HAIMER®
Quality Wins.

DUO-LOCK®

MODULAR MILLING SYSTEM

INCH SIZES
Coming Soon!

100%
Made by HAIMER
Made in Germany

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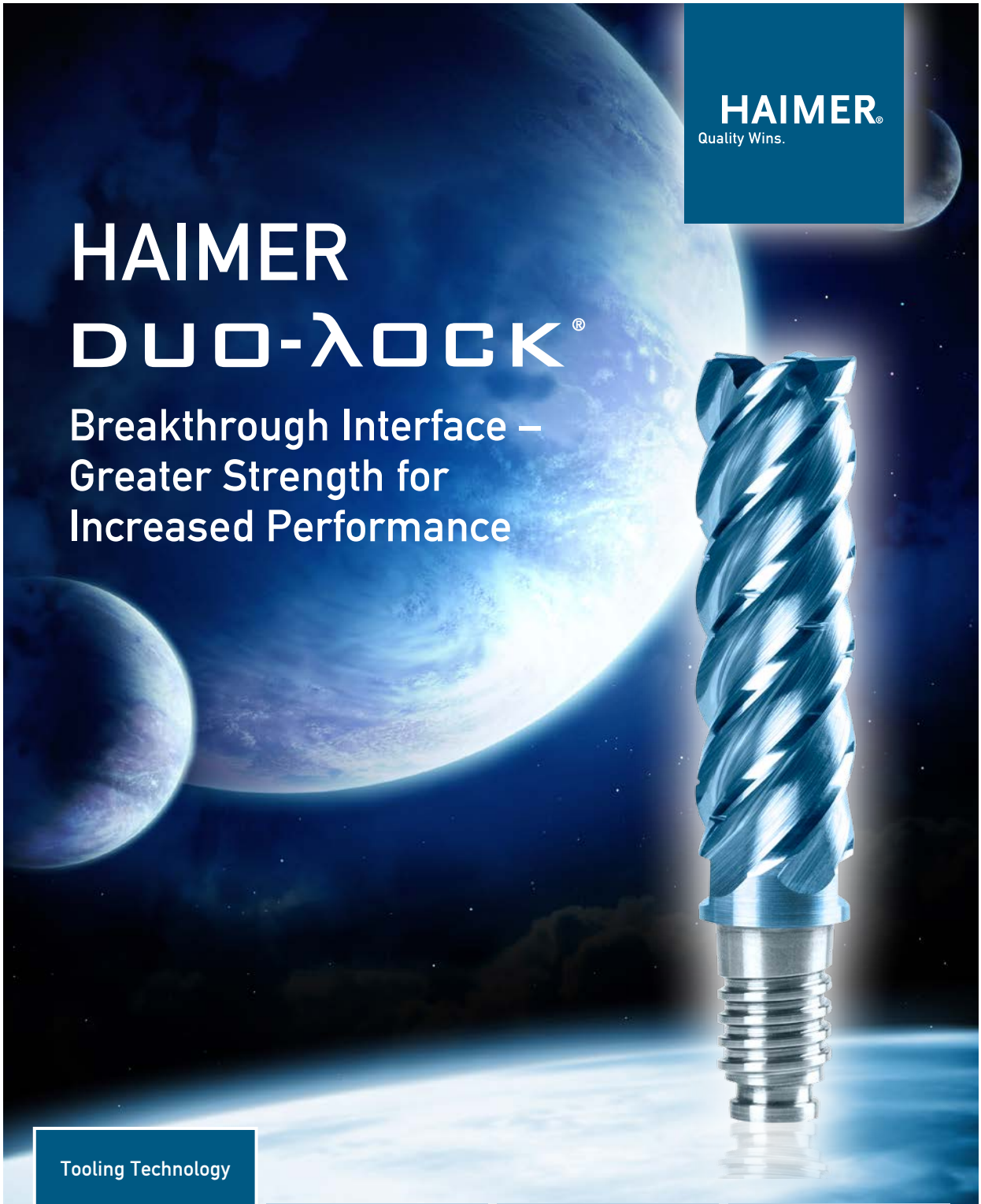
HAIMER DUO-λOCK®



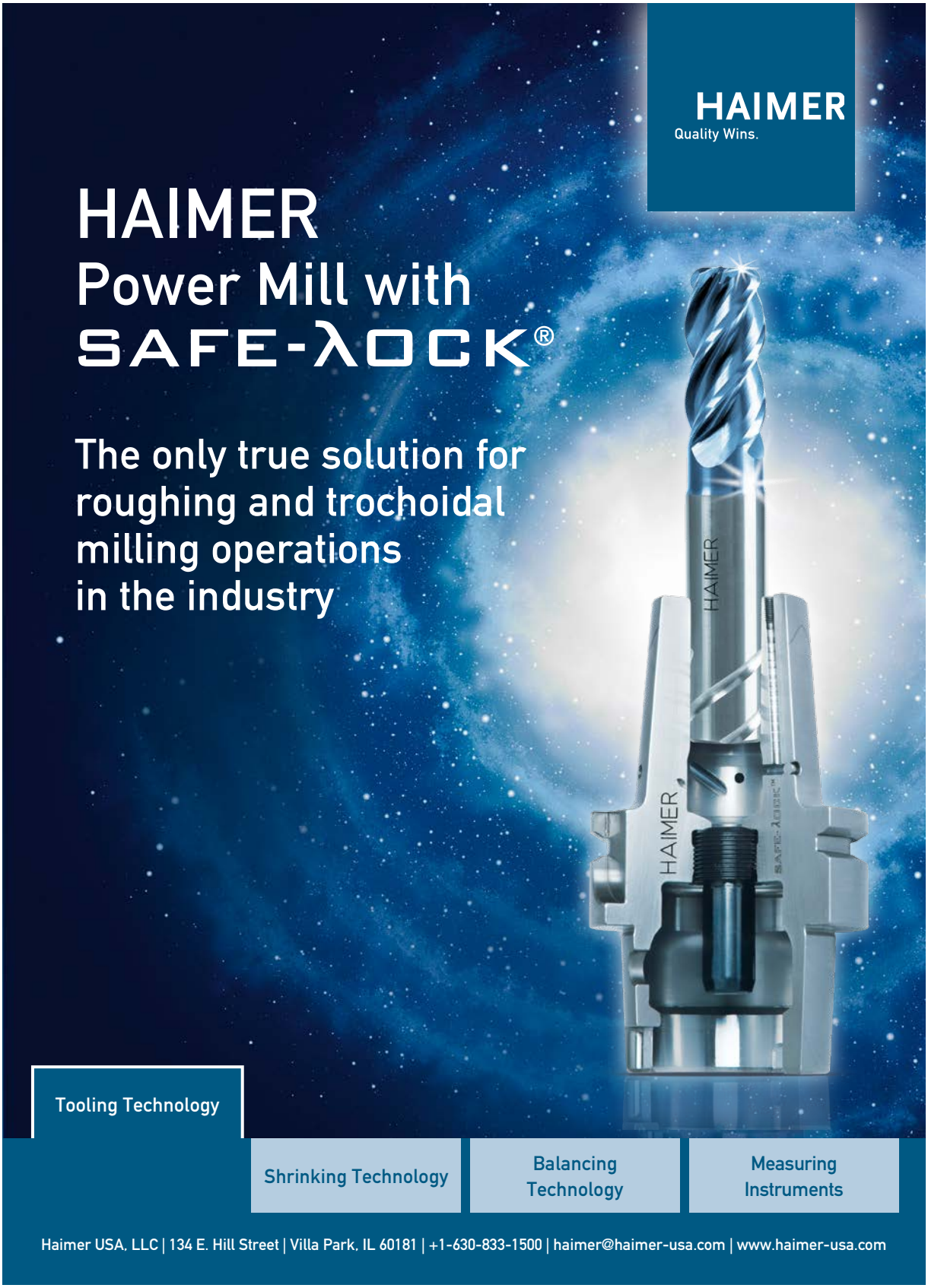
Cutting Speed, Feed and Milling

Description	Formula
RPM	$n = \frac{v_c \cdot 1000}{D \cdot \pi}$
Cutting Speed	$v_c = \frac{D \cdot \pi \cdot n}{1000}$
Feed per Tooth	$f_z = \frac{f_n}{z}$ $f_z = \frac{v_f}{z \cdot n}$
Feed per Rotation	$f_n = f_z \cdot z$ $f_n = \frac{v_f}{n}$
Feed Rate	$v_f = f_z \cdot z \cdot n$
Material Removal Rate	$Q = \frac{a_p \cdot a_e \cdot v_f}{1000}$
Drive Power	$P_a = \frac{a_p \cdot a_e \cdot v_f \cdot k_c}{60 \cdot 10^6 \cdot \eta_{mt}}$
Cutting Time	$T_c = \frac{l}{V_f} = \text{min}$
Average Chip Thickness	$h_m = f_z \cdot \sqrt{\frac{a_e}{D}}$

Legend

a_e = Radial cutting width [mm]
a_p = Axial cutting depth [mm]
D = Diameter [mm]
f_n = Feed per rotation [mm/r]
f_z = Feed per tooth [mm/Z]
h_m = Average chip thickness [mm]
k_c = Specific cutting force [N/mm²]
l = Length of cut [mm]
n = Rounds per minute [rpm]
P_a = Drive power [kW]
Q = Material removal rate [cm³/min]
T_c = Cutting time [min]
v_c = Cutting speed [m/min]
v_f = Feed rate [mm/min]
z = Number of teeth
π = 3.14...
η_{mt} = Efficiency rate

HAIMER Power Mill with SAFE-λOCK®:



DUO-LOCK®

Advanced Materials Require Advanced Manufacturing.

The continuing development of high-strength, lightweight materials such as titanium alloys, Inconel, and new aluminium alloys are eagerly sought by manufacturers in many industries, including aerospace and defense, energy, and transportation. These new materials present significant machining challenges in themselves. Add the competitive pressures in these global industries and finding advanced manufacturing solutions becomes a top priority.

DUO-LOCK®

The Duo-Lock™ technology addresses the issue of the increasing cost of carbide by delivering a modular interface for cutting tool heads. Duo-Lock™ provides maximum stability and load capacity through a proprietary thread design with a double cone bond. The results are unmatched precision and productivity, with a connection that is virtually unbreakable in the most demanding applications.

SAFE-LOCK®

The Safe-Lock™ anti-pullout interface will be also available with modular Duo-Lock™ extensions to take advantage of long reach and aggressive cuts.

For the first time, a modular milling system can achieve the same high performance of the latest generation solid carbide end mill.

Duo-Lock™ maximizes a carbide tool's full potential with productivity gains in both roughing and finishing. It provides high load capacity and rigidity when machining at high metal removal rates. When combined with high-performance cutting tools, Duo-Lock™ provides more than double the metal removal rate in common milling applications.

Superior rigidity of the interface allows for greater depths of cut up to 1.5xD in full slotting.

Geometric parameters of the connection have been optimized and thoroughly tested, leading to the most robust modular system ever developed.

FEA based design ensures that stress levels in the interface remain below critical values even at elevated loads.

The double cone surfaces, combined with an additional third supporting pilot, delivers high stiffness and accuracy.

Explanation of Icons

Characteristics

Helix angle

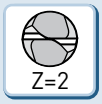
Sharp cutting edge

Corner chamfer

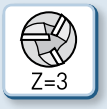
Corner radius

Ball Nose

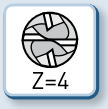
Teeth 2



Teeth 3



Teeth 4



Teeth 5

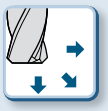
Teeth 6

Safe-λock®

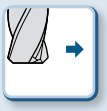
Straight shank

Application

Feed direction

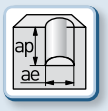


Feed direction

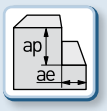


Ramping

Slotting



Side milling



Drilling

3D Milling

Coolant

Emulsion

Cool Flash

Cold air

Dry machining

Minimal lubrication

Explanation of Part Numbers

DL	F	1	0	0	2	U
Duo-Lock™ Size	Tool Type	Group	Group Type	Variant	No. of Teeth	Length of Cut
DL10 DL12 DL16 DL20 DL25 DL32	F- Milling cutter-VHM V- Copy mill carbide E- Chamfering end mill	1- Uni 2- Basic 4- Alu	0- Plain cutter cyl. 1- Chip breaker 3- Roughing cutter	0- V0	2- Z2 3- Z3 4- Z4 5- Z5 6- Z6	U- Short (L1= 0.75 x D) M- Normal (L1= 1.5 x D) L- Long (L1= 3 x D1)

Material List

Material Groups		Work Material	Material Information	
		ANSI	Tensile Strength	Content/Hardness
P1	General and Mild Steels	1015, 1045, 4140, 4340	≤ 800 N/mm²	up to 25 HRC
P2	Die Steels	D2, A2, H13, S7	> 800 N/mm²	up to 45 HRC
M1	Stainless Steels	303, 304	≤ 650 N/mm²	
M2	Stainless Steels	17-4PH, 15-5PH, 316L	> 650 N/mm²	
K1	Cast Iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	≤ 450 N/mm²	
K2	Ductile Iron	ASTM A536 80-55-06, ASTM A536 100-70-03	> 450 N/mm²	
N1	Aluminium Alloys	A5005, A6061, A7075		
N2	Cast Aluminium Alloys	A310, A400		Si > 12%
S1	Titanium & Titanium Alloys	B265, B338, B348, Ti6AL4V		
S2	High Temp Alloys	Inconel, Hastelloy	800 – 1700 N/mm²	
H1	Hardened Steels	H13, S7		45-50 HRC
H2	Hardened Steels	D2, A2, CPM-10V		50-55 HRC

	K	0600	S	0.50	A	A
	Overall Length	Diameter	Cutting Edge	Cutting Edge Size	Substrate	Coating
	K- Short N- Normal L- Long	0600- Metric	S- Sharp cutting edge C- Corner chamfer R- Corner radius W- Angle	60- Cone angle 0.50- Radius Size	A-D Finegrain carbide	A- PVD

Cutting Data

Material Groups		Work Material ANSI	Material Information Tensile Strength	Content/ Hardness	Roughing Vc (m/min)	Finishing Vc (m/min)
P1	General and Mild Steels	1015, 1045, 4140, 4340	≤ 800 N/mm²	up to 25 HRC	160 – 220	220 – 280
P2	Die Steels	D2, A2, H13, S7	> 800 N/mm²	up to 45 HRC	120 – 160	160 – 200
M1	Stainless Steels	303, 304	≤ 650 N/mm²		80 – 120	120 – 160
M2	Stainless Steels	17-4PH, 15-5PH, 316L	> 650 N/mm²		60 – 90	90 – 120
K1	Cast Iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	≤ 450 N/mm²		120 – 180	180 – 240
K2	Ductile Iron	ASTM A536 80-55-06, ASTM A536 100-70-03	> 450 N/mm²		80 – 160	160 – 220
S1	Titanium & Titanium Alloys	B265, B338, B348, Ti6AL4V			40 – 80	40 – 80
S2	High Temp Alloys	Inconel, Hastelloy	800 – 1700 N/ mm²		30 – 40	30 – 40
N1	Aluminium Alloys	A5005, A6061, A7075			500 – 900	500 – 900
N2	Cast Aluminium Alloys	A310, A400		Si > 12%	120 – 350	120 – 350

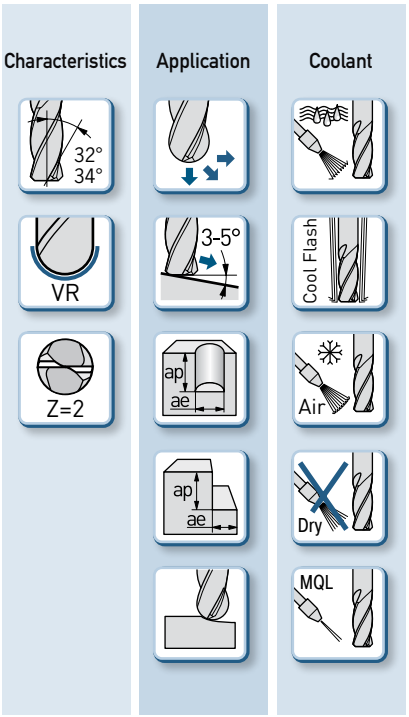
Cutting data are reference values and need to be adjusted according to the application.

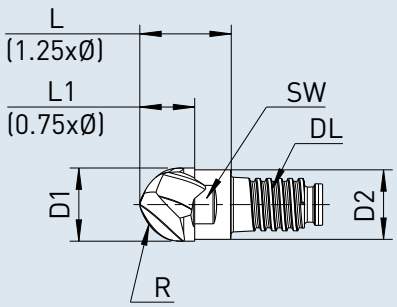
Feed per tooth (mm/tooth) in relation with D1 and cutting width ae				
	ø 10	ø 12	ø 16	ø 20
fz	0.03 – 0.09	0.03 – 0.10	0.04 – 0.12	0.05 – 0.13

Cutting data is based on short cylindrical extensions. Cutting data for long overhang needs to be adjusted.

Technical Data and Product Characteristics

- Necked for greater cutting depths
- Ball Nose
- Fine balanced
- Best length repeatability





Application Range - Material*

Main Material: P

also suitable for: K S N M

- For all steel materials
- For roughing and finishing
- Copy milling

*See HAIMER material page 9

Part Number	HAIMER Quality	Duo-Lock Size	D1 (f9) [mm]	Cutting Edge	Size [mm]	L1 max. [mm]	L [mm]	D2 [mm]	AF [mm]	Torque [N/m]
DL10V2002UK1000R..	DA	DL10	10.00	R	5.00	7.5	12.5	9.6	SW8	25
DL12V2002UK1200R..	DA	DL12	12.00	R	6.00	9	15	11.5	SW9.5	30
DL16V2002UK1600R..	DA	DL16	16.00	R	8.00	12	20	15.5	SW13	60
DL20V2002UK2000R..	DA	DL20	20.00	R	10.00	15	25	19.3	SW16	80

Order code = Article Code + HAIMER Quality.

Cutting Data

Material Groups		Work Material	Material Information			
		ANSI	Tensile Strength	Content/ Hardness	Roughing Vc (m/min)	Finishing Vc (m/min)
P1	General and Mild Steels	1015, 1045, 4140, 4340	≤ 800 N/mm²	up to 25 HRC	160 – 220	220 – 280
P2	Die Steels	D2, A2, H13, S7	> 800 N/mm²	up to 45 HRC	120 – 160	160 – 200
M1	Stainless Steels	303, 304	≤ 650 N/mm²		80 – 120	120 – 160
M2	Stainless Steels	17-4PH, 15-5PH, 316L	> 650 N/mm²		60 – 90	90 – 120
K1	Cast Iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	≤ 450 N/mm²		120 – 180	180 – 240
K2	Ductile Iron	ASTM A536 80-55-06, ASTM A536 100-70-03	> 450 N/mm²		80 – 160	160 – 220
S1	Titanium & Titanium Alloys	B265, B338, B348, Ti6AL4V			40 – 80	40 – 80
S2	High Temp Alloys	Inconel, Hastelloy	800 – 1700 N/ mm²		30 – 40	30 – 40
N1	Aluminium Alloys	A5005, A6061, A7075			500 – 900	500 – 900
N2	Cast Aluminium Alloys	A310, A400		Si > 12%	120 – 350	120 – 350

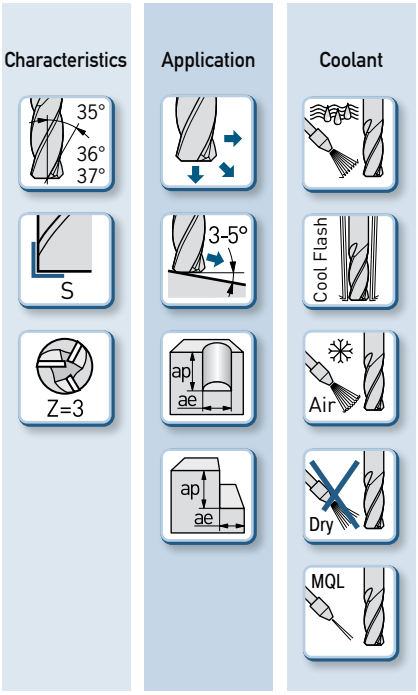
Cutting data are reference values and need to be adjusted according to the application.

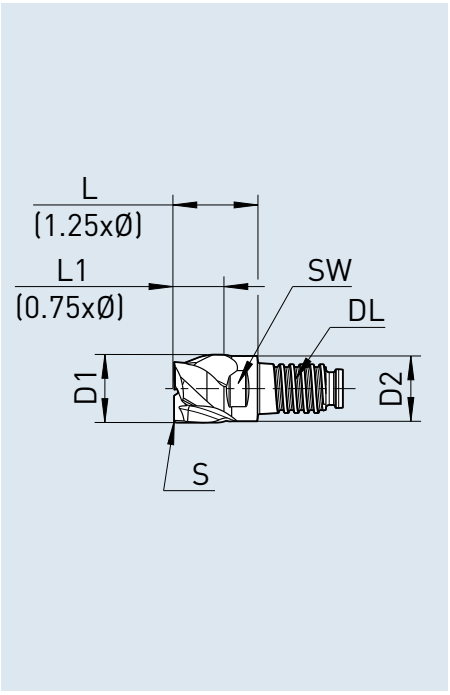
Feed per tooth (mm/tooth) in relation with D1 and cutting width ae				
	ø 10	ø 12	ø 16	ø 20
fz	0.03 – 0.09	0.03 – 0.10	0.04 – 0.12	0.05 – 0.13

Cutting data is based on short cylindrical extensions. Cutting data for long overhang needs to be adjusted.

Technical Data and Product Characteristics

- Necked for greater cutting depths
- Center cutting
- Unequal cutting edge
- Fine balanced
- Best length repeatability





Application Range - Material*

Main Material: P

also suitable for: K S N M

- Can be used for almost all materials
- For roughing and finishing

- Can be used for almost all materials
- For roughing and finishing

*See HAIMER material page 9

Part Number	HAIMER Quality	Duo-Lock Size	D1 (f9) [mm]	Cutting Edge	L1 max. [mm]	L [mm]	D2 [mm]	AF [mm]	Torque [N/m]
DL10F2003UK1000S..	DA	DL10	10.00	S	7.5	12.5	9.6	SW8	25
DL12F2003UK1200S..	DA	DL12	12.00	S	9	15	11.5	SW9.5	30
DL16F2003UK1600S..	DA	DL16	16.00	S	12	20	15.5	SW13	60
DL20F2003UK2000S..	DA	DL20	20.00	S	15	25	19.3	SW16	80

Order code = Article Code + HAIMER Quality.

Cutting Data

Material Groups		Work Material ANSI	Material Information Tensile Strength	Content/ Hardness	Roughing Vc (m/min)	Finishing Vc (m/min)
P1	General and Mild Steels	1015, 1045, 4140, 4340	≤ 800 N/mm²	up to 25 HRC	160 – 220	220 – 280
P2	Die Steels	D2, A2, H13, S7	> 800 N/mm²	up to 45 HRC	120 – 160	160 – 200
M1	Stainless Steels	303, 304	≤ 650 N/mm²		80 – 120	120 – 160
M2	Stainless Steels	17-4PH, 15-5PH, 316L	> 650 N/mm²		60 – 90	90 – 120
K1	Cast Iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	≤ 450 N/mm²		120 – 180	180 – 240
K2	Ductile Iron	ASTM A536 80-55-06, ASTM A536 100-70-03	> 450 N/mm²		80 – 160	160 – 220
S1	Titanium & Titanium Alloys	B265, B338, B348, Ti6AL4V			40 – 80	40 – 80
S2	High Temp Alloys	Inconel, Hastelloy	800 – 1700 N/ mm²		30 – 40	30 – 40
N1	Aluminium Alloys	A5005, A6061, A7075			500 – 900	500 – 900
N2	Cast Aluminium Alloys	A310, A400		Si > 12%	120 – 350	120 – 350

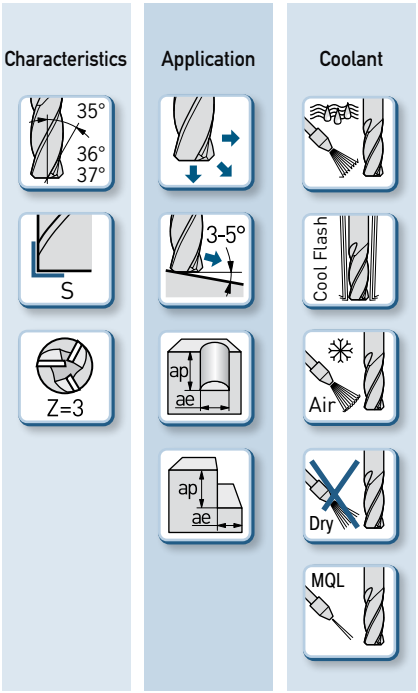
Cutting data are reference values and need to be adjusted according to the application.

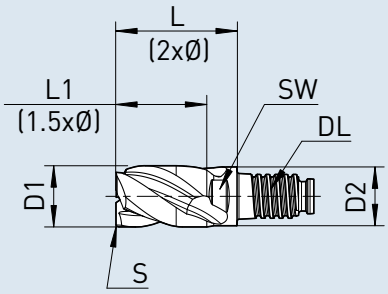
Feed per tooth (mm/tooth) in relation with D1 and cutting width ae				
	ø 10	ø 12	ø 16	ø 20
fz	0.03 – 0.09	0.03 – 0.10	0.04 – 0.12	0.05 – 0.13

Cutting data is based on short cylindrical extensions. Cutting data for long overhang needs to be adjusted.

Technical Data and Product Characteristics

- Necked for greater cutting depths
- Center cutting
- Unequal cutting edge
- Fine balanced
- Best length repeatability





Application Range - Material*

Main Material: P

also suitable for: K S N M

- Can be used for almost all materials
- For roughing and finishing

*See HAIMER material page 9

Part Number	HAIMER Quality	Duo-Lock Size	D1 (f9) [mm]	Cutting Edge	L1 max. [mm]	L [mm]	D2 [mm]	AF [mm]	Torque [N/m]
DL10F2003MN1000S..	DA	DL10	10.00	S	15	20	9.6	SW8	25
DL12F2003MN1200S..	DA	DL12	12.00	S	18	24	11.5	SW9.5	30
DL16F2003MN1600S..	DA	DL16	16.00	S	24	32	15.5	SW13	60
DL20F2003MN2000S..	DA	DL20	20.00	S	30	40	19.3	SW16	80

Order code = Article Code + HAIMER Quality.

Cutting Data

Material Groups		Work Material ANSI	Material Information Tensile Strength	Content/ Hardness	Roughing Vc (m/min)	Finishing Vc (m/min)
P1	General and Mild Steels	1015, 1045, 4140, 4340	≤ 800 N/mm²	up to 25 HRC	160 – 220	220 – 280
P2	Die Steels	D2, A2, H13, S7	> 800 N/mm²	up to 45 HRC	120 – 160	160 – 200
M1	Stainless Steels	303, 304	≤ 650 N/mm²		80 – 120	120 – 160
M2	Stainless Steels	17-4PH, 15-5PH, 316L	> 650 N/mm²		60 – 90	90 – 120
K1	Cast Iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	≤ 450 N/mm²		120 – 180	180 – 240
K2	Ductile Iron	ASTM A536 80-55-06, ASTM A536 100-70-03	> 450 N/mm²		80 – 160	160 – 220
S1	Titanium & Titanium Alloys	B265, B338, B348, Ti6AL4V			40 – 80	40 – 80
S2	High Temp Alloys	Inconel, Hastelloy	800 – 1700 N/ mm²		30 – 40	30 – 40
N1	Aluminium Alloys	A5005, A6061, A7075			500 – 900	500 – 900
N2	Cast Aluminium Alloys	A310, A400		Si > 12%	120 – 350	120 – 350

Cutting data are reference values and need to be adjusted according to the application.

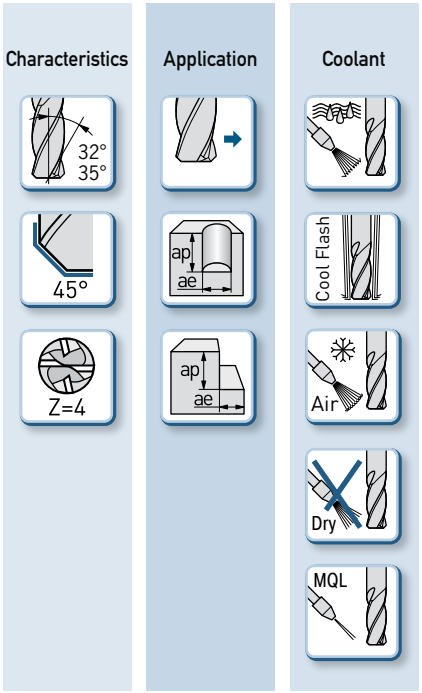
Feed per tooth (mm/tooth) in relation with D1 and cutting width ae				
	ø 10	ø 12	ø 16	ø 20
fz	0.03 – 0.09	0.03 – 0.10	0.04 – 0.12	0.05 – 0.13

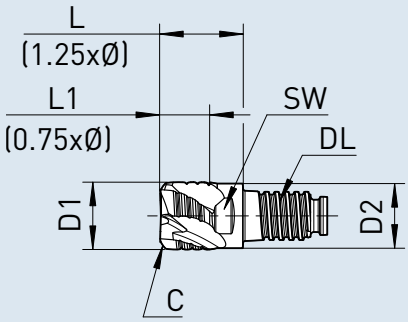
Cutting data is based on short cylindrical extensions. Cutting data for long overhang needs to be adjusted.

DUO-ΛOCK® POWER MILL UNI Z4
F2304UK CORD PROFILE
SHORT VERSION (0.75 X D)

Technical Data and Product Characteristics

- Necked for greater cutting depths
- Center cutting
- Unequal cutting edge
- Fine balanced
- Best length repeatability





Application Range - Material*

Main Material: P

also suitable for: K S N M

- For almost all materials
- For applications with chip evacuation issues
- Also for low power machines

*See HAIMER material page 9

Part Number	HAIMER Quality	Duo-Lock Size	D1 (f9) [mm]	Cutting Edge	Size [mm]	L1 max. [mm]	L [mm]	D2 [mm]	AF [mm]	Torque [N/m]
DL10F2304UK1000C..	DA	DL10	10.00	C	0.30	7.5	12.5	9.6	SW8	25
DL12F2304UK1200C..	DA	DL12	12.00	C	0.30	9	15	11.5	SW9.5	30
DL16F2304UK1600C..	DA	DL16	16.00	C	0.50	12	20	15.5	SW13	60
DL20F2304UK2000C..	DA	DL20	20.00	C	0.60	15	25	19.3	SW16	80

Order code = Article Code + HAIMER Quality.

Cutting Data

Material Groups		Work Material ANSI	Material Information Tensile Strength	Content/ Hardness	Roughing Vc (m/min)	Finishing Vc (m/min)
P1	General and Mild Steels	1015, 1045, 4140, 4340	≤ 800 N/mm²	up to 25 HRC	160 – 220	220 – 280
P2	Die Steels	D2, A2, H13, S7	> 800 N/mm²	up to 45 HRC	120 – 160	160 – 200
M1	Stainless Steels	303, 304	≤ 650 N/mm²		80 – 120	120 – 160
M2	Stainless Steels	17-4PH, 15-5PH, 316L	> 650 N/mm²		60 – 90	90 – 120
K1	Cast Iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	≤ 450 N/mm²		120 – 180	180 – 240
K2	Ductile Iron	ASTM A536 80-55-06, ASTM A536 100-70-03	> 450 N/mm²		80 – 160	160 – 220
S1	Titanium & Titanium Alloys	B265, B338, B348, Ti6AL4V			40 – 80	40 – 80
S2	High Temp Alloys	Inconel, Hastelloy	800 – 1700 N/ mm²		30 – 40	30 – 40
N1	Aluminium Alloys	A5005, A6061, A7075			500 – 900	500 – 900
N2	Cast Aluminium Alloys	A310, A400		Si > 12%	120 – 350	120 – 350

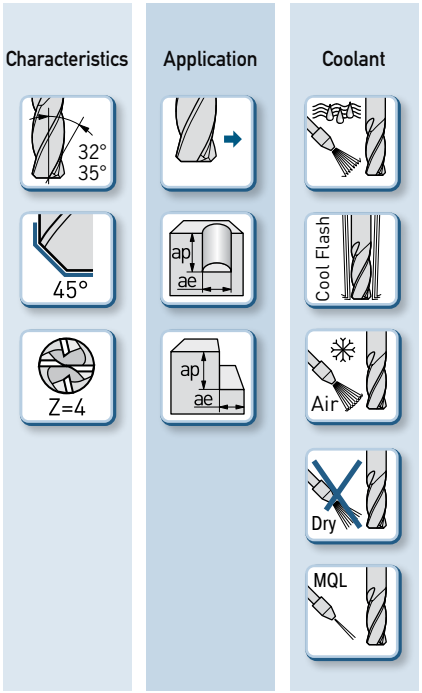
Cutting data are reference values and need to be adjusted according to the application.

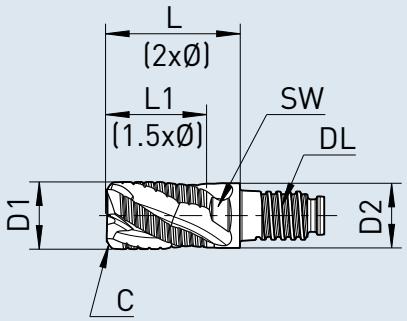
Feed per tooth (mm/tooth) in relation with D1 and cutting width ae				
	ø 10	ø 12	ø 16	ø 20
fz	0.03 – 0.09	0.03 – 0.10	0.04 – 0.12	0.05 – 0.13

Cutting data is based on short cylindrical extensions. Cutting data for long overhang needs to be adjusted.

Technical Data and Product Characteristics

- Necked for greater cutting depths
- Center cutting
- Unequal cutting edge
- Fine balanced
- Best length repeatability





Application Range - Material*

Main Material: P

also suitable for: K S N M

- For almost all materials
- For applications with chip evacuation issues
- Also for low power machines

*See HAIMER material page 9

Part Number	HAIMER Quality	Duo-Lock Size	D1 (f9) [mm]	Cutting Edge	Size [mm]	L1 max. [mm]	L [mm]	D2 [mm]	AF [mm]	Torque [N/m]
DL10F2304MN1000C..	DA	DL10	10.00	C	0.30	15	20	9.6	SW8	25
DL12F2304MN1200C..	DA	DL12	12.00	C	0.30	18	24	11.5	SW9.5	30
DL16F2304MN1600C..	DA	DL16	16.00	C	0.50	24	32	15.5	SW13	60
DL20F2304MN2000C..	DA	DL20	20.00	C	0.60	30	40	19.3	SW16	80

Order code = Article Code + HAIMER Quality.

Cutting Data

Material Groups		Work Material	Material Information			
		ANSI	Tensile Strength	Content/ Hardness	Roughing Vc (m/min)	Finishing Vc (m/min)
P1	General and Mild Steels	1015, 1045, 4140, 4340	≤ 800 N/mm²	up to 25 HRC	160 – 220	220 – 280
P2	Die Steels	D2, A2, H13, S7	> 800 N/mm²	up to 45 HRC	120 – 160	160 – 200
M1	Stainless Steels	303, 304	≤ 650 N/mm²		80 – 120	120 – 160
M2	Stainless Steels	17-4PH, 15-5PH, 316L	> 650 N/mm²		60 – 90	90 – 120
K1	Cast Iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	≤ 450 N/mm²		120 – 180	180 – 240
K2	Ductile Iron	ASTM A536 80-55-06, ASTM A536 100-70-03	> 450 N/mm²		80 – 160	160 – 220
S1	Titanium & Titanium Alloys	B265, B338, B348, Ti6AL4V			40 – 80	40 – 80
S2	High Temp Alloys	Inconel, Hastelloy	800 – 1700 N/ mm²		30 – 40	30 – 40
N1	Aluminium Alloys	A5005, A6061, A7075			500 – 900	500 – 900
N2	Cast Aluminium Alloys	A310, A400		Si > 12%	120 – 350	120 – 350

Cutting data are reference values and need to be adjusted according to the application.

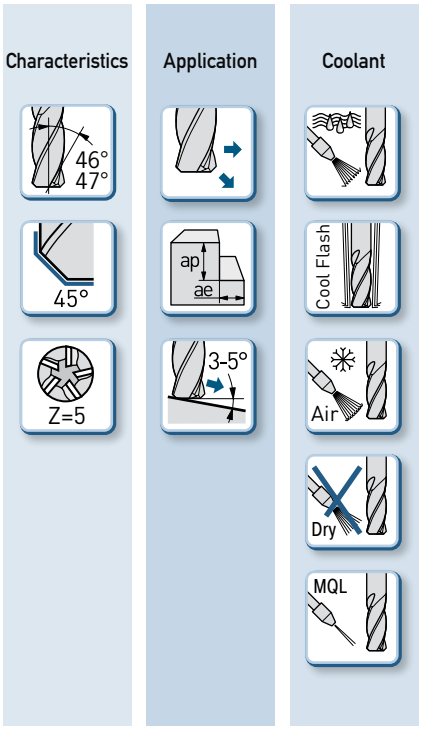
Feed per tooth (mm/tooth) in relation with D1 and cutting width ae						
	ø 10	ø 12	ø 16	ø 20	ø 25	ø 32
fz	0.03 – 0.09	0.03 – 0.10	0.04 – 0.12	0.05 – 0.13	0.06 – 0.17	0.07 – 0.20

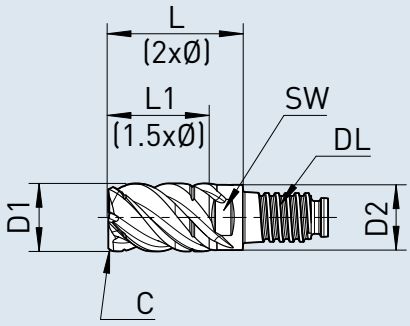
Cutting data is based on short cylindrical extensions. Cutting data for long overhang needs to be adjusted.

DUO-ΛOCK® POWER MILL UNI Z5
F1105MN CHAMFER WITH CHIP BREAKER
NORMAL VERSION (1.5 X D)

Technical Data and Product Characteristics

- Necked for greater cutting depths
- Unequal cutting edge
- Fine balanced
- Best length repeatability
- Polished gullets
- Chip breaker





Application Range - Material*

Main Material: P

also suitable for: K S N M

- Can be used for almost all materials
- HSC finishing up to 1.5 x D1
- Excellent for trochoidal milling

*See HAIMER material page 9

Part Number	HAIMER Quality	Duo-Lock Size	D1 (f9) [mm]	Cutting Edge	Size [mm]	L1 max. [mm]	L [mm]	D2 [mm]	AF [mm]	Torque [N/m]
DL10F1105MN1000C..	DA	DL10	10.00	C	0.30	15	20	9.6	SW8	25
DL12F1105MN1200C..	DA	DL12	12.00	C	0.30	18	24	11.5	SW9.5	30
DL16F1105MN1600C..	DA	DL16	16.00	C	0.50	24	32	15.5	SW13	60
DL20F1105MN2000C..	DA	DL20	20.00	C	0.60	30	40	19.3	SW16	80
DL25F1105MN2500C..	DA	DL25	25.00	C	0.60	37.5	50	24.0	SW21	100
DL32F1105MN3200C..	DA	DL32	32.00	C	0.70	48	64	31.0	SW28	130

Cutting Data

Material Groups		Work Material	Material Information		Finishing Vc (m/min)
		ANSI	Tensile Strength	Content/ Hardness	
P1	General and Mild Steels	1015, 1045, 4140, 4340	≤ 800 N/mm²	up to 25 HRC	220 – 280
P2	Die Steels	D2, A2, H13, S7	> 800 N/mm²	up to 45 HRC	160 – 200
M1	Stainless Steels	303, 304	≤ 650 N/mm²		120 – 160
M2	Stainless Steels	17-4PH, 15-5PH, 316L	> 650 N/mm²		90 – 120
K1	Cast Iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	≤ 450 N/mm²		180 – 240
K2	Ductile Iron	ASTM A536 80-55-06, ASTM A536 100-70-03	> 450 N/mm²		160 – 220
S1	Titanium & Titanium Alloys	B265, B338, B348, Ti6AL4V			40 – 80
S2	High Temp Alloys	Inconel, Hastelloy	800 – 1700 N/ mm²		30 – 40
N1	Aluminium Alloys	A5005, A6061, A7075			500 – 900
N2	Cast Aluminium Alloys	A310, A400		Si > 12%	120 – 350

Cutting data are reference values and need to be adjusted according to the application.

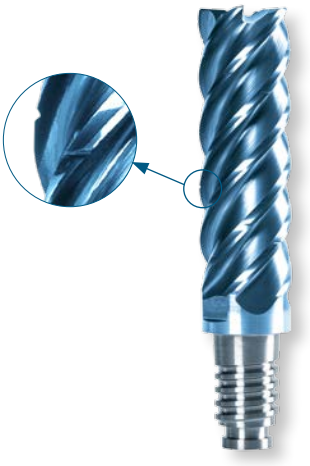
Feed per tooth (mm/tooth) in relation with D1 and cutting width ae						
	ø 10	ø 12	ø 16	ø 20	ø 25	ø 32
fz	0.03 – 0.09	0.03 – 0.10	0.04 – 0.12	0.05 – 0.13	0.06 – 0.17	0.07 – 0.20

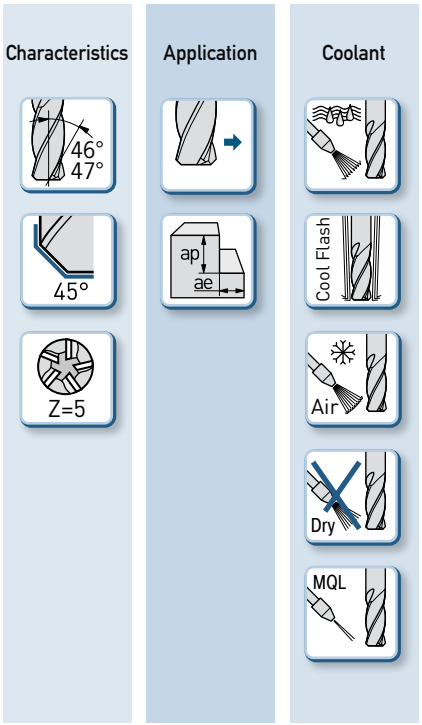
Cutting data is based on short cylindrical extensions. Cutting data for long overhang needs to be adjusted.

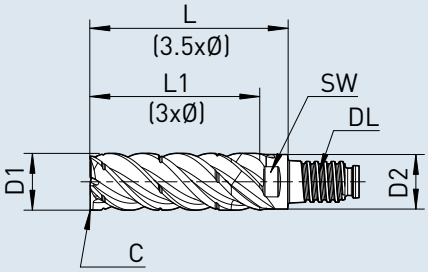
DUO-ΛOCK® POWER MILL UNI Z5
F1105LL CHAMFER WITH CHIP BREAKER
LONG VERSION (3 X D)

Technical Data and Product Characteristics

- Necked for greater cutting depths
- Unequal cutting edge
- Fine balanced
- Best length repeatability
- Polished gullets
- Chip breaker







Application Range - Material*

Main Material: P

also suitable for: K S N M

- For all steel materials
- HSC finishing up to 1.5 x D1
- Excellent for trochoidal milling

*See HAIMER material page 9

Part Number	HAIMER Quality	Duo-Lock Size	D1 (f9) [mm]	Cutting Edge	Size [mm]	L1 max. [mm]	L [mm]	D2 [mm]	AF [mm]	Torque [N/m]
DL10F1105LL1000C..	DA	DL10	10.00	C	0.30	30	35	9.6	SW8	25
DL12F1105LL1200C..	DA	DL12	12.00	C	0.30	36	42	11.5	SW9.5	30
DL16F1105LL1600C..	DA	DL16	16.00	C	0.50	48	56	15.5	SW13	60
DL20F1105LL2000C..	DA	DL20	20.00	C	0.60	60	70	19.3	SW16	80
DL25F1105LL2500C..	DA	DL25	25.00	C	0.60	75	87.5	24.0	SW21	100
DL32F1105LL3200C..	DA	DL32	32.00	C	0.70	96	112	31.0	SW28	130

Cutting Data

Material Groups		Work Material ANSI	Material Information Tensile Strength	Content/ Hardness	Roughing Vc (m/min)	Finishing Vc (m/min)
P1	General and Mild Steels	1015, 1045, 4140, 4340	≤ 800 N/mm²	up to 25 HRC	160 – 220	220 – 280
P2	Die Steels	D2, A2, H13, S7	> 800 N/mm²	up to 45 HRC	120 – 160	160 – 200
M1	Stainless Steels	303, 304	≤ 650 N/mm²		80 – 120	120 – 160
M2	Stainless Steels	17-4PH, 15-5PH, 316L	> 650 N/mm²		60 – 90	90 – 120
K1	Cast Iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	≤ 450 N/mm²		120 – 180	180 – 240
K2	Ductile Iron	ASTM A536 80-55-06, ASTM A536 100-70-03	> 450 N/mm²		80 – 160	160 – 220
S1	Titanium & Titanium Alloys	B265, B338, B348, Ti6AL4V			40 – 80	40 – 80
S2	High Temp Alloys	Inconel, Hastelloy	800 – 1700 N/ mm²		30 – 40	30 – 40
N1	Aluminium Alloys	A5005, A6061, A7075			500 – 900	500 – 900
N2	Cast Aluminium Alloys	A310, A400		Si > 12%	120 – 350	120 – 350

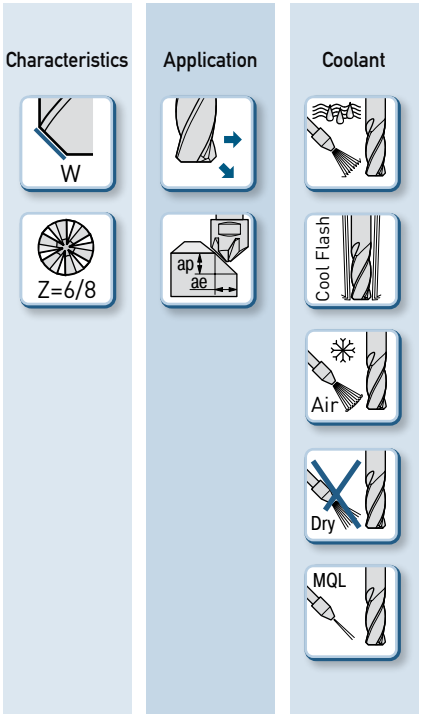
Cutting data are reference values and need to be adjusted according to the application.

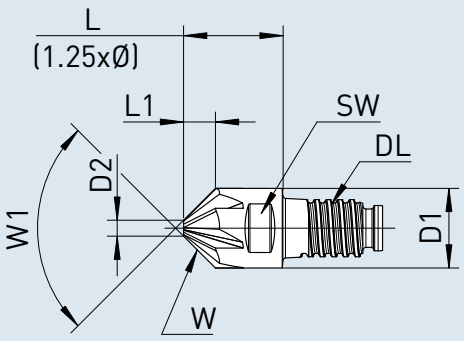
Feed per tooth (mm/tooth) in relation with D1 and cutting width ae			
	ø 10	ø 12	ø 16
fz	0.02 – 0.09	0.03 – 0.10	0.03 – 0.12

Cutting data is based on short cylindrical extensions. Cutting data for long overhang needs to be adjusted.

Technical Data and Product Characteristics

- Cone angle 60/90/120°
- Honed tip plan
- Best length repeatability





Application Range - Material*

Main Material: P

also suitable for: K S N M

- For almost all materials
- For chamfering of edges, grooves and holes

*See HAIMER material page 9

Part Number	HAIMER Quality	Duo-Lock Size	Z	D1 (h6) [mm]	Chamfer	Angle	L1 max. [mm]	L [mm]	D2 [mm]	AF [mm]	Torque [N/m]
DL10E1016UK1000W60..	DA	DL10	6	10.00	W	60°	6.9	12.5	2.0	SW8	25
DL10E1016UK1000W90..	DA	DL10	6	10.00	W	90°	4	12.5	2.0	SW8	25
DL10E1016UK1000W120..	DA	DL10	6	10.00	W	120°	2.3	12.5	2.0	SW8	25
DL12E1016UK1200W60..	DA	DL12	6	12.00	W	60°	8.3	15	2.4	SW9.5	30
DL12E1016UK1200W90..	DA	DL12	6	12.00	W	90°	4.8	15	2.4	SW9.5	30
DL12E1016UK1200W120..	DA	DL12	6	12.00	W	120°	2.7	15	2.4	SW9.5	30
DL16E1018UK1600W60..	DA	DL16	8	16.00	W	60°	11	20	3.2	SW13	60
DL16E1018UK1600W90..	DA	DL16	8	16.00	W	90°	6.4	20	3.2	SW13	60
DL16E1018UK1600W120..	DA	DL16	8	16.00	W	120°	3.6	20	3.2	SW13	60

Order code = Article Code + HAIMER Quality.

Cutting Data

Material Groups		Work Material	Material Information			
		ANSI	Tensile Strength	Content/ Hardness	Roughing Vc (m/min)	Finishing Vc (m/min)
P1	General and Mild Steels	1015, 1045, 4140, 4340	≤ 800 N/mm²	up to 25 HRC	160 – 220	220 – 280
P2	Die Steels	D2, A2, H13, S7	> 800 N/mm²	up to 45 HRC	120 – 160	160 – 200
M1	Stainless Steels	303, 304	≤ 650 N/mm²		80 – 120	120 – 160
M2	Stainless Steels	17-4PH, 15-5PH, 316L	> 650 N/mm²		60 – 90	90 – 120
K1	Cast Iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	≤ 450 N/mm²		120 – 180	180 – 240
K2	Ductile Iron	ASTM A536 80-55-06, ASTM A536 100-70-03	> 450 N/mm²		80 – 160	160 – 220
S1	Titanium & Titanium Alloys	B265, B338, B348, Ti6AL4V			40 – 80	40 – 80
S2	High Temp Alloys	Inconel, Hastelloy	800 – 1700 N/ mm²		30 – 40	30 – 40
N1	Aluminium Alloys	A5005, A6061, A7075			500 – 900	500 – 900
N2	Cast Aluminium Alloys	A310, A400		Si > 12%	120 – 350	120 – 350

Cutting data are reference values and need to be adjusted according to the application.

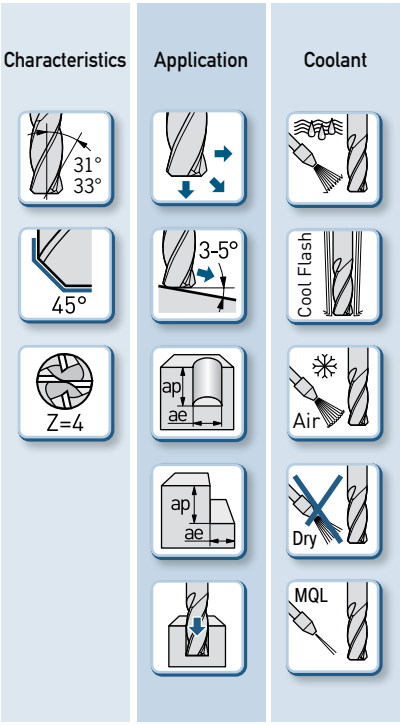
Feed per tooth (mm/tooth) in relation with D1 and cutting width ae						
	ø 10	ø 12	ø 16	ø 20	ø 25	ø 32
fz	0.03 – 0.09	0.03 – 0.10	0.04 – 0.12	0.05 – 0.13	0.06 – 0.17	0.07 – 0.20

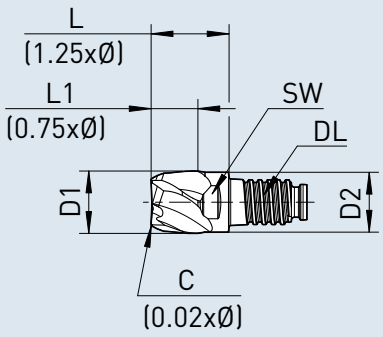
Cutting data is based on short cylindrical extensions. Cutting data for long overhang needs to be adjusted.

DUO-LOCK® BASIC Z4
F2004 UK CHAMFER
SHORT VERSION (0.75 X D)

Technical Data and Product Characteristics

- Necked for greater cutting depths
- Center cutting
- Unequal cutting edge
- Fine balanced
- Best length repeatability





Application Range - Material*

Main Material: P M

also suitable for: K S N

- For almost all materials
- For roughing and finishing

*See HAIMER material page 9

Cooling with Cool Jet or Cool Flash and using Power Chucks is recommended for longer tool life and increased metal removal rates.

Part Number	HAIMER Quality	Duo-Lock Size	D1 (f9) [mm]	Cutting Edge	Size [mm]	L1 max. [mm]	L [mm]	D2 [mm]	AF [mm]	Torque [N/m]
DL10F2004UK1000C..	DA	DL10	10.00	C	0.20	7.5	12.5	9.6	SW8	25
DL12F2004UK1200C..	DA	DL12	12.00	C	0.24	9	15	11.5	SW9.5	30
DL16F2004UK1600C..	DA	DL16	16.00	C	0.32	12	20	15.5	SW13	60
DL20F2004UK2000C..	DA	DL20	20.00	C	0.40	15	25	19.3	SW16	80
DL25F2004UK2500C..	DA	DL25	25.00	C	0.50	18.75	31.25	24.0	SW21	100
DL32F2004UK3200C..	DA	DL32	32.00	C	0.64	24	40	31.0	SW28	130

Order code = Article Code + HAIMER Quality.

Cutting Data

Material Groups		Work Material	Material Information			
		ANSI	Tensile Strength	Content/ Hardness	Roughing Vc (m/min)	Finishing Vc (m/min)
P1	General and Mild Steels	1015, 1045, 4140, 4340	≤ 800 N/mm²	up to 25 HRC	160 – 220	220 – 280
P2	Die Steels	D2, A2, H13, S7	> 800 N/mm²	up to 45 HRC	120 – 160	160 – 200
M1	Stainless Steels	303, 304	≤ 650 N/mm²		80 – 120	120 – 160
M2	Stainless Steels	17-4PH, 15-5PH, 316L	> 650 N/mm²		60 – 90	90 – 120
K1	Cast Iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	≤ 450 N/mm²		120 – 180	180 – 240
K2	Ductile Iron	ASTM A536 80-55-06, ASTM A536 100-70-03	> 450 N/mm²		80 – 160	160 – 220
S1	Titanium & Titanium Alloys	B265, B338, B348, Ti6AL4V			40 – 80	40 – 80
S2	High Temp Alloys	Inconel, Hastelloy	800 – 1700 N/ mm²		30 – 40	30 – 40
N1	Aluminium Alloys	A5005, A6061, A7075			500 – 900	500 – 900
N2	Cast Aluminium Alloys	A310, A400		Si > 12%	120 – 350	120 – 350

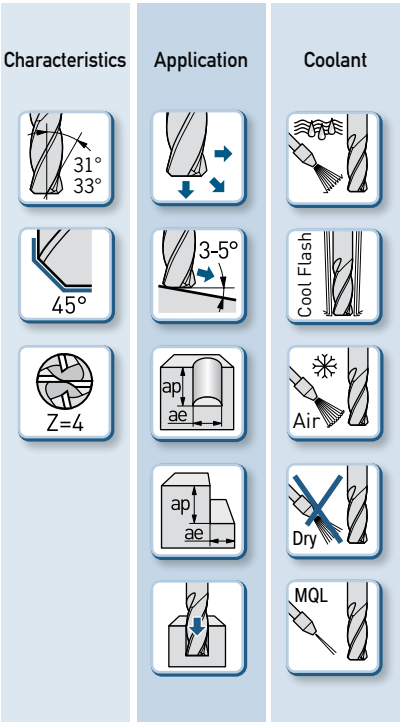
Cutting data are reference values and need to be adjusted according to the application.

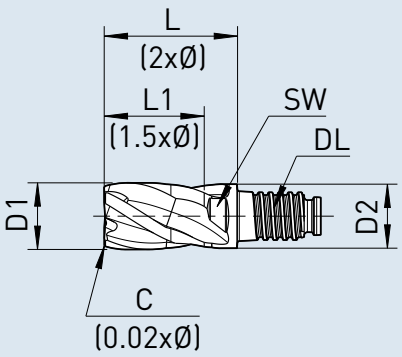
Feed per tooth (mm/tooth) in relation with D1 and cutting width ae						
	ø 10	ø 12	ø 16	ø 20	ø 25	ø 32
fz	0.03 – 0.09	0.03 – 0.10	0.04 – 0.12	0.05 – 0.13	0.06 – 0.17	0.07 – 0.20

Cutting data is based on short cylindrical extensions. Cutting data for long overhang needs to be adjusted.

Technical Data and Product Characteristics

- Necked for greater cutting depths
- Center cutting
- Unequal cutting edge
- Fine balanced
- Best length repeatability





Application Range - Material*

Main Material: P M

also suitable for: K S N

- For almost all materials
- For roughing and finishing

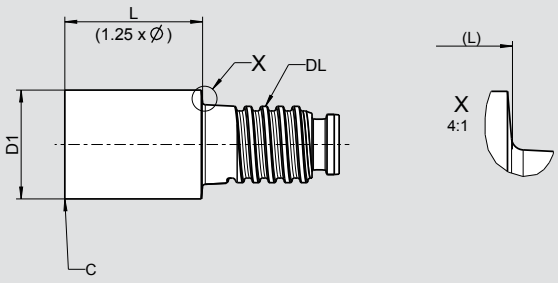
*See HAIMER material page 9

Cooling with Cool Jet or Cool Flash and using Power Chucks is recommended for longer tool life and increased metal removal rates.

Part Number	HAIMER Quality	Duo-Lock Size	D1 (f9) [mm]	Cutting Edge	Size [mm]	L1 max. [mm]	L [mm]	D2 [mm]	AF [mm]	Torque [N/m]
DL10F2004MN1000C..	DA	DL10	10.00	C	0.20	15	20	9.6	SW8	25
DL12F2004MN1200C..	DA	DL12	12.00	C	0.24	18	24	11.5	SW9.5	30
DL16F2004MN1600C..	DA	DL16	16.00	C	0.32	24	32	15.5	SW13	60
DL20F2004MN2000C..	DA	DL20	20.00	C	0.40	30	40	19.3	SW16	80
DL25F2004MN2500C..	DA	DL25	25.00	C	0.50	37.5	50	24.0	SW21	100
DL32F2004MN3200C..	DA	DL32	32.00	C	0.64	48	64	31.0	SW28	130

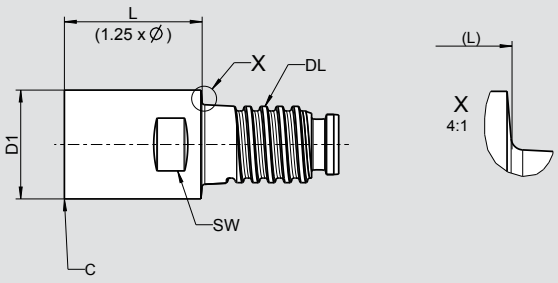
Order code = Article Code + HAIMER Quality.

DUO-ΛOCK® BLANK – SHORT VERSION



Version: short, without wrench flats
- Best length repeatability
- Fine grain carbide, 10% cobalt
- Roller spanner available upon request

Part Number	D1 (h6) [mm]	Cutting Edge	Size [mm]	L (+ 1) [mm]	Interface	Tightening Torque [Nm]	AF [mm]	Material [mm]
RODL10-D10HA0125-0001	10	C	—	12.5	DL10	25	8	HF10
RODL12-D12HA0150-0001	12	C	—	15	DL12	30	9.5	HF10
RODL16-D16HA0200-0001	16	C	—	20	DL16	60	13	HF10
RODL20-D20HA0250-0001	20	C	—	25	DL20	80	16	HF10
RODL25-D25HA0313-0001	25	C	—	31.25	DL25	100	21	HF10
RODL32-D32HA0400-0001	32	C	—	40	DL32	130	28	HF10



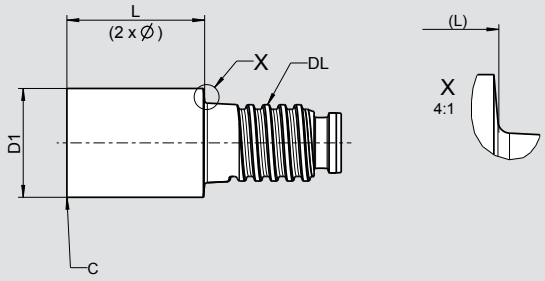
Version: short, with wrench flats
- Best length repeatability
- Fine grain carbide, 10% cobalt

For wrench flat specifications, please see page 32
Only suitable for use with Duo-Lock™ Torque Master

Part Number	D1 (h6) [mm]	Cutting Edge	Size [mm]	L (+ 1) [mm]	Interface	Tightening Torque [Nm]	AF [mm]	Material [mm]
RODL10-D10HA0125-0002	10	C	—	12.5	DL10	25	8	HF10
RODL12-D12HA0150-0002	12	C	—	15	DL12	30	9.5	HF10
RODL16-D16HA0200-0002	16	C	—	20	DL16	60	13	HF10
RODL20-D20HA0250-0002	20	C	—	25	DL20	80	16	HF10
RODL25-D25HA0313-0002	25	C	—	31.25	DL25	100	21	HF10
RODL32-D32HA0400-0002	32	C	—	40	DL32	130	28	HF10

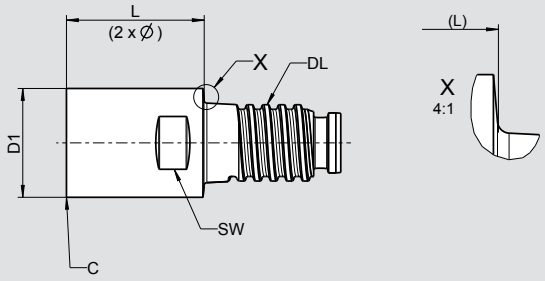
Further lengths available on request

DUO-ΛOCK® BLANK – NORMAL VERSION



Version: normal, without wrench flats
- Best length repeatability
- Fine grain carbide, 10% cobalt
- Roller spanner available upon request

Part Number	D1 (h6) [mm]	Cutting Edge	Size [mm]	L (+ 1) [mm]	Interface	Tightening Torque [Nm]	AF [mm]	Material [mm]
RODL10-D10HA0200-0001	10	C	0.2	20	DL10	25	8	HF10
RODL12-D12HA0240-0001	12	C	0.2	24	DL12	30	9.5	HF10
RODL16-D16HA0320-0001	16	C	0.2	32	DL16	60	13	HF10
RODL20-D20HA0400-0001	20	C	0.2	40	DL20	80	16	HF10
RODL25-D25HA0500-0001	25	C	0.2	50	DL25	100	21	HF10
RODL32-D32HA0640-0001	32	C	0.2	64	DL32	130	28	HF10



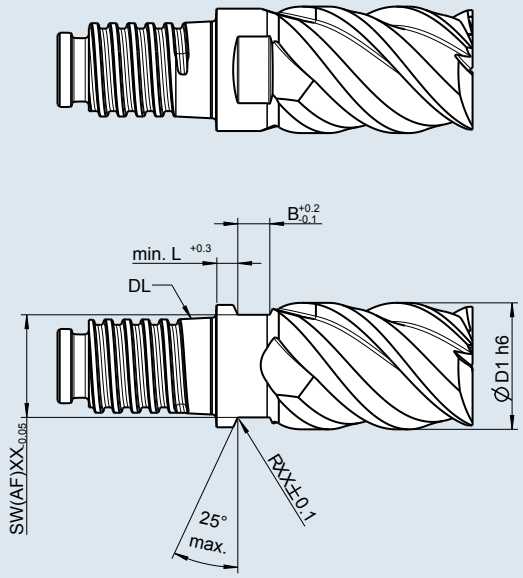
Version: normal, with wrench flats
- Best length repeatability
- Fine grain carbide, 10% cobalt

For wrench flat specifications, please see page 32
Only suitable for use with Duo-Lock™ Torque Master

Part Number	D1 (h6) [mm]	Cutting Edge	Size [mm]	L (+ 1) [mm]	Interface	Tightening Torque [Nm]	AF [mm]	Material [mm]
RODL10-D10HA0200-0002	10	C	0.2	20	DL10	25	8	HF10
RODL12-D12HA0240-0002	12	C	0.2	24	DL12	30	9.5	HF10
RODL16-D16HA0320-0002	16	C	0.2	32	DL16	60	13	HF10
RODL20-D20HA0400-0002	20	C	0.2	40	DL20	80	16	HF10
RODL25-D25HA0500-0002	25	C	0.2	50	DL25	100	21	HF10
RODL32-D32HA0640-0002	32	C	0.2	64	DL32	130	28	HF10

Further lengths available on request

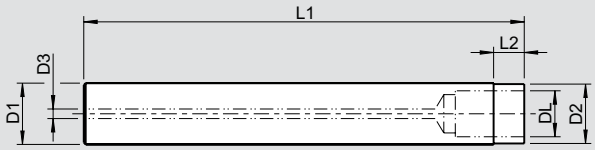
DUO-LOCK® BLANK – WRENCH FLAT SPECIFICATIONS



Interface	AF XX [mm]	L [mm]	B [mm]	Ø D1 [mm]	RXX [mm]
DL10	8	1.7	2.5	10	0.2
DL12	9.5	2	3	12	0.25
DL16	13	2.5	4	16	0.3
DL20	16	3.125	4.8	20	0.375
DL25	21	4.1	6.3	25	0.45
DL32	28	5.25	8.1	32	0.6

HAIMER Cool Flash

DUO-ΛOCK® EXTENSIONS – CYLINDRICAL – SHORT



Version: cylindrical, short
– Shank tolerance: h5
– With inner coolant bore
– Safe-Lock™ optional

Duo-Lock™ extensions cylindrical: short

Interface	Order No.	Clamping Ø D1 [mm]	Length L1 [mm]	Neck Ø D2 [mm]	Neck length L2 [mm]	Internal bore Ø D3 [mm]
DL12	**75.120.DL12**	12	60	11.5	6	2.5
DL16	**75.160.DL16**	16	65	15.5	8	3
DL20	**75.200.DL20**	20	70	19.3	10	3
DL25	**75.250.DL25**	25	80	24	12.5	5
DL32	**75.320.DL32**	32	90	31	16	5

Duo-Lock™ extensions cylindrical: short with Safe-Lock™

Interface	Order No.	Clamping Ø D1 [mm]	Length L1 [mm]	Neck Ø D2 [mm]	Neck length L2 [mm]	Internal bore Ø D3 [mm]
DL10	**75.100.DL10**	10	55	9.6	5	2.5
DL12	**75.121.DL12**	12	65	11.5	6	2.5
DL16	**75.161.DL16**	16	70	15.5	8	3
DL20	**75.201.DL20**	20	80	19.3	10	3
DL25	**75.251.DL25**	25	90	24	12.5	5
DL32	**75.321.DL32**	32	105	31	16	5

Torque of Duo-Lock™ interface						
	DL10	**DL12**	**DL16**	**DL20**	**DL25**	**DL32**
Nm	**25**	**30**	**60**	**80**	**100**	**130**

Accessories

Torque Master Duo-Lock™ incl. grip set long (2 pcs.)
Order No. **84.600.20**

Torque Master Set Duo-Lock™ (with case, insert and grip set, long)
Order No. **84.600.20.AK**

Insert

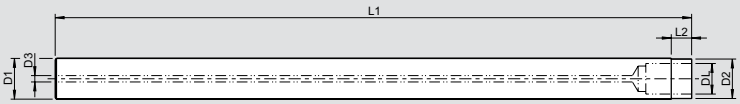
		DL10	DL12	DL16	DL20	DL25	DL32
Order No.	**84.640...**	**.10**	**.12**	**.16**	**.20**	**.25**	**.32**

Wear insert

		DL10	DL12
Order No.	**84.640...**	**.10.1**	**.12.1**

Grip set long
Order No. **84.600.20.1**

DUO-ΛOCK® EXTENSIONS – CYLINDRICAL – LONG



Version: cylindrical, long
– Shank tolerance: h5
– With inner coolant bore
– Vibration dampening on request
– Safe-Lock™ optional
– Overall length can be modified

Duo-Lock™ extensions cylindrical: long

Interface	Order No.	Clamping Ø D1 [mm]	Length L1 [mm]	Neck Ø D2 [mm]	Neck length L2 [mm]	Internal bore Ø D3 [mm]
DL10	**75.102.DL10**	10	100	9.6	5	2.5
DL12	**75.122.DL12**	12	120	11.5	6	2.5
DL16	**75.162.DL16**	16	160	15.5	8	3
DL20	**75.202.DL20**	20	200	19.3	10	3
DL25	**75.252.DL25**	25	250	24	12.5	5
DL32	**75.322.DL32**	32	250	31	16	5

Torque of Duo-Lock™ interface						
	DL10	**DL12**	**DL16**	**DL20**	**DL25**	**DL32**
Nm	**25**	**30**	**60**	**80**	**100**	**130**

Accessories

Torque Master Duo-Lock™ incl. grip set long (2 pcs.)
Order No. **84.600.20**

Torque Master Set Duo-Lock™ (with case, insert and grip set, long)
Order No. **84.600.20.AK**

Insert

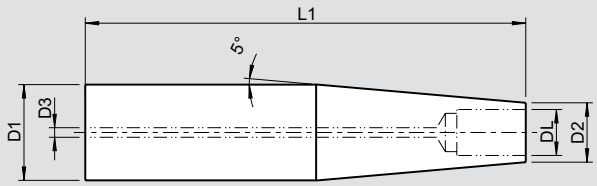
		DL10	DL12	DL16	DL20	DL25	DL32
Order No.	**84.640...**	**.10**	**.12**	**.16**	**.20**	**.25**	**.32**

Wear insert

		DL10	DL12
Order No.	**84.640...**	**.10.1**	**.12.1**

Grip set long
Order No. **84.600.20.1**

DUO-LOCK® EXTENSIONS CONICAL – SHORT



Version: conical, short
– Shank tolerance: h5
– With inner coolant bore
– With Safe-Lock™ as standard

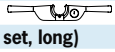
Duo-Lock™ extensions conical: short with Safe-Lock™

Interface	Order No.	Clamping Ø D1 [mm]	Length L1 [mm]	Clamping Ø D2 [mm]	Internal bore Ø D3 [mm]
DL10	**75.120.DL10**	12	65	9.6	2.5
DL10	**75.160.DL10**	16	90	9.6	2.5
DL10	**75.200.DL10**	20	115	9.6	2.5
DL12	**75.160.DL12**	16	80	11.5	2.5
DL12	**75.200.DL12**	20	105	11.5	2.5
DL16	**75.200.DL16**	20	80	15.5	3
DL16	**75.250.DL16**	25	115	15.5	3
DL20	**75.250.DL20**	25	95	19.3	3
DL25	**75.320.DL25**	32	105	24	5
DL32	**75.400.DL32**	40	140	31	5
DL32	**75.500.DL32**	50	200	31	5

Torque of Duo-Lock™ interface						
	DL10	DL12	DL16	DL20	DL25	DL32
Nm	**25**	**30**	**60**	**80**	**100**	**130**

Accessories

Torque Master Duo-Lock™ incl. grip set long (2 pcs.)
Order No. **84.600.20**



Torque Master Set Duo-Lock™ (with case, insert and grip set, long)
Order No. **84.600.20.AK**

Insert

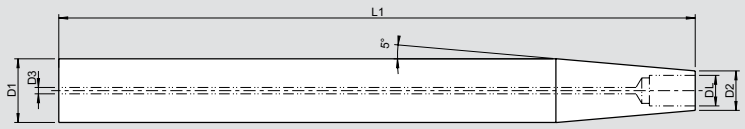
Order No.	84.640...	DL10	DL12	DL16	DL20	DL25	DL32
		.10	**.12**	**.16**	**.20**	**.25**	**.32**

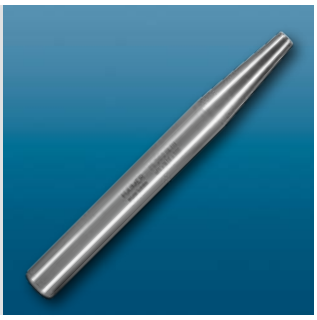
Wear insert

Order No.	84.640...	DL10	DL12
		.10.1	**.12.1**

Grip set long
Order No. **84.600.20.1**

DUO-ΛOCK® EXTENSIONS CONICAL – LONG





Version: conical, long
– Shank tolerance: h5
– With inner coolant bore
– Vibration dampening on request
– Safe-Lock™ optional
– Overall length can be modified

Duo-Lock™ extensions conical: long

Interface	Order No.	Clamping Ø D1 [mm]	Length L1 [mm]	Clamping Ø D2 [mm]	Internal bore Ø D3 [mm]
DL10	**75.122.DL10**	12	120	9.6	2.5
DL10	**75.162.DL10**	16	160	9.6	2.5
DL10	**75.202.DL10**	20	200	9.6	2.5
DL12	**75.162.DL12**	16	160	11.5	2.5
DL12	**75.202.DL12**	20	200	11.5	2.5
DL16	**75.202.DL16**	20	200	15.5	3
DL16	**75.252.DL16**	25	250	15.5	3
DL20	**75.252.DL20**	25	250	19.3	3
DL25	**75.322.DL25**	32	250	24	5
DL32	**75.402.DL32**	40	250	31	5
DL32	**75.502.DL32**	50	250	31	5

Torque of Duo-Lock™ interface						
	DL10	**DL12**	**DL16**	**DL20**	**DL25**	**DL32**
Nm	**25**	**30**	**60**	**80**	**100**	**130**

Accessories

Torque Master Duo-Lock™ incl. grip set long (2 pcs.)
Order No. **84.600.20**

Torque Master Set Duo-Lock™ (with case, insert and grip set, long)
Order No. **84.600.20.AK**

Insert

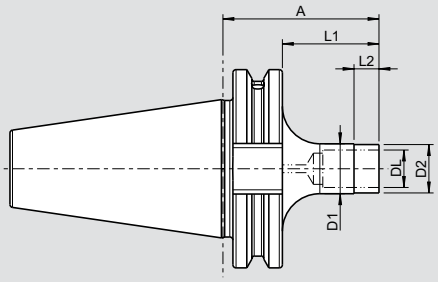
		DL10	DL12	DL16	DL20	DL25	DL32
Order No.	**84.640...**	**.10**	**.12**	**.16**	**.20**	**.25**	**.32**

Wear insert

		DL10	DL12
Order No.	**84.640...**	**.10.1**	**.12.1**

Grip set long
Order No. **84.600.20.1**

DUO-ΛOCK®
MONOBLOCK HOLDER
DIN 69871 · SK40



CERTIFICATE OF QUALITY

- ☑ *Chuck body fine balanced G2.5 25.000 1/min or U<1 gmm*
- ☑ *All functional surfaces fine machined*
- ☑ *Taper tolerance AT3*
- ☑ *Coolant supply form ADB*

Duo-Lock™ Monoblock holder for direct clamping.
Perfectly suitable for milling with short overhang.

With steep taper SK40 Form ADB DIN 69871.

Form ADB means: central coolant supply and coolant channels on the collar which can be sealed again.

– All holders incl. inner coolant
– Hardened 54-2 HRC

SK40

Interface		DL10	DL12	DL16	DL20	DL25	DL32
Clamping	Ø D1 [mm]	10	12	16	20	25	32
	Ø D2 [mm]	9.6	11.5	15.5	19.3	24	31
	L1 [mm]	21.9	21.9	30.9	30.9	36.9	45.9
	L2 [mm]	5	6	8	10	12.5	16
Length A [mm]	short	41	41	50	50	56	65
Order No.	**40.490.DL...**	**.10**	**.12**	**.16**	**.20**	**.25**	**.32**

Torque of Duo-Lock™ interface						
	DL10	DL12	DL16	DL20	DL25	DL32
Nm	**25**	**30**	**60**	**80**	**100**	**130**

Accessories

Torque Master Duo-Lock™ incl. grip set long (2 pcs.)
Order No. **84.600.20**

Torque Master Set Duo-Lock™ (with case, 6 inserts and grip set, long)
Order No. **84.600.20.AK**

Insert

		DL10	DL12	DL16	DL20	DL25	DL32
Order No.	**84.640...**	**.10**	**.12**	**.16**	**.20**	**.25**	**.32**

Wear insert

		DL10	DL12
Order No.	**84.640...**	**.10.1**	**.12.1**

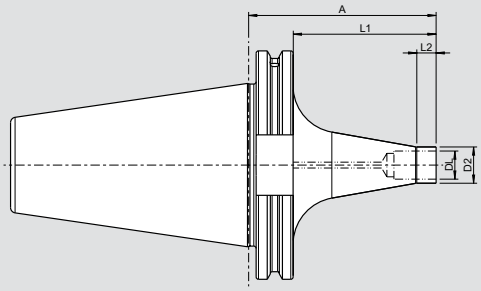
Grip set long
Order No. **84.600.20.1**

Pull studs

DUO-LOCK®
MONOBLOCK HOLDER
DIN 69871 · SK50

CERTIFICATE OF QUALITY

- ☑ *Chuck body fine balanced G2.5 25.000 1/min or U < 1 gmm*
- ☑ *All functional surfaces fine machined*
- ☑ *Taper tolerance AT3*
- ☑ *Coolant supply form ADB*



Duo-Lock™ Monoblock holder for direct clamping.
Perfectly suitable for milling and also for grinding Duo-Lock™ blanks.

With steep taper SK50 Form ADB DIN 69871.

Form ADB means: central coolant supply and coolant channels on the collar which can be sealed again.

– All holders incl. inner coolant
– Hardened 54-2 HRC
– Reinforced geometry

SK50

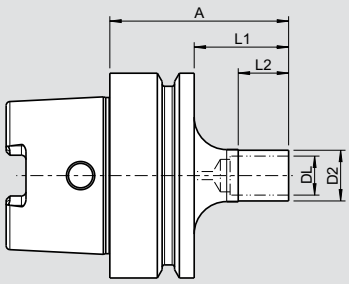
Interface		DL10	DL12	DL16	DL20	DL25	DL32
Clamping	Ø D1 [mm]	10	12	16	20	25	32
	Ø D2 [mm]	9.6	11.5	15.5	19.3	24	31
	L1 [mm]	60.9	60.9	60.9	60.9	60.9	60.9
	L2 [mm]	5	6	8	10	12.5	16
Length A [mm]	short	80	80	80	80	80	80
Order No.	**50.490.DL...**	**.10**	**.12**	**.16**	**.20**	**.25**	**.32**

Torque of Duo-Lock™ interface						
	DL10	DL12	DL16	DL20	DL25	DL32
Nm	**25**	**30**	**60**	**80**	**100**	**130**

Accessories

Torque Master Duo-Lock™ incl. grip set long (2 pcs.)							
Order No.	**84.600.20**						
Torque Master Set Duo-Lock™ (with case, 6 inserts and grip set, long)							
Order No.	**84.600.20.AK**						
Insert							
		DL10	DL12	DL16	DL20	DL25	DL32
Order No.	**84.640...**	**.10**	**.12**	**.16**	**.20**	**.25**	**.32**
Wear insert							
		DL10	DL12				
Order No.	**84.640...**	**.10.1**	**.12.1**				
Grip set long							
Order No.	**84.600.20.1**						
Pull studs							

DUO-ΛOCK®
MONOBLOCK HOLDER
DIN 69893-1 · HSK-A63



CERTIFICATE OF QUALITY

- ☑ *Chuck body fine balanced*
  G2.5 25.000 1/min
  or U<1 gmm
- ☑ *All functional surfaces fine machined*
- ☑ *More accurate than DIN*

Duo-Lock™ Monoblock holder for direct clamping.
Perfectly suitable for milling with short overhang.

– All holders incl. inner coolant
– Hardened 54-2 HRC

HSK-A63

Interface		DL10	DL12	DL16	DL20	DL25	DL32
Clamping	Ø D1 [mm]	10	12	16	20	25	32
	Ø D2 [mm]	9.6	11.5	15.5	19.3	24	31
	L1 [mm]	22	26	31	31	35	46
	L2 [mm]	5	6	8	10	12.5	16
Length A [mm]	short	48	52	57	57	61	72
Order No.	**A63.190.DL...**	**.10**	**.12**	**.16**	**.20**	**.25**	**.32**

Torque of Duo-Lock™ interface						
	DL10	DL12	DL16	DL20	DL25	DL32
Nm	25	30	60	80	100	130

Accessories

Torque Master Duo-Lock™ incl. grip set long (2 pcs.)
Order No. **84.600.20**

Torque Master Set Duo-Lock™ (with case, 6 inserts and grip set, long)
Order No. **84.600.20.AK**

Insert

		DL10	DL12	DL16	DL20	DL25	DL32
Order No.	**84.640...**	**.10**	**.12**	**.16**	**.20**	**.25**	**.32**

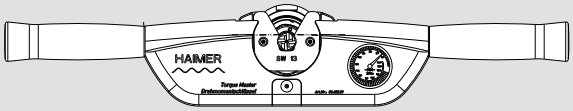
Wear insert

		DL10	DL12
Order No.	**84.640...**	**.10.1**	**.12.1**

Grip set long
Order No. **84.600.20.1**

Coolant tube
Order No. **85.700.63**

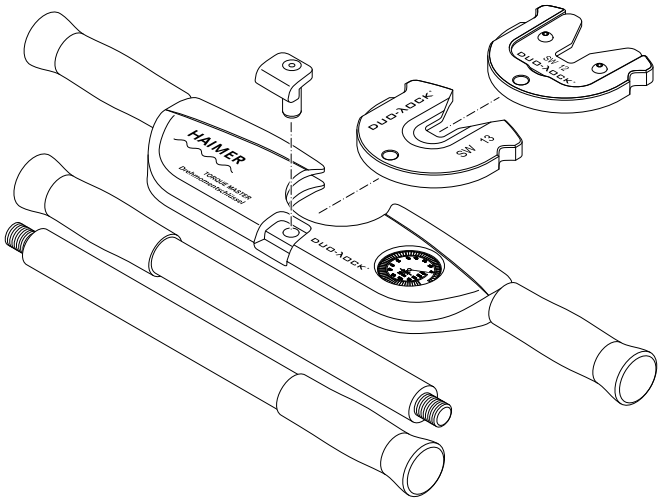
DUO-ΛOCK® TORQUE MASTER



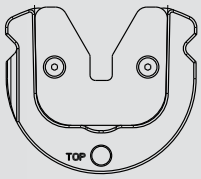
Two-armed torque wrench for Duo-Lock™:
– For highest runout accuracy, no one-sided clamping
– Optimal power transmission by constant force application
– Torque wrench for highest clamping accuracy and repeatability with dial gauge
– Maximum torque for highest clamping force
– No overloading of smaller clamping diameters
– Changeable inserts, useable also for standard ER-Nuts
– Extended grips for DL16 – DL32

Torque wrench for Duo-Lock™	
Torque Master Set Duo-Lock™ (with case, 6 inserts and grip sets, long)	84.600.20.AK
Torque Master Duo-Lock™ incl. grip set long (without inserts)	84.600.20

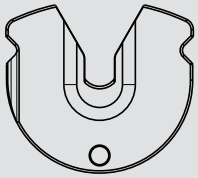
Torque of Duo-Lock™ interface						
	DL10	DL12	DL16	DL20	DL25	DL32
Nm	25	30	60	80	100	130



INSERTS FOR DUO-ΛOCK® TORQUE MASTER



DL10 – DL12: with Wear insert



DL16–DL32: Made of a single piece

– Exchangeable inserts for Duo-Lock™ Torque Master
– Suitable for Duo-Lock™ milling heads

Inserts		
Order No.	**Size**	**AF [mm]**
84.640.10	**DL10**	**8**
84.640.12	**DL12**	**9.5**
84.640.16	**DL16**	**13**
84.640.20	**DL20**	**16**
84.640.25	**DL25**	**21**
84.640.32	**DL32**	**28**

Accessories				
Wear insert				
Order No.	**84.640...**		DL10 **.10.1**	DL12 **.12.1**

THE MORE HAIMER, THE BETTER.

Passion for precision

HAIMER is a German, medium-sized family business. We develop and produce innovative ultra-precision products, primarily in the field of tool clamping. As the market leader in Germany, the continuous technological innovations of our products is very important to us and for this reason we annually invest 8–10% in research and development.
With this budget, we can afford our own product development team, which constantly works on practical innovations and continual product improvements. 13 sales and service subsidiaries guarantee the first class HAIMER service and specific customer orientated product consultation worldwide on the spot. However, all products are solely produced in Igenhausen, Germany.
In accordance with our corporate philosophy: **Quality Wins.**

Our new North American Headquarters

Located in the Chicago suburb of Villa Park, HAIMER's new 25,000 ft² headquarters is designed and built to help facilitate the company's growth in the North American marketplace. It features state-of-the-art training facilities able to accommodate up to sixty people. The expanded showroom includes a CNC machining center for demo cuts, shrink fit and balancing machines under power, and HAIMER's complete range of tool holding solutions on display. Both the training facilities and showroom are wired with HD cameras for live and web-based presentations.
From our new facility, HAIMER will also provide balance inspection, precision balancing and data chipping services for tool holders from HAIMER or any other manufacturer. Future service offerings will include end mill regrinding as well as Safe-Lock groove modifications.

HAIMER USA – Chicago, Illinois

HAIMER USA's Competency Center features a 60-seat Training Room

HAIMER's 25,000 ft² North American Headquarters includes a spacious customer lounge

HAIMER USA's new Showroom is equipped with the latest cutting edge technologies

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Haimer USA, LLC | 134 E. Hill Street | Villa Park, IL 60181 | USA
Phone 1-866-837-3265 | Fax (630) 833-1507 | Mail: haimer@haimer-usa.com | www.haimer-usa.com
Haimer Mexico | Anillo Vial Fray Junipero Serra No. 16950 Bodega 2 | Micro Parque Industrial Sotavento
Querétaro., QRO. C.P 76127 | Mexico | Phone +442-243-0950 | www.haimer-mexico.com | haimer@haimermx.com

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