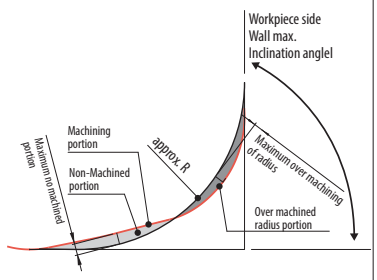
Vischer & Bolli
OSG GROUP COMPANY

MFH series general processing instructions

Approximate programming radius adjustment

Form



MFH Micro R ca. (mm)	Maximum over machining of radius (mm)	Maximum no machined portion (mm))	MFH Mini R ca. (mm)	Maximum over machining of radius (mm)	Maximum no machined portion (mm))
R1,0	0	0,21	R1,6 (empfohlen)	0	0,39
R1,2 (empfohlen)	0	0,17	R2,0	0,09	0,35
R1,5	0,08	0,1	R2,5	0,26	0,26
R2,0	0,28	0,01	R3,0	0,46	0,17

Cutting edge Angle for MFH Micro/MFH Mini is 12°, Workpiece side wall Max. inclination angle is 90°

MFH Harrier (GM • GH)						
Description	Insert	Cutting edge angle γ (°)	R approx. (mm) (Recommended)	Maximum over machining of radius (mm)	Maximum no machined portion (mm)	Workpiece side wall max. Inclination angle
MFH...-10-...	GM • GH	10°	R3,0	0	0,85	90°
	LD	14°	R3,5	0	0,69	65°
	FL	14°	R3,0	0	0,89	80°
MFH...-14-...	GM • GH	10°	R3,5	0	1,37	90°
	LD	16°	R5,0	0	1,06	65°
	FL	13°	R3,0	0	1,36	80°

Ramping reference data

Description	Cutting dia. DCX [mm]	8	10	12	14	16
MFH Micro	Max. ramping angle RMPX	4,0°	3,0°	2,0°	1,5°	1,2°
	tan RMPX	0,070	0,052	0,035	0,026	0,021

Description	Cutting dia. DCX [mm]	16	17	18	20	22	25	28	32	40	50
MFH Mini	Max. ramping angle RMPX	2.8°	2.5°	2.1°	1.7°	1.4°	1.2°	1°	0.8°	0.5°	0.4°
	tan RMPX	0.049	0.042	0.037	0.030	0.024	0.021	0.017	0.014	0.009	0.007

Description	Cutting dia. DCX [mm]	25	28	32	35	40	50	63	80
MFH Harrier (MFH...-10-...)	Max. ramping angle RMPX	5°	4.5°	4°	3.5°	3°	2.5°	2°	1°
	tan RMPX	0.087	0.078	0.070	0.061	0.052	0.043	0.035	0.017

Description	Cutting dia. DCX [mm]	50	63	80	100	125	160
MFH Harrier (MFH...-14-...)	Max. ramping angle RMPX	2°	1.8°	1°	0.5°	0.4°	0.2°
	tan RMPX	0.035	0.031	0.017	0.009	0.007	0.003

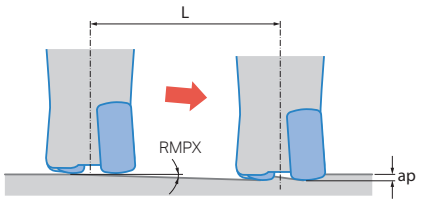
Decrease ramping angle if chips become excessively long.

Ramping

Ramping angle should be under RMPX (maximum ramping angle) in the above cutting conditions.
Reduce recommended feed rate in cutting conditions above by 70%.

Formula for max. cutting length (L) at max. ramping angle

$$L = \frac{ap}{RMPX}$$

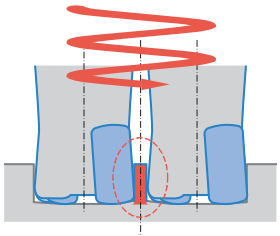


Helical milling

For helical milling, use between minimum and maximum cutting diameter.

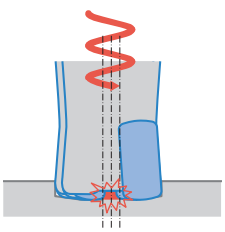
⦸ Exceeding max. machining dia.

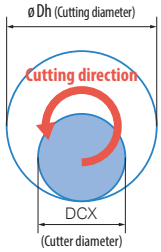
Center core remains after machining



⦸ Under min. machining dia.

Center core hits holder body

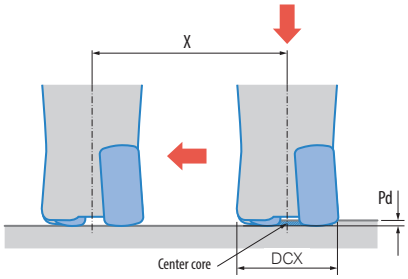




Description	Min. Cutting dia. øDh1	Min. Cutting dia. øDh2	Maximum ramping depth per cycle
MFH Micro	2×D–3,5	2×D–2	0,5 mm
MFH Mini	2×D–8	2×D–2	1 mm
MFH Harrier (MFH...-10-...)	2×D–18	2×D–2	GM = 1,5 mm
MFH Harrier (MFH...-14-...)	2×D–25	2×D–2	GM = 2 mm

- Use climb milling. (Refer to detail on right)
- Feed rates should be reduced to 50% of recommended cutting conditions.
- Use caution to eliminate incidences caused by producing long chips

Peck milling



Description	Max. cutting depth Pd	Min. cutting length x for flat bottom surface
MFH Micro	0 ,5	DCX-3,5
MFH Mini	1.0	DCX-9

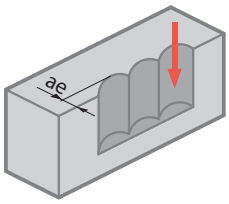
Unit: mm

- It is recommended to reduce feed by 25% of recommendation until the center core is removed.
- Axial feed rate recommendation per revolution is f < 0.2mm/rev.

Description	GM • GH		LD		FL	
	Max. cutting depth Pd	Min. cutting length X for flat bottom surface	Max. cutting depth Pd	Min. cutting length X for flat bottom surface	Max. cutting depth Pd	Min. cutting length X for flat bottom surface
MFH Harrier (MFH...-10-...)	1,5	DCX-18	1,5	DCX-14	1,5	DCX-15
MFH Harrier (MFH...-14-...)	2,0	DCX-24	2,0	DCX-18	2,0	DCX-19

Unit: mm

Plunging 3D



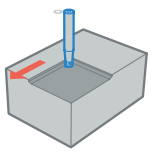
Description	Maximum width of cut (ae)
MFH Micro	1,7 mm
MFH Mini	3,5 mm
MFH Harrier (MFH...-10-...)	8 mm (GM)
MFH Harrier (MFH...-14-...)	11,5 mm (GM)

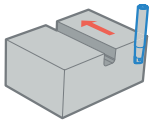
Unit: mm

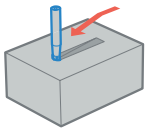
LD and FL chipbreakers are not available for plunging.
Reduce feed rate to fz ≤ 0.2mm/t when plunging.

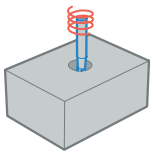
3D machining (MFH Harrier)

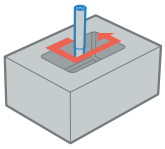
GM and GH chipbreakers are available for all the applications.

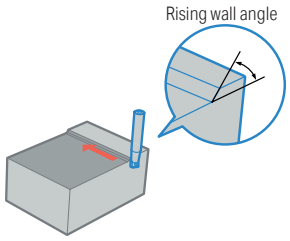

Surfaçage et surfacer-dresser


Rainurage


Usinage en ramping


Fraisage hélicoïdal


Usinage de poches



Contournage

For using MFH Harrier

Insert	Ramping	Contouring (Rising wall angle)	Plunging	Helical milling	Pocketing
GM • GH	○	○ (90°)	○	○	○
LD	○	△ (65°)	x	x	x
FL	○	△ (65°)	x	x	x

For FL and LD Type, there is a limit of rising wall angle during contouring