

RE-AL

Swiss Made

DIN212
Machine reamers

Hard surface coating

TiAlN-NANO

DIN8089
Reamers for automatic
lathe

DIN 8093-8094

Carbide reamers

Reamers with TS

DIN208
Expandable reamers
with TS

DIN 206
Hand-reamers

DIN311
Taper bridge reamers
with TS

DIN 212-208
High-helix machine
reamers

DIN 2179-2180
High-helix taper
pin reamers

Floating holder
Technical dates

Recommendations
for reaming

Power Reaming

8. REAL

9. LOUIS

10. PCM

11. WTO

12. REGOFIX

13. DIXI

14. Manigley

Machine precision reamers

from stock **DIN 212** every 0.01mm
DIN 212 H7

HSS-E, TiAlN or NANO
hard surface coating
straight shank h8
left hand spiral 7-8 ° ,
right hand cut

8. REAL

9. LOUIS

10. PCM

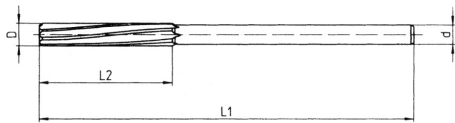
11. WTO

12. REGOFIX

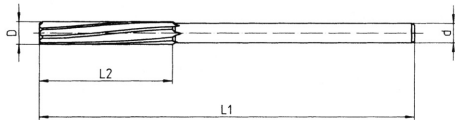
13. DIXI

14. Manigley

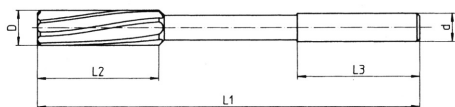
	D ∅ mm	L1	L2	L3	d	Z
tol. 0/+0.003 lead angle 60 °	0.60-1.32	40	15		1.2	4
	1.33-1.50	40	15		1.5	4
	1.51-2.12	50	20		2.0	4
	2.13-2.65	50	20		2.5	4



tol. 0/+0.004 lead angle 45 ° female centres	2.66-3.05	61	20		2.50	6
	3.06-3.35	65	25		3.00	6
	3.36-3.75	70	25		3.00	6



tol. 0/+0.004 lead angle 45 ° female centres	3.76-4.25	75	25	32	4.00	6
	4.26-4.75	80	28	32	4.50	6
	4.76-5.30	86	28	34	5.00	6
	5.31-6.05	93	32	36	5.50	6
	6.06-6.70	101	32	38	6.00	6
	6.71-7.55	109	32	40	7.00	6
	7.56-8.50	117	33	42	8.00	6
	8.51-9.50	125	36	42	9.00	6
	9.51-10.60	133	38	44	10.00	6
	10.61-11.80	142	41	44	10.00	6
	11.81-13.20	151	44	44	10.00	6
	13.21-14.05	160	47	50	12.50	8
	14.06-15.05	162	50	50	12.50	8
	15.06-16.05	170	52	50	12.50	8
	16.06-17.05	175	54	52	14.00	8
	17.06-18.05	182	56	52	14.00	8
18.06-19.05	189	58	58	16.00	8	
19.06-20.05	195	60	58	16.00	8	





RE-AL

8. REAL

9. LOUIS

10. PCM

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14. Manigley

HSS-E et TiAlN · DIN 212 stock RE-AL reamers HSS-E and TiAlN

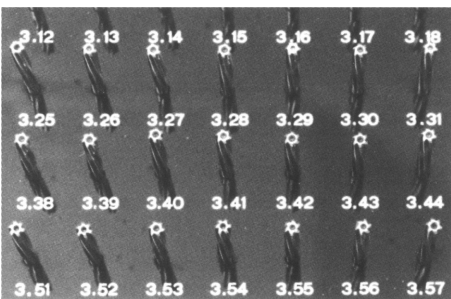
Table with columns for diameter (0.60 to 1.28) and various technical specifications for HSS-E and TiAlN reamers. The table is organized into rows corresponding to different product lines (8-14).

NANO hard surface coating, delivery 7days

Machine reamers in sets

from stock **DIN 212** every 0.01mm
DIN 212 H7

HSS-E, TiAlN or NANO
hard surface coating
special sets on request

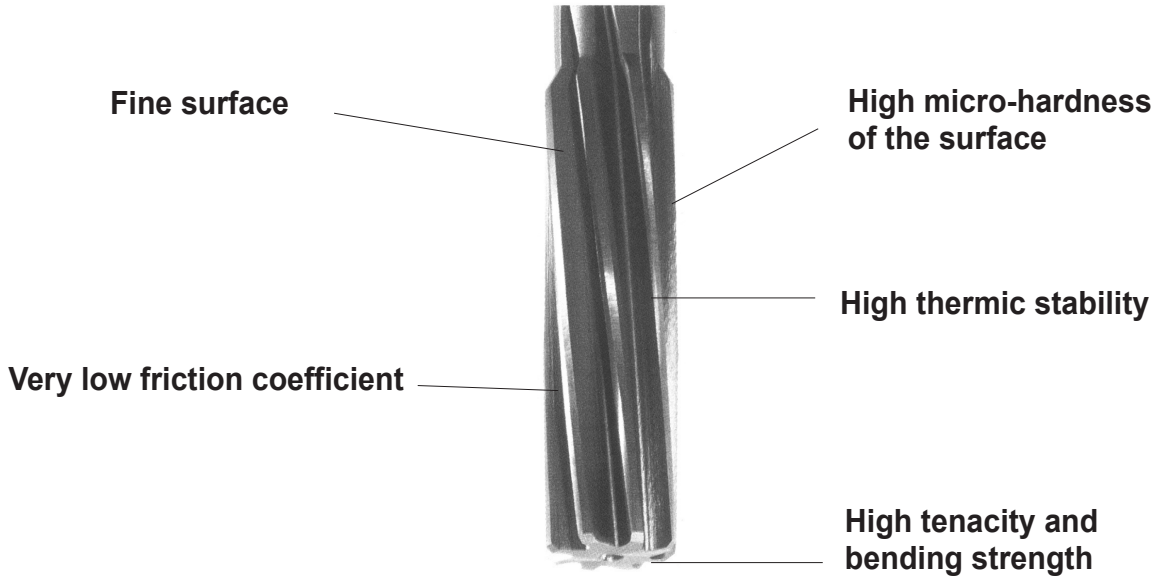


Code	∅ mm	in steps	pieces
1040	0.60-1.01	0.01	42
1041	0.98-2.01	0.01	104
1042	1.98-3.01	0.01	104
1043	2.98-4.01	0.01	104
1044	3.98-5.01	0.01	104
1045	4.98-6.01	0.01	104
5001	6.01-6.50	0.01	50
5002	6.51-7.00	0.01	50
5003	7.01-7.50	0.01	50
5004	7.51-8.00	0.01	50
5005	8.01-8.50	0.01	50
5006	8.51-9.00	0.01	50
5007	9.01-9.50	0.01	50
5008	9.51-10.00	0.01	50
5009	10.01-10.50	0.01	50
5010	10.51-11.00	0.01	50
5011	11.01-11.50	0.01	50
5012	11.51-12.00	0.01	50
5013	12.01-12.50	0.01	50
5014	12.51-13.00	0.01	50
3001	0.97-1.02		
	1.47-1.52		
	1.97-2.02		
	2.47-2.52		
	2.97-3.02	0.01	30
3002	3.47-3.52		
	3.97-2.02		
	4.47-4.52		
	4.97-5.02		
	5.47-5.52	0.01	30
3003	5.97-6.02		
	6.97-7.02		
	7.97-8.02		
	8.97-9.02		
	9.97-10.02	0.01	30
3004	1-13H7	1.00	13
3601	1.97-2.02		
	2.97-3.02		
	3.97-4.02		
	4.97-5.02		
	5.97-6.02		
	7.97-8.02	0.01	36
3602	3/32-5/15	INCH	40
6301	0.90-6.00	0.10	63
4002	6.10-10.00	0.10	40

Hard surface coatings

8. REAL

TiAlN - NANO TiAlN and NANO the modern RE-AL reaming technique the evident alternative to carbide reamers

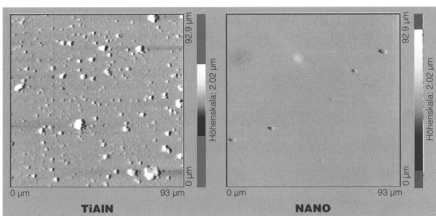


Recommended applications

DIN 212 & DIN 8089 \varnothing 0.60-20mm

HSS-E+

Recommendations for reaming	TiAlN	NANO
Hardness	3'000 HV	3'800 HV
Resistance to oxydation	800°C	800°C
Friction coefficient	0.4	0.3
Coating thickness	0.7µm	0.7µm
Surface speed	20-30 m/min	
Feed	0.-0.2 mm/U	
Depth of cut	0.1-0.2 mm/ \varnothing	
Material	Steel up to 1200N	Special material
	Stainless steel	Aluminium with high contaent of Si
	Free cutting steel	Non-magnetic material
	Non-Ferrous metal	Titan
	Plastics	Fibre strengthened material
	Cast steel and iron	Heat treated material
		Graphite



9. LOUIS

10. PCM

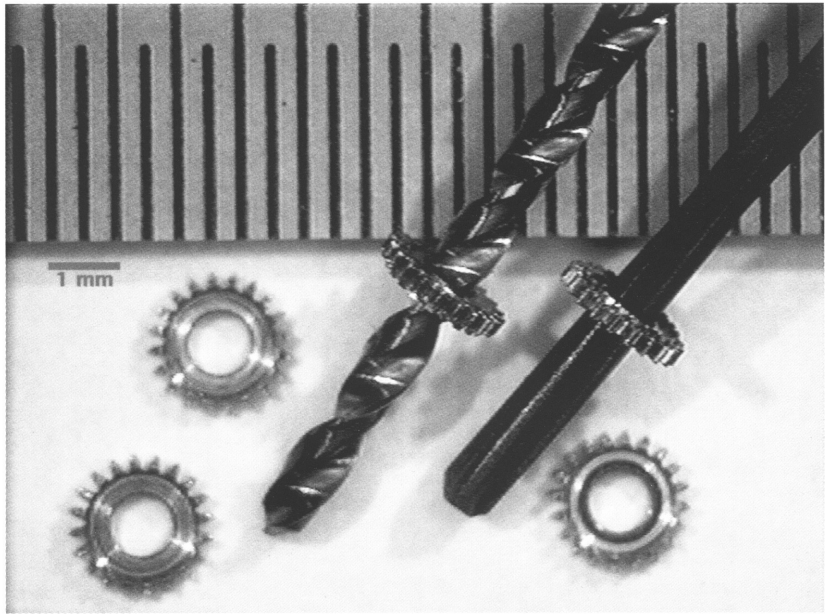
11. WTO

12. REGOFIX

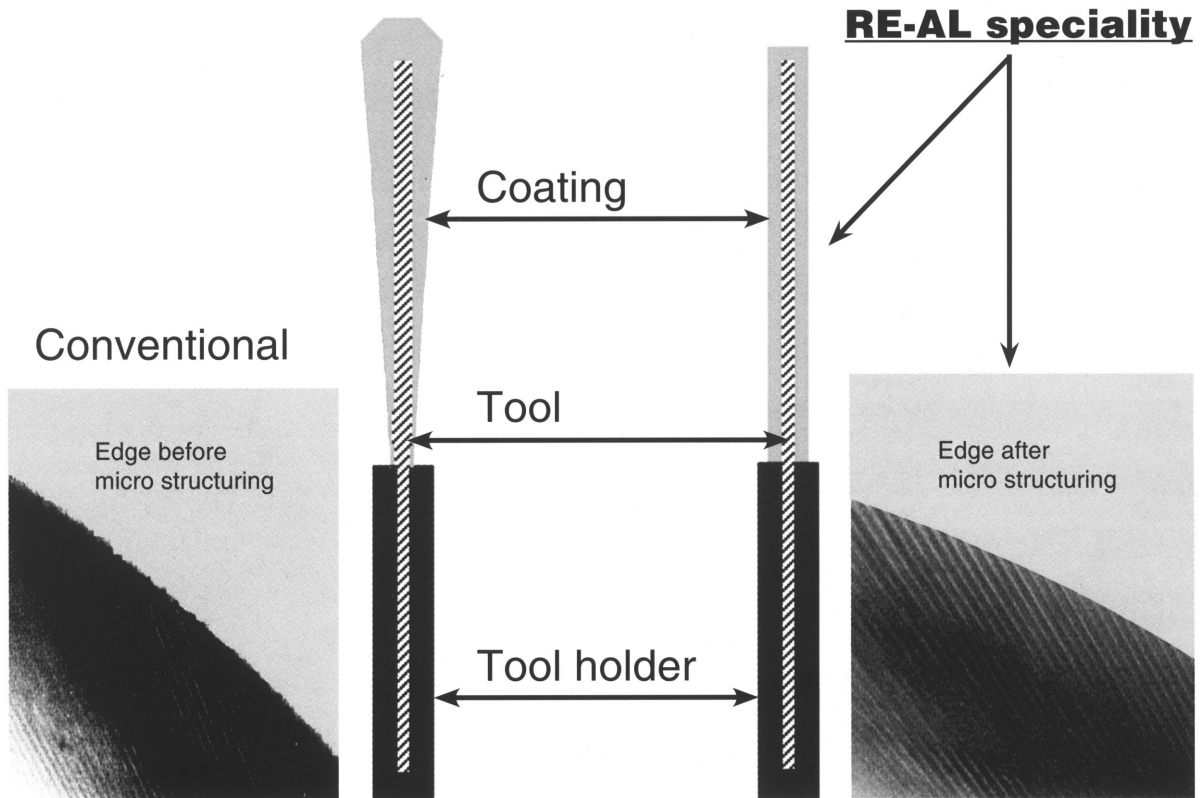
13. DIXI

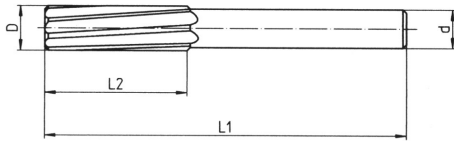
14. Manigley

Micro-cutting with HSS-E hard surface coated reamers



Very fine coating thickness



**RE-AL****NC Reamers for automatic lathe****DIN 8089** every 0.01mm
DIN 8089 H7for short tool feeding
HSS-E, also with and
NANO hard surface coatings
straight shank h6 in full diametertol. 0/+0.004
lead angle 45 °
female centres

D \varnothing mm	L1	L2	d	Z
3.76-				
4.25	56	20	3.0	6
4.26-				
5.30	63	22	4.0	6
5.31-				
6.70	63	22	5.0	6
6.71-				
8.50	71	25	6.0	6
8.51-				
10.60	71	25	8.0	6
10.61-				
13.20	80	28	10.0	6
13.21-				
17.00	90	32	12.0	8
17.01-				
20.05	100	36	16.0	8

\varnothing 3.76-20.05 mm Left hand spiral flutes 7-8 ° right hand cut
 \varnothing 3.76-13.20 mm Right hand spiral flutes 7-8 °, right hand cut

NC-Reamers

* for high precision shrink bushing

for high precision concentricity and reaming result

8. REAL

9. LOUIS

10. PCM

11. WTO

12. REGOFIX

13. DIXI

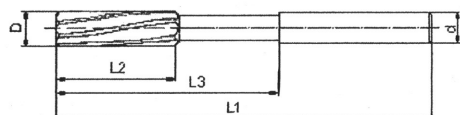
14. Manigley

Carbide machine reamers K10 Micrograin

DIN 8093 every 0.01mm
DIN 8093 H7
 similar

58-62-60 °
 unequal flute division,
 cyl. Shank h6 left hand spiral
 flutes 12 °, right hand cut

tol. 0/+0.003
 lead angle 45 °



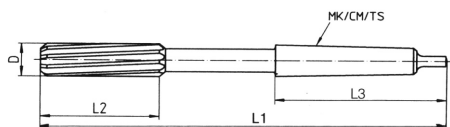
D ∅ mm	L1	L2	L3	d	Z
0.40-0.49	50	3	3	2.00	3
0.50-0.69	50	4	4	2.00	3
0.70-0.79	50	6	6	2.00	3
0.80-1.46	50	8	8	2.00	3
1.47-1.96	50	10	10	2.00	3
1.97-2.46	50	10	25	2.50	3
2.47-2.96	60	15	30	3.00	4
2.97-3.46	60	15	30	3.50	4
3.47-3.96	60	18	33	4.00	4
3.97-4.46	60	20	35	4.50	4
4.47-4.96	75	20	45	5.00	6
4.97-5.46	75	23	45	5.50	6
5.47-5.96	75	23	45	6.00	6
5.97-6.46	75	23	45	6.50	6
6.47-6.96	75	23	45	7.00	6
6.97-7.46	100	30	55	7.50	6
7.47-7.96	100	30	55	8.00	6
7.97-8.46	100	30	55	8.50	6
8.47-8.96	100	30	55	9.00	6
8.97-9.46	100	30	55	9.50	6
9.47-9.96	100	30	55	10.00	6
9.97-10.46	100	30	55	10.50	6
10.47-10.96	100	30	55	11.00	6
10.97-11.46	100	30	55	11.50	6
11.47-11.96	100	30	55	12.00	6
11.97-12.46	100	30	55	12.50	6
12.47-12.96	100	30	55	13.00	6
12.97-13.03	100	30	55	13.50	6

Carbide machine reamers with taper shank

DIN 8094 H7

Brazed carbide inserts K10
 taper shank, tolerance H7
 left hand spiral flutes,
 right hand cut

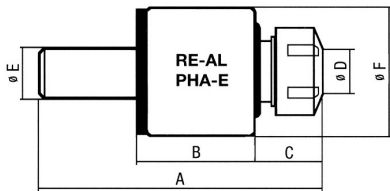
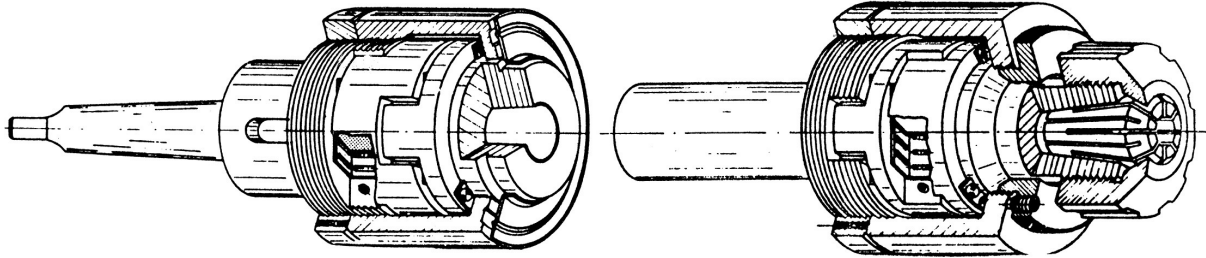
lead angle 45 °
 female centres



D ∅ mm	L1	L2	L3	MK	Z
14	189	47	62	1	6
15	204	50	75	2	6
16	210	52	75	2	6
17	214	54	75	2	6
18	219	56	75	2	6
19	223	58	75	2	6
20	228	60	75	2	6

intermediary sizes on request

Floating holder

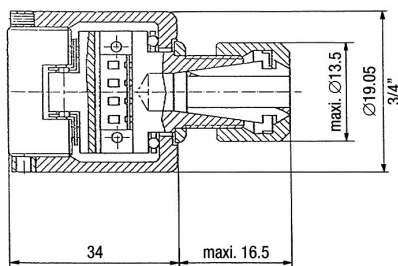


NEW

Floating holder

Short execution

PHA 9



Mod.	A	B	C	D	E	F
18091000 PHA-E 9	90	34	16	13.5	10	19.5
18091000 PHA-E 9 MINI	50	34	16	13.5		19.05/3/4"
18121200 PHA-E 12	97	32	20	19	12	31
18121600 PHA-E 12	100	32	20	19	16	31
18122000 PHA-E 12	102	32	20	19	20	31
18161600 PHA-E 16	85	35	20	35	16	50
18162000 PHA-E 16	85	35	20	35	20	50
18162500 PHA-E 16	105	35	20	35	25	50
18201600 PHA-E 20	85	35	20	35	16	50
18202000 PHA-E 20	85	35	20	35	20	50
18202500 PHA-E 20	105	35	20	35	25	50
18202540 PHA-E 20	105	35	20	35	1"	50
18200001 PHA-E 20	122	35	20	35	MK1	50
18200002 PHA-E 20	137	35	20	35	MK2	50
18252000 PHA-E 25	128	48	30	42	20	62
18252500 PHA-E 25	128	48	30	42	25	62
18252540 PHA-E 25	128	48	30	42	1"	62
18250002 PHA-E 25	160	48	30	42	MK2	62
18250003 PHA-E 25	179	48	30	42	MK3	62
18322000 PHA-E 32	143	55	38	50	20	78
18324000 PHA-E 32	173	55	38	50	40	78
18323175 PHA-E 32	173	55	38	50	1 1/4	78
18322003 PHA-E 32	195	55	38	50	MK3	78

details	PHA-E9	PHA-E12	PHA-E16	PHA-E20	PHA-E25	PHA-E32
collets	EX8/9	EX 11/12	EX 16	EX 20	EX 25	EX 32
nuts						
Range	1-5mm	1-7mm	1-10mm	1-13mm	2-16mm	3-20mm
Oscillation	0.1-0.2mm	0.2mm	0.3mm	0.3mm	(*)	(*)
Weight	100g	300g	800g	800g	1400g	2600g

(*) adjustment range up to 3 mm

Recommendations for reaming

Surface speed m/min=v

Feed mm/U = f

Speed U/min = n

material	Reamer quality			
	HSS-E HSS-E/NANO	HSS-E/TiAIN	HM/Carb. +NANO	PHA +TiAIN +HM/Carb.
Stahl/Acier/Steel	v	v	v	n
< 500 N/mm ²	10-12	25-30	20-25	
<700	8-10	20-25	15-20	mit Pendelhalter
<1000	6-8	15-20	10-15	avec mandrin
>1000	4-6	10-15	8-10	with floating holder
Stahlguss/Fonte/Cast steel < 500 N/mm ²	6-10	20-30	15-20	n2000
>500	4-6	15-25	10-15	3000 U/min
Grauguss/Fonte grise/Cast iron <200 Brin	8-10	20-30	15-20	
>200	4-6	15-25	10-15	
Kupfer/Cuivre/copper	8-12	20-30	15-20	
Messing/Laiton/Brass	10-12	25-40	20-25	
Leichtmetall/Aluminium	10-20	30-40	20-30	
Kunststoff/Matiere plastique/Plastics	4-10	20-30	10-20	
Feed per rev.	< ø 3mm < ø 8mm	01-0.2mm 0.15-0.25mm	* the harder the material f = less	
	< ø 10mm	0.2-0.4mm		
	< ø 10mm	0.3-0.5mm		
Return feed rapid			* the harder the material f = more	
Depth of cut mm/ ●	< ø 3mm < ø 8mm < ø 10mm < ø 10mm	0.1-0.2 0.2-0.3 0.3-0.4 0.3-0.5		
Coolant	Cutting oil/soluble 1:10		also with through coolant min 10 bar	