Technical information

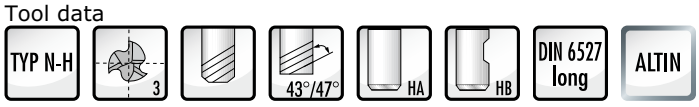
Art.-Nr. 243 / 1 - example Inox

VHM - Schaftfräser Starmax 3Z

Art.-Nr. **243**

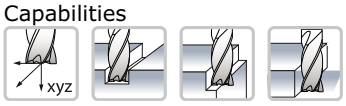
Flutes **3**

Tool data



Tool recommendation

Capabilities



Areas of application and special features

HPC Starmax z3 for Inox, titanium and universal materials.
Uneven helix and roughing flute.

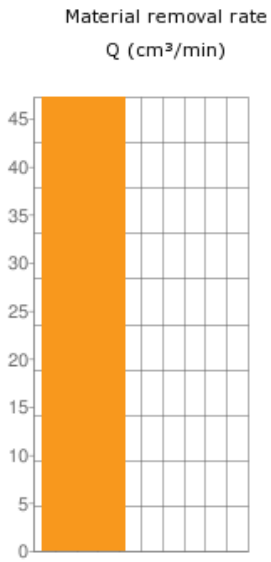
Competitive advantages and profitability

competition to Gühring and Hoffmann

Example application

Art.-Nr.: **243.120.10**
Material: **Rust and acid constant steels <700 N/mm² (<205 HB)**

Inovatools – Finishing			
D1	12,00	mm	Diameter
z	3		Flutes
ae	6,000	mm	Row pitch
ap	12,000	mm	Cutting depth
vc	110,00	m/min	Cutting speed
n	2918	U/min	Rotation speed
fz	0,07500	mm	Feed per tooth
vf	656,51	mm/min	Feed rate
Q	47,26901810	cm³/min	Material removal rate
hm	0,04775	mm	Middle chipping thickness
K/M		€/std	Machine hourly cost
K/W		€	Tool cost
T		min	Tool life
V		cm³	Processing volume
Tb		min	Process time
€/Ws		€	Cost workpiece



Competitor:
Art.-Nr.:

Calculator			
D1		mm	Diameter
z			Flutes
ae		mm	Row pitch
ap		mm	Cutting depth
vc		m/min	Cutting speed
n		U/min	Rotation speed
fz		mm	Feed per tooth
vf		mm/min	Feed rate
Q		cm³/min	Material removal rate
hm		mm	Middle chipping thickness
K/M		€/std	Machine hourly cost
K/W		€	Tool cost
T		min	Tool life
V		cm³	Processing volume
Tb		min	Process time
€/Ws		€	Cost workpiece

Cutting data and application recommendations

Art.-Nr. 243 / 1 - example Inox

Roughing

ap: 1,00
ae:1,00

Caption:
Ideal
Good
Applicable
Limited applicable

Material	vc m/min	φ Grad	D1 3,00 fz mm	D1 4,00 fz mm	D1 5,00 6,00 fz mm	D1 7,00 8,00 9,00 fz mm	D1 10,00 12,00 fz mm	D1 16,00 fz mm	D1 20,00 fz mm	D1 fz mm	D1 fz mm	D1 fz mm	D1 fz mm	D1 fz mm	D1 fz mm	D1 fz mm
General steels <500 N/mm² (<150 HB)	170	55	0,010	0,017	0,029	0,038	0,063	0,084	0,101							
General steels <700 N/mm² (<205 HB)	156	50	0,010	0,017	0,029	0,038	0,063	0,084	0,101							
General steels <850 N/mm² (<25 HRC)	127	48	0,010	0,017	0,029	0,038	0,063	0,084	0,101							
Tempering steel <850 N/mm² (<25 HRC)	113	50	0,010	0,017	0,029	0,038	0,063	0,084	0,101							
Tempering steel <1000 N/mm² (<32 HRC)	99	45	0,008	0,013	0,021	0,027	0,044	0,059	0,071							
Tempering steel <1400 N/mm² (<44 HRC)	85	40	0,008	0,013	0,021	0,027	0,044	0,059	0,071							
Tempered steels 45-55 HRC (1400-2000 N/mr																
Tempered steels 55-60 HRC (>2000 N/mm²)																
Tempered steels 60-65 HRC																
Cast iron <180HB	127	50	0,010	0,017	0,029	0,038	0,063	0,084	0,101							
Malleable cast iron	99	40	0,010	0,017	0,029	0,038	0,063	0,084	0,101							
Cast iron with nodular graphite	99	40	0,010	0,017	0,029	0,038	0,063	0,084	0,101							
Aluminium long-chipping																
Aluminium short-chipping																
Aluminium alloyed over >8% S																
Copper, brass, bronze, red brass																
Plastics - thermoplast																
Plastics - duroplast																
GFK/CFK (fibreglass/carbon fibre plastics)																
Graphite																
Rust and acid constant steels <700 N/mm² (<2(	78	50	0,010	0,017	0,029	0,038	0,063	0,084	0,101							
Rust and acid constant steels >700 N/mm² (>2(	53	30	0,008	0,013	0,021	0,027	0,044	0,059	0,071							
Inconel, Hastelloy, Nimonic, Monel	25	35	0,006	0,008	0,013	0,021	0,027	0,044	0,059							
Titanium	35	35	0,006	0,008	0,013	0,021	0,027	0,044	0,059							

Finishing

ap: 1,00
ae:0,50

Caption:
Ideal
Good
Applicable
Limited applicable

Material	vc m/min	φ Grad	D1 3,00 fz mm	D1 4,00 fz mm	D1 5,00 6,00 fz mm	D1 7,00 8,00 9,00 fz mm	D1 10,00 12,00 fz mm	D1 16,00 fz mm	D1 20,00 fz mm	D1 fz mm	D1 fz mm	D1 fz mm	D1 fz mm	D1 fz mm	D1 fz mm	D1 fz mm
General steels <500 N/mm² (<150 HB)	240	55	0,012	0,020	0,035	0,045	0,075	0,100	0,120							
General steels <700 N/mm² (<205 HB)	220	50	0,012	0,020	0,035	0,045	0,075	0,100	0,120							
General steels <850 N/mm² (<25 HRC)	180	48	0,012	0,020	0,035	0,045	0,075	0,100	0,120							
Tempering steel <850 N/mm² (<25 HRC)	160	50	0,012	0,020	0,035	0,045	0,075	0,100	0,120							
Tempering steel <1000 N/mm² (<32 HRC)	140	45	0,009	0,015	0,025	0,032	0,052	0,070	0,084							
Tempering steel <1400 N/mm² (<44 HRC)	120	40	0,009	0,015	0,025	0,032	0,052	0,070	0,084							
Tempered steels 45-55 HRC (1400-2000 N/mr																
Tempered steels 55-60 HRC (>2000 N/mm²)																
Tempered steels 60-65 HRC																
Cast iron <180HB	180	50	0,012	0,020	0,035	0,045	0,075	0,100	0,120							
Malleable cast iron	140	40	0,012	0,020	0,035	0,045	0,075	0,100	0,120							
Cast iron with nodular graphite	140	40	0,012	0,020	0,035	0,045	0,075	0,100	0,120							
Aluminium long-chipping																
Aluminium short-chipping																
Aluminium alloyed over >8% S																
Copper, brass, bronze, red brass																
Plastics - thermoplast																
Plastics - duroplast																
GFK/CFK (fibreglass/carbon fibre plastics)																
Graphite																
Rust and acid constant steels <700 N/mm² (<2(	110	50	0,012	0,020	0,035	0,045	0,075	0,100	0,120							
Rust and acid constant steels >700 N/mm² (>2(	75	30	0,009	0,015	0,025	0,032	0,052	0,070	0,084							
Inconel, Hastelloy, Nimonic, Monel	35	35	0,007	0,009	0,015	0,025	0,032	0,052	0,070							
Titanium	50	35	0,007	0,009	0,015	0,025	0,032	0,052	0,070							