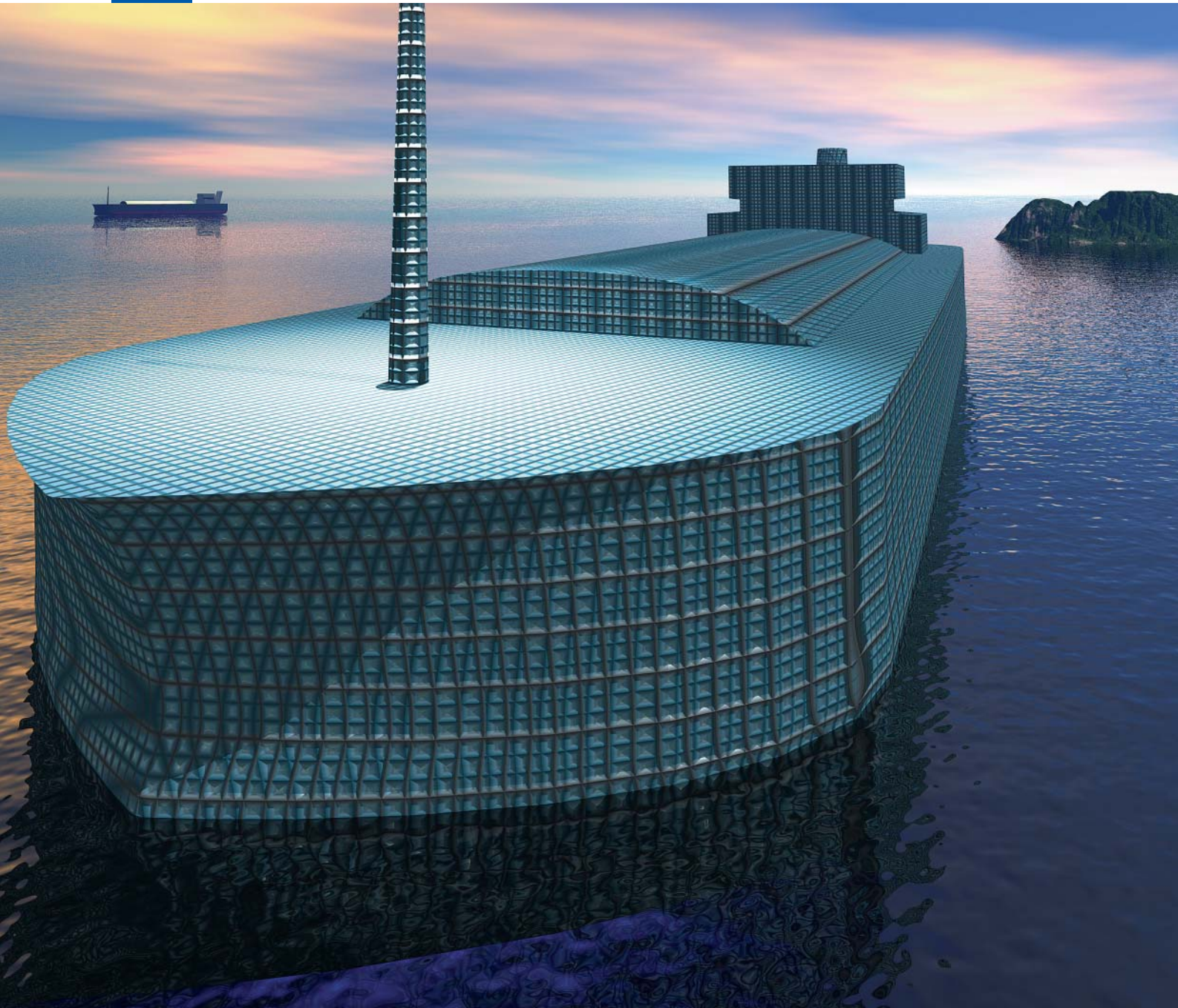




JFE

STEEL SECTIONS FOR SHIPBUILDING



JFE Steel Corporation
JFE Bars & Shapes Corporation

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Preface

Ever since JFE Steel and JFE Bars & Shapes (JFE-BS) started to produce steel shapes, we have endeavored to develop and to manufacture products that meet customers' requirements. By concentrating the two companies' abundant experience and technologies in manufacturing and marketing shapes, we continue to fulfill our customers' demands for shapes: demands that are becoming increasingly diversified and sophisticated.

We hope that our customers will continue to extend their support to us as we continue to supply high-quality products and services.

Features

1. Excellent quality

We offer products of high reliability, using quality control measures to thoroughly test products in operations ranging from the treatment to rolling and thermal refining of raw materials for iron making.

To produce homogeneous products of high dimensional accuracy, we take advantage of leading-edge equipment in production lines, including computers for control and measuring devices.

2. Wide array of types and sizes

We offer a wide range of extensive products, including NAB Series 6, BP Series 4, ABS Series 3, and other section steels, all of which are unrivaled in the industry.

3. Huge variety of applicable standards

Our products have obtained various classification society standards.

In addition, we offer products for low-temperature use, pressure use, as well as for a variety of other uses.

4. Strengthened facility and technology

To produce a wider range of new products, we have developed new technologies, including the thermo-mechanical control process (TMCP).

APPLICATIONS AND EXAMPLES



Ships hull block under construction

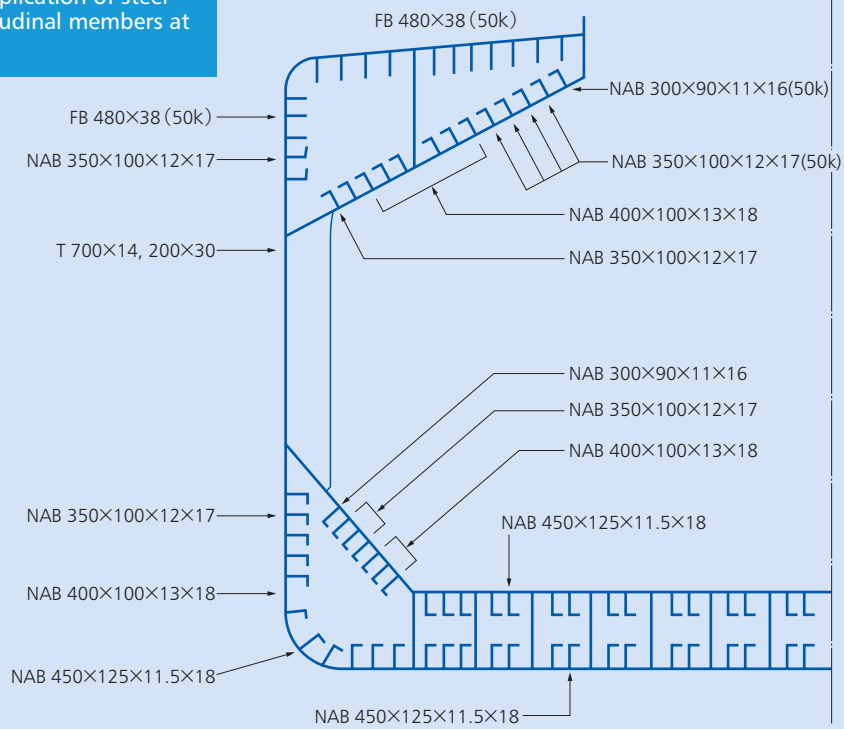


Ship under construction

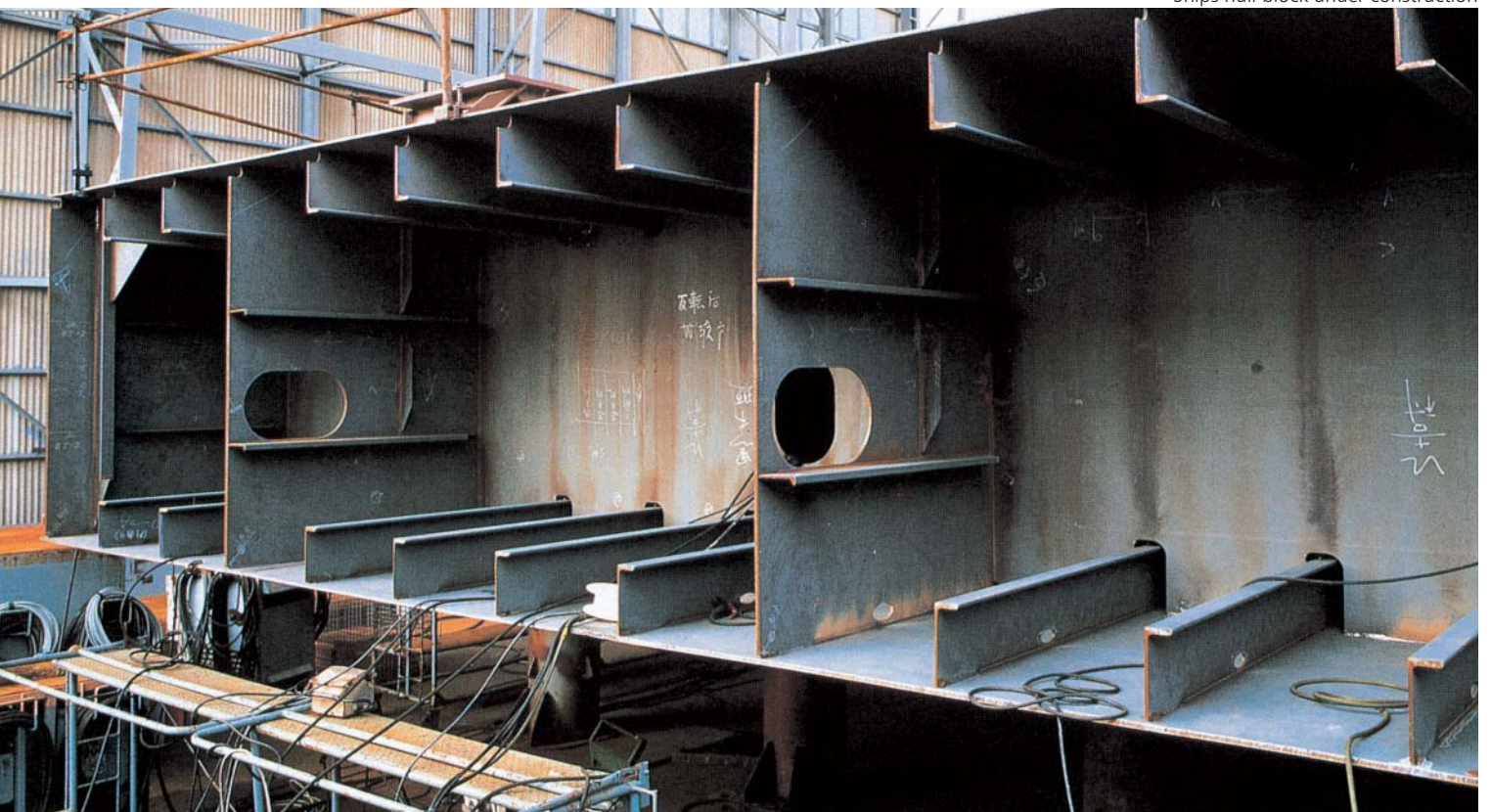


Ship under construction

150,000 DWT
Ore/Bulk/Oil Carrier
an example of the application of steel
sections to the longitudinal members at
midship section



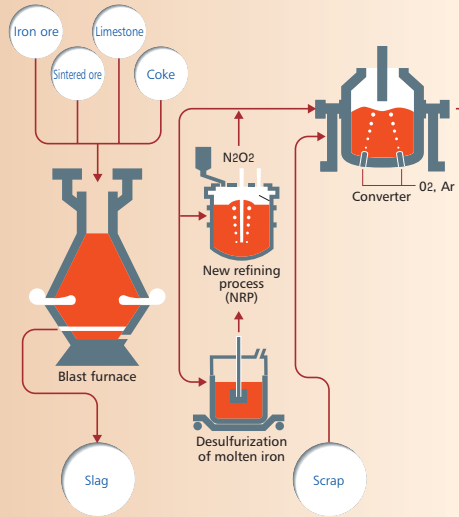
Ships hull block under construction



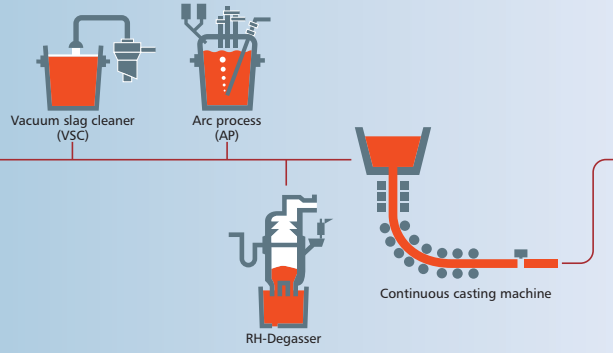
MANUFACTURING PROCESS

●JFE West Japan Works

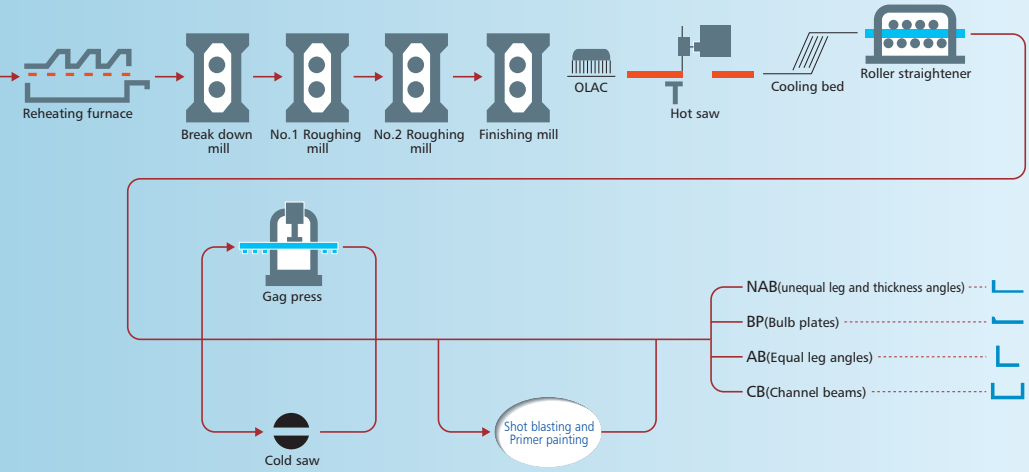
Pigiron



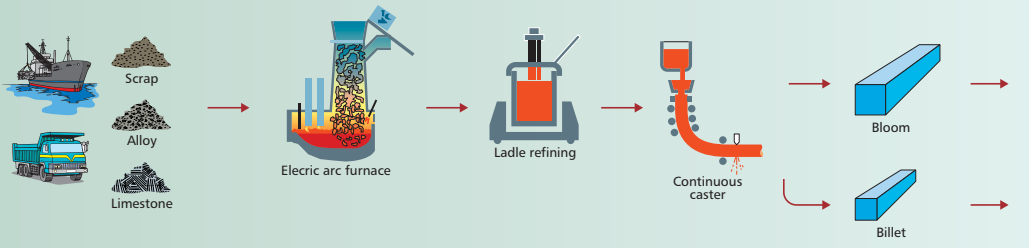
Steel making



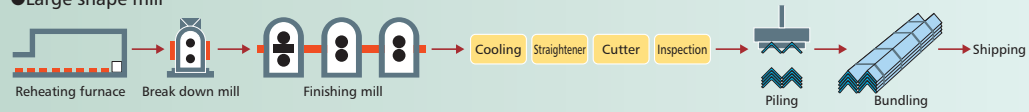
Rolling



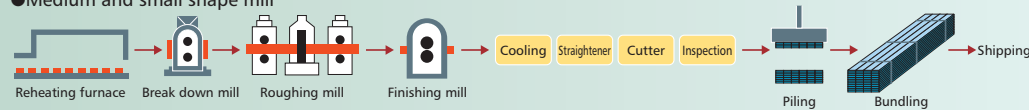
●JFE-BS Himeji Works



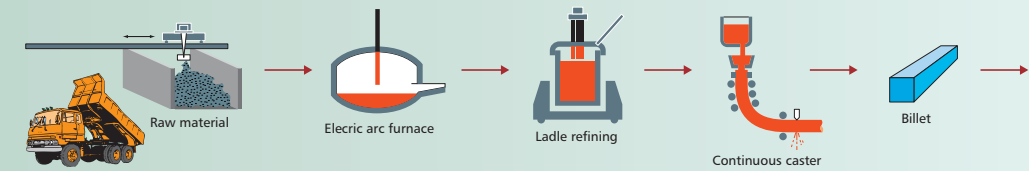
●Large shape mill



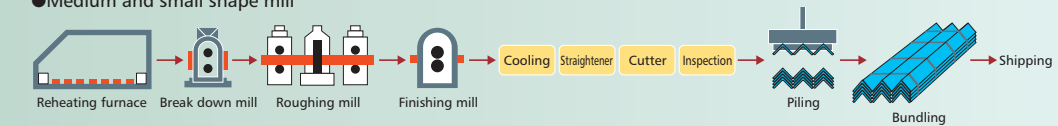
●Medium and small shape mill



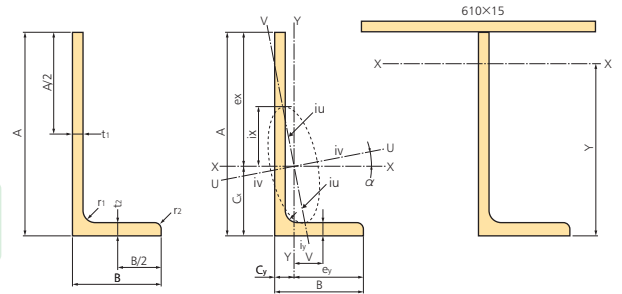
●JFE-BS Kashima Works



●Medium and small shape mill



Geometrical moment of inertia $I = ai^2$
 Radius of gyration of area $i = \sqrt{I/a}$
 Modulus of section $Z = I/e$
 (a:sectional area)

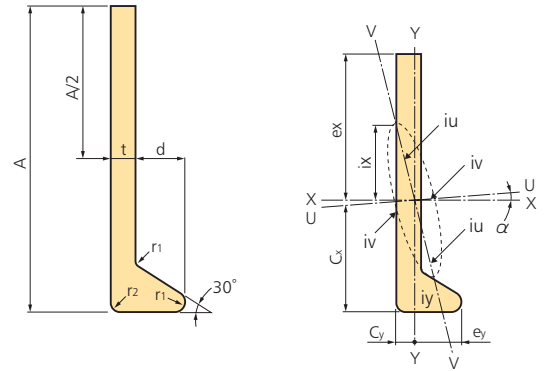


[Product shapes, dimensions and sectional properties]

AXB	Dimension (mm)						Sectional area (cm ²)	Unit mass (kg/m)	Position of center of gravity (cm)		Geometrical moment of inertia (cm ⁴)			Radius of gyration of area (cm)		Modulus of section (cm ³)		With Welded plate(610×15mm)				Remark
	A	B	t ₁	t ₂	r ₁	r ₂			Cx	Cy	I _x	I _y	I _w	i _x	i _y	Z _x	Z _y	Position of center of gravity (cm) Y	Geometrical moment of Inertia (cm ⁴) I	Radius of gyration of area (cm) i	Modulus of section (cm ³) Z	
200×90	200	90	8	14	14	7	27.80	21.8	6.07	2.24	1,120	197	6,520	6.34	2.66	80.3	29.1	17.3	5,730	6.93	331	
	200	90	9	14	14	7	29.66	23.3	6.36	2.15	1,210	200	6,730	6.39	2.60	88.7	29.2	17.2	5,870	6.96	340	JIS
	200	90	10	14	14	7	31.52	24.7	6.61	2.08	1,300	202	6,950	6.41	2.53	96.9	29.2	17.1	6,000	6.98	350	
250×90	250	90	9	14	17	8.5	34.31	26.9	8.46	1.91	2,240	209	11,600	8.09	2.47	136	29.5	21.0	9,720	8.79	462	
	250	90	9	15	17	8.5	35.12	27.6	8.30	1.98	2,280	221	12,100	8.06	2.51	137	31.5	20.9	10,000	8.89	480	
	250	90	10	15	17	8.5	37.47	29.4	8.61	1.92	2,440	223	12,500	8.08	2.44	149	31.5	20.8	10,300	8.94	494	JIS
	250	90	11	16	17	8.5	40.61	31.9	8.74	1.93	2,640	237	13,400	8.06	2.41	162	33.5	20.5	10,800	9.04	526	
	250	90	12	16	17	8.5	42.95	33.7	8.99	1.89	2,790	238	13,800	8.07	2.35	174	33.5	20.4	11,000	9.05	540	JIS
300×90	300	90	10	16	19	9.5	43.38	34.1	10.6	1.81	4,100	243	20,400	9.73	2.37	212	33.8	24.3	16,000	10.9	659	
	300	90	11	16	19	9.5	46.22	36.3	11.0	1.76	4,370	245	21,100	9.72	2.30	229	33.8	24.1	16,400	10.9	681	JIS
	300	90	12	17	19	9.5	49.84	39.1	11.1	1.78	4,690	258	22,500	9.70	2.28	248	35.8	23.8	17,200	11.0	721	
	300	90	13	17	19	9.5	52.67	41.3	11.3	1.75	4,940	259	23,300	9.68	2.22	265	35.8	23.7	17,500	11.0	744	JIS
350×100	350	100	11	17	22	11	54.41	42.7	12.7	1.92	7,030	360	34,200	11.4	2.57	314	44.5	27.1	25,200	13.1	930	
	350	100	12	17	22	11	57.74	45.3	13.0	1.87	7,440	362	35,400	11.3	2.50	338	44.5	26.9	25,800	13.1	956	JIS
400×100	400	100	11.5	16	24	12	61.09	47.9	15.3	1.71	10,300	349	47,600	13.0	2.39	416	42.1	30.6	34,100	14.9	1,110	
	400	100	12	18	24	12	64.77	50.8	15.1	1.80	10,900	387	51,100	13.0	2.44	437	47.2	30.1	35,900	15.2	1,190	
	400	100	13	18	24	12	68.59	53.8	15.4	1.77	11,500	388	53,000	12.9	2.38	467	47.1	29.9	36,700	15.1	1,230	JIS
450×125	450	125	11.5	18	24	12	73.11	57.4	16.2	2.29	15,700	768	76,300	14.7	3.24	547	75.2	32.6	51,200	17.6	1,570	

Remark: Available length is 6m-24m, Please contact us for other lengths.

JIS : JIS standard size (JIS G 3192)

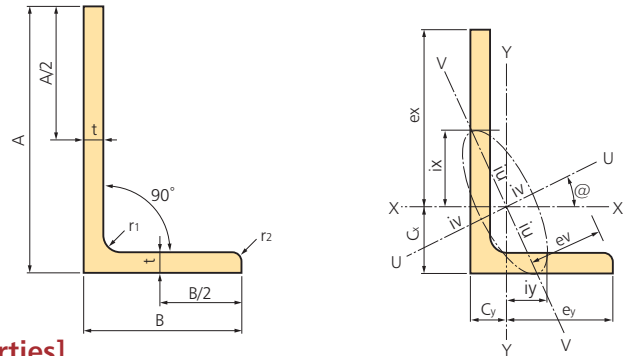


Geometrical moment of inertia $I = ai^2$
 Radius of gyration of area $i = \sqrt{I/a}$
 Modulus of section $Z = I/e$
 (a:sectional area)

[Product shapes, dimensions and sectional properties]

Dimension (mm)					Sectional area (cm ²)	Unit mass (kg/m)	Position of center of gravity (cm)		Geometrical moment of inertia (cm ⁴)				Radius of gyration of area (cm)				tan α	Modulus of section (cm ³)	
A	t	d	r ₁	r ₂			C _x	C _y	I _x	I _y	max. I _u	min. I _v	i _x	i _y	max. i _u	min. i _v		Z _x	Z _y
180	9.5	23	7	2	21.06	16.5	7.49	0.746	671	9.48	673	7.34	5.64	0.671	5.65	0.591	0.0568	63.8	3.79
200	10	26.5	8	2	25.23	19.8	8.16	0.834	997	15.1	1,000	11.4	6.29	0.773	6.30	0.672	0.0611	84.2	5.35
230	11	30	9	2	31.98	25.1	9.36	0.927	1,680	24.2	1,680	18.3	7.24	0.870	7.25	0.755	0.0599	123	7.62
250	12	33	10	2	38.13	29.9	10.1	1.02	2,360	35.2	2,370	26.4	7.87	0.960	7.88	0.832	0.0612	159	10.1

Remark: Available length is 6m-18m, Please contact us for other lengths.

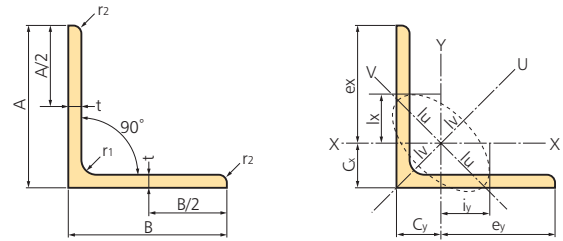


[Product shapes, dimensions and sectional properties]

Dimension (mm)				Sectional area (cm ²)	Unit mass (kg/m)	Position of center of gravity (cm)		Geometrical moment of inertia (cm ⁴)				Radius of gyration of area (cm)				tan α	Modulus of section (cm ³)	
A	t	r ₁	r ₂			C _x	C _y	I _x	I _y	max. I _u	min. I _v	i _x	i _y	max. i _u	min. i _v		Z _x	Z _y
100×75	7	10	5	11.87	9.32	3.06	1.83	118	56.9	144	30.8	3.15	2.19	3.49	1.61	0.548	17.0	10.0
	10	10	7	16.50	13.0	3.17	1.94	159	76.1	194	41.3	3.11	2.15	3.43	1.58	0.543	23.3	13.7
125×75	7	10	5	13.62	10.7	4.10	1.64	219	60.4	243	36.4	4.01	2.11	4.23	1.64	0.362	26.1	10.3
	10	10	7	19.00	14.9	4.22	1.75	299	80.8	330	49.0	3.96	2.06	4.17	1.61	0.357	36.1	14.1
150×90	9	12	6	20.94	16.4	4.95	1.99	485	133	537	80.4	4.81	2.52	5.06	1.96	0.361	48.2	19.0
	12	12	8.5	27.36	21.5	5.07	2.10	619	167	685	102	4.76	2.47	5.00	1.93	0.357	62.3	24.3

Remark: Length ranges from 5.5m to 18.5m at intervals of 0.5m. Please contact us for other lengths.

Geometrical moment of inertia $I = aI^2$
 Radius of gyration of area $i = \sqrt{I/a}$
 Modulus of section $Z = I/e$
 (a:sectional area)



[Product shapes, dimensions and sectional properties]

Dimension (mm)				Sectional area (cm ²)	Unit mass (kg/m)	Position of center of gravity (cm) (Cx=Cy)	Geometrical moment of inertia (cm ⁴)			Radius of gyration of area (cm)			Modulus of section (cm ³) (Zx=Zy)	Brand	
AxB	t	r ₁	r ₂				I _x =I _y	max. I _u	min. I _v	i _x =i _y	max. i _u	min. i _v		JFE	JFE-BS
20x20	3	4	2	1.127	0.885	0.595	0.388	0.613	0.163	0.587	0.737	0.380	0.276		●
25x25	3	4	2	1.427	1.12	0.719	0.797	1.26	0.332	0.747	0.940	0.483	0.448		●
30x30	3	4	2	1.727	1.36	0.844	1.42	2.26	0.590	0.908	1.14	0.585	0.661		●
	5	4	3	2.746	2.16	0.917	2.14	3.37	0.902	0.882	1.11	0.573	1.03		●
40x40	3	4.5	2	2.336	1.83	1.09	3.53	5.60	1.46	1.23	1.55	0.790	1.21		●
	*4	4.5	2	3.066	2.41	1.13	4.55	7.23	1.88	1.22	1.54	0.783	1.59		●
	5	4.5	3	3.755	2.95	1.17	5.42	8.59	2.25	1.20	1.51	0.774	1.91		●
	*6	4.5	3	4.445	3.49	1.20	6.31	9.97	2.64	1.19	1.50	0.771	2.26		●
45x45	*3	6.5	2	2.684	2.11	1.20	5.12	8.09	2.15	1.38	1.74	0.895	1.55		●
	4	6.5	3	3.492	2.74	1.24	6.50	10.3	2.70	1.36	1.72	0.880	2.00		●
	*4.76	6.5	3	4.110	3.23	1.27	7.58	12.0	3.15	1.36	1.71	0.875	2.35		●
	5	6.5	3	4.302	3.38	1.28	7.91	12.5	3.29	1.36	1.71	0.874	2.46		●
50x50	*3	6.5	3	2.962	2.33	1.32	6.95	11.0	2.91	1.53	1.93	0.990	1.89		●
	4	6.5	3	3.892	3.06	1.37	9.06	14.4	3.76	1.53	1.92	0.983	2.49		●
	*5	6.5	3	4.802	3.77	1.41	11.1	17.5	4.58	1.52	1.91	0.976	3.08		●
	6	6.5	4.5	5.644	4.43	1.44	12.6	20.0	5.23	1.50	1.88	0.963	3.55		●
60x60	8	6.5	4.5	7.364	5.78	1.52	16.1	25.4	6.76	1.48	1.86	0.958	4.62		●
	4	6.5	3	4.692	3.68	1.61	16.0	25.4	6.62	1.85	2.33	1.19	3.66		●
	*4.76	6.5	3	5.538	4.35	1.65	18.8	29.8	7.74	1.84	2.32	1.18	4.32		●
	5	6.5	3	5.802	4.55	1.66	19.6	31.2	8.09	1.84	2.32	1.18	4.52		●
63x63	*6	6.5	3	6.892	5.41	1.70	23.0	36.6	9.51	1.83	2.30	1.17	5.36		●
	*5	7	2.3	6.133	4.81	1.73	23.1	36.6	9.52	1.94	2.44	1.25	5.05		●
	*6	7	2.3	7.283	5.72	1.78	27.1	42.9	11.2	1.93	2.43	1.24	5.98		●
	*4.76	8.5	4	6.048	4.75	1.75	23.8	37.8	9.91	1.99	2.50	1.28	5.02		●
65x65	*5	8.5	3	6.367	5.00	1.77	25.3	40.1	10.5	1.99	2.51	1.28	5.35		●
	6	8.5	4	7.527	5.91	1.81	29.4	46.6	12.2	1.98	2.49	1.27	6.26		●
	*6.35	8.5	4	7.938	6.23	1.82	30.9	49.0	12.8	1.97	2.48	1.27	6.61		●
	8	8.5	6	9.761	7.66	1.88	36.8	58.3	15.3	1.94	2.44	1.25	7.96		●
	*5	8.5	4	6.837	5.37	1.89	31.5	49.9	13.0	2.15	2.70	1.38	6.16		●
70x70	6	8.5	4	8.127	6.38	1.93	37.1	58.9	15.3	2.14	2.69	1.37	7.33		●
	*6.35	8.5	4	8.573	6.73	1.95	39.0	61.9	16.1	2.13	2.69	1.37	7.73		●
	7	8.5	5	9.358	7.35	1.97	42.0	66.7	17.4	2.12	2.67	1.36	8.35		●
	*4.76	8.5	4	7.000	5.49	2.00	37.3	59.1	15.4	2.31	2.91	1.49	6.78		●
75x75	*5	8.5	4	7.337	5.76	2.01	39.0	61.9	16.2	2.31	2.90	1.48	7.11		●
	6	8.5	4	8.727	6.85	2.06	46.1	73.2	19.0	2.30	2.90	1.48	8.47		●
	*6.35	8.5	4	9.208	7.23	2.07	48.5	77.0	20.0	2.29	2.89	1.47	8.94		●
	*8	8.5	6	11.36	8.92	2.12	58.1	92.3	24.0	2.26	2.85	1.45	10.8		●
	9	8.5	6	12.69	9.96	2.17	64.4	102	26.7	2.25	2.84	1.45	12.1		●
	12	8.5	6	16.56	13.0	2.29	81.9	129	34.5	2.22	2.79	1.44	15.7		●
80x80	6	8.5	4	9.327	7.32	2.18	56.4	89.6	23.2	2.46	3.10	1.58	9.70		●
	*6.35	8.5	4	9.843	7.73	2.20	59.4	94.3	24.4	2.46	3.09	1.58	10.2		●
	*8	8.5	6	12.16	9.55	2.25	71.4	113	29.4	2.42	3.05	1.55	12.4		●

Remark: Available lengths are as follows ;

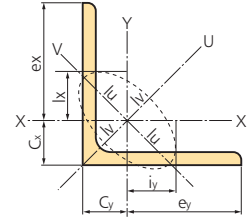
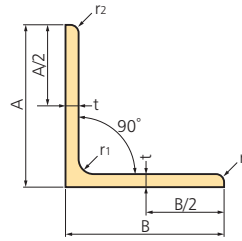
JFE brand: 6.0m to 24.0m.

JFE-BS brand: in case that A and B are under 90mm, 5.5m to 12.5m (0.5m pitch). In case that A and B are 100 to 150mm, 5.5m to 18.5m (0.5m pitch).

Please contact us for other lengths.

Notes: Please contact us in advance when ordering the sizes marked with *.

Geometrical moment of inertia $I = ai^2$
 Radius of gyration of area $i = \sqrt{I/a}$
 Modulus of section $Z = I/e$
 (a:sectional area)



[Product shapes, dimensions and sectional properties]

Dimension (mm)				Sectional area (cm ²)	Unit mass (kg/m)	Position of center of gravity (cm) (Cx=Cy)	Geometrical moment of inertia (cm ⁴)			Radius of gyration of area (cm)			Modulus of section (cm ³) (Zx=Zy)	Brand	
AxB	t	r ₁	r ₂				I _x =I _y	max. I _u	min. I _v	i _x =i _y	max. i _u	min. i _v		JFE	JFE-BS
90×90	6	10	5	10.55	8.28	2.42	80.7	128	33.4	2.77	3.48	1.78	12.3		●
	*6.35	10	5	11.13	8.74	2.43	85.0	135	35.1	2.76	3.48	1.78	12.9		●
	7	10	5	12.22	9.59	2.46	93.0	148	38.3	2.76	3.48	1.77	14.2		●
	*8	10	5	13.87	10.9	2.50	105	166	43.2	2.75	3.46	1.77	16.1		●
	*9	10	5	15.50	12.2	2.53	114	181	46.9	2.72	3.43	1.75	17.6		●
	10	10	7	17.00	13.3	2.57	125	199	51.7	2.71	3.42	1.74	19.5		●
	13	10	7	21.71	17.0	2.69	156	248	65.3	2.68	3.38	1.73	24.8		●
100×100	*6	10	5	11.75	9.22	2.66	112	178	46.3	3.09	3.89	1.98	15.3		●
	*6.35	10	5	12.40	9.73	2.68	118	188	48.6	3.09	3.89	1.98	16.1		●
	7	10	5	13.62	10.7	2.71	129	205	53.2	3.08	3.88	1.98	17.7		●
	*8	10	6	15.42	12.1	2.75	145	230	59.4	3.06	3.86	1.96	19.9		●
	*9	10	7	17.19	13.5	2.78	159	253	65.3	3.04	3.84	1.95	22.1		●
	10	10	7	19.00	14.9	2.82	175	278	72.0	3.04	3.83	1.95	24.4		●
	13	10	7	24.31	19.1	2.94	220	348	91.1	3.00	3.78	1.94	31.1		●
110×110	*8	10	4.8	17.08	13.4	3.00	197	313	80.8	3.40	4.28	2.18	24.6		●
	*10	10	4.8	21.12	16.6	3.09	240	382	98.7	3.37	4.25	2.16	30.4		●
120×120	8	12	5	18.76	14.7	3.24	258	410	106	3.71	4.67	2.38	29.5		●
	*10	12	6	23.15	18.2	3.32	314	499	129	3.68	4.64	2.36	36.2		●
	*12	12	8.5	27.36	21.5	3.39	363	576	149	3.64	4.59	2.33	42.1		●
130×130	9	12	6	22.74	17.9	3.53	366	583	150	4.01	5.06	2.57	38.7		●
	*10	12	6	25.15	19.7	3.57	403	641	165	4.00	5.05	2.56	42.8		●
	*11	12	8.5	27.39	21.5	3.59	432	687	177	3.97	5.01	2.54	45.9		●
	12	12	8.5	29.76	23.4	3.64	467	743	192	3.96	5.00	2.54	49.9		●
	15	12	8.5	36.75	28.8	3.76	568	902	234	3.93	4.95	2.53	61.5		●
150×150	10	14	7	29.21	22.9	4.05	627	997	258	4.63	5.84	2.97	57.3		●
	*11	14	7	32.00	25.1	4.10	684	1,090	281	4.62	5.83	2.96	62.8		●
	12	14	7	34.77	27.3	4.14	740	1,180	304	4.61	5.82	2.96	68.1		●
	15	14	10	42.74	33.6	4.24	888	1,410	365	4.56	5.75	2.92	82.6		●
	*16	14	10	45.43	35.7	4.28	940	1,490	386	4.55	5.73	2.92	87.7		●
175×175	12	15	11	40.52	31.8	4.73	1,170	1,860	480	5.38	6.78	3.44	91.8	●	
	15	15	11	50.21	39.4	4.85	1,440	2,290	589	5.35	6.75	3.42	114	●	
200×200	15	17	12	57.75	45.3	5.46	2,180	3,470	891	6.14	7.75	3.93	150	●	
	20	17	12	76.00	59.7	5.67	2,820	4,490	1,160	6.09	7.68	3.90	197	●	
	25	17	12	93.75	73.6	5.86	3,420	5,420	1,410	6.04	7.61	3.88	242	●	
250×250	25	24	12	119.4	93.7	7.10	6,950	11,000	2,860	7.63	9.62	4.90	388	●	
	35	24	18	162.6	128	7.45	9,110	14,400	3,790	7.49	9.42	4.83	519	●	

Remark: Available lengths are as follows ;

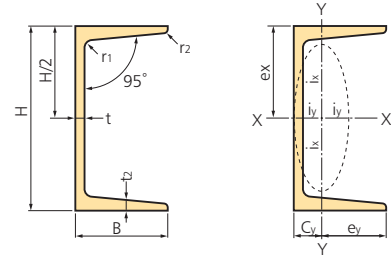
JFE brand: 6.0m to 24.0m.

JFE-BS brand: in case that A and B are under 90mm, 5.5m to 12.5m (0.5m pitch). In case that A and B are 100 to 150mm, 5.5m to 18.5m (0.5m pitch).

Please contact us for other lengths.

Notes: Please contact us in advance when ordering the sizes marked with *.

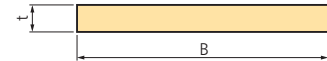
Geometrical moment of inertia $I = ai^2$
 Radius of gyration of area $i = \sqrt{I/a}$
 Modulus of section $Z = I/e$
 (a:sectional area)



[Product shapes, dimensions and sectional properties]

Dimension (mm)					Sectional area (cm ²)	Unit mass (kg/m)	Position of center of gravity (cm)		Geometrical moment of inertia (cm ⁴)		Radius of gyration of area (cm)		Modulus of section (cm ³)		Brand	
HxB	t ₁	t ₂	r ₁	r ₂			C _x	C _y	I _x	I _y	i _x	i _y	Z _x	Z _y	JFE	JFE-BS
75x40	5	7	8	4	8.818	6.92	0	1.28	75.3	12.2	2.92	1.17	20.1	4.47		●
100x50	5	7.5	8	4	11.92	9.36	0	1.54	188	26.0	3.97	1.48	37.6	7.52		●
125x65	6	8	8	4	17.11	13.4	0	1.90	424	61.8	4.98	1.90	67.8	13.4		●
150x75	6.5	10	10	5	23.71	18.6	0	2.28	861	117	6.03	2.22	115	22.4		●
	9	12.5	15	7.5	30.59	24.0	0	2.31	1,050	147	5.86	2.19	140	28.3		●
180x75	7	10.5	11	5.5	27.20	21.4	0	2.13	1,380	131	7.12	2.19	153	24.3		●
200x80	7.5	11	12	6	31.33	24.6	0	2.21	1,950	168	7.88	2.32	195	29.1		●
200x90	8	13.5	14	7	38.65	30.3	0	2.74	2,490	277	8.02	2.68	249	44.2		●
250x90	9	13	14	7	44.07	34.6	0	2.40	4,180	294	9.74	2.58	334	44.5	●	
300x90	9	13	14	7	48.57	38.1	0	2.22	6,440	309	11.5	2.52	429	45.7	●	

Remark: Length for JFE Brand ranges from 6.0m to 24.0m, for JFE-BS Brand; 5.5m to 18.5m at intervals of 0.5m.
 Please contact us for other lengths.



[Product size ranges]

t \ B	25	32	38	44	50	60	65	70	75	80	90	100	110	120	125	150	180	200
4.5	○	○	○	○	○	*○	○	*○	*○	*○	*○	○						
6	○	○	○	○	○	*○	○	*○	○	*○	○	○	○	○	○	○		
9	○	○	○	○	○	○	○	○	◎	○	○	◎	○	○	○	◎	●	●
10					*○					*○	○	◎			○	○		
11															●			
12	○	○	○	*○	○	*○	○	*○	◎	○	○	◎	○	○	◎	◎	●	●
12.5												●			●	●		
13												●					●	●
14												●			●	●	●	●
16	*○	○	○	*○	○	*○	○	*○	○	*○	○	◎	○		◎	◎	●	●
18												●						
19					○	*○	○	*○	○		○	◎			◎	◎	●	●
22					○		○		○		○	○			◎	◎	●	●
25					○		○		○		○	○			◎	◎	●	●

Remark : ○ : Only sharp edges available ● : Only round edges available ◎ : Both sharp and round edges available

[Measure and shape]

Dimension (mm)		Sectional area (cm ²)	Unit mass (kg/m)
t	B		
4.5	25	1.125	0.883
4.5	32	1.440	1.13
4.5	38	1.710	1.34
4.5	44	1.980	1.55
4.5	50	2.250	1.77
* 4.5	60	2.700	2.12
4.5	65	2.925	2.30
* 4.5	70	3.150	2.47
* 4.5	75	3.375	2.65
* 4.5	80	3.600	2.83
* 4.5	90	4.050	3.18
4.5	100	4.500	3.53
6	25	1.500	1.18
6	32	1.920	1.51
6	38	2.280	1.79
6	44	2.640	2.07
6	50	3.000	2.36
6	60	3.600	2.83
6	65	3.900	3.06
6	70	4.200	3.30
6	75	4.500	3.53
6	80	4.800	3.77
6	90	5.400	4.24
6	100	6.000	4.71
6	110	6.600	5.18
6	125	7.500	5.89
6	150	9.000	7.06
9	25	2.250	1.77
9	32	2.880	2.26
9	38	3.420	2.68
9	44	3.960	3.11
9	50	4.500	3.53
9	60	5.400	4.24
9	65	5.850	4.59
9	70	6.300	4.95
9	75	6.750	5.30
9	80	7.200	5.65
9	90	8.100	6.36
9	100	9.000	7.06
9	110	9.900	7.77
9	120	10.80	8.48
9	125	11.25	8.83
9	150	13.50	10.6

Dimension (mm)		Sectional area (cm ²)	Unit mass (kg/m)
t	B		
9	180	16.20	12.7
9	200	18.00	14.1
*10	50	5.000	3.92
*10	80	8.000	6.28
10	90	9.000	7.06
10	100	10.00	7.85
10	125	12.50	9.81
10	150	15.00	11.8
11	125	13.75	10.8
12	25	3.000	2.36
12	32	3.840	3.01
12	38	4.560	3.58
*12	44	5.280	4.14
12	50	6.000	4.71
12	60	7.200	5.65
12	65	7.800	6.12
12	70	8.400	6.59
12	75	9.000	7.06
12	80	9.600	7.54
12	90	10.80	8.48
12	100	12.00	9.42
12	110	13.20	10.4
12	120	14.40	11.3
12	125	15.00	11.8
12	150	18.00	14.1
12	180	21.60	17.0
12	200	24.00	18.8
12.5	100	12.50	9.81
12.5	125	15.62	12.3
12.5	150	18.75	14.7
13	100	13.00	10.2
13	180	23.40	18.4
13	200	26.00	20.4
14	100	14.00	11.0
14	125	17.50	13.7
14	150	21.00	16.5
14	180	25.20	19.8
14	200	28.00	22.0
*16	25	4.000	3.14
16	32	5.120	4.02
16	38	6.080	4.77
*16	44	7.040	5.53
16	50	8.000	6.28

Dimension (mm)		Sectional area (cm ²)	Unit mass (kg/m)
t	B		
16	60	9.600	7.54
16	65	10.40	8.16
16	70	11.20	8.79
16	75	12.00	9.42
16	80	12.80	10.0
16	90	14.40	11.3
16	100	16.00	12.6
16	110	17.60	13.8
16	125	20.00	15.7
16	150	24.00	18.8
16	180	28.80	22.6
16	200	32.00	25.1
18	100	18.00	14.1
19	50	9.500	7.46
* 19	60	11.40	8.95
19	65	12.35	9.69
* 19	70	13.30	10.4
19	75	14.25	11.2
19	90	17.10	13.4
19	100	19.00	14.9
19	125	23.75	18.6
19	150	28.50	22.4
19	180	34.20	26.8
19	200	38.00	29.8
22	50	11.00	8.64
22	65	14.30	11.2
22	75	16.50	13.0
22	90	19.80	15.5
22	100	22.00	17.3
22	125	27.50	21.6
22	150	33.00	25.9
22	180	39.60	31.1
22	200	44.00	34.5
25	50	12.50	9.81
25	65	16.25	12.8
25	75	18.75	14.7
25	90	22.50	17.7
25	100	25.00	19.6
25	125	31.25	24.5
25	150	37.50	29.4
25	180	45.00	35.3
25	200	50.00	39.2

Remark : Length ranges from 5.5m to 12.5m at intervals of 0.5m. Please contact us for other lengths.

Notes : Please contact us in advance when ordering the sizes marked with *.

Shape and dimensional tolerances

● NAB, BP, ABS, AB, CB

Unit:mm

Items		Tolerance		Remark
		JIS G 3192		
Leg length (A or B)	A, B < 50		±1.5	
	50 ≤ A, B < 100		±2.0	
	100 ≤ A, B < 200		±3.0	
	200 ≤ A, B		±4.0	
Depth (H)	H < 100		±1.5	
	100 ≤ H < 200		±2.0	
	200 ≤ H < 400		±3.0	
	400 ≤ H		±4.0	
Thickness (t, t1, t2)	A < 130	t < 6.3	±0.6	
		6.3 ≤ t < 10	±0.7	
		10 ≤ t < 16	±0.8	
		16 ≤ t	±1.0	
	A ≥ 130	t < 6.3	±0.7	
		6.3 ≤ t < 10	±0.8	
		10 ≤ t < 16	±1.0	
		16 ≤ t < 25	±1.2	
		25 ≤ t < 40	±1.5	
Length	7m or under		+40 0	
	7m Over		Add 5mm to the plus side tolerance given in the above column for 1m increase in lengths or its fraction.	
Out of square (T)		2.5% or under of width of flange B (or leg length).		
Bend		0.3% or under of length.		The bend allowance applies to major bends, up and down and to the right and left.

Remark: The purchaser may designate that the out-of-square shall be 2% and under of the leg length for equal leg angles 200mm or more in leg length.

● FB

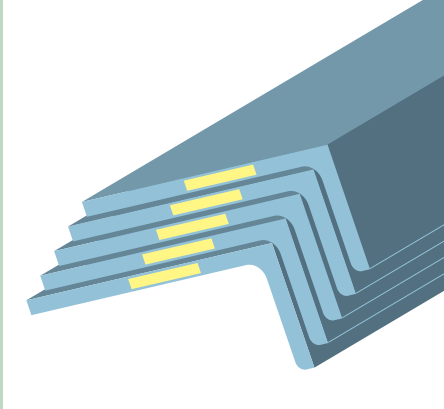
Unit:mm

Division		Tolerance		Resume
		JIS G 3194 (B class)		
Thickness	Less than 6.0mm		±0.3	
	6.0mm up to 12mm, excl.		±0.4	
	12mm up to 15mm, excl.		±0.5	
	15mm up to 20mm, excl.		±0.6	
	20mm up to 25mm, excl.		±0.8	
	25mm up to 40mm, excl.		±1.0	
Width	Less than 50mm		±0.8	
	50mm and over		±1.6% Provided that be ±3.5mm for the maximum value.	
Length		+100 0		
Corner drop (C)	9mm and over in thickness		15% max. of thickness, Provided that be 4mm for the maximum value.	
Lateral Warpage		Be within 0.3% of total length, Provided that be 4mm per m of optional length.		
Degree of flatness in width	150mm or more in width and 50mm or less in thickness		0.3% or less in width	
Degree of flatness in length		The degree of flatness in length is to be 0.3% or less of overall length, with a maximum value of no more than 10mm. The degree is to be 3mm or less per meter.		

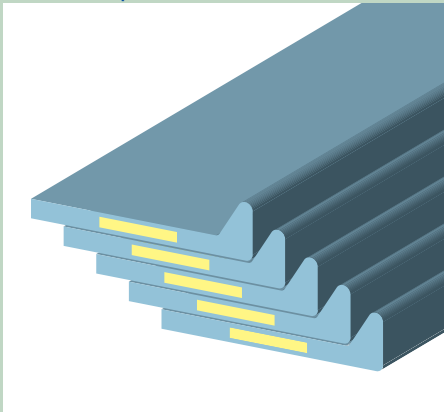
Package and marking

Standard of package and marking of JFE Products

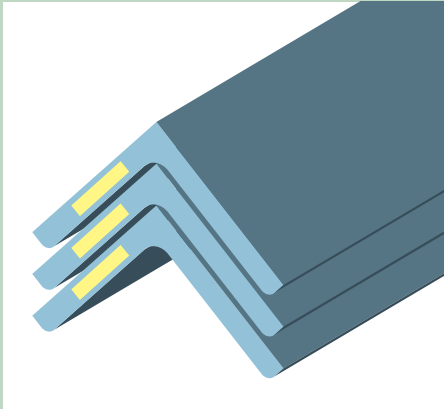
●NAB (Unequal leg and thickness angles)



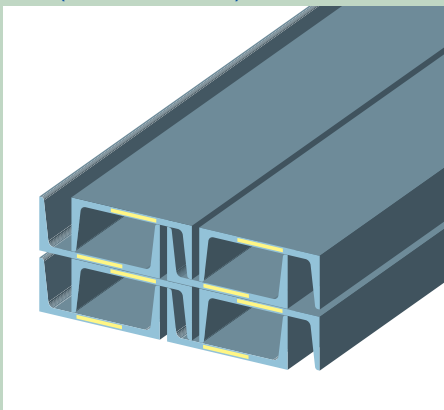
●BP (Bulb plates)



●AB (Equal leg angles)

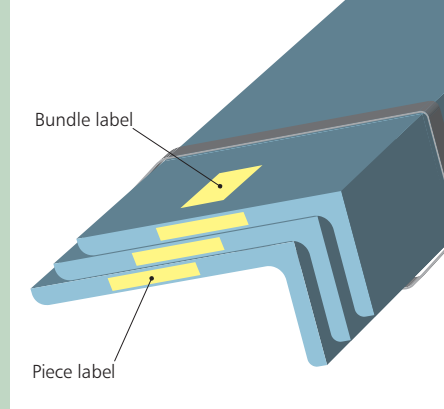


●CB (Channel beams)

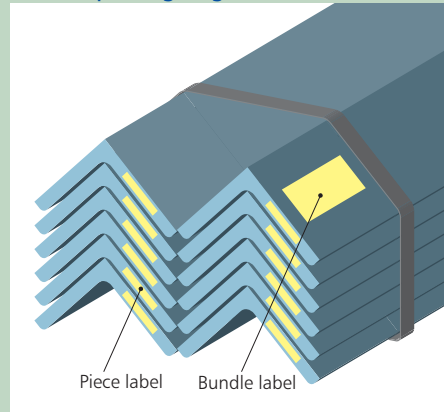


Standard of package and marking of JFE-BS Products

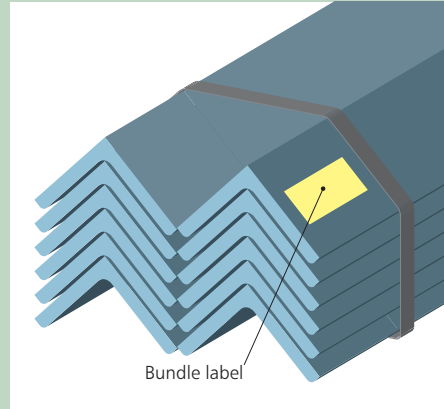
●ABS (Unequal leg angles)



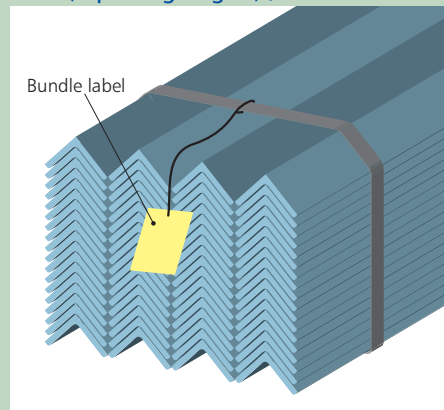
●AB (Equal leg angles) [Width more than 100mm]



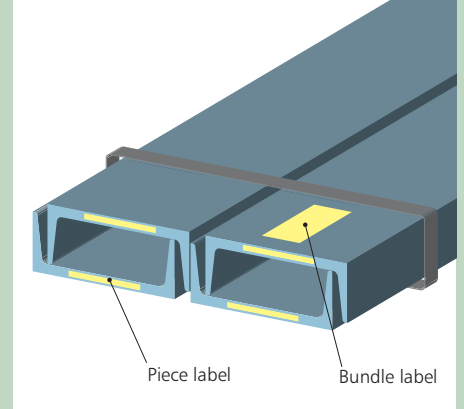
●AB (Equal leg angles) [Width equal to 100mm]



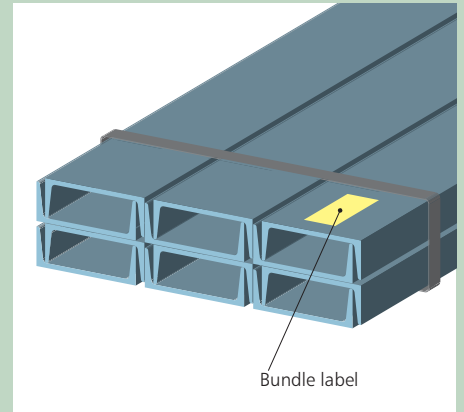
●AB (Equal leg angles) [Width less than 100mm]



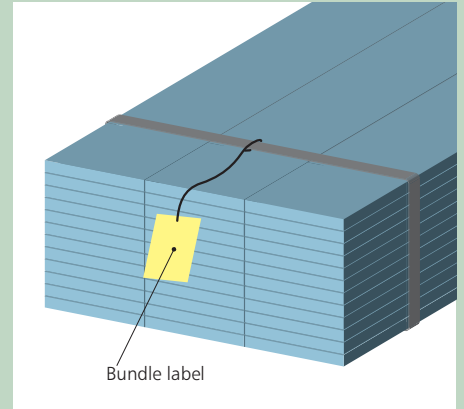
●CB (Channel beams) [Thickness above 6mm]



●CB (Channel beams)



●FB (Flat bars)

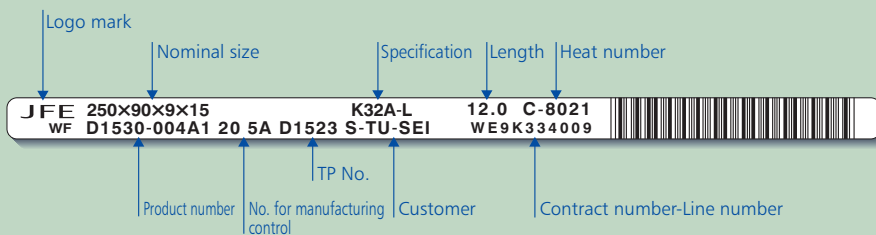


Marking

Labels of JFE products

Type of products

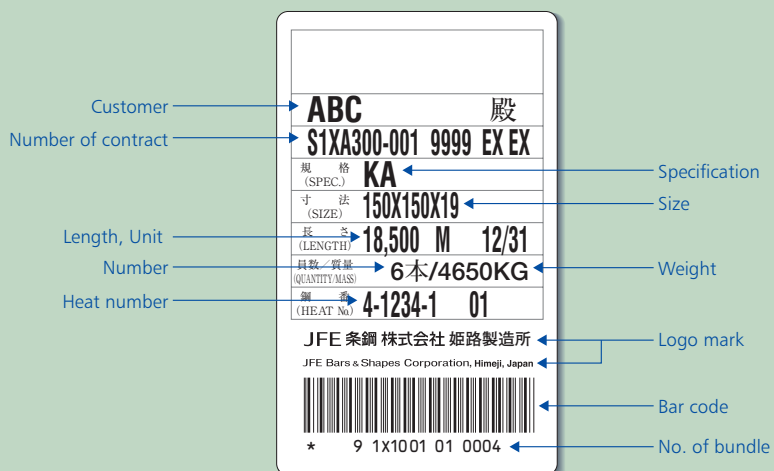
- NAB
- BP
- AB
- CB



Labels of JFE-BS products

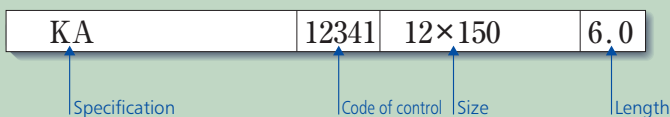
Bundle label

- AB
- ABS
- CB



Piece label

- FB
- AB
- ABS
- CB



Classification society standards (for mild steel)

Specification category	Grade	Chemical composition (%) ⁽¹⁾								Type of deoxidation	Thickness (mm)	Heat treatment	Tensile test				Charpy impact test							
		C	Si	Mn	P	S	Al	C+Mn/6					Yield point or proof stress (N/mm ²)	Tensile strength (N/mm ²)	Elongation (L=200)		Testing temperature (°C)	Minimum mean absorbed energy (J)						
															Thickness (mm)	Elongation (%)		L	T					
NK	KA	0.23max.	0.50max.	2.5XCmin.	0.035max.	0.035max.		0.40max.	S,K	t≤50	AR,N,CR,TMCP	235min.	400~520	5<t≤10	16min.	—	—	—						
	KB	0.21max.	0.35max.	0.80min. (0.60min.)										0.015min.	K	t≤25	N, TMCP	10<t≤15	17min.	0	27	20		
	KD	0.18max.	0.60min.	Ks														t≤50	15<t≤20	18min.	—20	—	—	
	KE		0.70min.																20<t≤25	19min.				—40
ABS	AA	0.23max.	0.50max.	2.5XCmin.	0.035max.	0.035max.	0.40max.	S,K	t≤50	AR,N,CR,TMCP	235min.	400~550	5<t≤10	16min.	—	—	—							
	AB	0.21max.	0.35max.	0.80min. (0.60min.)									0.015min.	K	t≤25	N, TMCP	10<t≤15	17min.	0 <small>(Unnecessary when the formula "t≤25" is applicable.)</small>	27	20			
	AD	0.10~0.35	0.60min.	Ks													t≤50	15<t≤20				18min.	—20	—
	AE		0.70min.															20<t≤25				19min.		
LR	LA	0.23max.	0.50max.	2.5XCmin.	0.035max.	0.035max.	0.40max.	S,K	t≤50	AR,N,CR,TMCP	235min.	400~520	5<t≤10	16min.	20	27	20							
	LB	0.21max.	0.35max.	0.80min. (0.60min.)									0.015min.	K	t≤25	N, TMCP	10<t≤15	17min.	0	27	20			
	LD	0.10~0.35	0.60min.	Ks													t≤50	15<t≤20				18min.	—20	—
	LE		0.70min.															20<t≤25				19min.		
DNV	NVA	0.23max.	0.50max.	2.5XCmin.	0.035max.	0.035max.	0.40max.	S,K	t≤50	AR,N,CR,TMCP	235min.	400~520	5<t≤10	16min.	—	—	—							
	NVB	0.21max.	0.35max.	0.80min. (0.60min.)									0.015min.	K	t≤25	N, TMCP, CR	10<t≤15	17min.	0	27	20			
	NVD	0.10~0.35	0.60min.	Ks													t≤50	15<t≤20				18min.	—20	—
	NVE		0.70min.															20<t≤25				19min.		
BV	BA	0.23max.	0.50max.	2.5XCmin.	0.035max.	0.035max.	0.40max.	S,K	t≤50	AR,N,CR,TMCP	235min.	400~540	5<t≤10	16min.	—	—	—							
	BB	0.21max.	0.35max.	0.80min. (0.60min.)									0.015min.	K	t≤25	N, TMCP, CR	10<t≤15	17min.	0	27	20			
	BD	0.18max.	0.60min.	Ks													t≤50	15<t≤20				18min.	—20	—
	BE		0.70min.															20<t≤25				19min.		
GL	GL-A	0.23max.	0.50max.	2.5XCmin.	0.035max.	0.035max.	0.40max.	S,K	t≤50	AR,N,CR,TMCP	235min.	400~520	5<t≤10	16min.	—	—	—							
	GL-B	0.21max.	0.35max.	0.80min. (0.60min.)									0.015min.	K	t≤25	N, TMCP	10<t≤15	17min.	0	27	20			
	GL-D	0.18max.	0.60min.	Ks													t≤50	15<t≤20				18min.	—20	—
	GL-E		0.70min.															20<t≤25				19min.		
KR	RA	0.23max.	0.50max.	2.5XCmin.	0.035max.	0.035max.	0.40max.	S,K	t≤50	AR,N,CR,TMCP	235min.	400~520	5<t≤10	16min.	—	—	—							
	RB	0.21max.	0.35max.	0.80min. (0.60min.)									0.015min.	K	t≤25	N, TMCP, CR	10<t≤15	17min.	0	27	20			
	RD	0.18max.	0.60min.	Ks													t≤50	15<t≤20				18min.	—20	—
	RE		0.70min.															20<t≤25				19min.		
CR	CA	0.23max.	0.50max.	2.5XCmin.	0.035max.	0.035max.	0.40max.	S,K	t≤50	AR,N,CR,TMCP	235min.	400~550	5<t≤10	16min.	—	—	—							
	CB	0.21max.	0.35max.	0.80min. (0.60min.)									0.015min.	K	t≤25	N, TMCP	10<t≤15	17min.	0	27	20			
	CD	0.18max.	0.60min.	Ks													t≤50	15<t≤20				18min.	—20	—
	CE		0.70min.															20<t≤25				19min.		
CCS	CSA	0.23max.	0.50max.	2.5XCmin.	0.035max.	0.035max.	0.40max.	S,K	t≤50	AR,N,CR,TMCP	235min.	400~520	5<t≤10	16min.	—	—	—							
	CSB	0.21max.	0.35max.	0.80min. (0.60min.)									0.015min.	K	t≤25	N, TMCP	10<t≤15	17min.	0	27	20			
	CSD	0.18max.	0.60min.	Ks													t≤50	15<t≤20				18min.	—20	—
	CSE		0.70min.															20<t≤25				19min.		

Remarks: Type of deoxidation S: Semi-killed steel Heat treatment AR: As-rolled CR: Rolling under temperature control Charpy impact test L: Rolling direction
 K: Killed steel N: Normalizing T: Perpendicular to rolling direction
 Ks: Fine-grained, killed steel TMCP: Controlling method of thermal processing QT: Quenching and tempering

Abbreviation of classification societies

NK	Nippon Kaiji Kyokai (Japan)
ABS	American Bureau of Shipping (USA)
LR	Lloyd's Register of Shipping (United Kingdom)
DNV	Det Norske Veritas (Norway)
BV	Bureau Veritas (France)
GL	Germanischer Lloyd (Germany)
KR	Korean Register of Shipping (Korea)
CR	China Corporation Register of Shipping (Taiwan)
CCS	China Classification Society (Republic of China)
RINA	Registro Italiano Navale (Italy)
RMR	Russian Maritime Register of Shipping (Russia)

Manufactured product complying to other Standards

JIS G 3101 (Rolled Steel for General Structure)	SS400, SS540
JIS G 3106 (Rolled Steel for Welded Structure)	SM400A, SM400B, SM400C SM490A, SM490B, SM490C SM490YA, SM490YB SM520B SM570
JIS G 3114 (Hot-Rolled Atmospheric Corrosion Resisting Steels for Welded Structure)	SMA400AW, SMA400AP SMA490AW, SMA490AP
JIS G 3126 (Carbon Steel Plates for Pressure Vessels for Low Temperature Service)	SLA235A, SLA235B SLA325A, SLA325B SLA365

Remarks: We welcome your inquiry about our available models and sizes.

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