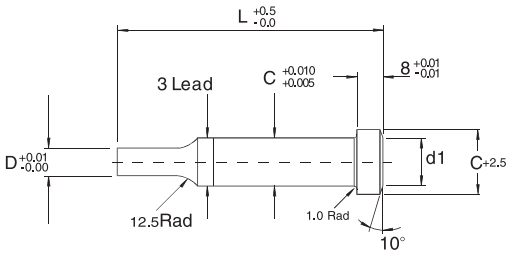
PRODUCT INFORMATION

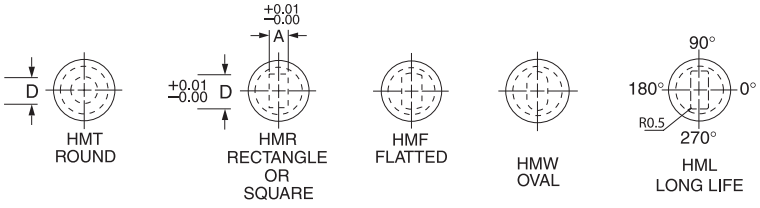
L = Overall Standard Lengths 50 up to 125mm.
Any alternative dimensions can be specified.

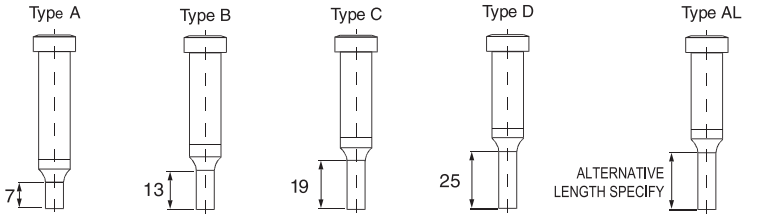
Example order:
- 6 off HM13 x 95
- 4 off HEM10 x 80

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







PRODUCT INFORMATION

L = Overall Standard Lengths 50 up to 125mm.
Any alternative dimensions can be specified.

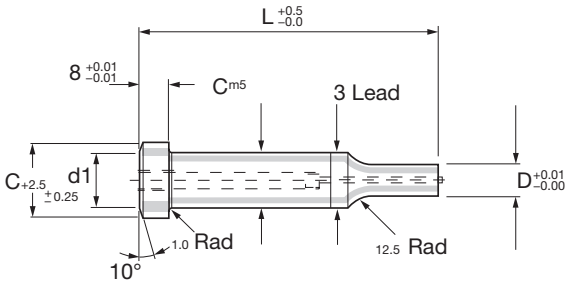
Example Order:

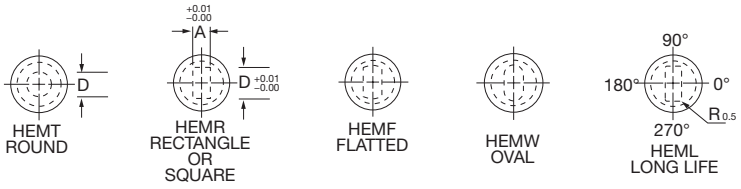
- 6 off HMT13D x 10.1 x 95
- 6 off HMF20C x 12.4 x 18 x 90 SF

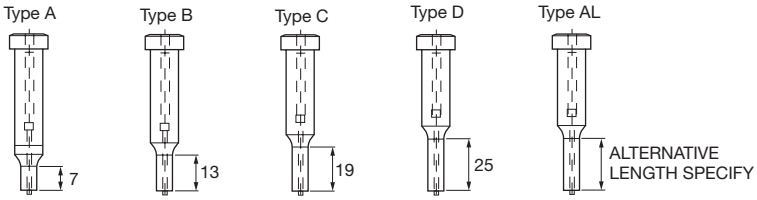
NS shapes. See pages X, X.
Location flats & dowel slots if required see page X.

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

Heavy Duty Ejector Punches







PRODUCT INFORMATION

L = Overall Standard Lengths 50 up to 125mm.
Any alternative dimensions can be specified.

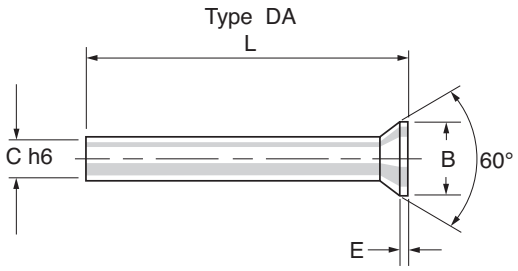
Example Order:

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

NS shapes. See pages X, X.
Location flats & dowel slots if required see page X.

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

Countersunk Headed Punches – DIN 9861



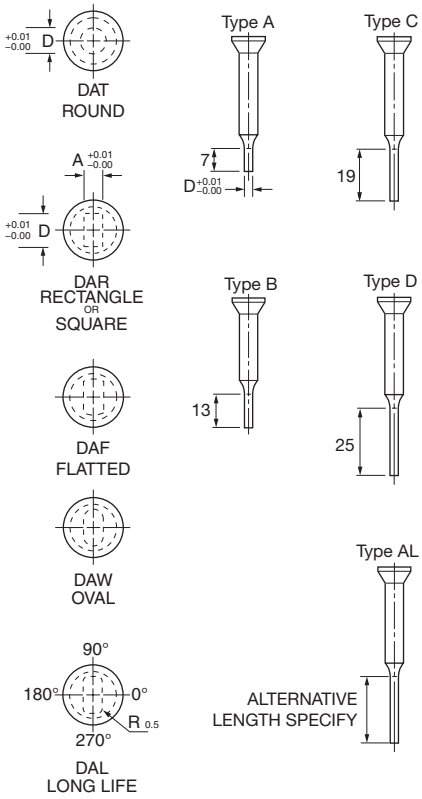
PRODUCT INFORMATION

Stock lengths up to 100 mm.
Any alternative dimensions to the above can be specified.

Example order:

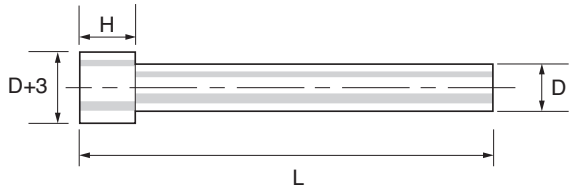
- 6 off DAT10C x 5.5 x 70 lg
- 5 off DAW13A x 10.0 x 4.0 x 7.0 lg
- 10 off DA6 x 100 lg BLANK

NS shapes available – see pages X, X.
Punch Quills see page X.



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

MAP Punches



PRODUCT INFORMATION

Any length up to 125mm and Alternative Head Thickness readily available. MAP – Metric Sizes.

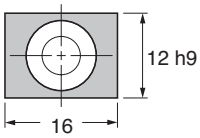
Example order:

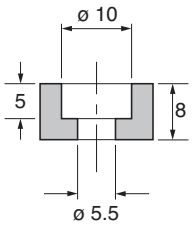
- For 19.45mm dia Punch 100 long = MAP19.45 x 100 lg

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

**HA = 5mm Head Please Specify*

Die Bush Clamps





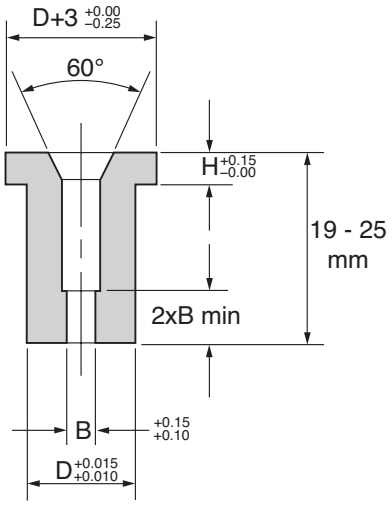
PRODUCT INFORMATION

- Material Din 6880.
- BS 4235 Keybar.

See Page XX for location flats.

?

Symbol Number
BR - 1



PRODUCT INFORMATION

Example order:

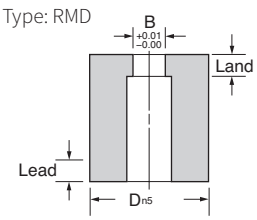
- 6 off MPQ8 x 3.6 x 25

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

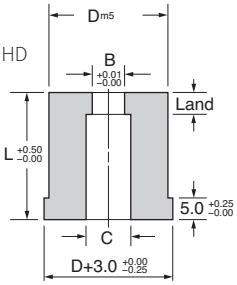
**HA = 5mm Head Please Specify*

Rapid Metric Dies

Type: RMD



Type: RMHD



PRODUCT INFORMATION

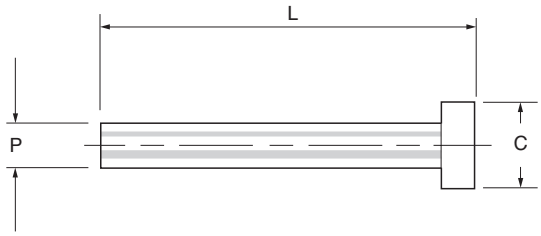
Material H.S.S.

Example order:

⊕ 6 off RMD13 3.6 x 25 lg

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

Ejector Components – Pins



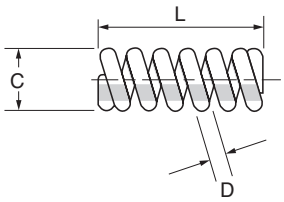
PRODUCT INFORMATION

Example order:

⊕ 30 off EP09

Symbol No.	Pin Dia. P	Head Dia. C	Length 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

Ejector Components – Springs



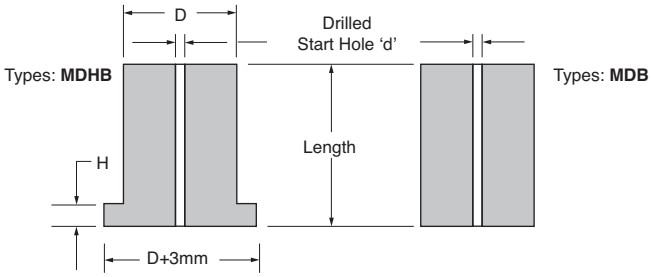
PRODUCT INFORMATION

Example order:

⊕ 30 off ES15

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

EDM Die Blanks



PRODUCT INFORMATION

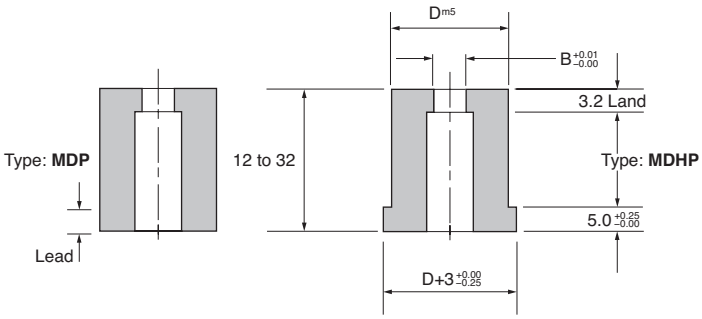
Alternative Body and Bore size available.
Location Flats if required see page X.
Dia d available at 1.0

Example order:
12 off MDHB20 25 lg

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

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

Round Die Bush – Parallel Recess



PRODUCT INFORMATION

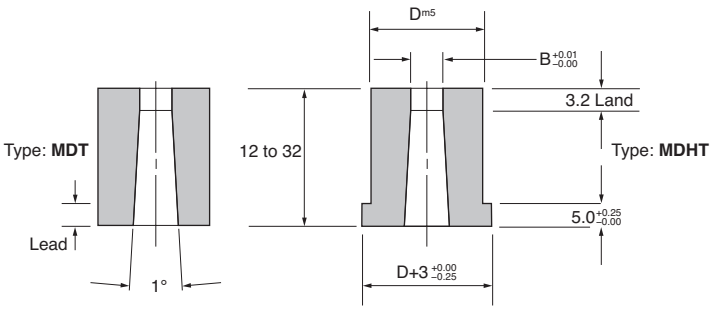
Alternative body diameter, overall length and land lengths readily available – see page X. ?

Example order:

⌖ 12 off MDHP10 5.0 19 lg

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

Round Die Bush – Taper Recess

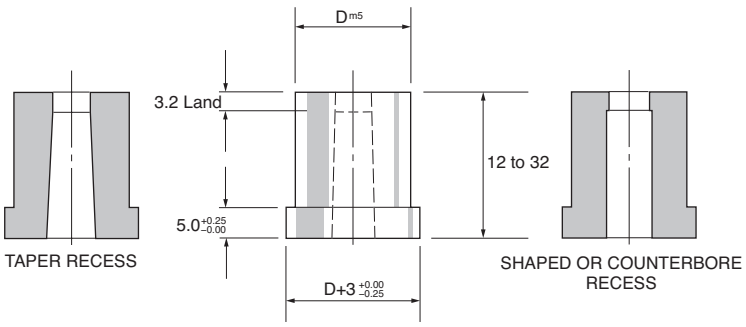


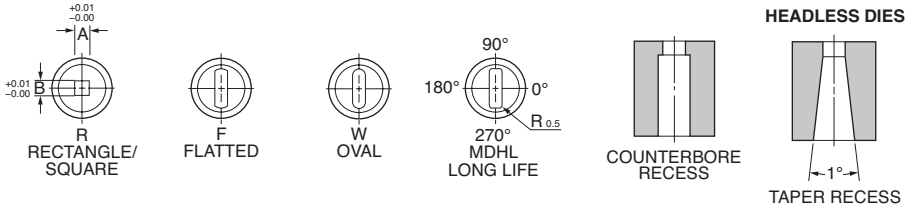
PRODUCT INFORMATION

Alternative body diameter, overall length and land lengths readily available – see page X.

Example order:
12 off MDHT10 5.0 19 lg

Symbol Numbers			
Headless	Headed	Dia. D	Bore Size 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





PRODUCT INFORMATION

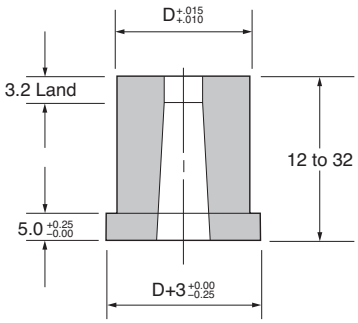
Alternative body diameter, overall length and land lengths readily available – see page X.
Locations if required please specify as shown on page X.
NS shapes see pages X, X. ?

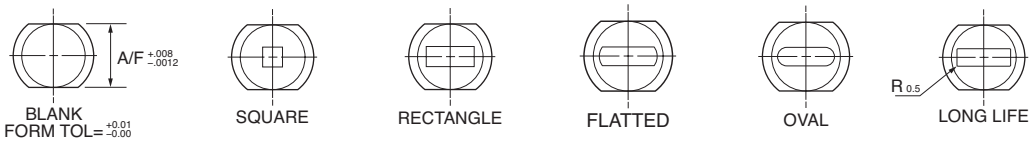
Example order:
- 4 off MDW16 3.0 x 5.0 25 lg
- 6 off MDHR20 5.5 x 7.5 32 lg

Taper Recess supplied as standard unless specified otherwise.

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

Die Bushes – SPLIT





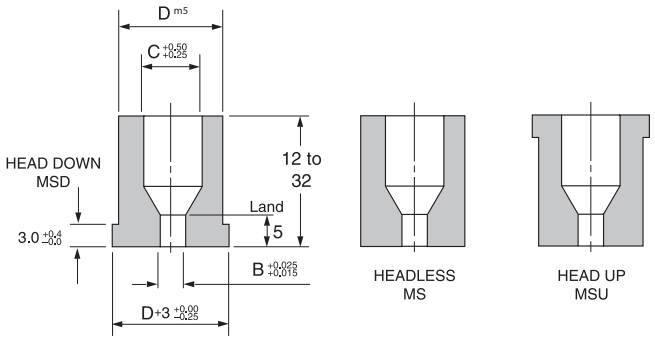
PRODUCT INFORMATION

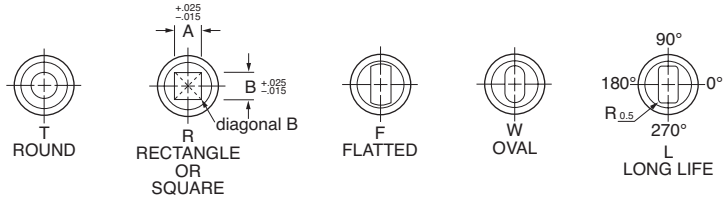
Alternative shapes, body dia, overall length and land lengths readily available – see page X.
Note: Head Flats are Standard on Split Dies.

To order specify: Symbol, type, shape and size and length.

Example order:
⊕ MGD25 Rect 10.25 x 12.25 32 lg

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





PRODUCT INFORMATION

Alternative shapes, body dia, overall length and land lengths available. If Location Flats are required, then please specify as shown on page X.
Views are from the dia C end.

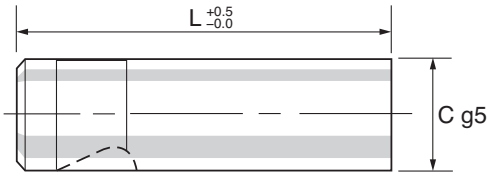
Note: Diagonal B must not exceed dia C.

Example order:
- 6 off MSUR10 3.0 x 4.0 18 lg
- 8 off MSDW25 8.0 x 12.5 32 lg

Symbol Numbers			Body Dia D	Dia Range B	Dia C
Head Down	Headless	Head Up			
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

**Insert the shape code*

Ball Lock Punch Blanks



Solid

L = 56 63 71 80 90 100 125

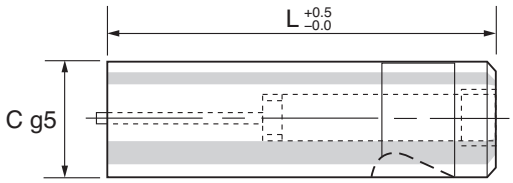
PRODUCT INFORMATION

Any alternative dimensions can be specified.

Example order:
10 off LAW16 80 lg

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

Ball Lock Ejector Punch Blanks



Ejector

L = 56 63 71 80 90 100 125

PRODUCT INFORMATION

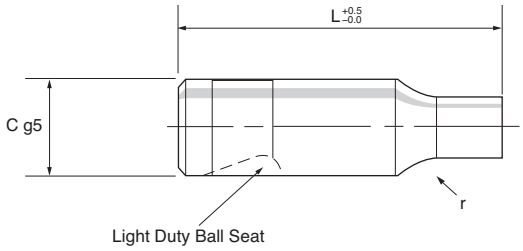
Any alternative dimensions can be specified.

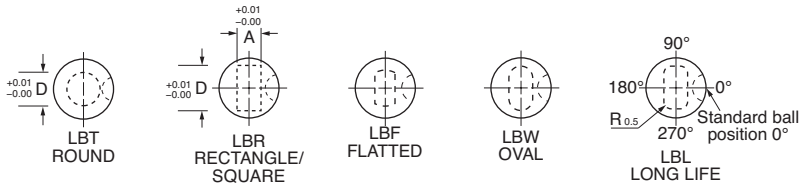
Example order:

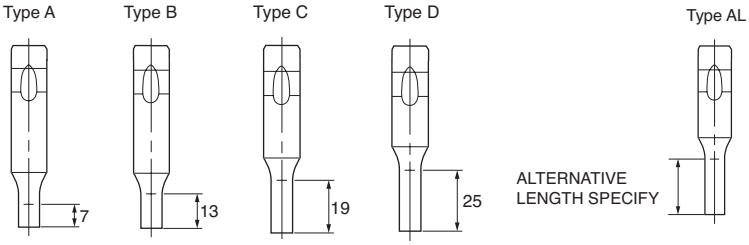
⌖ 8 off HEW16 80 lg

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

Light Duty Ball Lock Punches







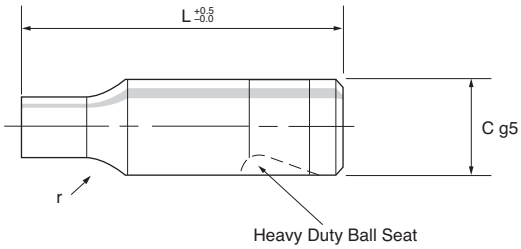
PRODUCT INFORMATION

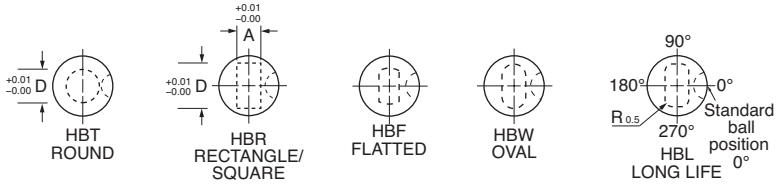
L = Overall standard lengths 50 up to 125mm.
0°= Standard Ball Seat Position.

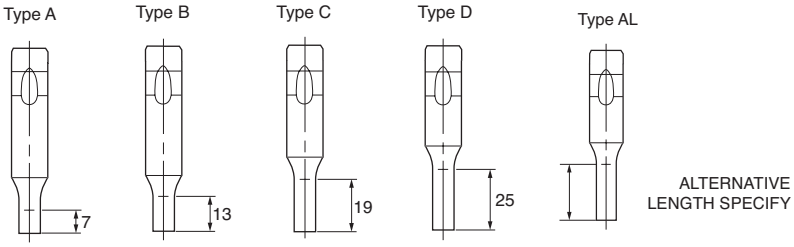
Example order:
⊕ 6 off LBF13B x 4 x 9 x 60 lg
Specify Ball Seat position.
NS shapes available see pages X, X. ?

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

Heavy Duty Ball Lock Punches







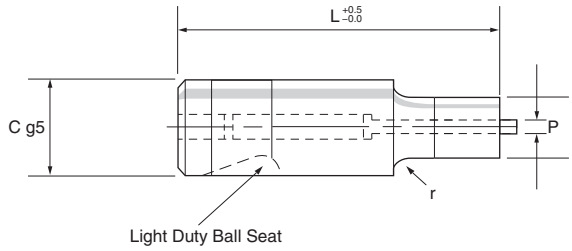
PRODUCT INFORMATION

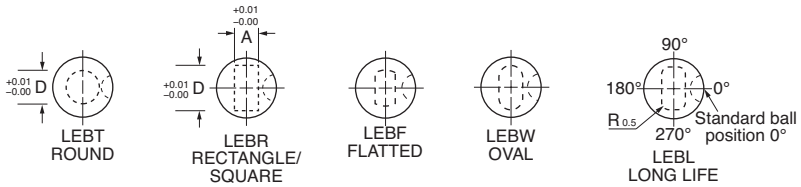
L = Overall standard lengths 50 up to 125mm.
0°= Standard Ball Seat Position.

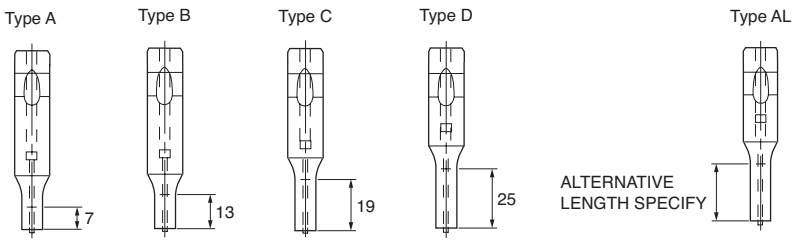
Example order:
⊕ 6 off HBF13B x 4 x 9 x 60 lg
Specify Ball Seat position.
NS shapes available see pages X, X. ?

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

Light Duty Ejector Ball Lock Punches







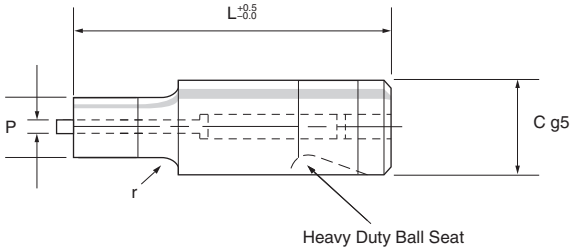
PRODUCT INFORMATION

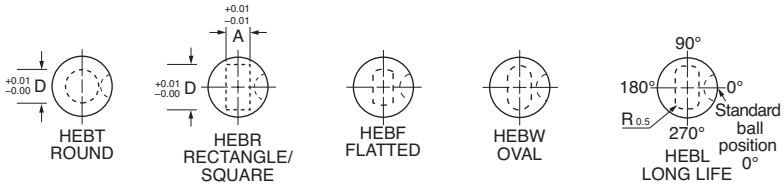
L = Overall standard lengths 50 up to 125mm.
0°= Standard Ball Seat Position.
Ejector components see page X.

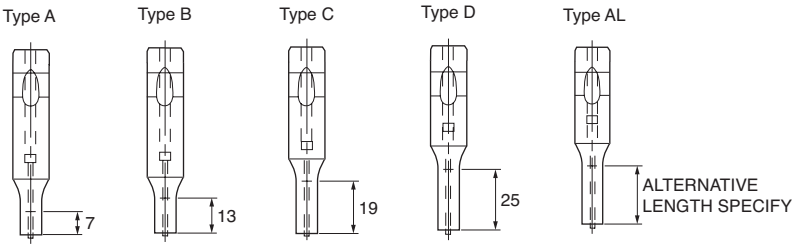
Example order:
⊕ 6 off LEBF13B x 4 x 9 x 60 lg
Specify Ball Seat position.
NS shapes available see pages X, X.

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

Heavy Duty Ejector Ball Lock Punches







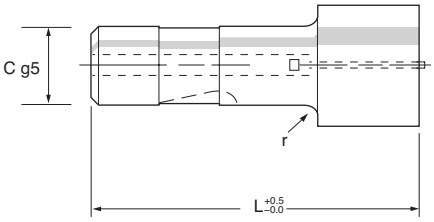
PRODUCT INFORMATION

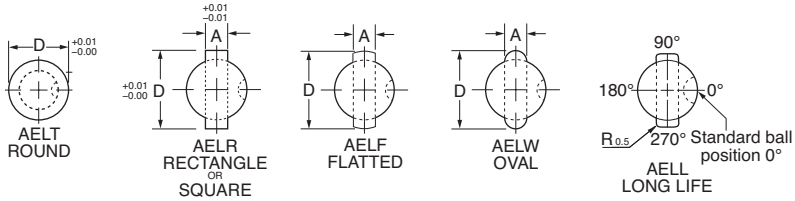
L = Overall standard lengths 50 up to 125mm.
0°= Standard Ball Seat Position.
Ejector components see page X. ?

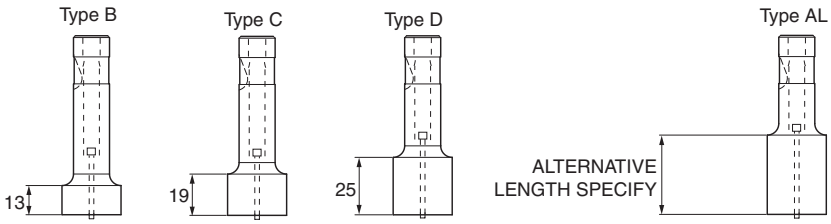
Example order:
⊕ 6 off HEBF13B x 4 x 9 x 60 lg
Specify Ball Seat position.
NS shapes available see pages X, X. ?

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

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







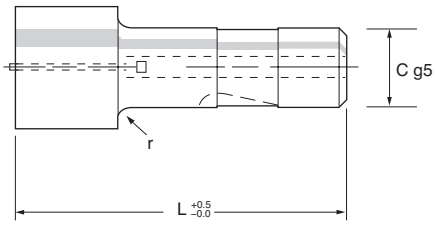
PRODUCT INFORMATION

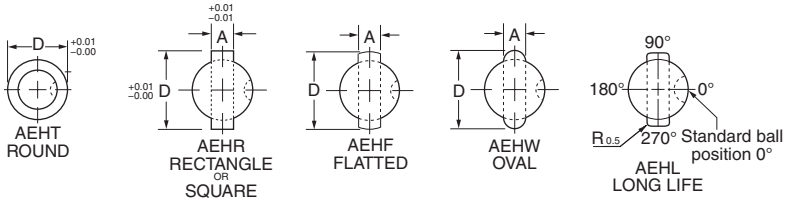
L = Overall standard lengths 50 up to 125mm.
0°= Standard Ball Seat Position.
Ejector components see page X.

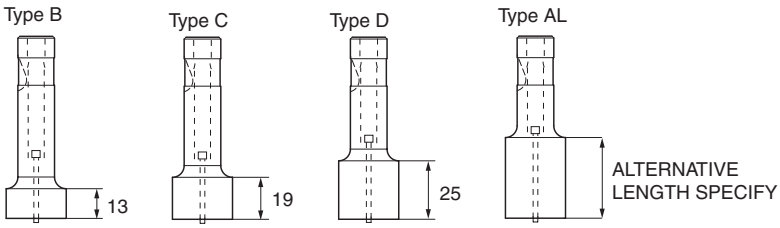
Example order:
⊕ AELR16C 8.4 x 21.60 x 80 BS 35°
NS shapes available see pages X, X.

Symbol Numbers Light Duty Ejector					Point Range			
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

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







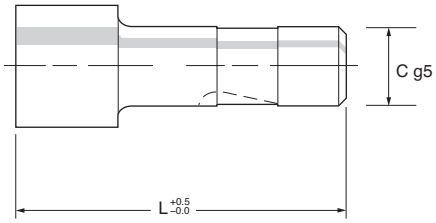
PRODUCT INFORMATION

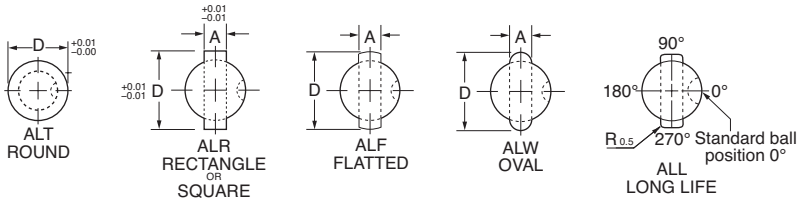
L = Overall length 50 up to 125mm.
0°= Standard Ball Seat Position.
Ejector components see page X.

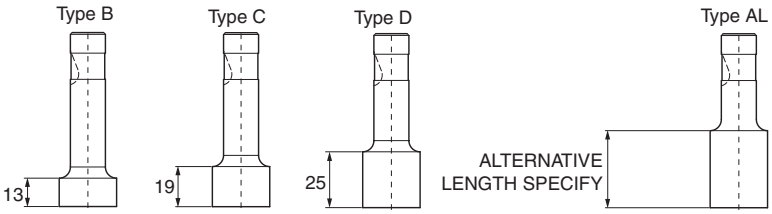
Example order:
⊕ AEHR16C 8.4 x 21.60 x 80 BS 0°
NS shapes available see pages X, X.

Symbol Numbers Heavy Duty Ejector					Point Range			
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

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







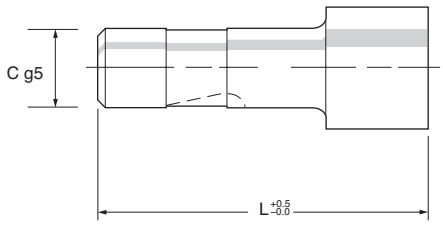
PRODUCT INFORMATION

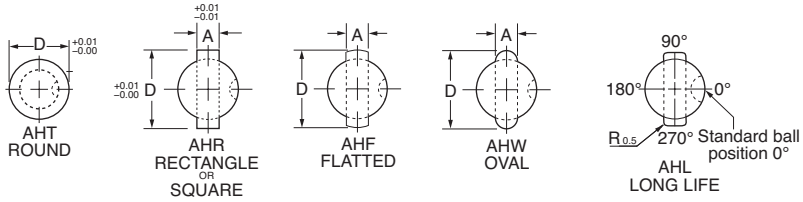
L = Overall length 50 up to 125mm.
0°= Standard Ball Seat Position.

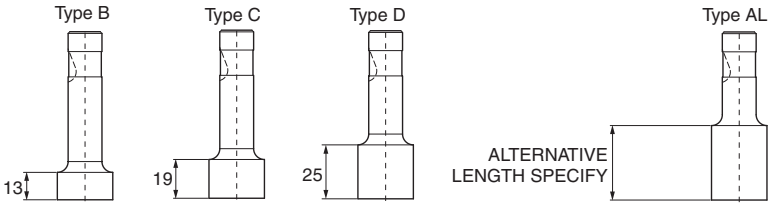
Example order:
⊕ ALL20 C 8.6 x 21.3 x 90 BS 90°
NS shapes available see pages X, X. ?

Symbol Numbers Light Duty					Point Range			
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

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







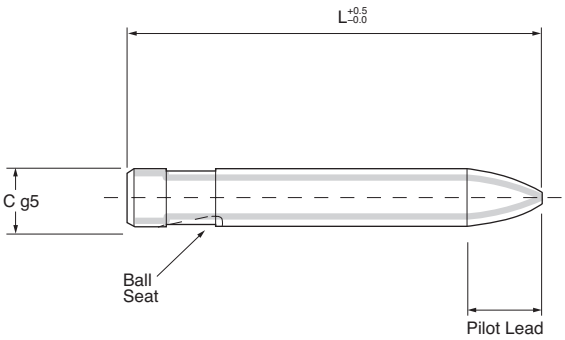
PRODUCT INFORMATION

L = Overall length 50 up to 125mm.
0°= Standard Ball Seat Position.

Example order:
⌖ AHR16C 8.4 x 21.60 x 80
NS shapes available see pages X, X.

Symbol Numbers Heavy Duty					Point Range			
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

Ball Lock Parallel Pilots



PRODUCT INFORMATION

L = Overall Standard Lengths 50 up to 125mm.

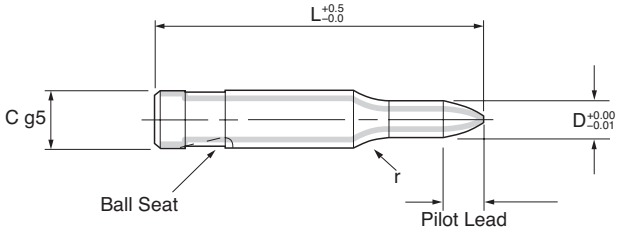
Example order:

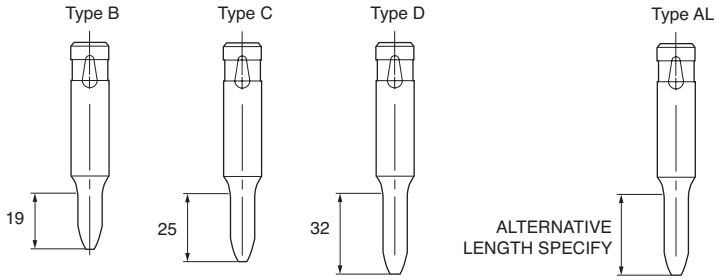
- 6 off HBPP13 x 60 lg
- 6 off LBPP 20 x 84

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

Ball Lock Pilot Points





PRODUCT INFORMATION

L = Overall Standard Lengths 56 up to 125mm.

Example order:

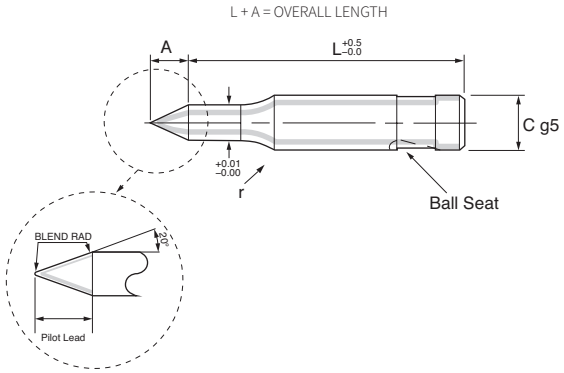
⌖ 6 off HBP13B x 9 x 60 lg

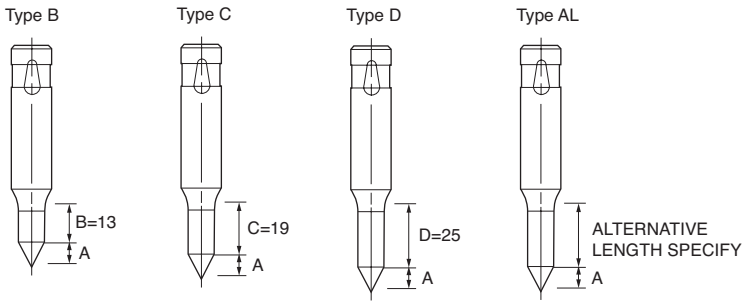
Light Duty	
Symbol Numbers	Shank Size C
LBP6	6
LBP10	10
LBP13	13
LBP16	16
LBP20	20
LBP25	25
LBP32	32
LBP38	38

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

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

Ball Lock Angular Pilot Points





PRODUCT INFORMATION

L = Overall length from 56-125mm.

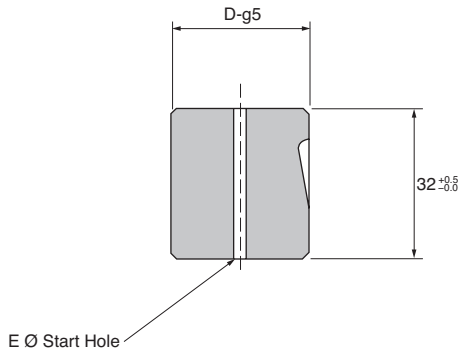
Example order:

- 6 off LBAPP13D X 10.1 X 80 L = 80 + A
- 6 off HBAPP16C x 15.5 x 100 L = 100 + A

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

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

Light Duty Ball Lock Die Blanks



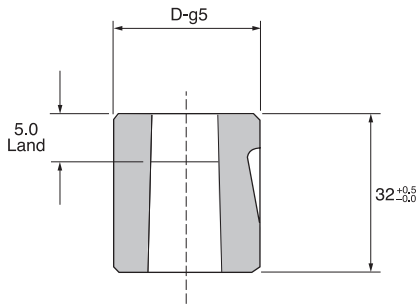
PRODUCT INFORMATION

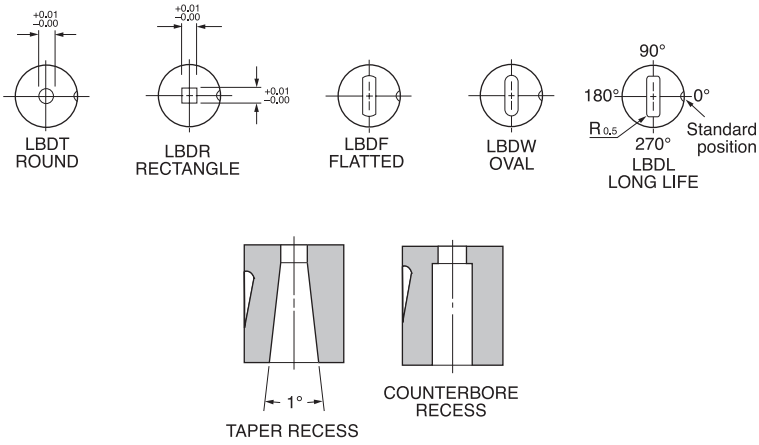
Example order:

- 6 off LBDB13 x 32

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

Light Duty Ball Lock Dies





PRODUCT INFORMATION

Alternative land lengths readily available.
0°= Standard Ball Seat Position.
Taper recess supplied unless specified otherwise.

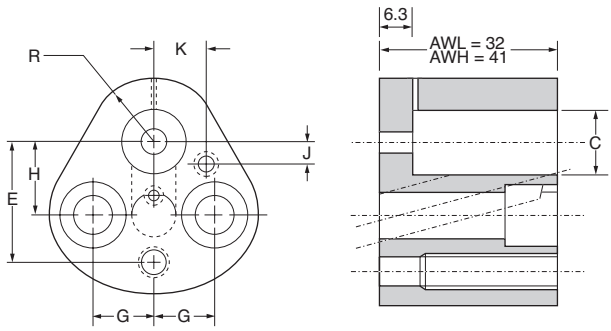
Example order:
- 6 off LBDT13 x 5.01 x 32
- 6 off LBDR38 x 8.0 x 15 x 32

NS available, see pages X, X. ?

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

Ball Lock Retainers

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



PRODUCT INFORMATION

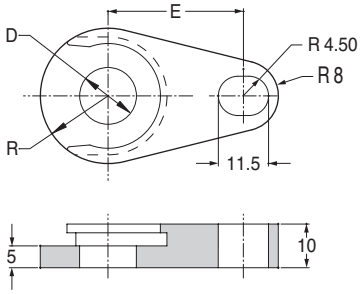
Example order:

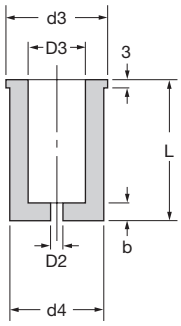
- 5 off AWH-13

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

Retainer Strippers





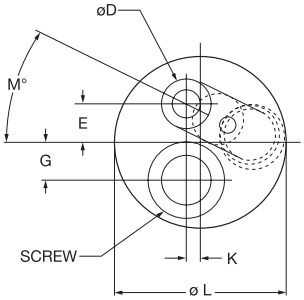
PRODUCT INFORMATION

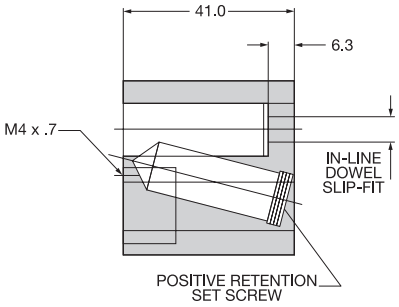
Set consists of: Retaining Plate and M8 x 20 Socket Head Cap Screw.
Urethane Hardness 90-95 Shore A.

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

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

International Patents Pending



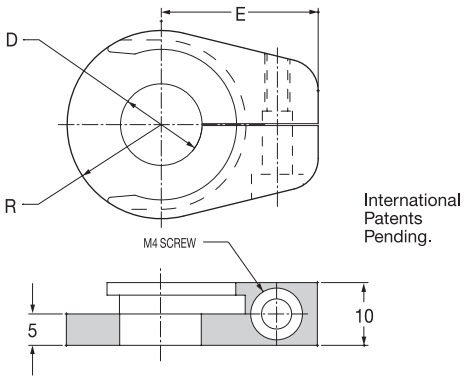


PRODUCT INFORMATION

Complete design & CAD files visit WWW.MOELLERMCAD.COM

Example order:
10 off ARH-16

Catalog Number	øD	øL	E	G	K	M	N	O	Screw Size	In-Line Dowel	Attachment Hole
ARH 10	10	38.1	9.86	7.10	2.65	20.5 °	4.47	12.72	M12	6	M6 x 1.0
ARH 13	13	41.3	9.25	9.17	3.18	26 °	9.35	11.88	M12	6	M6 x 1.0
ARH 16	16	44.5	9.10	11.07	1.93	33.5 °	10.21	13.16	M12	6	M6 x 1.0
ARH 20	20	57.2	12.20	14.30	0	30 °	9.35	19.40	M16	6	M8 x 1.25
ARH 25	25	63.5	12.51	17.50	0	30 °	14.27	20.17	M16	6	M8 x 1.25
ARH 32	32	76.2	15.67	20.83	0	30 °	15.46	26.12	M20	6	M8 x 1.25
ARH 40	40	82.6	15.39	23.55	0	30 °	15.46	26.12	M20	6	M8 x 1.25



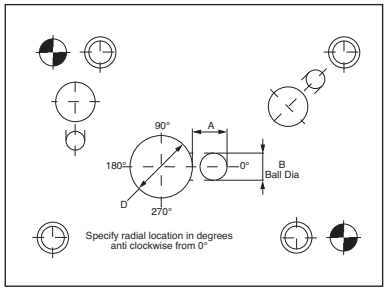
PRODUCT INFORMATION

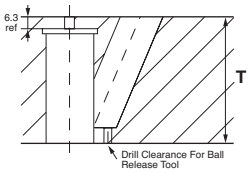
Example order:

- 4 off ARR-25

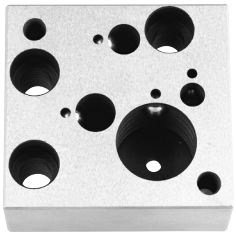
Retainer Backing Plate Set	D	R	E
ARR-10	10	13	22.5
ARR-13	13	15.5	25
ARR-16	16	18	27.5
ARR-20	20	20.5	30
ARR-25	25	24	35.5
ARR-32	32	31	37.5
ARR-40	40	36	42.3

Ball Lock Multi Hole Retainer





AWML = 32
AWMH = 41



PRODUCT INFORMATION

Class R Supplied unless otherwise specified.

Example order:

- AWML10F (Light Duty Shaped punch holder)
  To Customer Drawing.

STANDARD TOLERANCES

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

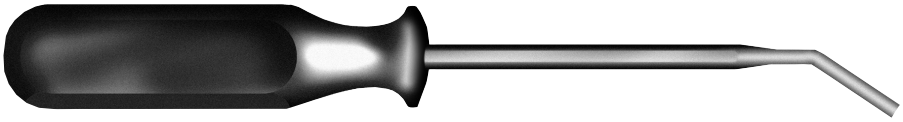
Punch Shape	Class Ball Hole	Radial Tolerance
Round	R	± 5°
Shaped	F	± 0°5'

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

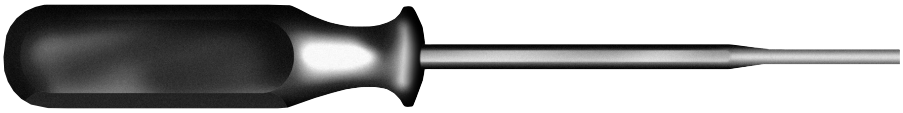
Ball Lock Release Tools

Ball Lock Angle Tool



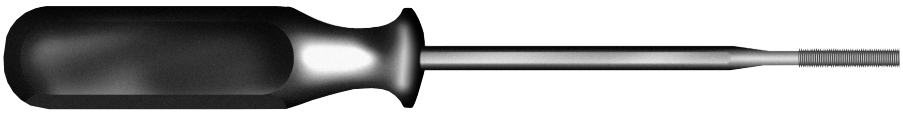
Order Code: 818038

Ball Lock Straight Tool



Order Code: 818046

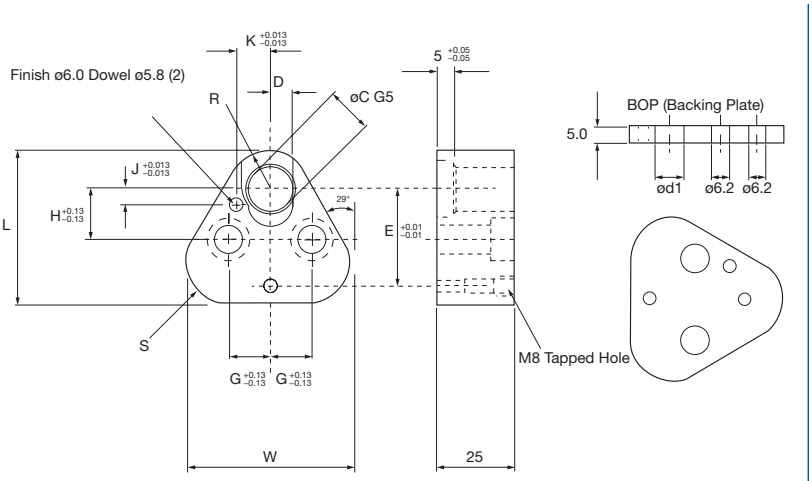
Ball Lock Threaded Tool



Order Code: 269999

PRODUCT INFORMATION
Example order:
- 6 off 818046

Headed Punch Retainer – (Shaped)



PRODUCT INFORMATION

To suit a 5mm Punch Head Only, BOP SOLD SEPARATELY.

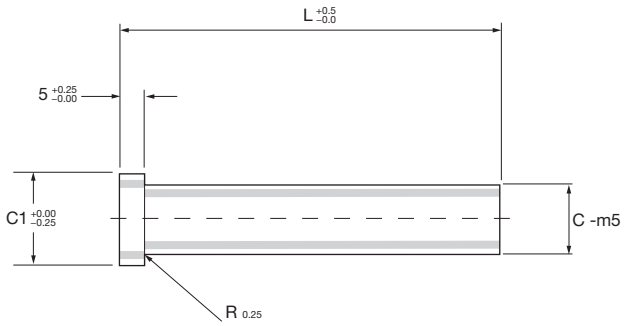
Example order:
- 12 off HHS13
- 12 off BOP13

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

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

ISO Punch Blanks

ISO 8020



PRODUCT INFORMATION

Any alternative dimensions can be specified.
Material M2
Heads 45 ± 5 RC
Shank 60/63 RC

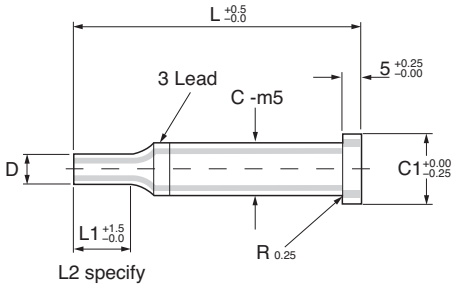
Alternative sizes on request.

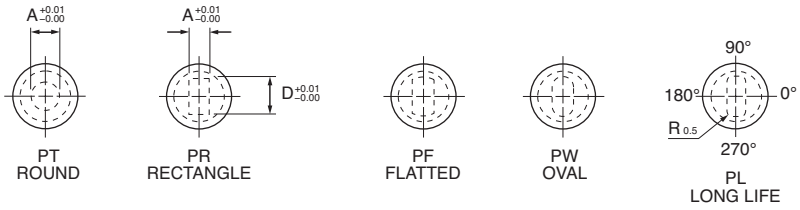
Example order:
- 6 off PB5 x 71
- 6 off PB16 x 80

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	*	*	*	*	*	*	*	*	*

ISO Round / Shaped Punches

ISO 8020





PRODUCT INFORMATION

Any alternative dimensions can be specified.
Material M2
Heads 45 + 5 RC
Shank 60/63 RC
Location flats if required see page X, X.

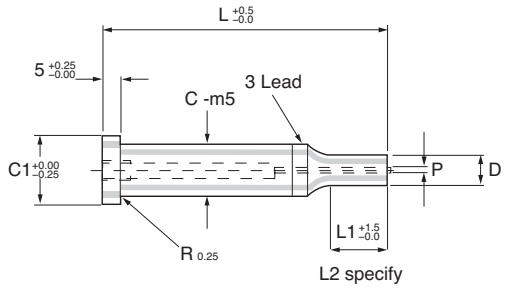
Example order:
- 6 off PT5 x 3.08 71
- 6 off PW16 x 12 x 8 x 80 L2 = 25

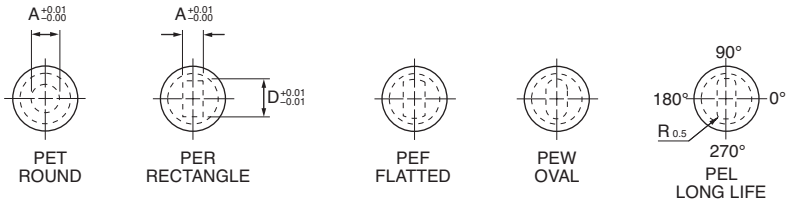
Non standard point lengths should be specified as eg: PW16(35) 12 x 8 x 80
NS shapes available see pages X, X.
For dowel & location flats see page X.

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	
PT5	PR5	PW5	PF5	PL5	5	8	2.3	*	*	*	*	*	*	*	*		16	
PT6	PR6	PW6	PF6	PL6	6	9	2.3	*	*	*	*	*	*	*	*		16	SPECIFY
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	

ISO Round / Shaped Ejector Punches

ISO 8020





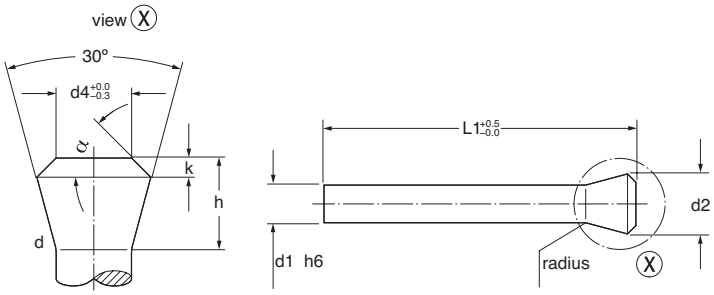
PRODUCT INFORMATION

Any alternative dimensions can be specified.
Material M2
Heads 45 + 5 RC
Shank 60/63 RC
Location flats if required see page X, X.

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 X, X.
For dowel & location flats see page X.

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	SPECIFY
PET6	PER6	PEW6	PEF6	PEL6	6	9	1.0	2.5	*	*	*	*	*	*	*	*	16	
PET8	PER8	PEW8	PEF8	PEL8	8	11	1.0	3.0	*	*	*	*	*	*	*	*	20	
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	

30° Headed Punch Blanks



PRODUCT INFORMATION

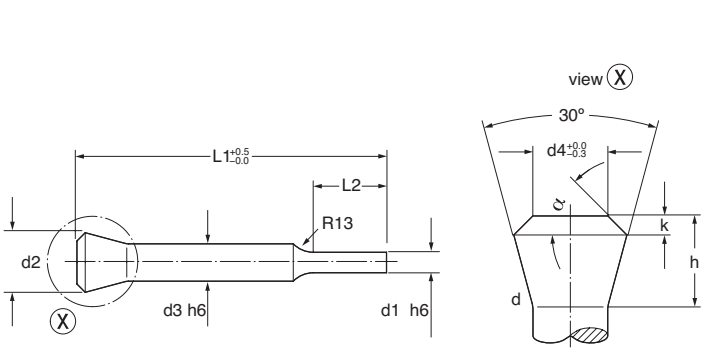
Ejectors available on request.

Example order:

⌖ TFF 6 x 80 (6 off)

Symbol Code	d1	d2	d4	h	k	α +/-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	*	*	*	*

30° Headed Punches Pointed



PRODUCT INFORMATION

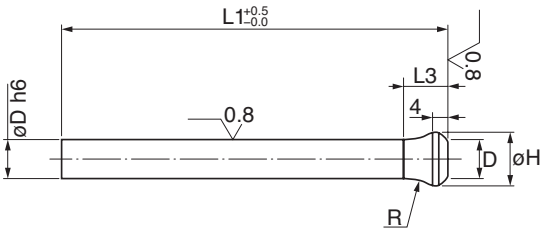
Ejectors available on request.

Example order:

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

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	*	*	*	*	*	*	*

Dome Headed Punch Blanks



PRODUCT INFORMATION

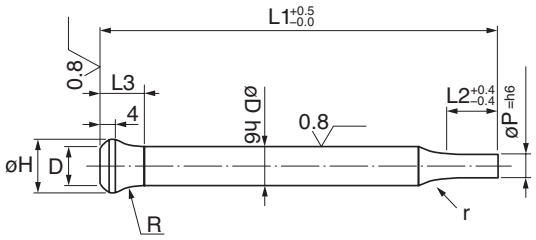
Ejectors available on request.

Example order:

⌖ TFB 8 x 100 (6 off)

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	*	*	*	*

Dome Headed Punches Pointed



PRODUCT INFORMATION

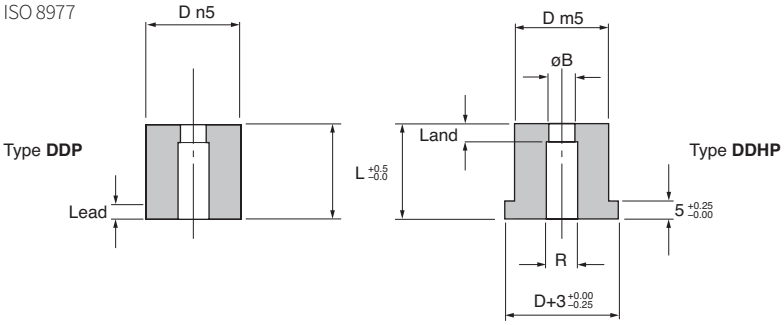
Ejectors available on request.

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

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			*	*	*	*	*	*	*

Round Dies Counterbore Recess

ISO 8977



PRODUCT INFORMATION

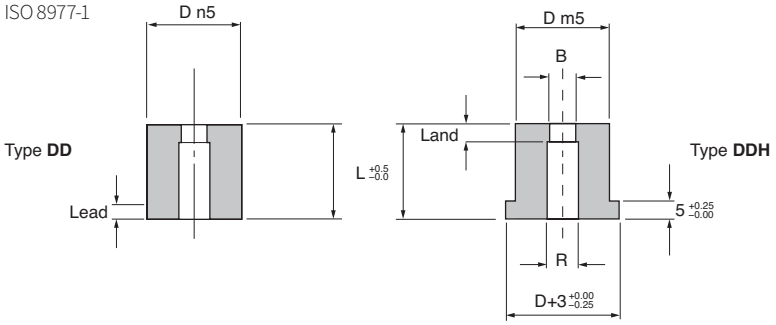
For dowel & location flats, see page X.

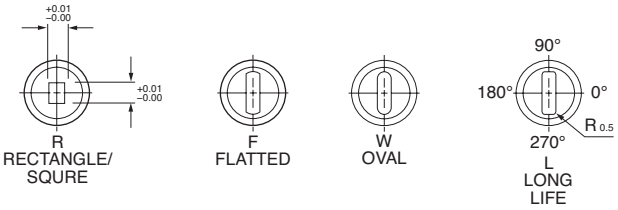
Example order:
- 1 off DDP10 x 6.1 x 30
- 1 off DDHP10 x 6.1 x 30

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		*	*	*	*	*	*	*

Shaped Dies Counterbore Recess

ISO 8977-1





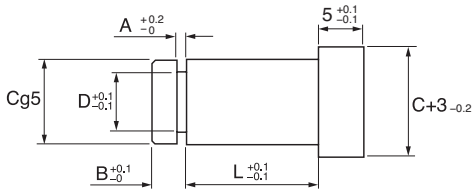
PRODUCT INFORMATION

For dowel & location flats, see page X.
NS shapes available, see pages X, X.

Example order:
1 off DDR10 x 6.1 x 5.1 x 20

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			*	*	*	*	*	*

Type "A"



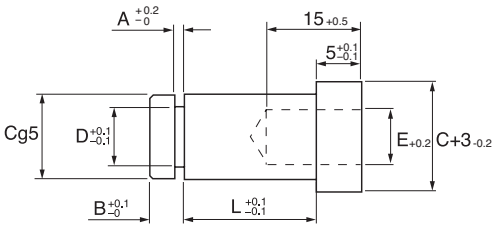
PRODUCT INFORMATION

Example order:

⊕ 10 off SLA8 x 2.0 x 40

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	

Type "B"



PRODUCT INFORMATION

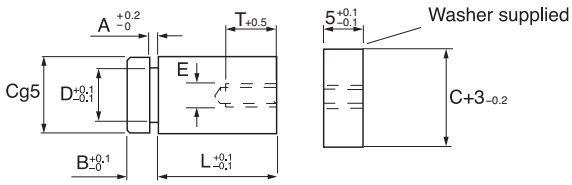
Example order:

⊕ 6 off SLB16 x 2.0 x 40

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	

Non Standard Strip Lifters

Type “C”



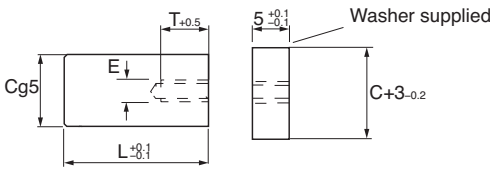
PRODUCT INFORMATION

Example order:

⊕ 8 off SLC8 x 2.0 x 40

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		

Type “D”



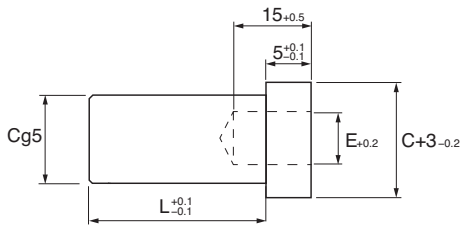
PRODUCT INFORMATION

Example order:

⊕ 8 off x SLD8 x 40

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		

Type "E"



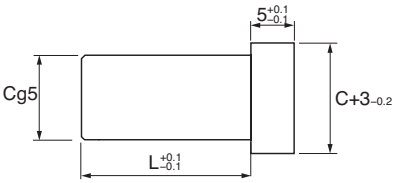
PRODUCT INFORMATION

Example order:

⊕ 12 off x SLE16 x 40

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

Type "F"



PRODUCT INFORMATION

Example order:

⊕ 4 off x SLF16 x 40

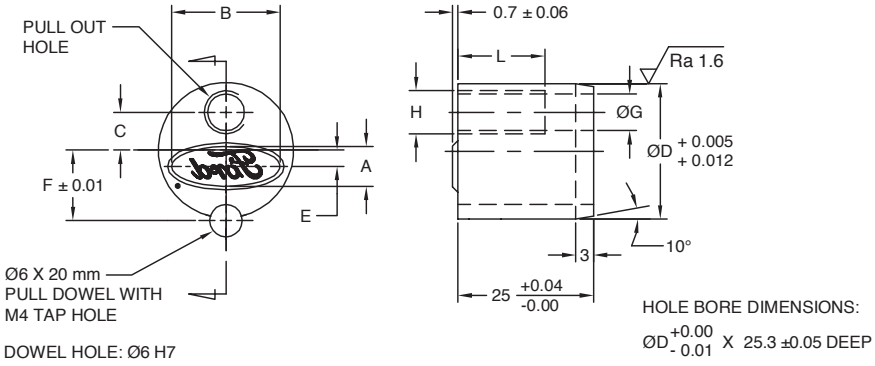
Symbol No.	C	L
SLF6	6	SPECIFY "L" LENGTH
SLF8	8	
SLF10	10	
SLF13	13	
SLF16	16	
SLF20	20	
SLF22	22	

Ford Trademark Round Stamp

ENLARGED VIEW OF STAMP

SMALL (R) FOR SPECIAL REGISTRATION PURPOSES.

ENGRAVE REVERSED AS ILLUSTRATED .



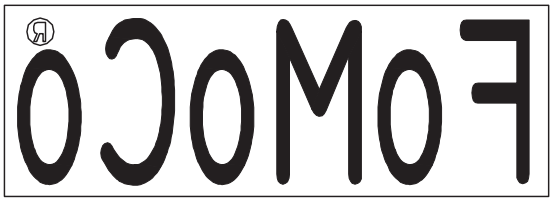
PRODUCT INFORMATION

- Die stamps depth to be compensated for metal thickness (inside or outside of metal).
- Stamp to enter metal 0.3mm to leave mark.
- Show in solid model stamps 25.3 Deep.

Material: 1.2379 (X155CrVMo121) to DIN EN ISO 4957 or AISI-W2
Finish: Heat treat to Rc 60 - 62, treat with Rust Inhibitor Oil for shipment.
Label: Permanently mark each part with ford part number and manufacturer's brand.

Ford Global Part Number	ØD	A	B	C	E	F	ØG	H	L
WDX20-65-0310	10	2.2	6	2.5	1.5	7.0	3.3	M4	8
WDX20-65-0313	13	3.6	10	3.0	2.0	8.2			
WDX20-65-0325	25	7.3	20	7.0	3.0	13.5	6.8	M8	16

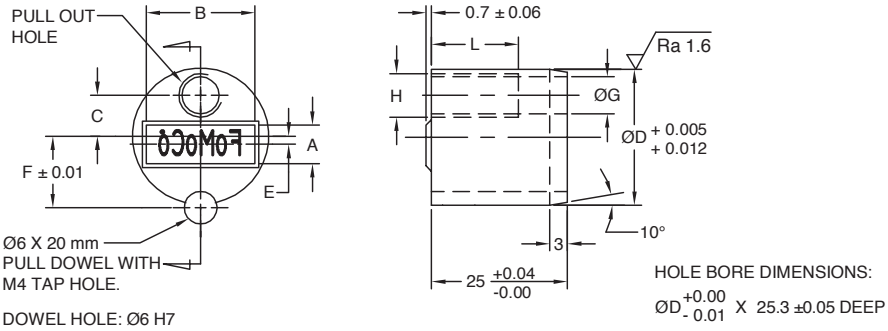
FoMoCo Trademark Round Stamp



ENLARGED VIEW OF STAMP

SMALL Ⓡ FOR SPECIAL REGISTRATION PURPOSES.

ENGRAVE REVERSED AS ILLUSTRATED.



PRODUCT INFORMATION

- Die stamps depth to be compensated for metal thickness (inside or outside of metal).
- Stamp to enter metal 0.3mm to leave mark.
- Show in solid model stamps 25.3 Deep.

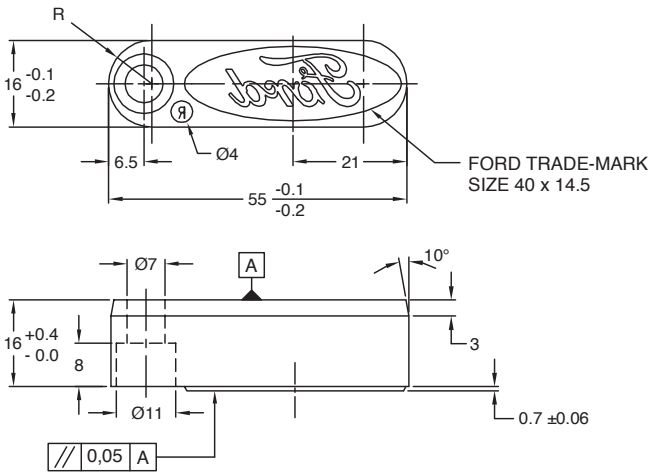
Material: 1.2379 (X155CrVMo121) to DIN EN ISO 4957 or AISI-W2
Finish: Heat treat to Rc 60 - 62, treat with Rust Inhibitor Oil for shipment.
Label: Permanently mark each part with ford part number and manufacturer's brand.

Ford Global Part Number	ØD	A	B	C	E	F	ØG	H	L
WDX20-65-0410	10	2.1	6	2.5	1.5	7.0	3.3	M4	8
WDX20-65-0416	16	3.6	10	4.5	2.0	8.2			
WDX20-65-0425	25	7.1	20	7.5	3.0	13.5	6.8	M8	16

Ford Trademark Oblong Stamp

ENLARGED VIEW OF STAMP

SMALL ® FOR SPECIAL REGISTRATION PURPOSES.
ENGRAVE REVERSED AS ILLUSTRATED.



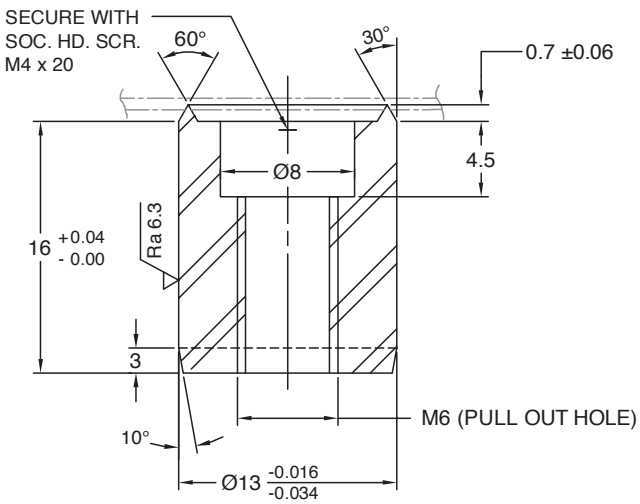
PRODUCT INFORMATION

- Die stamps depth to be compensated for metal thickness (inside or outside of metal).
- Stamp to enter metal 0.3mm to leave mark.
- Show in solid model stamps 16.3 Deep.

Material: 1.2379 (X155CrVMo121) to DIN EN ISO 4957 or AISI-W2
Finish: Heat treat to Rc 60 - 62, treat with Rust Inhibitor Oil for shipment.
Label: Permanently mark each part with ford part number and manufacturer's brand.

Ford Global Part Number
WDX20-65-0510

Ø12 Visual Locator Stamp – Bottoming Marker



HOLE BORE DIMENSIONS:
Ø13 $^{+0.018}_{-0.000}$ X 16.3±0.05 DEEP

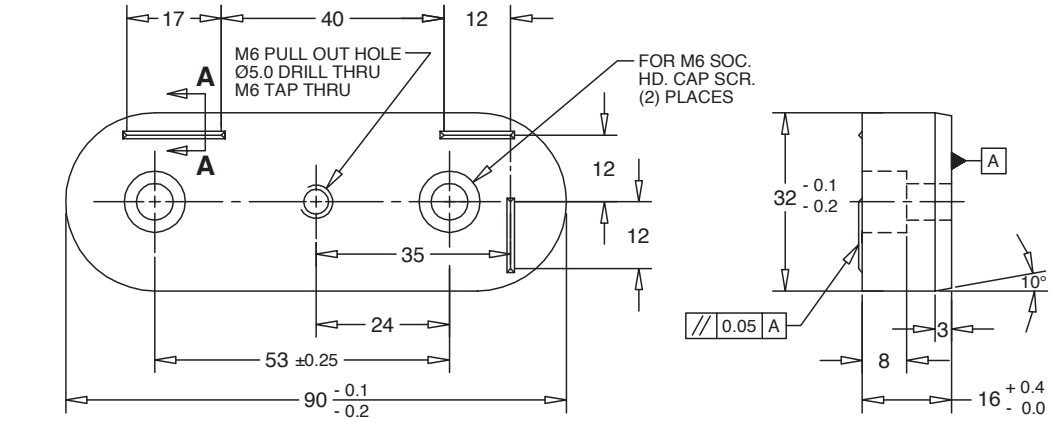
PRODUCT INFORMATION

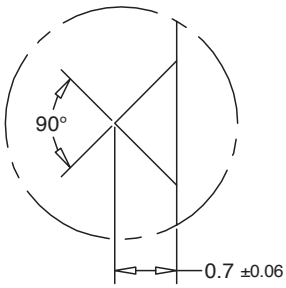
- Visual locator stamp depth to be compensated for metal thickness (inside or outside of metal).
- Stamp to enter metal 0.3mm to leave mark.
- Show in solid model stamps 16.3 Deep.

Material: 1.2379 (X155CrVMo121) to DIN EN ISO 4957 or AISI-W2
Finish: Heat treat to Rc 60 - 62, treat with Rust Inhibitor Oil for shipment.
Label: Permanently mark each part with ford part number and manufacturer's brand.

Ford Global Part Number
WDX20-65-0601

Visual VIN Locator Stamp





SECTION **A-A**

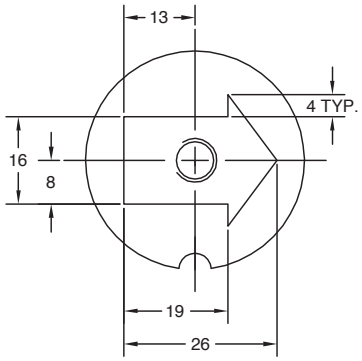
PRODUCT INFORMATION

- Visual locator stamp depth to be compensated for metal thickness (inside or outside of metal).
- Stamp to enter metal 0.3mm to leave mark.
- Show in solid model stamps 16.3 Deep.

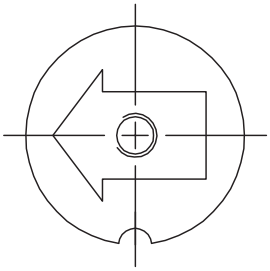
Material: 1.2379 (X155CrVMo121) to DIN EN ISO 4957 or AISI-W2
Finish: Heat treat to Rc 60 - 62, treat with Rust Inhibitor Oil for shipment.
Label: Permanently mark each part with ford part number and manufacturer's brand.

Ford Global Part Number
WDX20-65-0701

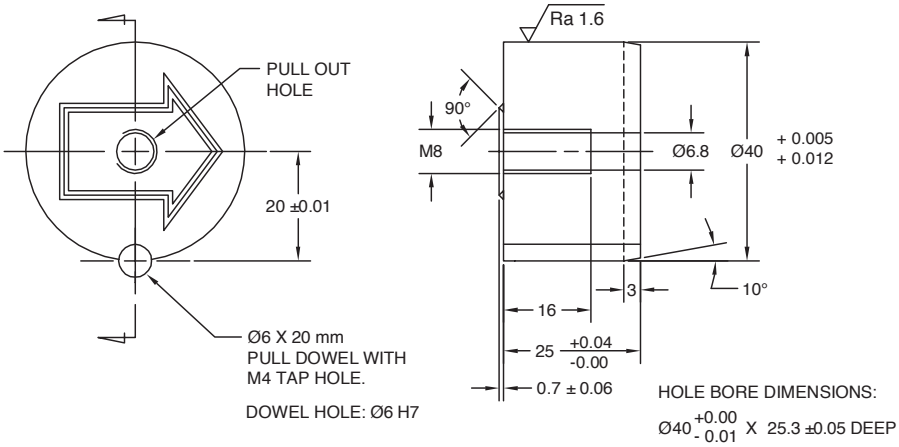
Hood Prop Round Stamp



Ford Global Part Number
WDX20-65-08401



Ford Global Part Number
WDX20-65-08402

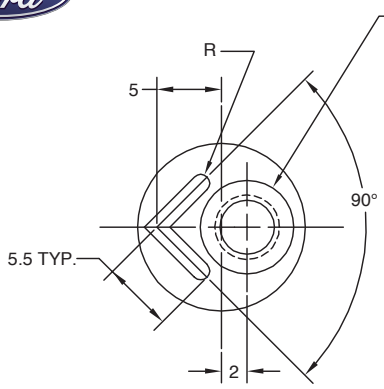


PRODUCT INFORMATION

- Hood prop die stamps depth to be compensated for metal thickness (inside or outside of metal).
- Stamp to enter metal 0.3mm to leave mark.
- Show in solid model stamps 25.3 Deep.

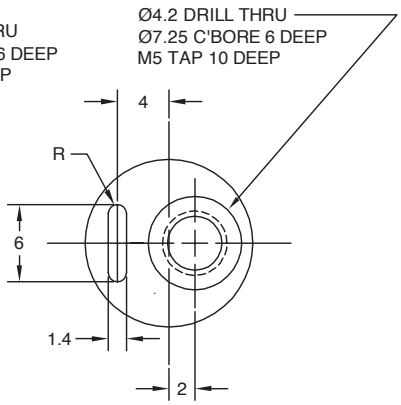
Material: 1.2379 (X155CrVMo121) to DIN EN ISO 4957 or AISI-W2
Finish: Heat treat to Rc 60 - 62, treat with Rust Inhibitor Oil for shipment.
Label: Permanently mark each part with ford part number and manufacturer's brand.

V-E and Dash Visual Locator Stamp Ø13



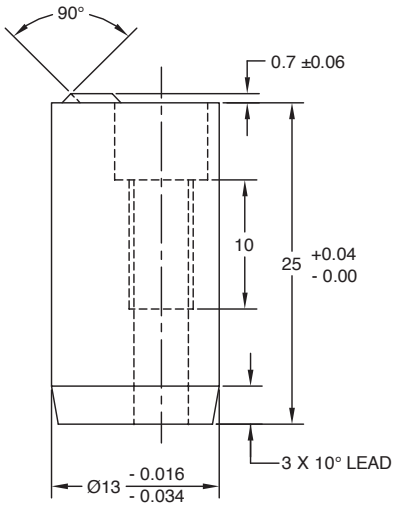
V-E Visual Locator Stamp

Ford Global Part Number
WDX20-65-091301
For replacement only WDX20-82-23131



Dash Visual Locator Stamp

Ford Global Part Number
WDX20-65-091302
For replacement only WDX20-82-23132



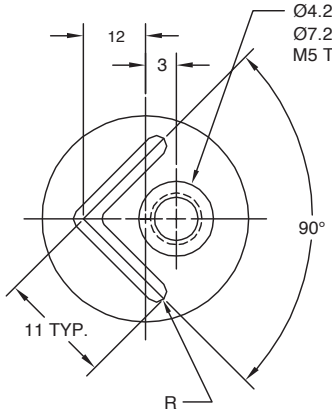
HOLE BORE DIMENSIONS:
Ø13 $^{+0.00}_{-0.01}$ X 25.3 ±0.05 DEEP

PRODUCT INFORMATION

- Die stamps depth to be compensated for metal thickness (inside or outside of metal).
- Stamp to enter metal 0.3mm to leave mark.
- Show in solid model stamps 25.3 Deep.

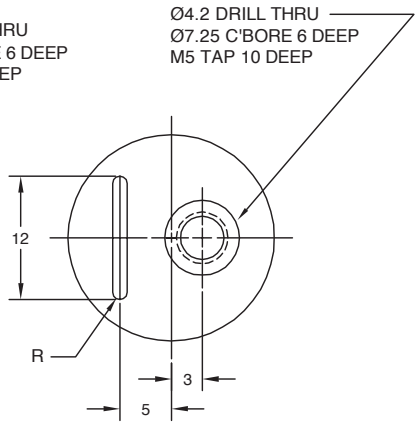
Material: 1.2379 (X155CrVMo121) to DIN EN ISO 4957 or AISI-W2
Finish: Heat treat to Rc 60 - 62, treat with Rust Inhibitor Oil for shipment.
Label: Permanently mark each part with ford part number and manufacturer's brand.

V-E and Dash Visual Locator Stamp Ø20



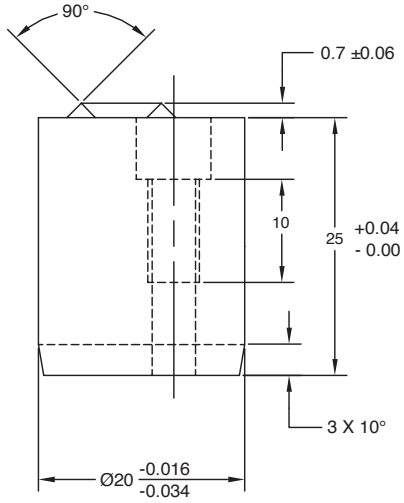
V-E Visual Locator Stamp

Ford Global Part Number
WDX20-65-102001



Dash Visual Locator Stamp

Ford Global Part Number
WDX20-65-102002



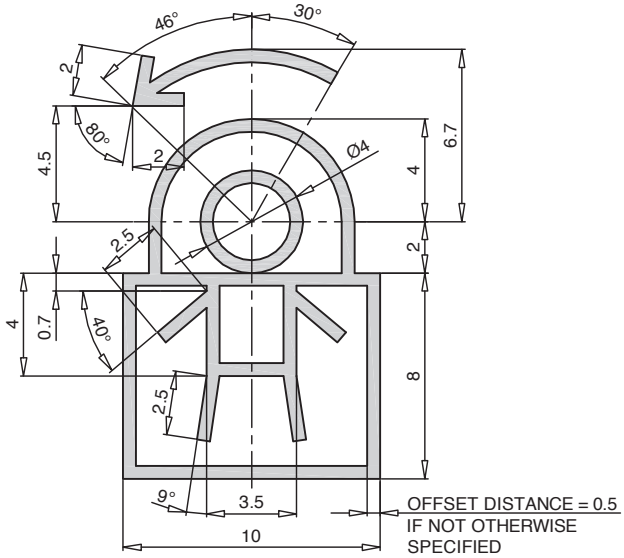
HOLE BORE DIMENSIONS:
Ø20 $^{+0.00}_{-0.01}$ X 25.3 ±0.05 DEEP

PRODUCT INFORMATION

- Die stamps depth to be compensated for metal thickness (inside or outside of metal).
- Stamp to enter metal 0.3mm to leave mark.
- Show in solid model stamps 25.3 Deep.

Material: 1.2379 (X155CrVMo121) to DIN EN ISO 4957 or AISI-W2
Finish: Heat treat to Rc 60 - 62, treat with Rust Inhibitor Oil for shipment.
Label: Permanently mark each part with ford part number and manufacturer's brand.

Child Lock Stamp for RH & LH Part – used on Restrike Steels



ENLARGED VIEW OF STAMP
(SHOWN WITH COUNTERCLOCKWISE ARROW

Use in right hand part

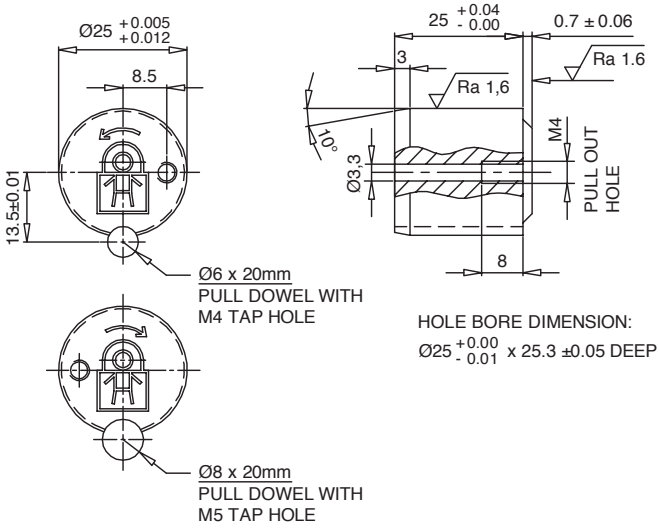
Ford Global Part Number

WDX20-65-1101

Use in left hand part

Ford Global Part Number

WDX20-65-1102

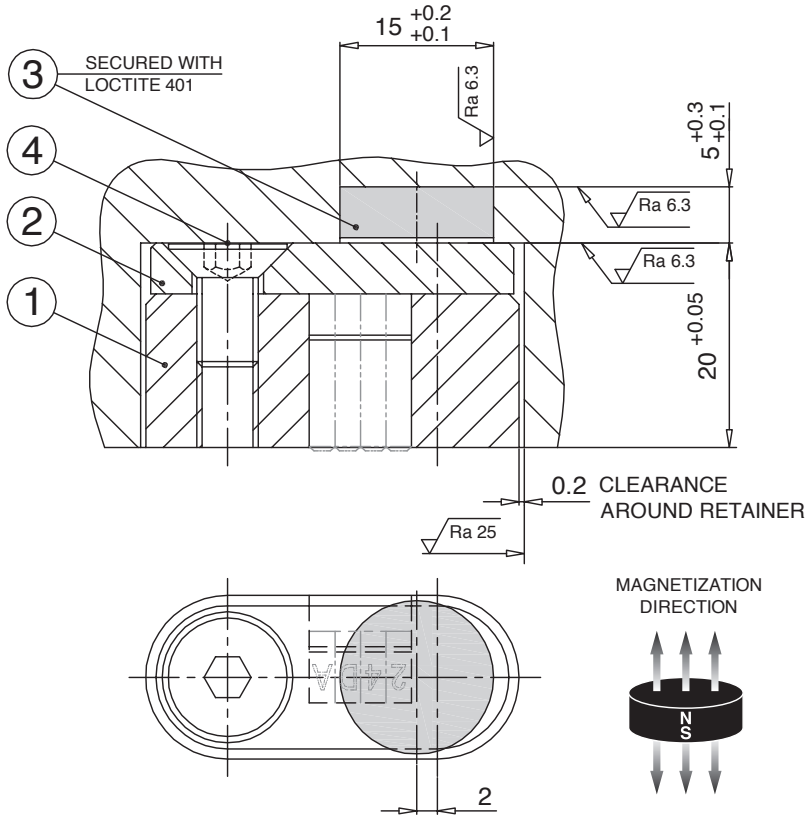


PRODUCT INFORMATION

- Die stamps depth to be compensated for metal thickness (inside or outside of metal).
- Stamp to enter metal 0.3mm to leave mark.
- Show in solid model stamps 25.3 Deep.

Material: 1.2379 (X155CrVMo121) to DIN EN ISO 4957 or AISI-W2
Finish: Heat treat to Rc 60 - 62, treat with Rust Inhibitor Oil for shipment.
Label: Permanently mark each part with ford part number and manufacturer's brand.

Retainer & Backing Plate for Production Date



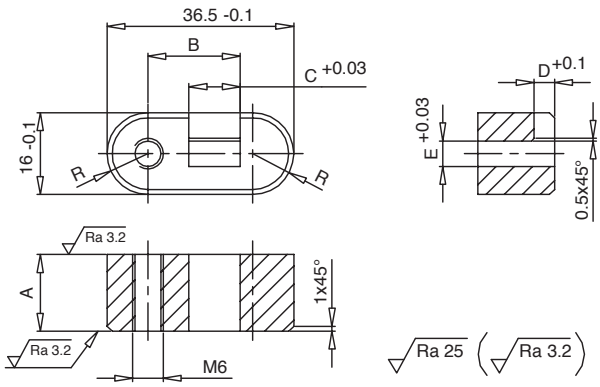
PRODUCT INFORMATION

- Retainer to be compensated for metal thickness (inside or outside of metal).
- Stamp to enter metal to leave readable mark.

		For Europe Only	For North America Only
Item	Part Name	Ford Assembly Number WDX20-66-0110-A	Ford Assembly Number WDX20-66-0119-A
1	Retainer	WDX20-66-02110	WDX20-66-02119
2	Backing Plate	WDX20-66-02210	WDX20-66-02219
3	Magnet	Ø15 x 5, FORCE = 40N, HXNH15-5, MISUMI	
4	Hex. Soc. Countersunk Head Screw	M6 x 12, DIN EN ISO 10642	

Retainer & Backing Plate for Production Date

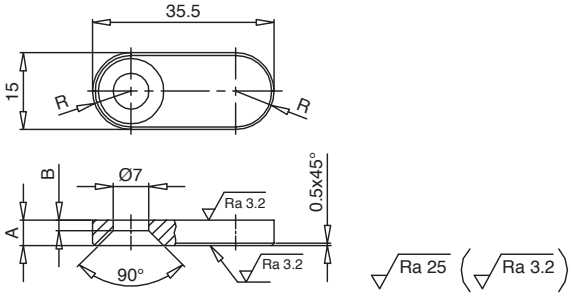
Retainer



PRODUCT INFORMATION
Material: S235JRG2C+C or AISI-1025 CAST, 58+2 HRC
Label: Permanently mark each part with Ford part number and manufacturer's brand.

Ford Global Part Number	A	B	C	D	E
WDX20-66-02110	$15^{-0.2}_{-0.4}$	18	10	4	5
WDX20-66-02119	$12^{-0.0}_{-0.2}$	24	19	2.6	6.3

Backing Plate

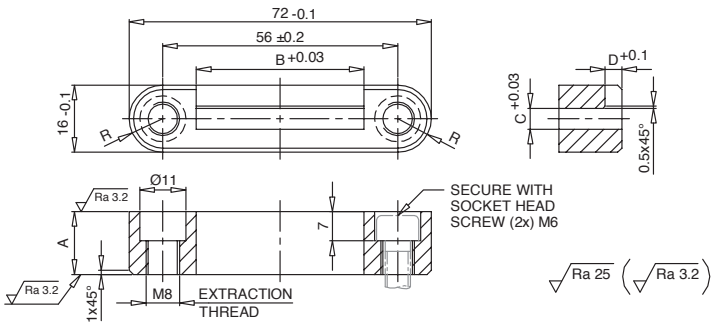


PRODUCT INFORMATION
Material: 1.2842, 1.2379, AISI-D2 or O2, 58+2 HRC
Label: Permanently mark each part with Ford part number and manufacturer's brand.

Ford Global Part Number	A	B
WDX20-66-02210	$5.0^{+0.03}_{+0.00}$	2.1
WDX20-66-02219	$7.7^{+0.02}_{+0.00}$	4.8

Single Row Retainer & Backing Plate – for Engineering Part Number

Retainer

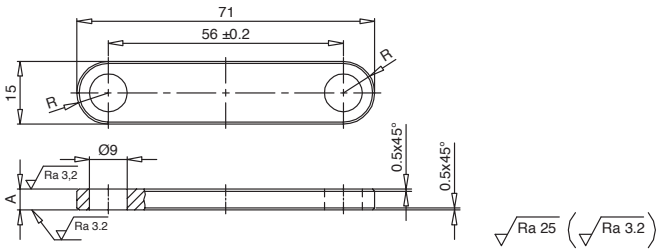


PRODUCT INFORMATION

Material: S235JRG2C+C or AISI-1025 CAST, 58+2 HRC
Label: Permanently mark each part with Ford part number and manufacturer's brand.

Ford Global Part Number	A	B	C	D
WDX20-66-03115	$15^{-0.2}_{-0.4}$	40	5	4
For replacement only WDX20-66-03112	$12^{-0.0}_{-0.2}$	33.4	6.3	2.6

Backing Plate



PRODUCT INFORMATION

Material: 1.2842, 1.2379, AISI-D2 or O2, 58+2 HRC
Label: Permanently mark each part with Ford part number and manufacturer's brand.

Ford Global Part Number	A
WDX20-66-03205	$5.0^{+0.03}_{+0.00}$
For replacement only WDX20-66-03208	$7.7^{+0.02}_{+0.00}$

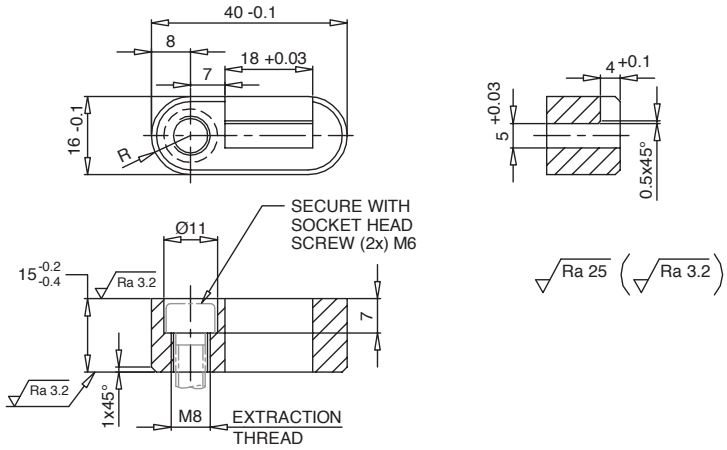
PRODUCT INFORMATION

- Retainer to be compensated for metal thickness (inside or outside of metal).
- Retainer pocket depth 20 +0.05 mm and solid model to show 0.2 mm clearance around the retainer.
- Stamp to enter metal 0.3 mm to leave readable mark.

Ford Global Assembly Number	Ford Global Part Name and Number		Application	Used with Stamps
	Retainer	Backing Plate		
WDX20-66-03120-A	WDX20-66-03115	WDX20-66-03205	Engineering Part Number and Stamping Plant Supplier Code	WDX20-66M
Replacement Only WDX20-66-03220-A	WDX20-66-03112	WDX20-66-03208	Replacement Only – North & South America and Asia Pacific	WDX20-82M

Single Row Retainer & Backing Plate – for Stamping Plant Supplier Code

Retainer



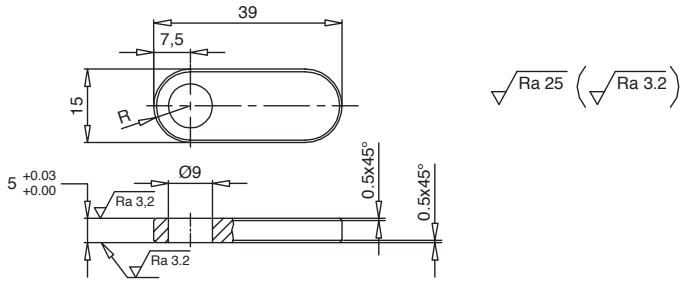
PRODUCT INFORMATION

Material: S235JRG2C+C or AISI-1025 CAST, 58+2 HRC

Label: Permanently mark each part with Ford part number and manufacturer's brand.

Ford Global Part Number
WDX20-66-04115

Backing Plate



PRODUCT INFORMATION

Material: 1.2842, 1.2379, AISI-D2 or O2, 58+2 HRC

Label: Permanently mark each part with Ford part number and manufacturer's brand.

Ford Global Part Number
WDX20-66-04205

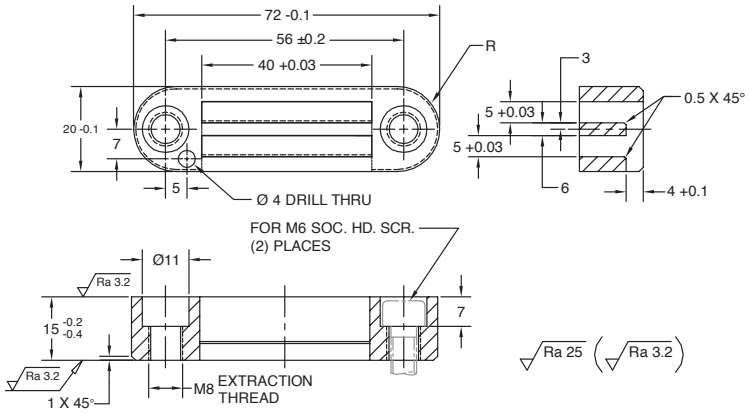
PRODUCT INFORMATION

- Retainer to be compensated for metal thickness (inside or outside of metal).
- Retainer pocket depth 20 +0.05 mm and solid model to show 0.2 mm clearance around the retainer.
- Stamp to enter metal 0.3 mm to leave readable mark.

Ford Global Assembly Number	Ford Global Part Name and Number		Application	Used with Stamps
	Retainer	Backing Plate		
WDX20-66-04120-A	WDX20-66-04115	WDX20-66-04205	Stamping Plant Supplier Code	WDX20-66M

Double Row Retainer & Backing Plate – for Engineering PN and Stamping PS Code

Retainer

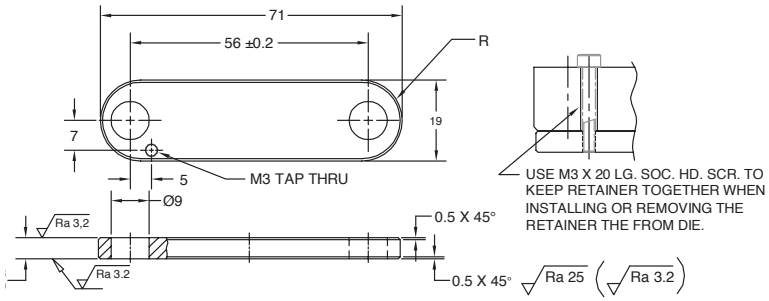


PRODUCT INFORMATION

Material: S235JRG2C+C or AISI-1025 CAST, 58+2 HRC
Label: Permanently mark each part with Ford part number and manufacturer's brand.

Ford Global Part Number
WDX20-66-05115

Backing Plate



PRODUCT INFORMATION

Material: 1.2842, 1.2379, AISI-D2 or O2, 58+2 HRC
Label: Permanently mark each part with Ford part number and manufacturer's brand.

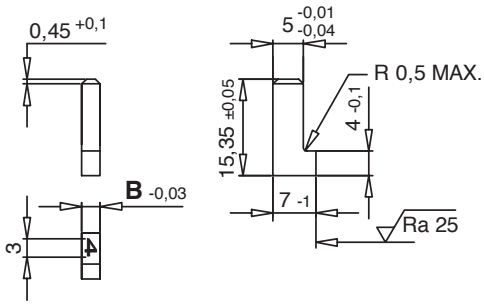
Ford Global Part Number
WDX20-66-05205

PRODUCT INFORMATION

- Retainer to be compensated for metal thickness (inside or outside of metal).
- Retainer pocket depth 20 +0.05 mm and solid model to show 0.2 mm clearance around the retainer.
- Stamp to enter metal 0.3 mm to leave readable mark.

Ford Global Assembly Number	Ford Global Part Name and Number		Application	Used with Stamps
	Retainer	Backing Plate		
WDX20-66-05120-A	WDX20-66-05115	WDX20-66-05205	Engineering Part Number and Stamping Plant Supplier Code	WDX20-66M

Stamps – for Engineering Part Identification Requirements



PRODUCT INFORMATION

- Stamp retainers see W-DX20-66M pages X through X.
- For Ford of Europe & North America stamps will be supplied by the stamping plant, do not order stamps in the BOM.
- For South America, Asia Pacific and Kocaeli stamp must be order in the BOM. All stamps must be installed in the stamp retainer before shipping to the stamping plant.
- It is the construction source responsibility to have one set of stamps to be used for tryout. This will help identify, that stamp retainers are set at a proper depth to insure stamps will mark the panel.

Ordering examples:

- For numbers WDX20-66-0601 – 4 stamp will come with number "4".
- For letters WDX20-66-0602 – a stamp will come with letter "A".
- For the letter "o" use the number stamp "0" WDX20-66-0601 – 0.
- Stamp depth to be compensated for metal thickness (inside or outside of metal). Stamp to enter metal 0.3 mm to leave mark.

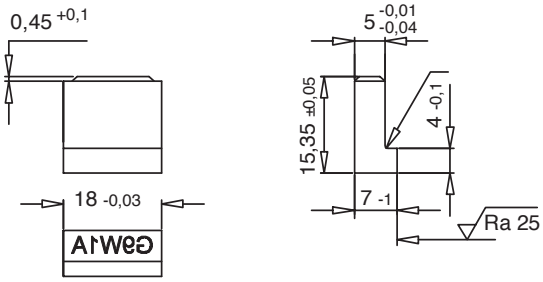
Material: BS4659-BD2 or X155CRVMO121, Material No. 1.2379. or AISI-W2

Finish: Figures and letters to be in bold script and may be alternatively 1/8" High. Heat treat to Rockwell 60-62 "C" – rust protected.

Label: Permanently mark each part with full ordering number and manufacturer's brand.

Ford Global Part Number	Ford Replacement Old Part Number	Symbol	View On Stamp	B
WDX20-66-0601 -	WDX20-70-0200	0	0	2,5
	WDX20-70-0201	1	1	
	WDX20-70-0202	2	2	
	WDX20-70-0203	3	3	
	WDX20-70-0204	4	4	
	WDX20-70-0205	5	5	
	WDX20-70-0206	6	6	
	WDX20-70-0207	7	7	
	WDX20-70-0208	8	8	
	WDX20-70-0209	9	9	
WDX20-66-0602 -	WDX20-70-0213	A	A	3,0
	WDX20-70-0214	B	B	
	WDX20-70-0215	C	C	
	WDX20-70-0216	D	D	
	WDX20-70-0217	E	E	
	WDX20-70-0218	F	F	2,5
	WDX20-70-0219	G	G	3,0
	WDX20-70-0220	H	H	
	WDX20-70-0221	I	I	2,5
	WDX20-70-0222	J	J	
	WDX20-70-0223	K	K	3,0
	WDX20-70-0224	L	L	2,5
	WDX20-70-0225	M	M	3,5
	WDX20-70-0226	N	N	3,0
	WDX20-70-0228	P	P	
	WDX20-70-0229	Q	Q	
	WDX20-70-0230	R	R	
	WDX20-70-0231	S	S	
	WDX20-70-0232	T	T	2,5
	WDX20-70-0233	U	U	3,0
	WDX20-70-0234	V	V	2,5
	WDX20-70-0235	W	W	3,5
	WDX20-70-0236	X	X	2,5
	WDX20-70-0237	Y	Y	
	WDX20-70-0238	Z	Z	
WDX20-66-0603	WDX20-70-0242	Blank Filler Pieces		0,5
WDX20-66-0604	WDX20-70-0243			1,0
WDX20-66-0605	WDX20-70-0210			1,5
WDX20-66-0606	WDX20-70-0211			2,0
WDX20-66-0607	WDX20-70-0212			2,5
WDX20-66-0608				22,0
WDX20-66-0609				6,0
WDX20-66-0610	Stamp kit all letters, numbers and blanks			

Stamps – for Global Stamping Plant Supplier Code



PRODUCT INFORMATION

- Application see W-DX20-01M page X.
- Stamp retainers see W-DX20-66M pages X through X.
- For Ford of Europe & North America stamps will be supplied by the stamping plant, do not order stamps in the BOM.
- For South America, Asia Pacific and Kocaeli stamp must be order in the BOM. All stamps must be installed in the stamp retainer before shipping to the stamping plant.
- It is the construction source responsibility to have one set of stamps to be used for tryout. This will help identify, that stamp retainers are set at a proper depth to insure stamps will mark the panel.

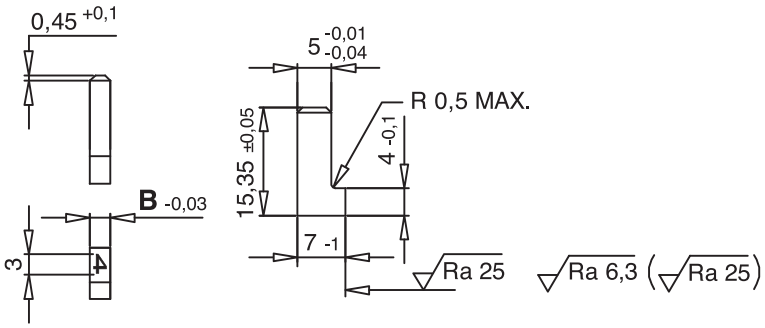
Material: BS4659-BD2 or X155CRVMO121, Material No. 1.2379. or AISI-W2

Finish: Figures and letters to be in bold script and may be alternatively 1/8" High. Heat treat to Rockwell 60-62 "C" – rust protected.

Label: Permanently mark each part with full ordering number and manufacturer's brand.

Ford Global Part Number	GSDB Supplier Code	View On Stamp	Stamping Plant Name
WDX20-66-0701	GQDHA	GQDHA	COSKUNOZ-FOR ELABUGA PLANT
WDX20-66-0702	GP1CA	GP1CA	PETERFORM-FOR ELABUGA PLANT
WDX20-66-0703	1055E	1055E	CHENNAI STAMPING PLANT
WDX20-66-0704	1055U	1055U	SANAND STAMPING PLANT
WDX20-66-0705	GK0VE	GK0VE	FORD MOTOR COMPANY THAILAND LTD
WDX20-66-0706	0134A	0134A	COLOGNE STAMPING PLANT
WDX20-66-0707	0097A	0097A	SAARLOUIS STAMPING PLANT
WDX20-66-0708	D1D4F	D1D4F	OTOSAN STAMPING PLANT
WDX20-66-0709	FLD2A	FLD2A	CRAIOVA STAMPING PLANT
WDX20-66-0710	FJ2RB	FJ2RB	GESTAMP-FOR ST. PETERSBURG PLANT
WDX20-66-0711	0144B	0144B	VALENCIA STAMPING & SUBASSY PLANT
WDX20-66-0712	FI07A	FI07A	PACHECO STAMPING PLANT
WDX20-66-0713	FI05C	FI05C	SAO BERNARDO STAMPING PLANT
WDX20-66-0714	BCMLA	BCMLA	CAMACARI STAMPING PLANT
WDX20-66-0715	MS01A	MS01A	BUFFALO STAMPING PLANT
WDX20-66-0716	MS02A	MS02A	CHICAGO HEIGHTS STAMPING PLANT
WDX20-66-0717	MS05A	MS05A	DEARBORN STAMPING PLANT
WDX20-66-0718	MS04A	MS04A	DEARBORN DIVERSIFIED MFG. PLT.
WDX20-66-0719	G9W1A	G9W1A	FLAT ROCK STAMPING PLANT
WDX20-66-0720	AP06L	AP06L	KANSAS CITY STAMPING PLANT
WDX20-66-0721	MS0DA	MS0DA	KENTUCKY TRUCK METAL STAMPING
WDX20-66-0722	MS0BA	MS0BA	MICHIGAN STAMPING PLANT (MAP)
WDX20-66-0723	MS09A	MS09A	WOODHAVEN STAMPING PLANT
WDX20-66-0724	AP23A	AP23A	CUAUTITLAN STAMPING PLANT
WDX20-66-0725	MS24A	MS24A	HERMOSILLO STAMPING PLANT
WDX20-66-0726	4158A	4158A	SAN LUIS POTOSI STAMPING PLANT
WDX20-66-0727	D1D4T	D1D4T	INONU STAMPING PLANT
WDX20-66-0728			TDM STAMPING PLANT

Stamps – for Production Part Number or Production Date



PRODUCT INFORMATION

For production part number

- Use stamps from Table 1.
- Retainer & backing plate assembly for stamps see WDX20-66M.
- For application see W-DX20-06M.

For production date

- Use stamp set WDX20-70-0250 to have all possible combinations.
- Use stamps from Table 2 only, if you need separate letter stamps.
- Retainer & backing plate assembly, for stamps see WDX20-66M.
- For application see W-DX20-06M.

Material: BS4659-BD2 or X155CRVMO121, Material No. 1.2379.

Finish: Figures and letters to be in bold script and may be alternatively 1/8" High. Heat treat to Rockwell 60-62 "C" – rust protected.

Label: Permanently mark each part with full ordering number and manufacturer's brand.

Stamp Set – for the date only

Ford Assembly Number WDX20-70-0250		
Amount	Ford Part Number	Refer To
2	WDX20-70-0200	Table 1
3	WDX20-70-0201 WDX20-70-0202	
2	WDX20-70-0203 WDX20-70-0204 WDX20-70-0205 WDX20-70-0206 WDX20-70-0207 WDX20-70-0208 WDX20-70-0209	
1	WDX20-70-0251 WDX20-70-0252 WDX20-70-0253	Table 2
2	WDX20-70-0254	
1	WDX20-70-0255 WDX20-70-0256	

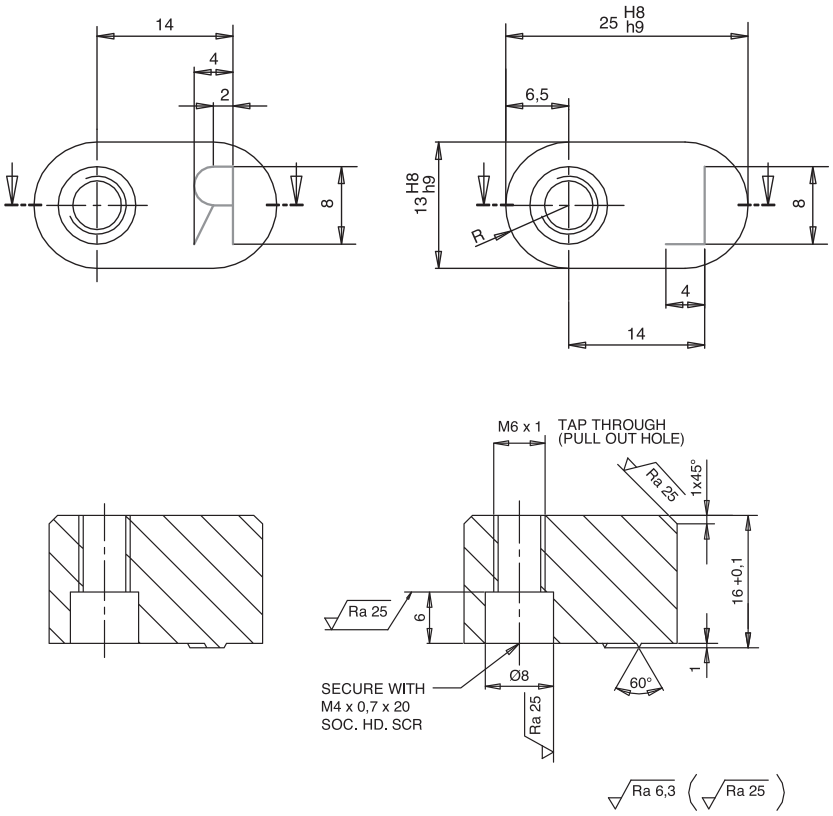
Table 1

Symbol Code	Ford Part Number	View On Stamp	B
0	WDX20-70-0200	0	2,5
1	WDX20-70-0201	1	
2	WDX20-70-0202	2	
3	WDX20-70-0203	3	
4	WDX20-70-0204	4	
5	WDX20-70-0205	5	
6	WDX20-70-0206	6	
7	WDX20-70-0207	7	
8	WDX20-70-0208	8	
9	WDX20-70-0209	9	
Filler Pieces	WDX20-70-0242		0,5
	WDX20-70-0243		1,0
	WDX20-70-0210		1,5
	WDX20-70-0211		2,0
	WDX20-70-0212		2,5
A	WDX20-70-0213	A	3,0
B	WDX20-70-0214	B	
C	WDX20-70-0215	C	
D	WDX20-70-0216	D	
E	WDX20-70-0217	E	
F	WDX20-70-0218	F	2,5
G	WDX20-70-0219	G	3,0
H	WDX20-70-0220	H	3,0
I	WDX20-70-0221	I	2,5
J	WDX20-70-0222	J	
K	WDX20-70-0223	K	3,0
L	WDX20-70-0224	L	2,5
M	WDX20-70-0225	M	3,5
N	WDX20-70-0226	N	3,0
1/2	WDX20-70-0227	1/2	3,5
P	WDX20-70-0228	P	3,0
Q	WDX20-70-0229	Q	
R	WDX20-70-0230	R	
S	WDX20-70-0231	S	
T	WDX20-70-0232	T	2,5
U	WDX20-70-0233	U	3,0
V	WDX20-70-0234	V	2,5
W	WDX20-70-0235	W	3,5
X	WDX20-70-0236	X	2,5
Y	WDX20-70-0237	Y	
Z	WDX20-70-0238	Z	
-	WDX20-70-0239	-	1,5
=	WDX20-70-0240	=	
≡	WDX20-70-0241	≡	

Table 2

Symbol Code	Ford Part Number	View On Stamp	B
A	WDX20-70-0251	A	2,5
B	WDX20-70-0252	B	
C	WDX20-70-0253	C	
D	WDX20-70-0254	D	
E	WDX20-70-0255	E	
N	WDX20-70-0256	N	

Stamp – for Part Identification
RH and LH Part



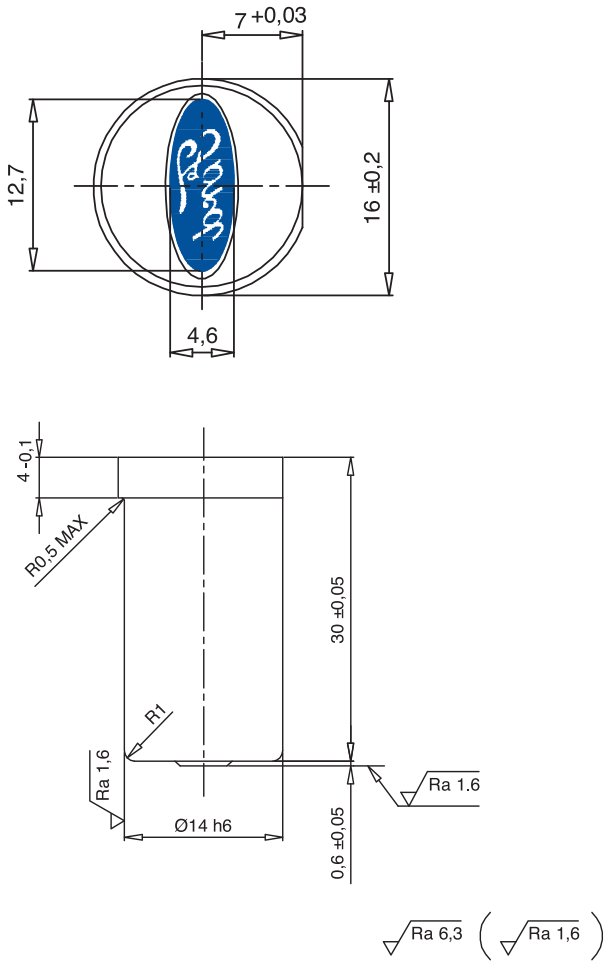
PRODUCT INFORMATION

Material: 1.2379
Finish: Harden 60-62 HRC, rust protect
Tolerance : All dimensions without tolerances stated to be ±0.3.

Label: Permanently mark each part with full ordering number and manufacturers brand.

Letter	Ford Part Number
R	WDX20-70-0501
L	WDX20-70-0502

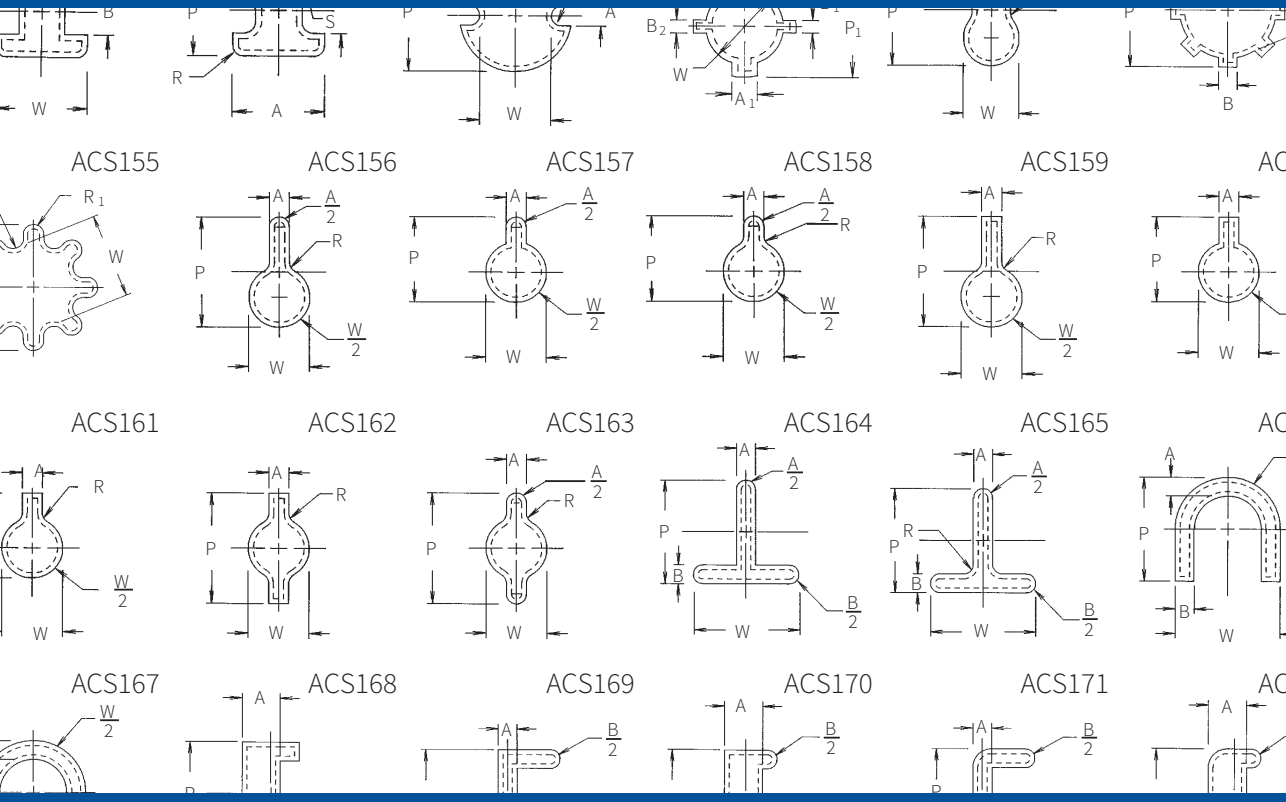
Special Stamp – Ford Trade Mark – for Spider Wheels Only



PRODUCT INFORMATION

Material: 1.2379 (X210CR12) to DIN 17350, Hardness HRC 60.
Finish: Permanently mark each part with ford part number and manufacturer's brand.

Ford Global Part Number
WDX20-70-0701



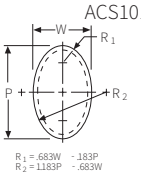
Classified Shapes and Technical Information

97 - 103

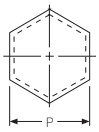
Note: All views in Die Position

90 °

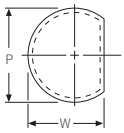
ACS101



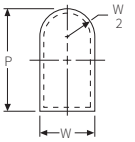
ACS102



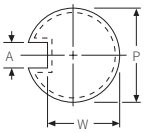
ACS103



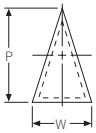
ACS104



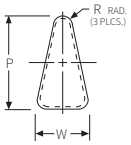
ACS105



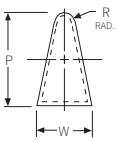
ACS106



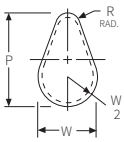
ACS107



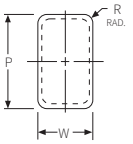
ACS108



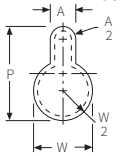
ACS109



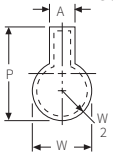
ACS110



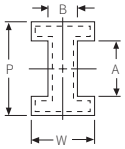
ACS111



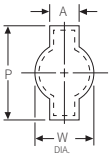
ACS112



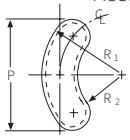
ACS113



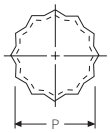
ACS114



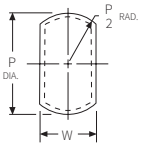
ACS115



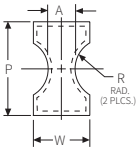
ACS116



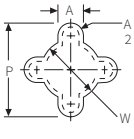
ACS117



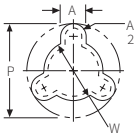
ACS118



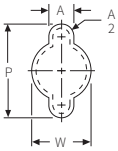
ACS119



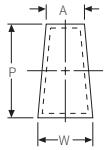
ACS120



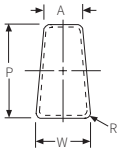
ACS121



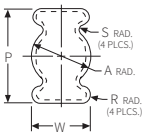
ACS122



ACS123



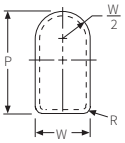
ACS124



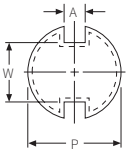
180 °

0 °

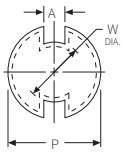
ACS125



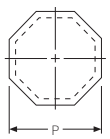
ACS126



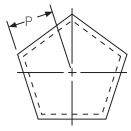
ACS127



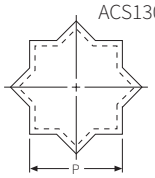
ACS128



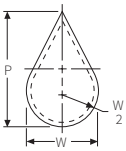
ACS129



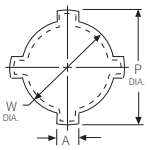
ACS130



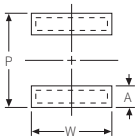
ACS131



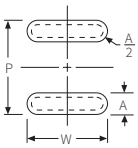
ACS132



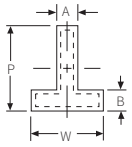
ACS133



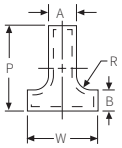
ACS134



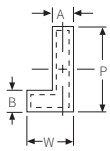
ACS135



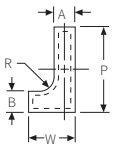
ACS136



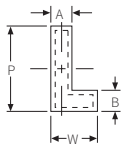
ACS137



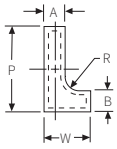
ACS138



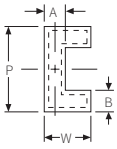
ACS139



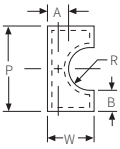
ACS140



ACS141



ACS142



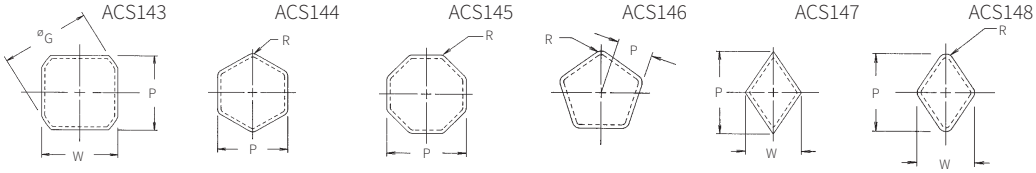
270 °

Classified Shapes

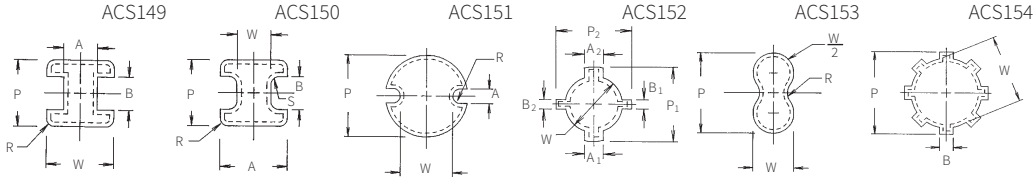
Note: All views in Die Position

90°

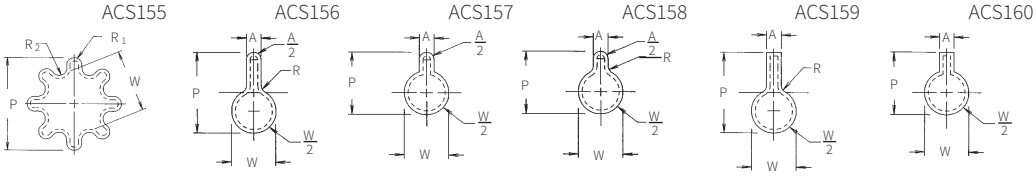
ACS143 ACS144 ACS145 ACS146 ACS147 ACS148



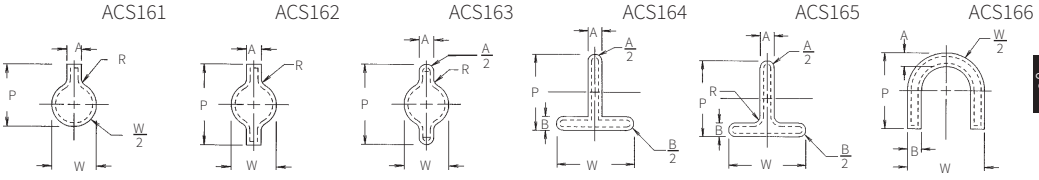
ACS149 ACS150 ACS151 ACS152 ACS153 ACS154



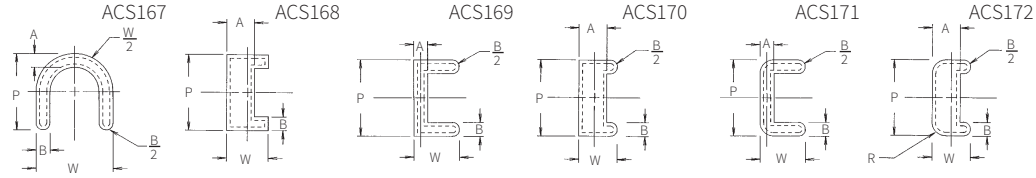
ACS155 ACS156 ACS157 ACS158 ACS159 ACS160



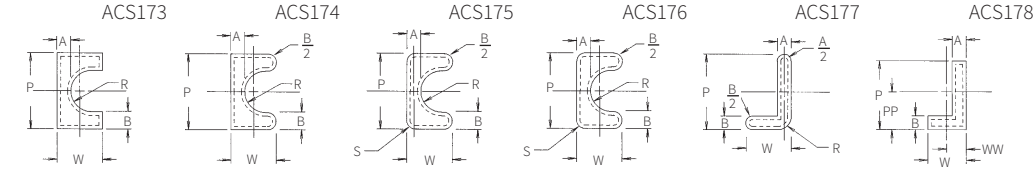
180° ACS161 ACS162 ACS163 ACS164 ACS165 ACS166 0°



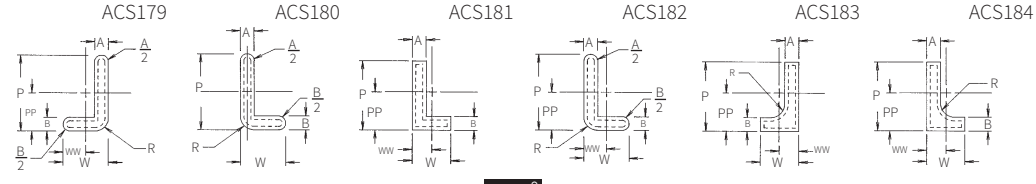
ACS167 ACS168 ACS169 ACS170 ACS171 ACS172



ACS173 ACS174 ACS175 ACS176 ACS177 ACS178



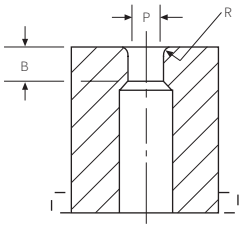
ACS179 ACS180 ACS181 ACS182 ACS183 ACS184



270°

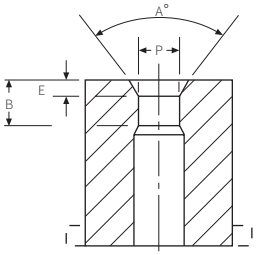
Draw / Extrude Die Buttons

D301



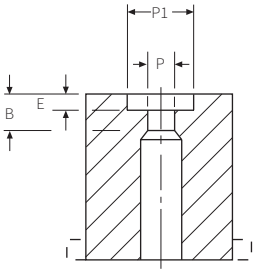
P= _____
R= _____
B= _____

D302



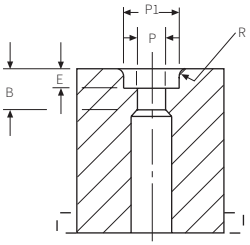
A= _____ E= _____
B= _____ P= _____

D303



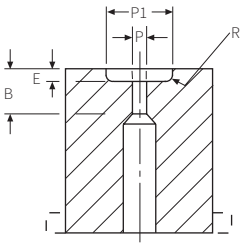
B= _____ P1= _____
E= _____ P= _____

D304



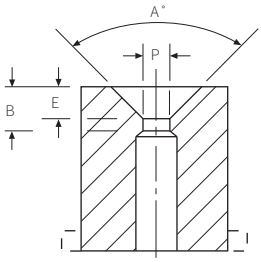
B= _____ P= _____
E= _____ R= _____
P1= _____

D305



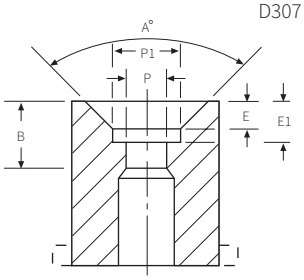
B= _____ P= _____
E= _____ R= _____
P1= _____

D306



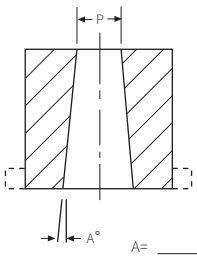
A= _____ E= _____
B= _____ P= _____

D307



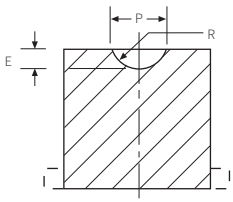
A= _____ P1= _____
B= _____ P= _____
C= _____ R= _____

D308



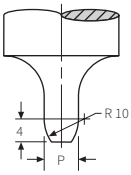
A= _____
P= _____

D309

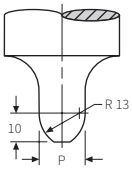


E= _____
P= _____
R= _____

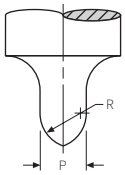
Draw / Extrude Punches for Drawing, Extruding, Staking, Forming, Coining



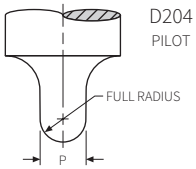
D201
PILOT



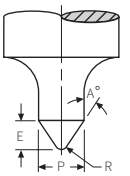
D202
PILOT



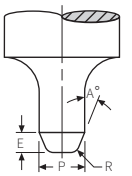
D203
PILOT



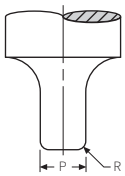
D204
PILOT



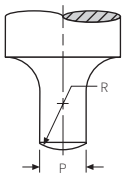
D205
PILOT



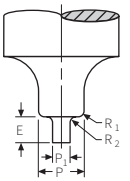
D206
PILOT



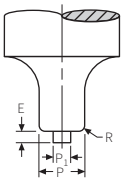
D207
EXTRUSION



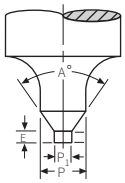
D208
FORM



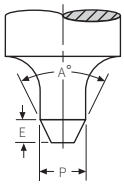
D209
PIERCE & EXTRUDE



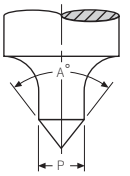
D210
PIERCE & EXTRUDE



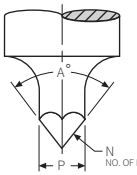
D211
PIERCE & COUNTER-SINK



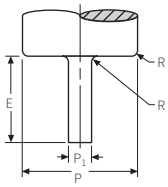
D212
COIN



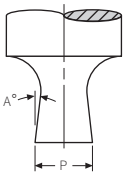
D213
CONE POINT



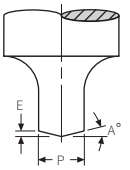
D214
NAIL POINT



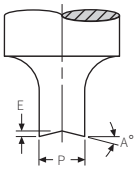
D215
PIERCE FORM



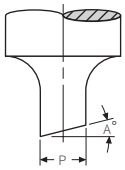
D216
BACK TAPER



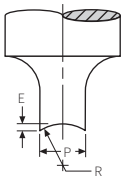
D217
CHISEL POINT



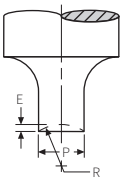
D218
ROOFTOP SHEAR



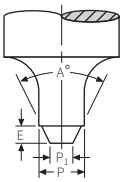
D219
ANGLED SHEAR



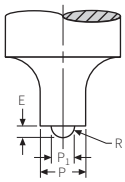
D220
THRU-RADIUS SHEAR



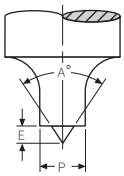
D221
CONCAVE SHEAR



D222
COIN



D223
DIMPLE



D224
PICK-UP PIERCE

Stamping/Stripping Forces

Punching Pressure:
(cutting force required)

Formula: PP = L x T x S

PP = Punching pressure required in Newtons.
L = Length of cut (perimeter).
T = Thickness of material.
S = Shear strength of material (N).

Stripping Pressure:

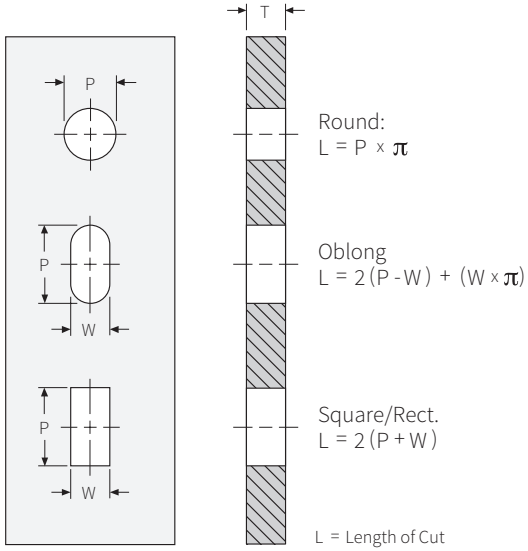
Formula: SP = L x T x 20.68

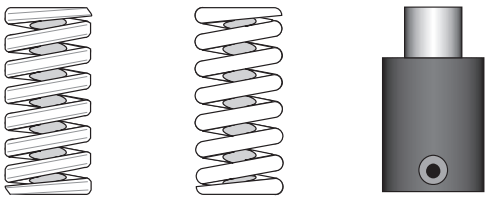
SP = Stripping pressure in Newtons.
L = Length of cut (perimeter).
T = Thickness of material.

Number of springs required for Stripping:

Formula: $NS = \frac{SP}{D}$

NS = Number of springs required.
SP = Stripping Pressure.
D = Deflection of selected spring rating in Newtons, based on spring manufacturer's efficient operating range that meets your needs.





Rectangular Oval Nitrogen

SPRING LENGTH & STRIPPING PRESSURE

These should be calculated to a point where the working face of the stripper is flush with the cutting edge of the punches, minus the stripper plates thickness. The force required to punch and the Stripping Pressure can be reduced by varying the amount of clearance between the Punch & Die.

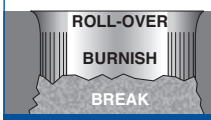
Note: Sharpening of punches and die buttons without shimming to compensate and/or lowering the upper press ram adjustment can lead to:

(a) Increased compression of the spring, premature failure or breakage.
(b) Irregular and inconsistent die performance.

It is always better to use a higher number of springs at a lower force and percentage of travel for longer life, consistent stock control and stripping.

Punch-to-Die Clearances

Developing the best hole for your application

HOLE CHARACTERISTICS THAT VARY WITH CLEARANCE	EXTREMELY TIGHT CLEARANCE	NORMAL TIGHT CLEARANCE	RECOMMENDED EJECTOR CLEARANCE (Optimum)	LOOSE EJECTOR CLEARANCE (Longest Tool Life)
				
Recommended *Total Clearance* Expressed as Percent of Material Thickness				
Aluminum, Soft	1 – 3%	4 – 8%	9 – 15%	16 – 20%
Aluminum, Hard	2 – 5%	6 – 10%	18 – 25%	26 – 35%
Brass, 1/2 Hard	2 – 5%	6 – 10%	16 – 26%	27 – 34%
Brass, Annealed	2 – 5%	6 – 11%	20 – 30%	30 – 42%
Bronze, Comm. 1/2 Hard	2 – 5%	6 – 10%	20 – 30%	30 – 36%
Copper, 1/2 Hard	2 – 4%	5 – 10%	16 – 24%	25 – 42%
Copper, Annealed	2 – 5%	3 – 08%	16 – 20%	21 – 28%
Lead	2 – 4%	4 – 10%	12 – 16%	16 – 20%
Magnesium	2 – 5%	6 – 10%	12 – 20%	20 – 34%
Stainless, Annealed	4 – 6%	6 – 10%	20 – 30%	30 – 45%
Steel, Low Carbon	2 – 4%	5 – 10%	20 – 30%	31 – 42%
Steel, High Carbon	5 – 8%	10 – 20%	21 – 34%	35 – 48%

GUIDELINES TO REDUCING DOWN TIME & INCREASING PRODUCTION IN YOUR DIES

1. The *function of the hole* is the most important consideration.

2. If the hole is for *clearance only*, you can greatly increase punch and die life by adding maximum clearance between the punch and die. Fortunately for most metal stampers, most holes provide clearance for fasteners. These are economical holes to manufacture.

3. If your hole has critical specifications for a *long, straight sidewall* (burnish), you will need to develop the proper clearance starting with a tight clearance. At this point, you can vary the length of straight wall. Lengthen the straight sidewall by further reducing the clearance between punch and die. These are very expensive holes to manufacture!

4. Don't apply rules for #3 to #2. It's very common and very expensive!

5. *Alignment* of punch to die is essential, especially for lighter gauge materials, since it will vary the clearance by the amount of misalignment. The problems won't go away until the misalignment is corrected.

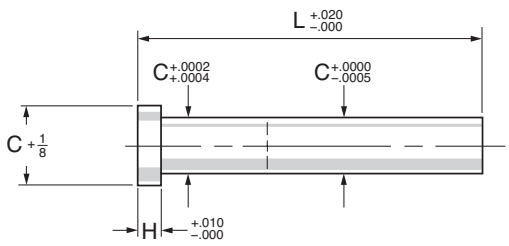
6. Much can be accomplished to improve die performance *before excessive burr* becomes a factor.

Tolerances & Metric-Inch Conversions

METRIC TOLERANCES							
Dia.	g5 Slip-Fit Ball-Lock Punches & Buttons	m4 Peerless Press-Fit Punches & Buttons (headed)	m5 General Press-Fit Punches & Buttons (headed)	n4 Peerless Press-Fit Buttons (headless)	n5 General Press-Fit Buttons (headless)	H6 Slip-Fit Retainer Holes	H7 Slip-Fit Dowel Holes
4.0	—	+0.004 +0.008	+0.004 +0.009	+0.008 +0.012	—	+0.008 -0.000	—
5.0	—	+0.004 +0.008	+0.004 +0.009	+0.008 +0.012	—	+0.008 -0.000	—
6.0	-0.004 -0.009	+0.004 +0.008	+0.006 +0.012	+0.008 +0.012	—	+0.008 -0.000	+0.012 -0.000
8.0	—	+0.006 +0.010	+0.006 +0.012	+0.010 +0.014	+0.016 +0.010	+0.009 -0.000	+0.015 -0.000
10.0	-0.005 -0.011	+0.006 +0.010	+0.006 +0.012	+0.010 +0.014	+0.016 +0.010	+0.009 -0.000	+0.015 -0.000
13.0	-0.006 -0.014	+0.007 +0.012	+0.007 +0.015	+0.012 +0.017	+0.020 +0.012	+0.011 -0.000	+0.018 -0.000
16.0	-0.006 -0.014	+0.007 +0.012	+0.007 +0.015	+0.012 +0.017	+0.020 +0.012	+0.011 -0.000	—
20.0	-0.007 -0.016	+0.008 +0.014	+0.008 +0.017	+0.015 +0.021	+0.024 +0.015	+0.013 -0.000	—
25.0	-0.007 -0.016	+0.008 +0.014	+0.008 +0.017	+0.015 +0.021	+0.024 +0.015	+0.013 -0.000	—
32.0	-0.009 -0.020	+0.009 +0.016	+0.009 +0.020	+0.017 +0.024	+0.028 +0.017	+0.016 -0.000	—
38.0	-0.009 -0.020	+0.009 +0.016	+0.009 +0.020	+0.017 +0.024	+0.028 +0.017	+0.016 -0.000	—
40.0	-0.009 -0.020	+0.009 +0.016	+0.009 +0.020	+0.017 +0.024	+0.028 +0.017	+0.016 -0.000	—
45.0	-0.009 -0.020	+0.009 +0.016	+0.009 +0.020	+0.017 +0.024	+0.028 +0.017	+0.016 -0.000	—
50.0	-0.009 -0.020	+0.009 +0.016	+0.009 +0.020	+0.017 +0.024	+0.028 +0.017	+0.016 -0.000	—
56.0	-0.010 -0.023	+0.011 +0.019	+0.011 +0.024	+0.020 +0.028	+0.033 +0.020	+0.019 -0.000	—
63.0	-0.010 -0.023	+0.011 +0.019	+0.011 +0.024	+0.020 +0.028	+0.033 +0.020	+0.019 -0.000	—
71.0	-0.010 -0.023	+0.011 +0.019	+0.011 +0.024	+0.020 +0.028	+0.033 +0.020	+0.019 -0.000	—
76.0	-0.010 -0.023	+0.011 +0.019	+0.011 +0.024	+0.020 +0.028	+0.033 +0.020	+0.019 -0.000	—
85.0	-0.010 -0.023	+0.013 +0.023	+0.013 +0.028	+0.023 +0.033	+0.038 +0.023	+0.022 -0.000	—
90.0	-0.010 -0.023	+0.013 +0.023	+0.013 +0.028	+0.023 +0.033	+0.038 +0.023	+0.022 -0.000	—
100.0	-0.010 -0.023	+0.013 +0.023	+0.013 +0.028	+0.023 +0.033	+0.038 +0.023	+0.022 -0.000	—

METRIC TO INCH CONVERSION			
mm	Inch	mm	Inch
1	.0394	51	2.0079
2	.0787	52	2.0472
3	.1181	53	2.0866
4	.1575	54	2.1260
5	.1969	55	2.1654
6	.2362	56	2.2047
7	.2756	57	2.2441
8	.3150	58	2.2835
9	.3543	59	2.3228
10	.3937	60	2.3622
11	.4331	61	2.4016
12	.4724	62	2.4410
13	.5118	63	2.4803
14	.5512	64	2.5197
15	.5906	65	2.5591
16	.6299	66	2.5984
17	.6693	67	2.6378
18	.7087	68	2.6772
19	.7480	69	2.7165
20	.7874	70	2.7559
21	.8268	71	2.7953
22	.8661	72	2.8347
23	.9055	73	2.8740
24	.9449	74	2.9134
25	.9843	75	2.9528
26	1.0236	76	2.9921
27	1.0630	77	3.0315
28	1.1024	78	3.0709
29	1.1417	79	3.1102
30	1.1811	80	3.1496
31	1.2205	81	3.1890
32	1.2598	82	3.2284
33	1.2992	83	3.2677
34	1.3386	84	3.3071
35	1.3780	85	3.3465
36	1.4173	86	3.3858
37	1.4567	87	3.4252
38	1.4961	88	3.4646
39	1.5354	89	3.5039
40	1.5748	90	3.5433
41	1.6142	91	3.5827
42	1.6535	92	3.6221
43	1.6929	93	3.6614
44	1.7323	94	3.7008
45	1.7717	95	3.7402
46	1.8110	96	3.7795
47	1.8504	97	3.8189
48	1.8898	98	3.8583
49	1.9291	99	3.8976
50	1.9685	100	3.9370

Imperial Punch and Die



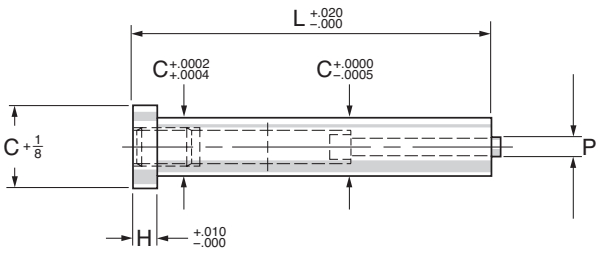
PRODUCT INFORMATION

Overall lengths up to 5".
Shank Dia Above 1" - +.0002, +.0006
Any alternative dimensions to the above can be specified.

Example order:
⌖ 6 off P7 x 31/2 lg

Symbol Numbers	Shank Dia. ø C	Head H
P1	.125	1/8
P2	.1562	1/8
P3	.1875	1/8
P4	.2187	1/8
P5	.250	1/8
P6	.2812	1/8
P7	.3125	1/8
P8	.375	3/16
P9	.4375	3/16
P10	.500	3/16
P11	.5625	3/16
P12	.625	3/16
P13	.750	1/4
P78	.875	1/4
P14	1.000	1/4
P15	1.125	1/4
P16	1.187	1/4
P17	1.250	1/4
P18	1.375	1/4
P19	1.500	1/4

Slug Ejector Punch Blanks



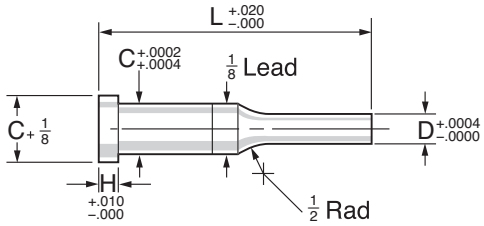
PRODUCT INFORMATION

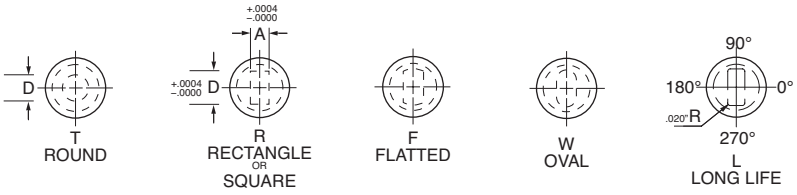
Overall length up to 4".
Shank Dia Above 1" - +.0002, +.0006
Any alternative dimensions to the above can be specified.

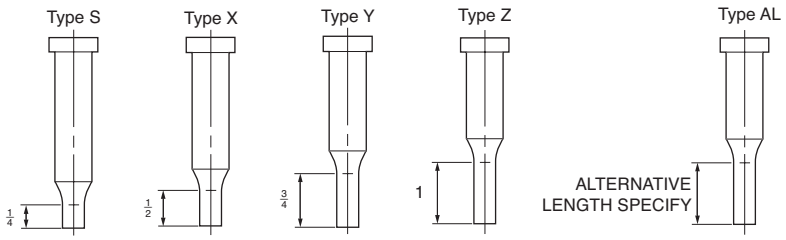
Example order:
⊕ 6 off PE8 x 31/2 LG
Ejector components available separately.

Symbol Numbers	Shank Dia. C	Head H	Pin Dia. P
PE1	.1875	1/8	.020
PE3	.1875	1/8	.040
PE5	.250	1/8	.040
PE6	.2812	1/8	.040
PE7	.3125	1/8	.040
PE8	.375	3/16	.060
PE9	.4375	3/16	.060
PE10	.500	3/16	.060
PE11	.5625	3/16	.060
PE12	.625	3/16	.093
PE13	.750	1/4	.093
PE78	.875	1/4	.093
PE14	1.000	1/4	.093
PE15	1.125	1/4	.093
PE16	1.187	1/4	.093
PE17	1.250	1/4	.093
PE18	1.375	1/4	.093
PE19	1.500	1/4	.093
PE20	1.750	1/4	.093

Standard Punches







PRODUCT INFORMATION

Headless Punches available.
Overall length up to 5".
Shank Dia Above 1" - +.0002, +.0006
Any alternative dimensions to the above can be specified.

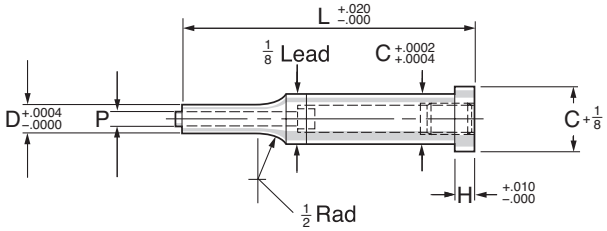
Example order:
- 6 off T12X .375 3 lg
- 6 off W12Y .396 x .500 3 lg

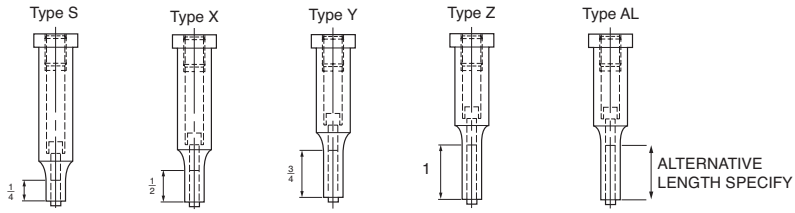
Location Flats if required see page X.
NS shapes available see pages X, X.

?

Symbol Numbers							
Round	Rect or Square	Flatted	Oval	Long Life	Shank Dia C	Head Thk. H	Min. Piercing D
T1	R1	F1	W1	L1	.125	1/8	.062
T2	R2	F2	W2	L2	.1562	1/8	.062
T3	R3	F3	W3	L3	.1875	1/8	.062
T4	R4	F4	W4	L4	.2187	1/8	.062
T5	R5	F5	W5	L5	.250	1/8	.062
T6	R6	F6	W6	L6	.2812	1/8	.094
T7	R7	F7	W7	L7	.3125	1/8	.094
T8	R8	F8	W8	L8	.375	3/16	.126
T9	R9	F9	W9	L9	.4375	3/16	.126
T10	R10	F10	W10	L10	.500	3/16	.126
T11	R11	F11	W11	L11	.5625	3/16	.156
T12	R12	F12	W12	L12	.625	3/16	.250
T13	R13	F13	W13	L13	.750	1/4	.375
T78	R78	F78	W78	L78	.875	1/4	.375
T14	R14	F14	W14	L14	1.000	1/4	.375
T15	R15	F15	W15	L15	1.125	1/4	.375
T16	R16	F16	W16	L16	1.187	1/4	.375
T17	R17	F17	W17	L17	1.250	1/4	.375
T18	R18	F18	W18	L18	1.375	1/4	.375
T19	R19	F19	W19	L19	1.500	1/4	.375

Slug Ejector Punches





PRODUCT INFORMATION

Overall length up to 4".
Shank Dia Above 1" - +.0002, +.0006
Any alternative dimensions to the above can be specified.

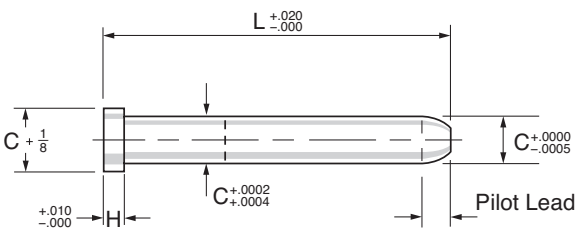
Example order:
- 2 off ER17Z .350 x 1.125 31/4 lg
- 6 off ET14S .280 21/2 lg

Location Flats if required see page X.
NS shapes available see pages X, X.
Ejector components available separately.

?

Symbol Numbers								
Round	Rect or Square	Flatted	Oval	Long Life	Shank Dia. C	Head Thk H	Pin Hole P	Min Width A/D
ET2	ER2	EF2	EW2	EL2	.1875	1/8	.020	.062
ET3	ER3	EF3	EW3	EL3	.1875	1/8	.040	.100
ET4	ER4	EF4	EW4	EL4	.2187	1/8	.040	.100
ET5	ER5	EF5	EW5	EL5	.250	1/8	.040	.100
ET6	ER6	EF6	EW6	EL6	.2812	1/8	.040	.125
ET7	ER7	EF7	EW7	EL7	.3125	1/8	.040	.125
ET8	ER8	EF8	EW8	EL8	.375	3/16	.060	.187
ET9	ER9	EF9	EW9	EL9	.4375	3/16	.060	.187
ET10	ER10	EF10	EW10	EL10	.500	3/16	.060	.187
ET11	ER11	EF11	EW11	EL11	.5625	3/16	.060	.187
ET12	ER12	EF12	EW12	EL12	.625	3/16	.093	.250
ET13	ER13	EF13	EW13	EL13	.750	1/4	.093	.250
ET78	ER78	EF78	EW78	EL78	.875	1/4	.093	.250
ET14	ER14	EF14	EW14	EL14	1.000	1/4	.093	.250
ET15	ER15	EF15	EW15	EL15	1.125	1/4	.093	.250
ET16	ER16	EF16	EW16	EL16	1.187	1/4	.093	.250
ET17	ER17	EF17	EW17	EL17	1.250	1/4	.093	.250
ET18	ER18	EF18	EW18	EL18	1.375	1/4	.093	.250
ET19	ER19	EF19	EW19	EL19	1.500	1/4	.093	.250

Parallel Pilots



PRODUCT INFORMATION

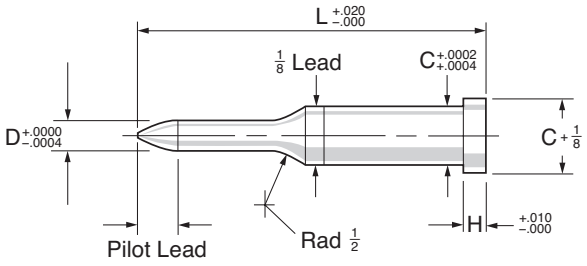
Overall lengths up to 5".
Shank Dia Above 1" - +.0002, +.0006
Any alternative dimensions can be specified.

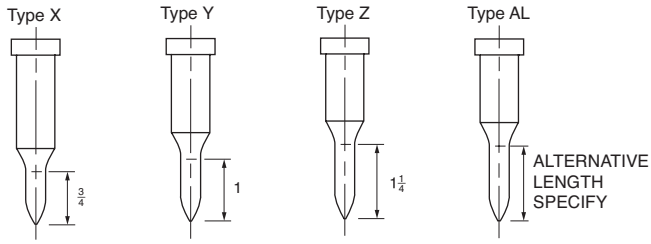
Example order:
⌖ 3 off SPP10 x 3 lg

Symbol Numbers	Shank Dia. C	Head H
SPP1	.125	1/8
SPP2	.1562	1/8
SPP3	.1875	1/8
SPP4	.2187	1/8
SPP5	.250	1/8
SPP6	.2812	1/8
SPP7	.3125	1/8
SPP8	.375	3/16
SPP9	.4375	3/16
SPP10	.500	3/16
SPP11	.5625	3/16
SPP12	.625	3/16
SPP13	.750	1/4
SPP78	.875	1/4
SPP14	1.000	1/4
SPP15	1.125	1/4
SPP16	1.187	1/4
SPP17	1.250	1/4
SPP18	1.375	1/4
SPP19	1.500	1/4

Dia C Range	Pilot Lead
.090–.250	3/16
.251–.375	1/4
.376–.500	5/16
.501–.750	3/8
.751–1.000	1/2
1.001–1.500	5/8

Pilot Points





PRODUCT INFORMATION

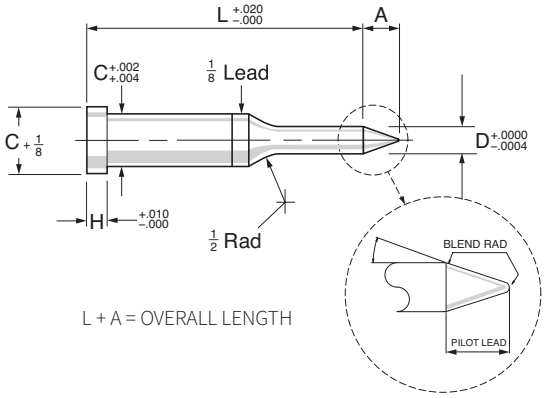
Overall lengths up to 5".
Shank Dia Above 1" - +.0002, +.0006
Any alternative dimensions can be specified.

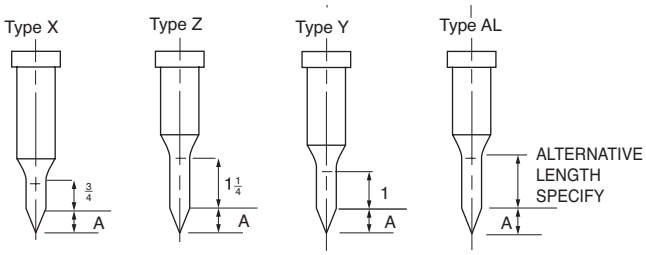
Example order:
⊕ 12 off TP5Y .231 3 lg

Symbol Numbers	Shank Dia. C	Head H	Pilot Dia. D
TP1	.125	1/8	.090–.125
TP2	.1562	1/8	.090–.156
TP3	.1875	1/8	.090–.187
TP4	.2187	1/8	.090–.218
TP5	.250	1/8	.090–.250
TP6	.2812	1/8	.125–.281
TP7	.3125	1/8	.125–.312
TP8	.375	3/16	.125–.375
TP9	.4375	3/16	.125–.437
TP10	.500	3/16	.250–.500
TP11	.5625	3/16	.250–.562
TP12	.625	3/16	.250–.625
TP13	.750	1/4	.375–.750
TP78	.875	1/4	.625–.875
TP14	1.000	1/4	.750–1.000
TP15	1.125	1/4	.875–1.125
TP16	1.187	1/4	.875–1.187
TP17	1.250	1/4	1.000–1.250
TP18	1.375	1/4	1.125–1.375
TP19	1.500	1/4	1.250–1.500

Dia D Range	Pilot Lead
.090–.250	3/16
.251–.375	1/4
.376–.500	5/16
.501–.750	5/8
.751–1.000	1/2
1.001–1.500	5/8

Angular Pilot Points





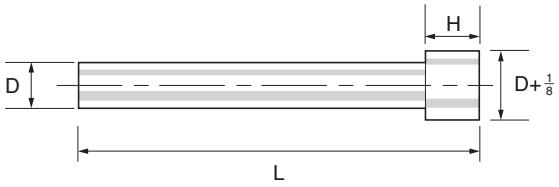
PRODUCT INFORMATION

Overall lengths up to 5".
Shank Dia Above 1" - +.0002, +.0006
Any alternative dimensions can be specified.

Example order:
ATP10X .300x4.000 L = 4.000 + A

Symbol Numbers	Shank Dia. C	Head H	Pilot Dia. D	A
ATP8	.375	3/16	.180 - .395	.315
ATP10	.500	3/16	.235 - .510	.395
ATP12	.625	3/16	.395 - .630	.590
ATP13	.750	1/4*	.530 - .785	.787
ATP14	1.000	1/4*	.690 - .985	.985
ATP15	1.125	1/4*	.810 - 1.260	1.180

Solid Any Size Punches



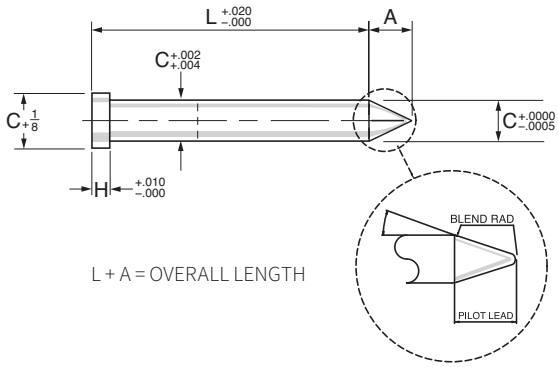
PRODUCT INFORMATION

Any length up to 5" and Alternative Head Thickness readily available.
AP – Imperial Sizes.

Example order:
- For .256" dia Punch 4" long = AP.256 x 4 lg

Symbol Numbers	Dia D $^{+.0004}_{-.0000}$ Increments .0004	Head H
AP	.0400 – .37	1/8
AP	.3750 – .62	3/16
AP	.6255 – OVER	1/4

Angular Parallel Pilots



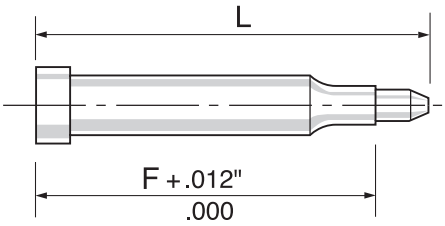
PRODUCT INFORMATION

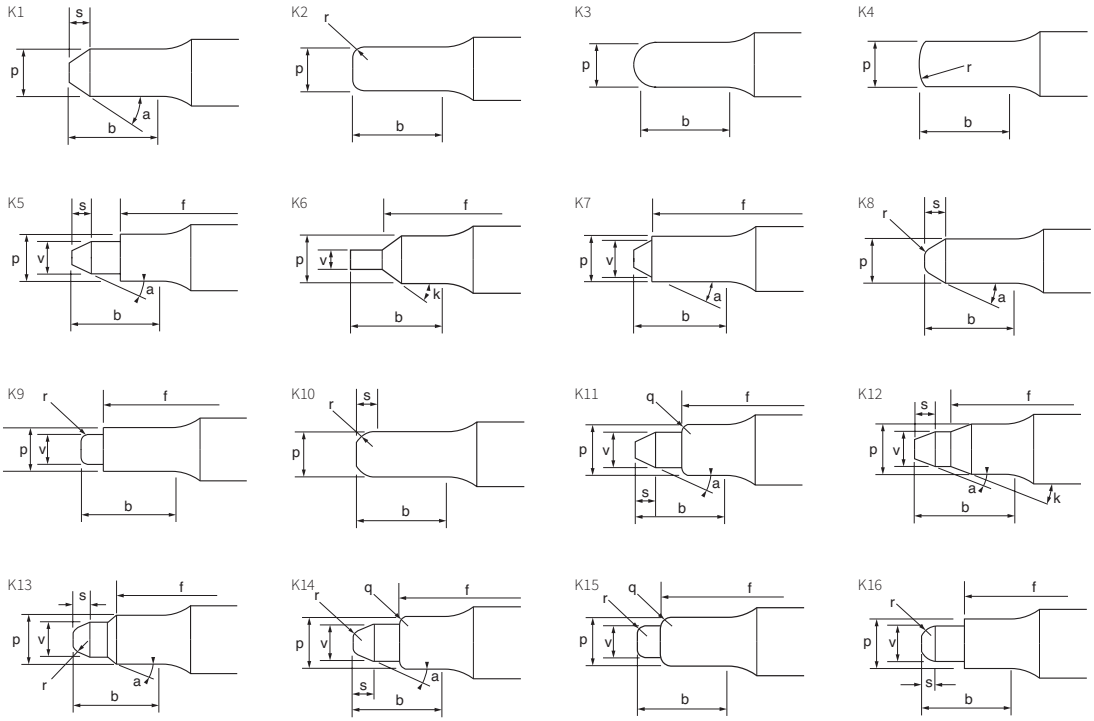
Overall lengths up to 5".
Shank Dia Above 1" - +.0002, +.0006
Any alternative dimensions can be specified.

Example order:
⊕ 6 off APP4 x 2 L = 2 + A

Symbol Numbers	Shank Dia. C	Head H	A
APP1	.125	1/8	.240
APP2	.1562	1/8	.240
APP3	.1875	1/8	.315
APP4	.2187	1/8	.315
APP5	.250	1/8	.315
APP6	.2812	1/8	.315
APP7	.3125	1/8	.315
APP8	.375	3/16	.315
APP9	.4375	3/16	.395
APP10	.500	3/16	.395
APP11	.5625	3/16	.590
APP12	.625	3/16	.590
APP13	.750	1/4	.790
APP78	.875	1/4	.790
APP14	1.000	1/4	.985
APP15	1.125	1/4	.985
APP16	1.187	1/4	1.180
APP17	1.250	1/4	1.180

Standard Drawing Punches





PRODUCT INFORMATION

To order specify:

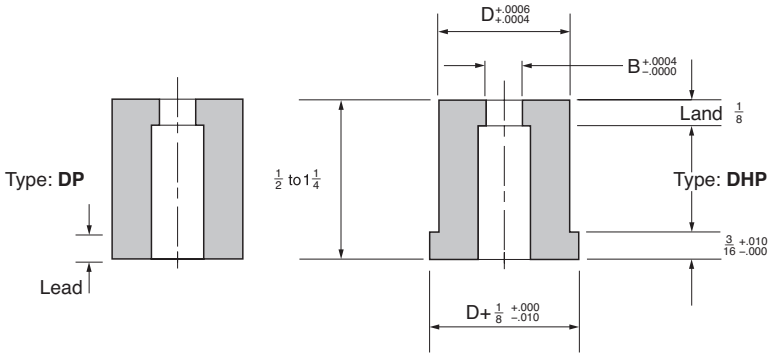
- Symbol Numbers
- Dimensions
- Punch Blank required see page X
- Overall Length
- Other Forms available

Example order:

- 6 Off P6 K3 3.15"
- P=.228 b=.750

Die Bushes

Round Parallel Recess



PRODUCT INFORMATION

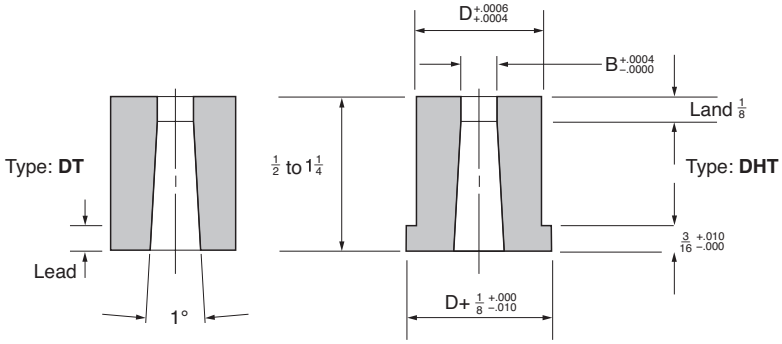
Alternative body diameter, overall length and land lengths readily available – see page X.

Example order:

- 6 off DP18 1.250 x 3/4 lg

SYMBOL NUMBERS		Dia.	Bore Size
Headless	Headed	D	B
DP1	DHP1	.1875	.062–.100
DP2	DHP2	.250	.062–.165
DP3	DHP3	.3125	.093–.200
DP4	DHP4	.375	.125–.250
DP5	DHP5	.4375	.125–.281
DP6	DHP6	.500	.125–.312
DP7	DHP7	.625	.248–.375
DP8	DHP8	.750	.375–.500
DP9	DHP9	.875	.375–.625
DP10	DHP10	1.000	.375–.750
DP11	DHP11	1.125	.375–.875
DP12	DHP12	1.250	.375–1.000
DP13	DHP13	1.375	.375–1.062
DP14	DHP14	1.500	.375–1.125
DP15	DHP15	1.625	.500–1.250
DP16	DHP16	1.750	.500–1.375
DP17	DHP17	1.875	.500–1.500
DP18	DHP18	2.000	.500–1.625

Round Taper Recess



PRODUCT INFORMATION

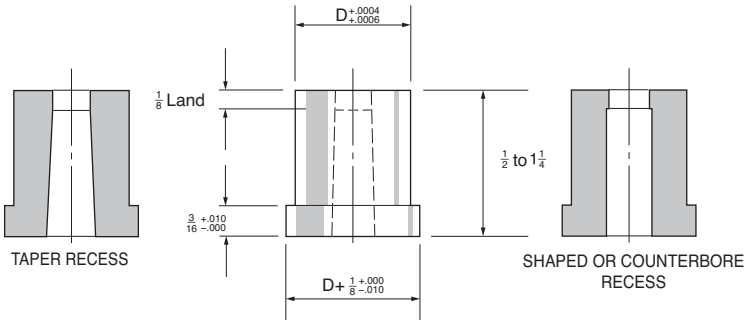
Alternative body diameter, overall length and land lengths readily available – see page X.

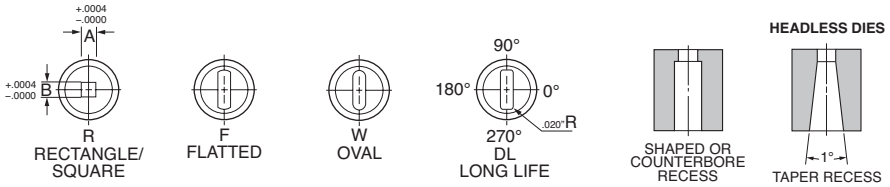
Example order:

⌖ 12 off DHT4 .200 3/4 lg

SYMBOL NUMBERS		Dia.	Bore Size
Headless	Headed	D	B
DT1	DHT1	.1875	.080–.100
DT2	DHT2	.250	.080–.165
DT3	DHT3	.3125	.093–.200
DT4	DHT4	.375	.125–.250
DT5	DHT5	.4375	.125–.281
DT6	DHT6	.500	.125–.312
DT7	DHT7	.625	.248–.375
DT8	DHT8	.750	.375–.500
DT9	DHT9	.875	.375–.625
DT10	DHT10	1.000	.375–.750
DT11	DHT11	1.125	.375–.875
DT12	DHT12	1.250	.375–1.000
DT13	DHT13	1.375	.375–1.062
DT14	DHT14	1.500	.375–1.125
DT15	DHT15	1.625	.500–1.250
DT16	DHT16	1.750	.500–1.375
DT17	DHT17	1.875	.500–1.500
DT18	DHT18	2.000	.500–1.625

Die Bushes – EDM





PRODUCT INFORMATION

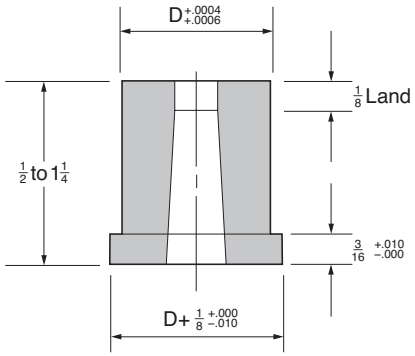
Alternative Body diameter, overall length and land lengths readily available – see page X.
Location Flats if required see page X.
NS shapes available see pages X, X.

Example order:
- 4 off DW 10 .300 x .500 1 lg
- 6 off DHR 15 .550 x .750 1 lg

Taper Recess is supplied unless specified otherwise.

Symbol Numbers								
Headless Dies				Headed Dies				
Rect/Sq.	Flatted	Oval	Long Life	Rect/Sq.	Flatted	Oval	Long Life	Dia. D
DR4	DF4	DW4	DL4	DHR4	DHF4	DHW4	DHL4	.375
DR5	DF5	DW5	DL5	DHR5	DHF5	DHW5	DHL5	.4375
DR6	DF6	DW6	DL6	DHR6	DHF6	DHW6	DHL6	.500
DR7	DF7	DW7	Dl7	DHR7	DHF7	DHW7	DHL7	.625
DR8	DF8	DW8	DL8	DHR8	DHF8	DHW8	DHL8	.750
DR9	DF9	DW9	DL9	DHR9	DHF9	DHW9	DHL9	.875
DR10	DF10	DW10	DL10	DHR10	DHF10	DHW10	DHL10	1.000
DR11	DF11	DW11	DL11	DHR11	DHF11	DHW11	DHL11	1.125
DR12	DF12	DW12	DL12	DHR12	DHF12	DHW12	DHL12	1.250
DR13	DF13	DW13	DL13	DHR13	DHF13	DHW13	DHL13	1.375
DR14	DF14	DW14	DL14	DHR14	DHF14	DHW14	DHL14	1.500
DR15	DF15	DW15	DL15	DHR15	DHF15	DHW15	DHL15	1.625
DR16	DF16	DW16	DL16	DHR16	DHF16	DHW16	DHL16	1.750
DR17	DF17	DW17	DL17	DHR17	DHF17	DHW17	DHL17	1.875
DR18	DF18	DW18	DL18	DHR18	DHF18	DHW18	DHL18	2.000

Die Bushes – Split



PRODUCT INFORMATION

Alternative shapes, body dia, overall length and land lengths readily available – see page X. ?

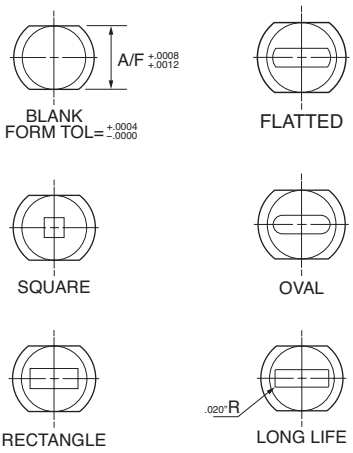
To order specify:

- Symbol, type, shape and size and length

Note: Head Flats are Standard on Split Dies

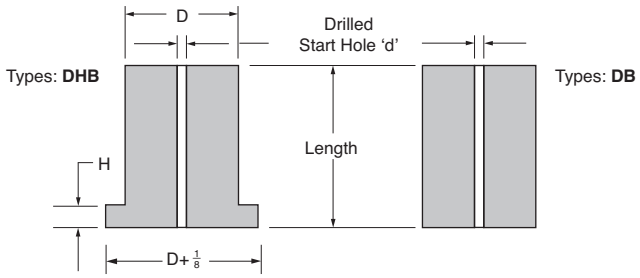
Example order:

- GD12 Oval .400 x .800 11/4 lg



Symbol Numbers	Dia. D
GD4	3/8
GD5	7/16
GD6	1/2
GD7	5/8
GD8	3/4
GD9	7/8
GD10	1
GD11	1 1/8
GD12	1 1/4
GD13	1 3/8
GD14	1 1/2
GD15	1 5/8
GD16	1 3/4
GD17	1 7/8
GD18	2

EDM Die Blanks



PRODUCT INFORMATION

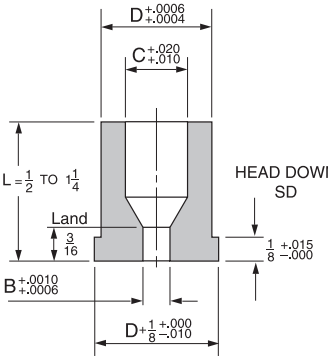
Alternative Body and Bore size available.
Location Flats if required see pages X. ?

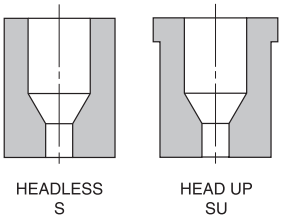
Example order:
⊕ 12 off DB17 1" lg

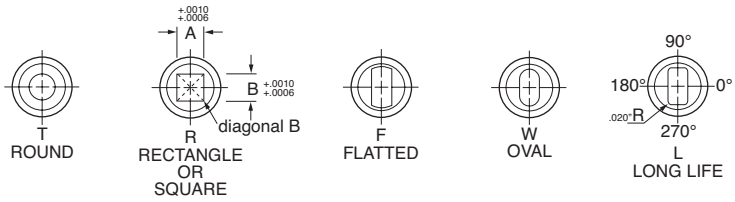
Symbol Numbers		Dia. D +.0006 +.0004	Dia. d
DB1	DHB1	.1875	0.04
DB2	DHB2	.250	
DB3	DHB3	.3125	
DB4	DHB4	.375	
DB5	DHB5	.4375	
DB6	DHB6	.500	
DB7	DHB7	.625	0.06
DB8	DHB8	.750	
DB9	DHB9	.875	
DB10	DHB10	1.000	
DB11	DHB11	1.125	
DB12	DHB12	1.250	
DB13	DHB13	1.375	0.08
DB14	DHB14	1.500	
DB15	DHB15	1.625	
DB16	DHB16	1.750	
DB17	DHB17	1.875	
DB18	DHB18	2.000	

Head Thickness H	Length
3/16	1/2 to 1 1/4

Stripper Bushes







PRODUCT INFORMATION

Alternative shapes, body dia, overall length and land lengths available.
Location Flats if required see page X.
Views are from the dia C end.

Note: Diagonal B must not exceed dia C.

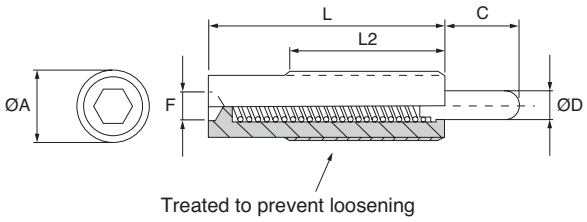
Example order:
- 6 off SUW10 x .375 x .500 x 1”
- 10 off SDT6 x .250 x 11/4”

Symbol Numbers			Body Dia D	Diagonal Range B	Dia C
Head Down	Headless	Head Up			
SD*2	S*2	SU*2	.250	.063–.125	.125
SD*3	S*3	SU*3	.3125	.070–.187	.187
SD*4	S*4	SU*4	.375	.090–.250	.250
SD*5	S*5	SU*5	.4375	.125–.312	.312
SD*6	S*6	SU*6	.500	.150–.344	.344
SD*7	S*7	SU*7	.625	.250–.450	.450
SD*8	S*8	SU*8	.750	.375–.562	.562
SD*9	S*9	SU*9	.875	.375–.687	.687
SD*10	S*10	SU*10	1.000	.375–.812	.812
SD*11	S*11	SU*11	1.125	.375–.937	.937
SD*12	S*12	SU*12	1.250	.375–.937	.937
SD*13	S*13	SU*13	1.375	.375–.969	.969
SD*14	S*14	SU*14	1.500	.375–1.000	1.000

**Insert the shape code*

Tooling Accessories

Long Spring Plungers



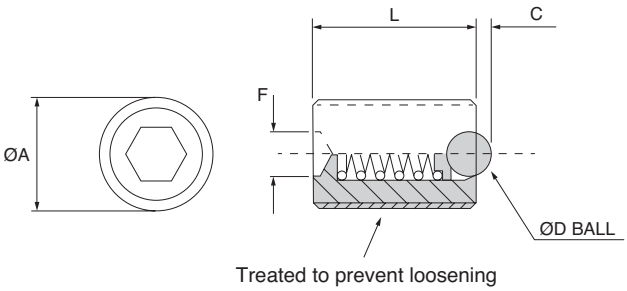
PRODUCT INFORMATION

For Nitrogen Gas Spring Plungers please see our Kaller range of gas springs.

Example order:
⌖ 8 off SP1210H

Symbol No.	A	L	L2	C	D	F	FORCE Kg MIN/MAX	Plunger Wrench
Light Load								
SP1210L	M12 x 1.75	43	35	10.0	5.5	4.0	0.4–2.0	PW–12
SP1610LS	M16 x 2.0	50	35	10.0	8.0	5.0	1.0–5.0	PW–16
SP1610L	M16 x 2.0	60	35	10.0	8.0	5.0	1.3–4.0	PW–16
SP1615L	M16 x 2.0	60	35	15.0	8.0	5.0	1.0–4.0	PW–16
SP1620L	M16 x 2.0	60	35	20.0	8.0	5.0	1.3–4.0	PW–16
SP1630L	M16 x 2.0	125	35	30.0	8.0	5.0	1.8–4.0	PW–16
SP1640L	M16 x 2.0	125	35	40.0	8.0	5.0	1.8–4.0	PW–16
SP1650L	M16 x 2.0	155	35	50.0	8.0	5.0	2.0–5.0	PW–16
SP1660L	M16 x 2.0	159	35	60.0	8.0	5.0	1.8–4.0	PW–16
SP1670L	M16 x 2.0	185	35	70.0	8.0	5.0	2.0–5.0	PW–16
SP1680L	M16 x 2.0	185	35	80.0	8.0	5.0	2.0–5.0	PW–16
SP2415L	M24 x 3.0	60	45	15.0	10.0	8.0	2.0–10.0	PW–24
SP3020L	M30 x 3.5	70	45	20.0	15.0	12.0	3.0–15.0	PW–30
Heavy Load								
SP1210H	M12 x 1.75	43	35	10.0	5.5	4.0	0.7–4.0	PW–12
SP1610HS	M16 x 2.0	50	35	10.0	8.0	5.0	2.0–10.0	PW–16
SP1610H	M16 x 2.0	60	35	10.0	8.0	5.0	2.7– 8.0	PW–16
SP1615H	M16 x 2.0	60	35	15.0	8.0	5.0	1.5–8.0	PW–16
SP1620H	M16 x 2.0	85	35	20.0	8.0	5.0	1.7–8.0	PW–16
SP1630H	M16 x 2.0	125	35	30.0	8.0	5.0	2.0–8.0	PW–16
SP1640H	M16 x 2.0	125	35	40.0	8.0	5.0	2.0–8.0	PW–16
SP1650H	M16 x 2.0	155	35	50.0	8.0	5.0	3.0–10.0	PW–16
SP1660H	M16 x 2.0	159	35	60.0	8.0	5.0	2.0– 8.0	PW–16
SP1670H	M 16 x 2.0	185	35	70.0	8.0	5.0	3.0–15.0	PW–16
SP1680H	M16 x 2.0	185	35	80.0	8.0	5.0	3.0–15.0	PW–16
SP2415H	M24 x 3.0	60	45	15.0	10.0	8.0	4.0–20.0	PW–24
SP3020H	M30 x 3.5	70	45	20.0	15.0	12.0	5.0–30.0	PW–30

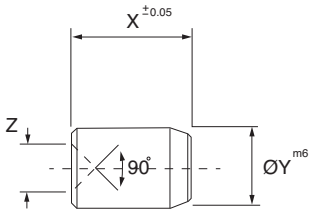
Ball Plungers



PRODUCT INFORMATION

Example order:

⊕ 12 off BP04L



Symbol No.	A	L	C	D	F	FORCE Kg MIN/MAX
BP04L	M4 x 0.7	9.0	0.8	2.5	0.6	0.2–0.5
BP05L	M5 x 0.8	12.0	0.8	3.0	2.5	0.3–1.0
BP06L	M6 x 1.0	13.0	0.8	3.0	3.0	0.5–1.5
BP08L	M8 x 1.25	15.0	1.0	4.0	4.0	0.7–2.0
BP10L	M10 x 1.5	16.0	1.2	5.0	5.0	0.9–2.5
BP12L	M12 x 1.75	20.0	1.8	7.0	6.0	1.0–3.0
BP16L	M16 x 2.0	25.0	2.5	9.5	8.0	1.6–5.0
SBP04	M4 x 0.7	9.0	0.8	2.5	0.6	0.3–0.8
SBP05	M5 x 0.8	12.0	0.8	3.0	2.5	0.4–1.2
SBP06	M6 x 1.0	13.0	0.8	3.0	3.0	0.7–2.3
SBP08	M8 x 1.25	15.0	1.0	4.0	4.0	1.0–3.0
SBP10	M10 x 1.5	16.0	1.2	5.0	5.0	1.2–3.8
SBP12	M12 x 1.75	20.0	1.8	7.0	6.0	1.5–4.5
SBP16	M16 x 2.0	25.0	2.5	9.5	8.0	2.5–7.5
BP03H	M3 x 0.5	7.0	0.5	1.5	1.5	0.15–0.3
BP04H	M4 x 0.7	9.0	0.8	2.5	0.6	0.4–1.0
BP05H	M5 x 0.8	12.0	0.8	3.0	2.5	0.5–2.0
BP06H	M6 x 1.0	13.0	0.8	3.0	3.0	1.0–3.0
BP08H	M8 x 1.25	15.0	1.0	4.0	4.0	1.3–4.0
BP10H	M10 x 1.5	16.0	1.2	5.0	5.0	1.9–5.0
BP12H	M12 x 1.75	20.0	1.8	7.0	6.0	2.0–6.0
BP16H	M16 x 2.0	25.0	2.5	9.5	8.0	3.0–10.0

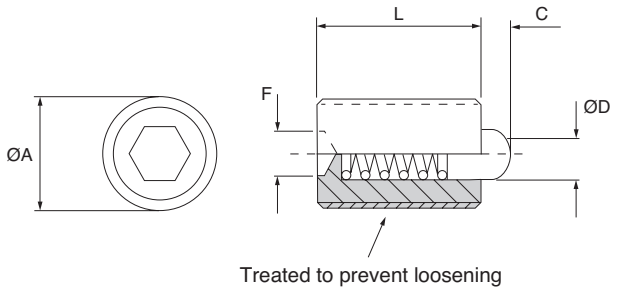
Symbol No.	X	Y	Z
BB–4	5.0	4.0	1.5
BB–5	6.0	5.0	2.0
BB–6	8.0	6.0	2.0
BB–8	10.0	8.0	3.0
BB–10	12.0	10.0	4.0
BB–12	14.0	12.0	6.0
BB–16	18.0	16.0	8.0

PRODUCT INFORMATION

Example order:

⊕ 8 off BB–16

Small Ball Plungers



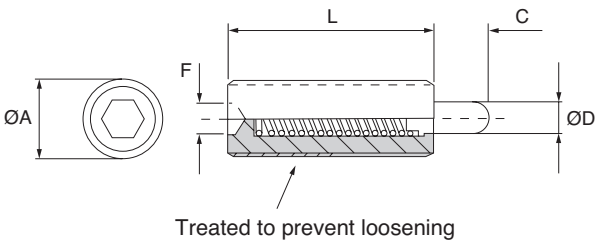
PRODUCT INFORMATION

Wrench not available for this range.

Example order:
⊕ 6 off SPS05L

Symbol No.	A	L	C	D	F	FORCE Kg MIN/MAX
Light Load						
SPS05L	M5 x 0.8	12.0	1.5	2.5	2.5	0.2–0.8
SPS06L	M6 x 1.0	13.0	1.5	3.0	3.0	0.3–1.0
SPS08L	M8 x 1.25	15.0	2.0	4.0	4.0	0.3–1.0
SPS10L	M10 x 1.5	16.0	2.5	5.0	5.0	0.5–1.5
SPS12L	M12 x 1.75	20.0	3.5	6.0	6.0	0.5–1.5
SPS16L	M16 x 2.0	22.0	4.5	8.0	8.0	1.0–3.0
Heavy Load						
SPS05H	M5 x 0.8	12.0	1.5	2.5	2.5	0.5–1.5
SPS06H	M6 x 1.0	13.0	1.5	3.0	3.0	0.6–2.0
SPS08H	M8 x 1.25	15.0	2.0	4.5	4.0	0.6–2.0
SPS10H	M10 x 1.5	16.0	2.5	5.0	5.0	1.0–3.0
SPS12H	M12 x 1.75	20.0	3.5	6.0	6.0	1.0–3.0
SPS16H	M16 x 2.0	22.0	4.5	8.0	8.0	2.0–6.0

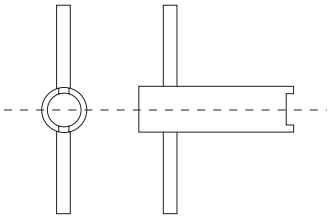
Spring Plungers

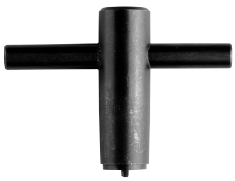


PRODUCT INFORMATION

Example order:

⊕ 12 off SP06L





Light Load							
Symbol No.	A	L	C	D	F	FORCE Kg MIN/MAX	Plunger Wrench
SP5LS	M5 x 0.8	13.0	3.0	2.0	1.5	0.2–0.8	PW–5
SP05L	M5 x 0.8	20.0	3.0	2.0	1.5	0.2–1.0	PW–5
SP06L	M6 x 1.0	25.0	3.0	2.5	2.0	0.3–1.0	PW–6
SP08L	M8 x 1.25	25.0	4.0	3.1	2.5	0.3–1.0	PW–8
SP10L	M10 x 1.5	30.0	5.0	3.8	3.0	0.3–1.5	PW–10
SP12L	M12 x 1.75	30.0	5.0	5.5	4.0	0.2–1.0	PW–12
Heavy Load							
SP03H	M3 x 0.5	10.0	1.5	1.0	0.8	0.05–0.3	N/A
SP04H	M4 x 0.7	12.0	2.0	1.6	0.8	0.2–1.0	N/A
SP05H	M5 x 0.8	20.0	3.0	2.0	1.5	0.4–2.0	PW–5
SP06H	M6 x 1.0	25.0	3.0	2.5	2.0	0.8–3.0	PW–6
SP08H	M8 x 1.25	25.0	4.0	3.1	2.5	0.8–3.0	PW–8
SP10H	M10 x 1.5	30.0	5.0	3.8	3.0	1.0–5.0	PW–10
SP12H	M12 x 1.75	30.0	5.0	5.5	4.0	1.0–5.0	PW–12

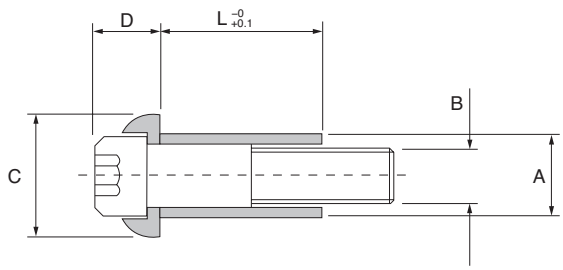
Wrench Symbol No.	
PW–5	PW–12
PW–6	PW–16
PW–8	PW–24
PW–10	PW–30

PRODUCT INFORMATION

Example order:

⊕ 2 off PW–10

Stripper Bolts with “Calibrated” Tube



PRODUCT INFORMATION

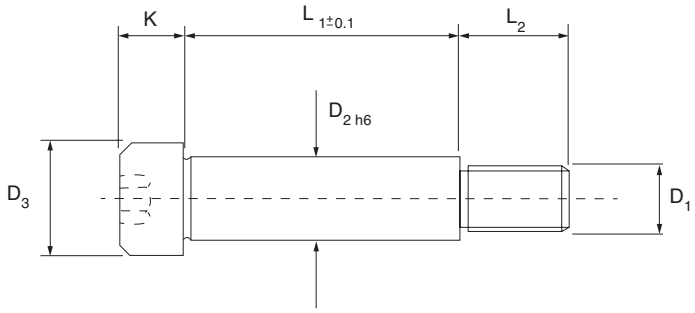
Washer: Heat treated steel. Tempered & ground.
Rated stress: 100 kg/mm

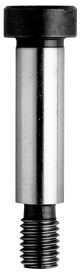
Example order:
⌖ 4 off A15.010.045

	A15.XXX.XXX				
A	10	12.5	15	17.5	23
B	M6	M8	M10	M12	M16
C	15	19	23	27	34
D	10	13	15	18	24

L	Symbol No.				
20	A15.010.020				
25	A15.010.025				
30	A15.010.030	A15.012.030	A15.015.030		
35	A15.010.035	A15.012.035	A15.015.035		
40	A15.010.040	A15.012.040	A15.015.040	A15.017.040	
45	A15.010.045	A15.012.045	A15.015.045	A15.017.045	
50	A15.010.050	A15.012.050	A15.015.050	A15.017.050	A15.023.050
55	A15.010.055	A15.012.055	A15.015.055	A15.017.055	
60	A15.010.060	A15.012.060	A15.015.060	A15.017.060	A15.023.060
70		A15.012.070	A15.015.070	A15.017.070	A15.023.070
80		A15.012.080	A15.015.080	A15.017.080	A15.023.080
90			A15.015.090	A15.017.090	A15.023.090
100			A15.015.100	A15.017.100	A15.023.100
110				A15.017.110	A15.023.110
120				A15.017.120	A15.023.120

Stripper Bolts





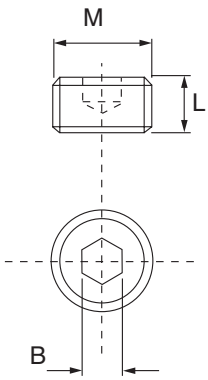
PRODUCT INFORMATION

Material: High Grade Alloy Steel

Example order:
6 off B17.010.040

	B17.XXX.XXX					
D2	6	8	10	12	16	20
D_1	M5	M6	M8	M10	M12	M16
D_3	10	13	16	18	24	30
K	4.5	5.5	7	8	11	14
L_2	9.75	11.25	13.25	16.4	18.4	22.4

L_1	Symbol No.					
10	B17.006.010	B17.008.010				
12	B17.006.012	B17.008.012	B17.010.012			
16	B17.006.016	B17.008.016	B17.010.016	B17.012.016		
20	B17.006.020	B17.008.020	B17.010.020	B17.012.020	B17.016.020	
25	B17.006.025	B17.008.025	B17.010.025	B17.012.025	B17.016.025	B17.020.025
30	B17.006.030	B17.008.030	B17.010.030	B17.012.030	B17.016.030	B17.020.030
35	B17.006.035	B17.008.035	B17.010.035	B17.012.035	B17.016.035	B17.020.035
40	B17.006.040	B17.008.040	B17.010.040	B17.012.040	B17.016.040	B17.020.040
45	B17.006.045	B17.008.045	B17.010.045	B17.012.045	B17.016.045	B17.020.045
50	B17.006.050	B17.008.050	B17.010.050	B17.012.050	B17.016.050	B17.020.050
55	B17.006.055	B17.008.055	B17.010.055	B17.012.055	B17.016.055	B17.020.055
60	B17.006.060	B17.008.060	B17.010.060	B17.012.060	B17.016.060	B17.020.060
65		B17.008.065	B17.010.065	B17.012.065	B17.016.065	B17.020.065
70		B17.008.070	B17.010.070	B17.012.070	B17.016.070	B17.020.070
75			B17.010.075	B17.012.075	B17.016.075	B17.020.075
80			B17.010.080	B17.012.080	B17.016.080	B17.020.080
90			B17.010.090	B17.012.090	B17.016.090	B17.020.090
100			B17.010.100	B17.012.100	B17.016.100	B17.020.100



PRODUCT INFORMATION

Example order:

- 8 off MSW10

Symbol No.	M	L	B
MSW2.5	M2.5 x 0.45	3	1.3
MSW3	M3 x 0.5	3	1.5
MSW4	M4 x 0.7	4	2
MSW5	M5 x 0.8	5	2.5
MSW6	M6 x 1.0	6	3
MSW8	M8 x 1.25	8	4
MSW10	M10 x 1.5	10	5
MSW12	M12 x 1.5	10	6
MSW14	M14 x 1.5	10	6
MSW16	M16 x 1.5	10	8
MSW18	M18 x 1.5	10	10.5
MSW20	M20 x 1.5	12	10
MSW22	M22 x 1.5	12	12

Symbol No.	M	L	B
MSW24	M24 x 1.5	12	14
MSW25	M25 x 1.5	12	14
MSW26	M26 x 1.5	12	14
MSW27	M27 x 1.5	12	14
MSW28	M28 x 1.5	12	14
MSW30	M30 x 1.5	12	17
MSW33	M33 x 1.5	12	17
MSW36	M36 x 1.5	18	17
MSW38	M38 x 1.5	18	17
MSW40	M40 x 1.5	18	17
MSW42	M42 x 1.5	18	17
MSW45	M45 x 1.45	18	17

Ball Point Key Sets

PRODUCT INFORMATION

Example order:

⊕ 1 off SM-010-9

Symbol No.	Wrench Sizes
SM-010-9	1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0

Metric Short Arm Keys

PRODUCT INFORMATION

Example order:

⊕ 2 off SM-030-9

Symbol No.	Wrench Sizes
SM-030-9	1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0

T-Handle Wrenches

PRODUCT INFORMATION

Example order:

- 3 off SMT0050

Symbol No.	A	B	C
SMT0020	2.0	100	80
SMT0025	2.5	100	80
SMT0030	3.0	100	80
SMT0040	4.0	150	80
SMT0050	5.0	150	100
SMT0060	6.0	150	100
SMT0080	8.0	200	100
SMT0100	10.0	200	120
SMT0120	12.0	200	120

T-Handle Key Sets

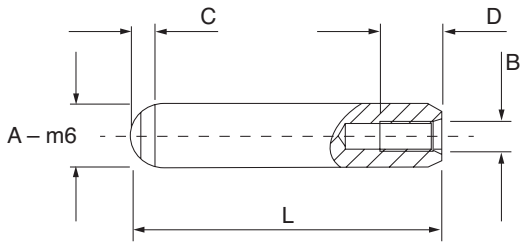
PRODUCT INFORMATION

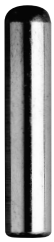
Example order:

- 3 off SM0408

Symbol No.	Wrench Sizes
SM-040-8	2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0, 12.0

Extractable Dowels





PRODUCT INFORMATION

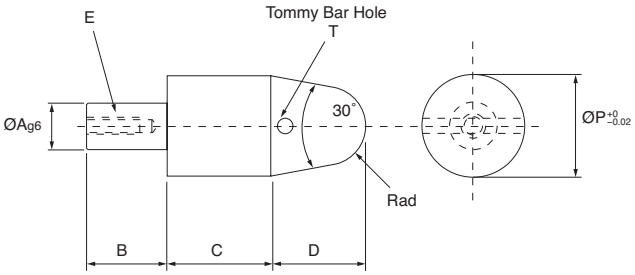
Hardness: 60 ±2 HRc

Example order:
4 off A25.008.050

	A25.XXX.XXX					
A	6	8	10	12	16	20
B	M4	M5	M6	M6	M8	M10
C	2.1	2.6	3.0	3.8	4.7	6.0
D	6	8	10	10	12	16

Symbol No.						LENGTH = L
A25.006.020	A25.008.020	A25.010.020				20
A25.006.032	A25.008.032	A25.010.032	A25.012.032			32
A25.006.040	A25.008.040	A25.010.040	A25.012.040	A25.016.040	A25.020.040	40
A25.006.050	A25.008.050	A25.010.050	A25.012.050	A25.016.050	A25.020.050	50
	A25.008.060	A25.010.060	A25.012.060	A25.016.060	A25.020.060	60
	A25.008.070	A25.010.070	A25.012.070	A25.016.070	A25.020.070	70
		A25.010.080	A25.012.080	A25.016.080	A25.020.080	80
			A25.012.100	A25.016.100	A25.020.100	100
				A25.016.120	A25.020.120	120

Standard Location Pins



PRODUCT INFORMATION

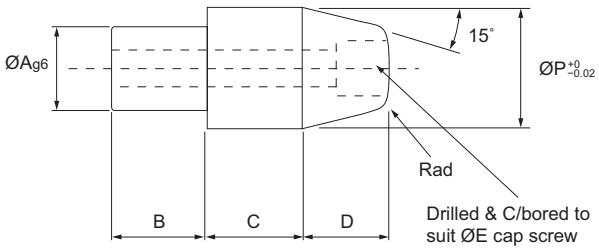
58–62 HRC

Example order:

⌖ 12 off LP10 x P = 16.5

Any alternative sizes may be ordered.

Symbol No.	A	B	C	D	E	P	T
LP6	6	15	10	15	M3	10–13	3
LP8	8	18	15	17	M4	12–16	4
LP10	10	18	15	20	M5	15–20	4
LP13	13	20	15	25	M6	19–25	6
LP16	16	24	15	35	M8	24–30	6



PRODUCT INFORMATION

58–62 HRC

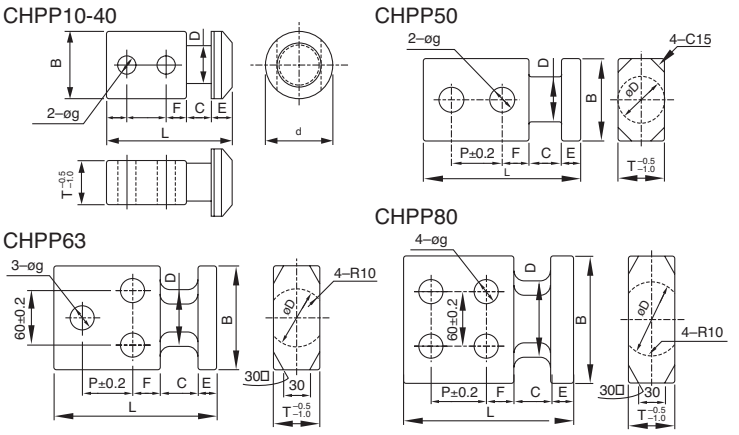
Example order:

⌖ 8 off LPS25 x P = 33

Any alternative sizes may be ordered.

Symbol No.	A	B	C	D	E	P
LPS20	20	15	20	11	M8	25–32
LPS25	25	20	25	13	M10	32–40
LPS32	32	20	32	15	M12	40–45

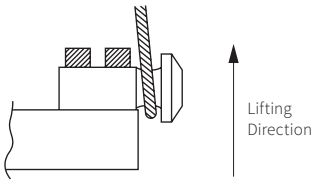
CHPP Lifting Lugs



PRODUCT INFORMATION

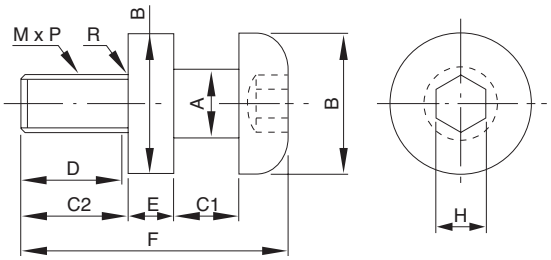
Example order:

- 8 off CHPP10

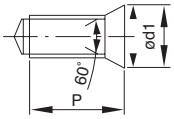


Symbol No.	D	d	B	T	L	C	E	F	P	g	Kgf/1P
CHPP10	10	28	28	18	50	10	8	8	16	7	160
CHPP12	12	32	32	20	56			10	18	9	360
CHPP16	16	36	36	24	67	13		12	22	11	460
CHPP20	20	40	40	26	88	18	10	15	30	14	560
CHPP25	25	48	48	35	92	20	12				670
CHPP32	32	55	55	40	118	25	13	20	40	18	1240
CHPP40	40	70	70	50	138	30	15	24	45	22	1950
CHPP50	49	—	90		170	35	20	30	55	26	2800
CHPP63	63		115		175	40					4000
CHPP80	80		140		185	40	25		60		5200

CHNN Lifting Lugs

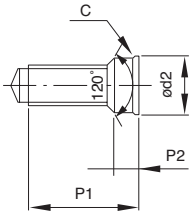


Dieset side hole dimensions 60°



Symbol No.	d1	P
CHNN10	15	22
CHNN12	18	26
CHNN16	23	32
CHNN20	27	40
CHNN24	35	50
CHNN30	42	60
CHNN36	50	72

Dieset side hole dimensions 120°

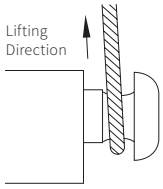


Symbol No.	d2	P1	P2
CHNN10	12	22	5
CHNN12	14	26	6
CHNN16	18	32	6
CHNN20	22	40	6
CHNN24	28	50	8
CHNN30	34	60	9
CHNN36	40	72	11

PRODUCT INFORMATION

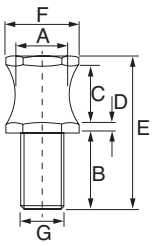
Example order:

⊕ 2 off CHNN16



Symbol No.	Kgf/1P	M x P	A	B	C1	C2	D	E	F	R	H
CHNN10	250	10 x 1.5	13	32	10	20	16	8	46	1.5	8
CHNN12	360	12 x 1.75	16	36	13	24	20	10	57	1.5	10
CHNN16	680	16 x 2.0	20	40	18	30	25	13	75	2.0	14
CHNN20	1060	20 x 2.5	25	48	20	37	32	16	90	2.0	17
CHNN24	1530	24 x 3.0	32	58	25	47	40	20	111	2.5	19
CHNN30	2430	30 x 3.5	36	68	30	56	48	22	131	3.0	22
CHNN36	3550	35 x 4.0	40	78	30	68	58	25	148	3.0	27

Lifting Lugs

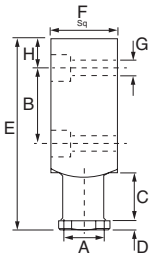


PRODUCT INFORMATION

Example order:

⌖ 4 off A30.010.036

Symbol No.	A	B	C	D	E	F	G	FORCE daN
A30.010.016	16	20	20	7.5	55	24	M16	320
A30.010.020	20	32	20	8	68	30	M20	500
A30.010.024	25	38	25	8	78	36	M24	1000
A30.010.030	32	45	32	10	95	41	M30	1500
A30.010.036	40	56	40	12	118	50	M36	2500



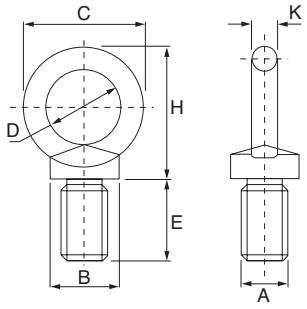
PRODUCT INFORMATION

Example order:

⌖ 8 off A30.015.015

Symbol No.	A	B	C	D	E	G	F	H	FORCE daN
A30.015.008	16	34	20	6	80	9	20	10	320
A30.015.010	20	37	25	8	90	11	25	10	630
A30.015.012	25	38	30	8	100	13	35	12	1250
A30.015.016	32	46	32	10	120	17	40	16	2500
A30.015.020	40	54	40	10	138	21	50	18	3200

Eye Bolts



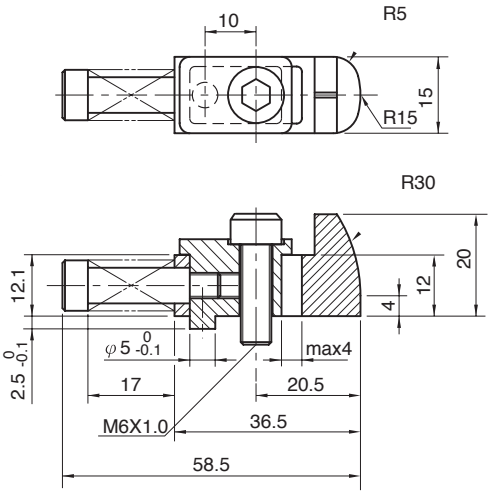
PRODUCT INFORMATION

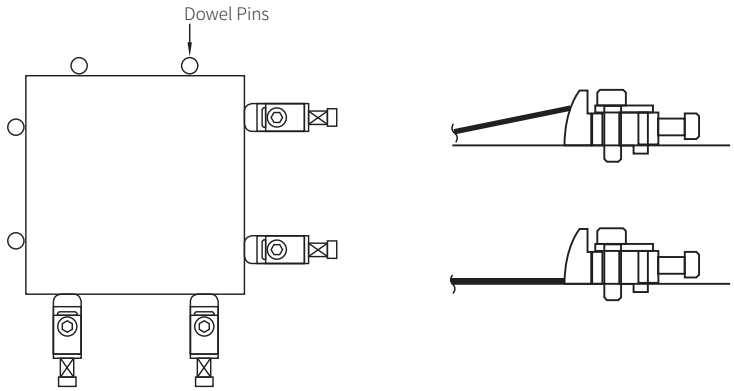
Example order:

⌖ 2 off A30.012.012

Symbol No.	A	FORCE daN	B	C	D	E	H	K
A30.012.008	M8	140	20	36	20	13	36	8
A30.012.010	M10	230	25	45	25	17	45	10
A30.012.012	M12	340	30	54	30	20.5	53	12
A30.012.016	M16	700	35	63	35	27	62	14
A30.012.020	M20	200	40	72	40	30	71	16
A30.012.024	M24	1800	50	90	50	36	90	20
A30.012.036	M36	5100	75	126	70	54	128	28
A30.012.042	M42	7000	80	144	80	63	147	32

Stock Locator





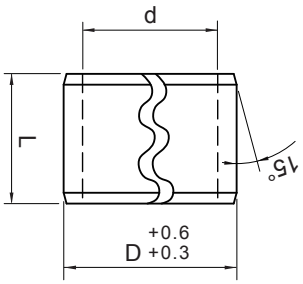
PRODUCT INFORMATION

Material: S45C
Hardness: HRC45-55
Hardened on Face CR15

Example order:
⊕ 2 off 1009-F

Spring Colour	Initial Loading	Spring Constant	Symbol Number
Yellow	1.47 [0.15]	0.49 [0.05]	1009-F
Blue	2.9 [0.3]	1.0 [0.1]	1009-L
Red	5.9 [0.6]	2.9 [0.3]	1009-M
Green	19.6 [2.0]	6.6 [0.675]	1009-H

NH / NHS Spring Plugs for Dowel Pins



PRODUCT INFORMATION

NH - Used for plates that are soft
NHS - Used for plates that are hardened

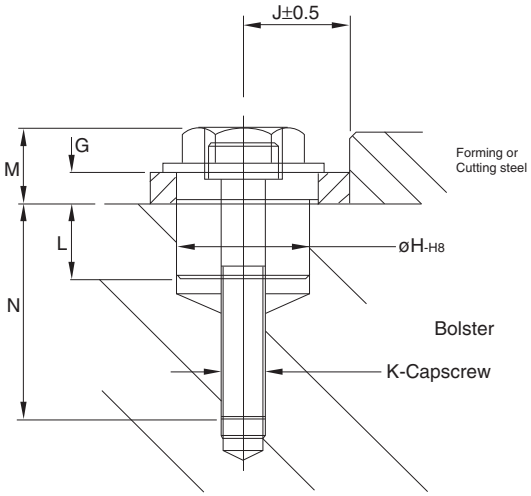
The pulling force will change slightly according to the tolerance of the dimension D, tolerance of diameter and roughness of surface 1N = 0.101972 Kgf

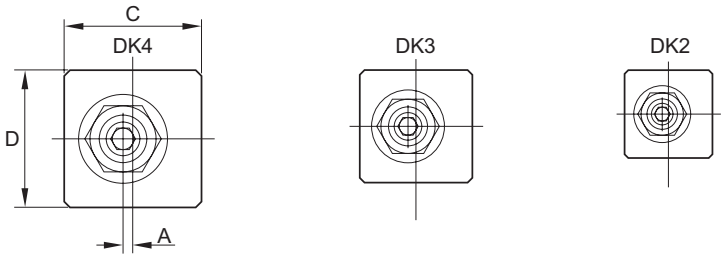
Example order:
⊕ NHS10

Symbol No.	Pulling Force (N)	d	L
NH6 - A1	392	4.4	8
NH6			6
NH8	1373	5.6	8
NH10	2354	6.4	12
NH12	1765	8.0	12
NH13	1716	9.0	12
NH16	1422	11.0	12

Symbol No.	Pulling Force (N)	d	L
NHS6 - A1	245	4.8	8
NHS6			6
NHS8	785	6.4	8
NHS10	1275	7.5	12
NHS12	981	9.2	12
NHS13		10.2	12
NHS16	785	12.5	12

AW Die Keys





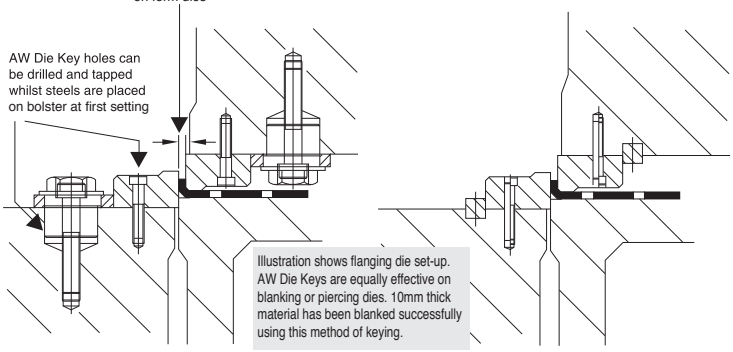
PRODUCT INFORMATION

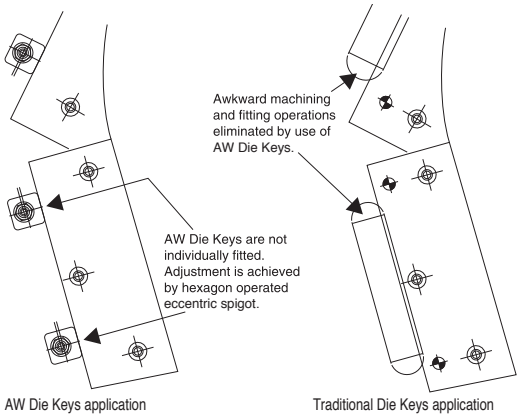
Example order:

- 4 off DK3

Symbol No.	A	B	C	D	G	H	J	K	L	M	N
DK4	1.0	2.5	38	40	13.0	22	20	M10	15	24	37
DK3	1.0	2.5	30	32	10.25	16	16	M8	15	19	29
DK2	0.75	2.0	23.5	25	8.0	12	12.5	M6	14.5	16	25

AW Die Keys





Minimum number of keys requried $= \frac{BT \times 1.25}{KT}$

BT = Blanking Tonnage (no shear)

KT = Recommended Key Tonnage

Key Pitch $= \frac{\text{Length of Cutting}}{\text{Min. No of keys req'd}}$

Note! A minimum of two keys must be used.

PRODUCT INFORMATION

- Reduce Design Time
- Eliminate Keyway Milling
- Reduce Maintenance Downtime
- Used by Major Motor Car Manufacturers in Europe

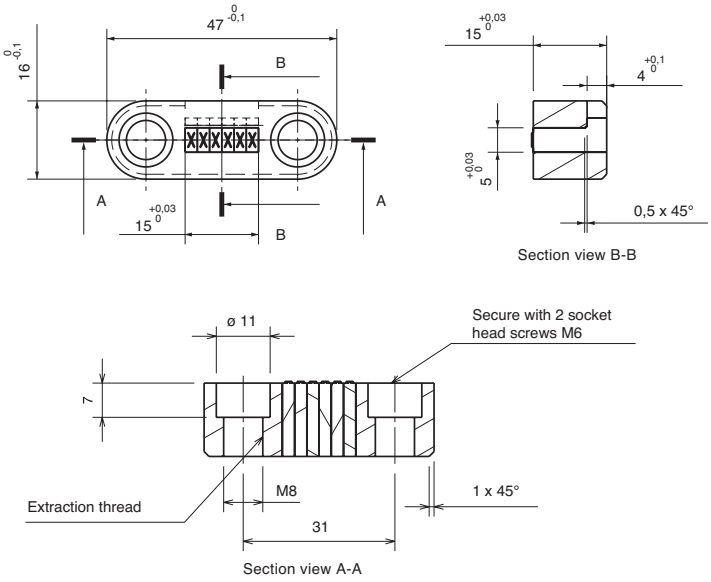
Note: Numerous other applications other than press tools.

OPERATION

When the hexagon is rotated the keying block oscillates by ± A from the axis. The faces are also eccentric to the axis therefore the DIE KEY has a clamping variation of ± B.

DIE KEY No.	Key strength KT Tonnes per Key	Material Thickness mm
DK4	10	1.5–2.25
DK3	6	0.75–1.5
DK2	2.5	–0.75

Vendor Code Stamps



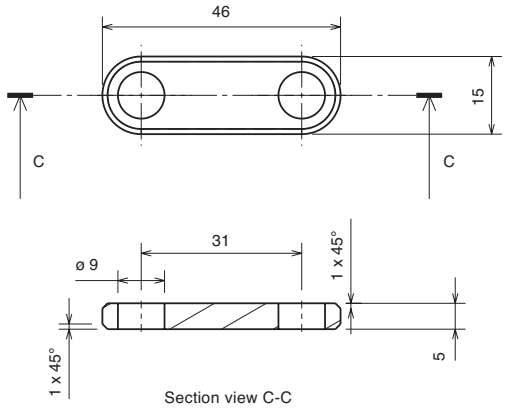
PRODUCT INFORMATION

Example order:

- 1 off VCSR

RETAINER

Symbol No.
VCSR



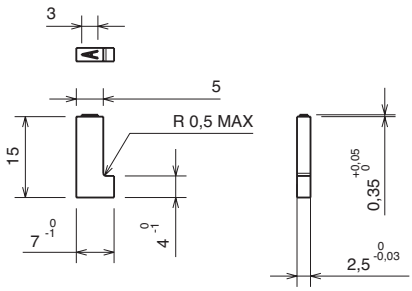
PRODUCT INFORMATION

Example order:

⊕ 1 off VCSB

BACKING PLATE

Symbol No.
VCSB



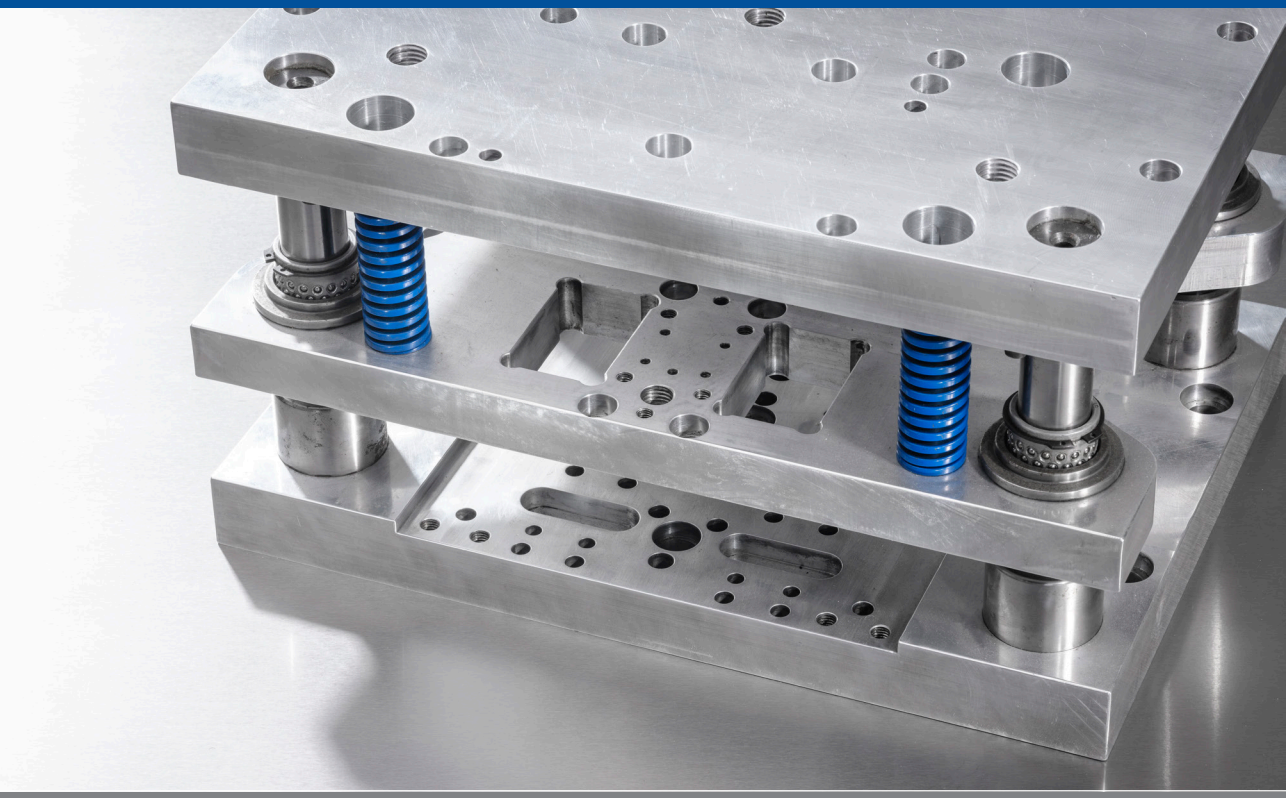
PRODUCT INFORMATION

Example order:

⊕ 1 off VCLS

LETTER STAMP

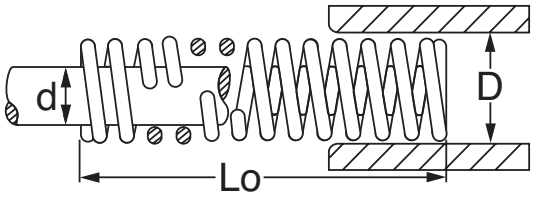
Symbol No.
VCLS



Springs, Die Sets, Guide Pillars and Guiding Elements

Light load springs

Diameters: 10 to 16 mm Round wire



PRODUCT INFORMATION

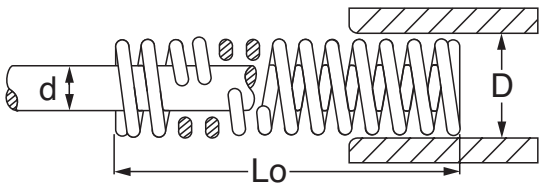
1 daN is approximately equal to 1 kg or 1 daN = 1,0197 kg
Colour: Green

Example order:
⌖ S11.xxx.xxx

Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (25% of Lo)		Total deflection recommended for average life (30% of Lo)		Maximum operating deflection (40% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
10	5	25	S11.010.025	0,45	2,8	6,2	3,4	7,5	4,6	10,2	5,8	13
		32	S11.010.032	0,35	2,8	8	3,4	9,6	4,4	12,5	5,6	16
		38	S11.010.038	0,28	2,7	9,5	3,1	11	4,2	15	5,6	20
		44	S11.010.044	0,24	2,6	11	3,1	13	4,3	18	5,6	23
		51	S11.010.051	0,21	2,7	13	3,1	15	4,2	20	5,6	27
		64	S11.010.064	0,16	2,6	16	3	19	4	25	5,5	34
		76	S11.010.076	0,13	2,5	19	3	23	3,9	30	5,3	40
		305	S11.010.305	0,03	2,3	76	2,7	91	3,7	122	4,9	163
12,5	6,3	25	S11.012.025	0,89	5,5	6,2	6,7	7,5	9,1	10,2	11,6	13
		32	S11.012.032	0,67	5,4	8	6,4	9,6	8,4	12,5	11,4	17
		38	S11.012.038	0,55	5,2	9,5	6,1	11	8,3	15	11	20
		44	S11.012.044	0,46	5,1	11	6	13	8,3	18	10,6	23
		51	S11.012.051	0,39	5,1	13	5,9	15	7,8	20	10,5	27
		64	S11.012.064	0,30	4,8	16	5,7	19	7,5	25	10,5	35
		76	S11.012.076	0,25	4,8	19	5,7	23	7,5	30	10,3	41
		89	S11.012.089	0,21	4,6	22	5,7	27	7,6	36	10,3	49
		305	S11.012.305	0,06	4,6	76	5,5	91	7,3	122	10	166
16	8	25	S11.016.025	1,79	11,1	6,2	13,4	7,5	18,3	10,2	23	13
		32	S11.016.032	1,34	10,7	8	12,9	9,6	16,8	12,5	21	16
		38	S11.016.038	1,06	10,1	9,5	11,7	11	15,9	15	21	20
		44	S11.016.044	0,87	9,6	11	11,3	13	15,7	18	20	23
		51	S11.016.051	0,76	9,9	13	11,4	15	15,2	20	20	27
		64	S11.016.064	0,59	9,4	16	11,2	19	14,8	25	20	34
		76	S11.016.076	0,48	9,1	19	11	23	14,4	30	19,7	41
		89	S11.016.089	0,40	8,8	22	10,8	27	14	35	19,6	49
		102	S11.016.102	0,35	9,1	26	10,8	31	14,3	41	19,6	56
		305	S11.016.305	0,11	8,4	76	10	91	13,4	122	18,7	170

Light load springs

Diameters: 20 to 63 mm Rectangular wire



PRODUCT INFORMATION

1 daN is approximately equal to 1 kg or 1 daN = 1,0197 kg
Colour: Green

Example order:
⊕ S11.xxx.xxx

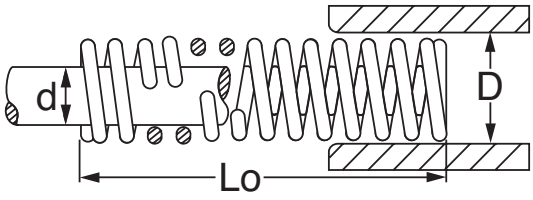
Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (25% of Lo)		Total deflection recommended for average life (30% of Lo)		Maximum operating deflection (40% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
20	10	25	S11.020.025	5,5	35	6,2	42	7,5	57	10,2	73	13
		32	S11.020.032	4,2	34	8	41	9,6	54	12,5	69	16
		38	S11.020.038	3,3	32	9,5	37	11	51	15	65	19
		44	S11.020.044	2,77	31	11	37	13	51	18	64	23
		51	S11.020.051	2,45	32	13	37	15	50	20	64	26
		64	S11.020.064	1,90	31	16	37	19	49	25	62	32
		76	S11.020.076	1,61	31	19	37	23	48	30	62	40
		89	S11.020.089	1,34	30	22	36	27	47	35	62	46
		102	S11.020.102	1,18	31	26	37	31	48	41	62	53
		115	S11.020.115	1,04	30	29	36	35	48	46	62	60
		127	S11.020.127	0,93	30	32	35	38	47	51	62	67
		140	S11.020.140	0,85	30	35	36	42	48	56	62	73
		152	S11.020.152	0,79	30	38	36	46	48	61	62	81
		305	S11.020.305	0,38	29	76	35	91	46	122	61	162
25	12,5	25	S11.025.025	10,7	66	6,2	80	7,5	109	10,2	139	13
		32	S11.025.032	8,1	65	8	78	9,6	101	12,5	130	16
		38	S11.025.038	6,5	62	9,5	72	11	98	15	124	19
		44	S11.025.044	5,3	58	11	69	13	95	18	122	23
		51	S11.025.051	4,6	60	13	69	15	92	20	115	25
		64	S11.025.064	3,6	58	16	68	19	90	25	112	31
		76	S11.025.076	2,92	56	19	67	23	88	30	112	39
		89	S11.025.089	2,46	54	22	66	27	86	35	112	46
		102	S11.025.102	2,12	55	26	66	31	87	41	110	52
		115	S11.025.115	1,87	54	29	65	35	86	46	110	59
		127	S11.025.127	1,67	53	32	63	38	85	51	110	66
		140	S11.025.140	1,52	53	35	64	42	85	56	112	74
		152	S11.025.152	1,40	53	38	64	46	85	61	110	80
		178	S11.025.178	1,20	53	44	64	53	85	71	110	93
		203	S11.025.203	1,05	53	51	64	61	85	81	110	107
		305	S11.025.305	0,70	53	76	64	91	85	122	110	160

Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (25% of Lo)		Total deflection recommended for average life (30% of Lo)		Maximum operating deflection (40% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
32	16	38	S11.032.038	10,10	96	9,5	111	11	152	15	192	19
		44	S11.032.044	8,3	91	11	108	13	149	18	183	22
		51	S11.032.051	7,1	92	13	107	15	142	20	178	25
		64	S11.032.064	5,5	88	16	105	19	138	25	176	32
		76	S11.032.076	4,6	87	19	106	23	138	30	175	39
		89	S11.032.089	3,9	86	22	105	27	137	35	175	45
		102	S11.032.102	3,4	88	26	105	31	139	41	175	52
		115	S11.032.115	3,0	87	29	105	35	138	46	174	58
		127	S11.032.127	2,62	84	32	100	38	134	51	170	65
		140	S11.032.140	2,38	83	35	100	42	133	56	171	72
		152	S11.032.152	2,19	83	38	101	46	134	61	170	78
		178	S11.032.178	1,82	80	44	96	53	129	71	165	88
		203	S11.032.203	1,59	81	51	97	61	129	81	165	104
		254	S11.032.254	1,25	80	64	95	76	128	102	163	130
		305	S11.032.305	1,04	79	76	95	91	127	122	161	155
40	20	51	S11.040.051	10,6	138	13	159	15	212	20	265	25
		64	S11.040.064	8,0	128	16	152	19	200	25	256	32
		76	S11.040.076	6,6	125	19	152	23	198	30	250	38
		89	S11.040.089	5,6	123	22	151	27	196	35	250	45
		102	S11.040.102	4,8	125	26	149	31	197	41	245	51
		115	S11.040.115	4,2	122	29	147	35	193	46	243	58
		127	S11.040.127	3,8	122	32	144	38	194	51	243	65
		140	S11.040.140	3,4	119	35	143	42	190	56	241	71
		152	S11.040.152	3,1	118	38	143	46	189	61	241	78
		178	S11.040.178	2,6	114	44	138	53	185	71	240	92
		203	S11.040.203	2,3	117	51	140	61	186	81	240	105
		254	S11.040.254	1,80	115	64	137	76	184	102	236	131
		305	S11.040.305	1,48	112	76	135	91	181	122	226	157
50	25	64	S11.050.064	15,7	251	16	298	19	393	25	502	32
		76	S11.050.076	12,6	239	19	290	23	378	30	491	39
		89	S11.050.089	10,5	231	22	284	27	368	35	473	45
		102	S11.050.102	9,0	234	26	279	31	369	41	468	52
		115	S11.050.115	7,8	226	29	273	35	359	46	455	58
		127	S11.050.127	7,0	224	32	266	38	357	51	455	65
		140	S11.050.140	6,3	221	35	265	42	353	56	446	72
		152	S11.050.152	5,7	217	38	262	46	348	61	445	78
		178	S11.050.178	4,8	211	44	254	53	341	71	441	92
		203	S11.050.203	4,2	214	51	256	61	340	81	437	104
		254	S11.050.254	3,3	211	64	251	76	337	102	429	130
		305	S11.050.305	2,7	205	76	246	91	329	122	421	156

Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (25% of Lo)		Total deflection recommended for average life (30% of Lo)		Maximum operating deflection (40% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
63	38	76	S11.063.076	19,3	367	19	444	23	579	30	733	38
		89	S11.063.089	15,8	348	22	427	27	553	35	695	44
		102	S11.063.102	13,4	348	26	415	31	549	41	670	50
		115	S11.063.115	11,6	336	29	406	35	534	46	661	57
		127	S11.063.127	10,2	326	32	388	38	520	51	653	64
		152	S11.063.152	8,4	319	38	386	46	512	61	638	76
		178	S11.063.178	7,0	308	44	371	53	497	71	623	89
		203	S11.063.203	6,0	306	51	366	61	486	81	612	102
		254	S11.063.254	4,7	301	64	357	76	479	102	592	126
		305	S11.063.305	3,9	296	76	355	91	476	122	592	152

Medium load springs

Diameters: 10 to 16 mm Round wire



PRODUCT INFORMATION

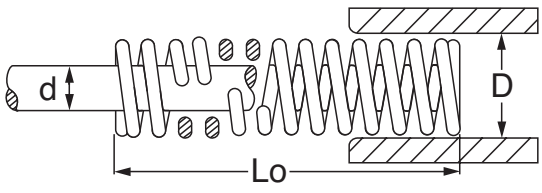
1 daN is approximately equal to 1 kg or 1 daN = 1,0197 kg
Colour: Blue

Example order:
⌖ S21.xxx.xxx

Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (25% of Lo)		Total deflection recommended for average life (30% of Lo)		Maximum operating deflection (37,5% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
10	5	25	S21.010.025	1,26	7,8	6,2	9,5	7,5	11,8	9,4	13	11
		32	S21.010.032	0,98	7,8	8	9,4	9,6	11,8	12	12,8	13
		38	S21.010.038	0,79	7,5	9,5	8,7	11	11,1	14	12,6	16
		44	S21.010.044	0,66	7,3	11	8,6	13	10,9	16,5	12,5	19
		51	S21.010.051	0,57	7,4	13	8,6	15	10,8	19	12,2	21
		64	S21.010.064	0,45	7,2	16	8,6	19	10,8	24	12,2	27
		76	S21.010.076	0,37	7,0	19	8,5	23	10,4	28	12,2	33
		305	S21.010.305	0,09	6,8	76	8,2	91	10,3	114	12,2	136
12,5	6,3	25	S21.012.025	2,28	14,1	6,2	17,1	7,5	21,4	9,4	23	11
		32	S21.012.032	1,75	14	8	16,8	9,6	21	12	22,8	13
		38	S21.012.038	1,43	13,6	9,5	15,7	11	20	14	22,8	16
		44	S21.012.044	1,18	13	11	15,3	13	19,5	16,5	22,5	19
		51	S21.012.051	1,02	13,3	13	15,3	15	19,4	19	22,4	22
		64	S21.012.064	0,79	12,6	16	15	19	19	24	22,1	28
		76	S21.012.076	0,65	12,4	19	15	23	18,2	28	22	34
		89	S21.012.089	0,55	12,1	22	14,9	27	18,2	33	22,6	41
		305	S21.012.305	0,15	11,4	76	13,7	91	17,1	114	21,6	144
16	8	25	S21.016.025	3,38	20,6	6,2	25,4	7,5	31,8	9,4	33,8	11
		32	S21.016.032	2,50	20	8	24	9,6	30	12	32,8	13
		38	S21.016.038	2,01	19,1	9,5	22,1	11	28,1	14	32,2	16
		44	S21.016.044	1,67	18,4	11	21,7	13	27,6	16,5	30,9	19
		51	S21.016.051	1,42	18,5	13	21,3	15	27	19	30	21
		64	S21.016.064	1,10	17,6	16	20,9	19	26,4	24	29,7	27
		76	S21.016.076	0,90	17,1	19	20,7	23	25,2	28	29,7	33
		89	S21.016.089	0,76	16,7	22	20,5	27	25,1	33	29,6	39
		102	S21.016.102	0,66	17,2	26	20,5	31	25,1	38	29,6	45
		305	S21.016.305	0,21	16	76	19,1	91	23,9	114	29	138

Medium load springs

Diameters: 20 to 63 mm Rectangular wire



PRODUCT INFORMATION

1 daN is approximately equal to 1 kg or 1 daN = 1,0197 kg
Colour: Blue

Example order:
⊕ S21.xxx.xxx

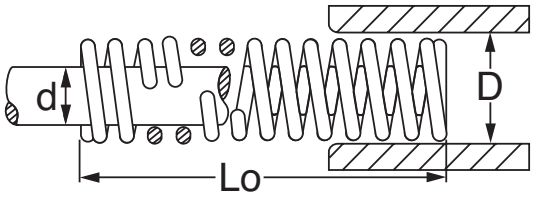
Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (25% of Lo)		Total deflection recommended for average life (30% of Lo)		Maximum operating deflection (37,5% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
20	10	25	S21.020.025	9,02	55,9	6,2	67,6	7,5	84,8	9,4	99	11
		32	S21.020.032	6,67	53,4	8	64	9,6	80	12	90	13
		38	S21.020.038	5,48	52,1	9,5	60,3	11	76,7	14	88	16
		44	S21.020.044	4,45	49	11	57,9	13	73,4	16,5	85	19
		51	S21.020.051	3,94	51,2	13	59,1	15	74,9	19	83	21
		64	S21.020.064	3,03	48,5	16	57,6	19	72,7	24	82	27
		76	S21.020.076	2,49	47,3	19	57,3	23	69,7	28	82	33
		89	S21.020.089	2,14	47,1	22	57,8	27	70,6	33	82	39
		102	S21.020.102	1,84	47,8	26	57	31	69,9	38	81	44
		115	S21.020.115	1,63	47,3	29	57	35	70,1	43	80	49
		127	S21.020.127	1,46	46,7	32	55,5	38	70,1	48	80	55
		140	S21.020.140	1,32	46	35	55	42	69	52	80	61
		152	S21.020.152	1,21	46	38	55,7	46	69	57	80	66
		305	S21.020.305	0,61	46,4	76	55,5	91	69,5	114	80	136
25	12,5	25	S21.025.025	16,7	104	6,2	125	7,5	157	9,4	184	11
		32	S21.025.032	12,5	100	8	120	9,6	150	12	170	13
		38	S21.025.038	9,9	94	9,5	109	11	139	14	158	16
		44	S21.025.044	8,3	91	11	108	13	137	16,5	158	19
		51	S21.025.051	7,2	94	13	108	15	137	19	156	21
		64	S21.025.064	5,5	88	16	105	19	132	24	151	27
		76	S21.025.076	4,5	86	19	104	23	126	28	148	33
		89	S21.025.089	3,8	84	22	103	27	125	33	148	39
		102	S21.025.102	3,3	86	26	102	31	125	38	145	44
		115	S21.025.115	2,91	84	29	102	35	125	43	145	60
		127	S21.025.127	2,63	84	32	100	38	126	48	145	66
		140	S21.025.140	2,36	83	35	99	42	123	52	149	63
		152	S21.025.152	2,17	82	38	100	46	124	57	145	67
		178	S21.025.178	1,84	81	44	98	53	123	67	145	79
		203	S21.025.203	1,60	82	51	98	61	122	76	144	90
		305	S21.025.305	1,05	80	76	96	91	120	114	142	135

Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (25% of Lo)		Total deflection recommended for average life (30% of Lo)		Maximum operating deflection (37,5% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
		38	S21.032.038	16,6	158	9,5	183	11	232	14	266	16
		44	S21.032.044	13,6	150	11	177	13	224	16,5	258	19
		51	S21.032.051	11,6	151	13	174	15	220	19	244	21
		64	S21.032.064	8,8	141	16	167	19	211	24	238	27
		76	S21.032.076	7,1	135	19	163	23	199	28	227	32
		89	S21.032.089	6,0	132	22	162	27	198	33	222	37
		102	S21.032.102	5,2	135	26	161	31	198	38	222	43
32	16	115	S21.032.115	4,6	133	29	161	35	198	43	222	49
		127	S21.032.127	4,2	134	32	160	38	202	48	222	55
		140	S21.032.140	3,7	130	35	155	42	192	52	222	60
		152	S21.032.152	3,4	129	38	156	46	194	57	222	66
		178	S21.032.178	2,91	128	44	154	53	195	67	222	77
		203	S21.032.203	2,52	129	51	154	61	192	76	222	88
		254	S21.032.254	2,00	128	64	152	76	190	95	220	110
		305	S21.032.305	1,66	126	76	151	91	189	114	220	133
		51	S21.040.051	17,1	222	13	257	15	325	19	359	21
		64	S21.040.064	12,9	206	16	245	19	310	24	335	26
		76	S21.040.076	10,5	200	19	242	23	294	28	335	32
		89	S21.040.089	8,8	194	22	238	27	290	33	326	37
		102	S21.040.102	7,6	198	26	236	31	289	38	326	43
		115	S21.040.115	6,7	194	29	235	35	288	43	322	48
40	20	127	S21.040.127	6,0	192	32	228	38	288	48	322	54
		140	S21.040.140	5,4	189	35	227	42	281	52	319	59
		152	S21.040.152	4,9	186	38	225	46	279	57	318	65
		178	S21.040.178	4,2	185	44	223	53	281	67	318	76
		203	S21.040.203	3,6	184	51	220	61	274	76	315	87
		254	S21.040.254	2,89	185	64	220	76	275	95	315	110
		305	S21.040.305	2,38	181	76	217	91	271	114	312	131
		64	S21.050.064	21,2	339	16	403	19	509	24	566	27
		76	S21.050.076	16,7	317	19	384	23	468	28	532	32
		89	S21.050.089	14,0	308	22	378	27	462	33	525	37
		102	S21.050.102	12,2	317	26	378	31	464	38	525	43
		115	S21.050.115	10,7	310	29	375	35	460	43	525	49
		127	S21.050.127	9,5	304	32	361	38	456	48	513	54
50	25	140	S21.050.140	8,6	301	35	361	42	447	52	507	59
		152	S21.050.152	7,8	296	38	359	46	445	57	508	66
		178	S21.050.178	6,6	290	44	350	53	442	67	506	77
		203	S21.050.203	5,7	291	51	348	61	433	76	506	88
		229	S21.050.229	5,1	291	57	352	69	439	86	506	100
		254	S21.050.254	4,6	294	64	350	76	437	95	506	117
		305	S21.050.305	3,8	289	76	346	91	433	114	504	134

Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (25% of Lo)		Total deflection recommended for average life (30% of Lo)		Maximum operating deflection (37,5% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
63	38	76	S21.063.076	30,4	578	19	699	23	851	28	973	32
		89	S21.063.089	25,0	550	22	675	27	825	33	950	38
		102	S21.063.102	21,2	551	26	657	31	806	38	933	44
		115	S21.063.115	18,6	539	29	651	35	800	43	930	50
		127	S21.063.127	16,4	525	32	623	38	787	48	918	56
		152	S21.063.152	13,3	505	38	612	46	758	57	891	67
		178	S21.063.178	11,2	493	44	594	53	750	67	874	78
		203	S21.063.203	9,6	490	51	586	61	730	76	865	90
		229	S21.063.229	8,5	485	57	587	69	731	86	865	102
		254	S21.063.254	7,7	493	64	585	76	732	95	865	115
		305	S21.063.305	6,3	479	76	573	91	718	114	865	138

Heavy load springs

Diameters: 10 to 16 mm Round wire



PRODUCT INFORMATION

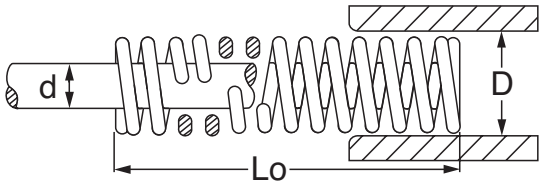
1 daN is approximately equal to 1 kg or 1 daN = 1,0197 kg
Colour: Red

Example order:
⌖ S26.xxx.xxx

Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (20% of Lo)		Total deflection recommended for average life (25% of Lo)		Maximum operating deflection (30% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
10	5	25	S26.010.025	2,13	10,5	5	13	6,2	16	7,5	19	8,9
		32	S26.010.032	1,64	10,5	6,5	13	8	15,5	9,6	19	11,7
		38	S26.010.038	1,33	10	7,5	12,5	9,5	14,5	11	18,5	14
		44	S26.010.044	1,13	10	9	12,5	11	14,5	13	18,5	17
		51	S26.010.051	0,98	10	10	12,5	13	14,5	15	18,5	19
		64	S26.010.064	0,78	10	13	12,5	16	14,5	19	18,5	25
		76	S26.010.076	0,63	9,5	15	12	19	14,5	23	18	29
		305	S26.010.305	0,15	9	61	11,5	76	13,5	91	18	120
12,5	6,3	25	S26.012.025	3,9	19,5	5	24	6,2	29	7,5	34	8,7
		32	S26.012.032	3,0	19,5	6,5	24	8	29	9,6	33	11,0
		38	S26.012.038	2,42	18	7,5	23	9,5	27	11	32	13,5
		44	S26.012.044	2,01	18	9	22	11	26	13	32	16
		51	S26.012.051	1,77	18	10	23	13	27	15	32	19
		64	S26.012.064	1,38	18	13	22	16	26	19	32	24
		76	S26.012.076	1,14	17	15	21,5	19	26	23	32	29
		89	S26.012.089	0,96	17,3	18	21,1	22	25,9	27	32	33
		305	S26.012.305	0,27	16,5	61	20,5	76	24,5	91	32	120
16	8	25	S26.016.025	8,7	44	5	54	6,2	65	7,5	76	8,7
		32	S26.016.032	6,4	42	6,5	51	8	61	9,6	70	11
		38	S26.016.038	5,2	39	7,5	49	9,5	57	11	70	13,7
		44	S26.016.044	4,2	38	9	46	11	55	13	66	15,7
		51	S26.016.051	3,64	36	10	47	13	55	15	66	18,5
		64	S26.016.064	2,84	37	13	45	16	54	19	66	23,5
		76	S26.016.076	2,33	35	15	44	19	54	23	66	29
		89	S26.016.089	1,98	36	18	44	22	53	27	66	34,5
		102	S26.016.102	1,72	34	20	45	26	53	31	66	40
		305	S26.016.305	0,54	33	61	41	76	49	91	66	122

Heavy load springs

Diameters: 20 to 50 mm Rectangular wire



PRODUCT INFORMATION

1 daN is approximately equal to 1 kg or 1 daN = 1,0197 kg
Colour: Red

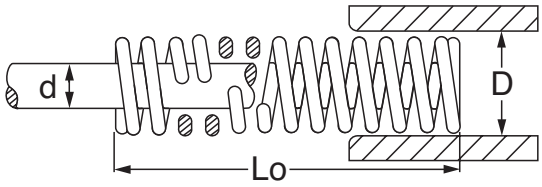
Example order:
S26.xxx.xxx

Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (20% of Lo)		Total deflection recommended for average life (25% of Lo)		Maximum operating deflection (30% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
20	10	25	S26.020.025	23,1	116	5	143	6,2	173	7,5	194	8,4
		32	S26.020.032	17,4	113	6,5	139	8	167	9,6	183	10,5
		38	S26.020.038	13,9	106	7,5	132	9,5	153	11	174	12,5
		44	S26.020.044	11,4	103	9	127	11	148	13	165	14,5
		51	S26.020.051	9,8	101	10	127	13	147	15	162	16,5
		64	S26.020.064	7,7	100	13	128	16	146	19	162	21
		76	S26.020.076	6,3	97	15	120	19	145	23	162	26
		89	S26.020.089	5,4	97	18	120	22	145	27	162	30
		102	S26.020.102	4,7	94	20	120	26	145	31	162	35
		115	S26.020.115	4,1	94	23	119	29	144	35	162	40
		127	S26.020.127	3,7	93	25	118	32	141	38	162	44
		140	S26.020.140	3,4	95	28	119	35	143	42	167	49
		152	S26.020.152	3,08	92	30	117	38	141	46	162	53
		305	S26.020.305	1,50	91	61	114	76	137	91	162	108
25	12,5	32	S26.025.032	27,6	179	6,5	221	8	265	9,6	290	10,5
		38	S26.025.038	22,0	165	7,5	209	9,5	242	11	286	13
		44	S26.025.044	18,4	166	9	202	11	239	13	285	15,5
		51	S26.025.051	15,7	157	10	204	13	236	15	283	18
		64	S26.025.064	12,2	159	13	195	16	232	19	275	22,5
		76	S26.025.076	10,0	150	15	190	19	230	23	275	27,5
		89	S26.025.089	8,4	151	18	185	22	227	27	275	32,5
		102	S26.025.102	7,4	148	20	192	26	229	31	275	37,5
		115	S26.025.115	6,5	150	23	189	29	228	35	275	42,7
		127	S26.025.127	5,8	145	25	186	32	220	38	273	47
		140	S26.025.140	5,2	146	28	182	35	218	42	270	52
		152	S26.025.152	4,8	144	30	182	38	221	46	273	57,5
		178	S26.025.178	4,1	148	36	180	44	217	53	273	68
		203	S26.025.203	3,59	144	40	183	51	219	61	273	77
		305	S26.025.305	2,42	148	61	184	76	220	91	273	115

Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (20% of Lo)		Total deflection recommended for average life (25% of Lo)		Maximum operating deflection (30% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
32	16	38	S26.032.038	37,6	282	7,5	357	9,5	414	11	451	12
		44	S26.032.044	31,0	279	9	341	11	403	13	440	14
		51	S26.032.051	26,3	263	10	342	13	394	15	435	16,5
		64	S26.032.064	20,5	267	13	328	16	389	19	435	21,5
		76	S26.032.076	16,6	249	15	315	19	382	23	430	26
		89	S26.032.089	13,9	250	18	306	22	375	27	425	30,5
		102	S26.032.102	12,1	242	20	315	26	375	31	425	35,5
		115	S26.032.115	10,6	244	23	307	29	371	35	425	40,5
		127	S26.032.127	9,6	240	25	307	32	365	38	425	45
		140	S26.032.140	8,6	241	28	301	35	361	42	430	50
		152	S26.032.152	7,9	237	30	300	38	363	46	425	54
		178	S26.032.178	6,7	241	36	295	44	355	53	420	63
		203	S26.032.203	5,8	232	40	296	51	354	61	420	72
		254	S26.032.254	4,6	235	51	294	64	350	76	420	92
		305	S26.032.305	3,8	232	61	289	76	346	91	420	110
40	20	51	S26.040.051	34,9	349	10	454	13	524	15	593	17
		64	S26.040.064	26,6	346	13	426	16	505	19	585	22
		76	S26.040.076	21,5	323	15	409	19	495	23	580	27
		89	S26.040.089	18,0	324	18	396	22	486	27	575	32
		102	S26.040.102	15,7	314	20	408	26	487	31	575	37
		115	S26.040.115	13,8	317	23	400	29	483	35	575	42
		127	S26.040.127	12,4	310	25	397	32	471	38	575	47
		140	S26.040.140	11,3	316	28	396	35	475	42	588	52
		152	S26.040.152	10,2	306	30	388	38	469	46	575	57,5
		178	S26.040.178	8,7	313	36	383	44	461	53	575	67
		203	S26.040.203	7,6	304	40	388	51	464	61	575	76
		254	S26.040.254	6,0	306	51	384	64	456	76	575	97
		305	S26.040.305	5,0	305	61	380	76	455	91	575	116
50	25	64	S26.050.064	42,3	550	13	677	16	804	19	910	21,5
		76	S26.050.076	33,8	507	15	642	19	777	23	879	26
		89	S26.050.089	28,1	506	18	618	22	759	27	860	30,5
		102	S26.050.102	24,5	490	20	637	26	760	31	860	35
		115	S26.050.115	21,5	495	23	624	29	753	35	860	40
		127	S26.050.127	18,9	473	25	605	32	718	38	850	45
		140	S26.050.140	16,9	473	28	592	35	710	42	845	50
		152	S26.050.152	15,4	462	30	585	38	708	46	830	54
		178	S26.050.178	13,2	475	36	581	44	700	53	830	64
		203	S26.050.203	11,5	460	40	587	51	701	61	830	72,5
		254	S26.050.254	9,0	459	51	576	64	684	76	825	92
		305	S26.050.305	7,5	457	61	570	76	683	91	825	112

Extra-heavy load springs

Diameters: 10 to 50 mm Rectangular wire



PRODUCT INFORMATION

1 daN is approximately equal to 1 kg or 1 daN = 1,0197 kg
Colour: Yellow

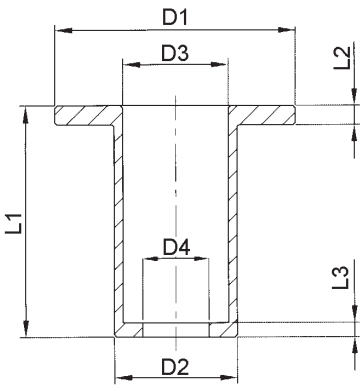
Example order:
⊕ S36.xxx.xxx

Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (17% of Lo)		Total deflection recommended for average life (20% of Lo)		Maximum operating deflection (25% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
10	5	25	S36.010.025	3,27	13,7	4,2	16,4	5	20,3	6,2	29,5	8,7
		32	S36.010.032	2,50	13,8	5,5	16,3	6,5	20	8	27	10,5
		38	S36.010.038	2,12	13,8	6,5	15,2	7,5	20,1	9,5	27	13,2
		44	S36.010.044	1,77	13,3	7,5	15,9	9	19,5	11	26,5	15
		51	S36.010.051	1,53	13,3	8,7	15,3	10	19,9	13	26,5	17
		64	S36.010.064	1,22	13,4	11	15,9	13	19,5	16	26,5	21,5
		76	S36.010.076	1,01	13,1	13	15,2	15	19,2	19	26,5	26,5
		305	S36.010.305	0,25	13	52	15,3	61	19	76	26	106
12,5	6,3	25	S36.012.025	5,87	24,7	4,2	29,4	5	36,4	6,2	53	9
		32	S36.012.032	4,43	24,4	5,5	28,8	6,5	35,4	8	48	10,8
		38	S36.012.038	3,63	23,6	6,5	27,2	7,5	34,5	9,5	47	13
		44	S36.012.044	3,06	23	7,5	27,5	9	33,7	11	47	15,5
		51	S36.012.051	2,71	23,6	8,7	27,1	10	35,2	13	47	18
		64	S36.012.064	2,17	23,9	11	28,2	13	34,7	16	47	22
		76	S36.012.076	1,77	23	13	26,6	15	33,6	19	47	27
		89	S36.012.089	1,51	22,7	15	27,2	18	33	22	50	33
		305	S36.012.305	0,42	21,8	52	25,6	61	31,9	76	47	112
16	8	25	S36.016.025	12,6	53	4,2	63	5	78	6,2	113	9
		32	S36.016.032	9,3	51	5,5	60	6,5	74	8	103	10,8
		38	S36.016.038	7,5	49	6,5	56	7,5	71	9,5	98	13
		44	S36.016.044	6,3	47	7,5	57	9	69	11	96	15
		51	S36.016.051	5,5	48	8,7	55	10	72	13	96	18
		64	S36.016.064	4,3	47	11	56	13	69	16	95	22
		76	S36.016.076	3,52	46	13	53	15	67	19	94	26,5
		89	S36.016.089	3,00	45	15	54	18	66	22	94	31,5
		102	S36.016.102	2,61	44	17	52	20	68	26	94	36,5
		305	S36.016.305	0,85	44	52	52	61	65	76	94	110

Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (17% of Lo)		Total deflection recommended for average life (20% of Lo)		Maximum operating deflection (25% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
20	10	25	S36.020.025	32,2	135	4,2	161	5	202	6,2	248	7,7
		32	S36.020.032	24,2	133	5,5	157	6,5	194	8	237	9,8
		38	S36.020.038	19,5	127	6,5	146	7,5	185	9,5	234	12
		44	S36.020.044	16,3	122	7,5	147	9	179	11	228	14
		51	S36.020.051	14,0	122	8,7	140	10	182	13	225	16
		64	S36.020.064	10,9	120	11	142	13	174	16	225	21
		76	S36.020.076	9,0	117	13	135	15	171	19	225	25
		89	S36.020.089	7,6	114	15	137	18	167	22	225	30
		102	S36.020.102	6,6	112	17	132	20	172	26	225	34
		115	S36.020.115	5,8	116	20	133	23	168	29	220	38
		127	S36.020.127	5,2	114	22	130	25	166	32	220	43
		140	S36.020.140	4,7	113	24	132	28	165	35	221	47
		152	S36.020.152	4,3	112	26	129	30	163	38	220	51
		305	S36.020.305	2,12	110	52	129	61	161	76	220	105
25	12,5	32	S36.025.032	35,4	195	5,5	230	6,5	283	8	354	10
		38	S36.025.038	28,0	182	6,5	210	7,5	266	9,5	336	12
		44	S36.025.044	23,2	174	7,5	209	9	255	11	325	14
		51	S36.025.051	19,8	172	8,7	198	10	257	13	317	16
		64	S36.025.064	15,4	169	11	200	13	246	16	316	21
		76	S36.025.076	12,5	163	13	188	15	238	19	313	25
		89	S36.025.089	10,5	158	15	189	18	231	22	310	29
		102	S36.025.102	9,1	155	17	182	20	237	26	310	34
		115	S36.025.115	8,1	162	20	186	23	235	29	310	39
		127	S36.025.127	7,2	158	22	180	25	230	32	310	43
		140	S36.025.140	6,6	158	24	185	28	231	35	317	48
		152	S36.025.152	6,0	156	26	180	30	228	38	310	53
		178	S36.025.178	5,1	153	30	184	36	224	44	310	62
		203	S36.025.203	4,5	153	34	180	40	230	51	310	70
		305	S36.025.305	2,96	154	52	181	61	225	76	310	108

Hole Ø mm	Rod Ø mm	Free length mm	Reference	RATE (daN) required to deflect 1 mm	LOAD TABLE							
					Total deflection recommended for long life (17% of Lo)		Total deflection recommended for average life (20% of Lo)		Maximum operating deflection (25% of Lo)		Total travel to solid	
D	d	Lo		C	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm	Load daN	Deflect. mm
32	16	38	S36.032.038	48,9	318	6,5	367	7,5	465	9,5	558	11
		44	S36.032.044	40,5	304	7,5	365	9	446	11	547	13
		51	S36.032.051	34,6	301	8,7	346	10	450	13	535	15
		64	S36.032.064	26,7	294	11	347	13	427	16	535	20
		76	S36.032.076	21,6	281	13	324	15	410	19	525	24
		89	S36.032.089	18,2	273	15	328	18	400	22	525	29
		102	S36.032.102	15,6	265	17	312	20	406	26	520	33
		115	S36.032.115	13,6	272	20	313	23	394	29	500	36
		127	S36.032.127	12,2	268	22	305	25	390	32	500	41
		140	S36.032.140	11,2	269	24	314	28	392	35	526	47
		152	S36.032.152	10,1	263	26	303	30	384	38	500	50
		178	S36.032.178	8,6	258	30	310	36	378	44	500	59
		203	S36.032.203	7,5	255	34	308	40	383	51	500	68
		254	S36.032.254	6,0	258	43	306	51	384	64	500	85
		305	S36.032.305	5,0	260	52	305	61	380	76	500	103
40	20	51	S36.040.051	56	487	8,7	560	10	714	13	840	15
		64	S36.040.064	42,2	464	11	549	13	675	16	820	19
		76	S36.040.076	34,3	446	13	525	15	652	19	815	24
		89	S36.040.089	28,2	423	15	508	18	620	22	800	28
		102	S36.040.102	24,4	415	17	488	20	634	26	800	33
		115	S36.040.115	21,4	428	20	492	23	621	29	792	37
		127	S36.040.127	19,0	418	22	475	25	608	32	780	41
		140	S36.040.140	17,1	410	24	479	28	599	35	787	46
		152	S36.040.152	15,6	406	26	468	30	593	38	780	50
		178	S36.040.178	13,2	396	30	475	36	581	44	765	58
		203	S36.040.203	11,4	388	34	456	40	581	51	765	67
		254	S36.040.254	9,1	391	43	464	51	582	64	765	85
		305	S36.040.305	7,5	390	52	458	61	570	76	760	102
50	25	64	S36.050.064	72,4	796	11	941	13	1158	16	1376	19
		76	S36.050.076	57,3	745	13	860	15	1089	19	1318	23
		89	S36.050.089	47,4	711	15	853	18	1043	22	1280	27
		102	S36.050.102	40,4	687	17	808	20	1050	26	1252	31
		115	S36.050.115	35,3	706	20	812	23	1024	29	1235	35
		127	S36.050.127	31,2	686	22	780	25	998	32	1217	39
		140	S36.050.140	28,2	677	24	790	28	987	35	1241	44
		152	S36.050.152	25,5	663	26	765	30	969	38	1200	47
		178	S36.050.178	21,5	645	30	774	36	946	44	1200	56
		203	S36.050.203	18,6	632	34	744	40	949	51	1190	64
		254	S36.050.254	14,6	628	43	745	51	934	64	1170	80
		305	S36.050.305	12,1	629	52	738	61	920	76	1170	97

FHx Retainer

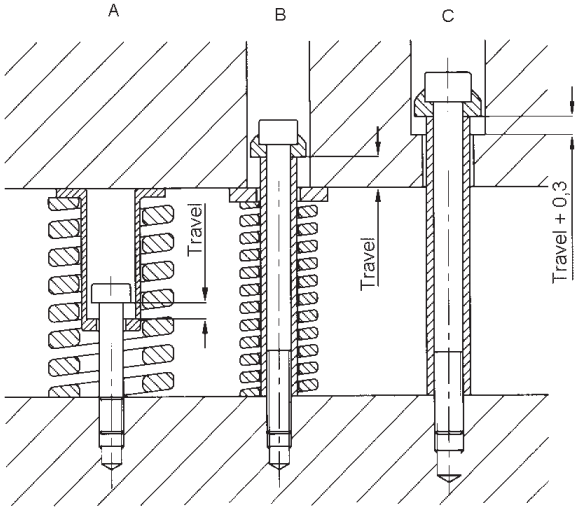


ASSEMBLY EXAMPLES

A Preloaded spring with FHx retainer and A17.xxx.xxx shoulder screw

B Preloaded spring with S65.010.xxx washer and A15.xxx.xxx locking grub screw

C Travel is restricted using an A15.xxx.xxx locking grub screw



PRODUCT INFORMATION

Preloaded springs offer key benefits:

- Each spring is individually attached and pre-loaded to the desired length.
- When assembling the tool, there is no need to compress all of the springs.
- In the resting position, the springs are not preloaded by the retainer.
- This saves time and improves safety during assembly and maintenance operations.

D1	D2	D3	D4	L1	L2	L3	Reference
37	20	16,5	10	48	3	4	FH2
49	25	21,5	13,5	48	4	3	FH3
49	25	21,5	13,5	73	4	3	FH4

Die Sets – Machined Plates according to drawing

Machine Capacities

CNC TORCH CUTTING
- Max. L x W x thickness: 6,000 x 2,300 x 250 mm
- Tolerance to ± 2 mm

STRESS RELIEVING
- L x W x H max.: 4,500 x 2,300 x 1,600 mm
- Max. load: 20 T

MACHINING

Grinding:
- Blanchard and tangential-type.
- Max. load: 2 T
- Max. diagonal: 2,200 mm

Milling on machining centre:
- Max. stroke (X): X x Y x Z: 3,650 x 1,750 x 710 mm – Max. load: 9 T
- Max. stroke (Y and Z): X x Y x Z: 3,000 x 2,500 x 1,000 mm – Max. load: 6 T
- Large capacity: X x Y x Z: 4,010 x 2,500 x 670 mm – Max. load: 15 T

Deep drilling:
- Max. stroke: X x Y x Z: 2,000 x 1,000 x 1,500 mm – Max. load: 15 T

Boring, Drilling, Edge milling, etc.

MECHANICAL WELDING
- Can be carried out upon demand

HANDLING
- Bridge cranes of up to 20T

STEEL PLATE SPECIFICATIONS

- In stock: C25 – C45
- Upon demand: Pre-treated steel, high-strength aluminium, etc.
- Stress relieving upon request.

TYPES OF PLATES

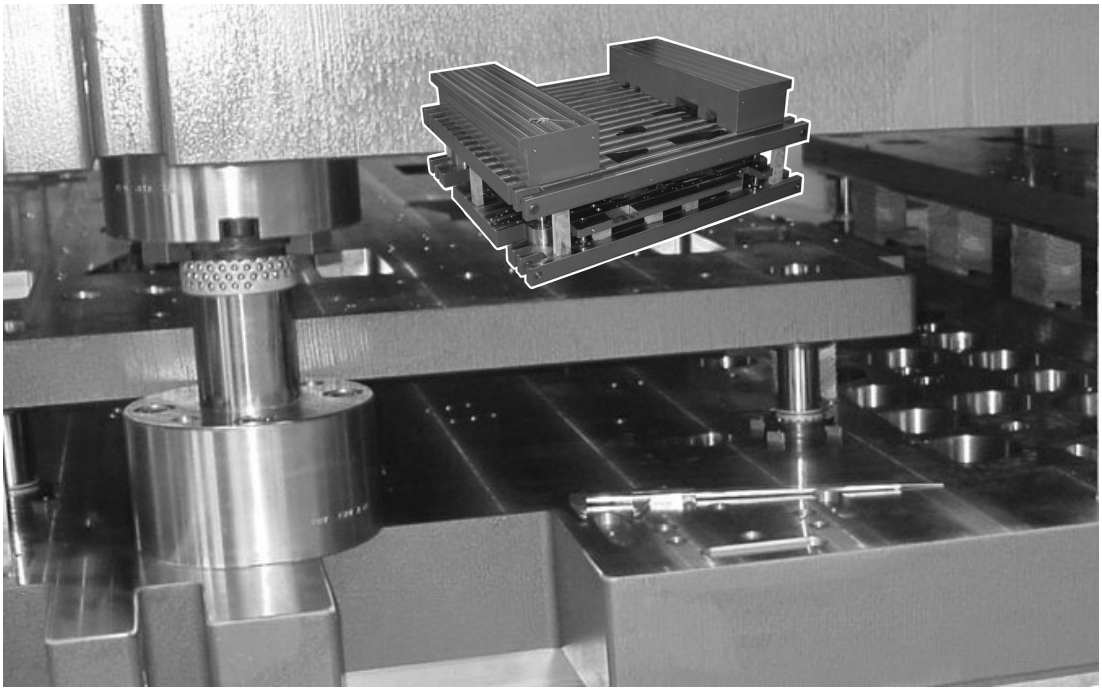
- The peripheral shapes are torch-cut and deburred.
- The edges may be milled for reference surfaces.
- *If tolerances are not specified for the thickness, the plates will be spotfaced to the minimum extent*, i.e. the blank sheet of the specified thickness is ground until our standards of flatness and parallel alignment are obtained.
- Spot facing = 0 to 3 mm/metre max.

SPECIAL RECTANGULAR DIE SETS

- You will find the different types of rectangular die sets on the following pages.
- To request prices or place your orders, simply photocopy the relevant page, fill it in (with your dimensions, guide elements and any special machining requirements, etc.) and fax it to us.

DIE SETS WITH TORCH-CUTTING AND MACHINING ACCORDING TO DRAWING

- We manufacture die sets according to your drawing and design specifications.
- Heavy machining removing a lot of metal, carried out after the die set has been assembled, may cause deformations. We recommend that you let us perform these machining operations.



Center Pillars

Company:

Town or City: Post code:

Tel:

Fax:

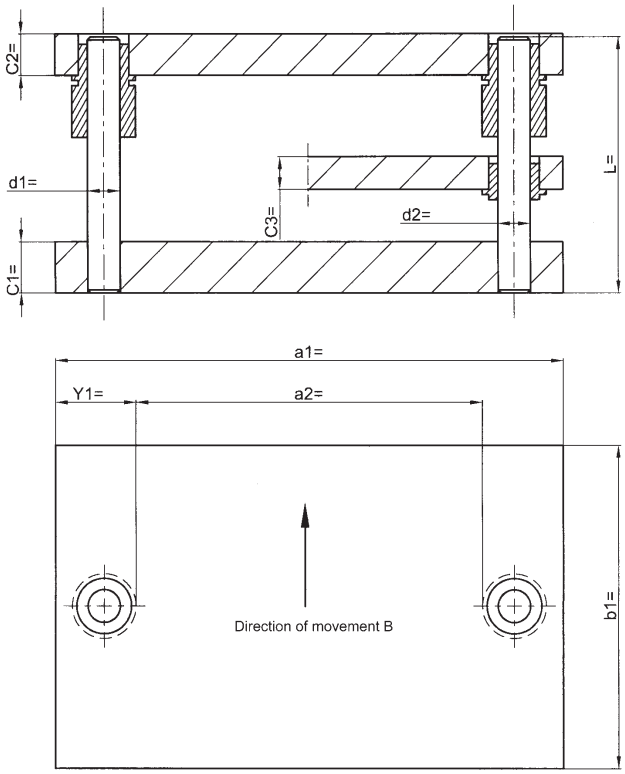
☐ PRICE REQUEST
☐ ORDER

Date:

Name:

Signature:

ENTER YOUR DESIRED DIMENSIONS ON THE DRAWING



DIRECTION B

Effective area: a2 x b1

a1 = a2 + 2 x Y1

Quantity:

Material (C25):

Guide element class: 1 - 2 - 3

STATE REFERENCES

Guide pillar:

for C

for C

Bush:

for C

for C

Ball bearing cage:

for C

for C

* See Guide Elements catalogue.

* For the use of ball bearing cages, the pillars are fitted as standard in C2.

PLATE DIMENSIONS

a1= mm

b1= mm

C1= ± mm

C2= ± mm

C3= ± mm

General tolerances in table on page ?? or according to your specifications.

See recommended dimensions for die sets on page ?? for Y1, C1, C2 and C3.

PLEASE COPY THIS PAGE OR DOWNLOAD IT FROM OUR WEBSITE AND FAX IT TO +44 (0)1788 561 256

Rear Pillars

Company:

Town or City: Post code:

Tel:

Fax:

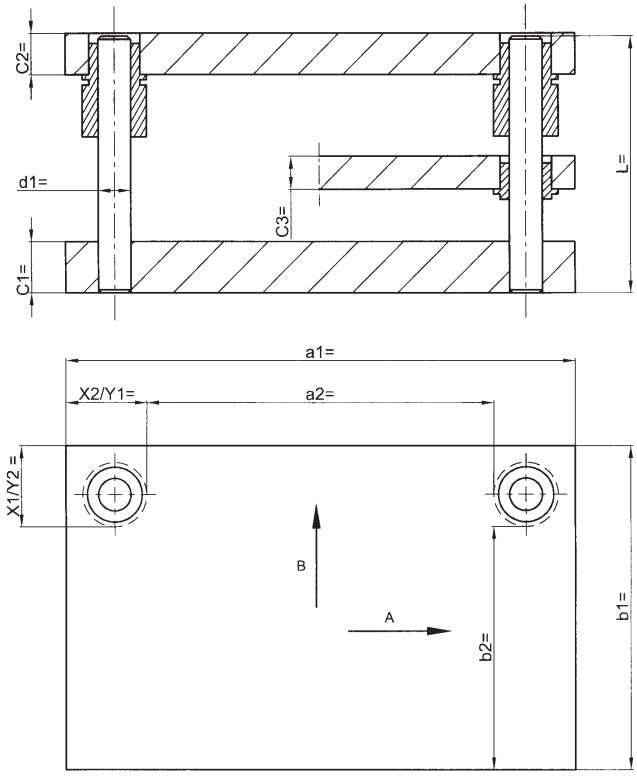
☐ PRICE REQUEST
☐ ORDER

Date:

Name:

Signature:

ENTER YOUR DESIRED DIMENSIONS ON THE DRAWING



Quantity:

Material (C25):

Guide element class: 1 - 2 - 3

STATE REFERENCES

Guide pillar:

for C

for C

Bush:

for C

for C

Ball bearing cage:

for C

for C

* See Guide Elements catalogue.
* For the use of ball bearing cages, the pillars are fitted as standard in C2.

DIRECTION OF MOVEMENT

☐ → A (Standard)
☐ ↑ B

PLATE DIMENSIONS

a1=		mm
b1=		mm
C1=	±	mm
C2=	±	mm
C3=	±	mm

General tolerances in table on page ?? or according to your specifications.
See recommended dimensions for die sets on page ?? for X1, X2, Y1, Y2, C1, C2 and C3.

DIRECTION A

Effective area: a1 x b2
a1 = a2 + 2 x X2
b1 = b2 + X1

DIRECTION B

Effective area: a2 x b1
a1 = a2 + 2 x Y1
b1 = b2 + Y2

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Special Rectangular Die Sets – Form CS Diagonal Pillars

Company:

Town or City: Post code:

Tel:

Fax:

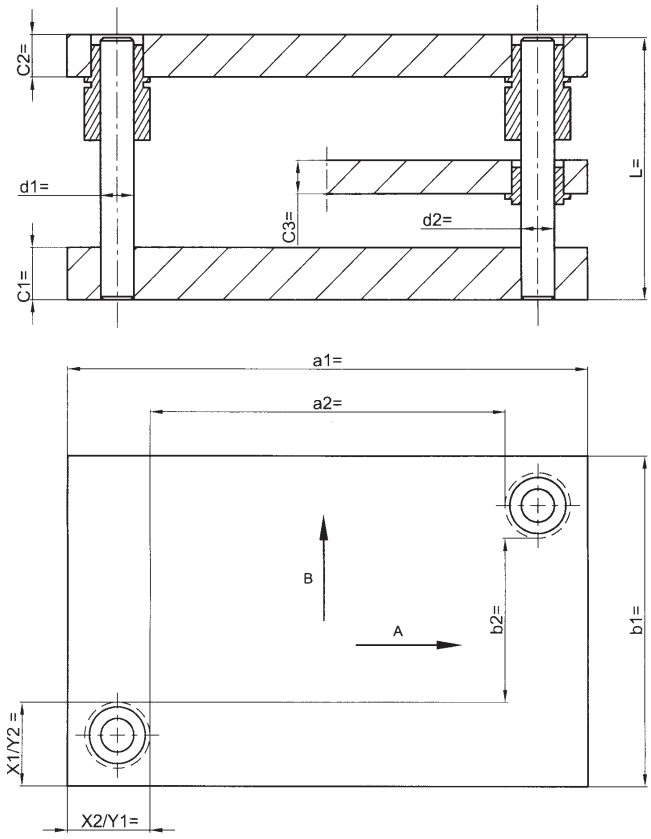
☐ PRICE REQUEST
☐ ORDER

Date:

Name:

Signature:

ENTER YOUR DESIRED DIMENSIONS ON THE DRAWING



Quantity:

Material (C25):

Guide element class: 1 - 2 - 3

STATE REFERENCES

Guide pillar:

for C

for C

Bush:

for C

for C

Ball bearing cage:

for C

for C

* See Guide Elements catalogue.
* For the use of ball bearing cages, the pillars are fitted as standard in C2.

DIRECTION OF MOVEMENT

☐ → A (Standard)
☐ ↑ B

PLATE DIMENSIONS

a1= mm

b1= mm

C1= ± mm

C2= ± mm

C3= ± mm

General tolerances in table on page ?? or according to your specifications.
See recommended dimensions for die set on page ?? for X1, X2, Y1, Y2, C1, C2 and C3.

DIRECTION A
Effective area: a1 x b2
a1 = a2 + 2 x X2
b1 = b2 + 2 x X1

DIRECTION B
Effective area: a2 x b1
a1 = a2 + 2 x Y1
b1 = b2 + 2 x Y2

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Special Rectangular Die Sets – Form DS 4 Pillars

Company:

Town or City: Post code:

Tel:

Fax:

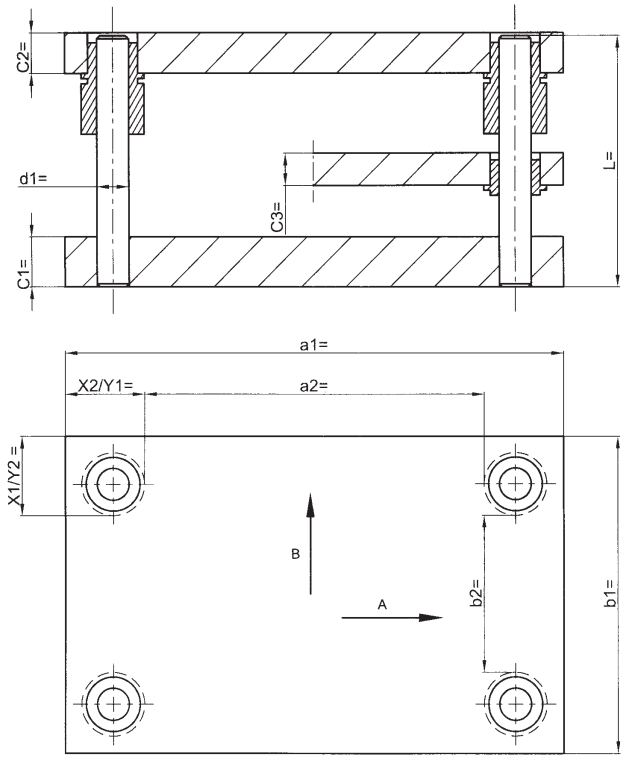
☐ PRICE REQUEST
☐ ORDER

Date:

Name:

Signature:

ENTER YOUR DESIRED DIMENSIONS ON THE DRAWING



Quantity:

Material (C25):

Guide element class: 1 - 2 - 3

STATE REFERENCES

Guide pillar:

for C

for C

Bush:

for C

for C

Ball bearing cage:

for C

for C

* See Guide Elements catalogue.
* For the use of ball bearing cages, the pillars are fitted as standard in C2.

DIRECTION OF MOVEMENT

☐ → A (Standard)
☐ ↑ B

PLATE DIMENSIONS

a1=		mm
b1=		mm
C1=	±	mm
C2=	±	mm
C3=	±	mm

General tolerances in table on page ?? or according to your specifications.
See recommended dimensions for die sets on page ?? for X1, X2, Y1, Y2, C1, C2 and C3. ?

DIRECTION A

Effective area: a1 x b2
a1 = a2 + 2 x X2
b1 = b2 + X1

DIRECTION B

Effective area: a2 x b1
a1 = a2 + 2 x Y1
b1 = b2 + Y2

FOOLPROOFING

2 mm offset for steel and bronze guide bushes.
3 mm offset for ball bearing guide bushes.

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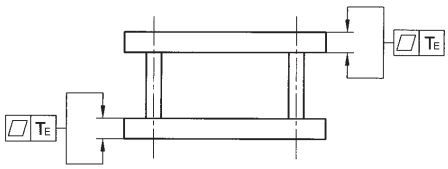
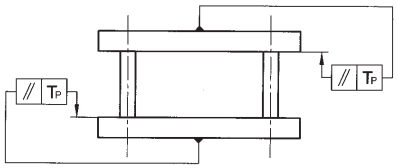
General Tolerances

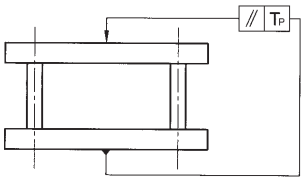
FLATNESS OF PLATE FACES	
Thickness	T_E
E > 30 mm	0.004 / 100 mm
20 < E < 30 mm	0.008 / 100 mm



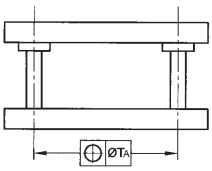
PARALLEL ALIGNMENT OF PLATE FACES		
From mm	To mm	T_P
0	100	0.006
100	200	0.012
200	300	0.018



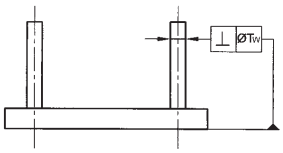
PARALLEL ALIGNMENT OF EXTERNAL FACES OF DIE SET		
From mm	To mm	TP
0	100	0.008
100	200	0.012
200	300	0.018
300	400	0.024
400	500	0.030
500	600	0.036



LOCATION
T_A: ±12 µm/m + additional 5 µm/m



PERPENDICULARITY
T_W
0,015 / 100 mm



ADJUSTMENT OF BORES	
Guide pillar	Guide bush
d = R6	D = H6

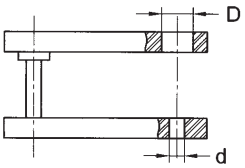
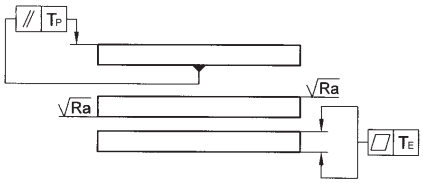
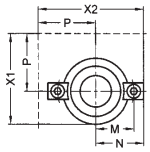
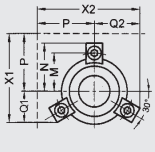
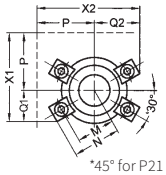
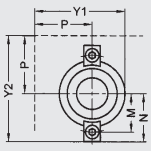
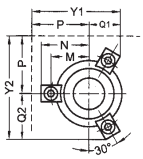
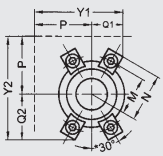


PLATE WITH MIN. SPOTFACING		
T_E	T_P	R_A
0.006/100mm	0.006/100mm	3



Recommended Dimensions for Die Sets

RECOMMENDED PILLAR DIAMETER ACCORDING TO LENGTH a1 OF PLATE						
Length a1	150 - 300	350 - 500	550 - 700	750 - 1000	1100 - 1900	200 - 2500
Recommended d1	25	32	40	50	63	80

DIRECTION OF MOVEMENT - A - left - right			DIRECTION OF MOVEMENT - B - front - back		
2 clamps	3 clamps	4 clamps	2 clamps	3 clamps	4 clamps
		 *45° for P21			 *45° for P21

STANDARD POSITION OF GUIDES AND FIXINGS							
GUIDE PILLAR P10 - P21 - P22							
Diameter	19 - 20	24 - 25	30 - 32	38 - 40	48 - 50	63	80
No. of P21 clamps	3 x M5	3 x M6	3 x M6	4 x M8	4 x M8	4 x M8	4 x M8
GUIDE BUSH B10 - B20							
P	30	40	45	50	60	65	75
X1 / Y1	46.3	64.2	71	81.5	97.5	111.5	132.5
X2 / Y2	55.5	74	82	94.1	112.3	122	141.6
No. of clamps	2 x M5	3 x M6	3 x M6	4 x M8	4 x M8	4 x M8	4 x M8
GUIDE BUSH B12 - B22							
P	30	40	45	50	60	65	75
X1 / Y1	46.3	65.3	72	83.8	97.5	102.5	132.5
X2 / Y2	55.5	76.6	84.6	99	114.2	127.5	146.6
No. of clamps	2 x M5	3 x M6	3 x M6	4 x M8	4 x M8	4 x M8	4 x M8
BALL BEARING GUIDE BUSH B30 - B40							
P	-	45	50	55	65	70	80
X1 / Y1	-	71	81.5	92.5	111.5	124	142.5
X2 / Y2	-	82	94.1	104.3	122	134	151.8
No. of B40 clamps	-	3 x M6	3 x M8	4 x M8	4 x M8	4 x M8	4 x M8
BALL BEARING GUIDE BUSH intermediate plate B42							
P	-	45	50	55	65	-	-
X1 / Y1	-	72	79.3	92.5	111.5	-	-
X2 / Y2	-	84.6	93.5	103.7	121.5	-	-
No. of clamps	-	3 x M6	3 x M6	4 x M6	4 x M6	-	-

RECOMMENDED PLATE THICKNESS ACCORDING TO TYPE OF GUIDE ELEMENT USED									
Diameter	P10	P21	P22	B10-B20	B12-B22	B30	B40	B42	Plates
19 - 20	25	25	38	-	-	-	-	-	C1
	20	20	30	20	20	-	-	-	C2
	-	-	-	20	20	-	-	-	C3
24 - 25	32	32	46	-	-	32	32	-	C1
	25	25	38	25	25	32	32	-	C2
	-	-	-	25	25	-	-	22	C3
30 - 32	40	40	56	-	-	40	40	-	C1
	32	32	48	28	32	40	40	-	C2
	-	-	-	25	28	-	-	22	C3
38 - 40	50	50	66	-	-	50	50	-	C1
	40	40	58	32	40	50	50	-	C2
	-	-	-	32	50	-	-	32	C3
48 - 50	58	58	76	-	-	58	58	-	C1
	50	50	68	38	50	58	58	-	C2
	-	-	-	32	50	-	-	38	C3
63	63	63	86	-	-	63	63	-	C1
	58	58	78	50	63	63	63	-	C2
	-	-	-	40	63	-	-	-	C3
80	68	68	98	-	-	-	-	-	C1
	60	60	92	50	80	-	-	-	C2
	-	-	-	40	80	-	-	-	C3

STEEL PLATE SPECIFICATIONS:

- In stock: C25 - C45
- Upon demand: Pre-treated steel, high-strength aluminium, etc.
- Stress relieving upon request.

TYPES OF PLATES:

- The peripheral shapes are torch-cut and deburred.
- The edges can be milled for reference surfaces.
- *If tolerances are not specified for the thickness, the plates will be spotfaced to the minimum extent*, i.e. the blank sheet of the specified thickness is ground until our standards of flatness and parallel alignment are obtained.
- Spot facing = Max. of 0 to 3 mm/metre.

PLATES WITH TORCH CUTTING AND SPECIAL MACHINING:

- We can torch-cut, grind and machine *plates according to your drawings*.
- All of our plates are annealed.
- If these machining operations require the removal of large amounts of material, it is in your interest to let us perform the roughing (see finish). We control the risks of deformations due to internal stresses.

UNFINISHED THICKNESSES OF PLATES KEPT IN STOCK

Other thicknesses available upon request:

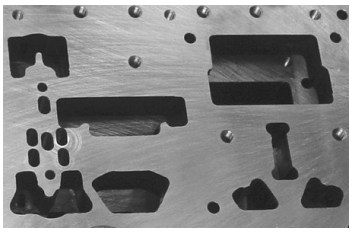
C25: 12 - 15 - 20 - 25 - 30 - 35 - 40 - 42 - 45 - 50 - 52 - 55 - 60 - 65 - 70 - 75 - 80 - 85 - 90 - 95 - 100 - 105 - 110 - 120 -150

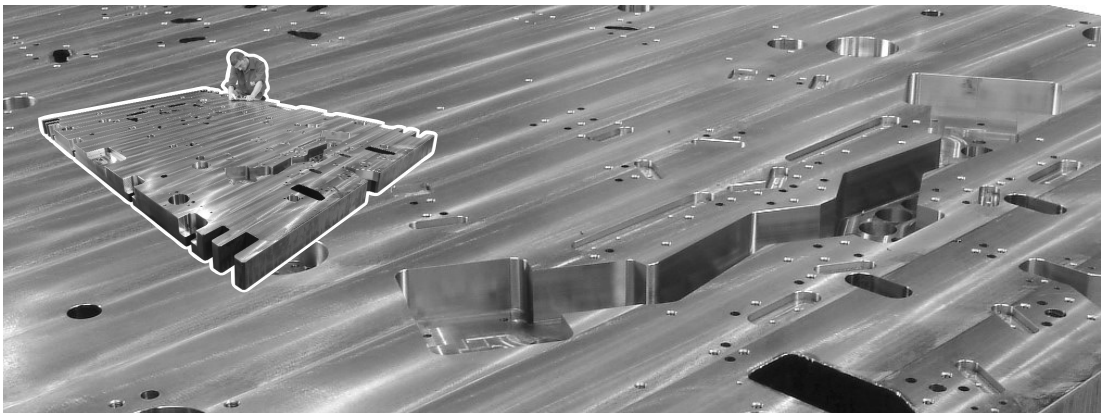
C45: 15 - 20 - 25 - 30 - 35 - 40 - 45 - 50 - 55 - 60 - 65 - 70 - 80 - 85 - 90 - 95 - 100 - 105 - 110 - 120 - 130 - 140 - 160

FOR YOUR PLATE ORDERS

Please specify:

- Steel grade of the plate
- Number of plates
- External dimensions
- Spotfaced or toleranced faces
- Torch-cut or milled edges
- *Special machining operations with detailed drawing.*





Standard Die Sets

In order to provide a better reponse to your urgent ordering requirements, we can offer you three new die set solutions:

- Standard die sets: 48-hours delivery ex works
- Rectangular die sets: 72-hours delivery ex works
- Made-to-measure die sets: according to your plans and specifications
- Special die sets: according to individual design requirements.

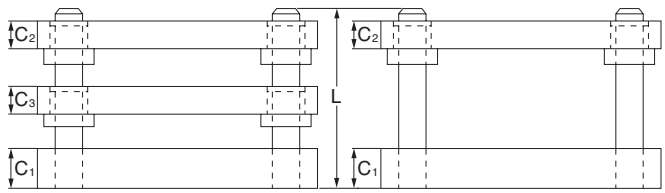
By matching bushes and pillars, we can offer you three adjustment categories:

Category I: For tooling processing of very thin sheet metal. For very fine clearance between punch and die sections. Where clearance per side is less than 0.02 mm.

Category II: For tooling processing of sheet metal more than 0.4 mm thick. For clearance between punch and die sections from 0.02 to 0.06 mm per side. For most applications.

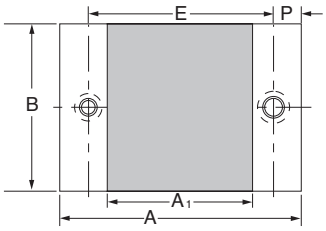
Category III: For clearance between punch and die sections of 0.08 mm per side. For automotive, forming dies.

Standard Die Sets with Centre Pillars



Standard Die Set with stripper plate
Ref. No.: D61.xxx.xxx

Standard Die Set
Ref. No.: D71.xxx.xxx



PRODUCT INFORMATION

The plates are torch-cut and stress relieved.
The guide elements can be chosen from our catalogue:

- Straight pillars P10.xxx.xxx
- Demountable pillars P2x.xxx.xxx
- Steel bushes B1x.xxx.xxx
- Bronze-plated bushes B2x.xxx.xxx

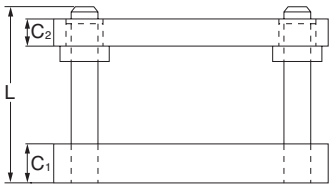
Delivery: 48 hours ex works

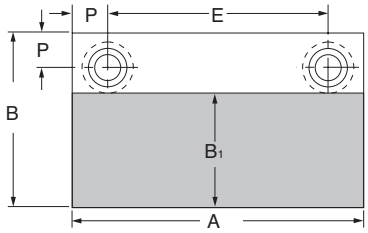
Example order:

- Die set with stripper plate: D61.012.010
- Identical die set without stripper plate: D71.012.010

a_2	Ext. Dimensions b_1	a_1	$C_1 \pm 1$	$C_2 \pm 1$	$C_3 \pm 1$	d_1	d_2	e_1	P	Reference x = 6: with C3 x = 7: without C3 ↓
Work space										
100	80	225	32	25	25	25	24	147	39	Dx1.010.008
125		250						172		Dx1.012.008
160		285						207		Dx1.016.008
200		325						247		Dx1.020.008
100	100	225						147		Dx1.010.010
125		250						172		Dx1.012.010
160		285						207		Dx1.016.010
250		390	40	32	28	32	30	304	43	Dx1.025.010
125	125	265						179		Dx1.012.012
160		300			32			214		Dx1.016.012
200		340	50	40				254		Dx1.020.012
315		455						369		Dx1.031.012
160	160	300						214		Dx1.016.016
200		340						254		Dx1.020.016
250		390				32	30	304		Dx1.025.016
315		455						369		Dx1.031.016
200	200	367				40	38	263	52	Dx1.020.020
315		482						378		Dx1.031.020
315	250	482						378		Dx1.031.025

Standard Die Sets with Rear Pillars





PRODUCT INFORMATION

The plates are torch-cut and stress relieved.
The guide elements can be chosen from our catalogue:

- Straight pillars P10.xxx.xxx
- Demountable pillars P2x.xxx.xxx
- Steel bushes B1x.xxx.xxx
- Bronze-plated bushes B2x.xxx.xxx

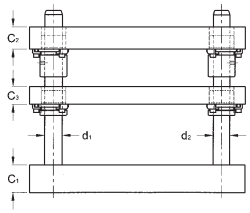
Delivery: 48 hours ex works

Example order:

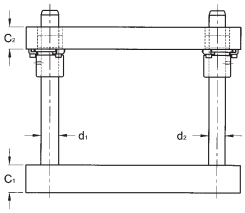
- Die set with rear pillars: D72.031.010

Ext. Dimensions			C_1±1	C_2±1	d_1=d_2	e	P	Reference
a_1 Work space	b_2	b_1						
125						69		D72.012.006
160	63	108	25	20	20	104	28	D72.016.006
200						144		D72.020.006
160						82		D72.016.008
200	80	143	32	25		122		D72.020.008
250					25	172	39	D72.025.008
200						122		D72.020.010
250	100	163				172		D72.025.010
315			40	32		237		D72.031.010
200						114		D72.020.012
250	125	195				164		D72.025.012
315					32	229	43	D72.031.012
250	160	230	50	40		164		D72.025.016
315						229		D72.031.016
315	200	284	56	50	40	211	52	D72.031.020

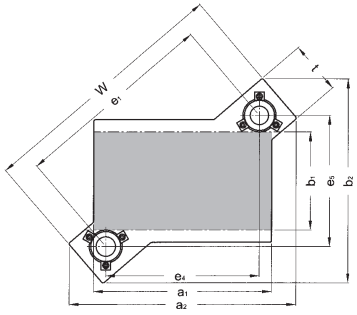
Standard Die Sets with Diagonal Pillars



Standard die set with stripper plate, type D63.xxx.xxx



Standard die set, type D73.xxx.xxx



PRODUCT INFORMATION

The plates are torch-cut and stress relieved.
The guide elements can be chosen from our catalogue:

- Straight pillars P10.xxx.xxx
- Demountable pillars P2x.xxx.xxx
- Steel bushes B1x.xxx.xxx
- Bronze-plated bushes B2x.xxx.xxx

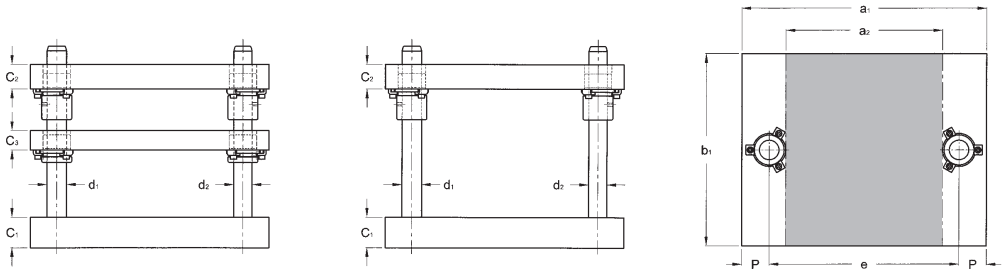
Delivery: 48 hours ex works

Example order:

- Die set with stripper plate: D63.024.012
- Identical die set without stripper plate: D73.024.012

a_1	b_1	Ext. Dimensions		C_1±1	C_2±1	C_3=+1	d_1	d_2	e_1	e_5 ≈	e_4 ≈	t	w	Reference x=6: with C3 x=7: without C3 ↓
Work space		a_2	b_2											
165	100	235	260	32	25	25	25	24	193	147	125	78	271	Dx3.016.010
200		271							218		160		296	Dx3.020.010
240		310		40	32	28			249		200		327	Dx3.024.010
290		357							290		250		368	Dx3.029.010
200	125	282	300				32	30	240	179	160	86	326	Dx3.020.012
240		322							269		200		355	Dx3.024.012
290		371							308		250		394	Dx3.029.012
355		433							363		315		449	Dx3.035.012
240	160	322	335	50	40	32			293	214	200		379	Dx3.024.016
290		372							329		250		415	Dx3.029.016
355		435							381		315		467	Dx3.035.016
290	200	398	410				40	38	363	263	250	104	467	Dx3.029.020
355		462							411		315		515	Dx3.035.020
355	250	462	460						444	313	315		548	Dx3.035.025

Rectangular Die Sets with Centre Pillars



Standard assembly of bushes on underside of stripper plate.

PRODUCT INFORMATION

The plates are torch-cut and stress relieved.
The steel or bronze-plated steel guide elements can be chosen from our "Guide Elements" catalogue.

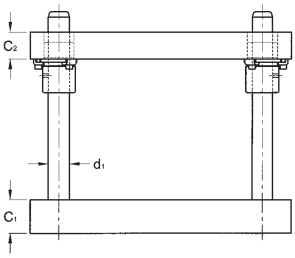
Delivery: 72 hours ex works

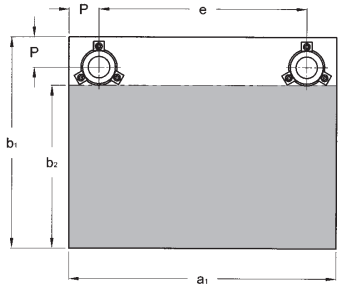
Example order:
- Die set with stripper plate: D81.463.040
- Identical die set without stripper plate: D91.463.040

Ext. Dimensions			C_1±1	C_2±1	C_3=+1	d_1	d_2	e	P	Reference x=8: with C3 x=9: without C3 ↓
a_1	b_1	a_2								
	Work space									
250	160	127	32	32	32	25	24	174	38	Dx1.125.016
			32	40						Dx1.225.016
			40	32						Dx1.325.016
			40	40						Dx1.425.016
	200		32	32						Dx1.125.020
			32	40						Dx1.225.020
			40	32						Dx1.325.020
			40	40						Dx1.425.020
	250		32	32						Dx1.125.025
			32	40						Dx1.225.025
			40	32						Dx1.325.025
			40	40						Dx1.425.025
315	200	171	32	32	32	32	30	225	45	Dx1.131.020
			32	40						Dx1.231.020
			40	32						Dx1.331.020
			40	40						Dx1.431.020
	250		32	32						Dx1.131.025
			32	40						Dx1.231.025
			40	32						Dx1.331.025
			40	40						Dx1.431.025
	315		40	40						Dx1.131.031
			40	50						Dx1.231.031
			50	40						Dx1.331.031
			50	50						Dx1.431.031

Ext. Dimensions			C_1±1	C_2±1	C_3=+1	d_1	d_2	e	P	Reference x=8: with C3 x=9: without C3 ↓
a_1	b_1 Work space	a_2								
400	200	256	40	40	32	32	30	310	45	Dx1.140.020
			40	50						Dx1.240.020
			50	40						Dx1.340.020
			50	50						Dx1.440.020
	250		40	40						Dx1.140.025
			40	50						Dx1.240.025
			50	40						Dx1.340.025
			50	50						Dx1.440.025
	315		40	40						Dx1.140.031
			40	50						Dx1.240.031
			50	40						Dx1.340.031
			50	50						Dx1.440.031
	400		40	40						Dx1.140.040
			40	50						Dx1.240.040
			50	40						Dx1.340.040
			50	50						Dx1.440.040
500	250	337	40	40	32	40	38	400	50	Dx1.150.025
			40	50						Dx1.250.025
			50	40						Dx1.350.025
			50	50						Dx1.450.025
	315		40	40						Dx1.150.031
			40	50						Dx1.250.031
			50	40						Dx1.350.031
			50	50						Dx1.450.031
	400		40	40						Dx1.150.040
			40	50						Dx1.250.040
			50	40						Dx1.350.040
			50	50						Dx1.450.040
	500		40	40						Dx1.150.050
			40	50						Dx1.250.050
			50	40						Dx1.350.050
			50	50						Dx1.450.050

Ext. Dimensions			C_1±1	C_2±1	C_3=+1	d_1	d_2	e	P	Reference x=8: with C3 x=9: without C3 ↓
a_1	b_1 Work space	a_2								
630	315	435	50	50	40	50	48	510	60	Dx1.163.031
			50	58						Dx1.263.031
			58	50						Dx1.363.031
			58	58						Dx1.463.031
	400		50	50						Dx1.163.040
			50	58						Dx1.263.040
			58	50						Dx1.363.040
			58	58						Dx1.463.040
	500		50	50						Dx1.163.050
			50	58						Dx1.263.050
			58	50						Dx1.363.050
			58	58						Dx1.463.050
	630		50	50						Dx1.163.063
			50	58						Dx1.263.063
			58	50						Dx1.363.063
			58	58						Dx1.463.063
710	400	515	58	58	40	50	48	590	60	Dx1.171.040
			58	63						Dx1.271.040
			63	58						Dx1.371.040
			63	63						Dx1.471.040
	500		58	58						Dx1.171.050
			58	63						Dx1.271.050
			63	58						Dx1.371.050
			63	63						Dx1.471.050
	630		58	58						Dx1.171.063
			58	63						Dx1.271.063
			63	58						Dx1.371.063
			63	63						Dx1.471.063





PRODUCT INFORMATION

The plates are torch-cut and stress relieved.
The steel or bronze-plated steel guide elements can be chosen from our “Guide Elements” catalogue.

Delivery: 72 hours ex works

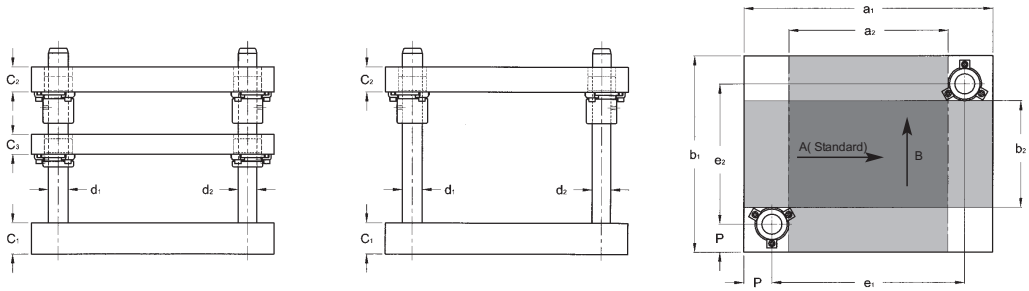
Example order:
⊕ Rectangular die set with rear pillars: D92.450.050

Ext. Dimensions			$C_1 \pm 1$	$C_2 \pm 1$	d_1	e	P	Reference
a_1 Work space	b_2	b_1						
250	98	160	32	32	25	174	38	D92.125.016
			32	40				D92.225.016
			40	32				D92.325.016
			40	40				D92.425.016
	138	200	32	32				D92.125.020
			32	40				D92.225.020
			40	32				D92.325.020
			40	40				D92.425.020
	188	250	32	32				D92.125.025
			32	40				D92.225.025
			40	32				D92.325.025
			40	40				D92.425.025
315	128	200	32	32	32	225	45	D92.131.020
			32	40				D92.231.020
			40	32				D92.331.020
			40	40				D92.431.020
	178	250	32	32				D92.131.025
			32	40				D92.231.025
			40	32				D92.331.025
			40	40				D92.431.025
	243	315	40	40				D92.131.031
			40	50				D92.231.031
			50	40				D92.331.031
			50	50				D92.431.031

Ext. Dimensions			$C_1 \pm 1$	$C_2 \pm 1$	d_1	e	P	Reference
a_1 Work space	b_2	b_1						
400	128	200	40	40	32	310	45	D92.140.020
			40	50				D92.240.020
			50	40				D92.340.020
			50	50				D92.440.020
	178	250	40	40				D92.140.025
			40	50				D92.240.025
			50	40				D92.340.025
			50	50				D92.440.025
	243	315	40	40				D92.140.031
			40	50				D92.240.031
			50	40				D92.340.031
			50	50				D92.440.031
	318	400	40	40	40	300	50	D92.140.040
			40	50				D92.240.040
			50	40				D92.340.040
			50	50				D92.440.040
500	168	250	40	40	40	400	50	D92.150.025
			40	50				D92.250.025
			50	40				D92.350.025
			50	50				D92.450.025
	233	315	40	40				D92.150.031
			40	50				D92.250.031
			50	40				D92.350.031
			50	50				D92.450.031
	318	400	40	40				D92.150.040
			40	50				D92.250.040
			50	40				D92.350.040
			50	50				D92.450.040
	418	500	40	40				D92.150.050
			40	50				D92.250.050
			50	40				D92.350.050
			50	50				D92.450.050

Ext. Dimensions			$C_1 \pm 1$	$C_2 \pm 1$	d_1	e	P	Reference
a_1 Work space	b_2	b_1						
630	217	315	50	50	50	510	60	D92.163.031
			50	58				D92.263.031
			58	50				D92.363.031
			58	58				D92.463.031
	302	400	50	50				D92.163.040
			50	58				D92.263.040
			58	50				D92.363.040
			58	58				D92.463.040
	402	500	50	50				D92.163.050
			50	58				D92.263.050
			58	50				D92.363.050
			58	58				D92.463.050
	532	630	50	50				D92.163.063
			50	58				D92.263.063
			58	50				D92.363.063
			58	58				D92.463.063
710	302	400	58	58	50	590	60	D92.171.040
			58	63				D92.271.040
			63	58				D92.371.040
			63	63				D92.471.040
	402	500	58	58				D92.171.050
			58	63				D92.271.050
			63	58				D92.371.050
			63	63				D92.471.050
	532	630	58	58				D92.171.063
			58	63				D92.271.063
			63	58				D92.371.063
			63	63				D92.471.063

Rectangular Die Sets with Diagonal Pillars



Standard assembly of bushes on underside of stripper plate.

PRODUCT INFORMATION

The plates are torch-cut and stress relieved.
The steel or bronze-plated steel guide elements can be chosen from our "Guide Elements" catalogue.

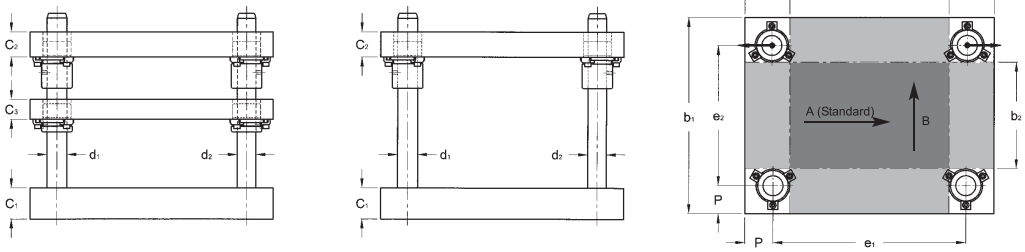
Delivery: 72 hours ex works

Example order:
- Die set with stripper plate: D83.450.031
- Identical die set without stripper plate: D93.450.031

Ext. Dimensions				C_1±1	C_2±1	C_3±1	d_1	d_2	e_1	e_2	P	Reference x=8: with C3 x=9: without C3 ↓
Work space direction A		Work space direction B										
a_1	b_2	b_1	a_2									
250	37	160	127	32	32	32	25	24	174	84	38	Dx3.125.016
				32	40							Dx3.225.016
				40	32							Dx3.325.016
				40	40							Dx3.425.016
	77	200		32	32					124		Dx3.125.020
				32	40							Dx3.225.020
				40	32							Dx3.325.020
				40	40							Dx3.425.020
	127	250		32	32					174		Dx3.125.025
				32	40							Dx3.225.025
				40	32							Dx3.325.025
				40	40							Dx3.425.025
315	56	200	171	32	32	32	32	30	225	110	45	Dx3.131.020
				32	40							Dx3.231.020
				40	32							Dx3.331.020
				40	40							Dx3.431.020
	106	250		32	32					160		Dx3.131.025
				32	40							Dx3.231.025
				40	32							Dx3.331.025
				40	40							Dx3.431.025
	171	315		40	40					225		Dx3.131.031
				40	50							Dx3.231.031
				50	40							Dx3.331.031
				50	50							Dx3.431.031

Ext. Dimensions				C_1±1	C_2±1	C_3±1	d_1	d_2	e_1	e_2	P	Reference x=8: with C3 x=9: without C3 ↓
Work space direction A		Work space direction B										
a_1	b_2	b_1	a_2									
400	56	200	256	40	40	32	32	30	310	110	45	Dx3.140.020
				40	50							Dx3.240.020
				50	40							Dx3.340.020
				50	50							Dx3.440.020
	106	250		40	40					160		Dx3.140.025
				40	50							Dx3.240.025
				50	40							Dx3.340.025
				50	50							Dx3.440.025
	171	315		40	40					225		Dx3.140.031
				40	50							Dx3.240.031
				50	40							Dx3.340.031
				50	50							Dx3.440.031
	256	400		40	40					310		Dx3.140.040
				40	50							Dx3.240.040
				50	40							Dx3.340.040
				50	50							Dx3.440.040
500	87	250	337	40	40	32	40	38	400	150	50	Dx3.150.025
				40	50							Dx3.250.025
				50	40							Dx3.350.025
				50	50							Dx3.450.025
	152	315		40	40					215		Dx3.150.031
				40	50							Dx3.250.031
				50	40							Dx3.350.031
				50	50							Dx3.450.031
	237	400		40	40					300		Dx3.150.040
				40	50							Dx3.250.040
				50	40							Dx3.350.040
				50	50							Dx3.450.040
	337	500		40	40					400		Dx3.150.050
				40	50							Dx3.250.050
				50	40							Dx3.350.050
				50	50							Dx3.450.050

Ext. Dimensions				C_1±1	C_2±1	C_3±1	d_1	d_2	e_1	e_2	P	Reference x=8: with C3 x=9: without C3 ↓
Work space direction A		Work space direction B										
a_1	b_2	b_1	a_2									
630	120	315	435	50	50	40	50	48	510	195	60	Dx3.163.031
				50	58							Dx3.263.031
				58	50							Dx3.363.031
				58	58							Dx3.463.031
	205	400		50	50					280		Dx3.163.040
				50	58							Dx3.263.040
				58	50							Dx3.363.040
				58	58							Dx3.463.040
	305	500		50	50					380		Dx3.163.050
				50	58							Dx3.263.050
				58	50							Dx3.363.050
				58	58							Dx3.463.050
	435	630		50	50					510		Dx3.163.063
				50	58							Dx3.263.063
				58	50							Dx3.363.063
				58	58							Dx3.463.063
710	205	400	515	58	58	40	50	48	590	280	60	Dx3.171.040
				58	63							Dx3.271.040
				63	58							Dx3.371.040
				63	63							Dx3.471.040
	305	500		58	58					380		Dx3.171.050
				58	63							Dx3.271.050
				63	58							Dx3.371.050
				63	63							Dx3.471.050
	435	630		58	58					510		Dx3.171.063
				58	63							Dx3.271.063
				63	58							Dx3.371.063
				63	63							Dx3.471.063



Standard assembly of bushes on underside of stripper plate.

PRODUCT INFORMATION

The plates are torch-cut and stress relieved. The steel or bronze-plated steel guide elements can be chosen from our "Guide Elements" catalogue. The two rear pillars are offset by 2 mm towards the outside for foolproofing.

Delivery: 72 hours ex works

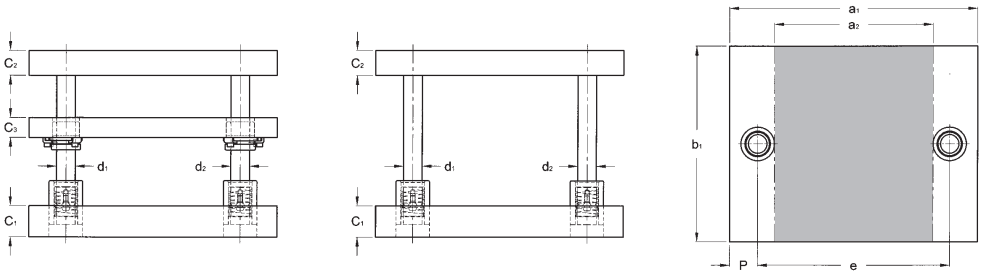
Example order:
- Die set with stripper plate: D84.450.031
- Identical die set without stripper plate: D94.450.031

Ext. Dimensions				C_1±1	C_2±1	C_3±1	d_1	e_1	e_2	P	Reference x=8: with C3 x=9: without C3 ↓
Work space direction A		Work space direction B									
a_1	b_2	b_1	a_2								
250	37	160	127	32	32	32	25	174	84	38	Dx4.125.016
				32	40						Dx4.225.016
				40	32						Dx4.325.016
				40	40						Dx4.425.016
	77	200		32	32				124		Dx4.125.020
				32	40						Dx4.225.020
				40	32						Dx4.325.020
				40	40						Dx4.425.020
	127	250		32	32				174		Dx4.125.025
				32	40						Dx4.225.025
				40	32						Dx4.325.025
				40	40						Dx4.425.025
315	77	200	192	32	32	32	25	239	124	38	Dx4.131.020
				32	40						Dx4.231.020
				40	32						Dx4.331.020
				40	40						Dx4.431.020
	127	250		32	32				174		Dx4.131.025
				32	40						Dx4.231.025
				40	32						Dx4.331.025
				40	40						Dx4.431.025
	192	315		40	40				239		Dx4.131.031
				40	50						Dx4.231.031
				50	40						Dx4.331.031
				50	50						Dx4.431.031

Ext. Dimensions				C_1±1	C_2±1	C_3±1	d_1	e_1	e_2	P	Reference x=8: with C3 x=9: without C3 ↓
Work space direction A		Work space direction B									
a_1	b_2	b_1	a_2								
400	77	200	277	40	40	32	25	324	124	38	Dx4.140.020
				40	50						Dx4.240.020
				50	40						Dx4.340.020
				50	50						Dx4.440.020
	127	250		40	40				174		Dx4.140.025
				40	50						Dx4.240.025
				50	40						Dx4.340.025
				50	50						Dx4.440.025
	171	315	256	40	40	32	32	310	225	45	Dx4.140.031
				40	50						Dx4.240.031
				50	40						Dx4.340.031
				50	50						Dx4.440.031
	256	400		40	40				310		Dx4.140.040
				40	50						Dx4.240.040
				50	40						Dx4.340.040
				50	50						Dx4.440.040
500	106	250	356	40	40	32	32	410	160	45	Dx4.150.025
				40	50						Dx4.250.025
				50	40						Dx4.350.025
				50	50						Dx4.450.025
	171	315		40	40				225		Dx4.150.031
				40	50						Dx4.250.031
				50	40						Dx4.350.031
				50	50						Dx4.450.031
	256	400		40	40				310		Dx4.150.040
				40	50						Dx4.250.040
				50	40						Dx4.350.040
				50	50						Dx4.450.040
	356	500		40	40				410		Dx4.150.050
				40	50						Dx4.250.050
				50	40						Dx4.350.050
				50	50						Dx4.450.050

Ext. Dimensions				C_1±1	C_2±1	C_3±1	d_1	e_1	e_2	P	Reference x=8: with C3 x=9: without C3 ↓
Work space direction A		Work space direction B									
a_1	b_2	b_1	a_2								
630	152	315	467	50	50	40	40	530	215	50	Dx4.163.031
				50	58						Dx4.263.031
				58	50						Dx4.363.031
				58	58						Dx4.463.031
	237	400		50	50				300		Dx4.163.040
				50	58						Dx4.263.040
				58	50						Dx4.363.040
				58	58						Dx4.463.040
	337	500		50	50				400		Dx4.163.050
				50	58						Dx4.263.050
				58	50						Dx4.363.050
				58	58						Dx4.463.050
	467	630		50	50				530		Dx4.163.063
				50	58						Dx4.263.063
				58	50						Dx4.363.063
				58	58						Dx4.463.063
710	205	400	515	58	58	40	50	590	280	60	Dx4.171.040
				58	63						Dx4.271.040
				63	58						Dx4.371.040
				63	63						Dx4.471.040
	305	500		58	58				380		Dx4.171.050
				58	63						Dx4.271.050
				63	58						Dx4.371.050
				63	63						Dx4.471.050
	435	630		58	58				510		Dx4.171.063
				58	63						Dx4.271.063
				63	58						Dx4.371.063
				63	63						Dx4.471.063

Rectangular Die Sets with Central Pillars and Ball Bearing Guide Bushes



Standard assembly of bushes on stripper plate:
- **on underside for demountable guide bushes (B1x.xxx.xxx and B2x.xxx.xxx)**
- **on top side for ball bearing guide bushes (B4x.xxx.xxx)**

PRODUCT INFORMATION

The plates are torch-cut and stress relieved. The guide elements with ball bearings (bush B30.xxx.xxx) can be chosen from our "Guide Elements" catalogue. Please note: The work space is reduced if B40 or B42 bushes are used (see pages X and X – position of clamps – dimensions Q1 and Q2).

Delivery: 72 hours ex works

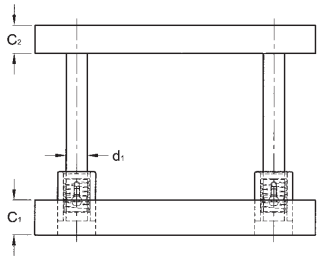
Example order:
- Die set with stripper plate: D86.463.040
- Identical die set without stripper plate: D96.463.040

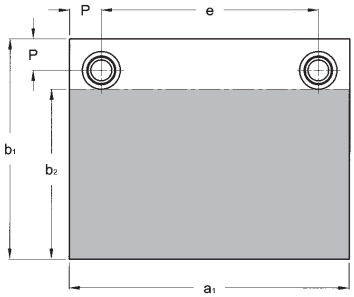
Ext. Dimensions			C_1±1	C_2±1	C_3±1	d_1	d_2	e	P	Reference x=8: with C3 x=9: without C3 ↓
a_1	b_1 Work space	a_2								
250	160	120	32	32	32	25	24	165	42.5	Dx6.125.016
			32	40						Dx6.225.016
			40	32						Dx6.325.016
			40	40						Dx6.425.016
	200		32	32						Dx6.125.020
			32	40						Dx6.225.020
			40	32						Dx6.325.020
			40	40						Dx6.425.020
	250		32	32						Dx6.125.025
			32	40						Dx6.225.025
			40	32						Dx6.325.025
			40	40						Dx6.425.025

Ext. Dimensions			$C_1 \pm 1$	$C_2 \pm 1$	$C_3 \pm 1$	d_1	d_2	e	P	Reference x=8: with C3 x=9: without C3 ↓
a_1	b_1 Work space	a_2								
315	200	170	32	32	32	32	30	224	45.5	Dx6.131.020
			32	40						Dx6.231.020
			40	32						Dx6.331.020
			40	40						Dx6.431.020
	250		32	32						Dx6.131.025
			32	40						Dx6.231.025
			40	32						Dx6.331.025
			40	40						Dx6.431.025
	315		40	40						Dx6.131.031
			40	40						Dx6.231.031
			50	50						Dx6.331.031
			50	50						Dx6.431.031
400	200	225	40	40	32	32	30	309	45.5	Dx6.140.020
			40	50						Dx6.240.020
			50	40						Dx6.340.020
			50	50						Dx6.440.020
	250		40	40						Dx6.140.025
			40	50						Dx6.240.025
			50	40						Dx6.340.025
			50	50						Dx6.440.025
	315		40	40						Dx6.140.031
			40	50						Dx6.240.031
			50	40						Dx6.340.031
			50	50						Dx6.440.031
	400		40	40						Dx6.140.040
			40	50						Dx6.240.040
			50	40						Dx6.340.040
			50	50						Dx6.440.040
500	250	330	40	40	32	40	38	395	52.5	Dx6.150.025
			40	50						Dx6.250.025
			50	40						Dx6.350.025
			50	50						Dx6.450.025
	315		40	40						Dx6.150.031
			40	50						Dx6.250.031
			50	40						Dx6.350.031
			50	50						Dx6.450.031
	400		40	40						Dx6.150.040
			40	50						Dx6.250.040
			50	40						Dx6.350.040
			50	50						Dx6.450.040

Ext. Dimensions			C_1±1	C_2±1	C_3±1	d_1	d_2	e	P	Reference x=8: with C3 x=9: without C3 ↓
a_1	b_1 Work space	a_2								
630	315	429	50	50	40	50	48	510	60	Dx6.163.031
			50	58						Dx6.263.031
			58	50						Dx6.363.031
			58	58						Dx6.463.031
	400		50	50						Dx6.163.040
			50	58						Dx6.263.040
			58	50						Dx6.363.040
			58	58						Dx6.463.040
	500		50	50						Dx6.163.050
			50	58						Dx6.263.050
			58	50						Dx6.363.050
			58	58						Dx6.463.050
	630		50	50						Dx6.163.063
			50	58						Dx6.263.063
			58	50						Dx6.363.063
			58	58						Dx6.463.063
710	400	509	58	58	40	50	48	590	60	Dx6.171.040
			58	63						Dx6.271.040
			63	58						Dx6.371.040
			63	63						Dx6.471.040
	500		58	58						Dx6.171.050
			58	63						Dx6.271.050
			63	58						Dx6.371.050
			63	63						Dx6.471.050
	630		58	58						Dx6.171.063
			58	63						Dx6.271.063
			63	58						Dx6.371.063
			63	63						Dx6.471.063

Rectangular Die Sets with Rear Pillars and Ball Bearing Guides





PRODUCT INFORMATION

The plates are torch-cut and stress relieved. The guide elements with ball bearings (bush B30.xxx.xxx) can be chosen from our "Guide Elements" catalogue. Please note: The work space is reduced if B40 bushes are used (see pages X position of clamps – dimensions Q1 and Q2).

Delivery: 72 hours ex works

Example order:

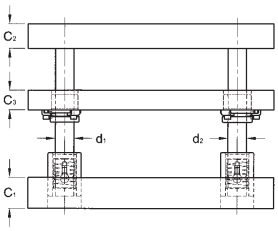
- Rectangular stock die set with rear ball bearing guides: D97.350.040

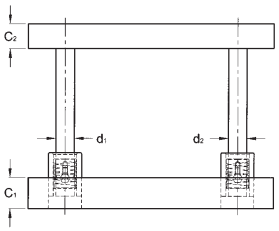
Ext. Dimensions			C_1±1	C_2±1	C_3±1	d_1	d_2	Reference
a_1	b_2	b_1						
Work space								
250	93	160	32	32	32	170	40	D97.125.016
			32	40				D97.225.016
			40	32				D97.325.016
			40	40				D97.425.016
	133	200	32	32				D97.125.020
			32	40				D97.225.020
			40	32				D97.325.020
			40	40				D97.425.020
	183	250	32	32				D97.125.025
			32	40				D97.225.025
			40	32				D97.325.025
			40	40				D97.425.025
315	128	200	32	32	32	225	45	D97.131.020
			32	40				D97.231.020
			40	32				D97.331.020
			40	40				D97.431.020
	178	250	32	32				D97.131.025
			32	40				D97.231.025
			40	32				D97.331.025
			40	40				D97.431.025
	243	315	40	40				D97.131.031
			40	40				D97.231.031
			50	50				D97.331.031
			50	50				D97.431.031

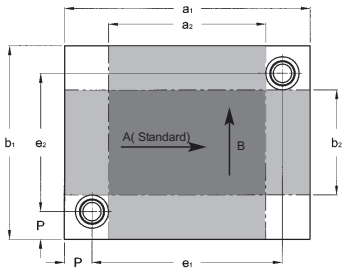
Ext. Dimensions			$C_1 \pm 1$	$C_2 \pm 1$	$C_3 \pm 1$	d_1	d_2	Reference
a_1 Work space	b_2	b_1						
400	128	200	40	40	32	310	45	D97.140.020
			40	50				D97.240.020
			50	40				D97.340.020
			50	50				D97.440.020
	178	250	40	40				D97.140.025
			40	50				D97.240.025
			50	40				D97.340.025
			50	50				D97.440.025
	230	315	40	40	40	295	52.5	D97.140.031
			40	50				D97.240.031
			50	40				D97.340.031
			50	50				D97.440.031
	315	400	40	40				D97.140.040
			40	50				D97.240.040
			50	40				D97.340.040
			50	50				D97.440.040
500	157	250	40	40	40	395	52.5	D97.150.025
			40	50				D97.250.025
			50	40				D97.350.025
			50	50				D97.450.025
	222	315	40	40				D97.150.031
			40	50				D97.250.031
			50	40				D97.350.031
			50	50				D97.450.031
	307	400	40	40				D97.150.040
			40	50				D97.250.040
			50	40				D97.350.040
			50	50				D97.450.040
	407	500	40	40				D97.150.050
			40	50				D97.250.050
			50	40				D97.350.050
			50	50				D97.450.050

Ext. Dimensions			C_1±1	C_2±1	d_1	e	P	Reference
a_1	b_2	b_1						
Work space								
630	206	315	50	50	50	510	60	D97.163.031
			50	58				D97.263.031
			58	50				D97.363.031
			58	58				D97.463.031
	291	400	50	50				D97.163.040
			50	58				D97.263.040
			58	50				D97.363.040
			58	58				D97.463.040
	391	500	50	50				D97.163.050
			50	58				D97.263.050
			58	50				D97.363.050
			58	58				D97.463.050
	521	630	50	50				D97.163.063
			50	58				D97.263.063
			58	50				D97.363.063
			58	58				D97.463.063
710	291	400	58	58	32	310	45	D97.171.040
			58	63				D97.271.040
			63	58				D97.371.040
			63	63				D97.471.040
	391	500	58	58				D97.171.050
			58	63				D97.271.050
			63	58				D97.371.050
			63	63				D97.471.050
	521	630	58	58	50	590	60	D97.171.063
			58	63				D97.271.063
			63	58				D97.371.063
			63	63				D97.471.063

Rectangular Die Sets with Diagonal Pillars and Ball Bearing Guides







PRODUCT INFORMATION

The plates are torch-cut and stress relieved. The guide elements with ball bearings (bush B30.xxx.xxx) can be chosen from our "Guide Elements" catalogue. Please note: The work space is reduced if B40 or B42 bushes are use (see pages X and X – position of clamps – dimensions Q1 and Q2).

Delivery: 72 hours ex works

Example order:

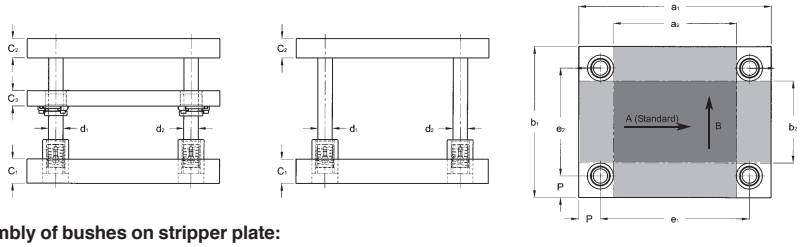
- Die set with stripper plate: D88.125.016
- Identical die set without stripper plate: D98.125.016

Ext. Dimensions				C_1±1	C_2±1	C_3±1	d_1	d_2	e_1	e_2	P	Reference x=8: with C3 x=9: without C3 ↓
Work space direction A		Work space direction B										
a_1	b_2	b_1	a_2									
250	30	160	120	32	32	32	25	24	165	75	42.5	Dx8.125.016
				32	40							Dx8.225.016
				40	32							Dx8.325.016
				40	40							Dx8.425.016
	70	200		32	32					115		Dx8.125.020
				32	40							Dx8.225.020
				40	32							Dx8.325.020
				40	40							Dx8.425.020
	120	250		32	32					165		Dx8.125.025
				32	40							Dx8.225.025
				40	32							Dx8.325.025
				40	40							Dx8.425.025
315	56	200	171	32	32	32	32	30	225	110	45	Dx8.131.020
				32	40							Dx8.231.020
				40	32							Dx8.331.020
				40	40							Dx8.431.020
	106	250		32	32					160		Dx8.131.025
				32	40							Dx8.231.025
				40	32							Dx8.331.025
				40	40							Dx8.431.025
	171	315		40	40					225		Dx8.131.031
				40	50							Dx8.231.031
				50	40							Dx8.331.031
				50	50							Dx8.431.031

Ext. Dimensions				C_1±1	C_2±1	C_3±1	d_1	d_2	e_1	e_2	P	Reference x=8: with C3 x=9: without C3 ↓
Work space direction A		Work space direction B										
a_1	b_2	b_1	a_2									
400	56	200	260	40	40	32	32	30	310	110	45	Dx8.140.020
				40	50							Dx8.240.020
				50	40							Dx8.340.020
				50	50							Dx8.440.020
	106	250		40	40					160		Dx8.140.025
				40	50							Dx8.240.025
				50	40							Dx8.340.025
				50	50							Dx8.440.025
	171	315		40	40					225		Dx8.140.031
				40	50							Dx8.240.031
				50	40							Dx8.340.031
				50	50							Dx8.440.031
	256	400		40	40					310		Dx8.140.040
				40	50							Dx8.240.040
				50	40							Dx8.340.040
				50	50							Dx8.440.040
500	80	250	330	40	40	32	40	38	395	145	52.5	Dx8.150.025
				40	50							Dx8.250.025
				50	40							Dx8.350.025
				50	50							Dx8.450.025
	145	315		40	40					210		Dx8.150.031
				40	50							Dx8.250.031
				50	40							Dx8.350.031
				50	50							Dx8.450.031
	230	400		40	40					295		Dx8.150.040
				40	50							Dx8.250.040
				50	40							Dx8.350.040
				50	50							Dx8.450.040
	330	500		40	40					395		Dx8.150.050
				40	50							Dx8.250.050
				50	40							Dx8.350.050
				50	50							Dx8.450.050

Ext. Dimensions				C_1±1	C_2±1	C_3±1	d_1	d_2	e_1	e_2	P	Reference x=8: with C3 x=9: without C3 ↓
Work space direction A		Work space direction B										
a_1	b_2	b_1	a_2									
630	114	315	429	50	50	40	50	48	510	195	60	Dx8.163.031
				50	58							Dx8.263.031
				58	50							Dx8.363.031
				58	58							Dx8.463.031
	199	400		50	50					280		Dx8.163.040
				50	58							Dx8.263.040
				58	50							Dx8.363.040
				58	58							Dx8.463.040
	299	500		50	50					380		Dx8.163.050
				50	58							Dx8.263.050
				58	50							Dx8.363.050
				58	58							Dx8.463.050
	429	630		50	50					510		Dx8.163.063
				50	58							Dx8.263.063
				58	50							Dx8.363.063
				58	58							Dx8.463.063
710	199	400	509	58	58	40	50	48	590	280	60	Dx8.171.040
				58	63							Dx8.271.040
				63	58							Dx8.371.040
				63	63							Dx8.471.040
	299	500		58	58					380		Dx8.171.050
				58	63							Dx8.271.050
				63	58							Dx8.371.050
				63	63							Dx8.471.050
	429	630		58	58					510		Dx8.171.063
				58	63							Dx8.271.063
				63	58							Dx8.371.063
				63	63							Dx8.471.063

Rectangular Die Sets with Four Pillars and Ball Bearing Guides



Standard assembly of bushes on stripper plate:
- **on underside for demountable guide bushes (B1x.xxx.xxx and B2x.xxx.xxx)**
- **on top side for ball bearing guide bushes (B4x.xxx.xxx)**

PRODUCT INFORMATION

The plates are torch-cut and stress relieved. The guide elements with ball bearings (bush B30.xxx.xxx) can be chosen from our "Guide Elements" catalogue. The two rear pillars are offset by three mm towards the outside for foolproofing. Please note: The work space is reduced if B40 or B42 bushes are used (See pages ?) and X – position of clamps – dimensions Q1 and Q2).
Delivery: 72 hours ex works

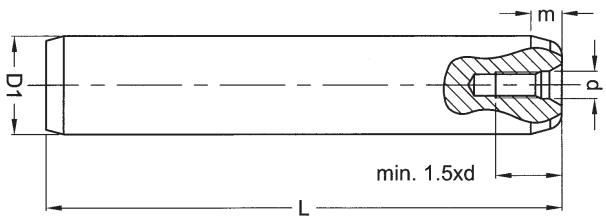
Example order:
- Die set with stripper plate: D89.125.016
- Identical die set without stripper plate: D99.125.016

Ext. Dimensions				C_1±1	C_2±1	C_3±1	d_1	e_1	e_2	P	Reference x=8: with C3 x=9: without C3 ↓
Work space direction A		Work space direction B									
a_1	b_2	b_1	a_2								
250	30	160	120	32	32	32	25	165	75	42.5	Dx9.125.016
				32	40						Dx9.225.016
				40	32						Dx9.325.016
				40	40						Dx9.425.016
	70	200		32	32				115		Dx9.125.020
				32	40						Dx9.225.020
				40	32						Dx9.325.020
				40	40						Dx9.425.020
	120	250		32	32				165		Dx9.125.025
				32	40						Dx9.225.025
				40	32						Dx9.325.025
				40	40						Dx9.425.025
315	70	200	185	32	32	32	25	230	115	42.5	Dx9.131.020
				32	40						Dx9.231.020
				40	32						Dx9.331.020
				40	40						Dx9.431.020
	120	250		32	32				165		Dx9.131.025
				32	40						Dx9.231.025
				40	32						Dx9.331.025
				40	40						Dx9.431.025
	185	315		40	40				230		Dx9.131.031
				40	50						Dx9.231.031
				50	40						Dx9.331.031
				50	50						Dx9.431.031

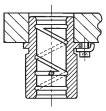
Ext. Dimensions				C_1±1	C_2±1	C_3±1	d_1	e_1	e_2	P	Reference x=8: with C3 x=9: without C3 ↓
Work space direction A		Work space direction B									
a_1	b_2	b_1	a_2								
400	70	200	270	40	40	32	25	315	115	42.5	Dx9.140.020
				40	50						Dx9.240.020
				50	40						Dx9.340.020
				50	50						Dx9.440.020
	120	250		40	40				165		Dx9.140.025
				40	50						Dx9.240.025
				50	40						Dx9.340.025
				50	50						Dx9.440.025
	165	315	250	40	40	32	32	304	219	48	Dx9.140.031
				40	50						Dx9.240.031
				50	40						Dx9.340.031
				50	50						Dx9.440.031
	250	400		40	40				304		Dx9.140.040
				40	50						Dx9.240.040
				50	40						Dx9.340.040
				50	50						Dx9.440.040
500	100	250	350	40	40	32	32	404	154	48	Dx9.150.025
				40	50						Dx9.250.025
				50	40						Dx9.350.025
				50	50						Dx9.450.025
	165	315		40	40				219		Dx9.150.031
				40	50						Dx9.250.031
				50	40						Dx9.350.031
				50	50						Dx9.450.031
	250	400		40	40				304		Dx9.150.040
				40	50						Dx9.250.040
				50	40						Dx9.350.040
				50	50						Dx9.450.040
	350	500		40	40				404		Dx9.150.050
				40	50						Dx9.250.050
				50	40						Dx9.350.050
				50	50						Dx9.450.050

Ext. Dimensions				C_1±1	C_2±1	C_3±1	d_1	e_1	e_2	P	Reference x=8: with C3 x=9: without C3 ↓
Work space direction A		Work space direction B									
a_1	b_2	b_1	a_2								
630	140	315	455	50	50	40	40	520	205	55	Dx9.163.031
				50	58						Dx9.263.031
				58	50						Dx9.363.031
				58	58						Dx9.463.031
	225	400		50	50				290		Dx9.163.040
				50	58						Dx9.263.040
				58	50						Dx9.363.040
				58	58						Dx9.463.040
	325	500		50	50				390		Dx9.163.050
				50	58						Dx9.263.050
				58	50						Dx9.363.050
				58	58						Dx9.463.050
	455	630		50	50				520		Dx9.163.063
				50	58						Dx9.263.063
				58	50						Dx9.363.063
				58	58						Dx9.463.063
710	190	400	500	58	58	40	50	581	271	64.5	Dx9.171.040
				58	63						Dx9.271.040
				63	58						Dx9.371.040
				63	63						Dx9.471.040
	290	500		58	58				371		Dx9.171.050
				58	63						Dx9.271.050
				63	58						Dx9.371.050
				63	63						Dx9.471.050
	420	630		58	58				501		Dx9.171.063
				58	63						Dx9.271.063
				63	58						Dx9.371.063
				63	63						Dx9.471.063

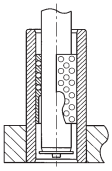
Guide Pillar



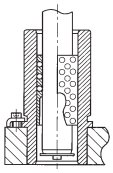
To be used with:



Steel bush
Bronze-plated bush

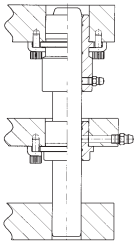


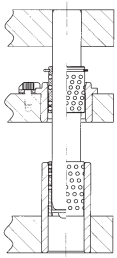
Flanged bearing bush
Ball bearing cage



Demountable bush
Ball bearing cage

Examples:





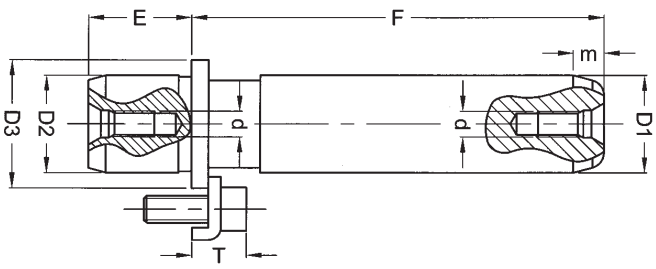
PRODUCT INFORMATION

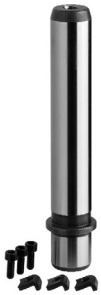
Case-hardened and tempered to 60 – 64 HRC

Example order:
- Pillar D1=30 L=160
- Please state: P10.030.160

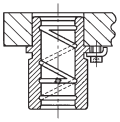
D_1	19	20	24	25	30	32	38	40	48	50	63	80
d	M5		M6		M8		M10		M12		M16	M20
m	6		8		8		8		8		8	8
L	REFERENCES											
100	P10.019.100	P10.020.100	P10.024.100	P10.025.100								
110	P10.019.110	P10.020.110	P10.024.110	P10.025.110	P10.030.110	P10.032.110						
125	P10.019.125	P10.020.125	P10.024.125	P10.025.125	P10.030.125	P10.032.125	P10.038.125	P10.040.125				
140	P10.019.140	P10.020.140	P10.024.140	P10.025.140	P10.030.140	P10.032.140	P10.038.140	P10.040.140				
160	P10.019.160	P10.020.160	P10.024.160	P10.025.160	P10.030.160	P10.032.160	P10.038.160	P10.040.160	P10.048.160	P10.050.160		
180	P10.019.180	P10.020.180	P10.024.180	P10.025.180	P10.030.180	P10.032.180	P10.038.180	P10.040.180	P10.048.180	P10.050.180		
200	P10.019.200	P10.020.200	P10.024.200	P10.025.200	P10.030.200	P10.032.200	P10.038.200	P10.040.200	P10.048.200	P10.050.200	P10.063.200	
220			P10.024.220	P10.025220	P10.030.220	P10.032.220	P10.038.220	P10.040.220	P10.048.220	P10.050.220	P10.063.220	
250			P10.024.250	P10.025.250	P10.030.250	P10.032.250	P10.038.250	P10.040.250	P10.048.250	P10.050.250	P10.063.250	P10.080.280
280			P10.024.280	P10.025.280	P10.030.280	P10.032.280	P10.038.280	P10.040.280	P10.048.280	P10.050.280	P10.063.280	P10.080.315
315					P10.030.315	P10.032.315	P10.038.315	P10.040.315	P10.048.315	P10.050.315	P10.063.315	P10.080.355
355							P10.038.355	P10.040.355	P10.048.355	P10.050.355	P10.063.355	P10.080.400
400									P10.048.400	P10.050.400	P10.063.400	P10.080.450
450									P10.048.450	P10.050.450	P10.063.450	P10.080.500
500											P10.063.500	P10.063.500

Demountable Guide Pillar with Mounting Clamps

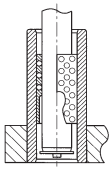




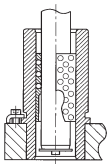
To be used with:



Steel bush
Bronze-plated bush

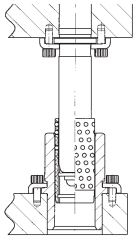


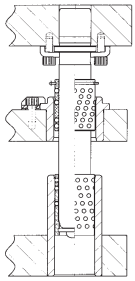
Flanged bearing bush
Ball bearing cage

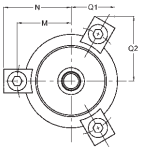


Demountable bush
Ball bearing cage

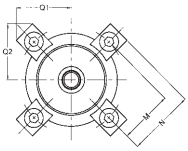
Examples:







Ø19 to 32



Ø38 to 80

PRODUCT INFORMATION

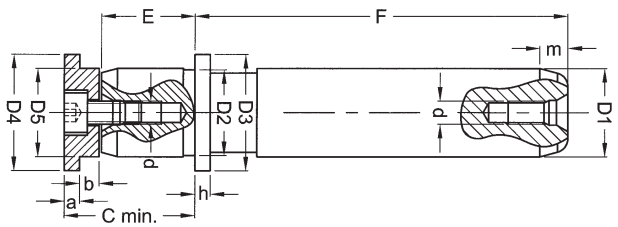
Case-hardened and tempered to 60 – 64 HRC.
Supplied with mounting clamps and screws.

Example order:

- Pillar D1=30 F=160
- Please state: P21.030.160

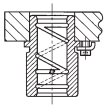
D_1=D_2	19	20	24	25	30	32	38	40	48	50	63	80
D_3	25		32		40		50		63		76	93
E	20		25		32		40		45		50	60
d	M5		M6		M8		M10		M12		M16	M20
m	6		8		8		8		8		8	8
Qty	3		3		3		4		4		4	4
Clamp	B01.005.000		B01.006.000		B01.006.000		B01.008.000		B01.008.000		B01.008.000	B01.008.000
Screw	M5 x12		M6 x16		M6 x16		M8 x20		M8 x20		M8 x20	M8 x20
M	16		20,3		24		30		36,5		42,5	51
N	22		27,5		31,5		39,3		45,8		51,8	60,3
Q1	16,5		20,6		22,6		33,4		38		42,2	48,3
Q2	22,2		27,8		31,3		38		38		42,2	48,3
T	10,5		14,7		14,7		17,5		17,5		17,5	17,5
F	REFERENCES											
80	P21.019.080	P21.020.080	P21.024.080	P21.025.080								
90	P21.019.090	P21.020.090	P21.024.090	P21.025.090								
100	P21.019.100	P21.020.100	P21.024.100	P21.025.100	P21.030.100	P21.032.100	P21.038.100	P21.040.100				
110	P21.019.110	P21.020.110	P21.024.110	P21.025.110	P21.030.110	P21.032.110	P21.038.110	P21.040.110	P21.048.110	P21.050.110		
125	P21.019.125	P21.020.125	P21.024.125	P21.025.125	P21.030.125	P21.032.125	P21.038.125	P21.040.125	P21.048.125	P21.050.125	P21.063.125	
140	P21.019.140	P21.020.140	P21.024.140	P21.025.140	P21.030.140	P21.032.140	P21.038.140	P21.040.140	P21.048.140	P21.050.140	P21.063.140	
160	P21.019.160	P21.020.160	P21.024.160	P21.025.160	P21.030.160	P21.032.160	P21.038.160	P21.040.160	P21.048.160	P21.050.160	P21.063.160	
180			P21.024.180	P21.025.180	P21.030.180	P21.032.180	P21.038.180	P21.040.180	P21.048.180	P21.050.180	P21.063.180	
200			P21.024.200	P21.025.200	P21.030.200	P21.032.200	P21.038.200	P21.040.200	P21.048.200	P21.050.200	P21.063.200	P21.080.200
220					P21.030.220	P21.032.220	P21.038.220	P21.040.220	P21.048.220	P21.050.220	P21.063.220	P21.080.220
250					P21.030.250	P21.032.250	P21.038.250	P21.040.250	P21.048.250	P21.050.250	P21.063.250	P21.080.250
280					P21.030.280	P21.032.280	P21.038.280	P21.040.280	P21.048.280	P21.050.280	P21.063.280	P21.080.280
315									P21.048.315	P21.050.315	P21.063.315	P21.080.315
355									P21.048.355	P21.050.355	P21.063.355	P21.080.355
400									P21.048.400	P21.050.400	P21.063.400	P21.080.400

Demountable Guide Pillar with Central Fixing

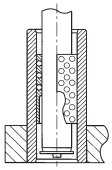


Please note: The minimum dimension C_{min} must correspond to the min. plate thickness

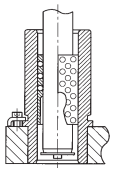
To be used with:



Steel bush
Bronze-plated bush

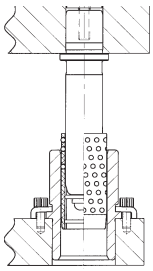


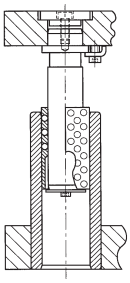
Flanged bearing bush
Ball bearing cage



Demountable bush
Ball bearing cage

Examples:





PRODUCT INFORMATION

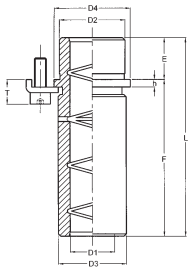
Case-hardened and tempered to 60 – 64 HRC.
Supplied with washer.

Example order:

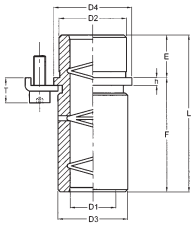
- Pillar D1=30 F=160
- Please state: P22.030.160

D_1=D_2	19	20	24	25	30	32	38	40	48	50	63	80
D_3	25		32		40		50		63		76	93
D_4	25		32		40		50		63		76	93
D_5	19		24		30		38		48		63	80
E	20		25		32		40		45		50	60
d	M5		M6		M8		M10		M12		M16	M20
m	6		8		8		8		8		8	8
a	3,3		5		5		5		5		5	5
b	4,2		4		7		10		13		19	25
C min.	28		35		45		56		64		75	91
Washer	P02.020.000		P02.025.000		P02.032.000		P02.040.000		P02.050.000		P02.063.000	P02.080.000
h	3.3		5		5		5		5		5	5
F	References											
80	P22.019.080	P22.020.080	P22.024.080	P22.025.080								
90	P22.019.090	P22.020.090	P22.024.090	P22.025.090								
100	P22.019.100	P22.020.100	P22.024.100	P22.025.100	P22.030.100	P22.032.100	P22.038.100	P22.040.100				
110	P22.019.110	P22.020.110	P22.024.110	P22.025.110	P22.030.110	P22.032.110	P22.038.110	P22.040.110	P22.048.110	P22.050.110		
125	P22.019.125	P22.020.125	P22.024.125	P22.025.125	P22.030.125	P22.032.125	P22.038.125	P22.040.125	P22.048.125	P22.050.125	P22.063.125	
140	P22.019.140	P22.020.140	P22.024.140	P22.025.140	P22.030.140	P22.032.140	P22.038.140	P22.040.140	P22.048.140	P22.050.140	P22.063.140	
160	P22.019.160	P22.020.160	P22.024.160	P22.025.160	P22.030.160	P22.032.160	P22.038.160	P22.040.160	P22.048.160	P22.050.160	P22.063.160	
180			P22.024.180	P22.025.180	P22.030.180	P22.032.180	P22.038.180	P22.040.180	P22.048.180	P22.050.180	P22.063.180	
200			P22.024.200	P22.025.200	P22.030.200	P22.032.200	P22.038.200	P22.040.200	P22.048.200	P22.050.200	P22.063.200	P22.080.200
220					P22.030.220	P22.032.220	P22.038.220	P22.040.220	P22.048.220	P22.050.220	P22.063.220	P22.080.220
250					P22.030.250	P22.032.250	P22.038.250	P22.040.250	P22.048.250	P22.050.250	P22.063.250	P22.080.250
280					P22.030.280	P22.032.280	P22.038.280	P22.040.280	P22.048.280	P22.050.280	P22.063.280	P22.080.280
315									P22.048.315	P22.050.315	P22.063.315	P22.080.315
355									P22.048.355	P22.050.355	P22.063.355	P22.080.355
400									P22.048.400	P22.050.400	P22.063.400	P22.080.400

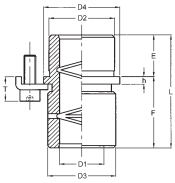
Demountable Steel or Bronze-Plated Guide Bush



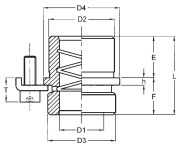
EXTRA-LONG SHOULDER
Steel: B10.0xx.100 Bronze-plated: B20.0xx.100



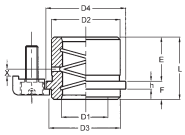
LONG SHOULDER
Steel: B10.0xx.075 Bronze-plated: B20.0xx.075



NORMAL SHOULDER
Steel: B10.0xx.032, B10.0xx.050
Bronze-plated: B20.0xx.032, B20.0xx.050



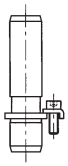
SHORT SHOULDER
Steel: B10.0xx.016, B10.0xx.020
Bronze-plated: B20.0xx.016, B20.0xx.020



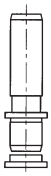
EXTRA-SHORT SHOULDER
Steel: B12.0xx.010, B12.0xx.014
Bronze-plated: B22.0xx.010, B22.0xx.014

To be used with:

Pillar

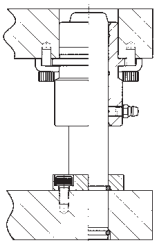


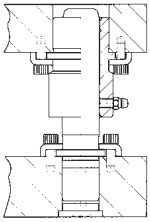
Demountable pillar



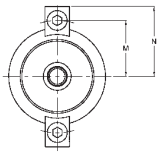
Demountable pillar

Examples:

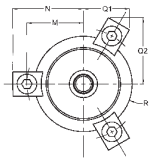




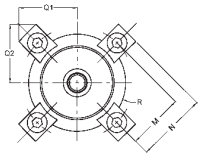
Positions of bush mounting clamps:



For Ø19 to 20



For Ø24 to 32



For Ø38 to 80

PRODUCT INFORMATION

Case-hardened and tempered to 60 – 64 HRC.
Supplied with mounting clamps and screws.

Example order:
- Pillar D1=40 F=100
- Please state: B10.040.100: steel B20.040.100: bronze-plated

D_1	19	20	24	25	30	32	38	40	48	50	63	80
D_2	28		38		45		54		65		81	100
D_3	29		42		49		58		70		88	110
D_4	32.5		47		54		63		75		93	115
E	18		22		25		30		35		48	48
h	3.3		5		5		5		5		5	5
No. of clamps	2		3		3		4		4		4	4
Clamp ref.	B01.005.000		B01.006.000		B01.006.000		B01.008.000		B01.008.000		B01.008.000	B01.008.000
Screw	M5x12		M6x16		M6x16		M8x20		M8x20		M8x20	M8x20
M	19,5		27,5		31		37		43		52	63
N	25,5		35		38,2		46,3		52,3		61,3	72,3
Q1/R	-		24,4/23,5		26/27		30/31,5		33/37,5		37,5/46,5	43/57,5
Q2	-		34,3		37,1		44,1		49,3		57,1	66,6
T	10,5		14,7		14,7		17,5		17,5		17,5	17,5

Extra-Long Shoulder

D_1					30	32	38	40	48	50	63	
F					100		100		100		100	
L					125		130		135		148	
Steel ref.					B10.0xx.100		B10.0xx.100		B10.0xx.100		B10.063.100	
Bronze-plated ref.					B20.0xx.100		B20.0xx.100		B20.0xx.100		B20.063.100	

Long Shoulder

D_1			24	25	30	32	38	40	48	50	63	
F			75		75		100		75		75	
L			97		100		105		110		123	
Steel ref.			B10.0xx.075		B10.0xx.075		B10.0xx.075		B10.0xx.075		B10.063.075	
Bronze-plated ref.			B20.0xx.075		B20.0xx.075		B20.0xx.075		B20.0xx.075		B20.063.075	

Normal Shoulder

D_1	19	20	24	25	30	32	38	40	48	50	63	80
F	32		50		50		50		50		50	50
L	50		72		75		80		85		98	98
Steel ref.	B10.0xx.032		B10.0xx.050		B10.0xx.050		B10.0xx.050		B10.0xx.050		B10.063.050	B10.080.050
Bronze-plated ref.	B20.0xx.032		B20.0xx.050		B20.0xx.050		B20.0xx.050		B20.0xx.050		B20.063.050	B20.080.050

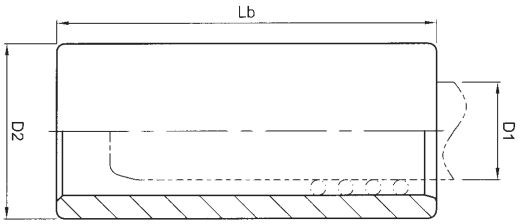
Short Shoulder

D_1	19	20	24	25	30	32	38	40	48	50	63	80
F	16		20		20		20		20		20	20
L	34		42		45		50		55		68	68
Steel ref.	B10.0xx.016		B10.0xx.020		B10.0xx.020		B10.0xx.020		B10.0xx.020		B10.063.020	B10.080.050
Bronze-plated ref.	B20.0xx.016		B20.0xx.020		B20.0xx.020		B20.0xx.020		B20.0xx.020		B20.063.020	B20.080.020

Extra-Short Shoulder

D_1	19	20	24	25	30	32	38	40	48	50	63	80
D_3	29		36		43		50		64		79	99
F	10		10		10		14		14		14	14
E	18		23		30		38		48		61	78
L	28		33		40		52		62		75	92
X	6		6		10		10		20		20	32
Clamp ref.	B01.005.000		B02.006.000		B02.006.000		B02.008.000		B02.008.000		B02.008.000	B02.008.000
Screw	M5x12		M6x12		M6x12		M8x16		M8x16		M8x16	M8x16
M	19,5		30		33,5		40		46		55	66
N	25,5		38		41,5		51,2		57,2		66,7	77,2
Q_1/R	-		25,2/23,5		26,9/27		33,7/31,5		36,7/37,5		41,5/46,5	46,7/57,5
Q_2	-		36,5		39,5		49,0		54,2		62,5	71,6
Steel ref.	B12.0xx.010		B12.0xx.010		B12.0xx.010		B12.0xx.014		B12.0xx.014		B12.063.014	B12.080.014
Q_1/R	B22.0xx.010		B22.0xx.010		B22.0xx.010		B22.0xx.014		B22.0xx.014		B22.063.014	B22.080.014

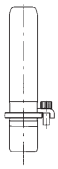
Straight Sleeve Ball Bearing Bush

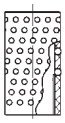


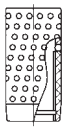
To be used with:


Straight pillar

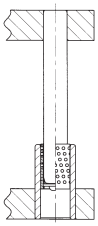

Demountable pillar

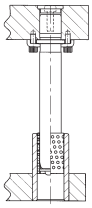

Demountable pillar


Type 1 ball bearing cage


Type 2 ball bearing cage

Examples:





PRODUCT INFORMATION

Made from vacuum-degassed alloy steel.

ASSEMBLY INSTRUCTIONS

Straight sleeve ball bearing bushes are glued into the plate.

1. Degrease with acetone or a similar solvant and thoroughly wipe clean the outer surface of the straight sleeve bush and the inside of the plate bore.
2. Apply a thin layer of Loctite 601 glue to both surfaces.
3. Insert the bush into the hole while turning.
4. Leave to set for the required amount of time (e.g. 4 hours at 22°C).

To select, please refer to pages X to X.

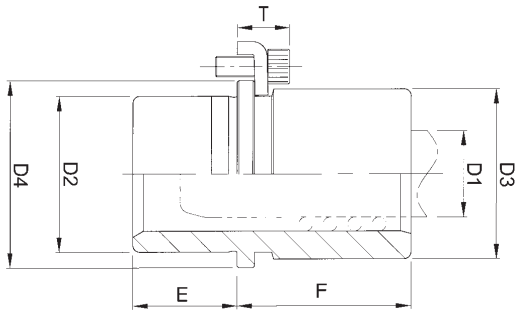
Example order:

- Pillar D1=30 Lb=110
- Please state: B30.030.110

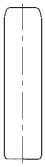
D_1	24	25	30	32	38	40	48	50	63	80
D_2	45		54		65		81		95	112
Lb	References									
65	B30.024.065	B30.025.065								
80	B30.024.080	B30.025.080	B30.030.080	B30.032.080	B30.038.080	B30.040.080				
95	B30.024.095	B30.025.095	B30.030.095	B30.032.095	B30.038.095	B30.040.095				
110	B30.024.110	B30.025.110	B30.030.110	B30.032.110	B30.038.110	B30.040.110	B30.048.110	B30.050.110		
130	B30.024.130	B30.025.130	B30.030.130	B30.032.130	B30.038.130	B30.040.130	B30.048.130	B30.050.130		
150			B30.030.150	B30.032.150	B30.038.150	B30.040.150	B30.048.150	B30.050.150	B30.063.150	B30.080.150
170			B30.030.170	B30.032.170	B30.038.170	B30.040.170	B30.048.170	B30.050.170	B30.063.170	B30.080.170
190					B30.038.190	B30.040.190	B30.048.190	B30.050.190	B30.063.190	B30.080.190
215					B30.038.215	B30.040.215	B30.048.215	B30.050.215	B30.063.215	B30.080.215
240							B30.048.240	B30.050.240	B30.063.240	B30.080.240
265							B30.048.265	B30.050.265	B30.063.265	B30.080.265

Upon demand

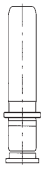
Demountable Ball Bearing Bush



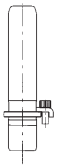
To be used with:



Straight pillar

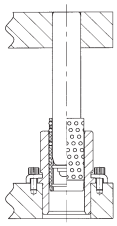


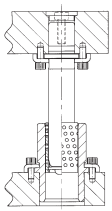
Demountable pillar

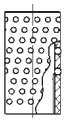


Demountable pillar

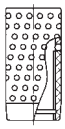
Examples:





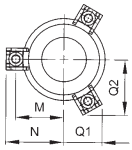


Type 1 ball bearing cage

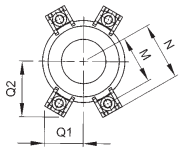


Type 2 ball bearing cage

R=D4/2



For Ø24 to 32



For Ø38 to 80

PRODUCT INFORMATION

Case-hardened and
tempered to 60 - 64 HRC
Supplied with clamps and screws.

Example order:

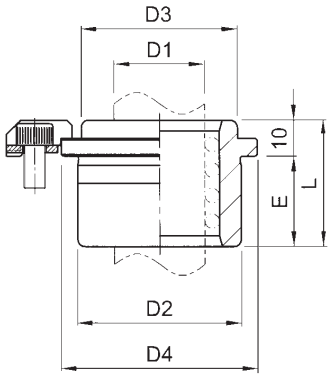
- Pillar D1=30 F=160
- Please state: P22.030.160

D_1	24	25	30	32	38	40	48	50	63	80
F	References									
35	B40.024.035	B40.025.035								
50	B40.024.050	B40.025.050	B40.030.050	B40.032.050	B40.038.050	B40.040.050				
65	B40.024.065	B40.025.065	B40.030.065	B40.032.065	B40.038.065	B40.040.065	B40.048.065	B40.050.065		
80			B40.030.080	B40.032.080	B40.038.080	B40.040.080	B40.048.080	B40.050.080		
100					B40.038.100	B40.040.100	B40.048.100	B40.050.100	B40.063.100	B40.080.100
120							B40.048.120	B40.050.120	B40.063.120	B40.080.120
140									B40.063.140	B40.080.140
D_2	45		54		65		81		95	112
D_3	49		58		70		88		103	120
D_4	54		63		75		93		108	125
E	30						50			

Fixing Clamps

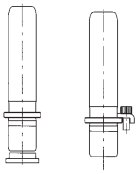
D_1	24	25	30	32	38	40	48	50	63	80
Qty.	3		3		4		4		4	4
Ref.	B01.006.000		B01.008.000							
Screw	M6x16		M8x20							
M	31		37		43		52		60	68
N	38,2		46,3		52,3		61,3		69,3	78,7
Q1/R	26/27		30/31,5		33/37,5		37,5/46,5		41,5/54	46/62,5
Q2	37,1		44,1		49,3		57,1		64,0	71,8
T	14,7		17.5							

Stripper Plate – Demountable Ball Bearing Bush

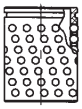


To be used with:

Straight pillar

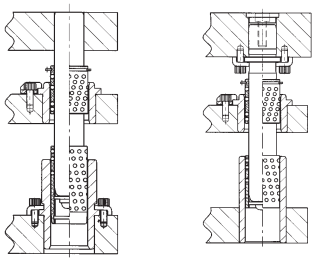


Demountable pillar

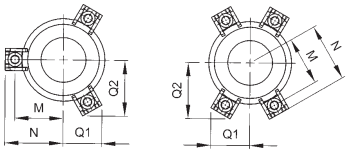


Type 3 ball bearing cage

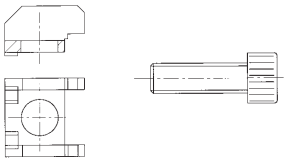
Examples:



R=$D_4/2$



Accessories



PRODUCT INFORMATION

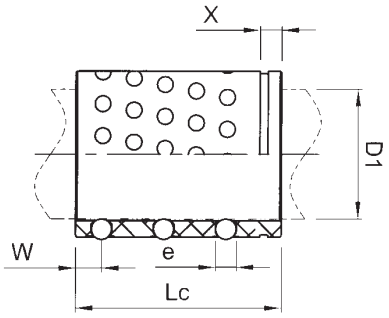
Case-hardened and tempered to 60 – 64 HRC.
Supplied with clamps and screws.

Example order:

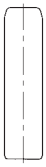
- Pillar D1=30 E=32
- Please state: B42.030.042

D_1	24	25	30	32	38	40	48	50
E	Reference							
20	B42.024.030	B42.025.030	B42.030.030	B42.032.030				
25	B42.024.035	B42.025.035	B42.030.035	B42.032.035				
29			B42.030.039	B42.032.039	B42.038.039	B42.040.039		
32			B42.030.042	B42.032.042	B42.038.042	B42.040.042		
36					B42.038.046	B42.040.046	B42.048.046	B42.050.046
44					B42.038.054	B42.040.054	B42.048.054	B42.050.054
D2	45		54		65		81	
D3	43		50		64		79	
D4	54		63		75		93	
Clamps	B02.006.000							
Qty	3		3		4		4	
Screw	M6x12		M6x12		M6x12		M6x12	
M	33,5		38		44		53	
N	41,5		46		52,4		61	
Q1/R	26,9/27		26,9/27		32,2/37,5		36,7/46,5	
Q2	39,5		43,4		48,6		56,4	

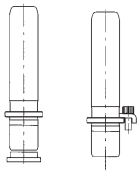
Type 3 Ball Bearing Cage



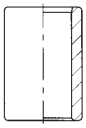
To be used with:



Straight pillar

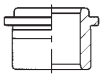


Demountable pillar



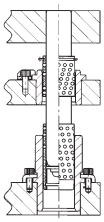
Straight sleeve bush

Demountable bush

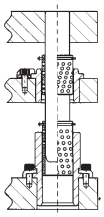


Bush of up to Ø50 for stripper plate

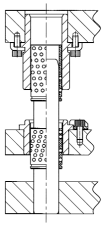
Examples:



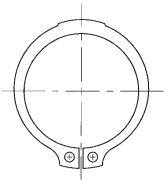
Type 3 ball bearing cage on stripper plate and type 2 on base plate. May pull out.



Type 3 ball bearing cage on stripper plate and on base plate. Pull-out is impossible. Operating condition page ?



Operation facilitating the fitting of two type 3 ball bearing cages.



Retaining clip for type 3 ball bearing cage C03.xxx.001

PRODUCT INFORMATION

The choice of ball bearing cage for the stripper plate depends upon the guide diameter, the stroke of the stipper plate (Ci) in relation to the pillar support plate, and the depth (E) of the bushes fitted into the stipper plate. The depth (Lc) of the ball bearing cages required is determined by the following formula:

$$Lc\ 3\ \frac{Ci}{2} + E + 10 + X$$

Made from heat-treated aluminium alloy.
Supplied with retaining clip.

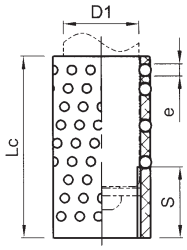
Example order:

- Pillar D1=30 Lc=63
- Please state: C13.030.063

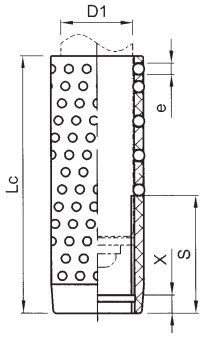
D_1	24	25	30	32	38	40	48	50	63	80
Lc	Reference									
40	C13.024.040	C13.025.040	C13.030.040	C13.032.040						
52	C13.024.052	C13.025.052	C13.030.052	C13.032.052	C13.038.052	C13.040.052				
63	C13.024.063	C13.025.063	C13.030.063	C13.032.063	C13.038.063	C13.040.063	C13.048.063	C13.050.063		
80	C13.024.080	C13.025.080	C13.030.080	C13.032.080	C13.038.080	C13.040.080	C13.048.080	C13.050.080		
100			C13.030.100	C13.032.100	C13.038.100	C13.040.100	C13.048.100	C13.050.100	C13.063.100	
125					C13.038.125	C13.040.125	C13.048.125	C13.050.125	C13.063.125	C13.080.125
140										C13.080.140
X	4,2		4,9		5,7		6,7			
e	4						6			
W	5,0		5,3		4,8		5,6			

Type 1 & 2 Ball Bearing Cage

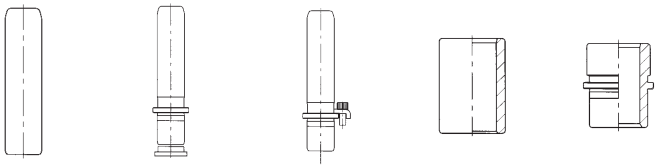
Type 1



Type 2

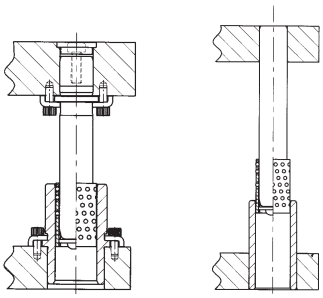


To be used with:



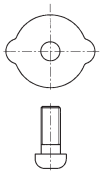
Straight pillar | Demountable pillar | Demountable pillar | Flanged bearing bush | Demountable bush

Examples:

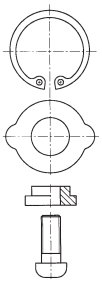


Type 1 | Type 2

Type 1
Retaining accessories
C01.xxx.000



Type 2
Retaining accessories
C02.xxx.000



PRODUCT INFORMATION

Made from heat-treated aluminium alloy.
Supplied with accessories.

WORKING CONDITIONS

Type 1

In this case, the end of the pillar and the retaining washer may come out of the ball bearing cage. *All of the ball bearings remain precompressed* in contact with the pliiar and bushes. The cage is supplied with a washer and screw. To select, please refer to pages ? to ? ?

Example order:

- Pillar D1=30 Lc=105
- Please state: C12.030.105

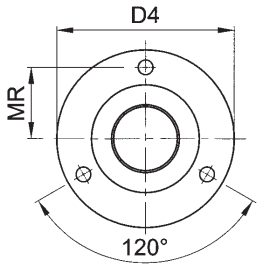
Type 2

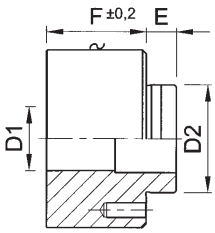
In this case, the ball bearing cage may come out of the bush completely. At the lower end, the end of the pillar cannot leave the cage because the washer is stopped by the remaining ring and screw. To select, please refer to pages ? to ? ?

D_1		24	25	30	32	38
Lc	S	Type 1 Ball Bearing Cage Reference				
36	11,5	C11.024.036	C11.025.036	C11.030.036	C11.032.036	
48	17,5	C11.024.048	C11.025.048	C11.030.048	C11.032.048	C11.038.048
60	23,5					C11.038.060
Lc	S	Type 2 Ball Bearing Cage Reference				
55	27	C12.024.055	C12.025.055			
70	35	C12.024.070	C12.025.070	C12.030.070	C12.032.070	
	36					C12.038.070
85	43					C12.038.085
90	42	C12.024.090	C12.025.090			
	43			C12.030.090	C12.032.090	
100	50	C12.024.100	C12.025.100			
105				C12.030.105	C12.032.105	
	51					C12.038.115
110	60	C12.024.110	C12.025.110			
115				C12.030.115	C12.032.115	
	61					C12.038.115
125	70			C12.030.125	C12.032.125	
	71					C12.038.125
135	80			C12.030.135	C12.032.135	
	81					C12.038.135
145	91					C12.038.145
155	103					C12.038.155
X		4.2				5.8
e		4				

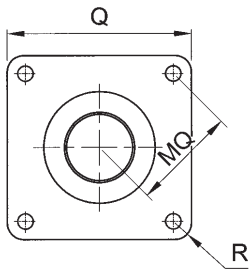
D_1		40	48	50	63	80
Lc	S	Type 1 Ball Bearing Cage Reference				
48	17,5	C11.040.048				
60	23,5	C11.040.060				
70	28,5		C11.048.070	C11.050.070		
84	35,5		C11.048.084	C11.050.084		
98	42,5				C11.063.098	C11.080.098
Lc	S	Type 1 Ball Bearing Cage Reference				
70	36	C12.040.070				
85	43	C12.040.085				
105	51	C12.040.105	C12.048.105	C12.050.105		
115	61	C12.040.115				
120			C12.048.120	C12.050.120		
125	71	C12.040.125				
135	81	C12.040.135				
140	71		C12.048.140	C12.050.140		
145	72				C12.063.145	C12.080.145
	91	C12.040.145				
150	81		C12.048.150	C12.050.150		
155	103	C12.040.155				
160	91		C12.048.160	C12.050.160		
165	82				C12.063.165	C12.080.165
170	103		C12.048.170	C12.050.170		
180	92				C12.063.180	C12.080.180
185	116		C12.048.185	C12.050.185		
190	105				C12.063.190	C12.080.190
195	128		C12.048.195	C12.050.195		
205	117				C12.063.205	C12.080.205
215	130				C12.063.215	C12.080.215
X		5.8	7.0			8.5
e		4	6			

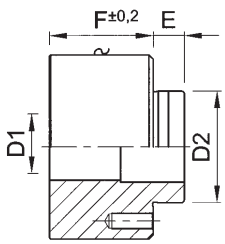
Demountable Round or Square Steel Block





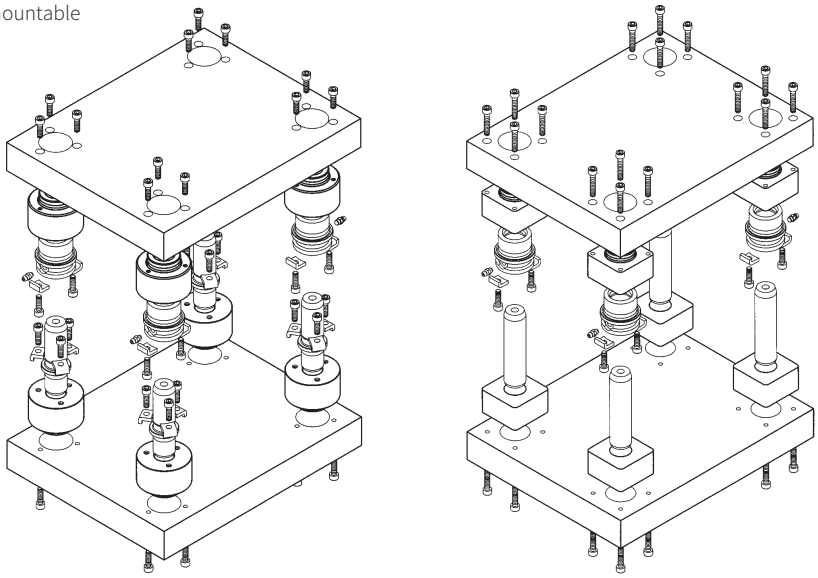
D1	32	40	50	63	80
F	Reference for Demountable Pillar Steel Block				
40	R05.032.040				
50	R05.032.040				
63		R05.040.063			
80		R05.040.080	R05.050.080		
100			R05.050.100	R05.063.100	
125				R05.063.125	R05.080.125
F	Reference for Demountable Bush Steel Block				
40	R06.032.040				
50	R06.032.040				
63		R06.040.063			
80		R06.040.080	R06.050.080		
100			R06.050.100	R06.063.100	
125				R06.063.125	R06.080.125



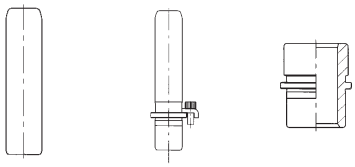


D_1	32	40	50	63	80
F	Reference for Demountable Pillar Steel Block				
40	R07.032.040				
50	R07.032.040				
63		R07.040.063			
80		R07.040.080	R07.050.080		
100			R07.050.100	R07.063.100	
125				R07.063.125	R07.080.125
F	Reference for Demountable Bush Steel Block				
40	R08.032.040				
50	R08.032.040				
63		R08.040.063			
80		R08.040.080	R08.050.080		
100			R08.050.100	R08.063.100	
125				R08.063.125	R08.080.125
Dimensions					
D2	54	65	81	100	118
D4=Q	89	102	114	140	165
E			15		
MR	35,75	41,75	48,75	60	70,75
MQ	48,79	55,15	59,40	77,78	88,39
Screw	M6	M8			

Fitting the demountable steel blocks:

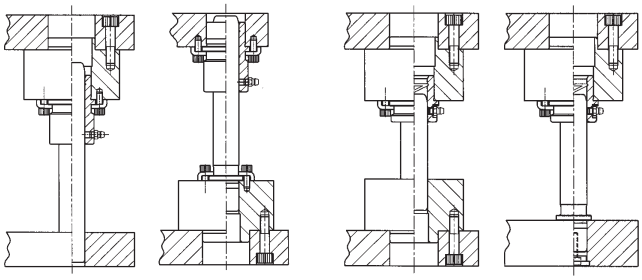


To be used with:



Straight pillar | Demountable pillar | Demountable bush

Examples:



MAIN ADVANTAGES AND OBSERVATIONS

1. The insertion method for the demountable steel blocks allows precise positioning in the bore without using pins and offers improved overall rigidity.
2. The demountable steel blocks are interchangeable within the same product reference, allowing them to be swapped during dismantling and reassembly operations without affecting the performance of the tool.
3. They are made from rolled carbon steel in round or square sections and are available in different standard thicknesses. Intermediate thicknesses are available upon request for a price supplement.

Please note:

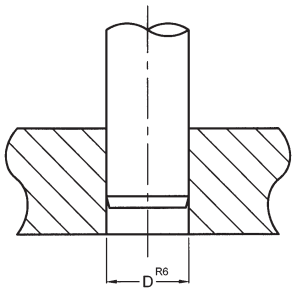
- Diameter D1 corresponds to the nominal diameter of the pillar.
- The screw lengths must be determined according to the thickness of the plates to which the extensions will be fitted.
- The extensions may be used with the ball bearing guide system. Please contact us for help with any of your questions.

Example order:

- Round bush extensions; D1=40 mm; F=80 mm
- Please state: R06.040.080

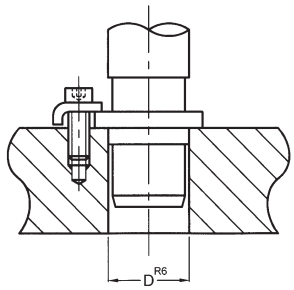
Assembly Instructions

GUIDE PILLAR P10.xxx.xxx



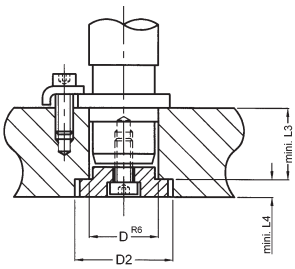
Pillar diameter D	Bore diameter D^{R6}	
19/20	19/20	-0,024 -0,037
24/25	24/25	-0,024 -0,037
30/32	30/32	-0,029 -0,045
38/40	38/40	-0,029 -0,045
48/50	48/50	-0,029 -0,045
63	63	-0,035 -0,054
80	80	-0,037 -0,056

DEMOUNTABLE GUIDE PILLAR
P21.xxx.xxx



Pillar diameter D		Bore diameter D^{R6}		Adjustment Min. Max.
19/20	-0,011 -0,020	19/20	-0,024 -0,037	-0,004 -0,026
24/25	-0,011 -0,020	24/25	-0,024 -0,037	-0,004 -0,026
30/32	-0,016 -0,025	30/32	-0,029 -0,045	-0,004 -0,026
38/40	-0,016 -0,025	38/40	-0,029 -0,045	-0,004 -0,026
48/50	-0,017 -0,029	48/50	-0,029 -0,045	0,000 -0,028
63	-0,017 -0,029	63	-0,035 -0,054	-0,006 -0,037
80	-0,017 -0,029	80	-0,037 -0,056	-0,008 -0,039

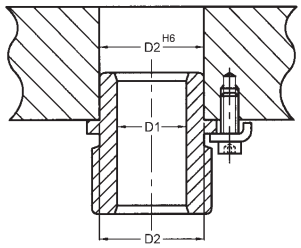
DEMOUNTABLE GUIDE PILLAR
P22.xxx.xxx



Pillar diameter D		Bore diameter D^{R6}		D2	L3	L4
19/20	-0,011 -0,020	19/20	-0,024 -0,037	26	25	3,5
24/25	-0,011 -0,020	24/25	-0,024 -0,037	33	30	5,5
30/32	-0,016 -0,025	30/32	-0,029 -0,045	41	40	5,5
38/40	-0,016 -0,025	38/40	-0,029 -0,045	51	51	5,5
48/50	-0,017 -0,029	48/50	-0,029 -0,045	64	59	5,5
63	-0,017 -0,029	63	-0,035 -0,054	77	70	5,5
80	-0,017 -0,029	80	-0,037 -0,056	94	86	5,5

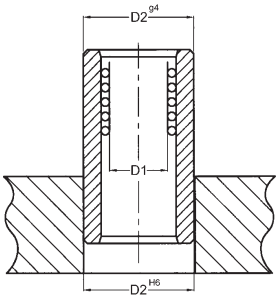
Assembly Instructions

DEMOUNTABLE STEEL BUSHES
B10.xxx.xxx



Nominal diameter D1	Bush diameter D2		Bore diameter D2 H6		Adjustment Min. max.
19/20	28	+0,021 +0,013	28	+0,013 +0,000	-0,000 -0,021
24/25	38	+0,025 +0,016	38	+0,016 +0,000	-0,000 -0,025
30/32	45	+0,025 +0,016	45	+0,016 +0,000	-0,000 -0,025
38/40	54	+0,030 +0,019	54	+0,019 +0,000	-0,000 -0,030
48/50	65	+0,030 +0,019	65	+0,019 +0,000	-0,000 -0,030
63	81	+0,035 +0,022	81	+0,022 +0,000	-0,000 -0,035
80	100	+0,035 +0,022	100	+0,022 +0,000	-0,000 -0,035

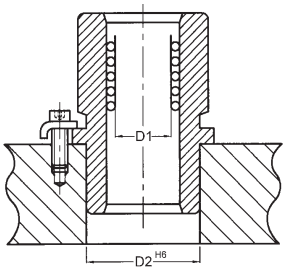
STRAIGHT SLEEVE BALL BEARING BUSHES
B30.xxx.xxx



Nominal diameter D1	Bush diameter D2 g4		Bore diameter D2 H6		Adjustment Min. max.
24/25	45	-0,009 -0,016	45	+0,016 +0,000	+0,009 +0,032
30/32	54	-0,010 -0,018	54	+0,019 +0,000	+0,010 +0,037
38/40	65	-0,010 -0,018	65	+0,019 +0,000	+0,010 +0,037
48/50	81	-0,012 -0,022	81	+0,022 +0,000	+0,012 +0,044
63	95	-0,012 -0,022	95	+0,022 +0,000	+0,012 +0,044
80	112	-0,012 -0,022	112	+0,022 +0,000	+0,012 +0,044

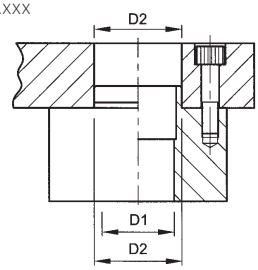
Assembly Instructions

DEMOUNTABLE BALL BEARING BUSHES
B40.xxx.xxx / B42.xxx.xxx



Nominal diameter D1	Bush diameter D2		Bore diameter D2 H6		Adjustment Min. max.
24/25	45	+0,025 +0,016	45	+0,016 +0,000	-0,000 -0,025
30/32	54	+0,030 +0,019	54	+0,019 +0,000	-0,000 -0,030
38/40	65	+0,030 +0,019	65	+0,019 +0,000	-0,000 -0,030
48/50	81	+0,035 +0,022	81	+0,022 +0,000	-0,000 -0,035
63	95	+0,035 +0,022	95	+0,022 +0,000	-0,000 -0,035
80	112	+0,035 +0,022	112	+0,022 +0,000	-0,000 -0,035

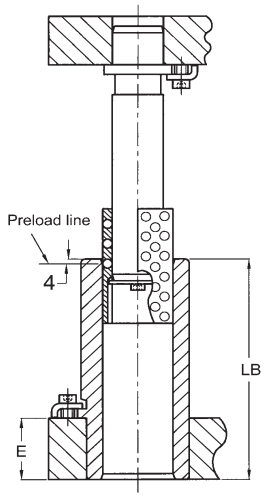
PILLAR/BUSH EXTENSION
R0x.xxx.xxx



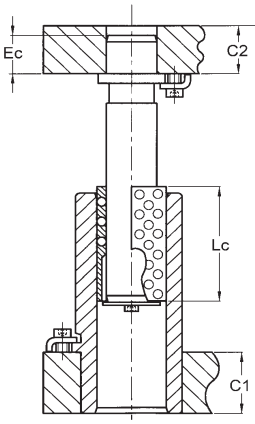
Nominal diameter D1	Extension diameter D2		Bore diameter D2 H6		Adjustment Min. max.
32	54	+0,030 +0,019	54	+0,019 +0,000	-0,000 -0,025
40	65	+0,030 +0,019	65	+0,019 +0,000	-0,000 -0,030
50	81	+0,035 +0,022	81	+0,022 +0,000	-0,000 -0,035
63	100	+0,035 +0,022	100	+0,022 +0,000	-0,000 -0,035
80	118	+0,035 +0,022	118	+0,022 +0,000	-0,000 -0,035

Ball Bearing Guide Element Selection – Type 1

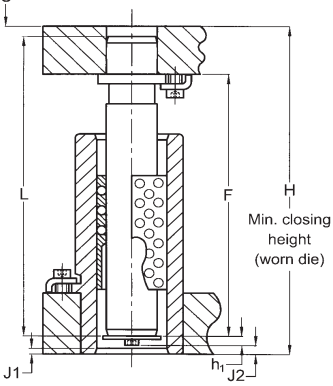
TYPE 1: The cage is completely preloaded throughout the entire stroke.



Unit in the assembly position: Ball bearing cage suspended on the tabs of the retaining washer.



Unit at the top of the stroke position.



Unit at the bottom of the stroke.

CALCULATING THE LENGTH OF THE PILLARS

- Use of B30.xxx.xxx bush
  L pillar, type P10 = H - h_1 - J_2 - C_2 + Ec
  F pillar, type P21 = H - h_1 - J_2 - C_2

- Use of B40.xxx.xxx bush
  L pillar, type P10 = H - h_1 - J_1 - C_1 + E - C_2 + Ec
  F pillar, type P21 = H - h_1 - J_1 - C_1 + E - C_2

H = Min. closing height
h_1 = Height of nut + washer at base of pillar
J_2 = Safety margin at end of stroke (B30 bush)
C_2 = Thickness of top plate
Ec = Depth of insertion for straight pillar
J_1 = Safety margin at end of stroke (B40 flanged bearing bush)
C_1 = Thickness of bottom plate
E = Depth of insertion for B40 bush

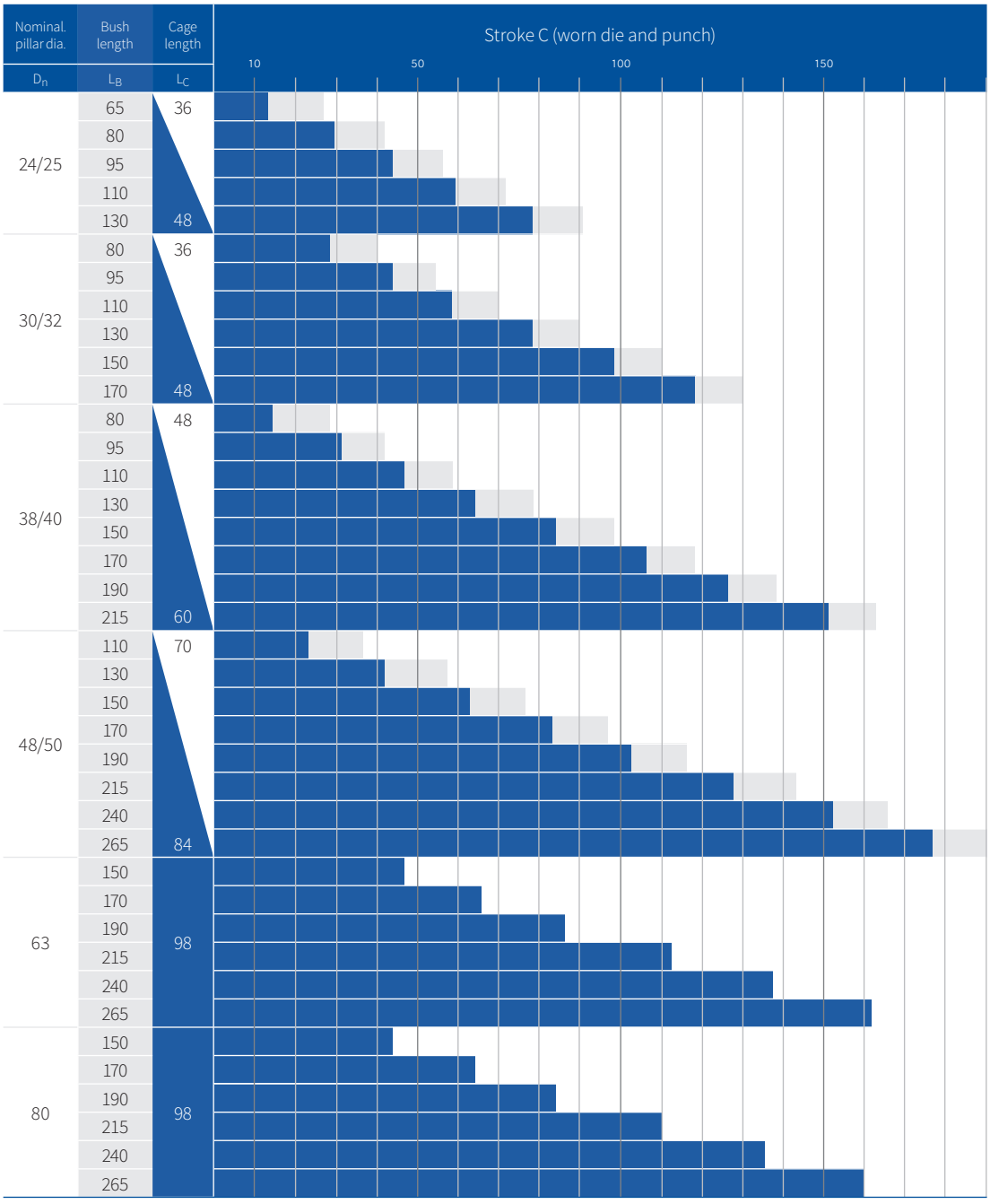
Refer to page ?? for values E, h, J_1 and J_2 ?

PRODUCT INFORMATION

The choice of a Type 1 bushing and ball cage unit is based upon the required stroke and the nominal diameter of the pillar. When these two measurements are known, choose the components by referring to the table opposite.

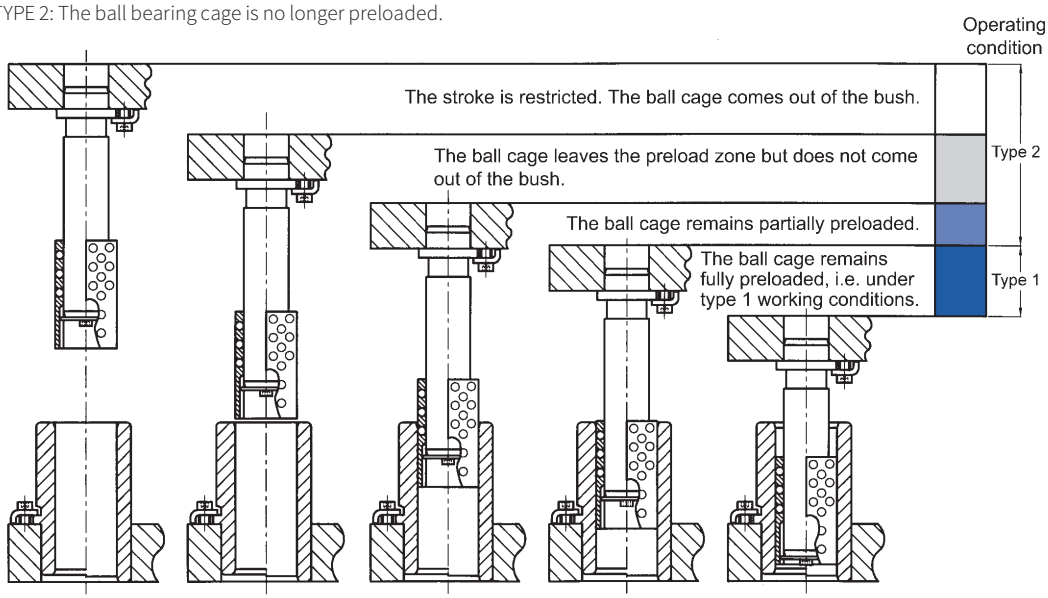
- Choose the required stroke from the “Stroke C” column.
- Follow this column down until you come to the coloured box situated in the row corresponding to the required pillar diameter.
- You will find the required length of bush on the same row, in column LB.
- Choose the required length of ball bearing cage from the column Lc. The longer the ball bearing cage, the longer its life span. Verify that the die closing height allows for this choice.
- See above to calculate the pillar lengths.

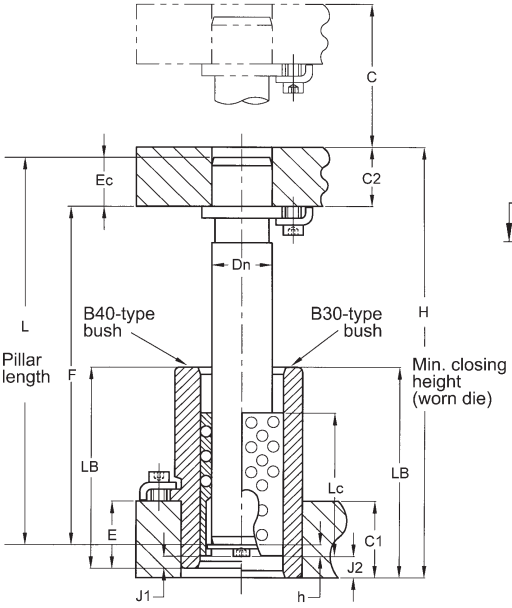
Bushing & Ball Cage Selection Chart – Type 1

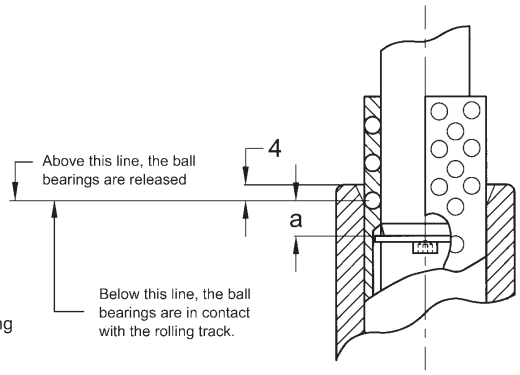


Ball Bearing Guide Element Selection – Type 2

TYPE 2: The ball bearing cage is no longer preloaded.



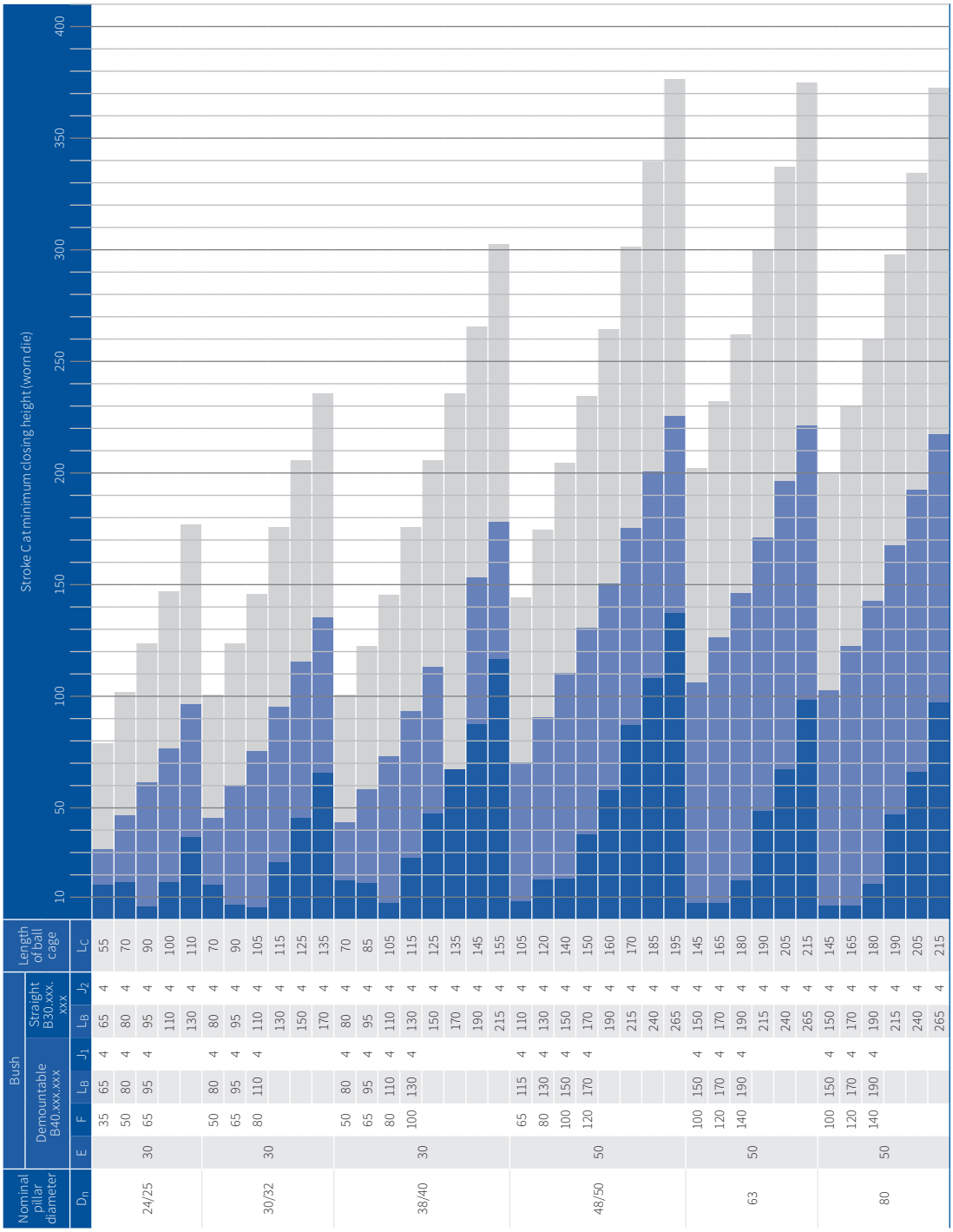




PRODUCT INFORMATION

- To choose bushes and ball bearing cages, refer to page ?-?
- To calculate pillar lengths, refer to page ?

Bushing & Ball Cage Selection Chart – Type 2



Nominal pillar diameter	Bush								Length of ball cage
			Demountable B40.xxx.xxx				Straight B30.xxx.xxx		
D_n	E	F	L_B	J_1	L_B	J_2	L_B	J_2	L_C
24/25	30	35	65	4	65	4	65	4	55
		50	80	4	80	4	80	4	70
		65	95	4	95	4	95	4	90
					110	4	110	4	100
					130	4	130	4	110
30/32	30	50	80	4	80	4	80	4	70
		65	95	4	95	4	95	4	90
		80	110	4	110	4	110	4	105
					130	4	130	4	115
							150	4	125
							170	4	135
38/40	30	50	80	4	80	4	80	4	70
		65	95	4	95	4	95	4	85
		80	110	4	110	4	110	4	105
		100	130	4	130	4	130	4	115
							150	4	125
							170	4	135
							190	4	145
							215	4	155
48/50	50	65	115	4	110	4	110	4	105
		80	130	4	130	4	130	4	120
		100	150	4	150	4	150	4	140
		120	170	4	170	4	170	4	150
					190	4	190	4	160
					215	4	215	4	170
					240	4	240	4	185
					265	4	265	4	195
63	50	100	150	4	150	4	150	4	145
		120	170	4	170	4	170	4	165
		140	190	4	190	4	190	4	180
					215	4	215	4	190
					240	4	240	4	205
					265	4	265	4	215
80	50	100	150	4	150	4	150	4	145
		120	170	4	170	4	170	4	165
		140	190	4	190	4	190	4	180
					215	4	215	4	190
					240	4	240	4	205
					265	4	265	4	215

Ball Bearing Guide Element Selection – Type 2

CALCULATING THE LENGTH OF THE PILLARS

- Use of bush B30.xxx.xxx
  L pillar, type P10 = H - h_2 - J_2 - C_2 + Ec
  F pillar, type P21 = H - h_2 - J_2 - C_2

If the correct length of guide pillar does not exist:

For the P10 type:

- Choose a guide pillar of next length up and cut it down to length L, or
- Choose a guide pillar of the next shortest length and place it in the punch plate in such a way that you obtain length L

H = Min. closing height
h_1 = Height of nut + washer at base of pillar
J_2 = Safety margin at end of stroke (B30 bush)
C_2 = Thickness of top plate
Ec = Depth of insertion for straight pillar
J_1 = Safety margin at end of stroke (B40 flanged bearing bush)
C_1 = Thickness of bottom plate
E = Depth of insertion for B40 bush

Refer to page ?? for values E, h, J_1 and J_2

- Use of bush B40.xxx.xxx
  L pillar, type P10 = H - h_2 - J_1 - C_1 + E - C_2 + Ec
  F pillar, type P21 = H - h_2 - J_1 - C_1 + E - C_2

For the P21 type:

- Adjust the dimension C_2 in order to obtain J_2 and h_2 at the lowest point.

For the P22 type:

- Position bush B30 in order to obtain J_2 and h at the lowest point.

PRODUCT INFORMATION

To choose a type 2 ball bearing bushing unit, you must first determine the required length of stroke C, and the diameter of the pillar. Next, determine the operating conditions (see pages ? to ?).

When these three factors are known, refer to the selection table on pages ? and ?. Go to the column with the stroke C required. Follow this column down until you are level with the required diameter Dn and find the box corresponding to the desired operating conditions.

The longest ball bearing bush allowed by the closing height will have the longest service life.

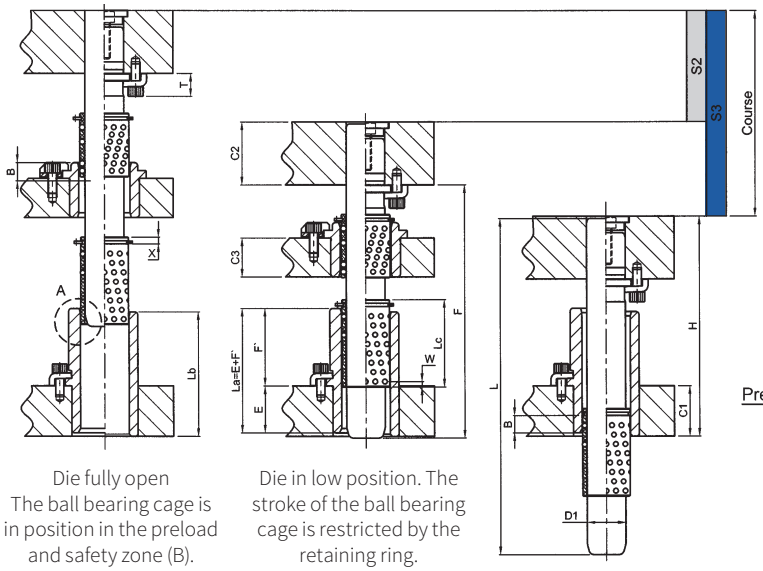
When you have found the corresponding coloured box, follow the horizontal line towards the right-hand side to select the correct lengths of bush and ball bearing cage. See the previous page to calculate the pillar length.

When you have determined all of these measurements, refer to the pages giving all of the dimensions and reference numbers for the different parts.

Nominal pillar Ø Dn	a	h_1	h_2	J_1=J_2	E
24/25	14,5	5,8	9,3	4	30
30/32	14	6,9	10,4	4	30
38/40	14,5	8	11,5	4	30
48/50	15,5	9,1	12,6	4	50
63	15,5	12,5	16	4	50
80	15,5	15	18,5	4	50

Ball Bearing Guide Element Selection – Type 3

TYPE 3: Part of the ball bearing cage is permanently preloaded during the entire working stroke.



Die fully open
The ball bearing cage is in position in the preload and safety zone (B).

Die in low position. The stroke of the ball bearing cage is restricted by the retaining ring.

Die in maximum position. Die with ball bearing cage without retanining ring and without stripper plate.

CALCULATION OF STROKES S2 AND S3 WITH TYPE 3 BALL BEARING CAGE

S2 = 2 (Lc - X - W - B)

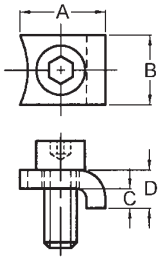
S3 = (Lc - X - W + La or Lb) - 4 (B)

H = Min. closing height
La = Length of demountable bush (type B4x.xxx.xxx)
Lb = Length of demountable bush (type B30.xxx.xxx)
Lc = Length of ball bearing cage (type C13.xxx.xxx)
p = Pitch of rows of ball bearings (ball bearing cage type C13.xxx.xxx)
m = Entry taper of pillar
B = Safety height for bearings when preloaded

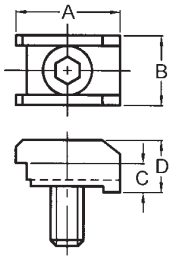
Technical data:
- Values La, E and F: See pages ? and ?
- Lb values: See page ?
- Lc values: See page ?

D1	24	25	30	32	38	40	48	50	63	80
X	4,2		4,9		5,7		6,7			
W	5		5,3		4,8		5,6			
B	20,1				21,1		22,8		23,6	24,8

Clamps (without screws)



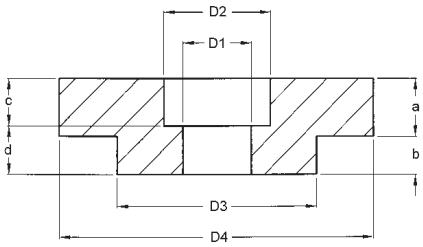
B01.00x.000



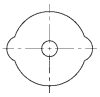
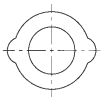
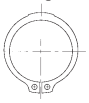
B02.00x.000

Ref.	B01.005.000	B01.006.000	B01.008.000	B02.006.000	B02.008.000
A	12,3	14,3	19,8	18,3	24,6
B	12,7	15,9	15,9	14,5	18,8
C	3,2	4,9	4,9	5	5
D	5,6	8,7	9,5	10	13
Ø screw	M5	M6	M8	M6	M8

Retaining rings for P22.xxx.xxx demountable pillars



Nominal pillar Ø Dn	19 20	24 25	30 32	38 40	48 50	63	80
D_1	5,6	6,8	8,8	10,8	12,8	17	21
D_2	9,7	11,2	14,2	17,2	19,2	25,5	31,5
D_3	19	24	30	38	48	63	80
D_4	25	32	40	50	63	76	93
a	3,3	5	5	5	5	5	5
b	4,2	4	7	10	13	19	25
c	5	6	8	10	12	16	20
d	2,5	3	4	5	6	8	10
Ref.	P02.020.000	P02.025.000	P02.032.000	P02.040.000	P02.050.000	P02.063.000	P02.080.000

	Retaining washer TYPE 1	Retaining washer TYPE 2	Lockwasher TYPE 2	Mounting screw	TYPE 2 retaining rings:	TYPE 3 retaining rings:
						

Nominal pillar Ø Dn	To be used for sets					
	Type 1	Type 2	Type 2	Type 1-2	Type 2	Type 3
24	C01.024.001	C02.024.001	C02.025.002	M 6 x 20	C02.024.003	C03.024.032
25	C01.025.001	C02.025.001			C02.025.003	C03.025.033
30	C01.030.001	C02.030.001	C02.032.002	M 8 x 20	C02.030.003	C03.030.038
32	C01.032.001	C02.032.001			C02.032.003	C03.032.040
38	C01.038.001	C02.038.001	C02.040.002	M 10 x 25	C02.038.003	C03.038.046
40	C01.040.001	C02.040.001			C02.040.003	C03.040.048
48	C01.048.001	C02.048.001	C02.050.002	M 12 x 30	C02.048.003	C03.048.060
50	C01.050.001	C02.050.001			C02.050.003	C03.050.062
63	C01.063.001	C02.063.001	C02.063.002	M 16 x 35	C02.063.003	C03.063.001
80	C01.080.001	C02.080.001	C02.080.002	M 20 x 40	C02.080.003	C03.080.091

Blue Line Compatibility to DIN Standard

Both standard AWP guiding components and the DIN-compatible AWP Blue Line products are equipped with their Easyfit system.

DIN COMPATIBILITY

All components in the Blue Line range are compatible and interchangeable with guiding elements complying with the DIN Standard.

See Equivalence Table below:

AWP Blue Line part	DIN compatibility
Straight column DP10	DIN 9825
Demountable column DP21 / DP 22	DIN 9825
Demountable bushing DB11 / DB21	DIN 9831
Demountable flanged bushing DB31	DIN 9831
Ball bearing guide bushing DB41	DIN 9831
Ball cage DC13	DIN 5401

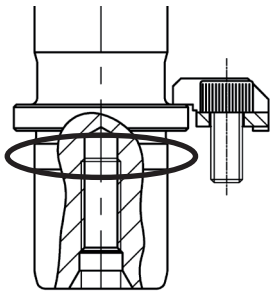
EASYFIT SYSTEM

The EasyFit system allows easier assembly and dissassembly of columns and/or bushings while ensuring parts are perfectly perpendicular to the plate surface.

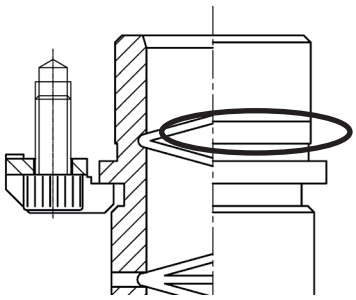
Tightening is achieved using a shoulder over a height of 5mm under the flange. Positioning is then ensured by the perpendicularity of the adjusted flange.

Our Easyfit design has been successfully used for more than 30 years by our clients worldwide over our whole AWP product portfolio. It is now compliant with DIN Standard and allows part interchangeability.

For columns

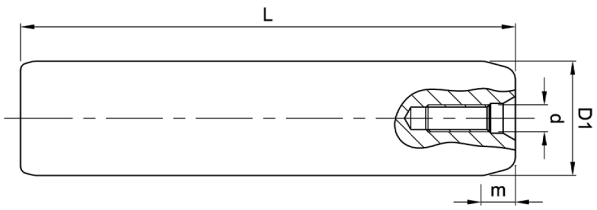


For bushings

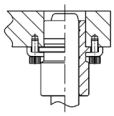


Blue Line Guide Column

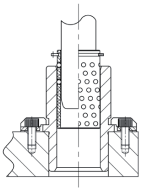
DIN 9825 compatible



For use with:

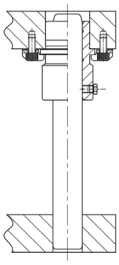


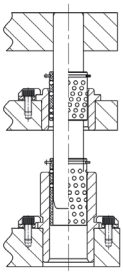
Steel bushing
Bronze-plated bushing



Demountable bushing
Ball cage

Examples:





PRODUCT INFORMATION

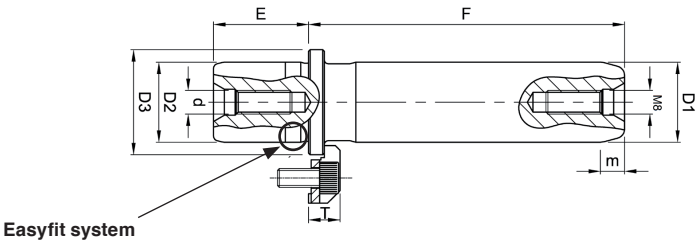
Tempered case-hardened steel columns with a hardness of 60-64HRC, with Easyfit system.

Example order:
- Column D1=30 – L=160
- Please indicate: DP10.030.160

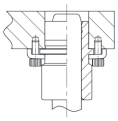
D_1 h4	19	20	24	25	30	32	40	50	63	80
d	M8		M8		M8		M8	M8	M8	M8
m	4		6		6		6	8	8	8
L	REFERENCES									
100	DP10.019.100	DP10.020.100	DP10.024.100	DP10.025.100						
112	DP10.019.112	DP10.020.112	DP10.024.112	DP10.025.112						
125	DP10.019.125	DP10.020.125	DP10.024.125	DP10.025.125	DP10.030.125	DP10.032.125				
140	DP10.019.140	DP10.020.140	DP10.024.140	DP10.025.140	DP10.030.140	DP10.032.140				
160	DP10.019.160	DP10.020.160	DP10.024.160	DP10.025.160	DP10.030.160	DP10.032.160	DP10.040.160			
180	DP10.019.180	DP10.020.180	DP10.024.180	DP10.025.180	DP10.030.180	DP10.032.180	DP10.040.180	DP10.050.180		
200	DP10.019.200	DP10.020.200	DP10.024.200	DP10.025.200	DP10.030.200	DP10.032.200	DP10.040.200	DP10.050.200		
224	DP10.019.224	DP10.020.224	DP10.024.224	DP10.025.224	DP10.030.224	DP10.032.224	DP10.040.224	DP10.050.224		
250			DP10.024.250	DP10.025.250	DP10.030.250	DP10.032.250	DP10.040.250	DP10.050.250	DP10.063.250	
280			DP10.024.280	DP10.025.280	DP10.030.280	DP10.032.280	DP10.040.280	DP10.050.280	DP10.063.280	DP10.080.280
315					DP10.030.315	DP10.032.315	DP10.040.315	DP10.050.315	DP10.063.315	DP10.080.315
355							DP10.040.355	DP10.050.355	DP10.063.355	DP10.080.355
400							DP10.040.400	DP10.050.400	DP10.063.400	DP10.080.400
450								DP10.050.450	DP10.063.450	DP10.080.450
500								DP10.050.500	DP10.063.500	DP10.080.500

Blue Line Demountable Column with Clip Fastening

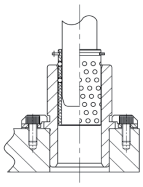
DIN 9825 compatible



For use with:

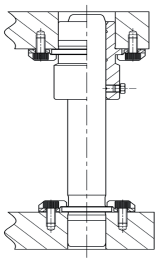


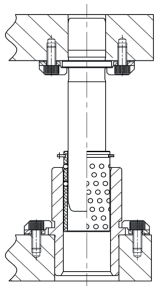
Steel bushing
Bronze-plated bushing

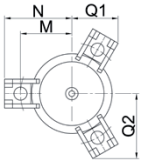


Demountable bushing
Ball cage

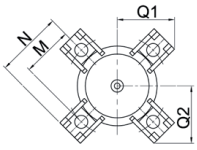
Examples:







Ø19 to 32



Ø40 to 80

PRODUCT INFORMATION

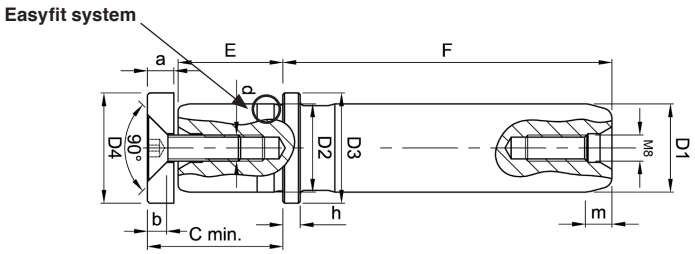
Tempered case-hardened steel columns with a hardness of 60-64HRC, with Easyfit system.
Comes with fastening clamp and screws. Quote D1h3 is available upon request.

Example order:
- Column D1=30 – F=160
- Please state: DP21.030.160

D_1 h4 =D_2 i6	19	20	24	25	30	32	40	50	63	80
D_3	25		32		40		50	63	76	95
E	20		25		32		40	45	50	60
d	M8		M8		M8		M8	M8	M8	M12
m	6		8		8		8	8	8	8
Qty. clamp	3		3		3		4	4	4	4
Ref. clamp	B02.006.100									
Screw	A05.006.012									
M	18		21,5		25,5		30	37	45,5	53
N	25,9		29,4		33,4		38,4	44,9	53,4	60,9
Q1	19.2		21		23		32,3	36,9	43,5	48,2
Q2	26,1		29,1		32,6		32,3	36,9	43,4	48,2
T	10									
F	REFERENCES									
100	DP21.019.100	DP21.020.100	DP21.024.100	DP21.025.100						
112	DP21.019.112	DP21.020.112	DP21.024.112	DP21.025112	DP21.030.112	DP21.032.112				
125	DP21.019.125	DP21.020.125	DP21.024.125	DP21.025.125	DP21.030.125	DP21.032.125	DP21.040.125			
140	DP21.019.140	DP21.020.140	DP21.024.140	DP21.025.140	DP21.030.140	DP21.032.140	DP21.040.140	DP21.050.140		
160	DP21.019.160	DP21.020.160	DP21.024.160	DP21.025.160	DP21.030.160	DP21.032.160	DP21.040.160	DP21.050.160	DP21.063.160	
180	DP21.019.180	DP21.020.180	DP21.024.180	DP21.025.180	DP21.030.180	DP21.032.180	DP21.040.180	DP21.050.180	DP21.063.180	
200	DP21.019.200	DP21.020.200	DP21.024.200	DP21.025.200	DP21.030.200	DP21.032.200	DP21.040.200	DP21.050.200	DP21.063.200	DP21.080.200
224			DP21.024.224	DP21.025.224	DP21.030.224	DP21.032.224	DP21.040.224	DP21.050.224	DP21.063.224	DP21.080.224
250			DP21.024.250	DP21.025.250	DP21.030.250	DP21.032.250	DP21.040.250	DP21.050.250	DP21.063.250	DP21.080.250
280					DP21.030.280	DP21.032.280	DP21.040.280	DP21.050.280	DP21.063.280	DP21.080.280
315							DP21.040.315	DP21.050.315	DP21.063.315	DP21.080.315
355								DP21.050.355	DP21.063.355	DP21.080.355
400										DP21.080.400

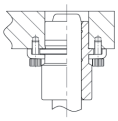
Blue Line Demountable Column with Central Fastening

DIN 9825 compatible

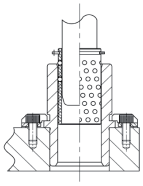


Warning: observe minimum plate thickness C min

For use with:

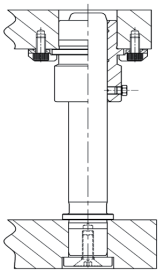


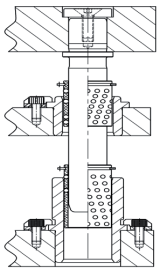
Steel bushing
Bronze-plated bushing



Demountable bushing
Ball cage

Examples:





PRODUCT INFORMATION

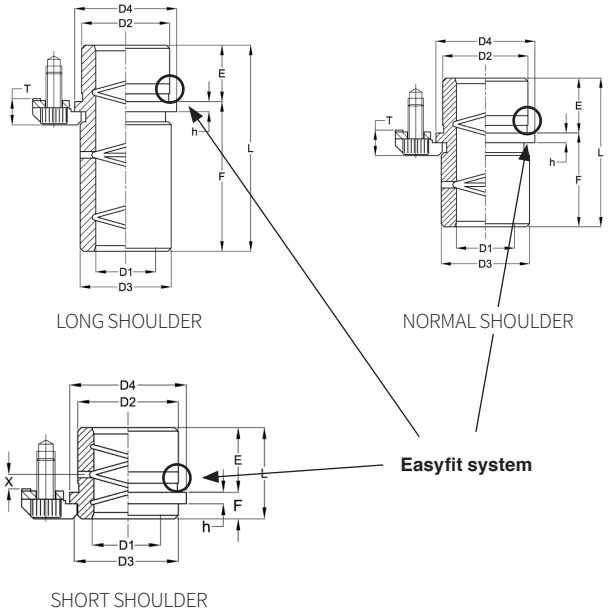
Tempered case-hardened steel columns with a hardness of 60-64HRC, with Easyfit system.
Comes with fastening clamp and screws. Quote D1h^3 is available upon request.

Example order:
- Column D1=30 – F=160
- Please state: DP22.030.160

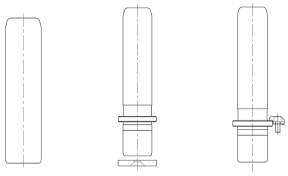
D_1 h4 =D_2 i6	19	20	24	25	30	32	40	50	63	80
D_3	25		32		40		50	63	80	93
D_4	25		32		40		50	60	70	93
E	20		25		32		40	45	50	60
d	M8		M8		M8		M8	M8	M8	M12
m	6		8		8		8	8	8	8
a	6		6		6		6	6	6	12
b	4,3		4,3		4,3		4,3	4,3	4,3	6,3
C min	26		31		38		46	51	56	72
Washer	P02.020.100		P02.025.100		P02.032.100		P02.040.100	P02.050.100	P02.063.100	P02.080.100
Vis	A09.008.020									A09.012.025
h	6									
F	REFERENCES									
100	DP22.019.100	DP22.020.100	DP22.024.100	DP22.025.100						
112	DP22.019.112	DP22.020.112	DP22.024.112	DP22.025112	DP22.030.112	DP22.032.112				
125	DP22.019.125	DP22.020.125	DP22.024.125	DP22.025.125	DP22.030.125	DP22.032.125	DP22.040.125			
140	DP22.019.140	DP22.020.140	DP22.024.140	DP22.025.140	DP22.030.140	DP22.032.140	DP22.040.140	DP22.050.140		
160	DP22.019.160	DP22.020.160	DP22.024.160	DP22.025.160	DP22.030.160	DP22.032.160	DP22.040.160	DP22.050.160	DP22.063.160	
180	DP22.019.180	DP22.020.180	DP22.024.180	DP22.025.180	DP22.030.180	DP22.032.180	DP22.040.180	DP22.050.180	DP22.063.180	
200	DP22.019.200	DP22.020.200	DP22.024.200	DP22.025.200	DP22.030.200	DP22.032.200	DP22.040.200	DP22.050.200	DP22.063.200	DP22.080.200
224			DP22.024.224	DP21.025.224	DP22.030.224	DP22.032.224	DP22.040.224	DP22.050.224	DP22.063.224	DP22.080.224
250			DP22.024.250	DP21.025.250	DP22.030.250	DP21.032.250	DP22.040.250	DP22.050.250	DP22.063.250	DP22.080.250
280					DP22.030.280	DP21.032.280	DP22.040.280	DP22.050.280	DP22.063.280	DP22.080.280
315							DP22.040.315	DP22.050.315	DP22.063.315	DP22.080.315
355								DP22.050.355	DP22.063.355	DP22.080.355
400										DP22.080.400

Blue Line Demountable Bushing
Steel / Bronze-Plated

DIN 9831 compatible

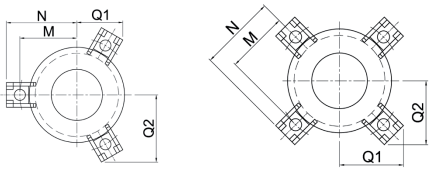


For use with:



Column Demountable column

Positions of the bushing fastening clamps:



For Ø19 to 32 For Ø40 to 80

PRODUCT INFORMATION

Tempered case-hardened steel bushings with a hardness of 60-64HRC, with Easyfit system, delivered with fastening clamps and screws.

Two different materials are available:

- Steel bushings: DB11 high rigidity and resistance
- Bronze-plated bushings: DB21 technology specific to the AWP group combining the rigidity of steel with the frictional coefficient of bronze

Example order:

- Pillar D1=40 F=45 Bronze-plated
- Please state: DB21.040.045

$D1^{H5}$	19	20	24	25	30	32	40	50	63	80
D2	32		40		48		58	70	85	105
D3	39		46		53		63	77	92	115
D4	40		48		56		66	80	95	118
E	23		23		30		37	47	60	60
Qty. clamps	3		3		3		4	4	4	4
Ref. clamps	B02.006.100									
Vis	A05.006.012									
h	6									
M	26		30		33,5		38,5	45,5	53	64,5
N	33,9		37,9		41,4		46,4	53,4	60,9	72,4
Q1	23,4		25,3		27,1		38	42,9	48,2	56,3
Q2	33,1		36,5		39,6		38	42,9	48,2	56,3
T	10									

Long Shoulder

D_1	19	20	24	25	30	32	40	50	63	80
F	36		56		63		71	80	90	90
L	59		79		93		108	127	150	150
Steel ref.	DB11.019.036	DB11.020.036	DB11.024.056	DB11.025.056	DB11.030.063	DB11.032.063	DB11.040.071	DB11.050.080	DB11.063.090	DB11.080.090
Bronze-plated ref.	DB21.019.036	DB21.020.036	DB21.024.056	DB21.025.056	DB21.030.063	DB21.032.063	DB21.040.071	DB21.050.080	DB21.063.090	DB21.080.090

Normal Shoulder

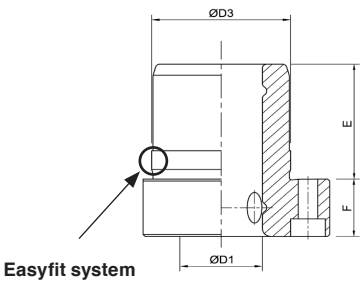
D_1	19	20	24	25	30	32	40	50	63	80
F	20		36		45		45	50	56	60
L	43		59		75		82	97	116	120
Steel ref.	DB11.019.020	DB11.020.020	DB11.024.036	DB11.025.036	DB11.030.045	DB11.032.045	DB11.040.045	DB11.050.050	DB11.063.056	DB11.080.060
Bronze-plated ref.	DB21.019.020	DB21.020.020	DB21.024.036	DB21.025.036	DB21.030.045	DB21.032.045	DB21.040.045	DB21.050.050	DB21.063.056	DB21.080.060

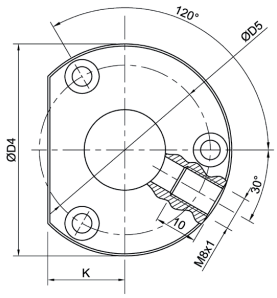
Short Shoulder

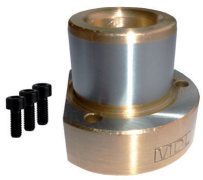
D_1	19	20	24	25	30	32	40	50	63	80
D_3	32		40		48		58	70	85	105
F	12		12		12		15	18	20	20
L	35		35		42		52	65	80	80
Steel ref.	DB11.019.012	DB11.020.012	DB11.024.012	DB11.025.012	DB11.030.012	DB11.032.012	DB11.040.015	DB11.050.018	DB11.063.020	DB11.080.020
Bronze-plated ref.	DB21.019.012	DB21.020.012	DB21.024.012	DB21.025.012	DB21.030.012	DB21.032.012	DB21.040.015	DB21.050.018	DB21.063.020	DB21.080.020

Blue Line Demountable Bushing Flanged

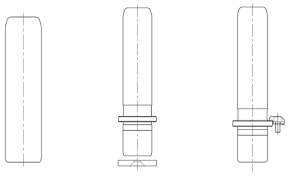
DIN 9831 compatible





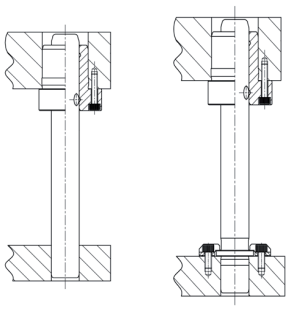


For use with:



Column Demountable column

Examples:



PRODUCT INFORMATION

Tempered case-hardened steel bushings with a hardness of 60-64HRC, bronze-plated, with Easyfit system.
Comes with screws.

Example order:
- Bushing: D1=30 – F=62
- Please state: DB41.030.062

$D1^{H5}$	19	20	24	25	30	32	40	50	63	80
D2	32		40		48		58	70	85	105
D3	39		46		53		63	77	92	115
D4	40		48		56		66	80	95	118
E	23		23		30		37	47	60	60
Qty. clamps	3		3		3		4	4	4	4
Ref. clamps	B02.006.100									
Vis	A05.006.012									
h	6									
M	26		30		33,5		38,5	45,5	53	64,5
N	33,9		37,9		41,4		46,4	53,4	60,9	72,4
Q1	23,4		25,3		27,1		38	42,9	48,2	56,3
Q2	33,1		36,5		39,6		38	42,9	48,2	56,3
T	10									

Long Shoulder

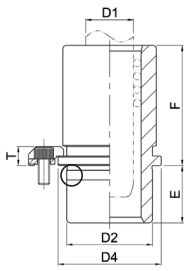
D_1	19	20	24	25	30	32	40	50	63	80
F	36		56		63		71	80	90	90
L	59		79		93		108	127	150	150
Steel ref.	DB11.019.036	DB11.020.036	DB11.024.056	DB11.025.056	DB11.030.063	DB11.032.063	DB11.040.071	DB11.050.080	DB11.063.090	DB11.080.090
Bronze-plated ref.	DB21.019.036	DB21.020.036	DB21.024.056	DB21.025.056	DB21.030.063	DB21.032.063	DB21.040.071	DB21.050.080	DB21.063.090	DB21.080.090

Short Shoulder

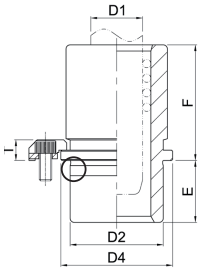
D_1	19	20	24	25	30	32	40	50	63	80
F	20		36		45		45	50	56	60
L	43		59		75		82	97	116	120
Steel ref.	DB11.019.020	DB11.020.020	DB11.024.036	DB11.025.036	DB11.030.045	DB11.032.045	DB11.040.045	DB11.050.050	DB11.063.056	DB11.080.060
Bronze-plated ref.	DB21.019.020	DB21.020.020	DB21.024.036	DB21.025.036	DB21.030.045	DB21.032.045	DB21.040.045	DB21.050.050	DB21.063.056	DB21.080.060

Steel Ball Bearings Guide Bushing

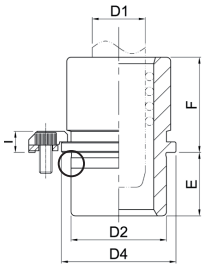
DIN 9831 compatible



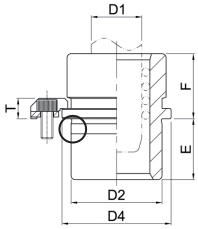
Extra long shoulder



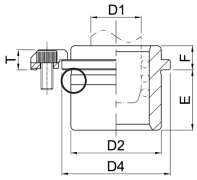
Long shoulder



Normal shoulder



Short shoulder

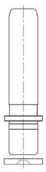


Extra-short shoulder

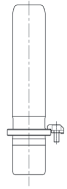
Easyfit system

For use with:

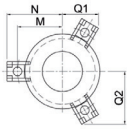
Column



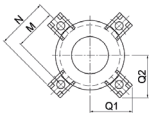
Demountable column



Positions of the bushing fastening clamps



From Ø19 to 32



From Ø40 to 63

PRODUCT INFORMATION

Tempered case-hardened steel bushings with a hardness of 60-64HRC, with Easyfit system.
Come with fastening clamps and screws.

Example order:
- Column D1=40 – F=45
- Please state: DB41.040.045

D1	19	20	24	25	30	32	40	50	63
D2	32		40		48		58	70	85
D3	39		46		53		63	77	92
D4	40		48		56		66	80	95
Qty. clamps	3		3		3		4	4	4
Ref. clamps	B02.006.100								
Vis	A05.006.012								
M	26		30		33,5		38,5	45,5	53
N	33,9		37,9		41,4		46,4	53,4	60,9
Q1	23,4		25,3		27,1		38	42,9	48,2
Q2	33,1		36,5		39,6		38	42,9	48,2
T	10								

Extra Long Shoulder

D1	19	20	24	25	30	32	40	50	63
E	23		23		30		37	47	60
F	36		56		63		71	80	90
L=E+F	59		79		93		108	127	150
Reference	DB41.019.036	DB41.020.036	DB41.024.056	DB41.025.056	DB41.030.063	DB41.032.063	DB41.040.071	DB41.050.080	DB41.063.090

Long Shoulder

D1	19	20	24	25	30	32	40	50	63
E			30		37		47	60	
F			50		56		63	71	
L=E+F			80		93		110	131	
Reference			DB41.024.050	DB41.025.050	DB41.030.056	DB41.032.056	DB41.040.063	DB41.050.071	

Normal Shoulder

D1	19	20	24	25	30	32	40	50	63
E	23		23		30		37	47	60
F	20		36		45		45	50	56
L=E+F	43		59		75		82	97	116
Reference	DB41.019.020	DB41.020.020	DB41.024.036	DB41.025.036	DB41.030.045	DB41.032.045	DB41.040.045	DB41.050.050	DB41.063.056

Short Shoulder

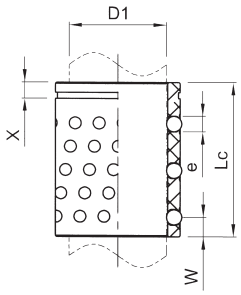
D1	19	20	24	25	30	32	40	50	63
E			30		37		47	60	
F			25		32		32	36	
L=E+F			55		69		79	96	
Reference			DB41.024.025	DB41.025.025	DB41.030.032	DB41.032.032	DB41.040.032	DB41.050.036	

Extra-Short Shoulder

D1	19	20	24	25	30	32	40	50	63
E	23		23		30		37	47	60
F	12		12		12		15	18	20
L=E+F	35		35		42		52	65	80
Reference	DB41.019.012	DB41.020.012	DB41.024.012	DB41.025.012	DB41.030.012	DB41.032.012	DB41.040.015	DB41.050.018	DB41.063.020

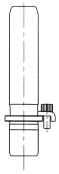
Ball Cage

DIN 5401 compatible

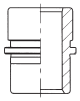


For use with:

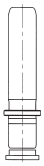
Straight column



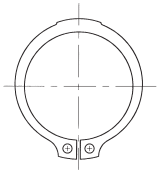
Demountable column



Demountable bushing

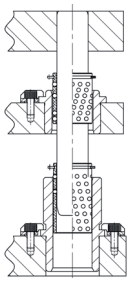


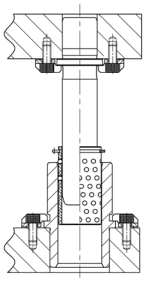
Demountable column



Circlips for ball cage, type 3 C03

Examples:





PRODUCT INFORMATION

Ball cage built of monobloc aluminium alloy, processed, aircraft grade.
Ball cages come with circlips.

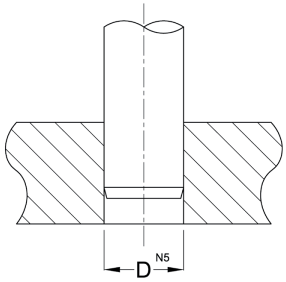
Example order:

- Column D1=30 – Lc=70
- Please state: DC13.030.070

D1	19	20	24	25	30	32	40	50	63
Lc	References								
32	DC13.019.032	DC13.020.032							
40						DC13.032.040			
44	DC13.019.044	DC13.020.044	DC13.024.044	DC13.025.044					
45						DC13.032.045			
50						DC13.032.050			
55					DC13.030.055	DC13.032.055			
56	DC13.019.056	DC13.020.056	DC13.024.056	DC13.025.056					
65							DC13.040.065		
70					DC13.030.070	DC13.032.070			
72	DC13.019.072	DC13.020.072	DC13.024.072	DC13.025.072					
80			DC13.024.080	DC13.025.080	DC13.030.080	DC13.032.080	DC13.040.080	DC13.050.080	
95					DC13.030.095	DC13.032.095	DC13.040.095	DC13.050.095	DC13.063.095
96			DC13.024.096	DC13.025.096					
105					DC13.030.105	DC13.032.105	DC13.040.105	DC13.050.105	DC13.063.105
120					DC13.030.120	DC13.032.120	DC13.040.120	DC13.050.120	DC13.063.120
140							DC13.040.140	DC13.050.140	DC13.063.140
160									DC13.063.180
180									
X	2.9		3,2		4		4	4,3	4,8
e	3		3		4	4	4	4	4

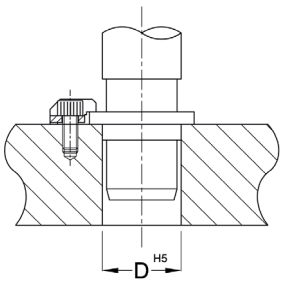
Assembly Instructions

STRAIGHT COLUMN
DP10.xxx.xxx
Tightened adjustment



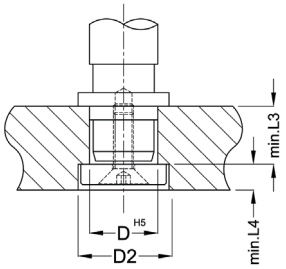
Column diameter D_1	Bore diameter D^{N5}	
19/20	19/20	-0,012 -0,021
24/25	24/25	-0,012 -0,021
30/32	30/32	-0,013 -0,024
40	40	-0,013 -0,024
50	50	-0,013 -0,024
63	63	-0,015 -0,028
80	80	-0,015 -0,028

DEMOUNTABLE COLUMN
DP21.xxx.xx
Uncertain adjustment



Column diameter D_1		Bore diameter D^{H5}		Adjustment Mini Maxi
19/20	+0,003 -0,003	19/20	+0,009 0	+0,012 -0,003
24/25	+0,003 -0,003	24/25	+0,009 0	+0,012 -0,003
30/32	+0,003 -0,003	30/32	+0,011 0	+0,014 -0,003
40	+0,003 -0,003	40	+0,011 0	+0,014 -0,003
50	+0,003 -0,003	50	+0,011 0	+0,014 -0,003
63	+0,003 -0,003	63	+0,013 0	+0,016 -0,003
80	+0,003 -0,003	80	+0,013 0	+0,016 -0,003

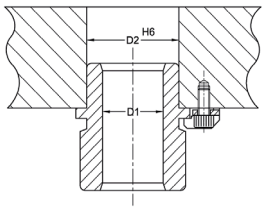
DEMOUNTABLE COLUMN
dP22.xxx.xxx
Uncertain adjustment



Column diameter D_1		Bore diameter D^{H5}		D_2	L_3	L_4
19/20	+0,003 -0,003	19/20	+0,009 0	27	23,5	6,5
24/25	+0,003 -0,003	24/25	+0,009 0	34	30,5	6,5
30/32	+0,003 -0,003	30/32	+0,011 0	42	37,5	6,5
40	+0,003 -0,003	40	+0,011 0	52	37,5	6,5
50	+0,003 -0,003	50	+0,011 0	62	47,5	6,5
63	+0,003 -0,003	63	+0,013 0	72	47,5	6,5
80	+0,003 -0,003	80	+0,013 0	95	60,5	12,5

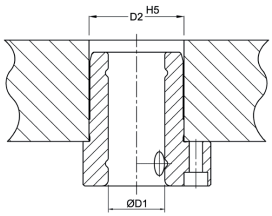
Assembly Instructions

DEMOUNTABLE STEEL/BRONZE-PLATED BUSHINGS
DB11.xxx.xxx



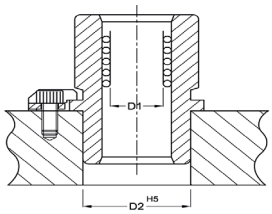
Nominal diameter D1	Bushing diameter D2		Bore diameter D2 H6		Adjustment Mini Maxi
19/20	32	+0,003 -0,003	32	+0,016 +0,000	+0,019 -0,003
24/25	40	+0,003 -0,003	40	+0,016 +0,000	+0,019 -0,003
30/32	48	+0,003 -0,003	48	+0,016 +0,000	+0,019 -0,003
40	58	+0,003 -0,003	58	+0,019 +0,000	+0,022 -0,003
50	70	+0,003 -0,003	70	+0,019 +0,00	+0,022 -0,003
63	85	+0,003 -0,003	85	+0,022 +0,000	+0,025 -0,003
80	105	+0,003 -0,003	105	+0,022 +0,000	+0,025 -0,003

DEMOUNTABLE FLANGED BUSHINGS
DB31.xxx.xxx



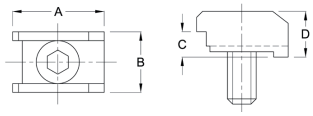
Nominal diameter D1	Bushing diameter D2		Bore diameter D2 H6		Adjustment Mini Maxi
19/20	32	+0,003 -0,003	32	+0,016 +0,000	+0,019 -0,003
24/25	40	+0,003 -0,003	40	+0,016 +0,000	+0,019 -0,003
30/32	48	+0,003 -0,003	48	+0,016 +0,000	+0,014 -0,003
40	58	+0,003 -0,003	58	+0,019 +0,000	+0,014 -0,003
50	70	+0,003 -0,003	70	+0,019 +0,000	+0,016 -0,003
63	85	+0,003 -0,003	85	+0,022 +0,000	+0,016 -0,003

STEEL BALL BEARINGS GUIDE BUSHING
DB41.xxx.xxx



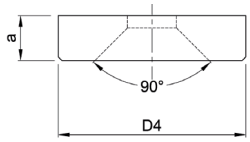
Nominal diameter D1	Bushing diameter D2		Bore diameter D2 H5		Adjustment Mini Maxi
19/20	32	+0,003 -0,003	32	+0,011 +0,000	+0,014 -0,003
24/25	40	+0,003 -0,003	40	+0,011 +0,000	+0,014 -0,003
30/32	48	+0,003 -0,003	48	+0,011 +0,000	+0,014 -0,003
40	58	+0,003 -0,003	58	+0,013 +0,000	+0,016 -0,003
50	70	+0,003 -0,003	70	+0,013 +0,000	+0,016 -0,003
63	85	+0,003 -0,003	85	+0,015 +0,000	+0,018 -0,003

Clamps (Screwless)



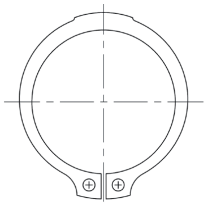
Fastening Clamps	
A	18,3
B	14,5
C	6
D	10
Qty of clamps	From Ø 19 to 32: 3 clamps From Ø 40 to 80: 4 clamps
Reference	B02.006.100
Screw reference code	A05.006.012

Fastening Washer



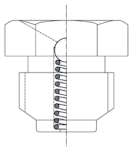
Fastening Washer For DP22 Column			
Reference	Ø Column	D4	a
P02.020.100	19 / 20	25	6
P02.025.100	24 / 25	32	6
P02.032.100	30 / 32	40	6
P02.040.100	40	50	6
P02.050.100	50	60	6
P02.063.100	63	70	6
P02.080.100	80	93	12

Ball Cage Circlips



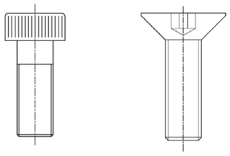
Circlips For DC13 Ball Cage	
Reference	Ø Ball cage
C03.019.100	19
C03.020.100	20
C03.024.100	24
C03.025.100	25
C03.030.038	30
C03.032.040	32
C03.040.048	40
C03.050.100	50
C03.063.100	63

Greasing Kit



Greasing Kit For Smooth Guide Bushings	
Reference	G03.008.100
Thread	M8
Greasing kit includes: 4 greasers	

Screw

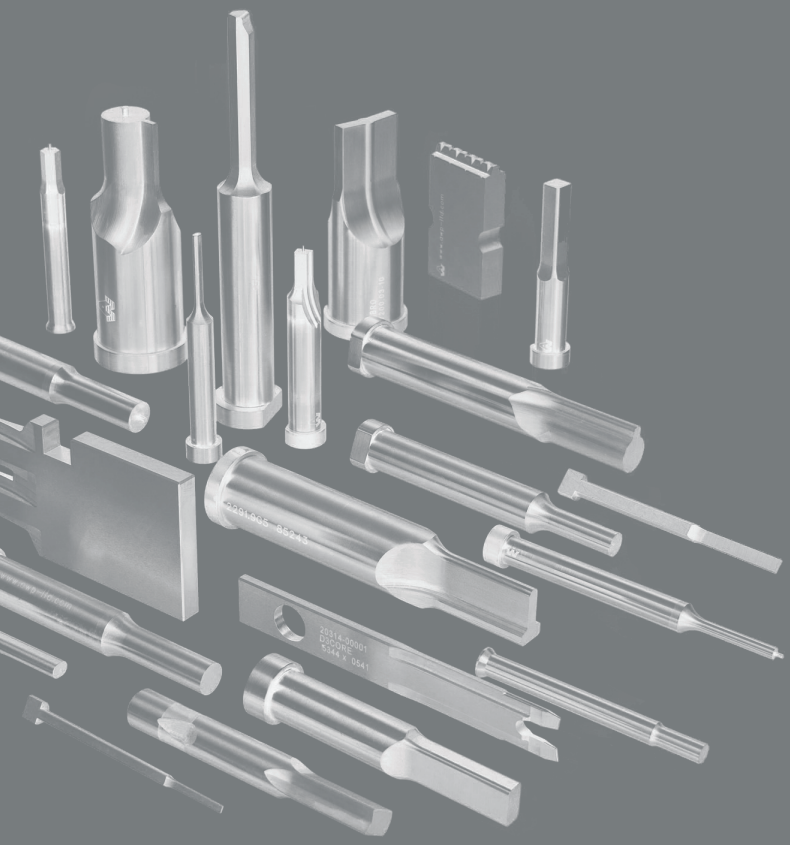


AO5 AO9

Screw	
Reference	Type
A05.004.020	Screw CHC M4 x 20
A05.005.020	Screw CHC M5 x 20
A05.005.030	Screw CHC M5 x 30
A05.006.030	Screw CHC M6 x 30
A05.006.035	Screw CHC M6 x 35
A05.008.050	Screw CHC M8 x 50
A05.006.012	Screw CHC M6 X 12
A09.008.020	Screw FHC M8 X 20
A09.012.025	Screw FHC M12 X 25

Notes

Notes



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