HYUNDAI
HEAVY INDUSTRES CO. LTD.

SHOP TEST RESULT FOR MAIN ENGINE

	Doc. No.: K630-IR10A-2353
Engine No.	AA4154
Engine type	6S50MC-C7
Hull No.	HMD2196
Owner	DALESIO
Class	RINA
Ship yard	HYUNDAI MIPO DOCKYARD CO. LTD.

HYUNDAI - MAN B&W

CONTENTS PAGE No.

1. Spec. of Engine & Accessory $2 \sim 3$

2. Engine Test Records $4 \sim 15$

3. Assembly Records $16 \sim 19$

QUALITY MANAGEMENT DEPARTMENT HHI-EMD

Rev.	Prepared	Checked	Approved	Description
2				
2				
1	A.7a			
	м. н. он СМ		M.H.KIM	First issue
0	2010-05-28		2010-05-28	



HEAVY INDUSTRIES CO.,		. Hul	l No.	HMD2196	Owner	DALESI	0
Official shop to		∩r	gine No.	AA4154	Class	RINA	
Main E	ngine	Eng	gine Type	6S50MC-C7	Test Date	May.14, 20	
Specification of	Main Engir	10	put(MCR)	9480 kW	Engineer	D. J. HON J. J. LIN	
		Spe	ed(MCR)		Operator	J. J. L/IIV	/1
	PAR	TICULAR	RS OF E	NGINE			
NUMBER OF CYLINDEI	RS			6			
DIAMETER OF CYLIND	ER			500	mm		
STROKE				2000	mm		
FIRING ORDER		AH	→	1-5-3-4	- 2 - 6 - 1	←AS	
CYLINDER CONSTANT	(kW)		- "	0.654	15		
		TURBO (HARG	ER			
TYPE				1 x TP	L77B12		
SPECIFICATION				CT70CA15	F20TA23		
nMmax. / tMmax.			17040	r/min	/ 5	50 °C	
nBmax. / tBmax.			16200	r/min	/ 5	20 ℃	
SERIAL No.				XH002	788		
MANUFACTURER				HYUNDA	I - ABB		
	-	DYNAM	OMET	ER			
MAKER / TYPE			FROUD	E / FA-	18		
CONSTANT (kW)			1 /	1.35962			
MAXIMUM CAPACITY			29400	kW x 325 rj	om	<u> </u>	
SPI	ECIFICATI	ON OF O	IL USE	D AT SHO	P TEST		
		F.O	System	Oil Cam	Oil Cyl. (Oil T/C	Oil
KIND OF OIL		BUNKER-A	VERIT	TAS VERIT	AS ALEX	IA VERI	TAS
			800 M	30 800 M	130 LS	800 M	1 30
SPEC. GRAVITY	(15 ℃)	0.9031	0.883	0.88	0.91	70 0.88	10
FLASH POINT	c	68	258	258	260	25	8
VISCOSITY	cst	(50℃)	(40℃	C) (40°C	C) (40°C	C) (40°	°C)
		3.85	103.	8 103.	8 209.	.1 103	8.8
WATER	vol%	0.05					
SULFUR	wt%	0.163					
CALORIFIC VALUE	kcal / kg	10042					
(LOWER)							
		-	·				



Official shop test result for Main Engine Specification of Accessory		ıe No.		D2196 4154	Owner Class	_	LESIO
						1 1	INA
Chaifetian of A	Lugu	e Type	6S50	мс-с7	Test Date		14, 2010
- SNACHICTION OF ACCOSSORY	Outpu	ıt(MCR)		0 kW	Engineer	[HONG
Specification of Accessory	Speed	l(MCR)	127	rpm	Operator	J. ,	I. LIM
·	GOVER	NOR				. <u> </u>	
TYPE	AC C20 D	GS	_				
SERIAL No.	B0097D32	7820045	5		-		
MANUFACTURER	KONGSB	ERG M	ARIT	IME KO	DREA		
FUEL V	ALVE (ATO	MIZI	ER)			
TYPE	3062332-6	x 115	-				
OPENING PRESSURE	350 ±30	bar		·			, ,
SPEC. HOLE No.	1 2		3	4			
DIA. OF HOLE(Φ) 1.1	15 1.15	5 1.	15	1.15			
VERTI. ANGLE(a°) 2	7 17	1	13	12			
HORIZ. ANGLE(β°)	2 12	3	30	48			
AUX	ILIARY	BLO	WER	L			
TYPE / CAPACITY	HA	A-334/8	0N	/	1.92 /	3.90 m ³	/sec
SPEED / PRESSURE		3560	rpm	/	571 /	327 m	nAq
SERIAL No. 1 / 2	SRA1	492010	1 / 02				
MANUFACTURER	HYU	JNDAI	MARI	NE MA	CHINERY	CO.,LTD) .
ELECT. TYPE / VOLTAGE		HM		/		440	V
MOTOR FREQUENCY / POWER / Amp	60 I	Hz /		45	kW /	72.1	A
SERIAL No. 1/2	0F0	94F26-	001	/	0F09	4F26-002	ļ
MANUFACTURER	HY	UNDAI	HEA'	VY IND	USTRIES (CO.,LTD.	
	AIR CO	OLEF	R				
PART No. / SURFACE AREA	A19-288255-0 / 638.6						
SERIAL No.	DHL3075	0-A					
MANUFACTURER	DongHwa	Entec					
CYLIN	DER LU	J BRI (CAT(OR			
TYPE	Φ 4.5 mm	n					
				CET			
NO. OF PISTON	18 PER U	NIT	2	SET			



MEAV I I	NDUSTRIES CO.,	LIU.		7.	11 3 7	777 575 440				Ď.	I DOLO
Officia	al shop tes	t result i	for	——	ıll No.	HMD219		Owner			LESIO RINA
	Main En	gine			gine No. gine Type	AA4154 6S50MC-0		Class Test Da	ıto .		.14, 2010
				ŧ	tput(MCR)	9480 kW		Engine			. HONG
Summ	ary Data o	f Load Te	est		eed(MCR)	127 rpm		Operato			J. LIM
		······			1						
DATA SHE	EET No.	1	2		3	4		5	6		
LOAD(%))	25	50		75	90		100	110)	
MEASURIN	NG TIME	9:50	10:2	0	10:50	11:20]	11:50	12:5	0	
SPEED (rps	m)	80.0	100.	8	115.4	122.6		127.0	131.	1	
Brake Powe	r(kW)	2370	4740	0	7110	8532		9480	1042	8	
Indicated Po	ower (kW)	2670	5150	6	7588	9037]]	0005	1097	6	
MECH. EFI	F. (%)	88.77	91.9	3	93.70	94.41	9	94.75	95.0	1	
Pmax. (bar)	79.2	105.	3	132.3	143.8		150.2	154.	8	
Pcomp. (ba	r)	48.3	71.7	7	100.0	117.2		127.7	135.	2	
Pi (bar)		8.50	13.0	3	16.74	18.77	20.06		21.3	2	
F.O PUMP	(P O)	33.0	47.0)	59.8	66.8		73.8	79.8	3	
Fuel Oil Con-	Measured	183.54	180.3	38	177.64	177.92	1	79.30	184.9)3	
sum.(g/kWh)	Corrected	181.68	177.4	1 1	174.54	174.85	1	76.24	181.8	35	BLANK
Exh. Gas	Cyl. Out	281	307	'	312	327		346	366	; 	DEATE
Тетр.	Bef. T/C	297	342	?	362	383		412	440)	
(℃)	Aft. T/C	245	264		242	242		252	265	;	
T/C Speed	No. 1	6170	1063	0	13420	14620]	15330	1598	0	
(rpm)	No. 2		:			BLANK	<u></u>				
	No. 3					DLANK	╚				
	No. 4										
	Average	6170	1063	0	13420	14620	1	15330	1598	80	
Scavenging	C	25.0	29.0)	34.0	36.0		38.0	40.0)	
Air	kg/cm ²	0.330	1.03	0	1.860	2.340] :	2.670	2.90	0	
Cooling Wate	er Inlet (°C)	17.0	18.0		20.0	24.0		25.0	24.0)	
Test Room	°C	20.3	22.0)	22.8	24.0		22.0	21.0	5	
	mbar	1020	102	0	1020	1020		1020	102	0	
	Humidity(%)	0.43	0.45	;	0.44	0.43		0.47	0,51		

^{*} Note: The Fuel Oil Consumption is corrected to Lower Calorific Value 10200 kcal/kg, and ISO condition



Official s	hon	test	recn	It fo	r	Hull	No.	H	MD21	96	Weat	her			FINE	
	Iain i			ut io			ie No.		A415			uring	Time		9:50	
17.		Lug	ше			Eng.			OMC-		Test				7.14, 2	
Data sheet	of :	25	% L	oad	test	Owne Class			ALES RINA		Engir Opera				J. LII	
* Room Tempera	ture :	20.3	3°C	* A	tmosp			re :	-				Humid		43.	
Engine Speed			ter Br			ke Po	-		ated P			ı.Effic		-	NOTC	
	rpm	40	.3	tonf	23	70	kW	26	70	kW	88.	.77	%		4.80	
System		M	lain L.	0		P.C.O		Exh	.V/V A	Act.	F	uel O	il	Cod	oling F	ł.W
In Press.(kg	/cm²)					2,05						8.50			4.00	
Temp.(°C	;)					44.0			·			40.0			70.0	
Cyl. No.		Avg.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Pmax.	bar	79.2	80	79	79	79	79	79								
Pcomp.	bar	48.3	49	48	48	48	49	48			:					
Pi	bar	8.50	8.52	8.56	8.63	8.42	8.38	8.48								
F.O Pump	РΘ	33.0	33.0	33.0	33.0	33.0	33.0	33.0		BL/	ANK	<u></u>				
1.01 ump	VIT	-	-	-	-	_	-	_	L							
Exh.Gas Out.	\mathbb{C}	281	288	280	288	275	274	280								
C.F.W Out.	${\cal C}$	73.0	73.0	73.0	73.0	73.0	73.0	73.0								
Cam L.O Out.	\mathbb{C}	40.0			40	0.0										
P.C.O Out.	${\mathbb C}$	50.0	50.0	50.0	50.0	50.0	50.0	50.0								
	i	Air C	oole	r							Scave	engin	g Air	•		
No.		1	2	3	4	· A	vg.		F	ressu	re			Tempe	rature	;
Bef. Cooler Press						20	0.0				kg/cr			25.0		
Press. Drop	mmAq	44		BLAN	K -	44	1.0	ļ			Pressu				mmH	
Air In.	$^{\circ}$	42					2.0	Exh			ld Pres			0.25		n²
Air Out.	r	19.0					0.0				T		Cons			
Cooling Water In.	$^{\circ}$	17.0					7.0	 	ıs.(kg/			as.(g/k			ect(g/k	•
Cooling Water Out.	\mathbb{C}	19.0				L	0.0		435.00	<u> </u>		183.54	4		181.68	3
	1					i —		arger	i —					-		
Turbo Charger	Spe			ower I	ļ.		ore Tu			er Tur			°C, kg			
>	rp			C	mmAq -	Ě	-	ıHg	°C		1Aq	In	 	Press.		<u> </u>
No. 1	61	70	20.0	28.0	7	297	1'	70	245]	1	44	45	1.55	•	•
No. 2						-	BLA	NK	┗				-			
No. 3								,_ _	<u> </u>							
No. 4		70		00	-	60-	. د	70	21-		1 44 45 155					
Avg.	61'			.00	7 * C	297	l	70	245]]	* Thrust Pad :				45.0	96:
* Pressure VIT :	-	kg/cm	1*	* Governor Position: 37.9 * Thrust Pad:					45.0	C						
Note: The Fuel	l Oil Co	onsum	ption i	s corre	ected to	o Low	er Cal	orific \	Value	10200	kcal /	kg & 1	l.S.O c	onditio	on	



	fficial s			PACII	lt fo	Tr.	Hull !	No.	H	MD21	96	Weat	her			FINE	
ľ		_			111 10	1	Engir	ıe No.		A415			uring '	Time		10:20	
	1.0	[ain]	Lng	ine			Eng.			OMC-		Test				7.14, 2	
Da	ta sheet	of	50	% L	oad	test	Owne			ALES RINA		Engir				J. HO	
* Poo	m Tempera	ture :	22.0) °C	* A	tmosp	Class			1020		Oper		Humid:		44.	
	gine Speed			ter Br			ke Po		1	ated P		_	n.Effic		•	NOTC	-
	100.8		63		tonf			kW	51:		kW		.93	%		6.30	-
	System	rpm		lain L.			P.C.O			.V/V A			uel Oi		Cox	oling F	7 137
 In	Press.(kg	/am2 \	101	tani L.			2.05		EXII	. V / V I	101.	1	8.50			3.95	. **
111	Temp.(°C			·			44.0						40.0		·	70.0	
	Cyl. No.	, ,	Avg.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Pmax	-	bar	105.3	105	106	105	105	106	105		0		10		12	13	17
Pcom		bar	71.7	72	72	72	72	71	71								
Pi		bar		12.92				_									_
		PΘ	47.0	47.0	47.0	47.0	47.0		47.0		·	<u> </u>	<u> </u>				
F.O	Pump	VIT		_	-	_	_		_		BLA	NK	,				
Exh.(Gas Out.	°C	307	310	310	310	300	300	310								
C.F.V	V Out.	С	75.0	75.0	75.0	75.0	75.0	75.0	75.0								
Cam	L.O Out.	C	44.0			44	 .0	<u> </u>	!								
P.C.C	Out.	°C	52.0	52.0	52.0	52.0	52.0	52.0	52.0								
			Air C	oole	r	L==						Scave	engin	ıg Aiı	r	-	,
	No.		1	- 2	3	4	A	vg.		F	ressu	re			Tempe	rature	;
Bef. C	Cooler Press	mmHg	750				75	0.0			1.03	kg/cr	n²		29.0	${\mathbb C}$	
Press	. Drop	mmAq	95				95	5.0	A	ir Rec	eiver	Pressu	re		730	mmF	Ig
Air Iı	1.	C	97	В	LAN:	K	97	7.0	Exh	aust N	lanifo	ld Pres	sure		0.83	kg/cr	n²
Air C	ut.	${\mathfrak C}$	28.0				28	3.0		Spe	ecific	Fue	l Oil	Cons	umpt	ion	
Coolii	ng Water In.	${\mathbb C}$	18.0				18	3.0	Mea	ıs.(kg/	h)	Mea	as.(g/k	Wh)	Corr	ect(g/l	(Wh)
Coolin	g Water Out.	${\mathbb C}$	55.0				55	5.0	,	855.00)		180.38	3		177.41	l
		,					Turt	oCh	arger								
Turb	o Charger	Spe	eed	Blo	ower I	nlet	Befo	re Tu	rbine	Aft	er Tur	bine	L.O.(°C , kg	g/cm²)	F.W	Temp
Tuit	· Charger	rp	m	۴	C	mmAq	℃	mn	nHg	${\mathbb C}$	mr	nAq	In	Out	Press.		C
	No. 1	100	530	20.0	32.0	25	342	6	10	264	(57	44	55	1.40	,	-
	No. 2									<u> </u>							<u></u> .
	No. 3							BLA	NK	<u> </u>							
	No. 4																
	Avg.	106	30	26	.00	25	342	6	10	264	•	67	44	55	1.4		-
* Pres	Pressure VIT: - kg/cm ² * Governor Position: 52.7 * Thrust Pad: 4						46.0	${\mathfrak C}$									
Not	e : The Fue	l Oil C	onsum	ption i	s corre	ected to	o Low	er Cal	orific \	Value	10200	kcal/	kg & 1	I.S.O c	onditi	on	
				_													



	Afficial o			MAGN	le fo	<u>, </u>	Hull	No.	Н	MD21	96	Weat	her			FINE	
ľ	official s	_			III IU	I	Engir	ne No.	A	A415	4	Meas	uring '	Time		10:50	
	IV.	<u> </u>	Lng.	ine				Type		OMC-		Test				y.14, 2	
Da	ta sheet	of	75	% L	oad	test	Owne			ALESI RINA		Engii Oper				J. HO J. LII	
* Roos	m Tempera	fure :	22.8	≥ °C	* A	tmoen		Pressu		1020				Humid		44.4	
	gine Speed		ı	ter Br			ke Po			ated P			n.Effic	1	<u> </u>	NOTC	
		rpm	83		tonf		10	kW		88	kW		.70	%		7.50	-
	System	ı pını		lain L.			P.C.O			.V/V A		-	uel Oi		Coc	oling F	
In	Press.(kg	/cm²)	14.			-	2.05		Data	. • , • 2	100.		8.00	-		3.95	
***	Temp.(°C						43.0						40.0			70.0	
	Cyl. No.	, ,	Avg.	1	2	3	4	5	6	7	8	9	10.0	11	12	13	14
Pmax		bar	132.3		132	132	132	133	132	,							<u> </u>
Pcom			100.0		100	100	100	100	100								
Pi	*	bar	ļ	16.84												-	
	_	PΘ	59.8	60.0	60.0	60.0	60.0	60.0	59.0				ς		-		
F.O	Pump	VIT	-	_	-	-	-	-	_		BL	ANK	_				
Exh.(Gas Out.	С	312	310	315	315	305	310	315							_	
C.F.V	V Out.	${\mathbb C}$	76.0	76.0	76.0	76.0	76.0	76.0	76.0								
Cam	L.O Out.	${\mathfrak C}$	47.0			47	7.0	J									
P.C.C	Out.	${\mathbb C}$	54.0	54.0	54.0	54.0	54.0	54.0	54.0								
			Air C	oole	r							Scave	engin	ıg Aiı	ſ		
	No.		1	2	3	4	A	vg.		F	Pressu	re			Tempe	emperature	
Bef. C	ooler Press	mmHg	1380				138	30.0			1.86	kg/cr	n²		34.0	\mathbb{C}	
Press	. Drop	mmAq	130		NT 4 N	T.	13	0.0	Α	ir Rec	eiver	Pressu	re		1370	mmH	[g
Air Ir	1.	\mathbb{C}	146		BLAN	K	14	6.0	Exh	aust N	Ianifo	ld Pres	sure		1.60	kg/cr	n²
Air O	ut.	C	32.0				32	2.0		Spe	ecific	Fuel	Oil	Cons	umpt	ion	
Coolir	ng Water In.	${\mathbb C}$	20.0				20	0.0	Mea	as.(kg/	h)	Mea	as.(g/k	Wh)	Corr	ect(g/k	(Wh)
Coolin	g Water Out.	C	57.0				51	7.0	1	263.0	0		177. 64	1		174.5 4	1
							Turt	oCh	arger							1	
Turb	o Charger	Spe	eed	Blo	ower I	ılet	Befo	ore Tu	rbine	Aft	er Tur	bine	L.O.(°C , kg	g/cm²)	F.W	Temp
			m	٩	<u> </u>	mmAq	$^{\circ}$	mn	1Hg	C	mr	nAq	In	Out	Press.	٩	C
]	No. 1	134	120	22.0	34.0	65	362	11	80	242	1	50	44	68	1.55		-
	No. 2						 		A DITZ	Ļ							
	No. 3						<u> </u>	BLA	NK	┦							
	No. 4																
	Avg.	134			.00	65	362	1	80	242	!	50	44	68	1.55		-
* Pressure VIT : - kg/cm ²						66.3		<u> </u>	* Th	ırust Pa	ad:	47.0	<u>°C</u>				
Note	e : The Fue	l Oil Co	onsum	ption i	s corre	cted to	o Low	er Cal	orific \	Value	10200	kcal/	kg & 1	I.S.O c	onditio	on	
<u> </u>				_												_	



Engine Speed Water Brake Brake Power Indicated Power Mech.Efficiency NOTO 122.6 rpm 94.6 tonf 8532 kW 9037 kW 94.41 % 8.10 System Main L.O P.C.O Exh.V/V Act. Fuel Oil Cooling In Press.(kg/cm²) 2.00 7.80 3.90	2010 NG M .5%							
Data sheet of 90 % Load test Owner Class DALESIO Engineer D. J. H.C. * Room Temperature : 24.0 °C * Atmospheric Pressure : 1020 mbar * Humidity 42 Engine Speed Water Brake Brake Power Indicated Power Mech.Efficiency NOTO 122.6 rpm 94.6 tonf 8532 kW 9037 kW 94.41 % 8.10 System Main L.O P.C.O Exh.V/V Act. Fuel Oil Cooling In Press.(kg/cm²) 2.00 7.80 3.90	NG M .5%							
**Room Temperature : 24.0 °C * Atmospheric Pressure : 1020 mbar * Humidity 42 Engine Speed Water Brake Brake Power Indicated Power Mech.Efficiency NOTO 122.6 rpm 94.6 tonf 8532 kW 9037 kW 94.41 % 8.10 System Main L.O P.C.O Exh.V/V Act. Fuel Oil Cooling In Press.(kg/cm²) 2.00 7.80 3.90	.5% CH							
* Room Temperature : 24.0 °C * Atmospheric Pressure : 1020 mbar * Humidity 42 Engine Speed Water Brake Brake Power Indicated Power Mech.Efficiency NOTO 122.6 rpm 94.6 tonf 8532 kW 9037 kW 94.41 % 8.10 System Main L.O P.C.O Exh.V/V Act. Fuel Oil Cooling In Press.(kg/cm²) 2.00 7.80 3.90	.5% CH							
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122.6 rpm 94.6 tonf 8532 kW 9037 kW 94.41 % 8.10 System Main L.O P.C.O Exh.V/V Act. Fuel Oil Cooling In Press.(kg/cm²) 2.00 7.80 3.90								
System Main L.O P.C.O Exh.V/V Act. Fuel Oil Cooling In Press.(kg/cm²) 2.00 7.80 3.90								
In Press.(kg/cm ²) 2.00 7.80 3.90	F.W							
Temp.($^{\circ}$) 43.0 40.0 70.0								
Cyl. No. Avg. 1 2 3 4 5 6 7 8 9 10 11 12 13	14							
Pmax. bar 143.8 144 144 144 143 144								
Pcomp. bar 117.2 118 117 117 117 117 117								
Pi bar 18.77 18.78 18.76 18.89 18.64 18.84 18.71								
F.O Pump PO 66.8 67.0 67.0 67.0 67.0 66.0 BLANK								
P.O Fullip								
Exh.Gas Out. °C 327 325 330 328 323 323 330								
C.F.W Out. C 77.0 77.0 77.0 77.0 77.0 77.0 77.0 7	ļ -							
Cam L.O Out. C 49.0 49.0								
P.C.O Out. C 55.0 55.0 55.0 55.0 55.0 55.0 55.0 5								
Air Cooler Scavenging Air								
No. 1 2 3 4 Avg. Pressure Temperatur	е							
Bef. Cooler Press mmHg 1740 1740.0 2.34 kg/cm² 36.0 °C								
Press. Drop mmAq 145 BLANK 145.0 Air Receiver Pressure 1720 mm	-							
Air In. C 166 Exhaust Manifold Pressure 2.05 kg/c	m²							
Air Out. C 35.0 Specific Fuel Oil Consumption								
Cooling Water In. C 24.0 Meas.(kg/h) Meas.(g/kWh) Correct(g								
Cooling Water Out. © 57.0 57.0 1518.00 177.92 174.8	5							
TurboCharger								
Turbo Charger	Temp							
rpm °C mmAq °C mmHg °C mmAq In Out Press.	<u>C</u>							
No. 1 14620 23.0 37.0 92 383 1510 242 220 44 75 1.55	-							
No. 2 BLANK								
NO. 3								
No. 4								
Avg. 14620 30.00 92 383 1510 242 220 44 75 1.55 * Pressure VIT : - kg/cm² * Governor Position : 74.5 * Thrust Pad : 48.0	-							
* Pressure VIT: - kg/cm ²	°°C							
Note: The Fuel Oil Consumption is corrected to Lower Calorific Value 10200 kcal / kg & I.S.O condition								



Official s	hon	test	recii	lt fo	r	Hull		H	MD21	96	Weat	her			FINE	
	_			iit io	•		ne No.		A415			uring '	Time		11:50	
1V)	[ain]	rugi					Туре		OMC-		Test				7.14, 2	
Data sheet	of 1	100	% L	oad	test	Owne Class			ALES! RINA		Engir Opera				J. HO J. LII	
* Room Temperat	ture :	22,0) °C	* A	tmosp		Pressu		1020				Humid		46.	
Engine Speed		Wa	ter Bra			ke Po			ated P			ı.Effic	iency	1	VOTC	—— Н
127.0	rpm	101	l .5	tonf	94	80	kW	100	005	kW	94	.75	%		8.50	
System		М	ain L.	0		P.C.O		Exh	.V/V A	Act.	F	uel Oi	i1	Coc	oling F	.W
In Press.(kg.	/cm²)					2.00						7.80			3,90	
Temp.(°C	:)					43.0						40.0			70.0	
Cyl. No.		Avg.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Pmax.	bar	150.2	150	150	150	150	150	151	,							
Pcomp.	bar	127.7	128	128	127	128	128	127								
Pi	bar	20.06	19.95	20.11	20.02	20.01	20.19	20.09								
F.O Pump	РΘ	73.8	74.0	74.0	74.0	74.0	74.0	73.0		RI A	NK	<u> </u>				
r.orump	VIT	-	-	-	•	•	-	-	L	DLA	NIAN.	<u> </u>				
Exh.Gas Out.	${\mathbb C}$	346	348	350	350	345	340	345								
C.F.W Out.	${\mathbb C}$	78.0	78.0	78.0	78.0	78.0	78.0	78.0								
Cam L.O Out.	${\mathbb C}$	50.0			50	0.0							<u> </u>			
P.C.O Out.	${\mathbb C}$	56.0	56.0	56.0	56.0	56.0	56.0	56.0								
		Air C	oole	r	Ti and the second secon					· · · · · · · · · · · · · · · · · · ·	Scav	engin				
No.		1	2	3	4	A	vg.		F	ressui	re			Tempe		:
Bef. Cooler Press	mmHg	1980					30.0				kg/cr			38.0		
	mmAq			LAN	L		5.0	<u> </u>			Pressu				mmH	<u> </u>
Air In.		184					4.0	Exh			ld Pres		<u></u>	2.38		n²
Air Out.		38.0					3.0				1			umpt		
Cooling Water In.	\mathbb{C}	25.0					5.0		as.(kg/			as.(g/k	•		ect(g/k	
Cooling Water Out.	${\mathbb C}$	57.0	:			ļ.	7.0		699.8	0		179.30	<u> </u>		176.24	•
						<u> </u>		arger				I				
Turbo Charger		eed		ower I		 	ore Tu			er Tur		 	C, kg			Гетр
	rp			C	mmAq	-	 	ıHg	°C		nAq	In		Press.	Ĭ	C
No. 1	153	330	24.0	40.0	108	412	17	50	252	2	60	44	79	1.60	•	-
No. 2							BLA	NK	\				1			
No. 3							DLA	71.417	<u> </u>							
No. 4		200		00	400	44.5										
Avg.	153		l	.00	108	412		50	252		60	44	79	1.6	40.0	•
* Pressure VIT :	-	kg/cm	l "		* G0	vernor	Positi	on :	80.4			↑ Th	rust Pa	ad :	48.0	C
Note: The Fuel Oil Consumption is corrected to Lower Calorific Value 10200 kcal / kg & I.S.O condition								orific \	Value	10200	kcal/	kg & 1	I.S.O c	onditio	on	

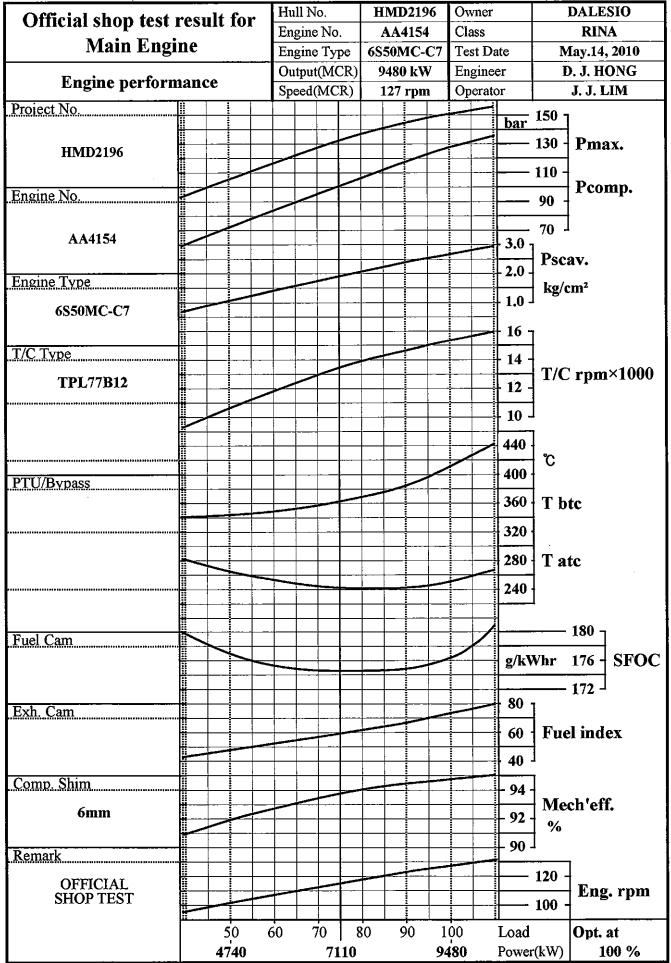


Official		1., LTD.		14 fa		Hull	No.	HI	MD21	96	Weat	her			FINE	
Official s	_			ut 10	r	Engir	ne No.		A415		Meas	uring	Time		12:50	
M	lain i	Engi	ine			Eng.	Type		OMC-		Test 1				.14 , 2	
Data sheet	of 1	10	% L	oad 1	test	Owne			ALES	(0	Engir				J. HO	
						Class			RINA		Oper		T 11		J. LII	
* Room Tempera		21.6					Pressu		1020		1		Humid		51.0	
Engine Speed			ter Bra			ke Po			ated P			n.Effic		1	OTC	H.
	rpm	108		tonf	104		kW	.109		kW	95.		%		8.90	
System		M	ain L.	O		P.C.O		Exh	.V/V A	Act.	F	uel O	i1 	Coc	ling F	.W
In Press.(kg	-					2.05						7.70			3.90	
Temp.(°C	()					44.0						42.0			70.0	
Cyl. No.		Avg.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Pmax.	bar	154.8	155	155	155	155	154	155								
Pcomp.	bar	135.2	135	135	135	135	136	135								
Pi	bar	21.32	21.32	21.33	21.37	21.38	21.37	21.14								
F.O Pump	РΘ	79.8	80.0	80.0	80.0	80.0	80.0	79.0		RI /	NK	1				
r.O Fump	VIT	-	-	-	-	-	-	•	L	DLA	71117					
Exh.Gas Out.	°C	366	367	370	370	362	362	365								
C.F.W Out.	${\mathbb C}$	78.0	78.0	78.0	78.0	78.0	78.0	78.0								
Cam L.O Out.	${\mathbb C}$	51.0			51	.0										
P.C.O Out.	Ç	57.0	57.0	57.0	57.0	57.0	57.0	57.0								
		Air C	oole	r							Scave	engin	g Ai	•		
No.		1	2	3	4	A	vg.		F	ressu	re			Tempe	rature	;
Bef. Cooler Press	mmHg	2150				215	50.0			2.90	kg/cr	n²		40.0	\mathbb{C}	
Press. Drop	mmAq	163				16	3.0	Α	ir Rec	eiver	Pressu	re		2130	mmF	[g
Air In.	C	195	E	LAN	K	19	5.0	Exh	aust M	lanifo	ld Pres	sure		2.60	kg/cr	n²
Air Out.	${\mathbb C}$	39.0				39	0.0		Spe	cific	Fuel	Oil	Cons	umpt	ion	
Cooling Water In.	${\mathbb C}$	24.0				24	1.0	Mea	as.(kg/		1	as.(g/k			ect(g/k	(Wh)
Cooling Water Out.	$^{\circ}$	54.0				54	 1.0	1	928.5	0		184.93	3		181.85	5
		II.			L	Turt	oCh	arger					-	L		
	Spe	eed	Blo	ower I	nlet	-	ore Tu			er Tur	bine	L.O.($^{\circ}\mathbb{C}$, kg	(/cm²)	F.W	Тетр
Turbo Charger	rp		- "(mmAq			ıHg	r		nAq	In		Press.		C
No. 1	159		24.0	,		440		20	265			44	81	1.60		-
No. 2																
No. 3						$\vdash \vdash \vdash$	BLA	NK	\vdash							
No. 4															 -	
Avg.	159	80	33	.00	120	440	10	20	265	,	280 44 81 1.6					
* Pressure VIT :	_	kg/cm		.00		<u> </u>	Positi		87.0		-	Ļ	rust Pa		49.0	
																<u> </u>
Note: The Fuel	Oil Co	onsum	ption i	s corre	cted to	o Low	er Cal	orific \	Value	10200	kcal/	kg & 1	I.S.O c	onditio	on	



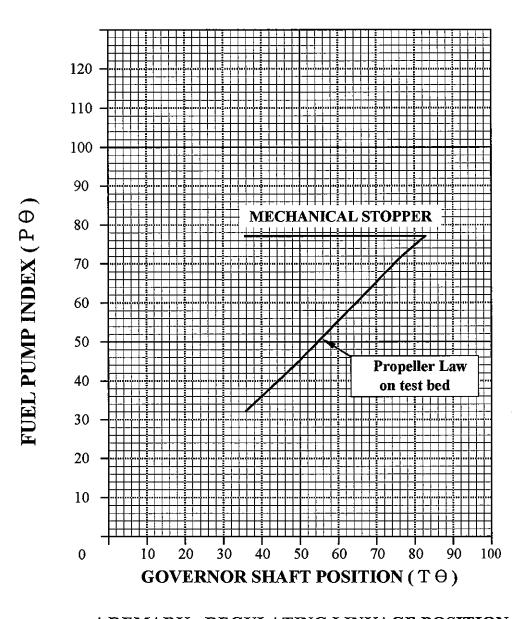
O.CC.											
Unicia	I shop tes	t result fo	r	Hull N		HMD		Owner	:		ALESIO
=+-	Main En			Engine		AA4		Class			RINA
	1 414111 1 211	gine		Engine		6S50N		Test D			y.14, 2010
Starting, (Gov', Safet	y, Min'rev'	test	Output		9480		Engine			J. HONG . J. LIM
	<u> </u>	· · · · · · · · · · · · · · · · · · ·		Speed	MCR)	127	rpm	Operat	ior	J.	, J. L/11V1
			Ç L	Startin	g Tes	t					
Time	Ahead	Time	Ast	tern	Ti	me	Ah	ead	Tia	me	Astern
1	BLANK	2	BLA	ANK	1	3	BLA	NK	1	4	BLANK
3		4			1	5			1	6	
5		6			1	7			1	8	
7		8			1	9			2	0	
9		10			2	1			2	2	
11		12			2	.3			2	4	
I .			F.W T	emp. :	m³		${\mathbb C}$	L.O Te	emp. :		· °C
			C	overn	or Te	st					
Load		Eng	gine Sp	eed (rp	m)		,	Variatio	n :	1.5	%
M.C.R			12	7.0							
M.C.R	⇒ 50		12	8.9					(Ins	tant)	
			12	7.0					(Perm	anent)	
			Saf	ety De	vice '	Test					
Emergency		Item							Set V	/alue	
Stop of		* Over Speed	 1						136.7	rpm	
Engine		* Main L.O I	Low pr	essure					1.20	kg/cm²	:
		* Cam L.O L	ow pre	ssure					_	kg/cm²	
		* T/C L.O Lo	ow pres	ssure					0.80	kg/cm²	<u> </u>
		* J.C.W Low	pressu	ıre					_	r	<u> </u>
		* Thrust Pad	High 7	Гетрега	ture				89.3	C	
		* O.M.D. Fu	nction						OK		
		<u>1</u>	linim	um Re	volut	ion Te	·et				
Engine Speed	Water Brake	Output		e Notch		ernor	T	Index		T/C	rpm
rpm	tonf	kW		ition		ition	-	ım		NO	_
31.5	15.0	347.5	<u> </u>	1.9		3.5		26			30



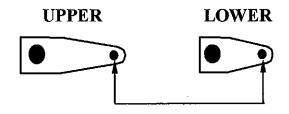




1				
Official shop test result for	Hull No.	HMD2196	Owner	DALESIO
•	Engine No.	AA4154	Class	RINA
Main Engine	Engine Type	6S50MC-C7	Test Date	May.14, 2010
DO TO Diagram	Output(MCR)	9480 kW	Engineer	D. J. HONG
PO - TO Diagram	Speed(MCR)	127 rpm	Operator	J. J. LIM



* REMARK: REGULATING LINKAGE POSITION



△HYUNDA

A HYUN	Sec, LYB.				
Offici	ial shap tost result for	Hull No.	HMD2196	Owner	DALESIO
Offici	ial shop test result for	Engine No.	AA4154	Class	RINA
	Main Engine	Engine Type	6S50MC-C7	Test Date	May.14, 2010
Load &	Torque Limit Diagram	Output(MCR)	9480 kW	Engineer	D. J. HONG
Loud G	- Torque Elimit Diagram	Speed(MCR)	127 rpm	Operator	J. J. LIM
FUEL PUMP INDEX (P \theta)	100 90 80 70 Load Limit Line 60 50 40 30	pad Limit D		Operator	
		1.50 ge Air Press			
FUEL PUMP INDEX (P \theta)	100				
FUEL PUN	40		80 90 10	Propelle on test	bed
	Engi	ne Revoluti	մա(ւհա)		



HEAVY INDUSTRIES CO.	, L U.	–				-			_	_				
Official shop test	resi	ult f	or i	Hull N				MD219	_	Owne			LESI	0_
^ .		WIV I		Engine				A4154		Class		RINA		
Main Eng	gine			Engine	е Туре	;	6S50MC-C7			Test Date		May.14, 2010		
Imanastian D	0 M 0 M	4		Output(MCR)			9480 kW			Engineer		D. J. HONG		
Inspection R	ehor	ι		Speed(MCR)			127 rpm O				ator	J.	J. LIN	A
					1									
Kind of Inspection.]	Place o	of Insp	ection			Work Condition				Judgement			
Timing Data		As	s'y Sh	op			After	Shop	Test			Re	ef.	
1. Exhaust Cam Lea	d (A	dvan	ice A	ngle])									
Cylinder NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Measured Timing(Ahead)	-3.40	-3.35	-3.35	-3.35	-3.35	-3.30	BL	ANK						
	1			* Ang	ile A :	112	2.9°		* Lift	:	10.0	mm	·	
				* Ang	le B :	254	1. 1°		* Lift	::	10.0	mm	-	
2. Fuel Pump														ļ
Cylinder NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Top Lift (mm)	12.30	12.83	12.45	12.80	13.21	12.84								
Lead Angle(Before T.D.C)	14.01	13.67	14.19	13.49	13.40	13.27	BL	ANK						
Number of Shim(EA) / Thickness of Shim(mm)	8/0.5	8/0.5	8/0.5	8/0.5	8/0.5	8/0.5								
3. Compression Shi	m													
Cylinder NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Thickness (mm)	6	6	6	6	6	6	BL	ANK						
4. Starting Air Distr	ibuto	or Lea	ad (<i>A</i>	Advar	nce A	ngle)		_ _					
Cylinder NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Open Aft T.D.C (Ahead)	E	-	•	l. No.		c _	BI	ANK						
Open Aft T.D.C (Astern)	<u> </u>	S	cratcl 	h Mar	·k									



Official Shop Test Result for Main Engine

Inspection Report

Hull No.	HMD2196	Owner	DALESIO
Engine No.	AA4154	Class	RINA
Engine type	6S50MC-C7	Nomenclature	Bearing
Output(MCR)	9480 kW	Kind of insp.	Clearance
Speed(MCR)	127 rpm	Work condition	Before shop test

Unit: 1/100 mm

1. Main Bear	ing	Clean	rance((positi	on A)		Spec.: 35 ~ 60									
BRG.No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Classes	F	41	40	38	37	37	37	38	42	Г	R T. A	NK				
Clearance	Α	40	40	38	37	37	36	37	42	Ľ					<u> </u>	

2. Crank pin	Bea	aring	Clear	ance(positio	on B)		_		Sp	ec.: 25	~ 50	
BRG.No.		1	2	3	4	5	6	7	8	9	10	11	12
Classes	F	32	32	32	32	32	32		BLA	NK			
Clearance	Α	32	32	32	32	32	32	L					

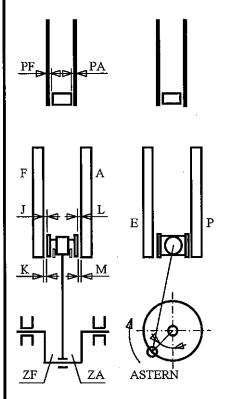
3. Crosshead	pin	Bear	ing C	1 C)	Spec.: 15 ~ 50								
BRG.No.		1	2	3	4	5	6	7	8	9	10	11	12
Classes	F	31	30	30	31	29	31	1	$\overline{\mathbf{B}}\mathbf{L}A$	NK			
Clearance	Α	31	30	30	31	30	32						

Position	D
Spec.	50~100
Clearance	73



DALESIO Hull No. **HMD2196** Owner Official Shop Test Result Class **RINA** Engine No. AA4154 for Main Engine 6S50MC-C7 Reciprocating parts **Engine Type** Nomenclature Output(MCR) 9480 kW Alignment Kind of Insp. **Inspection Report** Before shop test Speed(MCR) 127 rpm Work Condition

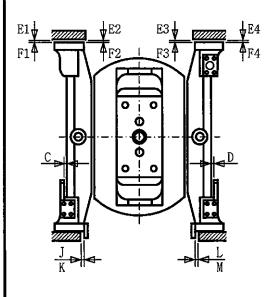
Unit: 1/100 mm



he										_	_		
Position	Cyl.No.	1	2	3	4	5	6	7	8	9	10	11	12
Piston & Liner	PF	15	16	15	15	16	16		2 T	A	N I		
Clearance	PA	15	16	15	15	16	16		עני כ	<i>A</i> .	14 1		
(Spec.: max.50)	PF+PA	30	32	30	30	32	32						
	E1	30	30	33	32	33	32						
	E2	33	30	33	32	33	30						
.	E3	30	30	30	30	30	33						
Guide shoe Clearance	E4	30	30	30	30	33	33						
(Spec.: 20~50)	F1	33	30	38	34	37	33						
(Spec.: 20 00)	F2	33	33	38	34	37	33						
•	F3	32	32	33	32	33	33						
	F4	32	32	32	30	33	33						
<u> </u>	J+C	72	69	72	64	70	75				<u> </u>		
Guide rail Clearance	L+D	78	77	72	73	67	72		L			·	
(Spec.: 50~90)	K+C	77	69	76	64	66	78						
(SP44 20 30)	M+D	78	74	67	78	72	72						
Crank throw & Conn. rod	ZF	10	8	10	10	9	9						
(Spec.: min.6)	ZA	11	11	11	11	12	12						

(Position: 45 ° after BDC.)

*ZF & ZA unit: mm



* Remark *

For further particulars, please refer to chapter No.904-5 of instruction book for operation.

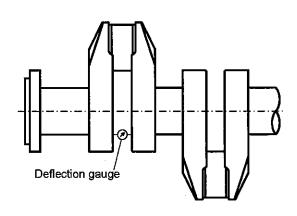


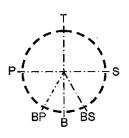
Official Shop Test Result for Main Engine

Inspection Report

Hull No.	HMD2196	Owner	DALESIO
Engine No.	AA4154	Class	RINA
Engine Type	6S50MC-C7	Nomenclature	Crankshaft
Output(MCR)	9480 kW	Kind of Insp.	Deflection
Speed(MCR)	127 rpm	Work Condition	Before & after

Unit: 1/100 mm





Looking from after

Spec.: Max. 18 (normal) / 47 (foremost & aftermost)

		- <u>-</u>		_ ` `									
Cyl Position	No.	1	2	3	4	5	6	7	8	9	10	11	12
After stay bolt tightening	BP	0	0	0	0	0	0	RI	LAN	K			
before shop trial	Р	+1	-4	-2	-6	- 6	+1						
(without water brake)	Т	+5	-4	0	-3	-7	+4						
Date: 2010.05.05	S	+1	-3	-1	-1	-1	+11						
<u>Temp.: 25 ℃</u>	BS	+1	+1	-1	+3	+2	+2						
After stay bolt tightening	$_{ m BP}$	0	0	0	0	0	0	RI	LAN	K			
after shop trial	Р	+4	-3	-4	-5	-6	-7		J PK I				
(with water brake)	Т	+8	+5	-8	-3	-4	+1						
Date:2010.05.14	S	+1	+3	-5	+2	-2	+6						
<u>Temp.: 48 ℃</u>	BS	-1	+1	-2	0	-1	+2						

* Remark *

Mark(+): Elongation of distance between Crank web(_____)_
Mark(-): Diminution of distance between Crank web(_____)_

For further particulars, please refer to chapter No.70804 of instruction book for operation.

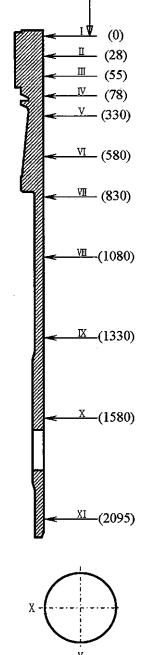


Official Shop Test Result	Hull No.	HMD2196	Owner	DALESIO
-	Engine No.	AA4154	Class	RINA
for Main Engine	Engine Type	6S50MC-C7	Nomenclature	Cyl. liner
Inquestion Denout	Output(MCR)	9480 kW	Kind of Insp.	Dimension
Inspection Report	Speed(MCR)	127 rpm	Work Condition	Before shop test

Unit: 1/100 mm

Note:

Before measuring, the measuring point "I" should be adjusted to 5mm below upper edge of uppermost ring at TDC



	Position	n.	I	П	Ш	IV	V	VI	VII	VIII	IX	X	ΧI
Cyl.No	Spec.		+0.097										
0	Item no.		ø500 ⁰										
1	S50MC	X	+4	+4	+4	+4	+4	+5	+5	+5	+5	+5	+5
	-C-5761	Y	+3	+3	+3	+3	+4	+4	+4	+4	+4	+4	+4
2		X	+7	+7	+7	+7	+7	+7	+7	+7	+7	+7	+7
	-C-5762	Y	+6	+6	+6	+7	+7	+7	+7	+7	+7	+7	+7
3	-C-5768	X	+5	+5	+5	+5	+5	+5	+5	+4	+4	+4	+4
		Y	+4	+4	+4	+4	+4	+4	+4	+4	+4	+4	+4
4		X	+2	+2	+2	+2	+1	+2	+1	+1	+1	+1	+1
	-C-5772	Y	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	0
5	-C-5774	X	+3	+3	+3	+3	+3	+2	+2	+2	+2	+2	+2
		Y	+2	+2	+2	+2	+2	+2	+1	+1	+1	+1	+1
6	-C5775	X	+4	+4	+4	+4	+4	+4	+4	+4	+4	+3	+3
Ľ		Y	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+2
s	-C-5777	X	+7	+7	+7	+8	+7	+8	+8	+8	+8	+8	+8
		Y	+6	+6	+6	+7	+7	+7	+7	+7	+7	+7	+7
		Х	BLANK										
		Y	DEANE										
		Х											
		Y									l		
		Х											
		Y											
		X											
		Y								_			
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