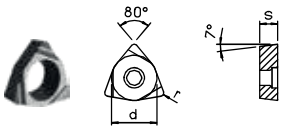
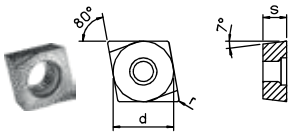
WCGT ○○○○○○L



REF.		CODE	d	s	r		
WCGT 020102L DC 100	CERMET	WCGT020102LC100	3.97	1.59	0.2	TS 21* - TS 211*	TORX T06
WCGT 020102L DC 100T	COATED CERMET	WCGT020102LC10T	3.97	1.59	0.2	TS 21* - TS 211*	TORX T06
WCGT 020102L DK 100	CARBIDE	WCGT020102LK100	3.97	1.59	0.2	TS 21* - TS 211*	TORX T06
WCGT 020102L DP 300	CARBIDE	WCGT020102LP300	3.97	1.59	0.2	TS 21* - TS 211*	TORX T06
WCGT 020104L DC 100	CERMET	WCGT020104LC100	3.97	1.59	0.4	TS 21* - TS 211*	TORX T06
WCGT 020104L DC 100T	COATED CERMET	WCGT020104LC10T	3.97	1.59	0.4	TS 21* - TS 211*	TORX T06
WCGT 020104L DK 100	CARBIDE	WCGT020104LK100	3.97	1.59	0.4	TS 21* - TS 211*	TORX T06
WCGT 020104L DP 300	CARBIDE	WCGT020104LP300	3.97	1.59	0.4	TS 21* - TS 211*	TORX T06

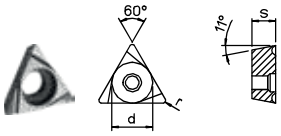
* TS21 : B...06 / * TS211 : B...08

CCGT ○○○○○○L



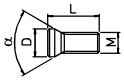
REF.		CODE	d	s	r		
CCGT 060200L DC 100	CERMET	CCGT060200LC100	6.35	2.38	0	TS 25	TORX T08
CCGT 060200L DC 100T	COATED CERMET	CCGT060200LC10T	6.35	2.38	0	TS 25	TORX T08
CCGT 060200L DK 100	CARBIDE	CCGT060200LK100	6.35	2.38	0	TS 25	TORX T08
CCGT 060200L DP 300	CARBIDE	CCGT060200LP300	6.35	2.38	0	TS 25	TORX T08
CCGT 060202L DC 100	CERMET	CCGT060202LC100	6.35	2.38	0.2	TS 25	TORX T08
CCGT 060202L DC 100T	COATED CERMET	CCGT060202LC10T	6.35	2.38	0.2	TS 25	TORX T08
CCGT 060202L DK 100	CARBIDE	CCGT060202LK100	6.35	2.38	0.2	TS 25	TORX T08
CCGT 060202L DP 300	CARBIDE	CCGT060202LP300	6.35	2.38	0.2	TS 25	TORX T08
CCGT 060204L DC 100	CERMET	CCGT060204LC100	6.35	2.38	0.4	TS 25	TORX T08
CCGT 060204L DC 100T	COATED CERMET	CCGT060204LC10T	6.35	2.38	0.4	TS 25	TORX T08
CCGT 060204L DK 100	CARBIDE	CCGT060204LK100	6.35	2.38	0.4	TS 25	TORX T08
CCGT 060204L DP 300	CARBIDE	CCGT060204LP300	6.35	2.38	0.4	TS 25	TORX T08
CCGT 09T302L DC 100	CERMET	CCGT09T302LC100	9.525	3.97	0.2	TS 4	TORX T15
CCGT 09T302L DC 100T	COATED CERMET	CCGT09T302LC10T	9.525	3.97	0.2	TS 4	TORX T15
CCGT 09T302L DK 100	CARBIDE	CCGT09T302LK100	9.525	3.97	0.2	TS 4	TORX T15
CCGT 09T302L DP 300	CARBIDE	CCGT09T302LP300	9.525	3.97	0.2	TS 4	TORX T15
CCGT 09T304L DC 100	CERMET	CCGT09T304LC100	9.525	3.97	0.4	TS 4	TORX T15
CCGT 09T304L DC 100T	COATED CERMET	CCGT09T304LC10T	9.525	3.97	0.4	TS 4	TORX T15
CCGT 09T304L DK 100	CARBIDE	CCGT09T304LK100	9.525	3.97	0.4	TS 4	TORX T15
CCGT 09T304L DP 300	CARBIDE	CCGT09T304LP300	9.525	3.97	0.4	TS 4	TORX T15

TPGX ○○○○○○L

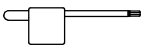


REF.		CODE	d	s	r		
TPGX 090200L DC 100	CERMET	TPGX090200LC100	5.56	2.38	0	CS250T	TORX T08
TPGX 090200L DC 100T	COATED CERMET	TPGX090200LC10T	5.56	2.38	0	CS250T	TORX T08
TPGX 090200L DK 100	CARBIDE	TPGX090200LK100	5.56	2.38	0	CS250T	TORX T08
TPGX 090200L DP 300	CARBIDE	TPGX090200LP300	5.56	2.38	0	CS250T	TORX T08
TPGX 090202L DC 100	CERMET	TPGX090202LC100	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090202L DC 100T	COATED CERMET	TPGX090202LC10T	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090202L DK 100	CARBIDE	TPGX090202LK100	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090202L DP 300	CARBIDE	TPGX090202LP300	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090204L DC 100	CERMET	TPGX090204LC100	5.56	2.38	0.4	CS250T	TORX T08
TPGX 090204L DC 100T	COATED CERMET	TPGX090204LC10T	5.56	2.38	0.4	CS250T	TORX T08
TPGX 090204L DK 100	CARBIDE	TPGX090204LK100	5.56	2.38	0.4	CS250T	TORX T08
TPGX 090204L DP 300	CARBIDE	TPGX090204LP300	5.56	2.38	0.4	CS250T	TORX T08
TPGX 110300L DC 100	CERMET	TPGX110300LC100	6.35	3.18	0	CS300890T	TORX T08
TPGX 110300L DC 100T	COATED CERMET	TPGX110300LC10T	6.35	3.18	0	CS300890T	TORX T08
TPGX 110300L DK 100	CARBIDE	TPGX110300LK100	6.35	3.18	0	CS300890T	TORX T08
TPGX 110300L DP 300	CARBIDE	TPGX110300LP300	6.35	3.18	0	CS300890T	TORX T08
TPGX 110302L DC 100	CERMET	TPGX110302LC100	6.35	3.18	0.2	CS300890T	TORX T08
TPGX 110302L DC 100T	COATED CERMET	TPGX110302LC10T	6.35	3.18	0.2	CS300890T	TORX T08
TPGX 110302L DK 100	CARBIDE	TPGX110302LK100	6.35	3.18	0.2	CS300890T	TORX T08
TPGX 110302L DP 300	CARBIDE	TPGX110302LP300	6.35	3.18	0.2	CS300890T	TORX T08
TPGX 110304L DC 100	CERMET	TPGX110304LC100	6.35	3.18	0.4	CS300890T	TORX T08
TPGX 110304L DC 100T	COATED CERMET	TPGX110304LC10T	6.35	3.18	0.4	CS300890T	TORX T08
TPGX 110304L DK 100	CARBIDE	TPGX110304LK100	6.35	3.18	0.4	CS300890T	TORX T08
TPGX 110304L DP 300	CARBIDE	TPGX110304LP300	6.35	3.18	0.4	CS300890T	TORX T08

INSERT CLAMPING SCREWS

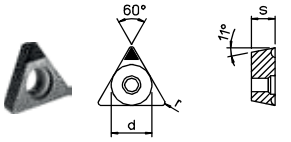


TORX WRENCH



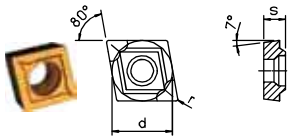
REF.	CODE		M	L	D	α	N·m	REF.	CODE
TS 21	494010002034		M 2x0.4	3.7	2.7	60°	0,5	TORX T06	101500900600
TS 211	494010002040		M 2x0.4	4	2.7	60°	0,5	TORX T06	101500900600
CS 250 T	494010002565		M 2.5x0.45	6	3.7	90°	1,0	TORX T08	101500900800
CS 300890 T	494010003008		M 3x0.5	8	4.1	90°	1,0	TORX T08	101500900800
TS 25	494010002555		M 2.5x0.45	5.7	3.45	60°	1,0	TORX T08	101500900800
TS 4	494010004008		M 4x0.7	10	5.5	60°	3,0	TORX T15	101500901500
TS 5	494010005009		M 5x0.8	11.5	7	60°	7,5	TORX T25	101500902500

TPGX ○○○○○○



REF.		CODE	d	s	r		
TPGX 090202 D20 MDC	SINTERED DIAMOND	TPGX090202MDC20	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090204 D20 MDC		TPGX090204MDC20	5.56	2.38	0.4	CS250T	TORX T08
TPGX 110302 D20 MDC		TPGX110302MDC20	6.35	3.18	0.2	CS300890T	TORX T08
TPGX 110304 D20 MDC		TPGX110304MDC20	6.35	3.18	0.4	CS300890T	TORX T08
TPGX 090202 D20 CBN	CUBIC BORON NITRIDE	TPGX090202CBN20	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090202 D25 CBN		TPGX090202CBN25	5.56	2.38	0.2	CS250T	TORX T08
TPGX 090204 D20 CBN		TPGX090204CBN20	5.56	2.38	0.4	CS250T	TORX T08
TPGX 090204 D25 CBN		TPGX090204CBN25	5.56	2.38	0.4	CS250T	TORX T08
TPGX 110302 D25 CBN		TPGX110302CBN25	6.35	3.18	0.2	CS300890T	TORX T08
TPGX 110304 D20 CBN		TPGX110304CBN20	6.35	3.18	0.4	CS300890T	TORX T08
TPGX 110304 D25 CBN		TPGX110304CBN25	6.35	3.18	0.4	CS300890T	TORX T08

CCMT ○○○○○○



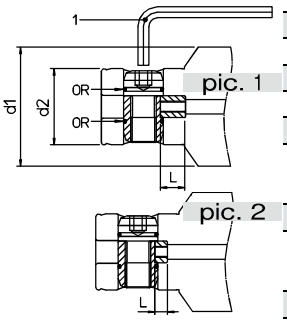
REF.		CODE	d	s	r		
CCMT 060202 DP 100R	CVD COATED CARBIDE	CCMT060202P100R	6.35	2.38	0.2	TS 25	TORX T08
CCMT 060202 DP 300	CARBIDE	CCMT060202P300	6.35	2.38	0.2	TS 25	TORX T08
CCMT 060204 DP 100R	CVD COATED CARBIDE	CCMT060204P100R	6.35	2.38	0.4	TS 25	TORX T08
CCMT 060204 DP 300	CARBIDE	CCMT060204P300	6.35	2.38	0.4	TS 25	TORX T08
CCMT 09T304 DP 100R	CVD COATED CARBIDE	CCMT09T304P100R	9.525	3.97	0.4	TS 4	TORX T15
CCMT 09T304 DP 300	CARBIDE	CCMT09T304P300	9.525	3.97	0.4	TS 4	TORX T15
CCMT 09T308 DP 100R	CVD COATED CARBIDE	CCMT09T308P100R	9.525	3.97	0.8	TS 4	TORX T15
CCMT 09T308 DP 300	CARBIDE	CCMT09T308P300	9.525	3.97	0.8	TS 4	TORX T15
CCMT 120404 DP 100R	CVD COATED CARBIDE	CCMT120404P100R	12.7	4.76	0.4	TS 5	TORX T25
CCMT 120404 DP 300	CARBIDE	CCMT120404P300	12.7	4.76	0.4	TS 5	TORX T25
CCMT 120408 DP 100R	CVD COATED CARBIDE	CCMT120408P100R	12.7	4.76	0.8	TS 5	TORX T25
CCMT 120408 DP 300	CARBIDE	CCMT120408P300	12.7	4.76	0.8	TS 5	TORX T25

BORING GRADE

ISO	CARBIDE	CERMET	COATED CERMET	CVD COATED CARBIDE
P01				
P10		DC100	DC100T	DP100R
P20				
P30	DP300			
P40				
K01				
K10	DK100	DC100	DC100T	DP100R
K20	DP300			
K30				

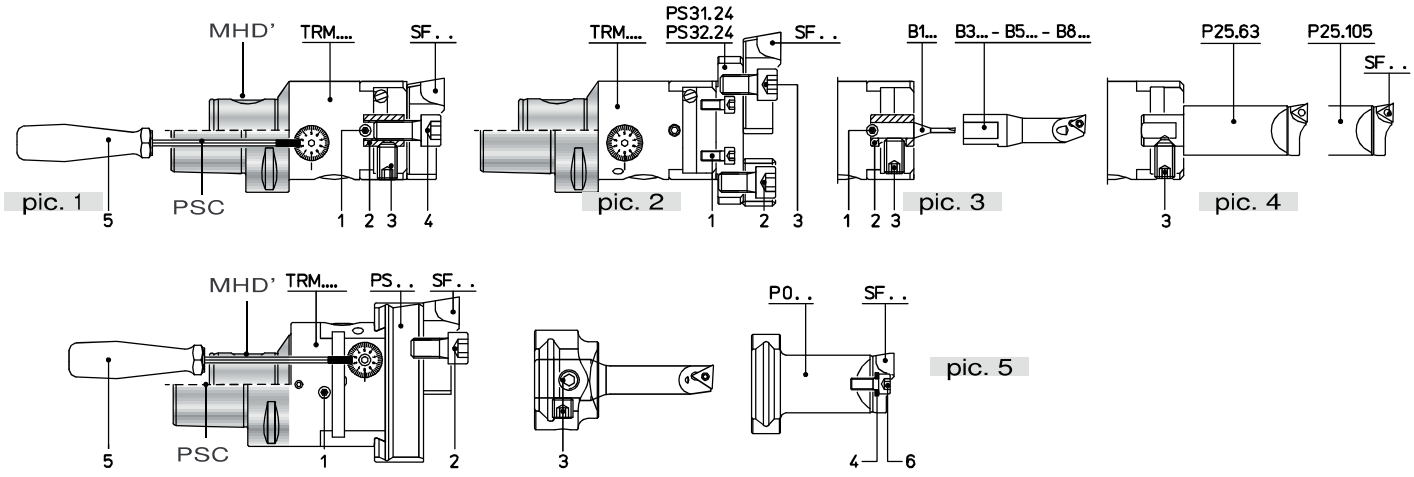
DP300	Roughing and finishing. Low carbon steel - stainless steels
DK100	Roughing and finishing. Aluminium alloy cast iron
DP100R	Roughing. Steels, alloy steels and cast iron
DC100	Finishing. Alloy steels and cast iron
DC100T	Finishing. Alloy steels, stainless steels and cast iron
D20MDC	Finishing. Aluminium alloys, non-ferrous materials and non-metals
D20CBN	Finishing. High hardness steels (over 50 HRC) (it may replace the grinding)
D25CBN	Finishing. High hardness steels (over 50 HRC) and interrupted cutting (it may replace the grinding)

SISTEM MHD'



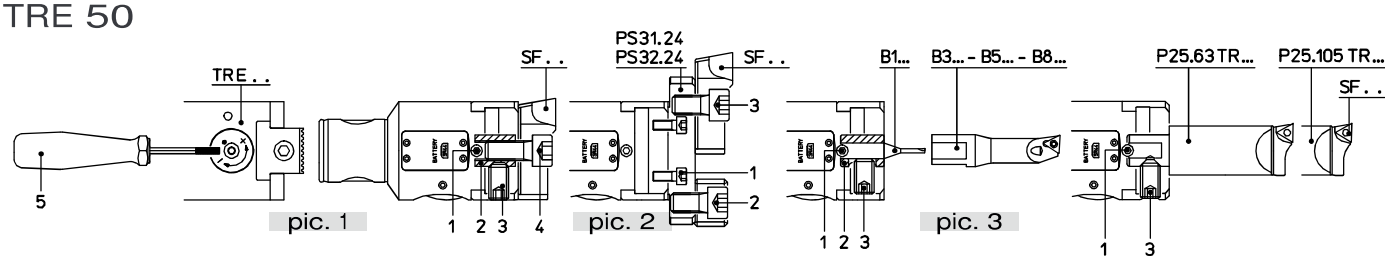
REF.	CODE	d1	d2	CODE 1	CODE OR	L	pic.
MHD' 16	381725001161	16	10	101500100250		2	2
MHD' 20	381725001201	20	13	101500100300		2.5	2
MHD' 25	381725001251	25	16	101500100300		3	2
MHD' 32	381725001321	32	20	101500100400	101254007510	3.55	2
MHD' 40	381725001401	40	25	101500100500	101254010010	4	2
MHD' 50 RD 50 / .. TRM - TRC - TR-E	381725001501	50	32	101500100600	101254013010	4.2	2
MHD' 50	381725001001	50	32	101500100600	101254013010	12.2	1
MHD' 63-80 RD 63 / .. TRM - TRC	381725001502	63-80	42	101500100800	101251002075	4.9	2
MHD' 63-80	381725001002	63-80	42	101500100800	101251002075	13.85	1

MHD' - PSC / TRM



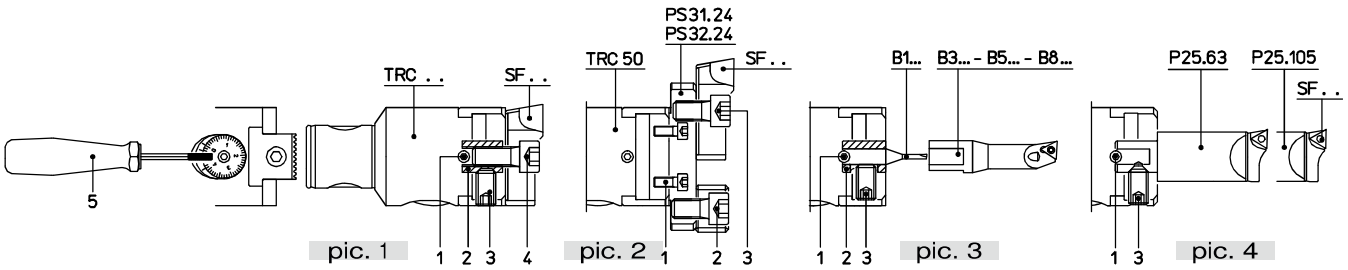
REF.	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5	CODE 6	pic.
TRM 16 MHD'	200100190301			100051030006	101500800150		1
TRM 20 MHD'	200100190301			100051040008	101500800150		1
TRM 25 MHD'	100271040004			100051050010	101500800200		1
TRM 32 MHD'	100271040006			100051060012	101500800200		1
TRM 40 MHD'	100271050005			100051080014	101500800250		1
TRM 50 MHD' PSC50-TRM50 PSC63-TRM50	100271050008	201041015002	100231100016	100051100025	101500800250		1
TRM 50 MHD' PSC50-TRM50 PSC63-TRM50	200100150501	100051100020	100051100020		101500800250		2
TRM 50 MHD' PSC50-TRM50 PSC63-TRM50	100271050008	200560116082	100231100016		101500800250		3-4
TRM 63 MHD' PSC63-TRM63	100251060010	100051100018	100251080008	100051050012	101500800300	100800100530	5
TRM 80-MHD' PSC63-TRM80	100251060014	100051100018	100251080008	100051050012	101500800300	100800100530	5
TRM 125 MHD'	100251060020	100051100025		100051060018	101500800300	100800100640	5

TRE 50



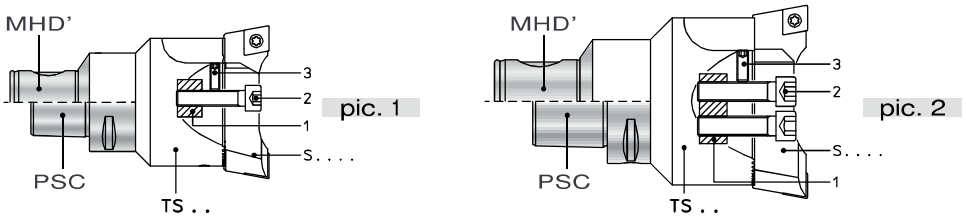
REF.	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5	pic.
TRE 50	100238060010	201041015002	100231100016	100051100025	101500800250	1
TRE 50	200100150501	100051100020	100051100020			2
TRE 50	100238060010	200560116082	100231100016			3

TRC



REF.	CODE 1		CODE 2		CODE 3		CODE 4		CODE 5		pic.
TRC 16	200100190301						100051030006		101500800150		1
TRC 20	200100190301						100051040008		101500800150		1
TRC 25	100271040004						100051050010		101500800150		1
TRC 32	100271050005						100051060012		101500800250		1
TRC 40	100271060006						100051080014		101500800300		1
TRC 50	100271060008		201041015002		100231100016		100051100025		101500800300		1
TRC 50	200100150501		100051100020		100051100025						2
TRC 50	100271060008		200560116082		100231100010						3-4
TRC 63	100271060008						100051100020		101500800300		1
TRC 80	100271060012						100051100025		101500800300		1

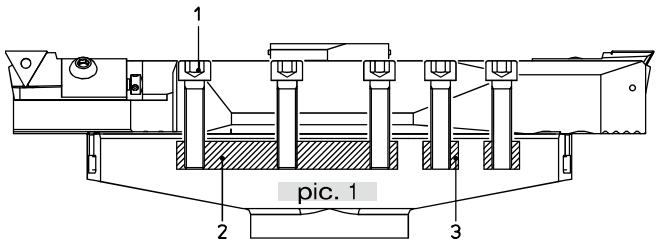
MHD' - PSC / TS



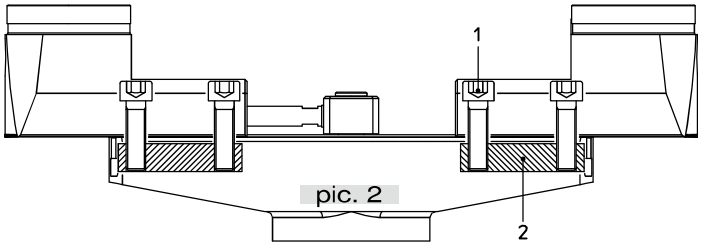
REF.	CODE 1		CODE 2		CODE 3		pic.
TS 16/16 MHD'	201430110008		100051030014		100231030004		1
TS 20/20 MHD'	201430110009		100051040015		100231030005		1
TS 25/25 MHD'	201430110032		100051040020		100231030008		1
TS 32/32 MHD'	201430110031		100051050025		100231040012		1
TS 40/40 MHD'	201430110029		100051060030		100231050014		1
TS 50/50 MHD' - PSC50-TS50 / PSC63-TS50	201430110013		100051080035		100231050012		1-2
TS 50/63 MHD'	201430110030		100051100040		100231060016		2
TS 63/63 MHD' - PSC63-TS63	201430110030		100051100040		100231060016		1-2
TS 80/80 MHD' - PSC63-TS80	201430110015		100051120045		100231080025		1-2
TS 80/90 MHD'	201430110015		100051120045		100231080025		1-2

BHT 250 - 500 - 750

SGROSSATURA BHT 250 - 500 - 750 SG



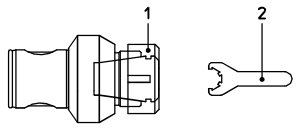
FINITURA BHT 250 - 500 - 750 SG



	REF.	CODE 1		CODE 2		CODE 3	
SGROSSATURA pic. 1	BHT 250 - 500 - 750 SG	100051100045		201430100065		201430100066	
FINITURA pic.2	BHT 250 - 500 - 750 FN	100051100035		201430100067			

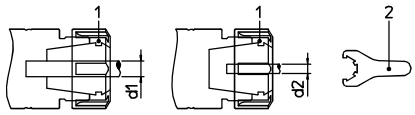
SPARE PARTS

PE - MHD' ER DIN 6499



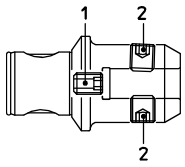
REF.	CODE 1		CODE 2	
PE 20 / ER16M	100451011600		101501001600	
PE 32 / ER25M	100451012500		101501002500	
PE 40 / ER25	100451032500		101501002501	
PE 50 / ER25	100451032500		101501002501	
PE 50 / ER32	100451033200		101501003201	
PE 63 / ER32	100451033200		101501003201	

PE - PSC / MONOd ER DIN 6499



REF.	CODE 1	d1		CODE 2	d2	
ER 16 M	100451011600	5 ~ 10		101501001600	1 ~ 4	
ER 25	100451032500	8 ~ 16		101501002501	2 ~ 7	
ER 32	100451033200	8 ~ 20		101501003201	3 ~ 7	

AW DIN 1835 B-E

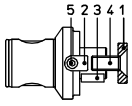


REF.	CODE 1		CODE 2	
AW 50/6	200100190808		200100190610	
AW 50/8	200100190808		200100190810	
AW 50/10	200100190809		200100191012	
AW 50/12	200100190809		200100191216	
AW 50/14	200100190809		200100191216	
AW 50/16	200100191215		200100191416	
AW 50/20	200100191215		200100191616	

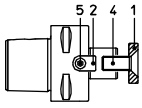
REF.	CODE 1		CODE 2	
AW 50/25	200100191615		200100191820	
AW 63/16	200100191215		200100191416	
AW 63/20	200100191215		200100191616	
AW 63/25	200100191615		200100191820	
AW 63/32	200100191615		200100192020	
AW 80/40	200100192019		200100192020	

PF MHD' - PSC

MHD'

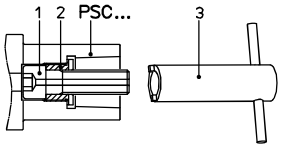


PSC



REF.	CODE 1		CODE 2		CODE 3		CODE 4		CODE 5	
PF 40/16	201010085010		201101800801		101001040014		100101080025		100051030008	
PF 40/22	201010105030		201101801002		101001060016		100101100025		100051040010	
PF 50/16	201010085010		201101800801		101001040014		100101080025		100051030008	
PF 50/22 MHD' / PSC50-PF22.25	201010105030		201101801002		101001060016		100101100025		100051040010	
PF 50/27 MHD' / PSC50-PF27.25	201010125030		201101801202		101001070018		100101120030		100051050012	
PF 50/32	201010165020		201101801402		101001080020		100101160035		100051060016	
PF 63/22	201010105030		201101801002		101001060016		100101100025		100051040010	
PF 63/27 MHD' / PSC63-PF27.25	201010125030		201101801202		101001070018		100101120030		100051050012	
PF 63/32 MHD' / PSC63-PF32.25	201010165020		201101801402		101001080020		100101160035		100051060016	
PF 80/32 MHD' / PSC80-PF32.30	201010165020		201101801402		101001080020		100101160035		100051060016	
PF 80/40 MHD' / PSC80-PF40.45	201010210010		201101801603		101001100025		100101200045		100051060018	
PF 80/50	201010260330		201101801802		101001120028		100101240050		100051060020	
PF 80/60			201101802510		101001140036				100051120025	

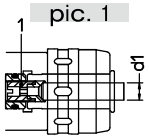
PSC



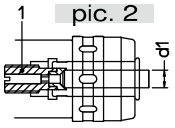
PSC	CODE 1		CODE 2		CODE 3	
40	200101151448		201032215005		101501402101	
50	200101151658		201032515005		101501402401	
63	200101152071		201033015021		101501403001	
80	200101152071		201033015021		101501403001	

FORCE VCR SETTING SCREW FOR INTERNAL COOLANT SUPPLY

pic. 1

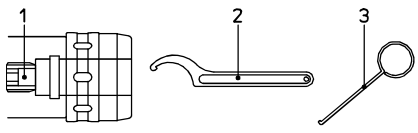


pic. 2



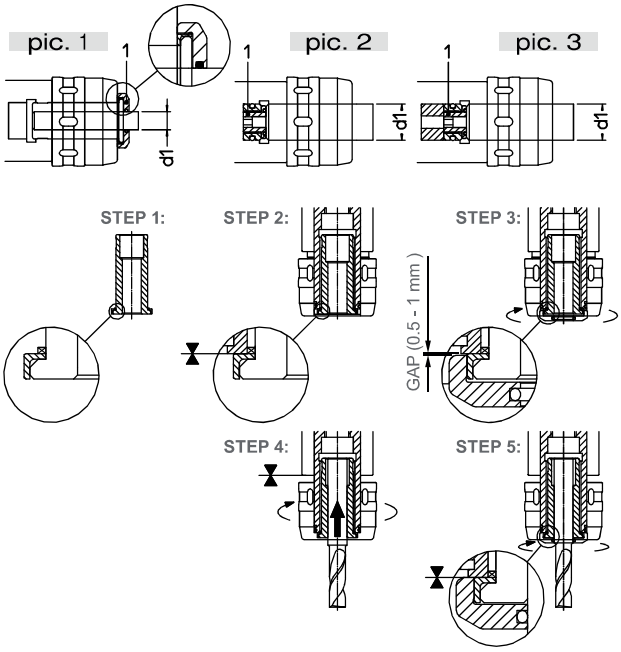
pic.	REF.	CODE 1	d1		pic.	REF.	CODE 1	d1	
1	VCR 20 MONOforce 20 HSK63-100 MHD'50 PSC 63-80	382041020032	3 ~ 5		2	VCR 20 MONOforce 20 DIN/BT-40-50	382041020031	3 ~ 5	
		382041020062	6 ~ 12				382041020061	6 ~ 12	
		382041020142	14 ~ 20				382041020141	14 ~ 20	
1	VCR 32 MONOforce 32 HSK63-100 MHD'63 PSC 63-80	382041032033	3 ~ 5		2	VCR 32 MONOforce 32 DIN/BT-40	382041032031	3 ~ 5	
		382041032063	6 ~ 12				382041032061	6 ~ 12	
		382041032143	14 ~ 20				382041032141	14 ~ 20	
		382041032253	25 ~ 32				382041032251	25 ~ 32	
					2	VCR 32 MONOforce 32 DIN/BT-50	382041032032	3 ~ 5	
							382041032062	6 ~ 12	
							382041032142	14 ~ 20	
							382041032252	25 ~ 32	

FORCE

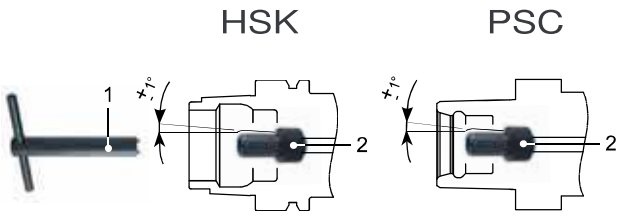


REF	CODE 1		CODE 2		CODE 3	
FORCE 12	200100191014		101500400028		201271600400	
FORCE 20	200100191615		101500400050		201271600400	
FORCE 32	200100191615		101500400075		201271600400	

FORCE GH - VT SEALING DEVICE FOR HIGH PRESSURE COOLANT SUPPLY

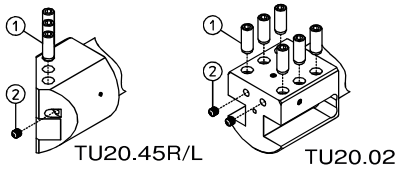


pic.	REF.	CODE 1	d1
1	GH 20 MONOforce 20 HSK63 MHD'50 / DIN/BT-40-50 PSC 63 - 80	382042020061	6
		382042020081	8
		382042020101	10
		382042020121	12
		382042020141	14
		382042020161	16
2	VT 20.20 MONOforce 20 DIN/BT-40-50 HSK63-100 PSC 63-80	382042020201	20
1	GH 32 MONOforce 32 DIN/BT-40-50 / HSK63-100 MHD'63 PSC 63-80	382042032061	6
		382042032081	8
		382042032101	10
		382042032121	12
		382042032141	14
		382042032161	16
		382042032181	18
		382042032201	20
		382042032251	25
2	VT 32.32 MONOforce 32 DIN/BT-40 HSK63-100 PSC 63-80	382042032321	32
3	VT 32.32.100 MONOforce 32 DIN/BT-50	382042032322	32



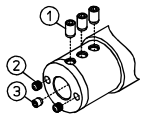
REF.	CODE 1	CODE 2
HSK-A50	101501101400	382019010001
HSK-A63	101501101600	382019012001
HSK-A80	101501101800	382019014001
HSK-A100	101501102200	382019016001
PSC 40	101501200700	382020006001
PSC 50	101501200800	382020007001
PSC 63	101501200900	382020008001
PSC 80	101501201100	382020010001

PSC - TU ISO 26623-1



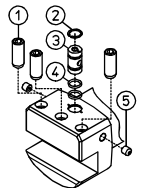
REF.	CODE 1	CODE 2
TCD' PSC 50 TU20.45R/L	100231120025	100585010800
TCD' PSC 63 TU25.45R/L	100231120025	100585010800
TCD' PSC 80 TU32.45R/L	100231120025	100585010800
TCD' PSC 50 TU20.02	100231120025	100585010800
TCD' PSC 63 TU25.02	100231120025	100585010800
TCD' PSC 80 TU32.02	100231120025	100585010800

PSC - D... ISO 26623-1



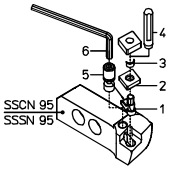
REF.	CODE 1	CODE 2	CODE 3
TCD' PSC 50 D.25x80	100231100016	100585010800	
TCD' PSC 63 D.25x80	100231100016	100585010800	
TCD' PSC 63 D.40x125	100231120020	100585010800	100231080008
TCD' PSC 80 D.25x85	100231100016	100585010800	
TCD' PSC 80 D.40x125	100231120020	100585010800	100231080008

PSC - TU ISO 26623-1



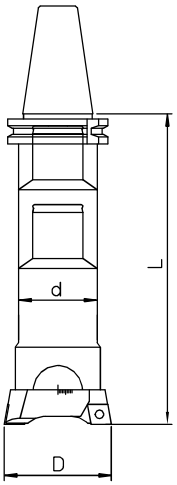
REF.	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5
TCD' PSC 63 TU20.90	100231120025	100900301400	201462501400	101251002043	100580610180
TCD' PSC 63 TU25.90	100231120025	100900301400	201462501400	101251002043	100580610180
TCD' PSC 80 TU32.90	100231120025	100900301400	201462501400	101251002043	100580610180

SS.. 95

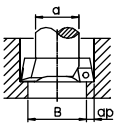


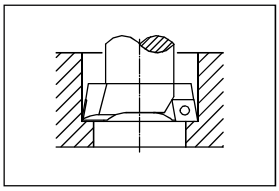
REF.	CODE 1	CODE 2	CODE 3	CODE 4	CODE 5	CODE 6
SSCN 95	491111190600	492031190600	100655095112	101501301408	494311190600	101500100400
SSSN 95	491111190600	492035190600	100655095112	101501301408	494311190600	101500100400

RECOMMENDED CUTTING CONDITIONS FOR ROUGHING OPERATIONS WITH DOUBLE-BIT HEADS TS

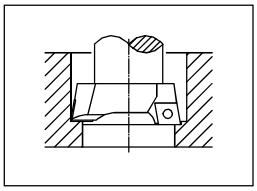


material	boring bar dimensions	working conditions	cutting speed Vc = m/min. diameter D < 38	cutting speed Vc = m/min. diameter D = 38~120	cutting speed Vc = m/min. diameter D > 120	feed fn = mm/rev (twin cutters) insert radius R = 0.2	feed fn = mm/rev (twin cutters) insert radius R = 0.4	feed fn = mm/rev (twin cutters) insert radius R = 0.8
carbon steel HB ≤ 200	L / d = 2.5	good	120 - 180	140 - 200	160 - 250		0.2 - 0.4	0.3 - 0.5
	L / d = 4	normal	100 - 160	120 - 180	140 - 200		0.2 - 0.4	0.3 - 0.5
	L / d = 6.3	difficult	70 - 100	70 - 100	70 - 100	0.15 - 0.3	0.2 - 0.4	
carbon steel HB > 200	L / d = 2.5	good	100 - 160	120 - 180	140 - 200		0.2 - 0.4	0.3 - 0.5
	L / d = 4	normal	80 - 140	100 - 160	120 - 180		0.2 - 0.4	0.3 - 0.5
	L / d = 6.3	difficult	60 - 90	70 - 100	70 - 100	0.15 - 0.3	0.2 - 0.4	
stainless steel AISI 304 - 316	L / d = 2.5	good	80 - 110	90 - 120	100 - 140		0.2 - 0.4	0.3 - 0.5
	L / d = 4	normal	70 - 100	80 - 110	90 - 120		0.2 - 0.4	0.3 - 0.5
	L / d = 6.3	difficult	60 - 90	60 - 90	60 - 90	0.15 - 0.3	0.2 - 0.4	
cast iron	L / d = 2.5	good	90 - 120	100 - 140	120 - 160		0.2 - 0.4	0.3 - 0.5
	L / d = 4	normal	70 - 100	90 - 120	100 - 140		0.2 - 0.4	0.3 - 0.5
	L / d = 6.3	difficult	60 - 90	60 - 90	60 - 90	0.15 - 0.3	0.2 - 0.4	
aluminium	L / d = 2.5	good	160 - 250	200 - 300	250 - 350		0.3 - 0.5	0.4 - 0.6
	L / d = 4	normal	140 - 200	160 - 250	200 - 300		0.3 - 0.5	0.4 - 0.6
	L / d = 6.3	difficult	100 - 150	100 - 150	100 - 150	0.2 - 0.4	0.3 - 0.5	

cutting depth ap = mm	working range Ø = mm	max. cutting depth steel	max. cutting depth cast iron, aluminium
	18 - 28	1.5 - 2	2 - 2.5
	28 - 50	2 - 3	2.5 - 3.5
	50 - 68	3 - 4	3.5 - 5
	68 - 200	4 - 5	5 - 7
	200 - 500	5 - 6	6 - 8



Twin cutters at the same cutting diameter

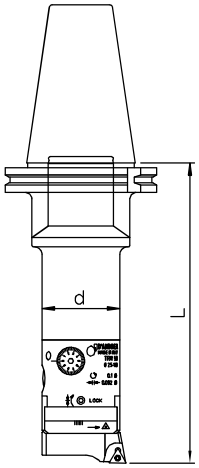


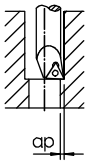
Twin cutters at different cutting diameters

It's advisable to start with B hole ≥ the boring bar diameter d.

ATTENTION: For boring operations at different diameters, reduce to a half the feed indicated on the above table.

RECOMMENDED CUTTING CONDITIONS FOR BORING OPERATIONS WITH TESTAROSSA TRM / TRC / TR-E



material	boring bar dimensions	working conditions	cutting speed Vc= m/min.	feed fn = mm/rev insert radius R = 0.0	feed fn = mm/rev insert radius R = 0.2	feed fn = mm/rev insert radius R = 0.4	quality insert	cutting depth
carbon steel HB ≤ 200	L / d = 2.5	good	200 - 300		0.05 - 0.08	0.07 - 0.1	DC100 DP300	 ap 0.1 - 0.25 mm
	L / d = 4	normal	160 - 250		0.05 - 0.08	0.07 - 0.1		
	L / d = 6.3	difficult	70 - 100	0.05 - 0.08	0.05 - 0.08			
carbon steel HB > 200	L / d = 2.5	good	160 - 250		0.05 - 0.08	0.07 - 0.1	DC100	
	L / d = 4	normal	150 - 200		0.05 - 0.08	0.07 - 0.1		
	L / d = 6.3	difficult	70 - 100	0.05 - 0.08	0.05 - 0.08			
stainless steel AISI 304 - 316	L / d = 2.5	good	120 - 160		0.05 - 0.08	0.07 - 0.1	DP300	
	L / d = 4	normal	100 - 140		0.05 - 0.08	0.07 - 0.1		
	L / d = 6.3	difficult	70 - 100	0.05 - 0.08	0.05 - 0.08			
cast iron	L / d = 2.5	good	120 - 160		0.05 - 0.08	0.07 - 0.1	DK100 DP100	
	L / d = 4	normal	100 - 140		0.05 - 0.08	0.07 - 0.1		
	L / d = 6.3	difficult	70 - 100	0.05 - 0.08	0.05 - 0.08			
aluminium	L / d = 2.5	good	300 - 400		0.05 - 0.08	0.07 - 0.1	DK100	
	L / d = 4	normal	250 - 350		0.05 - 0.08	0.07 - 0.1		
	L / d = 6.3	difficult	100 - 150	0.05 - 0.08	0.05 - 0.08			
steel HB > 200	L / d = 2.5	good	80 - 100		0.04 - 0.06	0.05 - 0.07	D20CBN	
	L / d = 4	normal	80 - 100		0.04 - 0.06	0.05 - 0.07		

CALCULATION FORMULAS FOR BORING

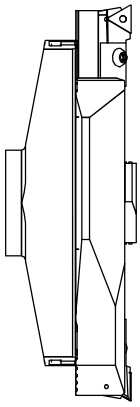
Vc cutting speed (m/min.)
D diameter of workpiece (mm)
n number of revolutions / min' (rev./min)
Vf feed rate (mm/min.)
fn feed / rev. (mm/rev)
π 3.14

$$Vc = \frac{\pi \cdot D \cdot n}{1000}$$

$$n = \frac{Vc \cdot 1000}{\pi \cdot D}$$

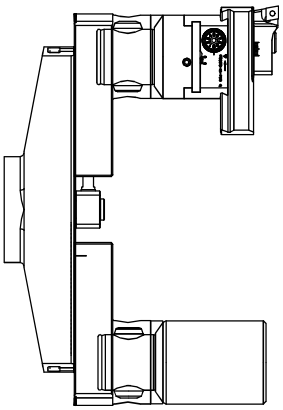
$$Vf = n \cdot fn$$

RECOMMENDED CUTTING CONDITIONS FOR ROUGHING OPERATIONSBHT 250-500-750



material	boring bar dimensions	working conditions	cutting speed Vc= m/min.	feed fn = mm/rev (twin cutters) insert radius		cutting depth		qualità quality insert
				R = 0.4	R = 0.8	steel	cast iron aluminium	
carbon steel HB ≤ 200	L / d = 2.5	good	160 - 250	0.2 - 0.4	0.3 - 0.5	1.5 - 8	1.5 - 10	DC100 DP300
	L / d = 4	normal	140 - 200	0.2 - 0.4	0.3 - 0.5			
carbon steel HB > 200	L / d = 2.5	good	140 - 200	0.2 - 0.4	0.3 - 0.5	1.5 - 8	1.5 - 10	DC100 DC100T
	L / d = 4	normal	120 - 180	0.2 - 0.4	0.3 - 0.5			
stainless steel AISI 304 - 316	L / d = 2.5	good	100 - 140	0.2 - 0.4	0.3 - 0.5	1.5 - 8	1.5 - 10	DP300
	L / d = 4	normal	80 - 120	0.2 - 0.4	0.3 - 0.5			
cast iron ductile cast iron	L / d = 2.5	good	120 - 160	0.2 - 0.4	0.3 - 0.5	1.5 - 8	1.5 - 10	DK100 DC100
	L / d = 4	normal	100 - 140	0.2 - 0.4	0.3 - 0.5			
aluminium	L / d = 2.5	good	250 - 350	0.3 - 0.5	0.4 - 0.6	1.5 - 8	1.5 - 10	DK100
	L / d = 4	normal	200 - 300	0.3 - 0.5	0.4 - 0.6			

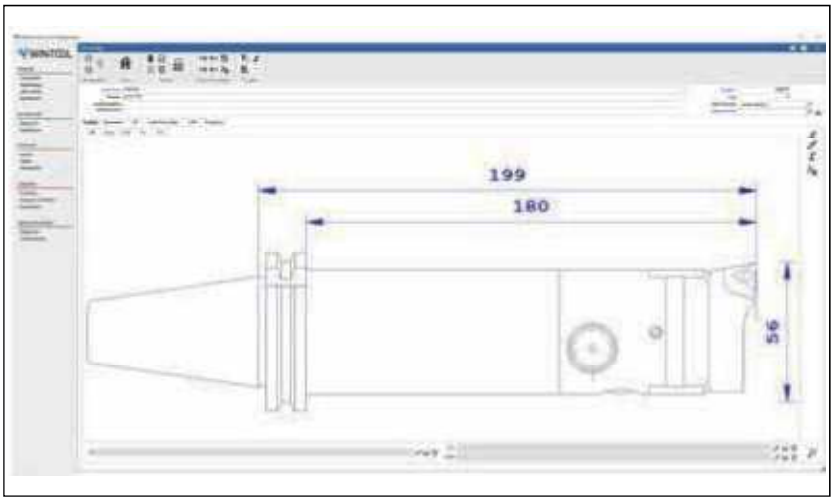
RECOMMENDED CUTTING CONDITIONS FOR FINISHING OPERATIONS CON BHT 250-500-750

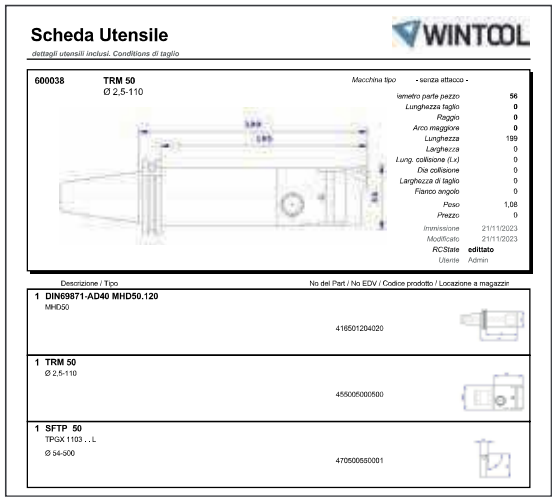


material	boring bar dimensions	working conditions	cutting speed Vc= m/min.	feed fn = mm/rev insert radius		cutting depth	quality insert
				R = 0.2	R = 0.4		
carbon steel HB ≤ 200	L / d = 2.5	good	200 - 300	0.05 - 0.08	0.07 - 0.1	0.15 - 0.3 mm	DC100 DP300
	L / d = 4	normal	150 - 250	0.05 - 0.08	0.07 - 0.1		
carbon steel HB > 200	L / d = 2.5	good	160 - 250	0.05 - 0.08	0.07 - 0.1		DC100 DC100T
	L / d = 4	normal	140 - 200	0.05 - 0.08	0.07 - 0.1		
stainless steel AISI 304 - 316	L / d = 2.5	good	90 - 140	0.05 - 0.08	0.07 - 0.1		DP300
	L / d = 4	normal	80 - 120	0.05 - 0.08	0.07 - 0.1		
cast iron ductile cast iron	L / d = 2.5	good	120 - 180	0.05 - 0.08	0.07 - 0.1		DK100 DC100
	L / d = 4	normal	100 - 140	0.05 - 0.08	0.07 - 0.1		
aluminium	L / d = 2.5	good	250 - 400	0.05 - 0.08	0.07 - 0.1		DK100
	L / d = 4	normal	200 - 350	0.05 - 0.08	0.07 - 0.1		
Hardened steel	L / d = 2.5	good	60 - 100	0.05 - 0.08	0.07 - 0.1		D20CBN
	L / d = 4	normal	60 - 100	0.05 - 0.08	0.07 - 0.1		

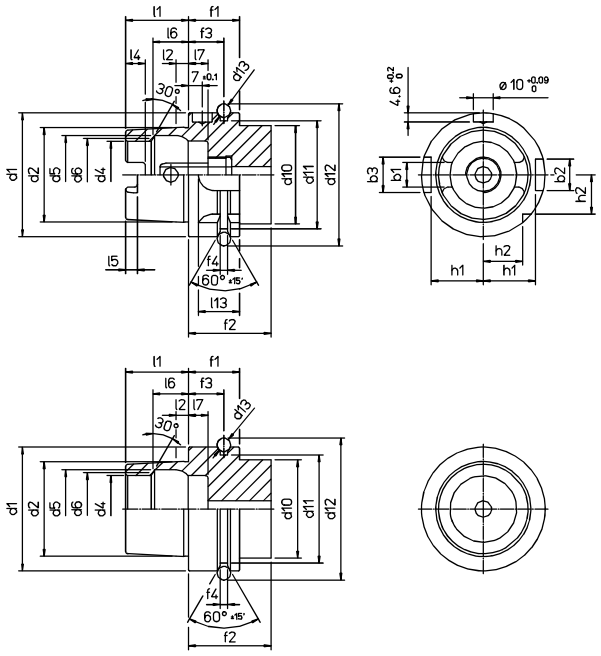
WINTOOL

It allows to be graphically constructed in a short period of time, showing the complete composition of the Modulhard'Andrea tools, including dimensions, weight and the list of components.



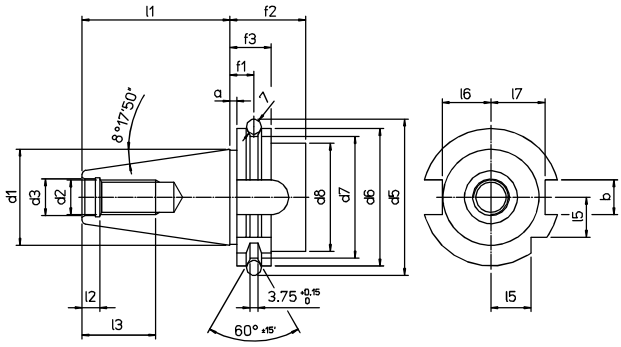


HSK-A



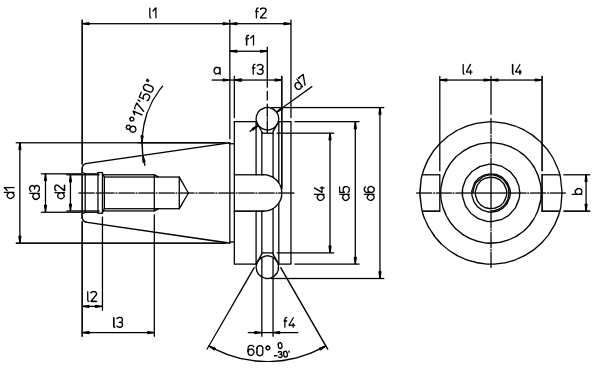
HSK	32	40	50	63	80	100
b1 $^{+0.04}_{-0.04}$	7.05	8.05	10.54	12.54	16.04	20.02
b2 H10	7	9	12	16	18	20
b3 H10	9	11	14	18	20	22
d1 h10	32	40	50	63	80	100
d2	24.007	30.007	38.009	48.010	60.012	75.013
d4 H10	17	21	26	34	42	53
d5 H11	20.5	25.5	32	40	50	63
d6	19	23	29	37	46	58
d10 max.	26	34	42	53	68	88
d11 $^{0}_{-0.1}$	26.5	34.8	43	55	70	92
d12 $^{0}_{-0.1}$	37	45	59.3	72.3	88.8	109.75
d13	4		7			
f1 $^{0}_{-0.1}$	20		26			29
f2 min.	35		42			45
f3 ± 0.1	16		18			20
f4 $^{+0.15}_{0}$	2		3.75			
h1 $^{0}_{-0.2}$	13	17	21	26.5	34	44
h2 $^{0}_{-0.3}$	9.5	12	15.5	20	25	31.5
l1 $^{0}_{-0.2}$	16	20	25	32	40	50
l2	3.2	4	5	6.3	8	10
l4 $^{+0.2}_{0}$	5	6	7.5	10	12	15
l5 $^{+0.2}_{0}$	3	3.5	4.5	6	8	10
l6 JS10	8.92	11.42	14.13	18.13	22.85	28.56
l7 $^{0}_{-0.1}$	8		10	10	12.5	12.5
l13	12		19	21	22	24

DIN 69871 A (ISO 7388-1)



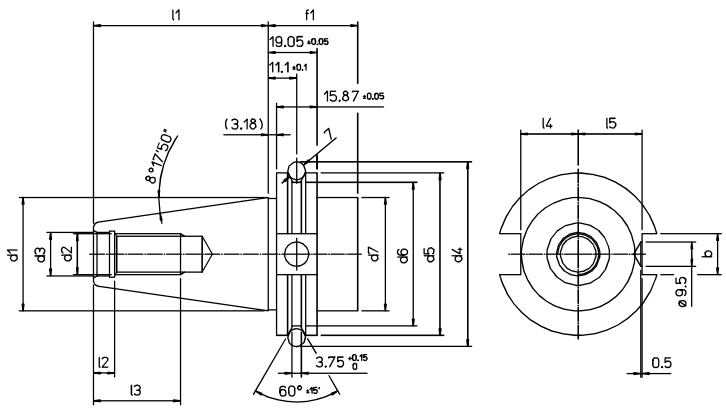
ISO	30	40	45	50	60
a ± 0.1	3.2				
b +0.5 / 0	16.1		19.3	25.7	
d1	31.75	44.45	57.15	69.85	107,95
d2 6H	M12	M16	M20	M24	M30
d3 H7	13	17	21	25	32
d5 ± 0.05	59.3	72.3	91.35	107.25	164,75
d6 0 / -0.1	50	63.55	82.55	97.50	155
d7 0 / -0.5	44.3	56.25	75.25	91.25	147,70
d8 max.	45	50	63	80	130
f1 ± 0.1	11.1				
f2 min.	35				38
f3 0 / -0.1	19.1				
l1 0 / -0.3	47.8	68.4	82.7	101.75	161,90
l2 +0.5 / 0	5.5	8.2	10	11.5	14
l3 min.	24	32	40	47	59
l5 0 / -0.3	15	18.5	24	30	49
l6 0 / -0.3	16.4	22.8	29.1	35.5	54,5
l7 0 / -0.3	19	25	31.3	37.7	59,3

MAS 403 BT A



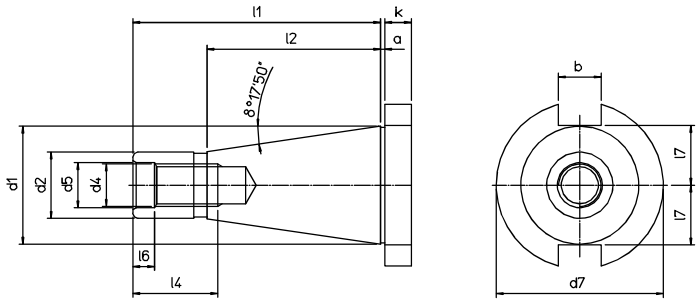
ISO	30	35	40	45	50	60
a ± 0.4	2			3		
b +0.2 / 0	16.1			19.3	25.7	25,7
d1	31.75	38.10	44.45	57.15	69.85	107,95
d2 6H	M 12		M 16	M 20	M 24	M30
d3 H8	12.5		17	21	25	31
d4 0 / -0.5	38	43	53	73	85	135
d5 h8	46	53	63	85	100	155
d6 ± 0.05	56.03	65.68	75.56	100.09	118.89	180.22
d7	8	10		12	15	20
f1 ± 0.1	13.6	14.6	16.6	21.2	23.2	28,2
f2	22	24	27	33	38	48
f3 min.	17	20	21	26	31	34
f4	4	5		6	7	11
l1 ± 0.2	48.4	56.4	65.4	82.8	101.8	161,8
l2 +0.5 / 0	7		9	11	13	16
l3 min.	24		30	36	45	56
l4 0 / -0.3	16.3	19.6	22.6	29.1	35.4	60,1

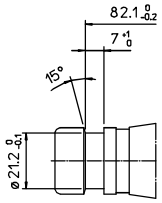
ANSI/CAT



ISO	40	45	50
b +0.2 / 0	16.1	19.3	25.7
d1 6H	44.45	57.15	69.85
d2	M 16	M 20	M 24
d3 H7	17	21	25
d4 ±0.05	72.3	91.35	108.25
d5 0 / -0.1	63.55	82.55	98.5
d6 0 / -0.5	56.25	75.25	91.25
d7 ±0.15	44.45	57.15	69.95
f1 min	35		38
l1 0 / -0.3	68.4	82.7	101.75
l2 +0.5 / 0	8.2	10	11.5
l3 min.	32	40	47
l4 0 / -0.3	22.8	29.10	35.50
l5 0 / -0.3	25	31.3	37.7

DIN 2080

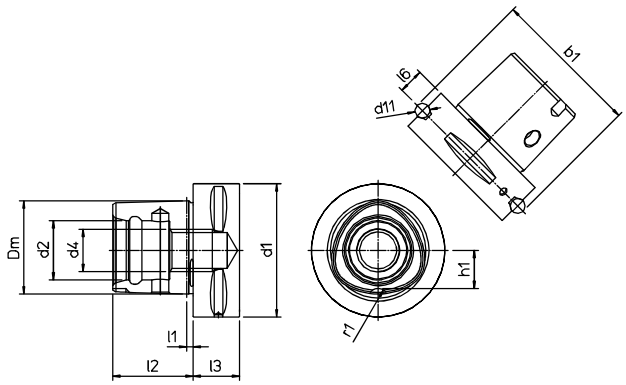




ISO 40 OTT

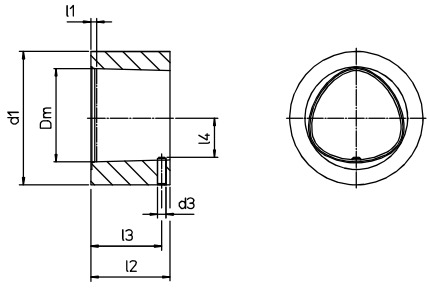
ISO	30	40	45	50
a ±0.2	1.6		3.2	
b H12	16.1		19.3	25.7
d1	31.75	44.45	57.15	69.85
d2 a10	17.4	25.3	32.4	39.6
d4 ±0.05	M 12	M 16	M 20	M 24
d5	13	17	21	26
d7 0 / -0.4	50	63	80	97.5
k ±0.15	8	10	12	12
l1	68.4	93.4	106.8	126.8
l2	48.4	65.4	82.8	101.8
l4	24	32	40	47
l6 +0.5/ 0	5.5	8.2	10	11.5
l7 max.	16.2	22.5	29	35.3

ISO 26623-1



PSC	40	50	63	80
b1 ±0.1	46	59.3	70.7	86
Dm	28	35	44	55
d1 ±0.1	40	50	63	80
d2 +0.1 -0.05	18	21	28	32
d4	M14x1.5	M16x1.5	M20x2	
d11	5	7		
l1	2.5	3		
l2 ±0.1	24	30	38	48
l3 min	20		22	30
l6 ±0.15	8	10	12	
h1 ±0.1	11	14	18	22.2
r1 ±0.3	4	5	6	7

ISO 26623-2



PSC	40	50	63	80
Dm	28	35	44	55
d1 min	40	50	63	80
d3	2.5	3	4	5
l1	2.3	2.8	2.8	2.8
l2 ±0.1	23.4	29.4	37.4	47.4
l3 ±0.2	21	26	33.5	43
l4	11.5±0.2	14.5±0.2	18.5±0.2	22.8±0.2