



Clamping Systems

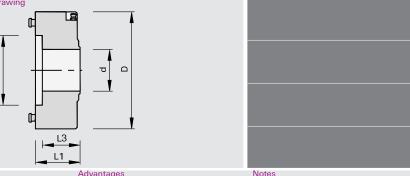
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Clamping Systems Ø 110 mm

Product

Drawing



Machine / Application

- double end tenoners
- through feed machines
- for mounting of tools with bore and for combination with mounting flanges Ø 110 mm

Design

- I hardened tool mounting area
- I n max = 9,000 min-1

Advantages

- I excellent balance quality I long tool life
- I consistent runout accuracy after each tool change
- I minimization of setup-times thanks to easy and quick tool change
- I maintenance-free and protected from dust
- I for clockwise and counterclockwise rotation I indicate machine type and
- shaft design when placing an
- I required tool adapters Class-No. 997370
- for changing the tools the pneumatic part Ident-No. 058250 is necessary
- I operational pressure 6 bar
- I included in delivery: clamping part incl. cap for attachment on the machine spindle

Ø D	Ø D2	Ød	L1	L3	DKN			Ident-No.
110	50	30	63	47.5	8x3			172399 &
110	50	30	63	47.5	8x3	Homag, Lehbrink, Torw meyer	egge, SPA, Wilms-	160836
110	50	35	63	47.5	10x4	Spanevello		162599
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			
Spare par	ts		Dimensio	n		For Ident-No.	Class-No.	ldent-No.
Head Ca	ap Screws		M12x3	O DIN EN I	SO 4762	172399	995111	001917
Covers						172399	997370	172397

Head Cap Screws	M12x30 DIN EN ISO 4762	172399	995111	001917
Covers		172399	997370	172397
Covers		160836	997370	181802
Covers		162599	997370	162602
Spacers	55x23,5x30	172399	955520	172398
pneumatic hose			994200	058250
	[mm]			



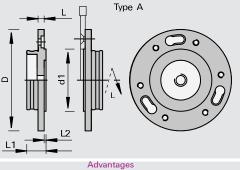
Mounting Flanges for Clamping System Ø 110 mm - saw blades d=65 mm

Product

Drawing Type A

Machine / Application

for the mounting of saw blades up to Ø 250 mm with bore Ø 65 mm, 6 countersunk holes TK 90 mm for screw M 5



- I for clockwise and counterclockwise rotation
- I especially suited for the mounting of scoring saw blades
- I at least two separate tool/ flange assemblies should be used per clamping element (reduced downtimes)
- I for DP circular saw blades the cylindrical head screw Ident-No. 001869 is necessary (to be ordered separately)

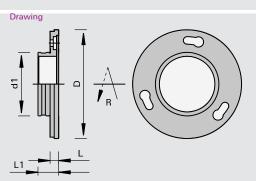
Ø D	Ø d1	L2	L	L1		ldent-No. [L]	Ident-No. [R]
110	65	2,5	10	27		164770	164758
[mm]	[mm]	[mm]	[mm]	[mm]			
Spare parts			Dimension			Class-No.	Ident-No.
Countersu	nk Flat Hea	ded Screws	M5x12		for mounting of saw blade	995122	180007
Head Cap	Screws		M5x12 DIN 912	2	for mounting of DP saw blades	995111	001869
			[mm]				



997370

Mounting Flanges for Clamping System Ø 110 mm - saw blades d=50 mm

Product



Machine / Application

for the mounting of saw blades up to Ø 250 mm and saw plate thickness 1.8 - 2.2 mm with bore Ø 50 mm, 3 NL - Ø 22 mm, TK Ø 80 mm

Design





- I for clockwise and counterclockwise rotation
- I especially suited for the mounting of scoring saw blades

ØD	Ø d1	L	L1	Ident-No.
107	50	10	26.5	160849
[mm]	[mm]	[mm]	[mm]	



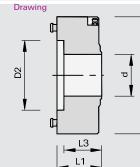
Mounting Flanges for Clamping System Ø 110 mm - tools with bore d=30 mm

Product Drawing Machine / Application Advantages I for mounting of light tools with I for clockwise and counterbore Ø 30 mm, 6 countersunk clockwise rotation holes for M 5, TK Ø 90 mm I at least two separate tool/ flange assemblies should be used per clamping element (reduced downtimes) Ø D Ød1 L2 L1 Ident-No. [L] Ident-No. [R] 110 30 15,5 10 40 163705 163226 [mm] [mm] [mm] [mm] [mm] Dimension Class-No. Spare parts Ident-No. Countersunk Flat Headed Screws M5x12 180007 995122 001869 Head Cap Screws M5x12 DIN 912 995111 [mm]



Clamping Systems Ø 140 mm





Machine / Application

Special Nuts

58

[mm]

[mm]

- double end tenoners through feed machines
- for mounting of tools with bore and for combination with mounting flanges Ø 140 mm

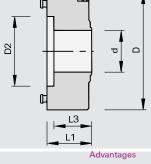
I n max = 9,000 min-1

- I excellent balance quality
- I long tool life thanks to hardened tool mounting area
- I consistent runout accuracy after each tool change
- I minimization of setup-times thanks to easy and quick tool change
- I maintenance-free and protected from dust

- I for clockwise and counterclockwise rotation
- I mounting examples (see drawings): shaft with internal thread, shaft with external thread
- I indicate machine type and shaft design when placing an
- I required tool adapters Class-No. 997370
- I for changing the tools the pneumatic part Ident-No. 058250 is necessary
- I operational pressure 6 bar
- I included in delivery: clamping part incl. cap for attachment on the machine spindle (spare parts for Homag and IMA not included in delivery)

995290

170364

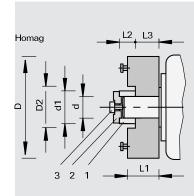


Ø D	Ø D2	Ø d	L1	L3	DKN			Ident-No.
140	80	30	57	41.5	8x3	Homag		167453
140	80	35	57	41.5	10x4	Homag, IMA		167451
140	80	40	57	41.5	12x5			167452
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			
Spare parts		ØD	Ø D1	Ø	d	For Ident-No.	Class-No.	Ident-No.
Covers		40	30	1	7	167453	997370	181802
Covers		45	35	2	2	167451	997370	180082
Covers		48	40	2	2	167452	997370	180121

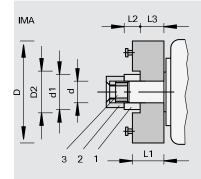
M30 x 1,5

[mm]





Spare parts	Dimension	Ø D	Ø d1	Ø D	For Ident-No.	Class-No.	Ident-No.
1 centering adapter				30	167453	997370	168457 s
2 caps		40	30	17	167453	997370	181802
1 centering adapter				35	167451	997370	180540
2 caps		45	35	22	167451	997370	180082
3 cylindrical head screws for Ød=30	M12x55R					995111	80068438
3 cylindrical head screws for Ød=30	M16x35L					995111	80068436
	[mm]	[mm]	[mm]	[mm]			

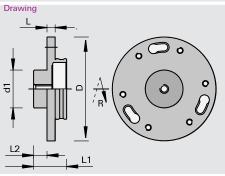


Spare parts	ØD	Ød	Dimension	Class-No.	Ident-No.
1 centering adapter		35		997370	180540
2 special nuts			M35x1,5	995290	IMA3
3 countersunk flat hea screws	ded			995121	IMA4
4 spacers	70	35	70x25x35	955520	170363
	[mm]	[mm]	[mm]		



Mounting Flanges for Clamping System Ø 140 mm - tools with bore d=30 mm

Product



Machine / Application

8, TK Ø 110 mm

for mounting of mediumweight tools with bore Ø 30 mm, 6 countersunk holes for M Design

Advantages

Notes

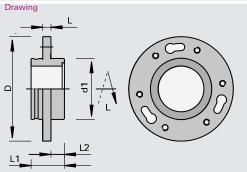
- I for clockwise and counterclockwise rotation
- I for S-System on shaft with internal thread
- I indicate shaft design when placing an order
- I at least two separate tool/ flange assemblies should be used per clamping element (reduced downtimes)

Ø D	Ø d1	L2	L	L1	Ident-No. [L]	Ident-No. [R]
137	30	17,4	10.8	43.4	163946	163945
[mm]	[mm]	[mm]	[mm]	[mm]		

997370

Mounting Flanges for Clamping System Ø 140 mm - tools with bore d=80 mm

Product



Machine / Application

for mounting of mediumweight tools with bore Ø 80 mm, 6 countersunk holes for M 8, TK Ø 110 mm Design

Advantages

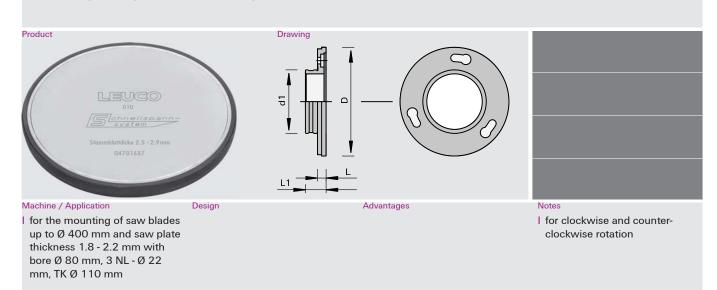
Notes

- I for clockwise and counterclockwise rotation
- I for S-System on shafts with external thread
- I indicate shaft design when placing an order
- I at least two separate tool/ flange assemblies should be used per clamping element (reduced downtimes)

ØD	Ø d1	L2	L	L1	Ident-No. [L]	Ident-No. [R]
137	80	17,5	11.8	44.7	168401	168400
[mm]	[mm]	[mm]	[mm]	[mm]		



Mounting Flanges for Clamping System Ø 140 mm - saw blades d=80 mm

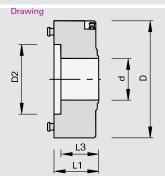


ØD	Ø d1	L	L1	Ident-No.
137	80	10	28	177050
[mm]	[mm]	[mm]	[mm]	



Clamping Systems Ø 160 mm





Machine / Application

Special Nuts

- double end tenoners
- I through feed machines
- I for mounting of tools with bore

Design

58

[mm]

[mm]

I n max = 9,000 min-1

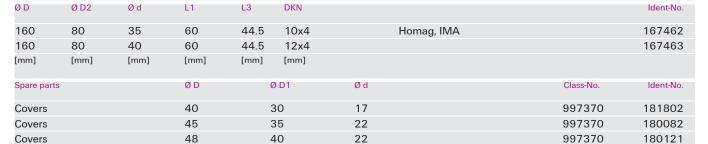
Advantages

- I excellent balance quality
- I long tool life thanks to hardened tool mounting area
- I consistent runout accuracy after each tool change
- I minimization of setup-times thanks to easy and quick tool change
- I maintenance-free and protected from dust

lotes

- I for clockwise and counterclockwise rotation
- I mounting examples (see drawing): shaft with internal thread, shaft with external thread
- I indicate machine type and shaft design when placing an order
- I required tool adapters Class-No. 997370
- I for changing the tools the pneumatic part Ident-No. 058250 is necessary
- l operational pressure 6 bar
- I included in delivery: clamping part incl. cap for attachment on the machine spindle (spare parts for Homag and IMA not included in delivery)

995290



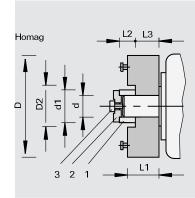
M30 x 1,5

[mm]

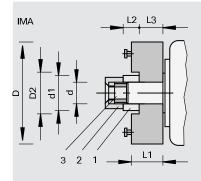




170364



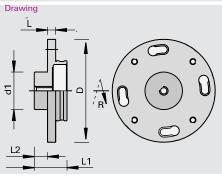
Spare parts	Dimension	Ø D	Ø D1	Ød	Class-No.	Ident-No.
1 centering adapter				30	997370	168457 s
2 caps		40	30	17	997370	181802
1 centering adapter				35	997370	180540
2 caps		45	35	22	997370	180082
3 cylindrical head screws for Ød=35	M16x55R				995111	80068439
3 cylindrical head screws for Ød=35	M20x35L				995111	80068437
4 spacers		60		35	955520	180647
	[mm]	[mm]	[mm]	[mm]		



Spare parts	Ø D	Ød	Dimension	Class-No.	Ident-No.
1 centering adapter		35		997370	180540
2 special nuts			M35x1,5	995290	IMA3
3 countersunk flat head screws	led			995121	IMA4
4 spacers	70	35	70x25x35	955520	170363
	[mm]	[mm]	[mm]		

Mounting Flanges for Clamping System Ø 160 mm - tools with bore d=30 mm

Product



Machine / Application

I for mounting of heavy tools with bore Ø 30 mm with 4 countersunk holes M 8, TK Ø 130 mm Design

Advantages

Notes

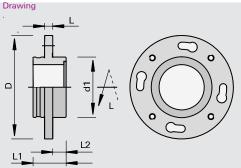
- I for S-System on shaft with external thread
- I for clockwise and counterclockwise rotation
- I indicate shaft design when placing an order
- I at least two separate tool/ flange assemblies should be used per clamping element (reduced downtimes)
- I sense of rotation see drawing

Ø D	Ø d1	L2	L	L1	ldent-No. [L]	Ident-No. [R]
157	30	17,4	10.8	43.4	167465	167464
[mm]	[mm]	[mm]	[mm]	[mm]		

997370

Mounting Flanges for Clamping System Ø 160 mm - tools with bore d=80 mm

Product



Machine / Application

I for mounting of heavy tools with bore Ø 80 mm with 4 countersunk holes M 8, TK Ø 130 mm Design

Advantages

Motos

- I for S-System on shaft with external thread
- I for clockwise and counterclockwise rotation
- I indicate shaft design when placing an order
- I at least two separate tool/ flange assemblies should be used per clamping element (reduced downtimes)
- I sense of rotation see drawing

Ø D	Ø d1	L2	L	L1	ldent-No. [L]	Ident-No. [R]
157	80	18	11.8	45	168399	168398
[mm]	[mm]	[mm]	[mm]	[mm]		





Zeroplan Clamping Systems Ø 160 mm

Product



5

Drawing

Machine / Application

Covers (IMA)

Engineers Wrenches

- double end tenoners through feed machines
- for mounting of tools with bore and for combination with mounting flanges Ø 160 mm

I n max = 7,200 min-1

Advantages

- I high runout accuracy almost as good as on hydro motors, now available for standard-motor shafts d = 35
- I distinct increase of edge life and quality thanks to precise run-out- I operational pressure 6 bar adjustment
- I consistent runout accuracy after each tool change
- I minimization of setup-times thanks to easy and quick tool change
- I maintenance-free and protected from dust

- I for clockwise and counterclockwise rotation
- I for changing the tools the pneumatic part Ident-No. 058250 is necessary

997370

985720

180656 o

171060 o

Ø D	Ød	Ø d1	L2	L1	DKN			Ident-No.
160	35	60	17,5	95	10x4	Homag		180654
160	35	60	17,5	102	10x4	IMA		180655
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			
Spare parts					Dimension		Class-No.	Ident-No.

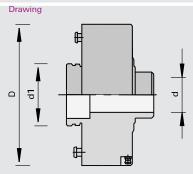
45x25x35 DKN

[mm]

SW10/13 DIN 895

Clamping Systems Ø 192 mm

Product



Machine / Application

double end tenoners

through feed machines

I for mounting of hoggers with Ø 250 mm

Docian

I n max = 7,200 min-1

Advantages

- I excellent balance quality
- I long tool life thanks to hardened tool mounting area
- I consistent runout accuracy after each tool change
- I minimization of setup-times thanks to easy and quick tool change
- I maintenance-free and protected from dust

Votos

- I for clockwise and counterclockwise rotation
- I mounting example (see drawing)
- I indicate machine type and shaft design when placing an order
- I required tool adapters Class-No.
- I operational pressure 6 bar
- I included in delivery: see accessory list

Ø D	Ød	Ø d1	KN	DKN			Ident-No.
192	35	80		10x4	clamping part, spacer ring	IMA, B+G, Hüllhorst	161363 &
192	35	80		10x4	clamping part, spacer ring	B+G (flat nut)	161364 &
192	40	80		12x5	clamping part, spacer ring	B+G, SCM-Stefani	161365 &
192	35	80		10x4	clamping part, spacer ring	Celaschi	161366 &
192	35	80		10x4	clamping part, spacer ring, cover disk	Danckaert	161367 &
192	40	80	10x4		clamping part, spacer ring	Gabbiani	161257 &
192	35	80		10x4	clamping part, spacer ring	Festo	161256 &
192	35	80		10x4	clamping part, spacer ring, cover disk	Frommia	161258 &
192	35	80		10x4	clamping part	Homag, Lehbrink, Torwegge, SPA, Wilmsmeyer	161259
192	35	80		10x4	clamping part, spacer ring, cover disk	Kuhlmann	161260 &
192	40	80		12x5	clamping part, spacer ring, cover disk	M+S, Schwabedissen	161251 &
192	35	80		10x4	clamping part, cover disk	Raimann	161252 &
192	30	80			clamping part	SPA	161253 s
[mm]	[mm]	[mm]	[mm]	[mm]	·		

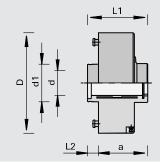


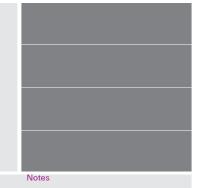


Hydro Clamping System Ø 160 mm - hoggers



Drawing





Machine / Application

I for mounting of tools with bore

- I hardened tool mounting area I n max = 9,000 min-1 I closed hydraulic expansion
- ping zone for tight-tolerance fit on the motor shaft

Advantages

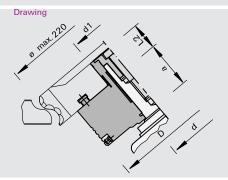
- I high cutting quality thanks to distinctly increased runout accuracy and concentricity clamping chuck with one clam- I consistent runout accuracy after each tool change
 - I minimization of setup-times thanks to easy and quick tool change
 - I maintenance-free
- I for clockwise and counterclockwise rotation
- I specifically designed for high-precision motors with hexagonal spindle base
- I for changing the tools the pneumatic part Ident-No. 058250 is necessary
- I operational pressure 6 bar
- I included in delivery: hydro quick-clamping system incl. Screwdrivers

Ø D	Ød	Ø d1	L2	L1	a			Ident-No.
160	40	60	17,5	96	78.5	Hoggers		172677
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			
Spare parts							Class-No.	ldent-No.
Covers wit	th O-Rings						997300	172679
Head Cap	Screws						995111	184251
pneumatio	hose						994200	058250
Screwdrive	ers						985730	167817
Cranked W	rench Keys						985730	177106



Hydro Clamping System Ø 160 mm - cutters

Product



Machine / Application

I for mounting of tools with bore

Design

- I hardened tool mounting area I n max = 9,000 min-1
- I closed hydraulic system with two clamping zones
- I clamping zone 1: for tighttolerance fit on the motor shaft (runout)
- I clamping zone 2: for tighttolerance fit of milling tools on the clamping element (concentricity)

Advantages

- I high cutting quality thanks to distinctly increased runout accuracy and concentricity
 I consistent runout accuracy after
- each tool change
 I minimization of setup-times
 thanks to easy and quick tool
 change
- I maintenance-free

Notes

- I for clockwise and counterclockwise rotation
- I specifically designed for high-precision motors with hexagonal spindle base
- I for changing the tools the pneumatic part Ident-No. 058250 is necessary
- l operational pressure 6 bar
- I included in delivery: hydro quick-clamping system incl. Screwdrivers

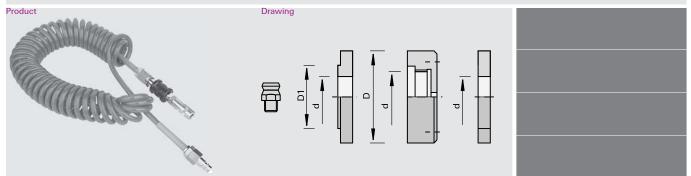
C						Class Na	Island NIa
[mm]	[mm]	[mm]	[mm]	[mm]			
160	40	60	35	53	milling tools		176829
Ø D	Ød	Ø d1	L2	а			Ident-No.

Spare parts	Class-No.	ldent-No.
Covers with O-Rings	997300	172679
Head Cap Screws	995111	184251
pneumatic hose	994200	058250
Screwdrivers	985730	167817
Cranked Wrench Keys	985730	177106





Accessories for Quick-Clamping Systems



Machine / Application

I for engaging or releasing the

LEUCO quick-clamping systems

Design

Advantages

Notes

- I anti-twist bolt Ident-No. 160875 for mounting
 I ring Ident-No. 170363 is required for L = 68 mm if no centering adapter is used
 I nut Ident-No. 170364 is required for IMA machines with short shaft
 I the pneumatic hose is required to change the
- I the pneumatic hose is required to change the tools; must be ordered separately before first delivery of clamping systems

					Class-No.	Ident-No.	
hydraulic connector R 1/8" (old design) 994400							
hydraulic connector M	994400	180084					
fitting	997800	161289					
pneumatic hose comp	lete				994200	058250	
Spare parts	For S-Sytem Ø D/d	Ø D	Ø D1	Ød	Class-No.	Ident-No.	
Covers	110/140/160/30	40	30	17	997370	181802	
Covers	110/35	40	35	17	997370	162602	
Covers	140/160/35	45	35	22	997370	180082	
Covers	140/160/40	48	40	22	997370	180121	
Special Nuts	140/160/35	58		M30 x 1,5	995290	170364	
Spacers	140/160/35	70		35	955520	170363	
Bolts	110/140/160			10x120	995322	160875	
		[mm]	[mm]	[mm]			



120

120

[mm]

40

40

[mm]

60

60

[mm]

68

68

[mm]

96

96

[mm]

20

20

[mm]

Hydro Clamping Bushings with hexagonal adapter bottom- tools with bore

Product	Drawing		
	D 01	L1 L2 a	
Machine / Application	Design	Advantages	Notes
I for mounting of tools with b	ore I hardened tool mounting are I Ident-No. 172678 with one clamping zone I Ident-No. 182103 with two clamping zones and for use with adjustment unit I closed hydraulic expansion clamping chuck for tight- tolerance fit on the motor sl	milling and hogging I maintenance-free and inured to dirt	I for clockwise and counter- clockwise rotation I specifically designed for high-precision motors with hexagonal spindle base I included in delivery: hydro clamping bushing without screwdrivers
Ø D Ø d Ø d1	L2 L1 a	NL	Ident-No.

Spare parts		Class-No.	ldent-No.
Covers with O-Rings	for axial locking or bores 40 mm	997300	172679
Head Cap Screws	M14x60 DIN 6912 for 172679	995111	184251
Screwdrivers	SW6 for hydro pressure build-up	985730	167817
Cranked Wrench Keys	SW12 DIN 6911	985730	177106
Spacers	119,5x51x60 NL	955520	179471

4/M8/100

4/M8/100



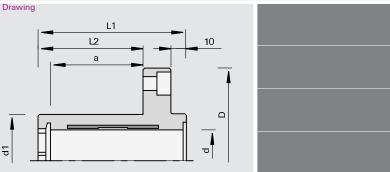
172678

182103



Hydro Clamping Bushings with hexagonal adapter top-tools with bore

Product



Machine / Application

I for mounting of tools with bore and for combination with Postforming radius panel raising cutters und LEUCODIA CompactTec hoggers

- I hardened tool mounting area I with one clamping zone
- I closed hydraulic expansion clamping chuck for tighttolerance fit on the motor shaft

Advantages

- I excellent cutting quality when milling and hogging
- I maintenance-free

- I for clockwise and counterclockwise rotation
- I specifically designed for high-precision motors with hexagonal spindle base
- I included in delivery: Hydro Clamping Bushing incl. screwdriver SW 6

ØD	Ød	Ø d1	L2	L1	a	NL	Ident-No.
120	40	60	68	96	60	4/M8/100	173724
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		

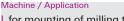
Spare parts		Class-No.	Ident-No.
Covers with O-Rings	for axial locking or bores 40 mm	997300	172679
Head Cap Screws	M14x60 DIN 6912 for 172679	995111	184251
Screwdrivers	SW6 for hydro pressure build-up	985730	167817
Cranked Wrench Keys	SW12 DIN 6911	985730	177106
Spacers	119,5x51x60 NL	955520	179471

933030

Hydro Clamping Bushings - tools with bore progressively adjustable

Drawing





for mounting of milling tools with progressive adjustment of the cutting width

Design

- I hardened tool mounting area I with one clamping zone
- I closed hydraulic expansion clamping chuck for tighttolerance fit on the motor shaft

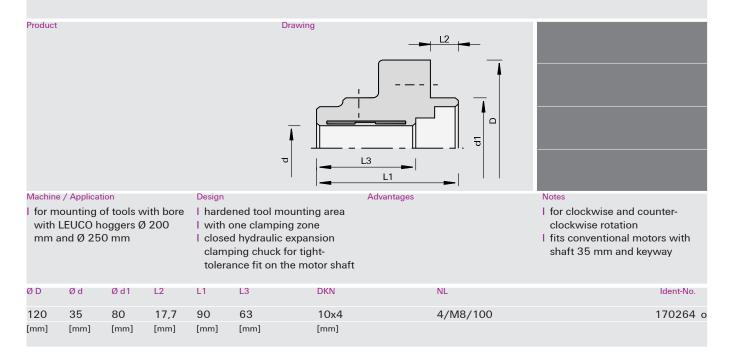
۱1

Advantages

- I excellent cutting quality when
- I maintenance-free
- - I for clockwise and counterclockwise rotation
 - I specifically designed for high-precision motors with hexagonal spindle base

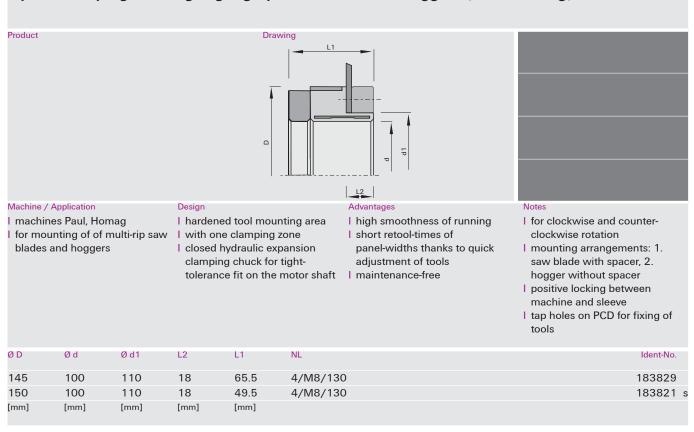
טש	Ø D2	Юu	bui	LZ	LI	L3	NL	ident-No.
120	50	40	60	39	101	44	4/M8/100	180181
[mm]								

Hydro Clamping Bushings - hoggers



933030

Hydro Clamping Bushings - gang-rip saw blades and hoggers (Paul, Homag)





Mounting Flanges - scoring saw blades (Homag, Brandt, IMA)



double end tenoners

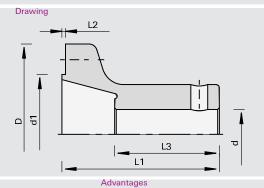
Homag, Brandt, IMA

blades

edge banding machines

for mounting of HW scoring

saw blades and DP scoring saw



Design



I mating and seating surfaces ground

Notes

- I for clockwise and counterclockwise rotation
- I for DP circular saw blades the cylindrical head screw Ident-No. 001869 is necessary (to be ordered separately)
- I countersink screw included in delivery

										delivery	
ØD	Ød	Ø d1	L2	L1	L3		DKN		NL		Ident-No.
109	30	65	2,2	95	63		8x4		6/M5/90		006480
109	35	65	2,2	95	63		10x3,3		6/M5/90		182128
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[mm]				
Spare pa	rts					ØD	Ø D1	Ød		Class-No.	Ident-No.
Covers						40	30	17		997370	181802
Counte Screws	rsunk Fla	t Headed	for mou	ınting of	saw blad	е				995122	180007
Head Cap Screws for mounting of DP saw blades								995111	001869		
						[mm]	[mm]	[mm]			



Attachment Sleeves and Flanges - grooving saw blades, scoring saw blades, clipping saw blades and hoggers

Drawing





Machine / Application

for mounting of grooving saw blades, scoring saw blades, clipping saw blades and hoggers

Design

Advantages

- I for clockwise and counterclockwise rotation
- I 1 = hogger sleeve
- 1 2 = flange
- I for horizontally tilted motor when working in small distance to chain track

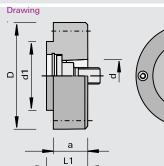
Ø D	Ød	Ø d1	L2	L1	DKN	NL		Ident-No.
115	30	80	17,7	96	8x3	8/M8/100		006309
115	35	60	17,7	90	10x4	8/M8/100		180062
115	35	80	17,7	90	10x4	8/M8/100		055997
115	40	60	17,7	90	12x5	8/M8/100		180120
115	40	80	17,7	96	12x5	8/M8/100		006308
145	35	110	17	89.4	10x4	4/M8/130		189750 s
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			
Flange			ØD	В	Ød	Ø NL	Class-No.	Ident-No.
			137	80	15	6/M5/105	997300	819300 s
			[mm]	[mm]	[mm]			

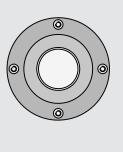


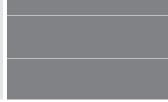
Mounting Flanges - clipping saw blades (Homag, IMA)











Machine / Application

- edge banding machines Homag, IMA
- for mounting of clipping saw blades

I machine interface HSK 25R

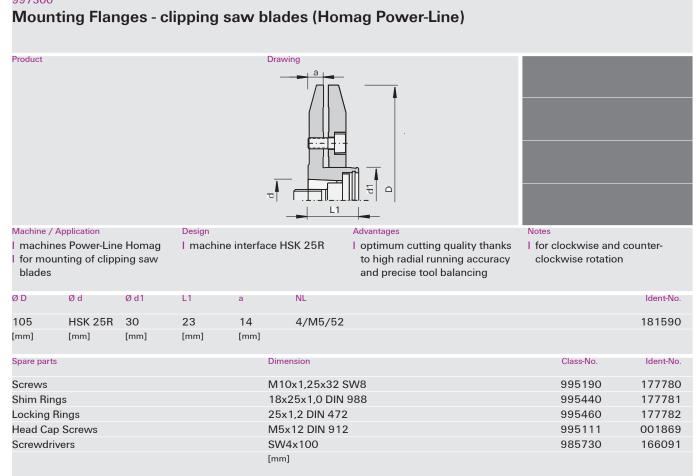
I optimum cutting quality thanks to high radial running accuracy and precise tool balancing

- I for clockwise and counterclockwise rotation
- I countersunk screw and screwdrivers are not included in delivery

ØD	Ød	Ø d1	L1	а	NL	ldent-No.
55	HSK 25R	34	22	20	4/M4/44+4/M5/42	179025
62	HSK 25R	40	24	20	4/M5/52	177788
66	HSK 25R	40	24	15	4/M5/52	183817
[mm]	[mm]	[mm]	[mm]	[mm]		



Spare parts	Dimension	Class-No.	Ident-No.
Screws	M10x1,25x32 SW8	995190	177780
Shim Rings	18x25x1,0 DIN 988	995440	177781
Locking Rings	25x1,2 DIN 472	995460	177782
Countersunk Flat Headed Screws	M5x10 T20	995125	171236
Screwdrivers	T20x100	985730	166092
	[mm]		





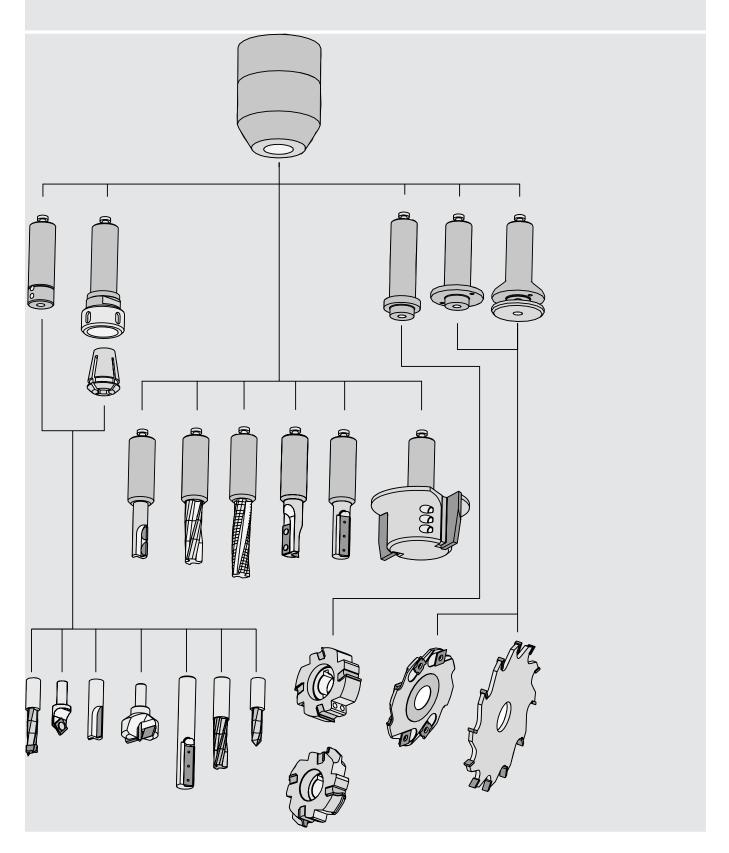
Hydro Clamping Bushings - tools with bore on spindle 30 mm

Product Drawing L1 L2 Machine / Application Advantages for Homag and IMA jointing I hardened tool mounting area I reduced machine downtimes I for clockwise and counteraggregat with spindle 30 mm I with one clamping zone thanks to axial impressurement clockwise rotation and hexagon adapter axial impressurement I excellent cutting quality when I specifically designed for high-precision motors with for mounting of tools with bore I closed hydraulic expansion milling and hogging clamping chuck for tight-I maintenance-free hexagonal spindle base tolerance fit on the 30 mm I included in delivery: hydro motor shaft clamping bushing without screwdrivers Ød Ød1 L2 L1 NL Ident-No. 30 70 70,5 86 6/M6/58 184310 [mm] [mm] [mm] [mm] Spare parts Class-No. Ident-No. Covers with O-Rings for axial locking or bores 30 mm 997300 184317 Head Cap Screws M10x50 DIN EN ISO 4762 for 184317 995111 001909 Screwdrivers SW4 for hydro pressure build-up 985730 166091 Cranked Wrench Keys **SW8 DIN ISO 2936** 985730 009677





Chart Tool Holders machine interface PS 2000-E



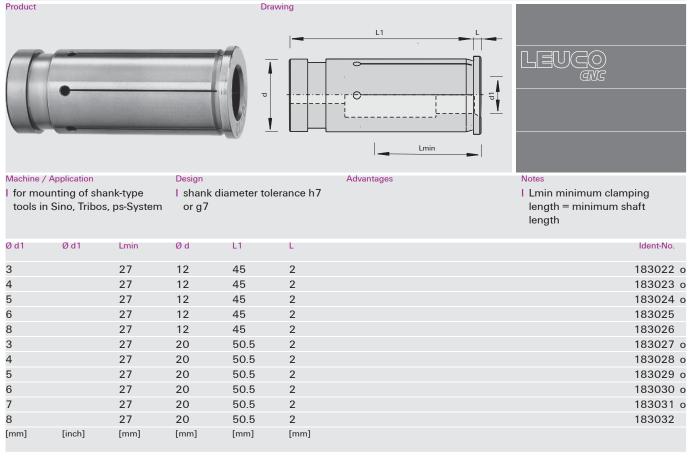


Hydro Clamping Chucks - tool directly attached by screws



933280

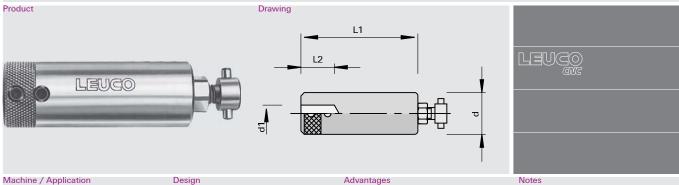
Universal Reducing Bushings





Ø d1	Ø d1	Lmin	Ød	L1	L	Ident-No.
9		27	20	50.5	2	183033 o
10		32	20	50.5	2	183034
11		37	20	50.5	2	183035 o
12		37	20	50.5	2	183036
13		37	20	50.5	2	183037 o
14		37	20	50.5	2	183038 o
15		38	20	50.5	2	183039 o
16		38	20	50.5	2	183040
17		38	20	50.5	2	183041 o
6		27	25	54.5	3	182304
8		27	25	54.5	3	182305
10		32	25	54.5	3	182306
12		37	25	54.5	3	182307
14		37	25	54.5	3	182308
16		38	25	54.5	3	182309
18		38	25	54.5	3	182310
20		42	25	54.5	3	182311
	1/2	37	25	54.5	3	182653
	5/8	38	25	54.5	3	182654 o
	3/4	42	25	54.5	3	182655
[mm]	[inch]	[mm]	[mm]	[mm]	[mm]	

Adapters with cylindrical shank - shank-type tools



I for mounting of shank-type tools in PS 2000-E for shank

diameter 6 - 12 mm

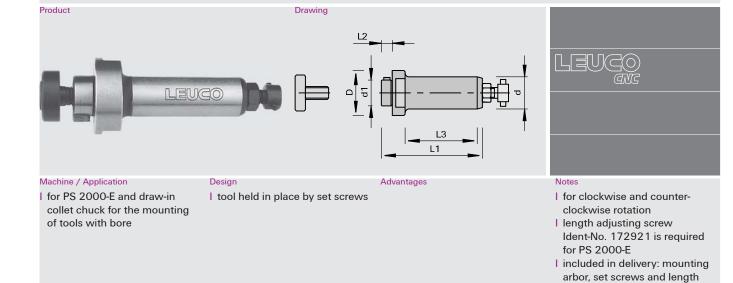
Advantages

- I the tool shanks must feature a flat clamping area
- I length adjusting screw Ident-No. 172921 is required for PS 2000-E
- I with length adjusting screw for ps-System Ø 16 mm Ident-No. 172115, Ø 25 mm Ident-No. 172113

Ød	Ø d1	L2	L1	Ident-No.
16	6,35	20	61	172112
16	8	20	61	172117
16	9,5	20	61	172118
16	10	20	61	172119
25	6	20	70	172103
25	8	20	70	172104
25	9,5	20	70	172105
25	10	20	70	172101
25	12	20	70	172102
[mm]	[mm]	[mm]	[mm]	



Adapters with cylindrical shank - tools with bore



Ø D	Ød	Ø d1	L2	L1	L3	Ident-No.	
35	16	20	8,5	68	43	171389 d)
35	25	20	8,5	78.5	55	171391 d)
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		

Spare parts	Dimension	Class-No. Ident-N	0.
Cutter Retaining Bolts	Ø20xM8x23	995190 17139	3
Cutter Retaining Bolts	Ø28xM10x26	995190 17139	2
Engineers Wrenches	24x27 DIN 3110	985730 00919	3 о
	[mm]		

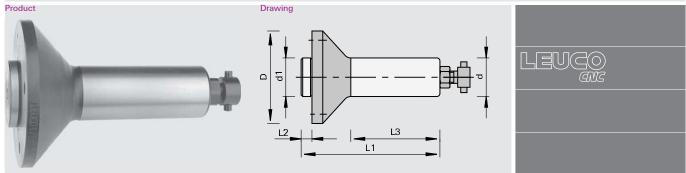


adjusting screw for ps-System for shank Ø 16 Ident-No. 172115, shank Ø 25 Ident-

No. 172113



Adapters with cylindrical shank - saw blades, grooving cutters and cutters



Machine / Application

I for PS 2000-E and draw-in collet chuck for the mounting of tools with bore

Design

I tool attached and secured against rotation with screws

Advantages

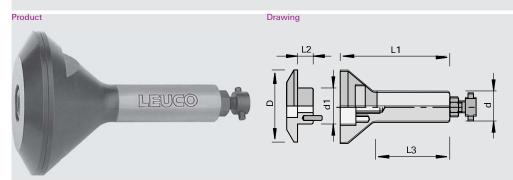
Notes

- I for clockwise and counterclockwise rotation
- I length adjusting screw Ident-No. 172921 is required for PS 2000-E
- I clamping length L2 = 30 and 36 mm for single- and multipiece cutters and cutterheads
- I clamping length L2 = 4 and 5 mm for circular saw blades and grooving cutters
- I included in delivery: mounting arbor and PS length adjusting screw for shank Ø 25 Ident-No. 172113

Ø D	Ød	Ø d1	L2	L1	L3	NL		Ident-No.
50	16	22	4	68	45	4/M5/34 + 4/M4/36		184277
50	25	22	4	92	60	4/M5/34 + 4/M4/36		184276
60	16	30	4	80	60	4/M6/48	Lamello Clamex P	184304
60	25	30	4	90	70	4/M6/48	Lamello Clamex P	184305
60	25	25	30	111	60	6/M6/48		168814 o
60	25	30	36	117	60	6/M6/48		168815
66	25	30	5	92	60	4/M5/48		171386
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			



Adapters with cylindrical shank - saw blades and grooving cutters



Machine / Application

I for PS 2000-E and draw-in collet chuck for mounting of circular saw blades and grooving cutters

Design

I secured against rotation with drive pin

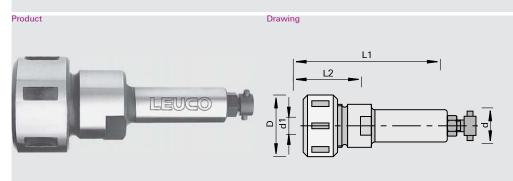
Advantages

- I for clockwise and counterclockwise rotation
- I length adjusting screw Ident-No. 172921 is required for PS 2000-E
- I included in delivery: clamping arbor, clamping flange, cap screw and length adjusting screw for ps-System for shank Ø 16 Ident-No. 172115, shank Ø 25 Ident-No. 172113

Ø D	Ød	Ød1	L2	L1	L3		Ident-No.
60	16	30	8	78	43	for plate thickness max. 6 mm	171394
60	25	30	9	94	55	for plate thickness max. 8 mm	167826
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		

933250

Draw-In Collet Chucks with cylindrical shank





Machine / Application

I for mounting of shank-type tools in PS 2000-E

Design

- I for shank diameter 2-16 mm
- l collet chucks DIN 6388 Type 415E/OZ16
- I lock nut with sleeve bearing

- I for clockwise and counterclockwise rotation
- I length adjusting screw Ident-No. 172921 is required for PS 2000-E
- I included in delivery: collet chuck adapter with nut and length adjusting screw for ps-System for shank Ø 16 Ident-No. 172115, shank Ø 25 Ident-No. 172113

Ø D	Ød	Ø d1	L2	L1	Ident-No.
43	16	2-16	50	95	170181
43	25	2-16	50	105	170182
[mm]	[mm]	[mm]	[mm]	[mm]	

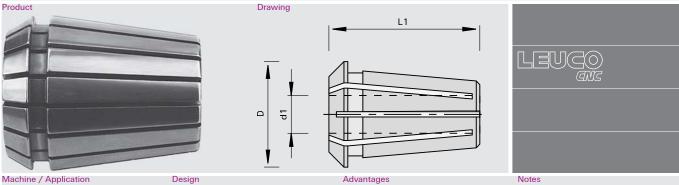
Advantages





Spare parts	Dimension	Class-No.	Ident-No.
Ball-bearing lock nuts	M30x1,5R	995290	178763
Hook Wrenches	SW40/42 DIN 1810	985720	169298
Engineers Wrenches	24x27 DIN 3110	985730	009193 о
	[mm]		

Precision collets - 415E/OZ16



I for use in draw-in collet chucks Type 415E/OZ16

- I slotted from top and bottom
- I clamping tolerance 0.5 mm
- I according to DIN 6388 415E/ OZ16

I for Ident-No. 170181, 170182

Ø D	Ø d1	L1	Ident-No.
25.5	2,5	40	820753 o
25.5	3	40	820754 o
25.5	4	40	820494 o
25.5	4,5	40	830236 o
25.5	5	40	820495 o
25.5	6	40	170779 o
25.5	6,35	40	821421 o
25.5	7	40	829692 o
25.5	8	40	170780
25.5	9	40	825190 o
25.5	9,5	40	168739 o
25.5	10	40	170781
25.5	12	40	168740
25.5	12,7	40	830156 o
25.5	13	40	821221 o
25.5	16	40	168741
[mm]	[mm]	[mm]	



StarterKit for Weeke BHX series



I for use in hydro expansion chuck on WEEKE BHX machines, expecially BHX 050/055 series

for tools with shank diameter up to 1-16 mm

Design

I adapters with high-precision collet chucks, especially adapted to the hydro clamping system of the BHX milling spindle

I with internal lock nut

Advantages

- I flexible, quick clamping I low building height
- I individual tool pre-setting outside of the machine is possible
- I time saving tool changes

I for Weeke BHX machines grooving cutters HW "g5-System" are also available

		Ident-No.
StarterKit SET1	[d]+[f] 3 clamping adapter incl. lock nuts [e] 3 collet chucks (8, 10, 12 mm) [c] 1 mounting device [a] 1 hook wrench [g] 1 wrench	184359 o
StarterKit SET2	[d]+[f] 5 clamping adapter incl. lock nuts [e] 5 collet chucks (6, 8, 10, 12, 16 mm) [c] 1 mounting device [a] 1 hook wrench [b] 1 wrench socket	184360 o

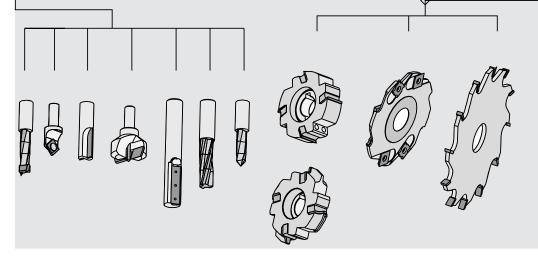
Spare parts	Content StarterKit	Class-No.	Ident-No.
[f]+[d] clamping adapter D25x16 mm incl. lock nut	For all	933250	184362 o
[c] mounting devices	For all	985202	184363 o
[a] hook wrench D25 L=200	For all	985720	184364 o
[g] wrench D30 SW27 H20	184359	985720	184365 o
[b] wrench socket D30 SW22 H96	184360	985720	184366 o
[e] collet chucks 411E D=6	184360	933280	184372 o
[e] collet chucks 411E D=8	For all	933280	184373 o
[e] collet chucks 411E D=10	For all	933280	184374 o
[e] collet chucks 411E D=12	For all	933280	184375 o
[e] collet chucks 411E D=16	184360	933280	184376 o

Class-No.	Ident-No.
933280	184367 o
933280	184368 o
933280	184369 o
933280	184370 o
933280	184371 o
933280	184372 o
933280	184376 o
985720	184377 o
995290	184378 o
	933280 933280 933280 933280 933280 933280 933280 933280





Clamping Systems with SK and BT shank for shank-type tools Chart Tool Holders machine interface SK- and BT-Mounting



Hydro Clamping Chucks PS 2000-E - tool changer

Product Drawing L2 a L1

Machine / Application

I CNC machining centers with automatic tool changer I for precise clamping of shanktype tools with cylindrical shank

Design

- I n max = 25,000 min -1
 I quick-release taper BT 30 and quick-release taper BT 35 with retaining bolt according to standard MAS 403
- I quick-release taper SK 30 according to ISO 7388-3 (without retaining bolt - must be ordered separately)
- I quick-release taper SK 30 and SK 40 according to DIN 69871A (with retaining bolt)

Advantages

- I minimization of setup-times thanks to easy and quick tool change
- I high cutting quality and long edge lives thanks to high concentricity



I for clockwise and counterclockwise rotation

LEUGO

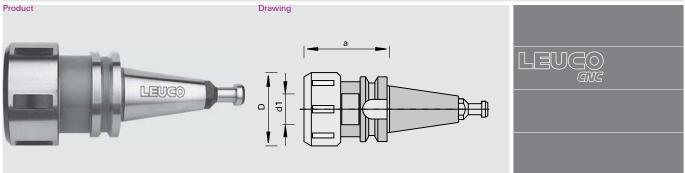
ØD	Ø d	Ø d1	L2	L1	a	Weight		Ident-No.
70	SK 30 (ISC))25	55	111	63	1.1	CMS	173774
70	SK 30 (DIN)	25	55	111	63	1.1	IMA, Maka, Biesse, Reichenbacher, Weeke	173754
70	SK 40 (DIN)	25	55	128	60	1.39	IMA, Maka, Reichenbacher, Stegherr	173756
70	BT 35	25	55	120	63	1.25	Heian	175796
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]		

Retaining Bolts		Mach.	Class-No.	Ident-No.
for SK 30	DIN 69872 A	IMA, Maka, Reichenbacher, Weeke	997870	169293
for SK 40	DIN 69872 A	IMA, Reichenbacher, Stegherr	997870	169294
for SK 30	ISO 7388-3	CMS, Masterwood	997870	177021
for SK 30		Rover old, Biesse up to 08/92	997870	175637
for SK 30		Rover new, Biesse (HSD motor) from 09/92, Masterwood (Colombo motor)	997870	173641
for SK 30	ISO 7388-3	Alberti	997870	177020
for BT 35	PT 35T-2	Heian	997870	176103





Draw-In Collet Chucks with SK shank



Machine / Application

I CNC machining centers with automatic tool changer for clamping of shank-type tools with cylindrical shank

Design

[mm]

Single-Head Engineers Wrenches SW41 DIN 894

- I quick-release taper according to DIN 69871 resp. ISO 7388-3 (without dog and locating grooves)
- I quick-release taper according to Japanese standard MAS -403 (for Ident-No. 176102)
- I lock nut with sleeve bearing (except for Ident-No. 177304 with ball bearing)

Advantages

- I minimization of setup-times thanks to easy and quick tool
- I high cutting quality and long edge lives thanks to high concentricity

Notes

- I for clockwise and counterclockwise rotation
- I included in delivery:collet chuck, clamping nut and retaining bolt

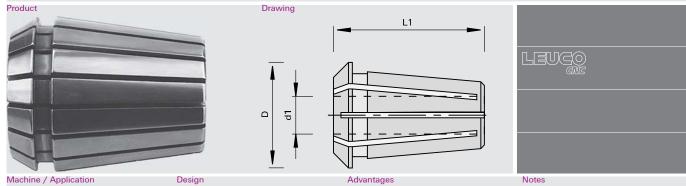
985720

169297

Ø D	Ød	Norm number	Ø d1	a				Ident-No.
43	SK 30 (DIN)	415E/ OZ16	2-16	55	SW 41	Weeke		177304 o
60	SK 30 (DIN)	462E/ OZ25	2-25	70	SW 41	IMA, Maka, Reichenba	acher	173794
50	SK 30 (ISO)	470E/ ER32	2-20	58	SW 41	CMS		180360 o
60	SK 40 (DIN)	462E/ OZ25	2-25	70	SW 46	IMA, Maka, Stegherr, cher	Reichenba-	173795
60	BT 35	462E/ OZ25	2-25	70	SW 41	Heian		176102
[mm]	[mm]		[mm]	[mm]				
Spare parts							Class-No.	Ident-No.
Ball-bearin	ig lock nuts	M30x1,5R			for Ø D = 43		995290	178763
Lock Nut v	with sleeve bearing	M48x2R		for Ø D = 60		995290	178764	
Retention	knobs	DIN 69872 A			for SK 30		997870	169293
Retention knobs		DIN 69872 B		for SK 40		997870	179339	
Retention knobs		ISO 7388-	3		for SK 30		997870	177021
Retention knobs		PT 35T-2			for BT 35		997870	176103
Hook Wrenches		SW58/62	DIN 1810		for Ø D = 60		985720	169299
Hook Wre	nches	SW40/42 DIN 1810		for Ø D = 43		985720	169298	
Single-Head Engineers Wrenches		SW46x10	DIN 894				985720	178760



Precision collets - 462E/OZ25



I for use in draw-in collet chuck Type 462E/OZ25

- I clamping tolerance 0.5 mm l according to DIN 6388 Type 462E/OZ25

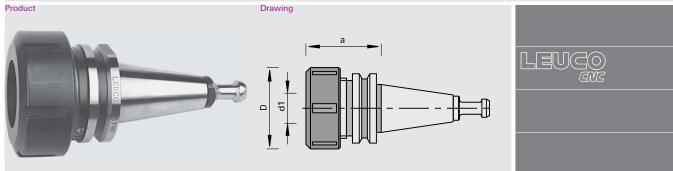
I	optimum transmission of
	clamping force thanks to 12
	slots from top and bottom

Ø d1	Ø d1	ØD	L1	Ident-No.
2		35.05	52	183803 о
3		35.05	52	183804
4		35.05	52	183805
5		35.05	52	183806
6		35.05	52	180213
	1/4	35.05	52	175815
7		35.05	52	183807 о
8		35.05	52	180358
9,5		35.05	52	175817
	3/8	35.05	52	185275
10		35.05	52	170782
12		35.05	52	168742
	1/2	35.05	52	175820
13		35.05	52	180215
14		35.05	52	170783
	5/8	35.05	52	175823
15		35.05	52	183808 o
16		35.05	52	168743
18		35.05	52	180216
	3/4	35.05	52	175826
20		35.05	52	168744
25		35.05	52	168745
[mm]	[inch]	[mm]	[mm]	





Draw-In Collet Chucks with SK shank - Biesse, CMS



Machine / Application

CNC machining centers with automatic tool changer for clamping of shank-type tools with cylindrical shank

Design

I quick-release taper according to DIN 69871 and ISO (without dog and locating grooves) I lock nut with sleeve bearing

Advantages

- I minimization of setup-times thanks to easy and quick tool change
- I high cutting quality and long edge lives thanks to high concentricity

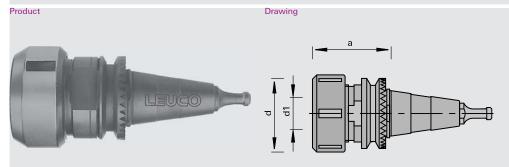
Notes

- I for clockwise and counterclockwise rotation
- I collet chucks according to Type 470E/ER32 Ø 2..20 mm
- I collet chucks according to Type 472E/ER40 Ø 4..25 mm
- I included in delivery:collet chuck, clamping nut and retaining bolt

					'	otaning bon	
Ø D	Ø d	Ø d1	а	Туре			Ident-No.
50	SK 30 (DIN)	2-20	50	470E/ER32	Biesse		173639
63	SK 30 (DIN)	4-25	57	472E/ER40	Biesse		175790
63	SK 30 (ISO)	4-25	64	472E/ER40	CMS		180361
[mm]	[mm]	[mm]	[mm]				
Spare part	S	Dimension				Class-No.	Ident-No.
Lock Nu	ts	M40x1,5R		for Ø D =	50	995290	178761
Lock Nu	ts with sleeve bearing	M50x1,5R		for Ø D =	for Ø D = 63		178762 o
Retentio	n knobs			HSD mot	or for Biesse as from 09/92	997870	173641
Retentio	n Knobs			for Biesse	for Biesse up to 08/92		175637
Retentio	n knobs	ISO 7388-3		for SK 30		997870	177021
Hook Wi	renches	SW45/50 D	IN 1810	for Ø D =	50	985720	175851
Hook Wrenches		SW58/62 DIN 1810		for Ø D =	for Ø D = 63		169299
		[mm]					



Draw-In Collet Chucks with SK shank with ring gear





Machine / Application

I CNC machining centers with automatic tool changer I for clamping of shank-type tools with cylindrical shank

Design

[mm]

- I quick-release taper according to SK 30 with ring gear
- I lock nut with sleeve bearing

Advantages

- I minimization of setup-times thanks to easy and quick tool change
- I high cutting quality and long edge lives thanks to high concentricity

lotes

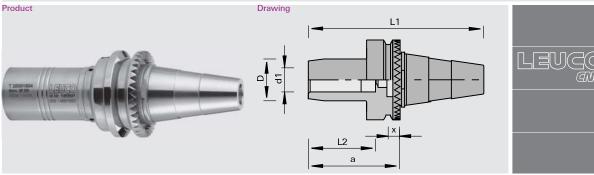
- I for clockwise and counterclockwise rotation
- I replaceble retaining bolt
- I collet chucks according to Type 462E/OZ25 Ø 4..25 mm
- I collet chucks according to Type 470E/ER32 Ø 2..20 mm
- I included in delivery:collet chuck, clamping nut and retaining bolt

Ø D	Ød	Ø d1	a	Туре			ldent-No.
50	SK 30	2-20	55	470E/ ER32	SCM, Morbidelli		173644
60	SK 30	4-25	72	462E/ OZ25	SCM, Morbidelli		175792
[mm]	[mm]	[mm]	[mm]				
Spare parts			Dimension			Class-No.	Ident-No.
Lock Nuts M4			M40x1,5F	}	for Ø D = 50	995290	178761
Lock Nut v	vith sleeve l	pearing	M48x2R		for Ø D = 60	995290	178764





Tribos Pressure Shrinking Chucks with SK shank



Machine / Application

I CNC machining centers with automatic tool changer I for precise clamping of shanktype tools with cylindrical shank

Design

- I quick-release taper according to SK 30 with ring gear I n max = 40,000 min-1
- Advantages
- I low weight is easy on machine bearing
- I suitable for high RPM 's
- I optimum chip extraction thanks to slim design
- I increased process safety, long edge lives and high machining quality thanks to very high concentricity and repeating accuracy (< 0.003 mm)

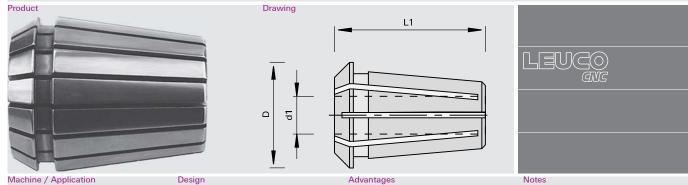
Notes

- I for clockwise and counterclockwise rotation
- I different diameters upon request
- I allowed projection:
- I clamping of the tools by means of the clamping device
- I can also be done at LEUCO upon request
- I delivery without retaining bolts; please choose retaining bolts according to the machine (see page with retaining bolts)

								machine (see page retaining bolts)	with
Ø d1	L2	Ød	ØD	L1	a	Х	Weight		Ident-No.
20	52	SK 30	30	127.85	80	10	0.7		180897
25	55	SK 30	35	127.85	80	10	0.7		180898
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]		
Spare parts								Class-No.	Ident-No.
Mounting	Devices (m	ianual)						985201	180261
Mounting	Devices (au	utomatic)						985201	181159 o
Adjustmer	nt Inserts			for	Ø d = 20			955530	180264
Adjustment Inserts					Ø d = 25		955530	180711	
Length adjusting device Tribos system					nout interface	e cable	985300	180828 o	
Interface Cables for Adjusting Gauges					RS 232C inte	erface		985300	180829 o



Precision collets - 430E/ER25, 470E/ER32, 472E/ER40



Machine / Application

I for use in draw-in collet chuck Type 430E/ER25, 470E/ER32, I clamping tolerance 1 mm 472E/ER40

- I slotted from top and bottom

- I Type 430E/ER25 Ø 6 16 mm for special chuck
- | Type 470E/ER32 Ø 3 20
- I Type 472E/ER40 Ø 6 25

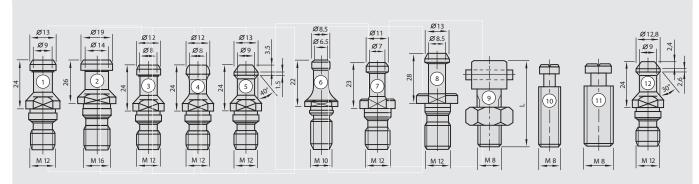
ØD	Ø d1	Ø d1	L1	Туре	Ident-No.
33	3		40	470E/ER32	173647 o
33	4		40	470E/ER32	173648 o
33	5		40	470E/ER32	173649 o
33	6		40	470E/ER32	173650
33	7		40	470E/ER32	173651 o
33	8		40	470E/ER32	173652
33	10		40	470E/ER32	173653
33	12		40	470E/ER32	173654
33	13		40	470E/ER32	173655 o
33	14		40	470E/ER32	173656 o
33	16		40	470E/ER32	173657
33	18		40	470E/ER32	173658 o
33	19		40	470E/ER32	173659 o
33	20		40	470E/ER32	173660
33		1/4	40	470E/ER32	175829
33		1/2	40	470E/ER32	175830
33		5/8	40	470E/ER32	175831 o
33		3/4	40	470E/ER32	175832 o
41	6		46	472E/ER40	180912 o
41	8		46	472E/ER40	180913 o
41	10		46	472E/ER40	180914 o
41	12		46	472E/ER40	175833
41	16		46	472E/ER40	175834
41	18		46	472E/ER40	175835 o
41	20		46	472E/ER40	175836
41	25		46	472E/ER40	175837
41		1/4	46	472E/ER40	175838 o
41		1/2	46	472E/ER40	175839 o
41		5/8	46	472E/ER40	175840 o
41		3/4	46	472E/ER40	175841 o
41		1	46	472E/ER40	175842 o
26	6		34	430E/ER25	181986 o
26	8		34	430E/ER25	181987
26	10		34	430E/ER25	181988
26	12		34	430E/ER25	181989
26	14		34	430E/ER25	181990 o
26	16		34	430E/ER25	181991
	[mm]	[inch]	[mm]		





Retaining Bolts

Product Drawing



Machine / Application

I for use in Hydro clamping chuck PS 2000-E, adapter and draw-in collet chuck with SK + BT-shank

Design

Advantages

I attachment screw for tools with shank diameter 25 mm

	Norm number	Туре		Ident-No.
for SK 30	DIN 69872 A	1	IMA, Maka, Reichenbacher, Weeke	169293
for SK 40 with ventilation	DIN 69872 A	2	IMA, Reichenbacher, Stegherr	169294
for SK 40	DIN 69872 B	2	IMA, Reichenbacher, Stegherr, Maka	179339
for SK 30		3	Rover old, Biesse up to 08/92	175637
for SK 30		4	Rover new, Biesse (HSD motor) from 09/92, Masterwood (Colombo motor)	173641
for SK 30	ISO 7388-3	5	Alberti	177020
for SK 30 (ISO)	ISO 7388-3	12	CMS, Masterwood	177021
Retaining Bolt Ø 8.5 mm		6	Morbidelli, SCM	173646
for BT 30	P 30T-2	7	Shoda	176200
for BT 35	PT 35T-2	8	Heian	176103
for ps-System 25 mm Ident-No. 167738		9	ps-System	172113
for PS-2000 E Ident-No. 173352		10	PS 2000-E	172921
stop screw		11	draw-in collet chuck	172828



AEROTECH SYSTEM with SK30 (DIN) with hydro expansion clamping

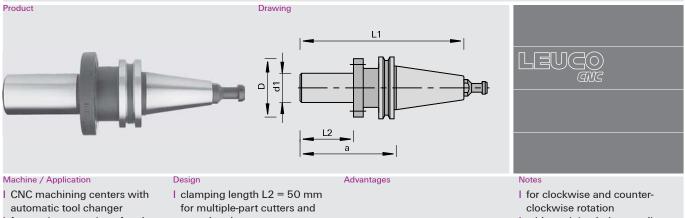
[mm]

Product Drawing L1 Machine / Application Advantages CNC machining centers I monolithic tool clamping I stopping of the chip flow I sufficient vacuum perforfor clamping of shank-type I cooling of the tool system mance is necessary tools and simultaneous chip I 9 wing design for the machi-I reduction of the dust quantity I impressurement via hexagoguide when working ning of particle board, MDF, I reduced efforts for cleaning and nal screwdriver (included in OSB, hard wood etc. for grooving, rabbeting in the maintenance delivery) case of pocket milling and I tool mounting by means of I minimization of setup-times I delivery with retaining bolts hydro expansion clamping for Biesse Ident-No. 173641 dividing cuts as well as for the thanks to easy and quick tool optimization of production technology change with hydro expansion I retaining boltt Ident-No. I balance quality G<2,5 169293 for IMA, Maka, processs e.g. with Nesting clamping applications I high cutting quality and long Reichenbacher and Weeke edge lives thanks to high must be ordered separately concentricity I please observe the I optimum torque transfer information in the Operating Instructions Ød1 Ød Ø D Ident-No. L1 20 SK30 (DIN) 95 143.2 92.2 9 wings 185153 [mm] [mm] [mm] [mm] [mm] Spare parts Dimension Class-No. Ident-No. 166091 Screwdrivers with sliding handle for hexagon socket SW4x100 985730





Adapters with SK shank



Retention knobs

- for precise mounting of tools with bore
- cutterheads
- I quick-release taper according to DIN 69871 (without dog and locating grooves)
- I tool attached and secured against rotation with screws

DIN 69872 B

- I with retaining bolt according to DIN 69872 for SK 30 type A, SK 40 type B
- I machines SK 30: IMA, Maka, Reichenbacher, Weeke
- I machines DK 40: IMA, Maka,

997870

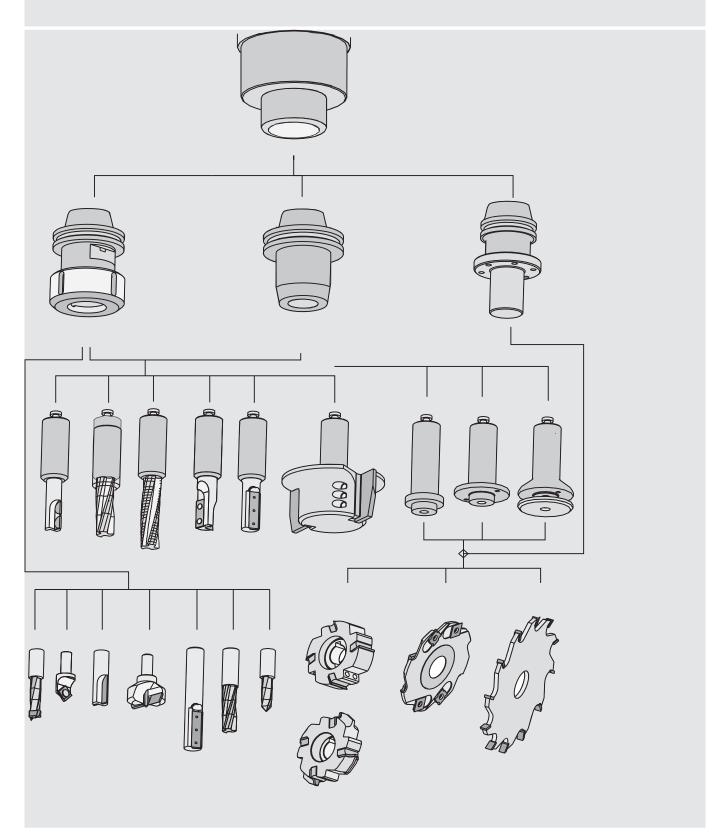
179339

			9				Reichenbacher, Ste	gherr
Ø D	Ød	Ø d1	L2	L1	a	NL		Ident-No.
60	SK 30	25	55	147.8	100	6/M6/48		168800 #
60	SK 30	30	55	147.8	100	2/M6/48+2/6/48		182167 o
60	SK 40	30	55	168.4	100	2/M6/48+2/6/48		182168 o
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			
Spare part	S						Class-No.	Ident-No.
Retention knobs			DIN 698	372 A		for SK 30	997870	169293

for SK 40



Chart Tool Holders machine interface HSK-Mounting

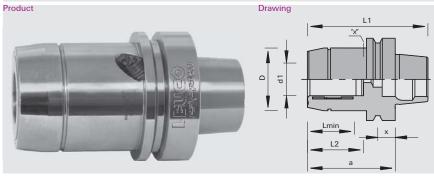








Hydro Clamping Chucks ps-System with HSK 63F shank



Machine / Application

CNC machining centers with automatic tool changer for precise clamping of shanktype tools with cylindrical shank

- I n max = 30,000 min -1
- I interface DIN 69893 HSK 63 F

Advantages

- I minimization of setup-times thanks to easy and quick tool
- I high cutting quality and long edge lives thanks to high concentricity
- I optimum torque transfer



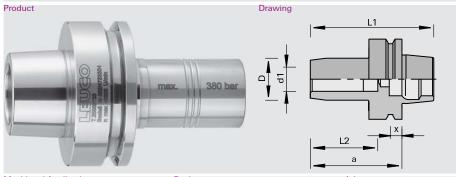
LEUCO

- Notes
- I for right- and lefthand rotation I with bore for installation of
- micro chips for electronic tool detection I x = impressurement by means
- of screwdriver
- I hexagonal screwdriver is not included in delivery
- I Lmin minimum clamping length = minimum shaft length

									,	
Ø d1	Lmin	L2	Ød	Ø D	L1	a	Х	Weight		Ident-No.
10	31	41	HSK 63F	30	105	80	18	1.2		184725
12	36	46	HSK 63F	32	105	80	18	1.16		184306
16	39	49	HSK 63F	38	105	80	18	1.20		184307
20	41	51	HSK 63F	52.5	105	80	18	1.30		184308
25	47	57	HSK 63F	52.5	109	84	18	1.28		184309
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]		
Ø d1	Lmin	L2	Ød	Ø D	L1	a	х	Weight		ldent-No.
3/8	31	41	HSK 63F	30	105	80	18	1.2		184724
1/2	36	47,5	HSK 63F	32	105	80	18	1.2		184726
[inch]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			
Spare parts			Dimension			Suitable for			Class-No.	ldent-No.
Screwdriv	ers		SW4x100			184306, 1	184724, 18	4725, 184726	985730	166091
Screwdriv	ers		SW5x150			184307, 184308, 184309			985730	168703
			[mm]							



Tribos Pressure Shrinking Chucks



Machine / Application

Ød1

L2

Adjustment Inserts

Length adjusting device Tribos system

Interface Cables for Adjusting Gauges

Ød

Ø D

L1

а

for \emptyset d = 25

without interface cable

for RS 232C interface

- CNC machining centers with automatic tool changer
- for precise clamping of shanktype tools with cylindrical shank

I n max = 40,000 min-1

Advantages

- I low weight is easy on machine bearing
- I suitable for high RPM's
- I optimum chip extraction thanks to slim design
- I increased process safety, long edge lives and high machining quality thanks to very high concentricity and repeating accuracy (< 0.003 mm)

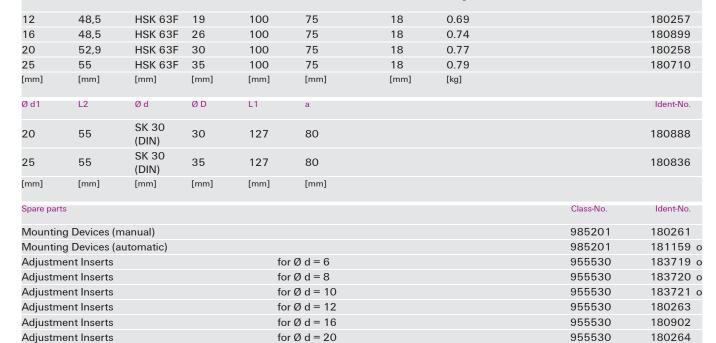
Weight

- I for right- and lefthand rotation I different diameters upon
- I allowed projection: 4 x d1
- I clamping of the tools by means of the clamping device I can also be done at LEUCO
- upon request
- I Tribos chuck with reinforced design especially for heavy roughing can be delivered upon request
- I delivery without retaining bolts; please choose retaining bolts according to the machine (see page with retaining bolts)

955530

985300

985300





Ident-No.

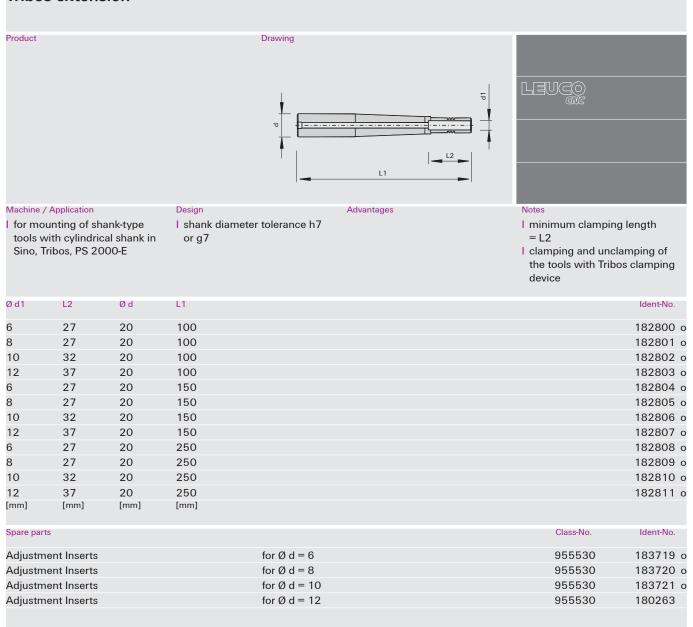


180711

180828 o

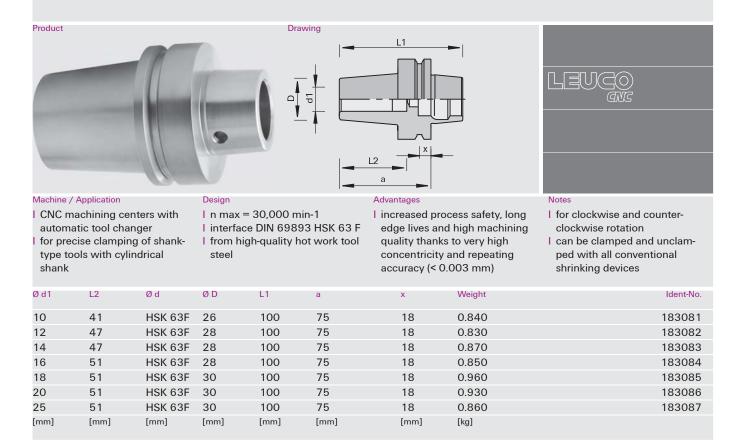
180829 o

Tribos extension



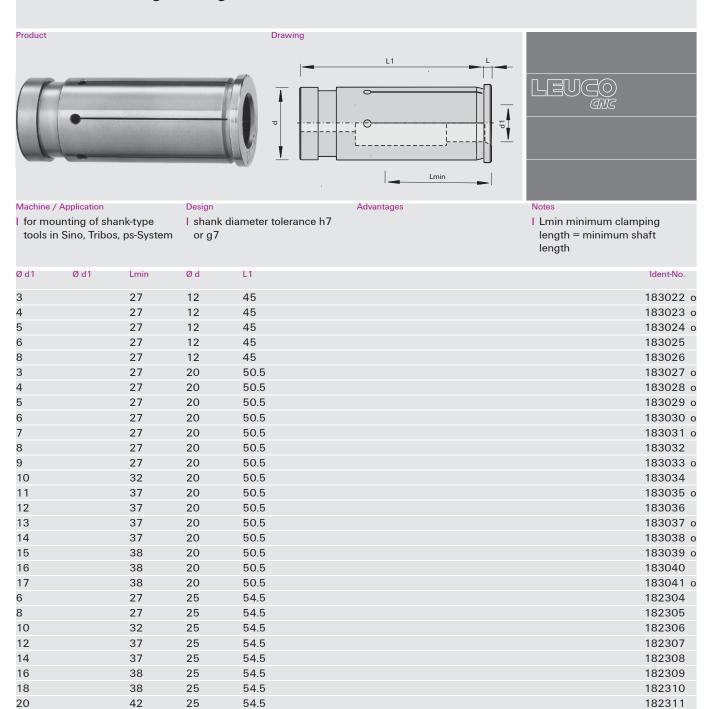


Heat-Shrinking Chucks





Universal Reducing Bushings





1/2

5/8

3/4

[inch]

[mm]

37

38

42

[mm]

25

25

25

[mm]

54.5

54.5

54.5

[mm]

182653

182655

182654 o

Draw-In Collet Chucks with HSK shank

Product Drawing

Machine / Application

CNC machining centers with automatic tool changer for precise clamping of shanktype tools with cylindrical shank

Design

- I interface according to DIN 69893 HSK 50F, HSK 63F and
- I lock nut with sleeve bearing

Advantages

I flexible utilization by collet chucks



- I for right- and lefthand rotation I Ident-No. 175795 for IMA (up to 12/94) similar to DIN 69893
- I Ø d1 = collet chuck diameter 2 - 25 mm
- I collet chucks according to DIN 6388: 1) type 462E/OZ25/ 2) type 472E/ER40
- I included in delivery: collet chuck, clamping nut without spanner wrench
- I attention: different interfaces in case of CMS machines, according to spindle performance (KW)

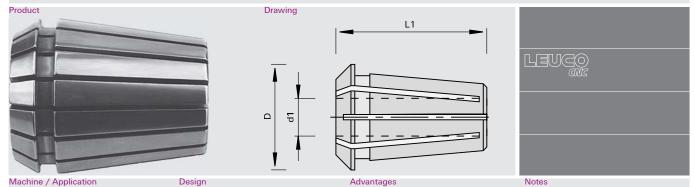
Ø d1	Ød	ØD	L1	a	х	Туре		ldent-No.
2-25	HSK 63F	60	101	76	18	1	Homag, IMA from 01/95, Weeke from 03/98, HOLZ-HER, SCM, CMS (12+15 KW)	173293
2-25	HSK 63E	63	103	78	18	2	CMS (18 KW)	180359 o
2-25	HSK 63F	60	101	76	9	1	IMA up to 12/94	175795
2-25	HSK 63F	60	140	115	18	1	Homag, IMA from 01/95, Weeke from 03/98, HOLZ-HER, CMS (12+15 KW)	179170
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			

Spare parts	Dimension	Class-No.	ldent-No.
Lock Nut with sleeve bearing	M48x2R	995290	178764
Hook Wrenches	SW58/62 DIN 1810	985720	169299
Single-Head Engineers Wrenches	SW46x10 DIN 894	985720	178760
	[mm]		





Precision collets - 462E/OZ25



I for use in draw-in collet chuck Type 462E/OZ25

I clamping tolerance 0.5 mm I according to DIN 6388 Type 462E/OZ25

I optimum transmission of

clamping force thanks to 12 slots from top and bottom

Ø d1	Ø d1	Ø D	L1	Ident-No.
2		35.05	52	183803 o
3		35.05	52	183804
4		35.05	52	183805
5		35.05	52	183806
6		35.05	52	180213
	1/4	35.05	52	175815
7		35.05	52	183807 o
8		35.05	52	180358
9,5		35.05	52	175817
	3/8	35.05	52	185275
10		35.05	52	170782
12		35.05	52	168742
	1/2	35.05	52	175820
13		35.05	52	180215
14		35.05	52	170783
	5/8	35.05	52	175823
15		35.05	52	183808 o
16		35.05	52	168743
18		35.05	52	180216
	3/4	35.05	52	175826
20		35.05	52	168744
25		35.05	52	168745
[mm]	[inch]	[mm]	[mm]	



draw-in collet chuck system 426E/ER16 with HSK 63F - clamping zone Ø 1-10 mm



Machine / Application

- CNC machining centers, especially 5-axis
- I for precise clamping of shanktype tools with cylindrical shank

Design

- I internal collet nut
- I hardened and ground
- I for double-slotted collets
- I with anticorrosive coating
- I n max = 36,000 min-1

Advantages

- I slim design
- I high stability even with large projection
- I high concentric accuracy
- I high clamping force

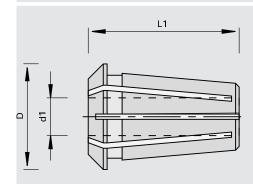
Notes

l also available for left-hand sense of rotation

LEUCO

- I included in delivery: collet chuck with clamping nut, without collet and mounting accessories
- I torques: 426E/ER16: 25 60 Nm (30 - 44 Lbf.ft)

Ø d1	Ø D1	Ød	ØD	L	L1	a	Ident-No.
1-10	29	HSK 63F	63	50	101	76	184847
1-10	29	HSK 63F	63	74	125	100	184848
1-10	29	HSK 63F	63	99	150	125	184849
1-10	29	HSK 63F	63	124	175	150	184850
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	



Collets 426E / ER 16



Ød1 ØD L1 1 17.25 27.5 2 17.25 27.5 3 17.25 27.5 4 17.25 27.5 5 17.25 27.5

6	17.25	27.5	1	184870
7	17.25	27.5	1	184871 o
8	17.25	27.5	1	184872
9	17.25	27.5	1	184873 о
10	17.25	27.5	1	184874
[mm]	[mm]	[mm]		

Ident-No.

184865 o

184866 o

184867 o

184868 o

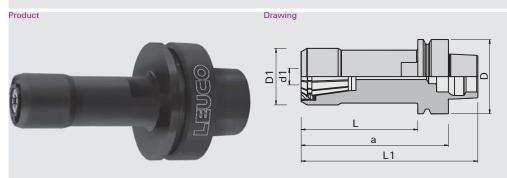
184869 o

Accessories	Class-No.	Ident-No.
[a] Lock Nuts	995290	184875
[b] hand spanner	985720	184878
[c] screw-in aid	985720	184881
[d] torque nut	985720	184884
[e] torque adapter	985300	184887
[f] torque wrench 20-200Nm	985300	184890





draw-in collet chuck system 470E/ER32 with HSK 63F - clamping zone Ø 2-20 mm



Machine / Application

- CNC machining centers, especially 5-axis
- I for precise clamping of shanktype tools with cylindrical shank

Design

- I internal collet nut
- I hardened and ground
- I for double-slotted collets
- I with anticorrosive coating
- I n max = 36,000 min-1

Advantages

- I slim design
- I high stability even with large projection
- I high concentric accuracy
- I high clamping force

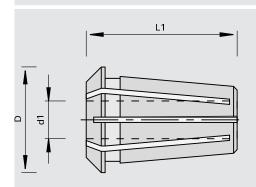
Notes

l also available for left-hand sense of rotation

LEUCO

- I included in delivery: collet chuck with clamping nut, without collet and mounting accessories
- 1 torques: 470E/ER32: 80 130 Nm (70 96 Lbf.ft)

Ø d1	Ø D1	Ød	ØD	L	L1	a	Ident-No.
2-20	48	HSK 63F	63	34	85	60	184851
2-20	48	HSK 63F	63	44	95	70	184852 o
2-20	48	HSK 63F	63	89	140	115	184853
2-20	48	HSK 63F	63	99	150	125	184854
2-20	48	HSK 63F	63	124	175	150	184855 o
2-20	48	HSK 63F	63	154	205	180	184856
2-20	48	HSK 63F	63	174	225	200	184857
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	



Col	lets	47	0F	/ I	FR	32
OUI	1613	T/	\mathbf{v}	, ,		U

Ø d1	Ø D	L1	Ident-No.
3	33	40	173647 o
4	33	40	173648 o
5	33	40	173649 o
6	33	40	173650
7	33	40	173651 o
8	33	40	173652
10	33	40	173653
12	33	40	173654
13	33	40	173655 o
14	33	40	173656 o
16	33	40	173657
18	33	40	173658 o
19	33	40	173659 o
20	33	40	173660
[mm]	[mm]	[mm]	





Accessories	Class-No.	Ident-No.
[a] Lock Nuts	995290	184876
[b] hand spanner	985720	184879
[c] screw-in aid	985720	184882
[d] torque nut	985720	184885
[e] torque adapter	985300	184888
[f] torque wrench 20-200Nm	985300	184890





draw-in collet chuck system 462E/OZ25 with HSK 63F - clamping zone Ø 2-25 (1") mm



Machine / Application

- I CNC machining centers, especially 5-axis
- I for precise clamping of shanktype tools with cylindrical shank

Design

- I internal collet nut
- I hardened and ground
- I for double-slotted collets
- I with anticorrosive coating
- 1 n max = 36,000 min-1

Advantages

- I slim design
- I high stability even with large projection
- I high concentric accuracy
- I high clamping force

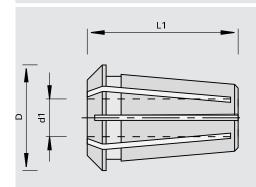
Notes

l also available for left-hand sense of rotation

L=U(<(0)

- I included in delivery: collet chuck with clamping nut, without collet and mounting accessories
- I torques: 462E/OZ25: 100 -150 Nm (75 - 110 Lbf.ft)

Ø d1	Ø D1	Ød	Ø D	L	L1	a	Ident-No.
2-25	51	HSK 63F	63	50	101	76	184858
2-25	51	HSK 63F	63	89	140	115	184860
2-25	51	HSK 63F	63	124	175	150	184861 o
2-25	51	HSK 63F	63	149	200	175	184862 o
2-25	51	HSK 63F	63	174	225	200	184863
2-25	51	HSK 63F	63	199	250	225	184864
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	

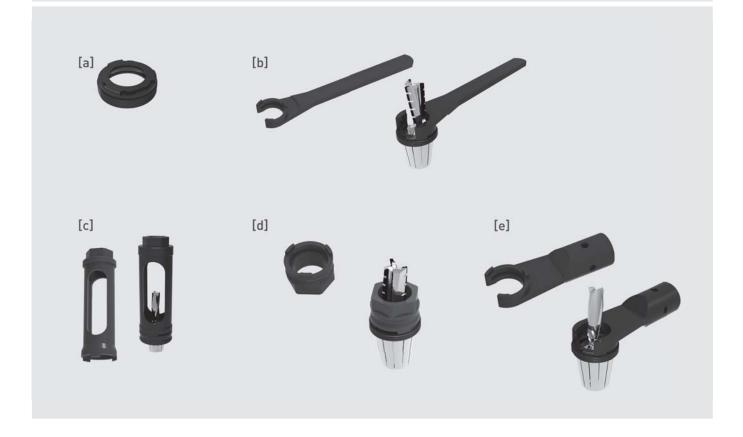


HSK-F63 Collet chucks 462E / OZ 25 /

Ø d1	Ø d1	Ø D	L1	Ident-No.
2		35.05	52	183803 о
3		35.05	52	183804
4		35.05	52	183805
5		35.05	52	183806
6		35.05	52	180213
	1/4	35.05	52	175815
7		35.05	52	183807 o
8		35.05	52	180358
9,5		35.05	52	175817
10		35.05	52	170782
12		35.05	52	168742
	1/2	35.05	52	175820
13		35.05	52	180215
14		35.05	52	170783
	5/8	35.05	52	175823
[mm]	[inch]	[mm]	[mm]	



HSK-F63 Collet chucks 462E / OZ 25 /									
Ø d1	Ø d1	Ø D	L1						ldent-No.
15		35.05	52						183808 o
16		35.05	52						168743
18		35.05	52						180216
	3/4	35.05	52						175826
20		35.05	52						168744
25		35.05	52						168745
[mm]	[inch]	[mm]	[mm]						
Accessorie	es						Class-N	lo.	Ident-No.
[a] Lock	Nuts						9952	90	184877
[b] hand	spanner						9857	20	184880
[c] screv	v-in aid						9857	20	184883
[d] torqu	ie nut						9857	20	184886
[e] torqu	e adapter						9853	00	184889
[f] torqu	e wrench 20)-200Nm					9853	00	184890





AEROTECH SYSTEM with HSK 63F with collet chuck adapter

Product

Drawing L1 a



Machine / Application

- CNC machining centers
- for grooving, rabbeting in the case of pocket milling and dividing cuts as well as for the optimization of production processs e.g. with Nesting applications
- I for tools with shank diameter up to 16 mm

Design

- I tool adapter with high-precision collet chucks
- I 9 wing design for the machining of particle board, MDF, OSB, hard wood etc.
- I 7 wing design for low-density materials (e.g. soft wood) as well as gypsum boards etc.
- I tool mounting by means of clamping key or pre-adjusted torque wrench (recommended)

Advantages

- I stopping of the chip flow
- I cooling of the tool
- I reduction of the dust quantity
- I reduced efforts for cleaning and maintenance

lotes

- I balance quality G=2.5
- I n max. = 24,000 min-1
- I sufficient vacuum performance is necessary
- I please observe the information in the Operating Instructions

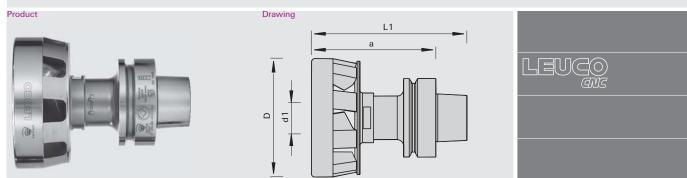
Ø d1	Ød	ØD	L1	а			Ident-No.
6-16	HSK 63F	95	125	100	9 wings		184652
6-16	HSK 63F	95	125	100	7 wings		184665 o
[mm]	[mm]	[mm]	[mm]	[mm]			

Spare parts	Dimension	Class-No. Ide	nt-No.
collet chucks	Ø 6 mm	933280 184	1653 o
collet chucks	Ø 8 mm	933280 184	1654 o
collet chucks	Ø 10 mm	933280 184	1655
collet chucks	Ø 12 mm	933280 184	1656
collet chucks	Ø 14 mm	933280 184	1657
collet chucks	Ø 16 mm	933280 184	1658
collet chucks	Ø 1/4"	933280 184	1659 o
collet chucks	Ø 3/8"	933280 184	1660
collet chucks	Ø 1/2"	933280 184	1661
collet chucks	Ø 5/8"	933280 184	1662 o
set screw for 184665		995191 185	5155
set screw for 184652		995191 185	5154
torque wrench 40 Nm		985730 184	1667
mounting devices incl. torque wrench 40) Nm	985202 184	1666
	[mm]		





AEROTECH SYSTEM with HSK 63F with hydro expansion clamping



Machine / Application

- CNC machining centers for clamping of shank-type tools and simultaneous chip guide when working
- for grooving, rabbeting in the case of pocket milling and dividing cuts as well as for the optimization of production processs e.g. with Nesting applications

Design

- I monolithic tool clamping system
- I 9 wing design for the machining of particle board, MDF, OSB, hard wood etc.
- I tool mounting by means of hydro expansion clamping technology
- I balance quality G<2,5

Advantages

- I stopping of the chip flow
- I cooling of the tool
- I reduction of the dust quantity
- I reduced efforts for cleaning and maintenance
- I minimization of setup-times thanks to easy and quick tool change with hydro expansion clamping
- I high cutting quality and long edge lives thanks to high concentricity
- I optimum torque transfer

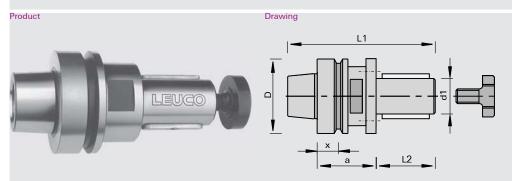
Notes

- I sufficient vacuum performance is necessary
- I impressurement via hexagonal screwdriver (included in delivery)
- I Ident-No. 184757: clamping of smaller shank diameters is possible by means of LEUCO universal reducing sleeves
- I please observe the information in the Operating Instructions

Ø d1	Ød	ØD	L1	а			Ident-No.
6-25	HSK 63F	105	131	106	9 wings		184757
[mm]	[mm]	[mm]	[mm]	[mm]			
Spare parts				Dime	nsion	Class-No.	Ident-No.
Screwdrive	ers with slid	ing handle f	or hexagon	socket SW4	1x100	985730	166091
				[mm]			



Mounting Arbors with HSK shank



Machine / Application

- CNC machining centers with automatic tool changer
- I for precise mounting of tools with bore with double keyway

Design

- I with 6 pin holes M6 8 mm deep TK 48 mm
- I interface DIN 69893 HSK 63 F
- I clamping length L2 = 50 mm for multiple-part cutters and cutterheads
- I secured against rotation with double key

Advantages

I high feed rates thanks to optimum torque transfer

Notes

- I for clockwise and counterclockwise rotation
- I spacer ring Ident-No. 181193 consists of: 1 piece 20 mm thick, 1 piece 10 mm thick, 3 piece 5 mm thick, 2 piece 2 mm thick, 1 piece 1 mm thick spacer ring set Ident-No. 181194 additionally 1 piece 20 mm thick, 1 piece 10 mm
- tool attached with retaining
- I included in delivery: clamping arbor with retaining bolt

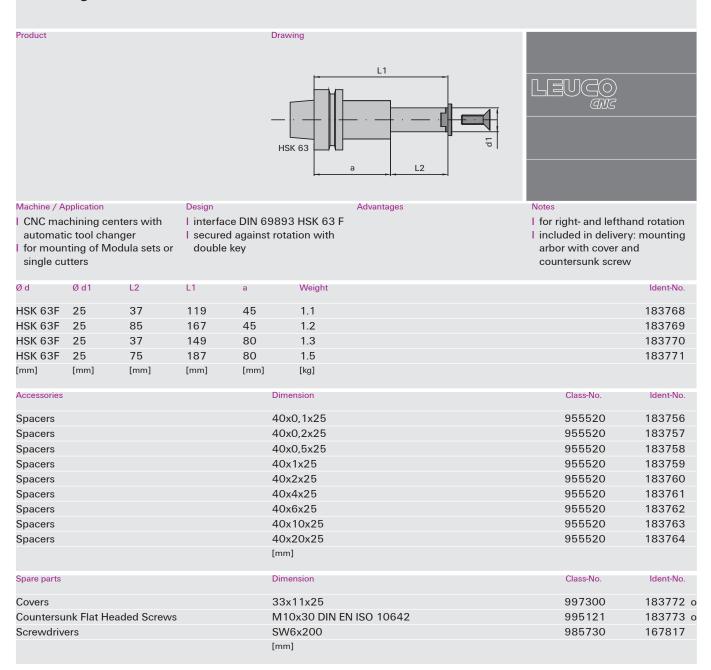
Ø D	Ød	Ø d1	L2	L1	a	X	DKN	Weight		ldent-No.
63	HSK 63F	30	50	120	45	18	8 x 3	1.4	Homag, IMA from 01/95	183748
63	HSK 63F	30	80	150	45	18	8 x 3	1.5	Homag, IMA from 01/95, HOLZ- HER	183749
63	HSK 63F	30	110	180	45	18	8 x 3	1.4	Homag, IMA from 01/95, HOLZ- HER	183747
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]		

Spare parts	Dimension	Class-No.	Ident-No.
Single-Head Engineers Wrenches	SW46x10 DIN 894	985720	178760
Cutter Retaining Bolts	M16x26xØ42	995190	173592
Spacer Sets	60x50x30	955521	181193
Spacer Sets	60x80x30	955521	181194
	[mm]		





Mounting Arbors HSK 63F





Milling Assemblies with chip directing steel sheet

Product Drawing



Machine / Application

- CNC-machining centers with C-axis Homag
- I for precise mounting of tools with bore

Design

- I milling aggregate with integrated chip directing steel sheet
- I Ident-No. 182049 and 182050 with double keyway
- I Ident-No. 182075 and 182076 with lid and retaining bolt; 2 carrier pins Ø6 TK 48
- I n max = 11,000 min-1 (stock design)
- I shank 30 mm, shank length 105 mm

Note

- I weight of the component approx. 2 kg (depending on design)
- I max. weight of the clamped tool 3,8 kg

Ø Dmax	Ød	Ød1	L2	a	DKN		ldent-No. [L]	Ident-No. [R]
300	HSK 63F	30	105	80	8 x 4	Homag	182049 o	182050 o
300	HSK 63F	30	105	80		Homag	182075 o	182076 o
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			

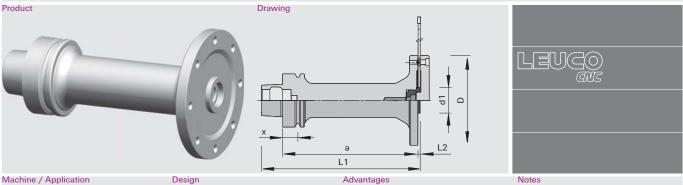
Advantages

I optimized chip removal





CNC Combi Saw Blade Adapters HSK 63F



- Machine / Application
- I CNC machining centers with automatic tool changer for precise mounting of circular saw blades
- I interface DIN 69893 HSK 63 F for high-precision adapter to the machine spindle

Advantages

- I exchangeable centering adapter can be obtained separately; thus I mounting of the saw directly saw blades with different bore diameters can be used on the same mounting device
- I the mounting of the saw blade can be made with or without lid I adapter available with different a measures
- I for right- and lefthand rotation by means of countersunk screws or lid by means of cylinder head screw I included in delivery: lid, countersunk screws, cylinder head screws and centering adapter for saw blade bore \emptyset 30 mm

Ø D	Ød	Ø d1	L2	L1	a	Х	NL	Ident-No.
106	HSK 63F	30	2,5	65	40	18	8/M5/90	184835
106	HSK 63F	30	2,5	75	50	18	8/M5/90	184836
106	HSK 63F	30	2,5	125	100	18	8/M5/90	184837
106	HSK 63F	30	2,5	155	130	18	8/M5/90	184838
106	HSK 63F	30	2,5	185	160	18	8/M5/90	184839
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		

Options	Dimension	Class-No.	Ident-No.
Covers	106x15x20	997300	184845
Adapter	Ø 30 mm	997300	184840
Adapter	Ø 31,75 mm	997300	184841
Adapter	Ø 32 mm	997300	184842
Adapter	Ø 35 mm	997300	184843
Adapter	Ø 40 mm	997300	184844
	[mm]		
Spare parts	Dimension	Class-No.	Ident-No.
Countersunk Flat Headed Screws	M5x8 T20	995125	164005
Head Cap Screws	M5x16 DIN EN ISO 4762	995111	001870
Cylinder head screws for adapters	M8x12 DIN 7984	995111	184846
	[mm]		



Saw Blade Adapters HSK 63F modified

Product Drawing L1 Machine / Application Advantages CNC machining centers with I interface DIN 69893 HSK 63 I for clockwise and counterautomatic tool changer F for high-precision adapter to clockwise rotation for precise mounting of circular the machine spindle I mounting of the saw directly by means of countersunk saw blades and grooving screw or lid 183310 by cutters means of cylinder head screw I included in delivery: I adapter with countersunk screws I lid with cylinder head screws to be ordered separately ØD Ident-No. Ød Ød1 L2 L1 NL 70 HSK 63F 30 2,5 157.5 130 8/M5/52 183309 [mm] [mm] [mm] [mm] [mm] [mm] Dimension Spare parts Class-No. Ident-No. Countersunk Flat Headed Screws M5x8 T20 995125 164005 [mm] Dimension Accessories Class-No. Ident-No. Lid with cylinder head screws 70x24x8 997300 183310

[mm]





Mounting Arbors HSK 63F modified - without gripper groove

Product Drawing

Machine / Application

- I through-feed machines with tool changer Homag I d1=30 mm especially for Homag and IMA jointing
- aggregates d1=60 mm especially for flooring manufacturing
- for precise clamping of tools with bore

Design

I interface DIN 69893 HSK 63 F modified for highly precise mounting on the machine spindle

Advantages

I quick tool change I maintenance-free Notes

I for clockwise and counterclockwise rotation

Ø D	Ød	Ø d1	L2	L1	а	NL		Ident-No.
94	HSK 63F	30	25	66	16	4/M8/80	furniture	184787
120	HSK 63F	60	68	113	20	4/M8/100 + 4/9/100	Flooring	183616 o
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			

933061

Mounting Arbors HSK 63F modified - with gripper groove

Drawing Product Machine / Application Design Advantages I through-feed machines with I with pulling grooves I for clockwise and counter-I quick tool change tool changer Homag I flange with fastening screw clockwise rotation for precise clamping of tools thread with bore I interface DIN 69893 HSK 63 F for highly precise mounting on the machine spindle ØD Ød Ød1 L1 Ident-No. 23.5 102.5 183615 o 63 HSK 63F 60 54 4/M8/80 [mm] [mm] [mm] [mm] [mm] [mm]

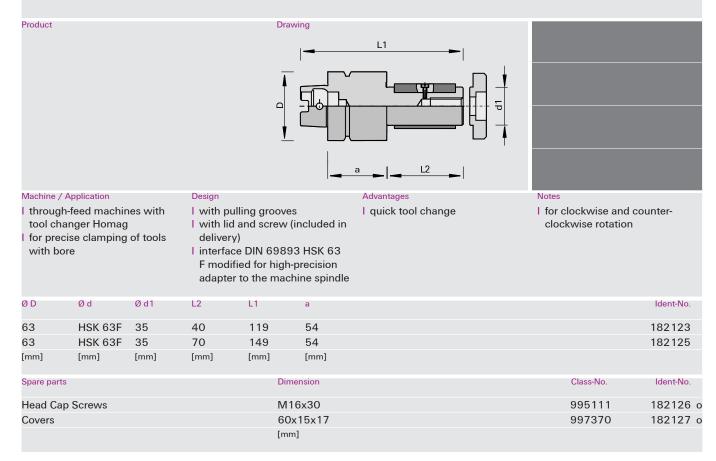


Mounting Arbors HSK 63F modified - 35 DKN, with lid and screws

Product Drawing L1 L2 __ Machine / Application Advantages Design through-feed machines with I with pulling grooves I quick tool change I for clockwise and counter-I flange with fastening screw clockwise rotation tool changer Homag for precise clamping of tools I interface DIN 69893 HSK 63 F with bore for highly precise mounting on the machine spindle Ø D Ød1 L1 Ident-No. 63 HSK 63F 35 40 119 54 8/M8/80 182689 63 HSK 63F 35 50 129 54 8/M8/80 182124 [mm] [mm] [mm] [mm] [mm] Dimension Class-No. Ident-No. Spare parts Head Cap Screws M16x30 995111 182126 o Covers 60x15x17 997370 182127 o [mm]

933069

Mounting Arbors HSK 63F modified - 35 DKN, tool directly attached by screws





Hydro Tensile Spindles Weinig HSK - clamping length 40-55 mm

Drawing Product L2 Machine / Application planing machines Weinig I with hydro-tensile spindle I precise mounting of tools with I for clockwise and counterbore thanks to hydro-tensile Powermat clockwise rotation for precise clamping of tools I accessories: dummy piece for spindle with bore covering the HSK-interface on spindles not used

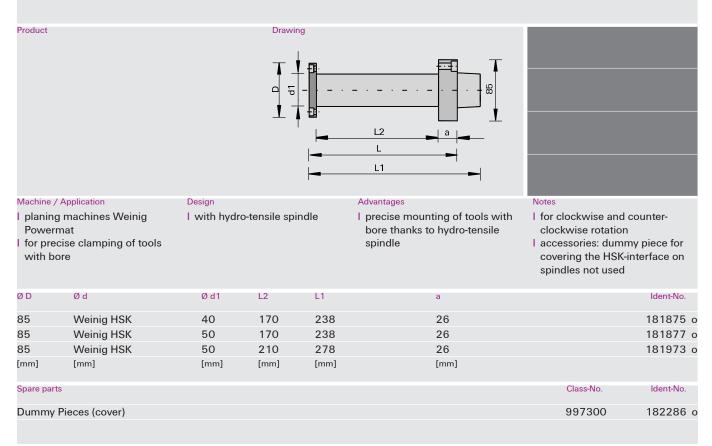
Ø D	Ø d	Ø d1	L2	L1	a	Ident-No.
85	Weinig HSK	30	40	108	26	181872 o
85	Weinig HSK	30	55	123	26	181873 o
85	Weinig HSK	40	55	123	26	181874 o
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	

Spare parts Class-No. Ident-No.

Dummy Pieces (cover) 997300 182286 o

997300

Hydro Tensile Spindles Weinig HSK - clamping length 170-210 mm





Mounting Arbors Weinig HSK

Product Drawing L1 Machine / Application Design Advantages

I profile machines Weinig

Powermat

for mounting of tools with bore

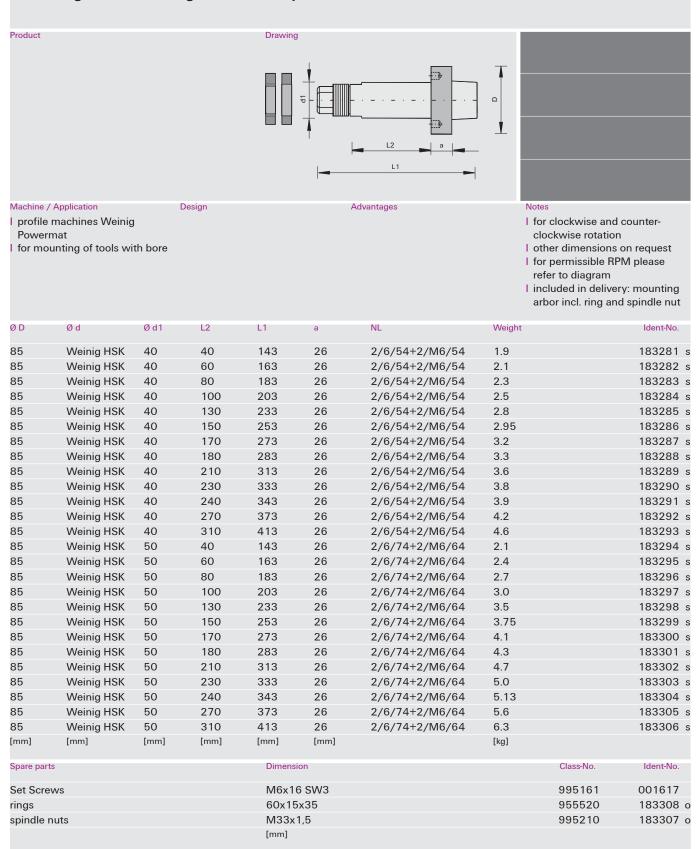
- I for clockwise and counterclockwise rotation
- I other dimensions upon request
- I for permissible RPM please refer to diagram

Ø D	Ød	Ø d1	L2	L1	а	NL	Weight	Ident-No.
85	Weinig HSK	30	40	98	26	2/6/48+2/M6/48	1.7	182056 o
85	Weinig HSK	30	60	118	26	2/6/48+2/M6/48	1.8	182057 o
85	Weinig HSK	30	80	138	26	2/6/48+2/M6/48	1.9	182058 o
85	Weinig HSK	30	130	188	26	2/6/48+2/M6/48	2.2	182059 o
85	Weinig HSK	30	170	228	26	2/6/48+2/M6/48	2.4	182060 o
85	Weinig HSK	30	240	298	26	2/6/48+2/M6/48	2.8	182061 o
85	Weinig HSK	40	40	98	26	2/6/54+2/M6/54	1.9	182062 o
85	Weinig HSK	40	60	118	26	2/6/54+2/M6/54	2.1	182063 o
85	Weinig HSK	40	80	138	26	2/6/54+2/M6/54	2.3	182064 o
85	Weinig HSK	40	130	188	26	2/6/54+2/M6/54	2.8	182065 o
85	Weinig HSK	40	170	228	26	2/6/54+2/M6/54	3.2	182066 o
85	Weinig HSK	40	240	298	26	2/6/54+2/M6/54	3.9	182067 o
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[kg]	



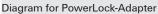


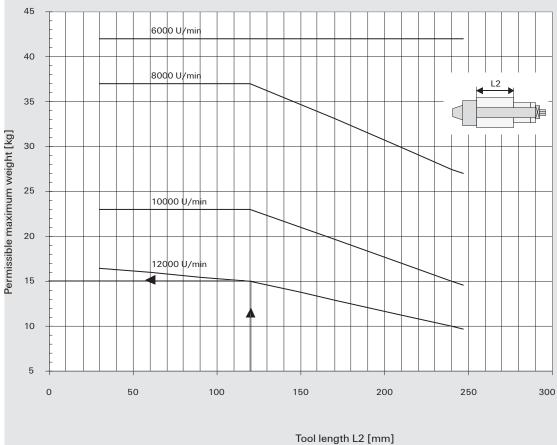
Mounting Arbors Weinig HSK - with spindle nut





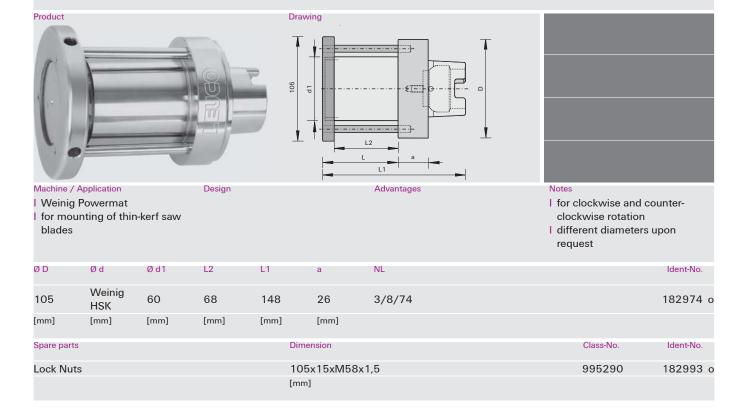
Adapter Weinig HSK







Saw Blade Adapters Weinig HSK



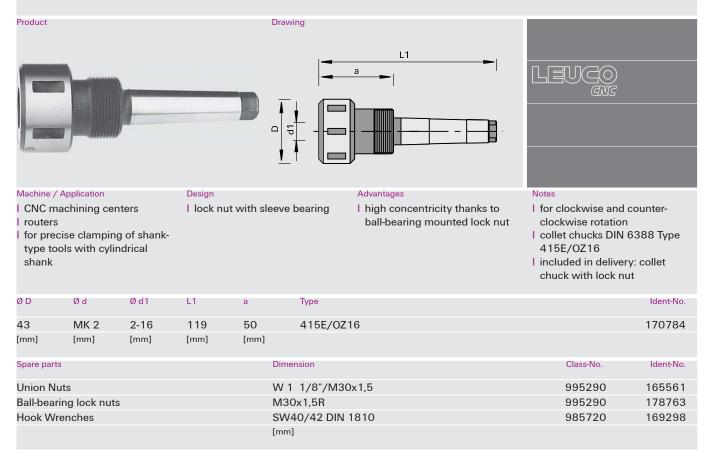


Balluff Chip for mounting in HSK 63F tool adapters

Balluff Chip for mount	ing in i	15K 63F to	oi adapters		
Product		Drawing	H		
Machine / Application I CNC machining centers with tool recognition system based on Balluff Chip I for machines Biesse, Reichenbacher, Homag	511 Byte	nip BIS C-122-04/I ting in HSK 63F to		Notes I without reading / I reading / writing after clearance	
	Ø D	Н			Ident-No.
Balluff Chip with adapter	11,6 [mm]	6 [mm]			182558 o
Spare parts		Dimension		Class-No.	ldent-No.
Adapter for Balluff Chip		Ø 11,6x6		956500	182560 o
Balluff Chip		Ø 10x4,5 [mm]		994711	182559 o



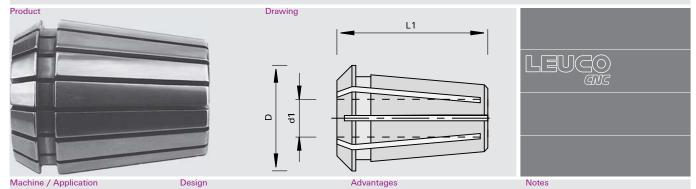
Draw-In Collet Chucks with MK shank







Precision collets - 415E/OZ16



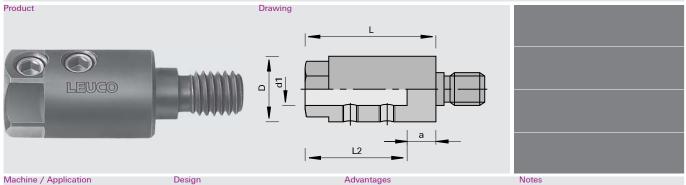
I for use in draw-in collet chuck Type 415E/OZ16

- I slotted from top and bottom
- I clamping tolerance 0.5 mm I according to DIN 6388 Type 415E/OZ16

ØD	Ø d1	L1		ldent-No.
25.5	2,5	40		820753 o
25.5	3	40		820754 o
25.5	4	40		820494 o
25.5	4,5	40		830236 o
25.5	5	40		820495 o
25.5	6	40		170779 o
25.5	6,35	40		821421 o
25.5	7	40		829692 o
25.5	8	40		170780
25.5	9	40		825190 o
25.5	9,5	40		168739 o
25.5	10	40		170781
25.5	12	40		168740
25.5	12,7	40		830156 o
25.5	13	40		821221 o
25.5	16	40		168741
[mm]	[mm]	[mm]		



Clamping Chuck Combi Systems



Machine / Application

I for mounting of drill bits with cylindrical shank and clamping surface

I drill bits are clamped with setscrews

- I clamping chucks with "BSS" mark are compatible with quick-changing system for drill bits
- I for threaded shank design and appropriate machines see technical information

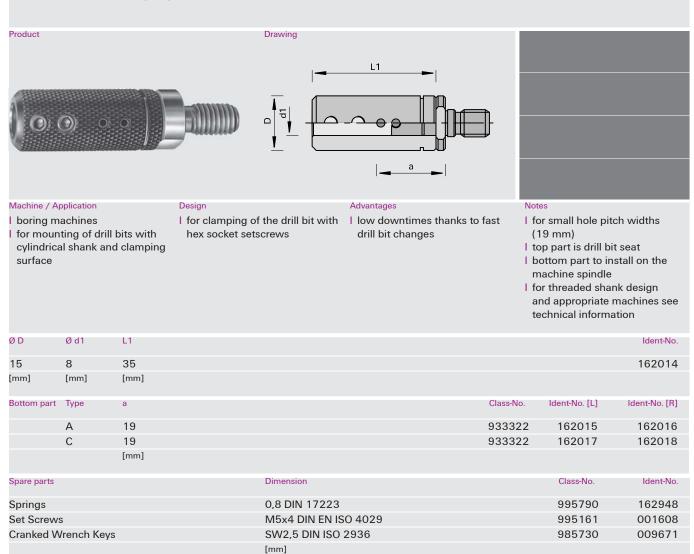
ØD	Ø d1	L2	L	а	Туре		Ident-No. [L]	Ident-No. [R]
15	8	20	22	2	D		161282 o	161281 o
15	8	20	24.5	4.5	Α		010683 o	010677 o
15	8	20	24.5	4.5	В		161285 o	161284 o
15	8	20	24.5	4.5	С		058412 o	058411 o
15	8	20	37	17	С		059300	059299
19	10	20	24.5	4.5	Α		003575	003574
19	10	20	24.5	4.5	В		008003	008002
19	10	20	24.5	4.5	С		058414	058413
19	10	20	25	5	D		003571	003570
19	10	20	25	5		cyl. shank Ø 10x30	183055 o	183055 o
19	10	20	47	27	G		161287	161286
19	10	20	29.3	9.3	F		003573	003572
19	10	20	28.5	8.5	Е		161987 o	161283 o
19	10	20	37	17	С		161681	161680
19	10	20	47	27	D	BSS	170372 s	170371 s
[mm]	[mm]	[mm]	[mm]	[mm]				

Spare parts	Dimension	For Ø D	Class-No.	Ident-No.
Set Screws	M6x4 DIN EN ISO 4029	15	995161	167068
Set Screws	M6x5 DIN EN ISO 4029	19	995161	165049
Set Screws	M5x4 DIN EN ISO 4029	15	995161	001608
	[mm]	[mm]		



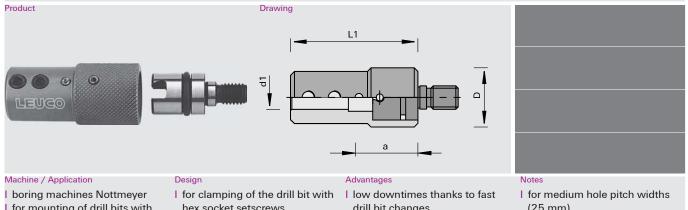


Klack Quick-Changing Chucks with hole pitch 19 mm





Klack Quick-Changing Chucks with hole pitch 25 mm



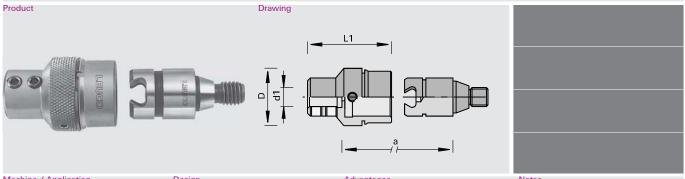
- for mounting of drill bits with cylindrical shank and clamping surface
- hex socket setscrews
- drill bit changes
- (25 mm)
- I top part is drill bit seat
- I bottom part to install on the machine spindle
- I for threaded shank design and appropriate machines see technical information

ØD	Ø d1	L1					Ident-No.
22	10	47					166992
22	8	49					166074
[mm]	[mm]	[mm]					
Bottom part	Туре	a			Class-No.	Ident-No. [L]	Ident-No. [R]
	С	19			933322	166075	166076
		[mm]					
Spare parts			Dimension			Class-No.	ldent-No.
Multi-Purp	ose Grease	S				993520	056746
Special Lev	/ers					997100	166095 o
Set Screws	3		M5x4 DIN EN ISO 402	9		995161	001608
Set Screws	3		M6x5 DIN EN ISO 402	9		995161	165049
O-Rings			10,77x2,62			995490	166078
			[mm]				





Klack Quick-Changing Chucks with hole pitch 32 mm



Machine / Application

- I boring machines
- for mounting of drill bits with cylindrical shank and clamping surface

Design

I for mounting of drill bits with cylindrical shank and clamping

Advantages

I low downtimes thanks to fast drill bit changes

- I for larger hole pitch widths (32 mm)
- I top part is drill bit seat
- I bottom part to install on the machine spindle
- I for threaded shank design and appropriate machines see technical information

				·	ecimical imorn	ation
Ø D	Ø d1	L1				Ident-No.
30	10	44				003567
[mm]	[mm]	[mm]				
Bottom part	Туре	a		Class-No.	Ident-No. [L]	Ident-No. [R]
	D	26.5		933322	003561	003560
	Α	19		933322	003565	003564
		[mm]				
Spare parts			Dimension		Class-No.	Ident-No.
Multi-Purp	ose Greases	3			993520	056746
Special Lev	vers				997100	164309
Reducing E	Bushings				955530	057513
Set Screws	3		M6x5 DIN EN ISO 4029		995161	165049
Set Screws	3		M5x8 DIN EN ISO 4028		995161	180015
Screws			M8x24L		995191	180013
Screws			M8x24R		995191	180012
			[mm]			



Drill Bit Quick-Changing Systems - top part

Product Drawing

Machine / Application

I boring machines

I for mounting of drill bits with cylindrical shank with clamping screws

Design

Dimension

I for clamping of the drill bit with hex socket setscrews

Advantages

I low downtimes thanks to fast drill bit changes

Motos

- I for larger hole pitch widths (32 mm)
- I top part is drill bit seat
- I bottom part to install on the machine spindle
- I for threaded shank design and appropriate machines see technical information

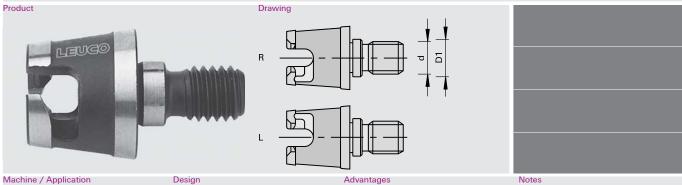
Ident-No.

locating bore	Ø10			168669
locating bore	Ø8			168668
	[mm]			
Spare parts		Dimension	Class-No.	Ident-No.
collet chuck		Ø3	933380	168666 o
collet chucks		Ø2,5	933380	168665 o
Engineers Wrenches		9x11 DIN 3118	985720	168672 o
Engineers Wrenches		11x13 DIN 3118	985720	168670 o
Engineers Wrenches		14x17 DIN 3118	985720	168671
		[mm]		
Spare parts		Dimension	Class-No.	Ident-No.
Set Screws		M6x5 DIN EN ISO 4029	995161	165049
Set Screws		M5x4 DIN EN ISO 4029	995161	001608
		[mm]		





Drill Bit Quick-Changing Systems - bottom part



I boring machines for installation on the machine spindle

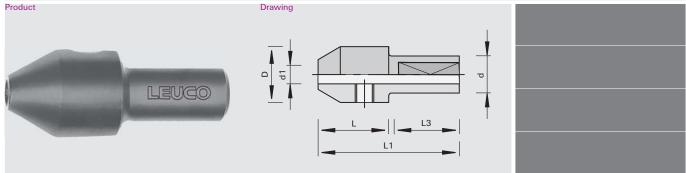
I conical design

I for threaded shank design and appropriate machines see technical information

Туре	Ød	Ø D1	Ident-No. [L]	Ident-No. [R]
С	M8	9	168662	168663
D	M10	11	170243	170242
	[mm]	[mm]		
Spare parts	5		Class-No.	ldent-No.
Dust prot	ection cap		997800	170283
Socket W	/renchs		985730	168673

933389

Adapters



Machine / Application

Design

Advantages

I for mounting of twist drills in combi chuck and Klack chuck

I shank with clamping surface I thread M5, without screw

I adjusting and attachment screw Ident-No. 181520 M5x11,5 for Weeke quick clamping chuck must be ordered separately

Ø d1	L	Ød	L3	Ø D	L1	Ident-No.
2	19	10	21	15	41	183275
2,5	19	10	21	15	41	183276
3	19	10	21	15	41	183277
3,5	19	10	21	15	41	183278
4	19	10	21	15	41	183279
5	19	10	21	15	41	183280
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	

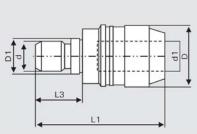


Spare parts	Dimension	Class-No. Ide	ent-No.
Set Screws	M6x6 DIN EN ISO 4029	995161 18	0003
Cranked Wrench Keys	SW3 DIN ISO 2936	985730 00	9672
	[mm]		

Drill Bit Quick-Changing Systems



Design



Advantages



Machine / Application

- boring machines
- I CNC machining centers
- I for mounting of drill bits with cylindrical shank and clamping surface

Drawing

- I low downtimes thanks to fast drill bit changes
- I no special adjusting screw necessary
- I for all common drill bits with shank Ø 10 mm and boring Ø < 20 mm

Notes

I for threaded shank design and appropriate machines see Technical Information

Ø D	Ø D1	Ød	Ø d1	L1	L3	Туре	Ident-No. [L]	Ident-No. [R]
20	9	M8	10	42	15	С	182396 o	182395 o
20		M8	10	42	15	A	182398 o	182397 o
20		10	10	45	18		182400 o	182399 o
20	11	M10	10	42	15	D	182402 o	182401 o
20		M10	10	42	15	В	182404 o	182403 o
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]			

Spare parts	Class-No.	Ident-No.
Socket Wrenchs	985730	182405 o



Universal Drill Chucks

Product

Drawing





Machine / Application

I CNC machining centers with automatic tool changer I for clamping of drill bits with cylindrical shank

Design

- I continuously adjustable clamping area between 1-13 mm
- I n max = 20,000 min-1 I hardened clamping jaws

Advantages

- I fine balance is easy on spindle and spindle bearing
- I high clamping accuracy over total lifetime of drill chuck thanks to hardened clamping jaws
- I high holding moment
- I no chips and dirt in the clamping zone thanks to special clamping jaws

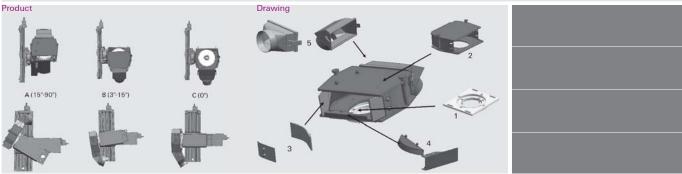
Notes

- I for clockwise and counterclockwise rotation
- I included in delivery: clamping key, retaining bolts

Ø D	Ød	Ø d1	L1				Ident-No.
50	SK 30 (DIN)	1-13	90		Weeke, Maka, Reichenbacher		180375 o
50	SK 30	1-13	90		Biesse from 9/92, Masterwood (HSD mo	tors)	180376 o
50	SK 30	1-13	90		Alberti, Masterwood (Colombo motors)		180377 o
50	SK 30	1-13	90		Morbidelli, SCM (with ring gear)		180378 o
50	SK 40 (DIN)	1-13	90		Maka, Reichenbacher Stegherr		180379 o
57	SK 40 (DIN)	3-16	90		Maka, Reichenbacher Stegherr		180380 o
50	HSK 63F	1-13	112		Homag, EIMA, Weeke, IMA from 9/94		180381
57	HSK 63F	3-16	112		Homag, EIMA, Weeke, IMA from 9/94		180382
[mm]	[mm]	[mm]	[mm]				
Spare parts				Dimension		Class-No.	Ident-No.
Cranked V	Vrench Keys			SW6x100		985730	180383 o
				[mm]			



LEUCO Dust Hoods



Machine / Application

- double end tenoners especially for flooring manufacturing
- I LEUCO dust hood system

Advantages

- I optimum chip caption
- I wear parts individually replace-
- I flow-optimizing design

Notes

complete dust hood - consisting of one part of each of the following 5 groups

Flange	Ø D	В	Mo	otor output		Class-No.	ldent-No.
flange Ø180x13	180	13	Pe	rske up to	11 KW	975117	540301 o
flange Ø180x13	180	13	Pe	rske from 1	11 KW	975117	540430 o
	[mm]	[mm]					
2 - Basic hood		Tool Ø D	Tilting area	Basic	c hood form	Class-No.	ldent-No.
basic hood 15° - 90° cpl. tool-Ø 2	50 mm	250	15 - 90	А		975217	540295 o
basic hood 3° - 15° cpl. tool-Ø 250	0 mm	250	3 - 15	В		975117	540317 o
basic hood 0° cpl. tool-Ø 250 mm		250	0	С		975117	540389 o
		[mm]	[°]				
3 - Side profile (wear plate and adjusting	plate)	Thickne	ss of wear plate			Class-No.	Ident-No.
side profile standard cpl.		8				975417	540302 o
side profile 0° right cpl.		8				975417	540358 o
side profile 0° left cpl.		8				975417	540386 o
		[mm]					
4 - Chip flow set	Height of C p	plate	Не	ight of chip flo	ow plate	Class-No.	Ident-No.
chip flow set 12/82 cpl.	12		82	2		975217	540227 o
chip flow set 22/72 cpl.	22		72	2		975217	540228 o
chip flow set 32/62 cpl.	32		62	2		975217	540229 o
chip flow set 42/52 cpl.	42		52	2		975217	540230 o
chip flow set 52/42 cpl.	52		42	2		975217	540231 o
chip flow set 62/32 cpl.	62		32	2		975217	540232 o
chip flow set 67/27 cpl.	67		27	7		975217	540233 o
	[mm]		[m	m]			
5 - Extraction connection		Tool Ø D	Ø Connection	- Angle	Basic hood form	Class-No.	Ident-No.
connection 0° - Ø 120 mm		250	120	0	A, B	975217	540298 o
connection 0° - Ø 140 mm		250	140	0	A, B	975217	540304 o
connection 30° - Ø 120 mm		250	120	30	A, B	975217	540308 o
connection 30° - Ø 140 mm		250	140	30	A, B	975217	540310 o
connection 0° - Ø 120 mm		250	120	0	С	975217	540362 o
connection 0° - Ø 140 mm		250	140	0	С	975217	540392 o
		[mm]	[mm]	[°]			

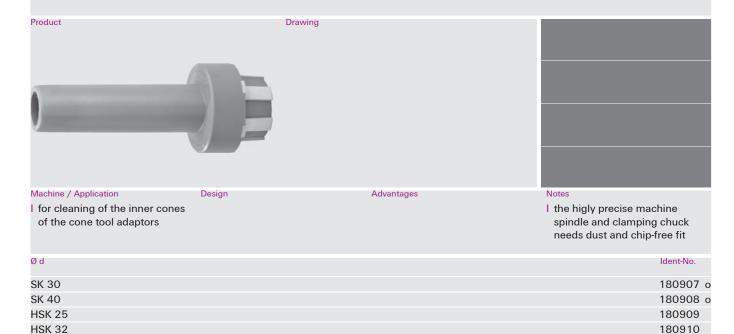




Spare parts	Dimension	Basic hood form	Class-No.	Ident-No.
basic plate	D = 250 mm	A, B, C	975217	540291 o
basic hood 15° - 90° cpl. tool-Ø 250 mm		A	975217	540292 o
thread bolt		A, B, C	975217	540201 o
wear plate 0° standard cpl.	S = 8 mm	A, B	975517	540210 o
wear plate 0° right cpl.	S = 8 mm	С	975517	540356 o
wear plate 0° left cpl.	S = 8 mm	С	975517	540364 o
C plate 12	H = 12 mm	A, B, C	975217	540213 o
C plate 22	H = 22 mm	A, B, C	975217	540214 o
C plate 32	H = 32 mm	A, B, C	975217	540215 o
C plate 42	H = 42 mm	A, B, C	975217	540216 o
C plate 52	H = 52 mm	A, B, C	975217	540217 o
C plate 62	H = 62 mm	A, B, C	975217	540218 o
C plate 67	H = 67 mm	A, B, C	975217	540219 o
connection 0° - Ø 120 mm		A, B	975217	540298 o
connection 0° - Ø 140 mm		A, B	975217	540304 o
connection 30° - Ø 120 mm		A, B	975217	540308 o
connection 30° - Ø 140 mm		A, B	975217	540310 o
connection 0° - Ø 120 mm		С	975217	540362 o
connection 0° - Ø 140 mm		С	975217	540392 o
	[mm]			



Cone wiper



985202

HSK 63

[mm]

Mounting device with clamping lever

Product	Drawing	

Machine / Application

I for quick and simple mounting and adjusting of cutting tools in draw-in collet chucks or on arbors and tool holders Design

- I with two-part clamping jaws made from high-quality light alloy
- I mounted on stable pedestal which can be fixed onto workbench
- I quick-grip lever for clamping of clamping chucks or holding arbors

Advantages

I variably applicable for all interfaces by simple exchanging of the clamping jaw Notes

ldent-No.

	Ø d	ident-No.
SK 30 (DIN) / HSK 50F	50	180362 o
SK 40 (DIN)	63,5	180363 o
SK 30 with ring gear (Morbidelli, SCM)	49	180364 o
SK 30 (ISO) CMS / BT 30	46	180365 o
HSK 63F / 63E	63	180366 o
BT 35	53	180367 o
HSK 85 (Weinig)	85	182284 o
	[mm]	



180911 o



Spare parts	For Ident-No.	Class-No.	ldent-No.
Clamping Jaws (2-parts)	180362	997300	180368 o
Clamping Jaws (2-parts)	180363	997300	180369 o
Clamping Jaws (2-parts)	180364	997300	180370 o
Clamping Jaws (2-parts)	180365	997300	180371 o
Clamping Jaws (2-parts)	180366	997300	180372 o
Clamping Jaws (2-parts)	180367	997300	180373 o
Clamping Jaws (2-parts)	182284	997300	182285 o
Pedestal (without clamping jaw)		997300	180374 o

Mounting device without clamping lever

Product	Drawing			
Machine / Application	Design	Advantages	Notes	
I for quick and simple mounting and adjusting of cutting tools in draw-in collet chucks or on arbors and tool holders	I mounted on stable pedestal which can be fixed onto workbench	I simplest handling offering highest comfort thanks to roll clamping system, no clamping or jamming necessary	I for all adapters HSK 6	3 F
Ø d1				ldent-No.
HSK 63F				182467
[mm]				

985202

Mounting device without clamping lever, high-end design

Product

Drawing



I for quick and simple mounting and adjusting of cutting tools in draw-in collet chucks or on arbors and tool holders

.

- I high-end version with integrated plastic inserts to protect the tool holder
- I mounted on stable pedestal which can be fixed onto workbench

Advantages

I simplest handling offering highest comfort thanks to roll clamping system, no clamping or jamming necessary



I for all adapters HSK 63 F



inductive shrinking device ISG2202

Machine / Application

Design

Advantages

I for shrinking of HW shanks Ø

I device with inductor, centering

I inductor can be lowered to

I in combination with the coo-

I for shrinking of HW shanks Ø 3 - 20 mm and HS shanks Ø 6 - 20 mm

I device with inductor, centering discs for tool adapters and 3 replacement discs

- color: grey-white RAL 9002
- I performance: 8 kW I version without ventilator
- the heating position by simple manual operation and can be locked by pushing a button
- I choose the shrinking diameter on the control panel and press the start button
- I the stored time elapses, at the end the inductor moves automatically upward
- I the process can be ended ahead of time by pressing the stop button
- I in combination with the cooling station FKS04 shrinking, cooling and cleaning can be done within seconds please order separately

	Dimension	Weight		Ident-No.
inductive shrinking device ISG2202 (without ventilator)	640x310x390	25		184036 o
	[mm]	[kg]		
Accessories	Weight		Class-No.	Ident-No.
liquid cooling device FKS 04 (manual)	22.5		985201	184037o
tool adapter HSK40/50/63F for FKS04			985201	184039o
tool adapter SK30/40/BT30/40 for FKS04			985201	184038o
	[kg]			





inductive shrinking device ISG3400TLK



Drawing



I for shrinking of HW shanks Ø 3 - 32 mm and HS steel shanks Ø 6 - 32 mm with the inductive shrink unit ISG3400 TLK all tools from Ø 3-32 can be shrinked by simple change of discs; the energy coupling is thereby optimally adapted to the respective chuck; with special coils, the

system can also shrink larger diameters tools up to 50 mm

- I device with inductor with 4 replacement discs I performance: 11 kW
- I design with ventilator

Advantages

- I operation of the ISG3400TLK by menu
- I all parameter are shown at the same time
- I several languages can be chosen
- I data for clamping chucks with special geometries can be saved

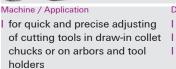
I in combination with the cooling station FKS04 shrinking, cooling and cleaning can be done within seconds please order separately

	Dimension		ldent-No.
inductive shrinking device ISG3400TLK (without ventilator)	780x535x950		184035 o
	[mm]		
Accessories	Weight	Class-No.	Ident-No.
liquid cooling device FKS 04 (manual)	22.5	985201	184037o
tool adapter HSK40/50/63F for FKS04		985201	184039o
tool adapter SK30/40/BT30/40 for FKS04		985201	184038o
	[kg]		

digital height measuring device



Drawing



Design

- I repeating precision 0.01 mm I tungsten carbide-tipped scriber
- I digital display

Advantages

I simple adjustment and fixing of the height dimension



Ident-No.

digital height measuring device

183684 o



iBlade StarterKit

Product





Machine / Application

I for simple monitoring and tracking of tool performance

Design

Advantages

I perfect cost control

Notes

- I the insertion of the chip depends on the tool used
- I in the case of very small/thin tools the memory chip can be attached to a tool card

lo			

iBlade StarterKit software documentation Basic, memory chip V2 (5 pieces), reader Classic USB, activator spray, glue

Accessories		Class-No.	Ident-No.
Software documentation Basic	annual licence	999300 1	84776s
Software documentation user	annual licence	999300 1	84777s
software documentation dealer/service	annual licence	999300 1	84778s
reader Classic USB		994721 1	84779s
reader bluetooth		994721 1	84780s
memory chip V2	8.5x2.0 mm	994711 1	84781
glue	20g	993390 1	84782s
activator spray	200 ml can	993390 1	84783s





Connection dimensions for Boring Bit Collet Chucks

Threaded shank design for Kombi and Klack systems with appropriate machines

Туре		Machine assignment	
A	a 15	Nottmeyer Lehbrink Pankoke + Kochsiek Prieß + Horstmann	
В	a 15	Ayen Holzma Knoevenagel Mayer Brandt Reichenbacher Torwegge Zubiola	
С	a 15	Nottmeyer	
D	4 a 16	Böttchner + Gessner Biesse Busellato Dingenotto Hüllhorst Holz-Her Homag Koch	Morbidelli Reimall Torwegge Weeke Reich
Е	22,5 a 22,5	Bilek Type KÜN Knoevenagel	
F	a 17.7	Alberti Balestrini Bilek (05 R) Busellato Dubus Goma Grotefeld Omeg	Reimall Schleicher SCM Tanzani Viciani Vitap Weingärtner
G	00 to	Scheer	