



## SCARFING

Scarfing of welds is a special operation that is used when making welded tubes or closed profiles. During this procedure a tube is made from a steel strip that is formed into a circular shape using leading wheels and then continuously welded without a filler material using induction heating.

The welded burrs are scarfed from outside or inside immediately after the welding operation so that the required quality of a product can be reached. Tube calibration, straightening and cutting for the required length follow as a part of the operation.

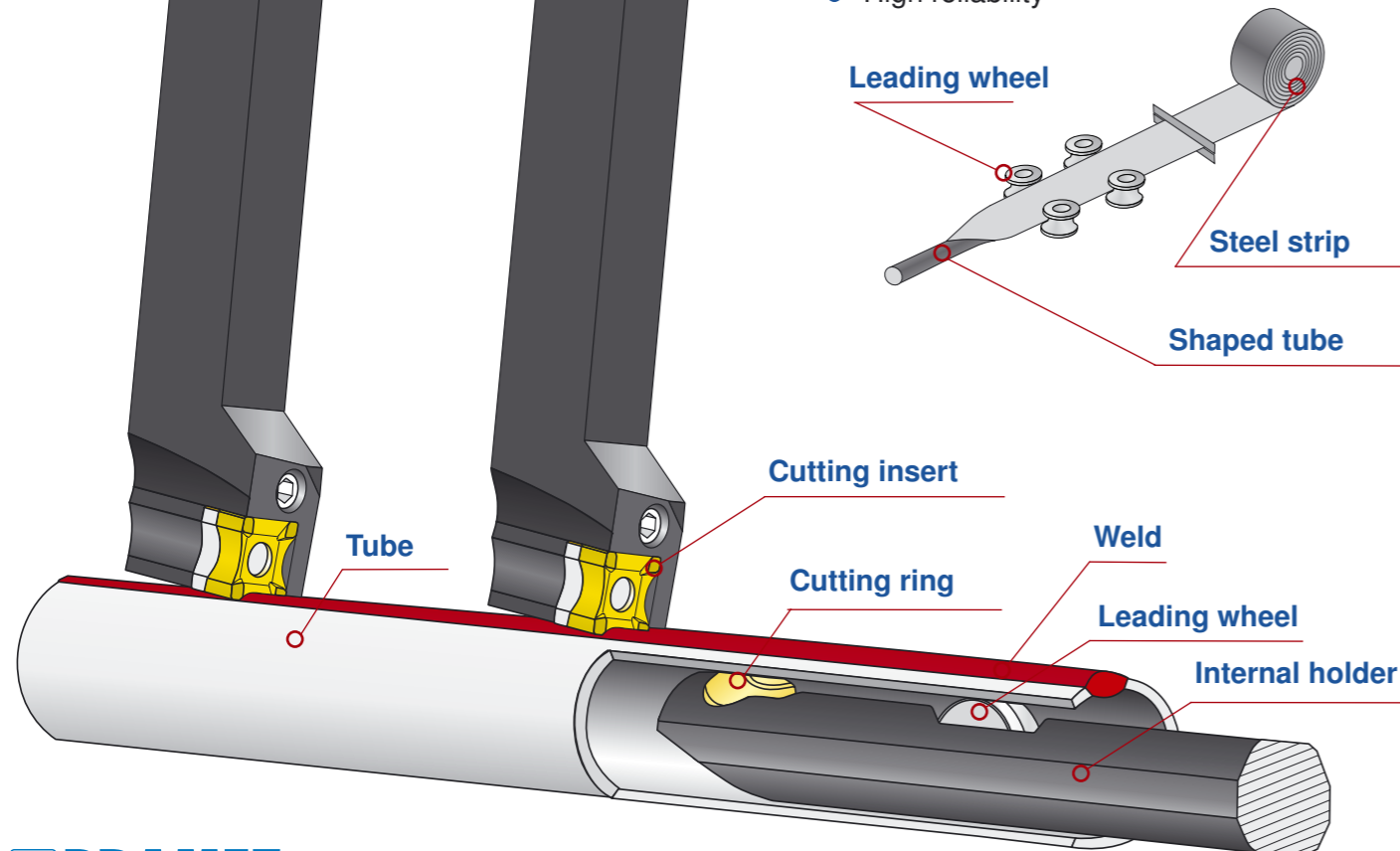
Welded steel tubes are used for constructions or for water distribution, possibly for gas distribution in construction, furniture and automotive industry (exhaust pipes). The most often materials used for tube making are carbon steel (Zn, Al surface finishes etc. are also used), corrosion-resistant steel and heat-resistant materials that are mainly used in automotive industry.

The Pramet Tools company, a long-term producer of cemented carbides, has enlarged its standard manufacturing programme and it offers holders and inserts for outside scarfing of welds and cutting rings that are used for an inside scarfing of the tube weld.

Regarding the requirement of reliability and trouble-free process of the tube scarfing, high heat stress of the cutting edges of the tools and relatively low cutting speed, the Pramet company offers range of the tools made of tough cemented carbide with a coating suitable for extreme heat stoke resistance. These coatings are applied with CVD method. In combination with geometry of the cutting edges of the tools, an excellent quality of the tube surface as well as high durability are reached by which frequency of the cutting tool replacement is reduced.

### Cutting rings and inserts offered have the following qualities:

- Excellent cutting geometry
- High quality of the surface worked
- Optimal combination of substrate and coating
- High productivity and durability
- Cost saving
- High reliability

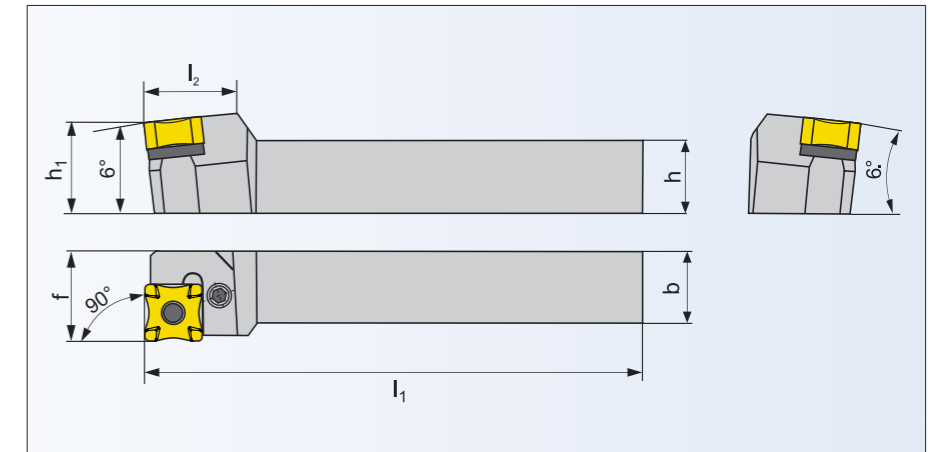
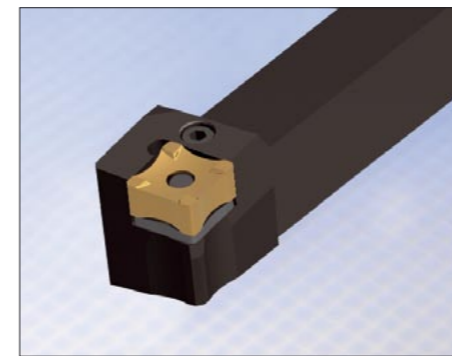


## EXTERNAL SCARFING



### Holders for external scarfing

#### PXFNR/L



ISO	R/L	Dimensions [mm]							kg	Spare parts	Inserts
		h=h <sub>1</sub>	b	f	l <sub>1</sub>	l <sub>2max</sub>					
PXFNR/L 2525 R15	• / •	25	25	25	200	40			1,05	PX 40	SNMX 15-R..
PXFNR/L 2525 S19	• / •	25	25	25	250	45			1,30	PX 50	SNMX 19-R..
PXFNR/L 3232 S25	• / •	32	32	40	250	50			2,20	PX 60	SNMX 25-R..

#### SPARE PARTS

Type	Shim	Clamping lever	Clamp. screw	Tubular rivet	Mount. taper plug	Key
PX 40	SNU 150310-R	PU 03	US 36	NT 05	MT 05	HXK 4
PX 50	SNU 190410-R	PU 05	US 38	NT 06	MT 06	HXK 5
PX 60	SNU 250424-R	PU 06	US 47	NT 08	MT 08	HXK 5

● Stock Assortment

○ Non-stock Assortment

All dimensions [mm]



## External inserts

Marking	Grades				Dimensions				
	6640				l	d	d <sub>1</sub>	s	R
	●				15,875	15,875	5,16	8,15	7
	●				15,875	15,875	5,16	8,15	9
	●				15,875	15,875	5,16	8,15	11
	●				15,875	15,875	5,16	8,15	13
	●				15,875	15,875	5,16	8,15	15
	●				15,875	15,875	5,16	8,15	18
	●				15,875	15,875	5,16	8,15	20
	●				15,875	15,875	5,16	8,15	22
	●				15,875	15,875	5,16	8,15	25
	●				15,875	15,875	5,16	8,15	27
	●				15,875	15,875	5,16	8,15	30
	●				15,875	15,875	5,16	8,15	35
	●				15,875	15,875	5,16	8,15	40
	●				15,875	15,875	5,16	8,15	45
	●				15,875	15,875	5,16	8,15	50
	●				15,875	15,875	5,16	8,15	60

Marking	Grades				Dimensions				
	6640				l	d	d <sub>1</sub>	s	R
	●				19,05	19,05	7,95	8,15	10
	●				19,05	19,05	7,95	8,15	12
	●				19,05	19,05	7,95	8,15	15
	●				19,05	19,05	7,95	8,15	20
	●				19,05	19,05	7,95	8,15	25
	●				19,05	19,05	7,95	8,15	30
	●				19,05	19,05	7,95	8,15	35
	●				19,05	19,05	7,95	8,15	40
	●				19,05	19,05	7,95	8,15	45
	●				19,05	19,05	7,95	8,15	50
	●				19,05	19,05	7,95	8,15	55
	●				19,05	19,05	7,95	8,15	60
	●				19,05	19,05	7,95	8,15	65
	●				19,05	19,05	7,95	8,15	80
	●				19,05	19,05	7,95	8,15	90
	●				19,05	19,05	7,95	8,15	110

Marking	Grades				Dimensions				
	6640				l	d	d <sub>1</sub>	s	R
	●				25,40	25,40	9,12	12,20	50
	●				25,40	25,40	9,12	12,20	80
	●				25,40	25,40	9,12	12,20	100
	●				25,40	25,40	9,12	12,20	120
	●				25,40	25,40	9,12	12,20	140
	●				25,40	25,40	9,12	12,20	160
	●				25,40	25,40	9,12	12,20	180
	●				25,40	25,40	9,12	12,20	200

● Stock Assortment

○ Non-stock Assortment

All dimensions [mm]

## INTERNAL SCARFING



### Description of scarfing rings

**PSR 1 - R9 ; 5035**

1	2	3	4
Scarfing Ring Type	Diameter external	Working radius R circle of osculatory d <sub>1</sub>	Grade
	0 = 8 mm; 10 mm 1 = 13 mm      5 = 35 mm 2 = 19 mm      6 = 45 mm 3 = 22 mm      7 = 50 mm 4 = 30 mm      8 = 55 mm	$R = \frac{d_1}{2x\sin\beta}$ d <sub>1</sub> - internal rings diameter β - angle of ring rotation	

### Cutting rings

Marking	Grades			Dimensions				
	5035	5040	S45	d	d <sub>1</sub>	h	Working radius R	tube ø
	●	○	●	8	4	4	4,5	14-17
	●	○	●	10	5,5	4,5	6,2	16-19
	●	○	●	10	6	4,5	6,5	17-20
	●	○	●	13	6	5	6,8	20-22
	●	○	●	13	7	5	7,9	22-24
	●	○	●	13	8	5	9,1	24-26
	●	○	●	19	9	8	10,2	26-28
	●	○	●	19	10	8	11,4	29-30
	●	○	●	19	11	8	12,5	30-34
	●	○	●	22	12	10	13,7	32-41
	●	○	●	22	15	10	17,1	41-50
	●	○	●	30	20	12	22,8	46-72
	○	○	●	35	22	12	25,1	70-85
	○	○	●	35	25	12	28,5	85-100
	○	○	●	45	30	15	34,2	100-130
	○	○	●	50	35	15	39,5	125-140
	○	○	●	55	40	18	45,6	150-160

● Stock Assortment

○ Non-stock Assortment

● First choice

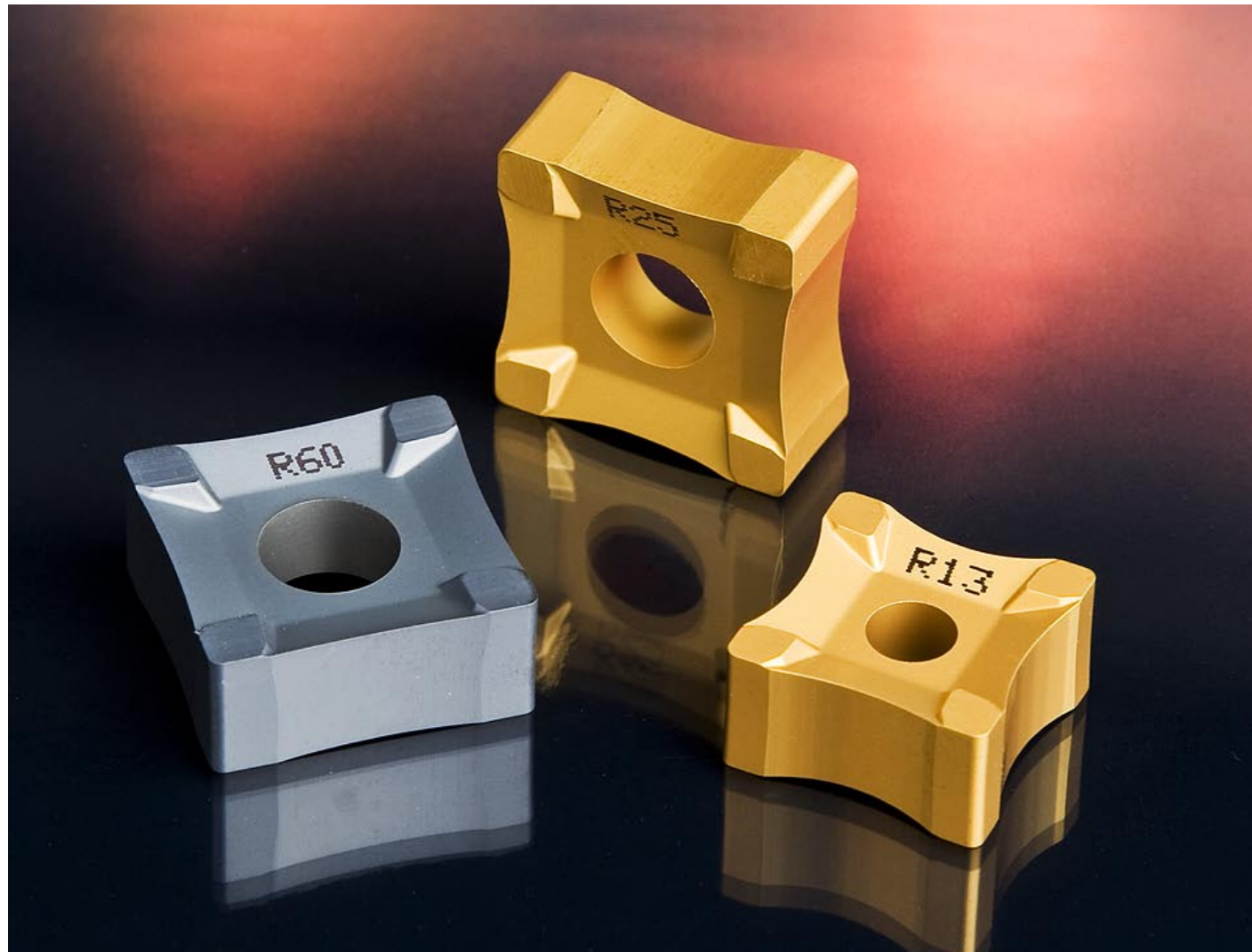
All dimensions [mm]

## Scarfig grades

Grades	P						M					
	P01	P10	P20	P30	P40	P50	M01	M10	M20	M30	M40	
<b>External inserts</b>												
6640			■						■			
<b>Cutting rings</b>												
5035			■						■			
5040			■						■			
S45				■						■		

Grades:

5035	5040	6640	S45
first choice for machining of carbon steel and stainless steels – high cutting condition	grade for alloyed steels	very tough grade for universal operations on carbon steel and also stainless steels	very tough grade for carbon and stainless steels – low cutting condition

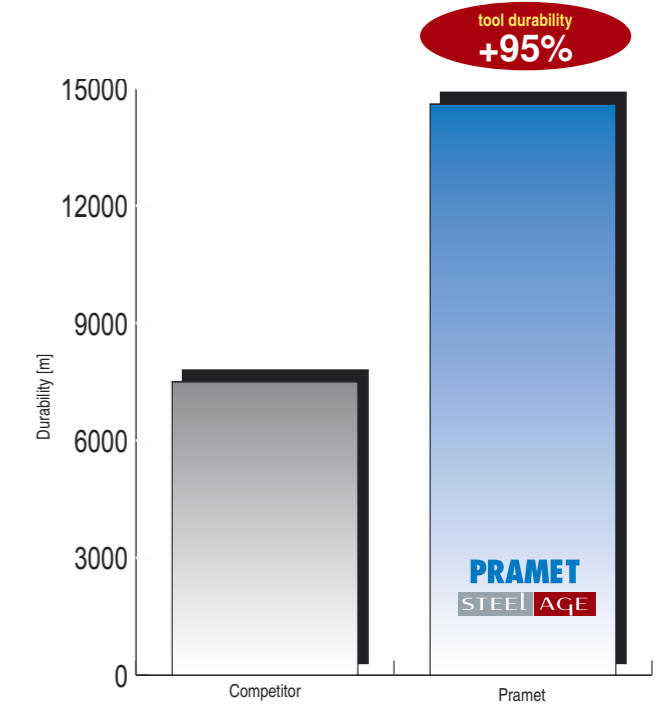


## Practical examples

### EXAMPLE 1:

Machine: Line HF02  
 Workpiece: Tube Ø35 x 1,2 mm  
 Operation: Scarfig internal with cooling  
 Material: 1.4512  
 Insert: SR1/AR7 competitor  
 PSR1-R7; 5035 Pramet

Cutting conditions		Competitor	Pramet	
Cutting speed	$v_c$	90	90	m.min <sup>-1</sup>
Feed of tube	f	90	90	m.min <sup>-1</sup>
Depth of cut	a	0,80	0,80	mm
Width of cut	b	1,80	1,80	mm
Tool durability	Q	83,3	162,2	min



### EXAMPLE 2:

Stroj: Line HF02  
 Workpiece: Tube Ø35 x 1,2 mm  
 Operace: Scarfig external with cooling  
 Material: 1.4512  
 Insert: SNMG 1907-R35 competitor  
 SNMX 19-R35; 6640 Pramet

Cutting conditions		Competitor	Pramet	
Cutting speed	$v_c$	90	90	m.min <sup>-1</sup>
Feed of tube	f	90	90	m.min <sup>-1</sup>
Depth of cut	a	0,80	0,80	mm
Width of cut	b	1,80	1,80	mm
Tool durability	Q	77,7	121,1	min

