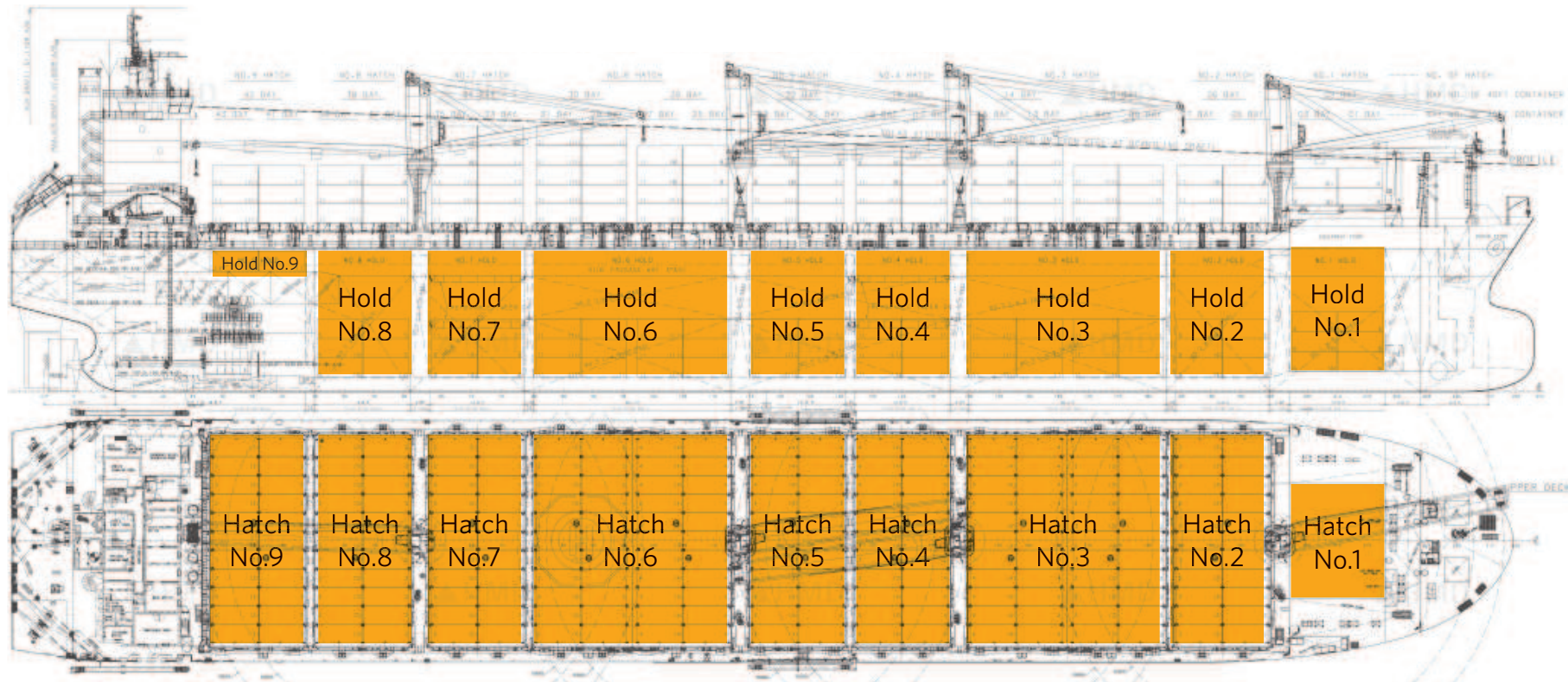




## L-class vessels

CLASS NOTATION: +1A1, General Cargo Carrier, Container, HC-B(+), HA(+), IB(3), BIS, BWM-T, TMON, E0, NAUTIC(OC)

NOTE! Information given in this booklet is reflecting the situation at the time being created, January 2013.



### MAIN DIMENSIONS

LOA:	204,40 m	Depth main deck:	19,00 m	Cargo hold capacity:	66.775 m <sup>3</sup>
LPP:	194,00 m	Draught Mld.:	12,00 m	Max air draught:	51,11 m
Bredth Mld.	32,26 m	Draught ext.:	12,64 m	Max air draught, mast folded:	47,00 m



**Owners:** Grieg International II AS / Grieg Shipping II AS

**Management:** Grieg Star

**Operator:** Grieg Star

**Nationality:** Norway (NIS)

**Port of registry:** Bergen

**Deadweight:** 50.800 mt

**Gross ton:** 37.447 mt

**Net ton:** 15.619 mt

**Bale capacity:** 66.775 m<sup>3</sup>

**Number of holds:** 9

**Speed:** 15,5 knots

**General description:**

Open hatch general cargo carrier with 4 x 75 mt slewing cranes on deck and 9 box-shaped cargo holds intended for the carriage of baled pulp, ore, grain, cement, paper, packaged lumber and other solid bulk cargoes. Tween decks in hold no. 4 and 7. For Hull No. 8079-84 brackets for Tween decks are also fitted in hold no. 5. Piggy back hatch covers except hold no. 1 which is folding type. Two grain/cement hatches fitted in each weather deck hatch no. 1 to 8.

Containers arranged in holds and on deck. Dehumidification system for all cargo holds.

Accommodation aft for a total of 29 persons. Water ballast in fore- and aft peak tanks and in 10 tanks in double hull and double bottom.

No ballast in cargo holds. Four HFO storage tanks in transverse bulkheads between cargo holds except HFO tk. No. 1 which is located aft of fore peak.

**Painted surface:**

Hull (top side): 3.379 m<sup>2</sup>

Flat bottom: 5.315 m<sup>2</sup>

Vertical bottom: 4.683 m<sup>2</sup>

L-class overview

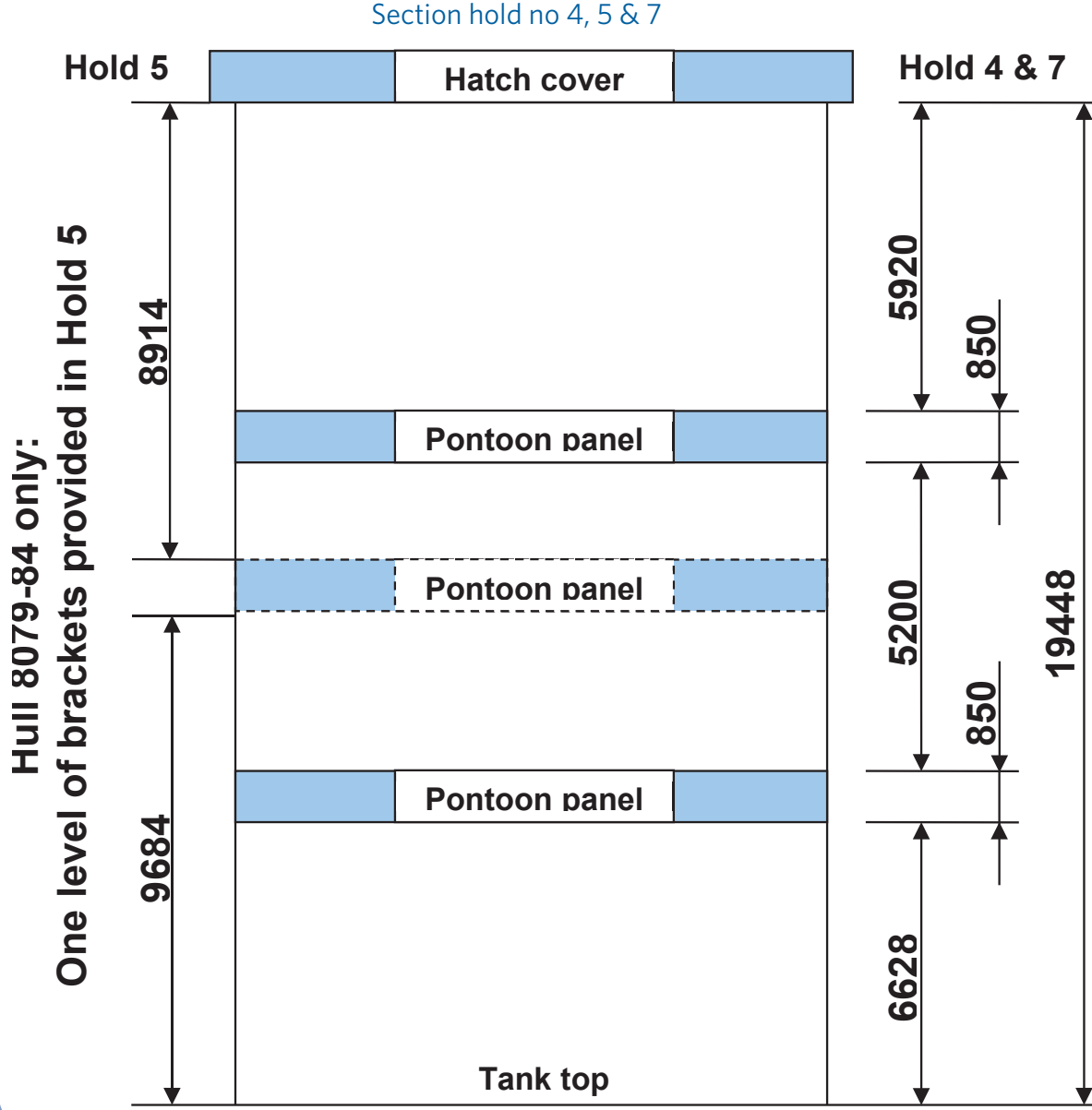
HMD Hull No.	Name	IMO No.	TD brackets in Hold No.
8075	STAR LAGUNA	9593854	4 & 7
8076	STAR LIMA	9593866	4 & 7
8077	STAR LINDESNES	9593878	4 & 7
8078	STAR LOUISIANA	9593880	4 & 7
8079	STAR LOFOTEN	9593892	4, 5 & 7
8080	STAR LIVORNO	9593907	4, 5 & 7
8081	STAR LOEN	9603790	4, 5 & 7
8082	STAR LUSTER	9603805	4, 5 & 7
8083	STAR LYGRA	9616838	4, 5 & 7
8084	STAR LYSEFJORD	9616840	4, 5 & 7

Hold 4 & 7 : 2 levels of Tween Deck brackets

Hold 5: 1 level of Tween Deck brackets



HATCH NO.	BAY NO.		IN HOLD				WEATHER DECK HATCH COVER				TOTAL			
			CASE 1		CASE 2		CASE 1		CASE 2		CASE 1		CASE 2	
	20FT	40FT	20FT	40FT	20FT	40FT	20FT	40FT	20FT	40FT	20FT	40FT	20FT	40FT
1	1	2	18	-	-	18	16	-	2	14	34	-	2	32
	3		18	-	-	18	14	-	-	14	32	-	-	32
2	5	6	27	-	-	27	30	-	-	30	57	-	-	57
	7		27	-	-	27	33	-	3	30	60	-	3	57
3	9	10	33	-	-	33	33	-	-	33	66	-	-	66
	11		33	-	-	33	33	-	-	33	66	-	-	66
	13	14	33	-	-	33	44	-	6	38	77	-	6	71
	15		33	-	-	33	38	-	-	38	71	-	-	71
4	17	18	33	-	-	33	37	-	1	36	70	-	1	69
	19		33	-	-	33	39	-	3	36	72	-	3	69
5	21	22	33	-	-	33	39	-	3	36	72	-	3	69
	23		33	-	-	33	37	-	1	36	70	-	1	69
6	25	26	33	-	-	33	38	-	-	38	71	-	-	71
	27		33	-	-	33	44	-	6	38	77	-	6	71
	29	30	33	-	-	33	55	-	-	55	88	-	-	88
	31		33	-	-	33	55	-	-	55	88	-	-	88
7	33	34	29	-	-	29	55	-	9	46	84	-	9	75
	35		29	-	-	29	46	-	-	46	75	-	-	75
8	37	38	15	-	-	15	30	-	-	30	45	-	-	45
	39		15	-	-	15	33	-	3	30	48	-	3	45
9	41	42	11	-	-	11	33	-	-	33	44	-	-	44
	43		11	-	-	11	33	-	-	33	44	-	-	44
SUB TOTAL			596	-	-	298	815	-	37	389	1411	-	37	687
GRANDTOTAL (TEU)			596		596		815		815		1411		1411	



Solid cargo

(S.G. \* FILL RATIO = 1.000 \* 100 %)

COMPARTMENTS	LOCATION (FRAME)	VOLUME 100% (M3)	WEIGHT (MT)	CENTER OF GRAVITY			I MAX. (M4)
				V.C.G. FROM B.L. (M)	L.C.G. FROM MIDSHIP (M)	T.C.G. FROM C.L. (M)	
NO.1 CARGO HOLD	202.0 - 218.0	4522.6	4522.6	14.026	76.600	0.000	9325
NO.2 CARGO HOLD	184.0 - 200.0	5959.2	5959.2	12.051	61.200	0.000	23415
NO.3 CARGO HOLD	150.0 - 183.0	14298.2	14298.2	11.570	40.400	0.000	48294
NO.4 CARGO HOLD	132.0 - 148.0	6932.5	6932.5	11.570	18.200	0.000	23415
NO.5 CARGO HOLD	115.0 - 131.0	6932.5	6932.5	11.570	4.200	0.000	23415
NO.6 CARGO HOLD	80.0 - 113.0	14298.2	14298.2	11.570	-18.000	0.000	48294
NO.7 CARGO HOLD	63.0 - 79.0	6557.5	6557.5	11.977	-38.800	0.000	23415
NO.8 CARGO HOLD	45.0 - 61.0	5388.7	5388.7	13.233	-54.200	0.000	23415
NO.9 CARGO HOLD	28.0 - 44.0	1886.5	1886.5	18.645	-68.200	0.000	23415
TOTAL		66775.9	66775.9				



## Main engine

One 5-cyl. 2-stroke cross head diesel engine

Type: MAN B&W HYUNDAI 5S60ME-C8.1  
MCR: 10 780 kW at 95,2 rpm  
NSR: 9 090 kW at 90,0 rpm  
Turbo charger: ABB TPL77B

## Electric Power Generation

Three 5-cyl. 4-stroke diesel engines w/generator on common frame

Engine type: HYUNDAI HiMSEN 5H21/32  
Generator type: Hyundai Heavy Industries HFC7 506-84K  
Engine output: 960 KW at 900 rpm  
Generator output: 1125 KVA / 900 KW

Emergency Diesel Generator

Type: NORHAVN GASI 8-06E (Engine: SISU)  
Generator output: 225 KVA / 180 KW

## Incinerator

One incinerator TEAMTEC, type GS500CS, edition TG5  
850 kW capacity / 100 l/h of IMO sludge.  
Burning sludge oil and solid waste

## Sewage Treatment Plant

One sewage treatment plant, IL SEUNG Co.,Ltd, type ISS-35N  
Biologic type, 2450 l/day (35 persons - 70 l/man/day)

## Air compressors

Two main air compressors:

SPERRE XW150  
165 m3/h capacity at 30 bar.(3 MPa)

One working air compressor:

ATLAS COPCO GA37VSD-175-60  
388 m3/h capacity at 7 bar. (0,7 MPa)

One emergency air compressor:

SPERRE XA030  
35 m3/h capacity at 30 bar.(3 MPa)

## Fresh Water Generator

One fresh water generator ALFA LAVAL

Type: AQUA-100-HW  
Capacity: 30 m3/24h

## Purifiers and Separators

Two HFO purifiers, GEA WESTFALIA OSE40-0136-067/30  
3400 l/h capacity, 600 cSt at 50°C, density 1,01g/ml (15°C)

Two M/E lube oil purifiers GEA WESTFALIA OSE 10-91-067/6  
1950 l/h capacity at 90°C, viscosity SAE 30

One bilge water separator (15ppm), COMPASS WATER SOLUTIONS  
Type Ultra-Sep 3000-J502, capacity 3,0 m3/h



### Boilers

Auxiliary Boiler, KANGRIM Heavy Industries Co., Ltd

Type: PA0101P12  
 Steam production: 1 600 kg/h  
 Working pressure: 7 kg/cm<sup>2</sup> (0,59MPa)  
 Fuel oil consumption: 121 kg/h

Exhaust gas economizer, KANGRIM Heavy Industries Co., Ltd

Type: EM12RD12A4  
 Steam production: 1 200 Kg/h NCR ISO  
 Working pressure: 7 kg/cm<sup>2</sup> (0,59 MPa)  
 Exhaust gas amount: 87 000 Kg/h

### Dehumidifiers

Dehumidifiers for cargo holds, ALFSEN & GUNDERSON

Type AG-CZ-104S, capacity 82 Kg/h at 20°C, 80% RH.

12 000 m<sup>3</sup>/h dry air flow.

Total circulation capacity with booster fan 20 000 m<sup>3</sup>/h

### Cargo hold exhaust fans

One for each cargo hold No. 1 to 8, HI AIR KOREA

Capacity Hold 1-2: 6 air changes per hour (\*)

Hold 3-8: 2 air changes per hour

(\*) - Note that hold 1 is adjacent to fuel oil tank

All fans of spark proof design, EEx-d-IIB-T4, IP-56

### Cargo cranes:

Four CARGOTEC/MACGREGOR GLE7526/MLC/6030-2/4530gr

Lifting capacity:

- Hook operation: 75/60 metric tons S.W.L.

- Grab, log or palletized cargo: 45 metric tons S.W.L.

Hoisting speed, max, load depending : 22~45 m/min

Angle of slewing: 360 degrees

Slewing speed, empty/loaded hook: 0,9 / 0,5 rpm

Maximum working radius: 26.0/30.0 m

Minimum working radius: Abt. 3.8 m

### Local strength - uniformly distributed load

Weather deck hatch covers: 3,6 metric tons/m<sup>2</sup>

Tween decks: 5,5 metric tons/m<sup>2</sup>

Tank top, Hold 2 to 8 28,0 metric tons/m<sup>2</sup>

Tank top, Hold 9: 5,5 metric tons/m<sup>2</sup>

Bench in Hold 1, 2, 7 & 8 to be relative reduced compared to tanktop height above baseline.

### Other cargo related information

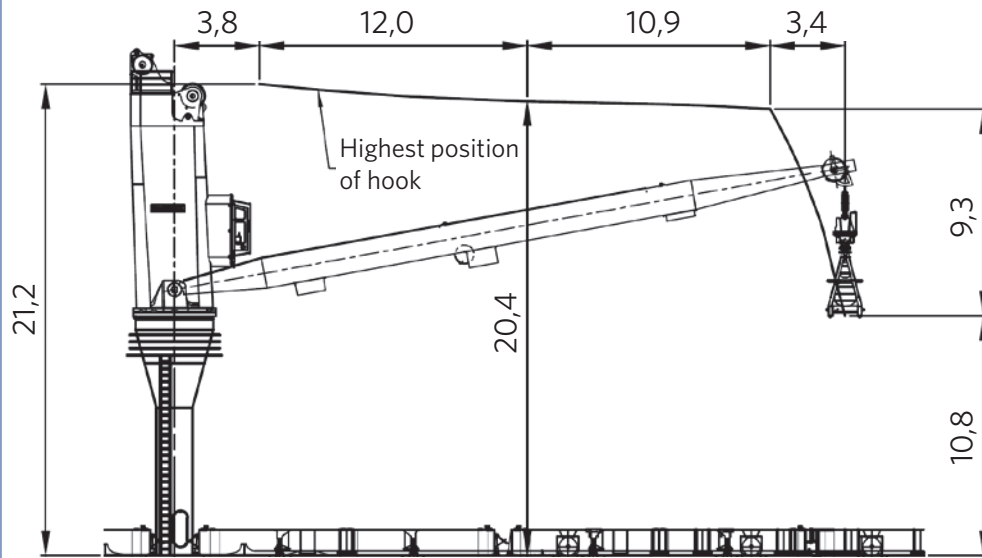
Welding restrictions in cargo holds on transverse bulkheads due to HFO tanks (additional lashing points installed):

Hold	1	2	3	4	5	6	7	8
Bulkhead	Fwd		Aft	Fwd	Aft	Fwd	Aft	Fwd

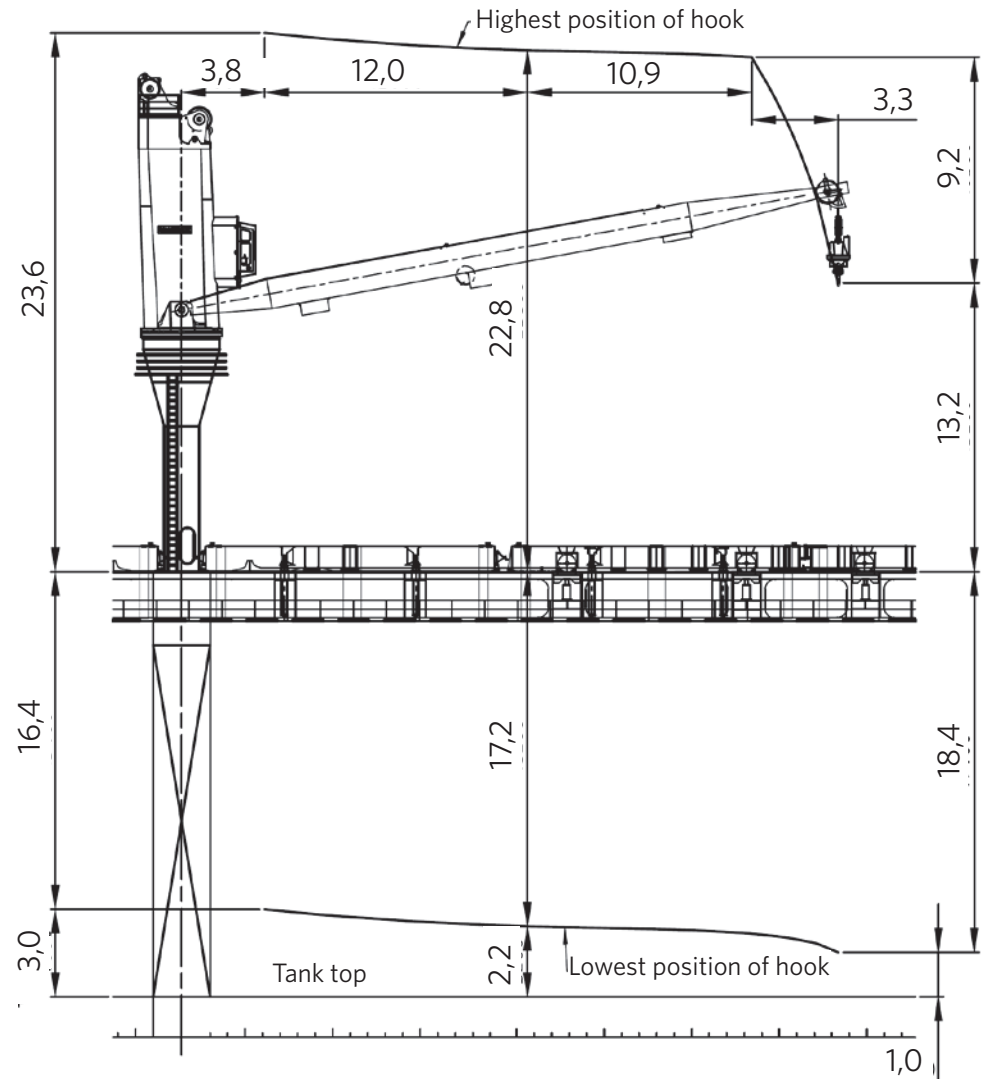
Grain/cement hatches installed in all cargo hatch covers, 2 each.



### Lifting height diagram, crane 2-4 in hold 3-8, w/ adapter frame.



### Lifting height diagrams, crane no 2-4 in hold no 3-8.



To find lifting height above hatch cover, reduce heights above coaming by 1,2m (22,4 - 12,0 for crane 2, 3 & 4).

**Crane no. 1 operating in cargo hold no. 2&3:** The highest / lowest hook position will be about 1,5m lower than indicated for crane no.2, 3 & 4 (22,1 - 11,7 above hatch coaming).

**Crane no.1 operating in cargo hold no. 1:** The highest / lowest hook position will be about 4,3m lower than indicated for crane no.2, 3 & 4 (19,3 - 18,5 above hatch coaming).

*All dimensions in metres*