



FRÄSWERKZEUGE | MILLING TOOLS

FRÄS-SYSTEME TOOLUTION | MILLING SYSTEMS TOOLUTION

M.1.2.1 System "toolution®"

396 - 403

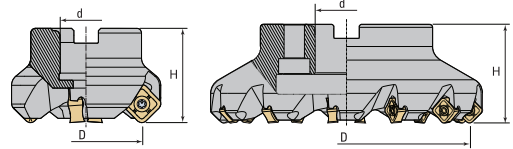
M.1.2.2 System "ClassicLine"

404 - 413

M.1.3.1 Werkzeug-Verlängerungen | tool extensions

414 - 415





toolution® MILL V145-DUO

Planfräs-System 45° für SNHG 12 / ONHG 12
facemill system 45° for SNHG 12 / ONHG 12

TECHNISCHE DATEN | TECHNICAL DATA

ISO-Bezeichnung ISO code	Z T	Abmessungen dimensions				kg	Spez. spec.			Lager stock	WSP insert	
		Ød		D (mm)			ap (mm)		Zeichn. Draw.		ISO	
		(mm)	SNHG	ONHG	SNHG		ONHG	SNHG				ONHG
V145-F050-22-04-DUO	4	22	50	53,13	40	38,43	0,30	6	2,75	1	○	SNHG 12/ONHG 12
V145-F050-22-06-DUO	6	22	50	53,13	40	38,43	0,30	6	2,75	1	●	SNHG 12/ONHG 12
V145-F063-22-06-DUO	6	22	63	66,13	40	38,43	0,50	6	2,75	1	●	SNHG 12/ONHG 12
V145-F063-22-08-DUO	8	22	63	66,13	40	38,43	0,50	6	2,75	1	●	SNHG 12/ONHG 12
V145-F080-27-07-DUO	7	27	80	83,13	50	48,43	0,80	6	2,75	1	●	SNHG 12/ONHG 12
V145-F080-27-10-DUO	10	27	80	83,13	50	48,43	0,80	6	2,75	1	●	SNHG 12/ONHG 12
V145-F100-32-08-DUO	8	32	100	103,13	50	48,43	1,40	6	2,75	1	●	SNHG 12/ONHG 12
V145-F100-32-10-DUO	10	32	100	103,13	50	48,43	1,30	6	2,75	1	●	SNHG 12/ONHG 12
V145-F100-32-12-DUO	12	32	100	103,13	50	48,43	1,20	6	2,75	1	○	SNHG 12/ONHG 12
V145-F125-40-10-DUO	10	40	125	128,13	63	61,43	3,50	6	2,75	1	●	SNHG 12/ONHG 12
V145-F125-40-16-DUO	16	40	125	128,13	63	61,43	3,00	6	2,75	1	●	SNHG 12/ONHG 12
V145-F160-40-08-DUO	8	40	160	163,13	63	61,43	4,6	6	2,75	2	●	SNHG 12/ONHG 12
V145-F160-40-12-DUO	12	40	160	163,13	63	61,43	5,20	6	2,75	2	●	SNHG 12/ONHG 12
V145-F160-40-20-DUO	20	40	160	163,13	63	61,43	4,20	6	2,75	2	○	SNHG 12/ONHG 12
V145-F200-60-18-DUO	18	60	200	203,13	63	61,43	6,70	6	2,75	2	○	SNHG 12/ONHG 12
V145-F200-60-26-DUO	26	60	200	203,13	63	61,43	6,00	6	2,75	2	○	SNHG 12/ONHG 12
V145-F250-60-20-DUO	20	60	250	253,13	63	61,43	8,50	6	2,75	2	○	SNHG 12/ONHG 12

Bohrung | arbor mounting

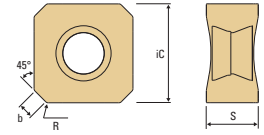
ERSATZTEILE | SPARE PARTS

ISO-Bezeichnung ISO code	WSP Schraube	Schraube Aufn.	Drehmomentschl.	Drehmoment		
	insert screw	mounting bolt	torque wrench	torque value		
ONHG 12 / SNHG 12						
	V69 B1040	a.A. / POA	DS 15			



SNHG

Hartmetall-WSP, Negativ 90°, zum Schruppen und Schlichten
carbide insert, negative 90°, for roughing and finishing



TECHNISCHE DATEN | TECHNICAL DATA

ISO-Bezeichnung ISO code	siehe Zeichnung see drawing					ap max (mm)
	iC (mm)	S (mm)	I (mm)	R (mm)	b (mm)	
SNHG 1205 ANT	12,0	6,3		0,4	1,84	6

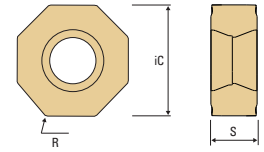
SORTEN | GRADES

Hartmetall beschichtet carbide coated					
Härte hardness <-----> Zähigkeit toughness					
V805	V820	V725F	V825	V830	V840
●	●		●	●	●
P15-P35	P20-P30	P15-P40	P30-P45	P25-P45	
M10-M30	M20-M30		M20-M40	M20-M40	
K05-K20	K10-K30			K15-K40	
N05-N20					
S20-S30				S15-S30	
H05-H20	H15-H30				



ONHG

Hartmetall-WSP, Negativ 135°, zum Schruppen und Schlichten
carbide insert, negative 135°, for roughing and finishing



TECHNISCHE DATEN | TECHNICAL DATA

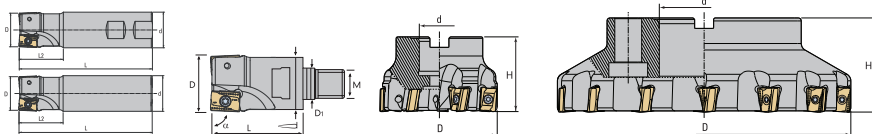
ISO-Bezeichnung ISO code	siehe Zeichnung see drawing					ap max (mm)
	iC (mm)	S (mm)	I (mm)	R (mm)	F (mm)	
ONHG 1205 ANT	12,0	5,0		0,4		2,75

SORTEN | GRADES

Hartmetall beschichtet carbide coated					
Härte hardness <-----> Zähigkeit toughness					
V805	V820	V725F	V825	V830	V840
●	●		●	●	●
P15-P35	P20-P30	P15-P40	P30-P45	P25-P45	
M10-M30	M20-M30		M20-M40	M20-M40	
K05-K20	K10-K30			K15-K40	
N05-N20					
S20-S30				S15-S30	
H05-H20	H15-H30				

ANWENDUNG & OPERATION | APPLICATION & OPERATION

Planfräsen face milling	Anfasen chamfer	Eckfräsen shouldering	Nutfräsen slotting	Taschenfräsen pocket milling	schräg. Eintauch. ramping	Tauchfräsen (side) plunging	Zirkularfräsen helical interp.



toollution[®] MILL V190-A10

Eckfräs-System 90° für ANHG 10
helical milling system 90° for ANHG 10

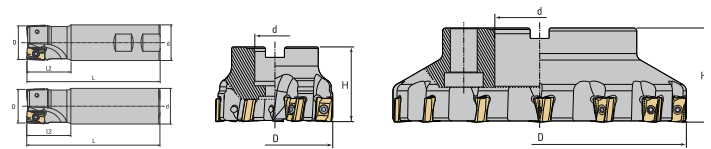
TECHNISCHE DATEN | TECHNICAL DATA

ISO-Bezeichnung ISO code	Z T	Abmessungen dimensions					kg	Spez.	spec.	Lager stock	WSP insert
		D (mm)	d (mm)	H/D1 (mm)	L (mm)	L2/M (mm)		ap* (mm)	Zeichn. Draw.		ISO
V190-W020-20-2-90	2	20	20	-	90	30	0,40	-	1	●	ANHG 10
V190-E020-20-2-150	2	20	20	-	150	40	0,50	-	2	●	ANHG 10
V190-W025-25-3-100	3	25	25	-	100	35	0,70	-	1	●	ANHG 10
V190-E025-25-3-150	3	25	25	-	150	40	0,80	-	2	●	ANHG 10
V190-W032-32-3-110	3	32	32	-	110	40	0,70	-	1	●	ANHG 10
V190-E032-32-3-150	3	32	32	-	150	40	0,80	-	2	●	ANHG 10
V190-E033-32-3-200	3	33	32	-	200	40	0,90	-	2	○	ANHG 10
V190-W040-32-4-115	4	40	32	-	115	40	0,75	-	1	○	ANHG 10
V190-E040-32-4-150	4	40	32	-	150	40	0,85	-	2	●	ANHG 10
V190-E040-32-5-150	5	40	32	-	150	40	1,00	-	2	●	ANHG 10
V190-S020-M10-2-A10	2	20	18	10,5	35	10	0,07	-	3	●	ANHG 10
V190-S025-M12-3-A10	3	25	21	12,5	35	12	0,10	-	3	●	ANHG 10
V190-S032-M16-4-A10	4	32	29	17,0	43	16	0,23	-	3	●	ANHG 10
V190-F032-16-03-A10	3	32	16	40	-	-	0,20	9	4	●	ANHG 10
V190-F040-22-03-A10	3	40	22	40	-	-	0,30	9	4	●	ANHG 10
V190-F040-22-04-A10	4	40	22	40	-	-	0,30	9	4	●	ANHG 10
V190-F050-22-04-A10	4	50	22	40	-	-	0,40	9	4	●	ANHG 10
V190-F050-22-05-A10	5	50	22	40	-	-	0,40	9	4	●	ANHG 10
V190-F063-22-05-A10	5	63	22	40	-	-	0,50	9	4	●	ANHG 10
V190-F063-22-07-A10	7	63	22	40	-	-	0,50	9	4	●	ANHG 10
V190-F080-27-06-A10	6	80	27	50	-	-	0,80	9	4	●	ANHG 10
V190-F080-27-08-A10	8	80	27	50	-	-	0,90	9	4	●	ANHG 10
V190-F100-32-07-A10	7	100	32	50	-	-	1,30	9	4	●	ANHG 10
V190-F100-32-10-A10	10	100	32	50	-	-	1,50	9	5	●	ANHG 10
V190-F125-40-09-A10	9	125	40	63	-	-	3,80	9	5	○	ANHG 10
V190-F125-40-12-A10	12	125	40	63	-	-	3,80	9	5	○	ANHG 10

ERSATZTEILE | SPARE PARTS

ISO-Bezeichnung ISO code	WSP Schraube	Schraube Aufn.	Drehmomentschl.	Drehmoment
	insert screw	mounting bolt	torque wrench	torque value
ANHG 10	V69 0530	a.A. / POA	DS 9	Nm

PlusLine
Tangential
highFEED
AluLine
milling systems
ProLine
Fräs-Systeme
toolution®
ClassicLine
extensions
ceramic
milling inserts
pCBN
FRÄSEN | MILLING



toolution® MILL V190-A16

Eckfräs-System 90° für ANHG 16
helical milling system 90° for ANHG 16

TECHNISCHE DATEN | TECHNICAL DATA

ISO-Bezeichnung ISO code	Z T	Abmessungen dimensions					kg	Spez.	spec.	Lager stock	WSP insert
		D (mm)	d (mm)	H/D1 (mm)	L (mm)	L2/M (mm)		ap* (mm)	Zeichn. Draw.		ISO
V190-W032-32-2-110	2	32	32	-	110	30	0,70	-	1	●	ANHG 16
V190-E032-32-2-150	2	32	32	-	150	45	0,80	-	2	●	ANHG 16
V190-E033-32-2-200	2	33	32	-	200	45	0,90	-	2	●	ANHG 16
V190-W040-32-3-115	3	40	32	-	115	35	0,75	-	1	○	ANHG 16
V190-E040-32-3-150	3	40	32	-	150	45	0,85	-	2	●	ANHG 16
V190-E050-32-4-150	4	50	32	-	150	50	1,00	-	2	○	ANHG 16
V190-F050-22-03-A16	3	50	22	40	-	-	0,40	15	3	○	ANHG 16
V190-F050-22-04-A16	4	50	22	40	-	-	0,40	15	3	●	ANHG 16
V190-F063-22-04-A16	4	63	22	40	-	-	0,50	15	3	●	ANHG 16
V190-F063-22-06-A16	6	63	22	40	-	-	0,50	15	3	●	ANHG 16
V190-F080-27-05-A16	5	80	27	50	-	-	0,80	15	3	●	ANHG 16
V190-F080-27-07-A16	7	80	27	50	-	-	0,90	15	3	●	ANHG 16
V190-F100-32-05-A16	5	100	32	50	-	-	1,30	15	3	●	ANHG 16
V190-F100-32-08-A16	8	100	32	50	-	-	1,50	15	3	●	ANHG 16
V190-F125-40-07-A16	7	125	40	63	-	-	3,90	15	3	●	ANHG 16
V190-F125-40-10-A16	10	125	40	63	-	-	3,70	15	3	●	ANHG 16
V190-F160-40-08-A16	8	160	40	63	-	-	5,00	15	4	●	ANHG 16
V190-F160-40-12-A16	12	160	40	63	-	-	5,30	15	4	○	ANHG 16
V190-F200-60-14-A16	14	200	60	63	-	-	7,00	15	4	●	ANHG 16

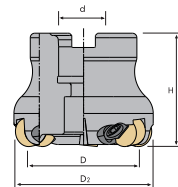
ERSATZTEILE | SPARE PARTS

ISO-Bezeichnung ISO code	WSP Schraube	Schraube Aufn.	Drehmomentschl.	Drehmoment		
	insert screw	mounting bolt	torque wrench	torque value		
ANHG 16	V69 1240	a.A. / POA	DS 15			



toolution[®] MILL V100

Planmesserkopf für RNGN
face cutter for RNGN



TECHNISCHE DATEN | TECHNICAL DATA

ISO-Bezeichnung ISO code	Z T	Abmessungen dimensions			kg	Spez.	spec.	Lager stock	WSP insert
		ØD (mm)	Ød (mm)	H (mm)		ap* (mm)	Aufm. arbor		ISO
V100-F050-22-05-R1207	5	50	22	50	0,38	6	●	RNGN 120700	
V100-F063-22-06-R1207	6	63	22	50	0,58	6	●	RNGN 120700	
V100-F080-27-07-R1207	7	80	27	50	0,80	6	●	RNGN 120700	
V100-F100-32-08-R1207	8	100	32	50	1,20	6	○	RNGN 120700	
V100-F125-40-12-R1207	12	125	40	50	2,40	6	○	RNGN 120700	
V100-F160-40-14-R1207	14	160	40	50	3,60	6	○	RNGN 120700	
V100-F200-60-18-R1207	18	200	60	55	5,60	6	●	RNGN 120700	

ERSATZTEILE | SPARE PARTS

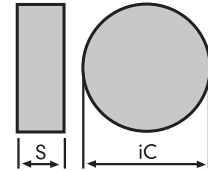
ISO-Bezeichnung ISO code	Keil	Schraube für Keil	Schlüssel			
	wedge	wedge screw	wrench			
V100-F050-22-05-R1207	V69 WFZ 8F-S	V69 WS 8S	V69 T-W3			
V100-F063-22-06-R1207	V69 WFZ 8F-S	V69 WS 8S	V69 T-W3			
V100-F080-27-07-R1207	V69 WFZ 8F-S	V69 WS 8S	V69 T-W3			
V100-F100-32-08-R1207	V69 WFZ 8F-S	V69 WS 8S	V69 T-W3			
V100-F125-40-12-R1207	V69 WFZ 8F-S	V69 WS 8S	V69 T-W3			
V100-F160-40-14-R1207	V69 WFZ 8F-S	V69 WS 8S	V69 T-W3			
V100-F200-60-18-R1207	V69 WFZ 8F-S	V69 WS 8S	V69 T-W3			

PlusLine
Tangential
highFEED
AluLine
ProLine
Fräs-Systeme | milling systems
toolution[®]
ClassicLine
extensions
ceramic
pCBN
Fräs-Wsp | milling inserts
M | FRÄSEN | MILLING



RNGN

Keramik-WSP, Negativ, runde WSP zum Schruppen
ceramic insert, negative, round insert for roughing



TECHNISCHE DATEN | TECHNICAL DATA

ISO-Bezeichnung ISO code	siehe Zeichnung see drawing				
	iC (mm)	S (mm)	a (mm)	b (mm)	
RNGN 120700 T2 (H)	12,70	7,94	-	-	
RNGN 120700 T4 (H)	12,70	7,94	-	-	

SORTEN | GRADES

Keramik ceramic					
VZ	VAC	VA	VSN	VSL	VWS
VZ150	VAC250	VA250	VSN250	VSL210	VWS100
	○	●	●		●
		●			
					M05-M20
					K05-K20
					K05-K25
					S05-S20
					H05-H20

ANWENDUNG & OPERATION | APPLICATION & OPERATION

	Planfräsen face milling	Anfasen chamfer	Eckfräsen shouldering	Nutfräsen slotting	Taschenfräsen pocket milling	schräg. Eintauch. ramping	Tauchfräsen (side) plunging	Zirkularfräsen helical interp.