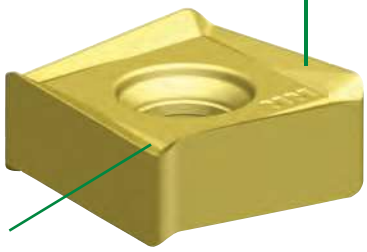
VSM890™-12

0°/90° Shoulder Mills • VSM890-12

- True 90° wall and stepping down capability.
- Axial depth of cut capability; Ap1 max up to 9,8mm.
- Optimised chip gash design for proper chip evacuation.
- User-friendly pocket numbering system.
- Cutter bodies with internal coolant supply.
- Less bur creation on the workpiece.



Unique insert rake design to reduce and perfectly balance axial and radial cutting forces. Engineered for light machining to heavy roughing in all material groups.

-ALP

N

First choice for Non-Ferrous materials.

-ML

P M S

First choice for Stainless Steel, light machining, and finishing jobs.

-MM NEW!

P M K S H

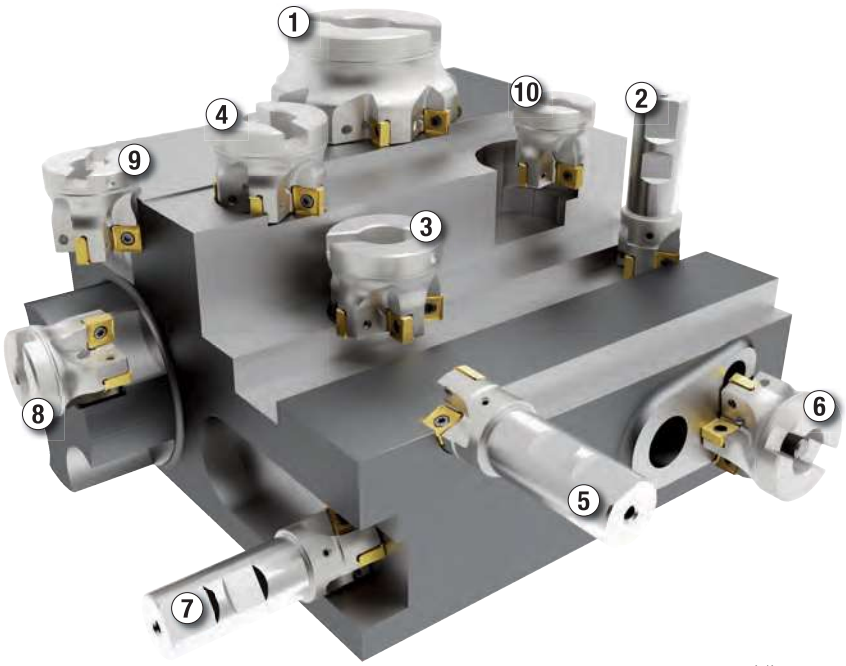
First choice for general purpose in all workpiece materials. Engineered for high-feed rates.

Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening/Stronger Cutting Edge Protection

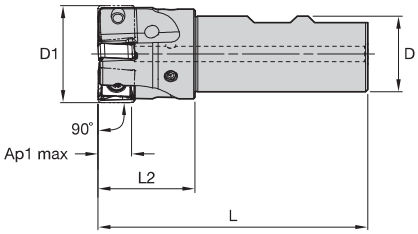
Applications

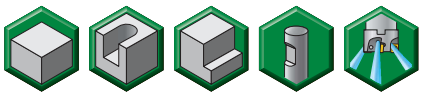
1. Face milling.
2. Full slotting with 100% radial engagement.
3. Shoulder milling with stepping down and great wall finish.
4. Shoulder milling with low axial and high radial engagement.
5. Shoulder milling with low radial and high axial engagement.
6. HPC face milling. First choice to clean up castings.
7. Dynamic/trochoidal slot milling.
8. Z-axis plunge milling.
9. Z-axis contour plunge milling.
10. Z-axis zig-zag slot plunge milling.



0°/90° Shoulder Mills • VSM890™-12

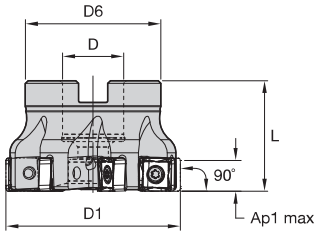
Weldon® End Mills • Metric

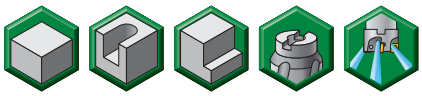




order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
6596066	VSM890D032Z03B25SN12	32	25	89	32	9,8	3	33200	Yes	0,31

Shell Mills • Metric





order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
6596067	VSM890D040Z04S22SN12	40	22	39	40	9,8	4	28000	Yes	0,20
6596068	VSM890D050Z04S22SN12	50	22	49	40	9,8	4	24100	Yes	0,32
6596069	VSM890D050Z05S22SN12	50	22	49	40	9,8	5	24100	Yes	0,32
6596070	VSM890D063Z05S22SN12	63	22	49	40	9,8	5	20800	Yes	0,48
6596111	VSM890D063Z07S22SN12	63	22	49	40	9,8	7	20800	Yes	0,45
6596112	VSM890D080Z05S27SN12	80	27	60	50	9,8	5	18000	Yes	0,96
6596113	VSM890D080Z07S27SN12	80	27	60	50	9,8	7	18000	Yes	1,03
6596114	VSM890D080Z09S27SN12	80	27	60	50	9,8	9	18000	Yes	1,01
6596115	VSM890D100Z06S32SN12	100	32	78	50	9,8	6	15800	Yes	1,69
6596116	VSM890D100Z08S32SN12	100	32	78	50	9,8	8	15800	Yes	1,56
6596117	VSM890D100Z11S32SN12	100	32	78	50	9,8	11	15800	Yes	1,53
6596118	VSM890D125Z07S40SN12	125	40	89	63	9,8	7	13900	Yes	2,79
6596119	VSM890D125Z10S40SN12	125	40	89	63	9,8	10	13900	Yes	2,98
6596121	VSM890D125Z14S40SN12	125	40	89	63	9,8	14	13900	Yes	2,86
6596122	VSM890D160Z08S40SN12	160	40	110	63	9,8	8	12200	Yes	4,10
6596123	VSM890D160Z12S40SN12	160	40	110	63	9,8	12	12200	Yes	4,15
6596124	VSM890D160Z16S40SN12	160	40	110	63	9,8	16	12200	Yes	8,97
6596125	VSM890D200Z10S60SN12	200	60	130	63	9,8	10	10800	Yes	5,62
6596126	VSM890D200Z14S60SN12	200	60	130	63	9,8	14	10800	Yes	5,59
6596127	VSM890D200Z22S60SN12	200	60	130	63	9,8	22	10800	Yes	5,67
6596128	VSM890D250Z16S60SN12	250	60	130	63	9,8	16	9600	Yes	8,10

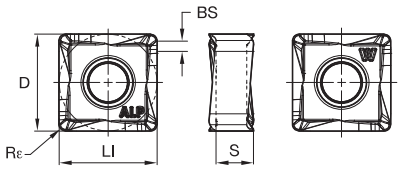
FOR SPARE PARTS, PLEASE VISIT WIDIA NOVO™ OR WIDIA.COM.

MOUNTING SCREWS ARE NOT INCLUDED IN STANDARD PACKAGING.

VSM890™-12

0°/90° Shoulder Mills • VSM890-12

Inserts • SNHX-ALP • For Aluminium and Other Non-Ferrous Alloys

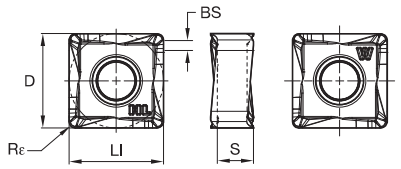


● first choice
○ alternate choice

P			●	●	○	
M			●	●	●	
K	●		○			●
N		●				
S			●	○	●	
H						●

ISO catalogue number	cutting edges	Ll	S	D	BS	Rε	WK15CM	WN25PM	WP25PM	WP40PM	WS40PM	WU10PM
SNHX120408PNERALP	8	12,00	4,61	12,00	1,34	0,80	▪	6596397	▪	▪	▪	▪

Inserts • SNHX-ML • Precision Finishing and Light Machining



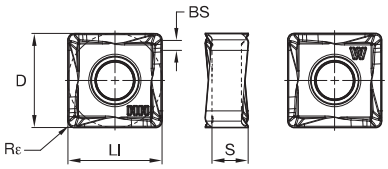
● first choice
○ alternate choice

P			●	●	○	
M			●	●	●	
K	●		○			●
N		●				
S			●	○	●	
H						●

ISO catalogue number	cutting edges	Ll	S	D	BS	Rε	WK15CM	WN25PM	WP25PM	WP40PM	WS40PM	WU10PM
SNHX120408PNERML	8	12,00	4,61	12,00	1,34	0,80	▪	▪	6596398	▪	6596399	▪

0°/90° Shoulder Mills • VSM890™-12

Inserts • SNHX-MM • Universal Geometry for Medium Machining



● first choice
○ alternate choice

P			●	●	○	
M			●	●	●	
K	●		○			●
N		●				
S			●	○	●	
H						●

ISO catalogue number	cutting edges	Ll	S	D	BS	Rε	WK15CM	WN25PM	WP25PM	WP40PM	WS40PM	WU10PM
SNHX120408PNSRMM	8	12,00	4,61	12,00	1,34	0,80	6667462	–	6596431	6596432	6596433	6596400
SNHX120416PNSRMM	8	12,00	4,58	12,00	1,00	1,60	6712874	–	6712875	6712876	6712877	–

For M4000 cartridge milling system, please see page 12.

VSM890™-12
M4000CA-XN10
(MM6433216)

P M K S

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	SNHX-ML	WS40PM	**SNHX-MM**	**WP40PM**	SNHX-MM	WP40PM
P3–P4	SNHX-ML	WS40PM	**SNHX-MM**	**WP40PM**	SNHX-MM	WP40PM
P5–P6	SNHX-ML	WP25PM	**SNHX-MM**	**WP40PM**	SNHX-MM	WP40PM
M1–M2	SNHX-ML	WS40PM	**SNHX-ML**	**WS40PM**	SNHX-MM	WS40PM
M3	SNHX-ML	WS40PM	**SNHX-ML**	**WS40PM**	SNHX-MM	WS40PM
K1–K2	SNHX-MM	WK15CM	**SNHX-MM**	**WK15CM**	SNHX-MM	WK15CM
K3	SNHX-MM	WK15CM	**SNHX-MM**	**WK15CM**	SNHX-MM	WK15CM
N1–N2	SNHX-ALP	WN25PM	**SNHX-ALP**	**WN25PM**	SNHX-ALP	WN25PM
N3	SNHX-ALP	WN25PM	**SNHX-ALP**	**WN25PM**	SNHX-ALP	WN25PM
S1–S2	SNHX-ML	WP25PM	**SNHX-ML**	**WS40PM**	SNHX-MM	WS40PM
S3	SNHX-ML	WS40PM	**SNHX-ML**	**WS40PM**	SNHX-MM	WS40PM
S4	SNHX-ML	WS40PM	**SNHX-ML**	**WS40PM**	SNHX-MM	WS40PM
H1	SNHX-MM	WU10PM	**SNHX-MM**	**WU10PM**	–	–

VSM890™-12

0°/90° Shoulder Mills • VSM890-12

Recommended Starting Speeds [m/min]*

Material Group		WK15CM			WN25PM			WP25PM			WP40PM			WS40PM			WU10PM		
P	1	–	–	–	–	–	–	330	**285**	270	295	**260**	245	–	–	–	–	–	–
	2	–	–	–	–	–	–	275	**240**	200	250	**215**	180	–	–	–	–	–	–
	3	–	–	–	–	–	–	255	**215**	175	230	**195**	160	–	–	–	–	–	–
	4	–	–	–	–	–	–	225	**185**	150	205	**170**	135	–	–	–	–	–	–
	5	–	–	–	–	–	–	185	**170**	150	170	**155**	135	170	**145**	120	–	–	–
	6	–	–	–	–	–	–	165	**125**	100	150	**115**	90	150	**110**	80	–	–	–
M	1	–	–	–	–	–	–	205	**180**	165	195	**170**	155	210	**170**	140	–	–	–
	2	–	–	–	–	–	–	185	**160**	130	175	**150**	125	180	**145**	120	–	–	–
	3	–	–	–	–	–	–	140	**120**	95	130	**115**	90	145	**110**	85	–	–	–
K	1	420	**385**	340	–	–	–	230	**205**	185	–	–	–	–	–	–	295	**265**	240
	2	335	**295**	275	–	–	–	180	**160**	150	–	–	–	–	–	–	230	**205**	190
	3	280	**250**	230	–	–	–	150	**135**	120	–	–	–	–	–	–	195	**175**	160
N	1	–	–	–	1075	**945**	875	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	945	**875**	760	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	945	**875**	760	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	40	**35**	25	–	–	–	40	**35**	25	–	–	–
	2	–	–	–	–	–	–	40	**35**	25	–	–	–	40	**35**	25	–	–	–
	3	–	–	–	–	–	–	50	**40**	25	–	–	–	50	**40**	25	–	–	–
	4	–	–	–	–	–	–	70	**50**	35	–	–	–	60	**50**	30	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	160	**130**	90

*NOTE: FIRST choice starting speeds are in **bold** type. As the average chip thickness increases, the speed should be decreased.*
**Material groups P, M, K, and H show recommended starting speeds for dry machining. For wet machining, reduce speed by 20%.*
**Material groups N and S show recommended starting speeds for wet machining. Not recommended for dry machining.*

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..ALP	0,12	**0,28**	0,43	0,08	**0,20**	0,31	0,06	**0,15**	0,23	0,06	**0,13**	0,20	0,05	**0,12**	0,18	.E..ALP
.E..ML	0,17	**0,32**	0,60	0,13	**0,23**	0,44	0,09	**0,18**	0,33	0,08	**0,15**	0,28	0,08	**0,14**	0,26	.E..ML
.S..MM	0,23	**0,36**	0,82	0,17	**0,26**	0,59	0,13	**0,20**	0,44	0,11	**0,17**	0,38	0,10	**0,16**	0,35	.S..MM

NOTE: Use "Light Machining" values as starting feed rate.