

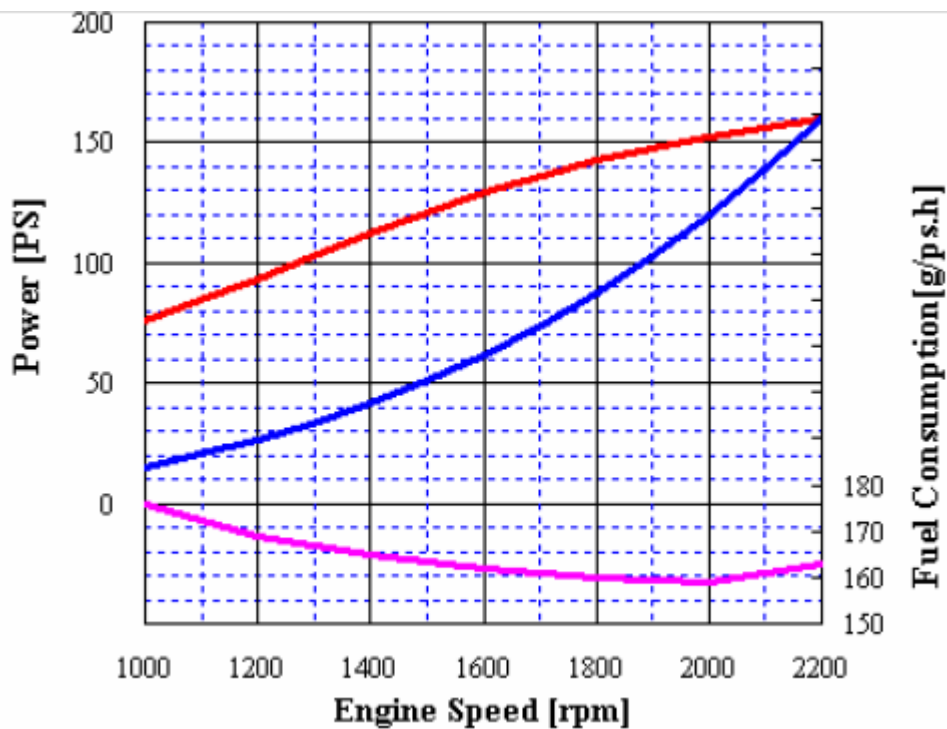
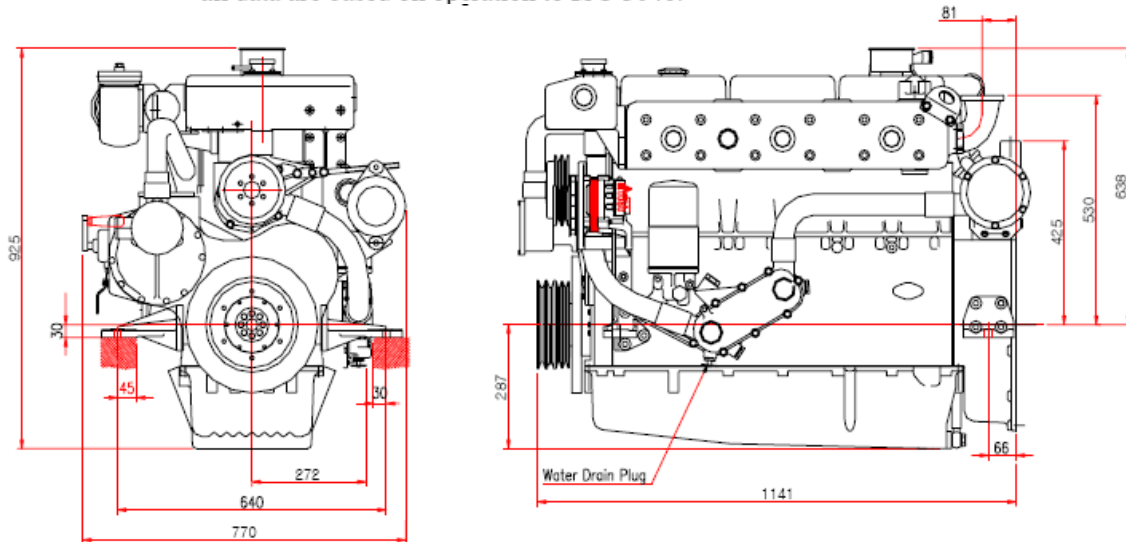
## L136 MARINE ENGINE

### POWER RATING

Production tolerance :  $\pm 3\%$

MODEL	CONDITIONS	POWER	rpm	Base Engine
L136	HEAVY DUTY	160PS (118kW)	2200	D1146

**Note : 1)** No reduction in rating for intake air temperature is up to 45 °C (318K) and sea water temperature is up to 32 °C (305K) , relative humidity is up to 60 % all data are based on operation to ISO 3046.



- **Heavy Duty** : Operation hours are unlimited per year, at average load is up to 90 %, at full load is up to 80 %  
Typical gearbox ratio: 2.5 ~ 6  
(Fishing trawler, Tug boat, Pushing vessel, Cargo boat, Freighter, Ferry)

Engine Specification		
Model	Units	L136
Engine type		4 cycle, In line, direct- injection, water cooled, aspirated naturally
Rating output (B.H.P)	PS(kW)/rpm	160(118)/2200
Displacement	cc	8,071
Cylinder number - bore( $\phi$ ) x stroke	mm	6 - $\phi$ 111 x 139
Valve clearance at cold	In / Ex	mm 0.3 / 0.3
Low idling rpm	rpm	725 $\pm$ 25
No load max. rpm	rpm	below 2,420
Mean effective pressure	kg/cm <sup>2</sup>	8.07
Mean piston speed	m/sec.	10.19
Compression ratio		17.6 : 1
Firing order		1 - 5 - 3 - 6 - 2 - 4
Compression pressure	at 200 rpm	kg/cm <sup>2</sup> 28 ( Initial Condition)
Governor type of injection pump		Mechanical all speed (R.S.V)
Fuel consumption	g/ps.h	165
	lit / h	32
Injection timing (B.T.D.C)	Deg	22° $\pm$ 1°
Fuel inj. nozzle opening pressure	kg/cm <sup>2</sup>	224
Starting system		Electric Starting by starter motor
Starter motor capacity	V- kW	24 - 4.5
Alternator capacity	V- A	24 - 50
Battery	V- Ah	24 - 100
Cooling system		Indirect sea water cooling with heat exchanger
Cooling water capacity	Max. / Min.	lit 25 / 23
Fresh water pump type		Centrifugal type, driven by V- belt
Sea water pump type		Rubber impeller type driven by gear
Lubricating Oil (Engine)	pan capacity	lit Max : 23 , Min : 17 ( Engine total : 25 )
	pressure	kg/cm <sup>2</sup> Full : 3.5 , Idle : 1.5
Marine gear	Model	DMT90AF (Dong-I)
	Gear ratio	1.61 2.06 2.45 2.82 3.12 3.46
Direction of revolution	crankshaft	Counter clockwise viewed from stern side
	propeller	Clockwise viewed from stern side
Engine size (L x W x H)	without M/G	mm 1,182 x 770 x 925
	with M. gear	mm 1,542 x 770 x 963
Engine dry weight	without M/G	kg 743
	with M. gear	kg 928

psi = kg/cm<sup>2</sup> x 14.22  
lb/ft. = N.m x 0.737  
kW = 0.2388 kcal/s

lb= kg x 2.205  
lb/PS.h = g/kW.h x 0.00162  
cfm = m<sup>3</sup>/min x 35.3

hp = PS x 0.98635  
U.S gal. = liter x 0.264