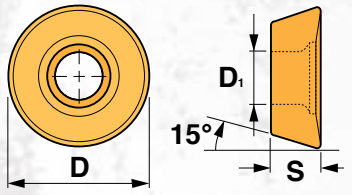
Copy Milling Program Tools



Insert Data

Tool Ordering Number	Dimensions			HSN	TLN
	D	S	D1		
FMI-0702	0.275/7mm	0.094	0.112	•	•
FMI-1003	0.393/10mm	0.125	0.153	•	•
FMI-12T3	0.472/12mm	0.156	0.154	•	•
FMIR-12T3	0.472/12mm	0.156	0.154	•	•
FMI-1604	0.629/16mm	0.205	0.1875	•	•

Cutting Conditions: Recommended Cutting Speed And Ap

Working Material	Hardness	Insert Type	Grade	SFM	Ap Max Roughing	Ap Max Medium	Ap Max Light
Low Alloy Steel (1.7225)	200-280HB	FMI	HSN, TLN	300-800	.08-.16	.04-.08	.004-.04
Alloy & Die Steel (1.2311, P20, DME2/3/5)	32-42HRC	FMI	HSN, TLN	300-600	.08-.16	.04-.08	.004-.04
Tool Steel (1.2344, 1.2379)	42-52HRC	FMI	HSN, TLN	200-450	.08-.12	.04-.08	.004-.04
Stainless Steel (1.4301, 1.4401)	200-350HB	FMIR	HSN, TLN	300-600	.08-.16	.04-.08	.004-.04
Gray Cast Iron (GG25-GG30)	160-260HB	FMIR	HSN, TLN	300-600	.08-.16	.04-.08	.004-.04
Nodular Cast Iron (GGG60-GGG70)	180-300HB	FMIR	HSN, TLN	300-1200	.08-.16	.04-.08	.004-.04
Copper Alloy	80-150HB	FMIR	TLN	1200	.08-.16	.04-.08	.004-.04
Aluminum Alloys	30-120HB	FMIR	TLN	3000	.08-.16	.04-.08	.004-.04
Ni & Co Based Alloy	250-320HB	FMIR	HSN, TLN	100-450	.08-.12	.04-.08	.004-.04
Titanium Alloy (Annealed)	<350HB	FMIR	HSN, TLN	100-450	.08-.12	.04-.08	.004-.04

Cutting Conditions: Recommended Feed fz (in./tooth)

Operation	Ap										
	IC	0.012	0.02	0.028	0.031	0.04	0.05	0.08	0.12	0.16	0.2
Light	10	0.012	0.008	0.008	0.007	0.006	0	0	0	0	0
	12	0.015	0.012	0.010	0.012	0.008	0.006	0	0	0	0
	16	0.016	0.015	0.012	0.012	0.009	0.008	0.007	0	0	0
Rough	10	0	0	0	0	0.012	0.009	0.008	0.007	0.006	0.005
	12	0	0	0	0	0.016	0.014	0.012	0.011	0.009	0.008
	16	0	0	0	0	0.020	0.017	0.015	0.012	0.011	0.010

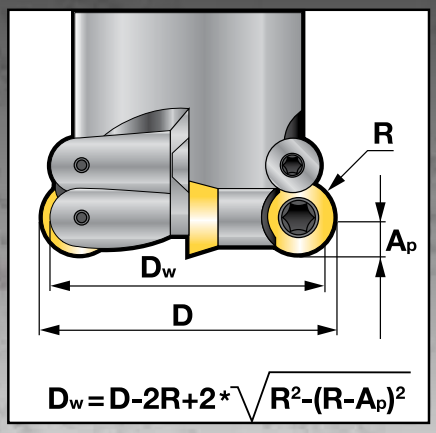
The "fz" indicated above is for an overhang of 3xD. The values are calculated based on the recommended thickness of the chip "hm".

LIGHT: Ae up to 25% of the Diameter of the Tool "D".

ROUGH: Ae up to 75% of the Diameter of the Tool "D".

Working Diameter (D_w)

In order to compute the RPM value of the spindle it is necessary to determine the Dw which is the effective engaged tool diameter. The Dw depends on the geometry of the inserts (ball nose or toroid) and of the relative position of the tool against the working piece surface. A formula is presented.



$$D_w = D - 2R + 2 * \sqrt{R^2 - (R - A_p)^2}$$

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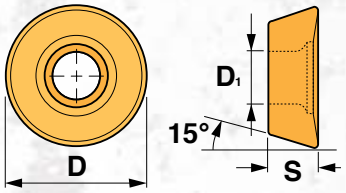

Insert Data

Tool Ordering Number	Dimensions			HSN	TLN
	D	S	D1		
FMI-0702	7	2,38	2,84	•	•
FMI-1003	10	3,18	3,88	•	•
FMI-12T3	12	3,97	3,9	•	•
FMIR-12T3	12	3,97	3,9	•	•
FMI-1604	16	4,77	5,2	•	•

Cutting Conditions: Recommended Cutting Speed And Ap

Working Material	Hardness	Insert Type	Grade	Vc m/min	Ap Max Roughing	Ap Max Medium	Ap Max Light
Low Alloy Steel (1.7225)	200-280HB	FMI	HSN, TLN	130-200	2,5-4,5	1,0-2,5	0,1-1,0
Alloy & Die Steel (1.2311, P20, DME2/3/5)	32-42HRC	FMI	HSN, TLN	100-150	2,5-4,0	1,0-2,5	0,1-1,0
Tool Steel (1.2344, 1.2379)	42-52HRC	FMI	HSN, TLN	80-100	2,0-3,5	1,0-2,5	0,1-1,0
Stainless Steel (1.4301, 1.4401)	200-350HB	FMIR	HSN, TLN	120-170	2,5-4,0	1,0-2,5	0,1-1,0
Gray Cast Iron (GG25-GG30)	160-260HB	FMIR	HSN, TLN	140-190	2,5-4,0	1,0-2,5	0,1-1,0
Nodular Cast Iron (GGG60-GGG70)	180-300HB	FMIR	HSN, TLN	120-170	2,5-4,0	1,0-2,5	0,1-1,0
Copper Alloy	80-150HB	FMIR	TLN	350	2,5-4,5	1,0-2,5	0,1-1,0
Aluminum Alloys	30-120HB	FMIR	TLN	400	2,5-5,0	1,0-2,5	0,1-1,0
Ni & Co Based Alloy	250-320HB	FMIR	HSN, TLN	30-60	2,0-3,0	1,0-2,5	0,1-1,0
Titanium Alloy (Annealed)	<350HB	FMIR	HSN, TLN	50-70	2,0-3,0	1,0-2,5	0,1-1,0

Cutting Conditions: Recommended Feed fz (mm/tooth)

Operation	Ap												
	IC	0,3	0,5	0,7	0,8	1	1,2	2	3	4	5	6	8
Light	10	0,3	0,23	0,2	0,18	0,15	0	0	0	0	0	0	0
	12	0,38	0,3	0,25	0,23	0,21	0,18	0	0	0	0	0	0
	16	0,45	0,35	0,3	0,27	0,23	0,21	0,18	0	0	0	0	0
Rough	10	0	0	0	0	0,32	0,29	0,22	0,18	0,16	0,14	0	0
	12	0	0	0	0	0,42	0,38	0,3	0,28	0,24	0,20	0,18	0,16
	16	0	0	0	0	0,50	0,47	0,36	0,3	0,27	0,25	0,34	0,23

The “fz” indicated above is for an overhang of 3xD. The values are calculated based on the recommended thickness of the chip “hm”.

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Working Diameter (D_w)

In order to compute the RPM value of the spindle it is necessary to determine the Dw which is the effective engaged tool diameter. The Dw depends on the geometry of the inserts (ball nose or toroid) and of the relative position of the tool against the working piece surface. A formula is presented.