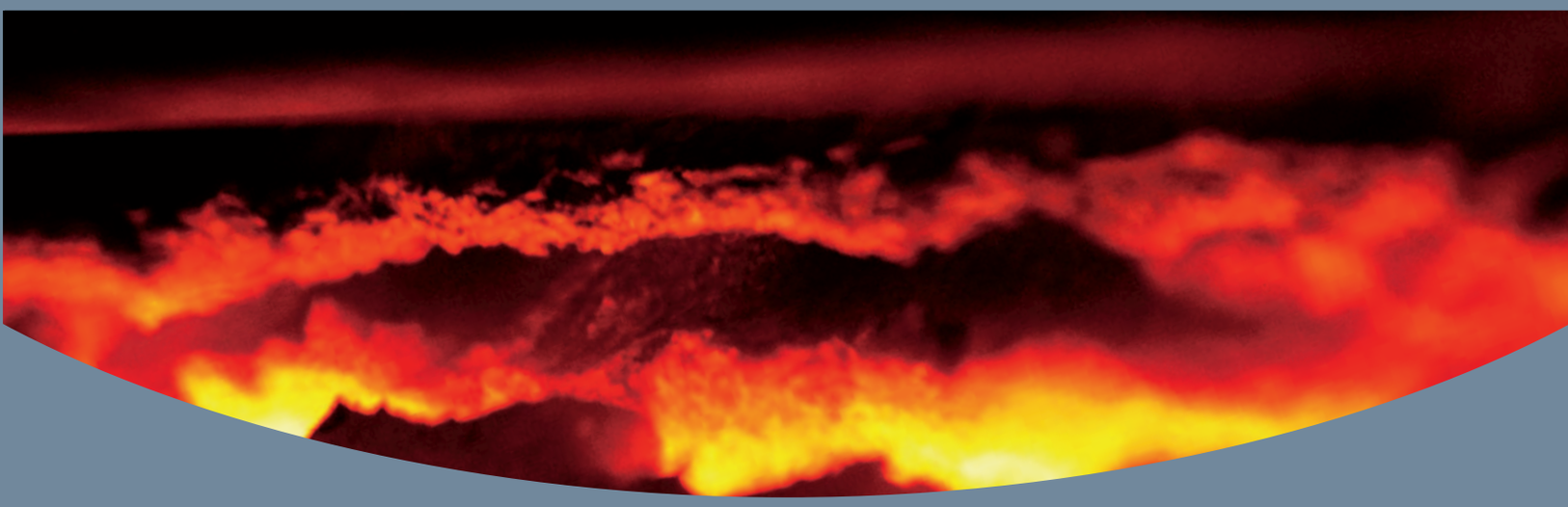
The name
you can
trust



DIMENSIONAL RANGE OF PRODUCTION & SALES PROGRAM

METAL RAVNE, d. o. o.,
Ravne na Koroškem, Slovenija,
is a member of
SIJ - Slovenska industrija jekla, d. d.

For almost 400 years, the song of steel has been heard in the Carinthian Valley, spreading around the world the reputation of the high quality of our steels, excellent knowledge and skills of our employees, own development which persistently follows market requirements and future-oriented investments into production.

Metal Ravne is part of the group **SIJ - Slovenska industrija jekla** which is a member of the international holding of companies in the group **IMH - Industrial Metallurgical Holding.**

Our own Steel Plant, Forging Shop, Rolling Mill and a wide range of heat treatment and machining allow us to produce a rich pallet of more than 200 steel grades in different dimensional shapes, from carbon and alloyed structural to tool and special steels in the form of rolled and forged products.

Continuous improvements allow us to come closer to the requirements, wishes and expectations of our customers, suppliers, employees, owners and also the environment we live and work in.

More than 80 % of our products are exported. Although our main target are the European Union countries, our products are well known in the United States, Near and Far East, and in other countries all over the world, where we have many satisfied customers.

Metal Ravne is a name
you can trust.

slovenian steel

METAL RAVNE
Production Program

STEEL PROGRAM

ROLLING PROGRAM

FORGING PROGRAM

STEEL

ROLLING

FORGING

Steel Program

STEEL

Here starts the production of all our products. The program consists of three key sectors: Steel Plant, Billet Rolling Mill and Electroslag Remelting Plant which have complete crucial equipment that is necessary for the production of high-quality steels. The basic plant in our Steel Plant is 45 t UHP - electric arc furnace. There is also a vacuum ladle furnace, while the most modern Teeming Pit will guarantee a high-class conventional ingot. The Electroslag Remelting Plant features one large 36 ton ESR plant and a smaller one of 3 ton. The Billet Rolling Mill uses a modern Blooming rolling stand in addition to many modern heat treatment furnaces, and grinding and testing machines.

Steel Program products:

- INGOTS
- BILLETS WITH ROUNDED EDGES
- WIDE FLATS

Steel Program

INGOTS:	• Conventional and ESR
BILLETS WITH ROUNDED EDGES:	• Square: 85-254 mm • Length: 2000-5500 mm
WIDE FLATS:	• Width: 250-505 mm, width milled in tolerance +2/-0 • Thickness: 26-90 mm, tolerance +4/-0

Rolling Program

ROLLING

The Rolling Program joins two production units: Section Rolling Mill and Steel Drawing Plant. The Section Rolling Mill can produce round, square and flat sections of various dimensions in its Intermediate Rolling Mill and Rod Mill. In addition, we have modern heat treatment furnaces, machines for straightening, cutting, sandblasting, varnishing operations and for inspection of rolled products. The Steel Drawing Plant produces products with a drawn, peeled or ground surface. This program enables us to produce a very wide spectrum of products with different surface machining finish and various final heat treatment conditions.

Rolling Program products:

- BILLETS WITH ROUNDED EDGES
- ROUND SECTIONS
- SQUARE SECTIONS
- FLAT SECTIONS

Rolling Program

BILLETS WITH ROUNDED EDGES:

- Square: 14-110 mm, length 3000-6000 mm
- Tolerance: +/-3 %

ROUND SECTIONS
(acc.to EN 10060 standard):

- Bars: ø 15-105 mm
- Length: 3000-6000 mm
- Surface:
  Surface can be unmachined or rough peeled.
  Rough peeled products are made in dimensions ø 30-102 mm and tolerance ± 0.3 mm (+ 0.6/-0 mm); if very narrow tolerances are required, we apply + 0.5/-0.
- Tolerance for unmachined surface is seen in the table below.
- Straightness: We reach ≥ 2 mm/m straightness.

TOLERANCES FOR ROUND UNMACHINED SECTIONS

DIMENSION mm	TOLERANCE mm	DIMENSION mm	TOLERANCE mm	DIMENSION mm	TOLERANCE mm
15	±0,4	36		62	
16		37		63	
17		38		64	
18		39		65	
19		40		66	
20	±0,5	41		68	±1,0
21		42	±0,8	70	
22		43		72	
23		44		73	
24		45		75	
25		46		78	
26		47		80	
27		49		82	
28		50		83	
29		51		85	
30	±0,6	52		88	
31		53		89	
32		54	±1,0	90	±1,3
33		55		92	
34		56		93	
35		58		94	
		60		95	
				97	
				100	
				103	
				105	±1,5

SQUARE SECTIONS
(acc.to EN 10059 standard):

- Square 25-75 mm
- Length: 3000-6000 mm
- Tolerance: See the table below.
- Straightness: We reach ≥ 2 mm/m straightness.

TOLERANCES FOR SQUARE SECTIONS

DIMENSION mm	TOLERANCE mm	ROUNDNESS OF EDGES mm	DIMENSION mm	DIMENSION mm	ROUNDNESS OF EDGES mm
25 x 25	±0,4	r ≥ 2	40 x 40	±0,8	r ≥ 2,5
26 x 26	±0,6		42 x 42		
28 x 28			45 x 45		
30 x 30			50 x 50		
32 x 32		r ≥ 2,5	52 x 52		r ≥ 3
35 x 35			55 x 55	±1,0	
36 x 36			60 x 60		
37 x 37			65 x 65		
38 x 38			70 x 70		
			75 x 75		

Sections can be made in plus tolerance only, in plus/minus tolerance or in minus tolerance only.
We can also produce intermediate dimensions (by 1 mm increments).

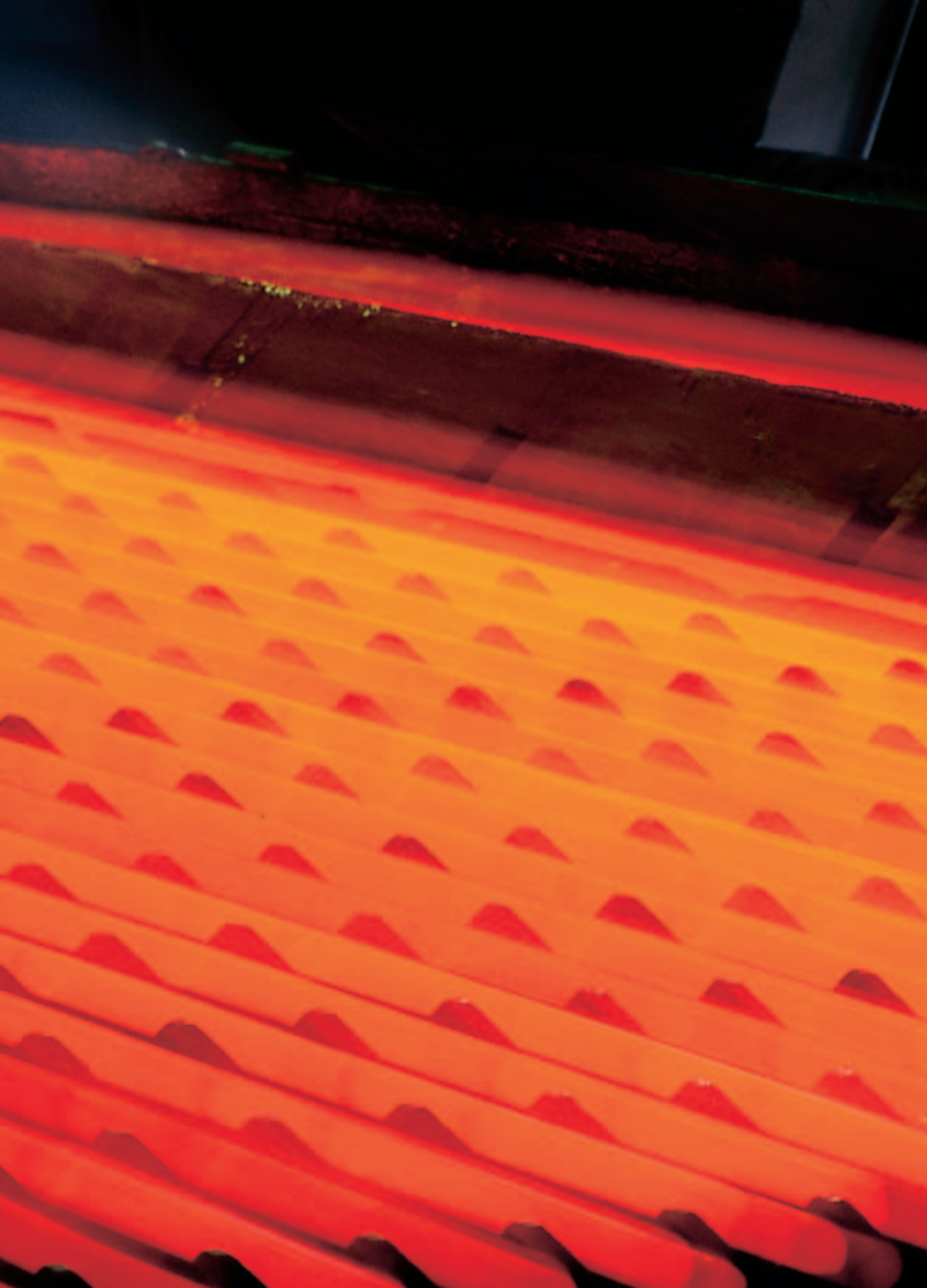
FLAT SECTIONS
(acc.to EN 10058 standard):

- Width: 40-150 mm
  with thickness: 7-65 mm
- Width: 150-255 mm
  with thickness: 7-50 mm
- Ratio: for tool steel 1:15,
  for structural steel 1:18
- Width: min. thickness + 10 mm - applies to all steels except for high-speed steel.
- Length: 3000-6000 mm
- Surface: unmachined, sandblasted or varnished
- Tolerance: See the table below.
- Straightness: We reach ≥ 2 mm/m straightness.

TOLERANCES FOR FLAT SECTIONS

	WIDTH (mm)	TOLERANCE (mm)
width < 150mm	b = 40	±0,75
	40 < b ≥ 80	±1
	80 < b ≥ 100	±1,5
	100 < b ≥ 120	±2
	120 < b ≥ 120	±2,5
	THICKNESS (mm)	**TOLERANCE (mm)**
	d < 20	±0,5
	20 < d ≥ 40	±1
	40 < d ≥ 50	±1,5
width > 150 mm	**WIDTH (mm)**	**TOLERANCE (mm)**
	150 < d ≥ 250	2 % width
	THICKNESS (mm)	**TOLERANCE (mm)**
	4 < b ≥ 10	-0,4/+0,6
	10 < b ≥ 20	-0,4/+0,8
	20 < b ≥ 25	-0,5/+0,9
	25 < b ≥ 30	-0,6/+1,0
	30 < b ≥ 40	-0,7/+1,1
	40 < b ≥ 50	-0,9/+1,1

Table contains standard tolerances. Sections can be also made with a very tight tolerance, namely to a 3/4 width tolerance and to a 1/2 thickness tolerance from the table. Sections can be made in plus tolerance only, in plus/minus tolerance or in minus tolerance only.



Rolling Program - BRIGHT SECTIONS

PEELED AND PEELED&POLISHED BARS
(acc.to EN 10278 standard)

- Bars: ø 16-80 mm
- Length: 2500-6000 mm

GROUND AND GROUND&POLISHED BARS
(acc.to EN 10278 standard)

- Bars: ø 7-80 mm
- Length: 1200-4000 mm

TOLERANCES FOR BRIGHT SECTIONS

NOMINAL DIMENSION (mm)	TOLERANCES		
	h8	h9	h11
> 6 ≤ 10	0,022	0,036	0,090
> 10 ≤ 18	0,027	0,043	0,110
>18 ≤ 30	0,033	0,052	0,130
> 30 ≤ 50	0,039	0,062	0,160
> 50 ≤ 80	0,046	0,074	0,190

In addition to these tolerances: f, k, a, g, j,...

Forging Program

FORGING

This program offers the basic forging equipment and all other necessary devices for the production of various forging products. For smaller dimensions, we use the SX-40 forging machine, while larger ones are made on presses. We have 12 MN, 25 MN and 40 MN presses.
Our production mix allows us to produce square, flat and round forging bars and also forgings of different dimensions and shapes. All these products can be subjected to heat treatment in modern heat treatment furnaces using different procedures. The important part of our Forging Program involves machines for machining and cutting of material.
In addition to products with unmachined surfaces, we can also make products with bright surfaces using the method of peeling, turning and milling. All these products can be cut into required dimensions.

Forging Program products:

- BILLETS
- FORGED BARS
- FORGINGS
- DISCS
- BUSHES

Forging Program

BILLETS
(product used for further hot forming)

- Round: ø 90-1000 mm
- Square: sq. 90-900 mm
- Length: 2000-10000 mm

FORGED BARS
(acc.to DIN 7527/6 standard)

- Round: ø 90-1050 mm
- Square bars: 80-950 mm
- Flat bars: from 90x60 mm to 1800x500 mm or 1200x700 mm or 1500x600 mm
- Length: 2000 - 10 000 mm

Max. diameter and weight:

- Structural steel: ø 1050 mm
- Tool steel: ø 950 mm
- Stainless steel: ø 850 mm
- Max. forging weight: 29 500 kg
- Max. weight of ESR forging: 24 000 kg

TOLERANCES AND ADDITIONS - DIN 7527/BL.6

FINISH SIZE b		TOOL STEEL				STRUCTIAL STEEL				ALLOYED AND UNALLOYED STEEL			
		Lenght up to 3500 mm		Lenght over 3500 to 6000 mm		Lenght up to 3500 mm		Lenght over 3500 to 6000 mm		Lenght up to 3500 mm		Lenght over 3500 to 6000 mm	
		Section	Lenght	Section	Lenght	Section	Lenght	Section	Lenght	Section	Lenght	Section	Lenght
OVER	UP TO	Additional tolerance Z	Additional tolerance Z_1	Additional tolerance Z	Additional tolerance Z_1	Additional tolerance Z	Additional tolerance Z_1	Additional tolerance Z	Additional tolerance Z_1	Additional tolerance Z	Additional tolerance Z_1	Additional tolerance Z	Additional tolerance Z_1
16	25	2,6 ±0,6	9 +10 -7	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /
25	40	3 ±0,7	9 +10 -8	/ /	/ /	5 ±0,9	11 +10 -8	8 ±2,6	16 +10 -8	/ /	/ /	/ /	/ /
40	63	4 ±0,9	10 +11 -8	6 ±1,4	14 +11 -9	6 ±1,1	12 +11 -8	9 ±2,9	17 +11 -8	9 ±2,8	13 +13 -9	/ /	/ /
63	80	5 ±1,1	11 +12 -9	7 ±1,6	15 +12 -10	7 ±1,4	14 +12 -9	11 ±3,3	18 +12 -9	11 ±3,1	15 +14 -9	14 ±4	20 +18 -12
80	100	6 ±1,3	12 +13 -9	8 ±1,9	16 +13 -10	8 ±1,7	15 +13 -9	12 ±3,6	20 +13 -9	12 ±3,4	16 +16 -10	15 ±4,4	21 +20 -12
100	125	7 ±1,5	14 +14 -11	10 ±2,1	17 +14 -10	10 ±2	16 +14 -11	13 ±4	21 +14 -11	14 ±3,8	17 +17 -10	17 ±4,8	22 +21 -13
125	160	9 ±1,8	15 +14 -11	12 ±2,5	19 +15 -12	12 ±2,3	18 +14 -11	15 ±4,6	22 +14 -11	16 ±4,2	19 +18 -11	19 ±5,4	24 +22 -14
160	200	11 ±2,2	17 +14 -14	14 ±2,9	21 +16 -14	14 ±2,8	20 +14 -14	18 ±5,2	25 +14 -14	18 ±4,9	22 +20 -13	21 ±6,3	26 +22 -15
200	250	13 ±2,6	20 +16 -16	17 ±3,5	23 +17 -17	17 ±3,4	23 +16 -16	21 ±6	27 +16 -16	21 ±5,6	24 +22 -14	24 ±7,2	29 +26 -17
250	315	16 ±3,2	23 +18 -18	21 ±4,2	26 +19 -19	21 ±4,2	26 +18 -18	24 ±7	30 +18 -18	25 ±6,5	28 +26 -15	28 ±8,4	32 +29 -19
315	400	19 ± 4	27 +21 -21	26 ±5	30 +22 -22	26 ±5,1	30 +21 -21	29 ±8,4	35 +21 -21	30 ±7,7	32 +28 -18	33 ±10	36 +33 -22
400	500	24 ±4,9	32 +25 -25	32 ±6,2	35 +26 -26	32 ±6,3	36 +25 -25	35 ±10	40 +25 -25	36 ±9,2	38 +33 -22	40 ±11.9	42 +38 -25
500	630	30 ±6	38 +29 -29	39 ±7,5	41 +31 -31	39 ±7,8	42 +29 -29	42 ±12	47 +29 -29	44 ±11	45 +39 -25	48 ±14,3	49 +46 -29
630	800	37 ±7,4	47 +35 -35	49 ±9,4	49 +36 -36	49 ±9,8	52 +35 -53	52 ±14,9	55 +35 -53	54 ±13,5	55 +45 -30	58 ±17,4	58 +51 -34
800	1000	46 ±9,3	57 +42 -42	61 ±11,6	53 +44 -44	61 ±12,1	63 +42 -42	64 ±18,1	66 +42 -42	66 ±16,2	67 +55 -36	71 ±21,3	69 +61 -40

Forging Program – FORGED BARS – GROUPS OF STEEL GRADES

GROUP 1: Unalloyed and alloyed structural steels:
- Round: max. ø 1050 mm
- Square: max. sq. 950 mm
- Flat: max. 1800 x 500 mm, 1500 x 600 mm, 1200 x 700 mm (max. ratio width : thickness is 11 : 1)
  Larger dimensions, as agreed with customer.

GROUP 2: Low-alloyed tool steels:
- Round: max. ø 950 mm
- Square: max. sq. 850 mm
- Flat: max.1600 x 550 mm, 1200 x 700 mm (max. ratio width : thickness is 11 : 1)
  Larger dimensions, as agreed with customer.

GROUP 3: High-alloyed cold work tool steels:
- Round: max. ø 650 mm
- Square: max. sq. 550 mm
- Flat: max. 1000 x 300 mm, 800 x 400 mm, 1150 x 250 mm (max. ratio width : thickness is 8 : 1)

GROUP 4: High-alloyed hot work tool steels:
- Round: max. ø 950 mm
- Square: max. sq. 850 mm
- Flat: max.1600 x 450 mm, 1200 x 600 mm (max. ratio width : thickness is 10 : 1)

GROUP 5: High-speed steels:
- Round: max. ø 270 mm
- Square: max. sq. 240 mm
- Flat: max. 300 x 250 mm (max. ratio width : thickness is 4 : 1)

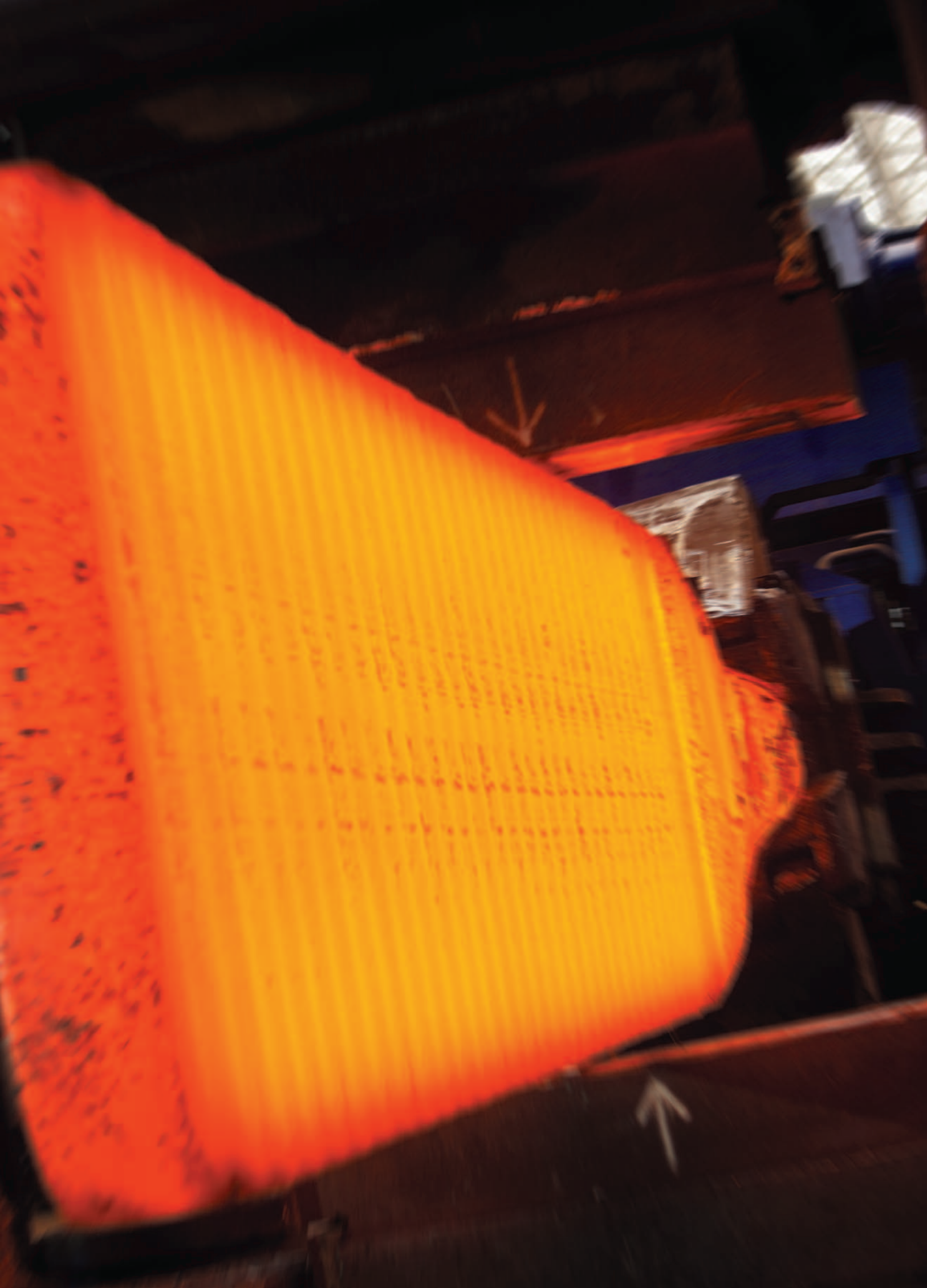
GROUP 6: Special steels:
- Round: max. ø 800 mm
- Square: max. sq. 750 mm
- Flat: max. 1500 x 400 mm, 1200 x 500 mm, 1000 x 550 mm (max. ratio width : thickness is 8 : 1)
  Larger dimensions, as agreed with customer.

FORGINGS
- Max. dia.: ø 1050 mm
- Max. length: 10 000 mm
- Max. weight of a forging: 27 000 kg
  - Conventional: 29 500 kg
  - ESR: 24 000 kg
  - Machined: 20 000 kg

DISCS
- Max. external dia.: ø 2500 mm
- Max. borehole dia.: ø 1800 mm
- Max. weight: 28 000 kg

BUSHES
- Max. external dia.: ø 950 mm
- Max. borehole dia.: ø 700 mm
- Min. internal dia.: ø 200 mm
- Max. length: 1900 mm
- Borehole diameter has to be at least 100 mm smaller than diameter of the final product borehole.
- Addition per length is 150 mm.
- Tolerance per length is 40–50 mm.

MACHINING
- Peeled: ø 85-205 mm
- Turned : ø 206-1150 mm, length: 10 m , weight: 30 000 kg
- Milled : max. width: 3200 mm
  max. thickness: 3000 mm
  length: 10 m
  weight: 40 000 kg
- Forgings can also be subjected to rough machining.



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