



Ships' steel cargo blocks

1. **Scope** This Japanese Industrial Standard specifies ships' cargo lifting steel blocks (hereinafter referred to as "block").

Remarks: This standard makes reference to the following standards:

- JIS B 0207** – Metric fine screw threads
- JIS B 1351** – Split pins
- JIS B 2801** – Shackles
- JIS G 3101** – Rolled steel for general structure
- JIS G 3452** – Carbon steel pipes for ordinary piping
- JIS G 4051** – Carbon steel for machine structural use
- JIS G 4801** – Spring steel
- JIS G 5101** – Carbon steel castings
- JIS G 5501** – Grey iron castings
- JIS G 5702** – Blackheart malleable iron castings
- JIS H 3100** – Copper and copper alloy sheets, plates and strips
- JIS H 3250** – Copper and copper alloy rods and bars
- JIS H 5111** – Bronze castings

2. **Classification** The block shall be classified as given in **Table 1**.

Table 1

Type	Nominal size							
1A	220	240	280	340	410	430	460	480
1B	220	240	280	340	410	430	460	480
2A	-	240	280	340	410	430	460	480
2B	-	240	280	340	410	430	460	480
3A	-	-	-	-	410	430	-	-
3B	-	-	-	-	410	430	-	-
4A	-	-	-	-	410	430	-	-
4B	-	-	-	-	410	430	-	-

Remarks: 1. The first letters 1, 2, 3 and 4 in the type symbol denotes single, double, triple and quadruple sheave blocks respectively.

2. The second letter A in the type symbol denotes the block without becket, and B with becket.

3. **Construction, shape and dimensions** The construction, shape and dimensions shall be as shown in **Figs. 1 to 9** and conform to the following requirements:

- (1) Shackles shall conform to **JIS B 2801-SB** or **BB**. Where a block type 1A, 1B, 2A or 2B is used in guy tackle, shackle pin may be of screwed type.
- (2) Split pins shall conform to **JIS B 1351**.
- (3) Dimensions of L and angle of 65° for types 1A, 1B 2A and 2B may be changed to some extent.
- (4) When the side plates of types 1A, 1B, 2A and 2B are made from steel plate, the side plates may be welded to the fork.
- (5) Screw threads on the swivel shall conform to **JIS B 0207**.
- (6) Lightening holes of side plates and partition plates may not necessarily be cut.

4. Proof load Proof loads for the block shall be as given in **Table 2**.

Table 2

		Unit: kN	
Type		Working load	Proof load
Single sheave	1A	123 or Less	4 × S.W.L. (¹)
	1B	82 or Less	6 × S.W.L.
Multiple sheaves	2A, 2B, 3A, 3B, 4A, 4B	245 or Less	2 × S.W.L.
		245 or more 1 569 or Less	0.933 × S.W.L. + 265

Note (¹): S.W.L. denotes the safe working load.

Remark: The safe working load for a single-sheave block means the maximum load allowed to be applied to one end of the rope passing the block.

The safe working load for a multi-sheave block means the maximum load allowed to be applied to the shackle of the block.

5. Materials The materials shall be as given in **Table 3**.

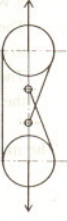
Table 3

No.	Component		Material	No.	Component	Material
1	Swivel		JIS G 4051-S25C	14	Lower hexagon head bolt and nut	JIS G 3101-SS 400
2	Nut for swivel			15	Distance piece	JIS G 3452-SGP
3	Fork	Single block	JIS G 3101-SS 400	16	Becket	JIS G 3101-SS 400
		Double block and more		17	Bolt and hexagon nut for becket	
4	Crosshead		JIS G 5101-SC 450 or JIS G 4051-S25C	18	Rib for becket	JIS G 3452-SGP
5	Bolt and hexagon nut for crosshead		JIS G 4051-S25C	19	Distance piece	
6	Side plate and partition plate	Single and double block	JIS G 5702-FCMB or JIS G 3101-SS 400	20	Swivel holder	JIS G 3101-SS 400 or JIS G 4051-S25C
		Triple and quadruple block	JIS G 3101-SS 400	21	Hexagon nut for swivel	JIS G 4051-S25C
				22	Sheave	JIS G 5501-FC 200 or JIS G 5101-SC 410
7	Axle pin and nut		JIS G 4051-S25C	23	Bush for sheave	JIS H 5111-BC6
8	Check piece		Steel plate	24	Set screw for sheave	Steel bar
9	Countersunk head bolt and hexagon nut		Steel bar	25	Shackle	Conform to JIS B 2801
10	Stay bolt and hexagon nut		Steel bar	26	Grease nipple	Brass
11	Distance piece		JIS G 3452-SGP	27	Split pin	Brass wire
12	Rope guard		Steel wire	28	Cover for grease nipple	JIS G 3452-SGP
13	Washer		JIS H3100-C2600P or C2680P	29	Spring washer	JIS G 4801-SUP
			JIS H 3250-C3604BD or C3604BE	30	Check piece	Steel plate
				31	Set bolt	Steel bar

6. Tests and inspection

6.1 Loading test The block coupled with shackle shall be tested by applying the proof load in such a manner as given in Table 4.

Table 4

Item	Type															
	1A								1B							
Testing method																
Nominal size	220	240	280	340	410	430	460	480	220	240	280	340	410	430	460	480
Safe working load kN	13.7	17.2	22.1	34.3	49.0	53.9	58.8	68.6	13.7	17.2	22.1	34.3	49.0	53.9	58.8	68.6
Proof load kN	54.8	68.8	88.4	137.2	196	215.6	235.2	274.4	82.2	103.2	132.6	205.8	294	323.4	352.8	411.6

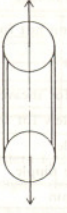
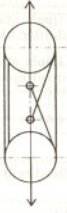
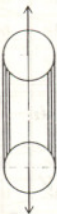
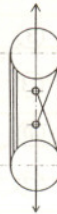
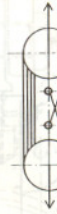
Item	Type															
	2A								2B							
Testing method																
Nominal size	240	280	340	410	430	460	480	240	280	340	410	430	460	480	240	280
Safe working load kN	63.7	83.4	127.5	186	206	226	275	78	98	157	226	245	275	333	78	98
Proof load kN	127.4	166.8	255	372	412	452	522	156	196	314	452	493	520	576	156	196

Table 4 (continued)

Item	Type							
	3A		3B		4A		4B	
Testing method								
Nominal size	410	430	410	430	410	430	410	430
Safe working load kN	284	314	324	353	353	392	392	431
Proof load kN	530	558	567	594	594	631	631	667

6.2 Overhaul inspection After the loading test is finished, all parts shall be inspected by overhauling and be free from any defect.

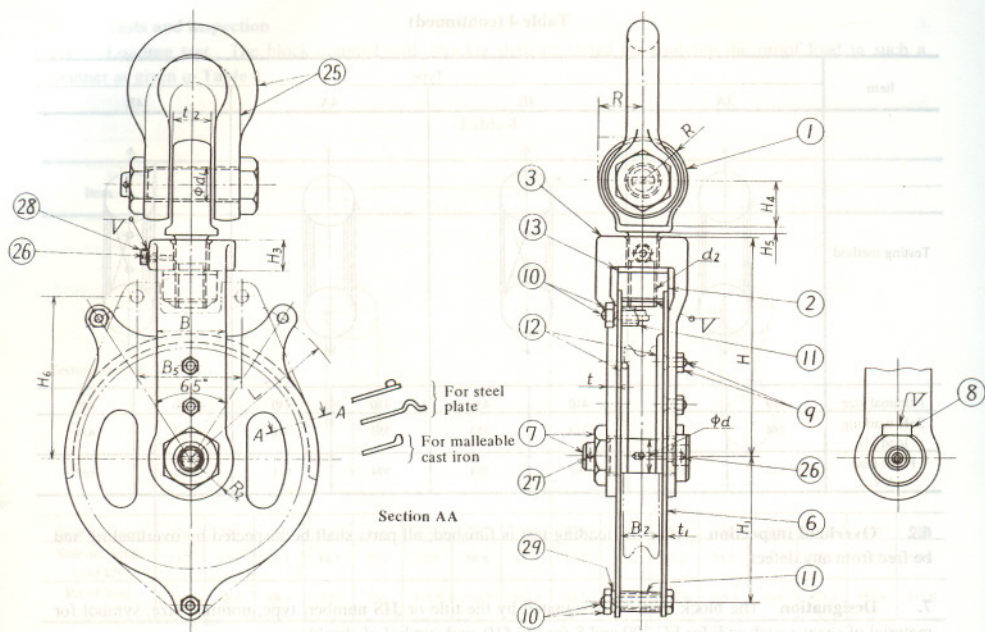
7. Designation The block shall be designated by the title or **JIS** number, type, nominal size, symbol for material of sheave such as F for FC 200 and S for SC 410, and symbol of shackle.

Example: Ships' cargo lifting steel block 1A 220 F-SB or **JIS F 3421-1 A 220 F-SB**

8. Marking The following items shall be marked in a readily visible part on the block.

- (1) Nominal size or identification symbol
- (2) Safe working load
- (3) Year of manufacture
- (4) Manufacturer's name or mark

Year of manufacture	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00
1	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00



Unit: mm

Nominal size	B	B_2	B_5	d	d_1	Nominal dia. of screw threads d_2	H	H_1	H_3	H_4	H_5	H_6	L	R	R_2	t	t_1	t_2
220	50	35	—	30	28	M 25 × 2	210	140	27	40	8	—	160	32	32	8	4, 5	29
240	60	39	—	35	34	M 30 × 2	230	155	30	45	10	—	180	40	40	10	4, 5	36
280	70	47	—	40	38	M 33 × 2	265	180	35	50	12	—	205	45	45	12	6	39
340	80	55	150	45	42	M 39 × 3	320	220	40	58	14	240	245	50	50	14	6	45
410	90	65	170	55	51	M 48 × 3	380	260	45	68	16	285	290	55	55	18	6	55
430	90	65	180	55	54	M 48 × 3	395	270	45	70	16	310	315	55	60	18	6	57
460	95	67	190	60	57	M 52 × 3	440	275	50	80	18	340	340	65	65	20	8	61
480	100	71	200	65	61	M 52 × 3	450	300	50	84	18	355	350	65	70	20	8	67

Fig. 1 1A

Fig. 1 (continued)

Nominal size	Shackle	Reference	
		Dia. of applicable wire rope	Calculated mass (kg)
220	SB 22 or BB 22	12.5	16
240	SB 26 or BB 26	14	21
280	SB 30 or BB 30	16	33
340	SB 34 or BB 34	20	52
410	SB 40 or BB 40	24	74
430	SB 42 or BB 42	25	84
460	SB 44 or BB 44	26	110
480	SB 48 or BB 48	28	123

- Remarks:
1. The shape of swivel head may be rectangular as shown in chain double-dashed line.
 2. The calculated mass includes mass of sheave and bow shackle.
 3. The shape of side plates may be altered as shown by chain double-dashed line where the block of nominal size 340, 410, 430, 460 or 480 is used for topping blocks.

Nominal size	Shackle	Reference	
		Dia. of applicable wire rope	Calculated mass (kg)
220	SB 22 or BB 22	12.5	16
240	SB 26 or BB 26	14	21
280	SB 30 or BB 30	16	33
340	SB 34 or BB 34	20	52
410	SB 40 or BB 40	24	74
430	SB 42 or BB 42	25	84
460	SB 44 or BB 44	26	110
480	SB 48 or BB 48	28	123

- Remarks:
1. The shape of swivel head may be rectangular as shown in chain double-dashed line.
 2. The shape of side plates may be altered as shown by chain double-dashed line where the block of nominal size 340, 410, 430, 460 or 480 is used for topping blocks.
 3. The nominal mass includes mass of sheave and bow shackle.