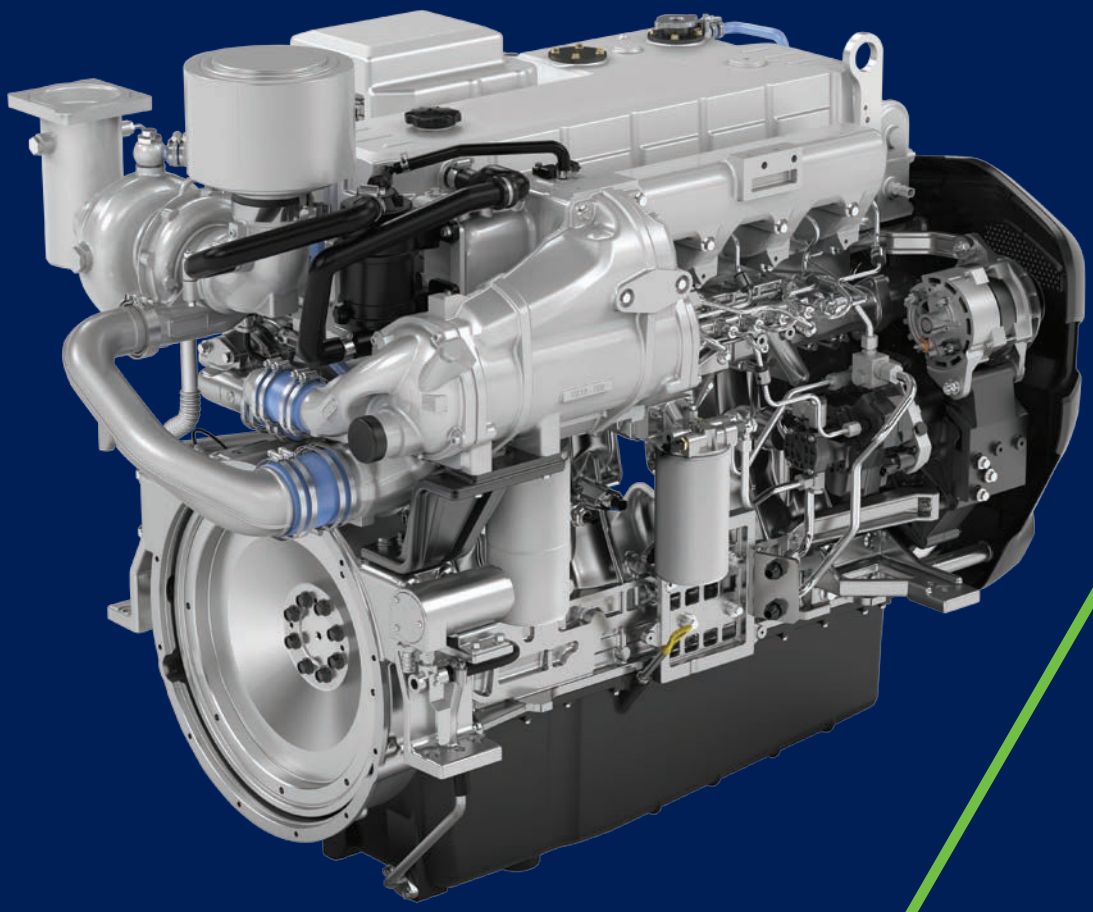
HD HYUNDAI INFRACORE

HYUNDAI Electronic Engines for Marine



Powered by **Innovation**

Key Features

• High performance solution

- Advanced Fuel Injection System with common Rail
- Compliance with emission regulation (Satisfy IMO Tier2/3, EPA Tier3)
- SCR (Selective Catalytic Reduction) technology is used for Tier 3
- Increased durability of key components
- Decrease smoke level about amount of 78% than our mechanical engine

• Economical solution

- Maintaining engine power node of mechanical engine and decreasing fuel consumption to average 5% by downsizing
- Increased oil &filter replacement cycle (250hr → 500hr)

• Convenience / Maintainability / Stability

- Application of Auto Tensioner
- Application of Turning Device
- Application of Safety Guards
- Application of Electrical oil drain pump
- Application of CCV type for improving engine room cleanliness

• Provide extended warranty program

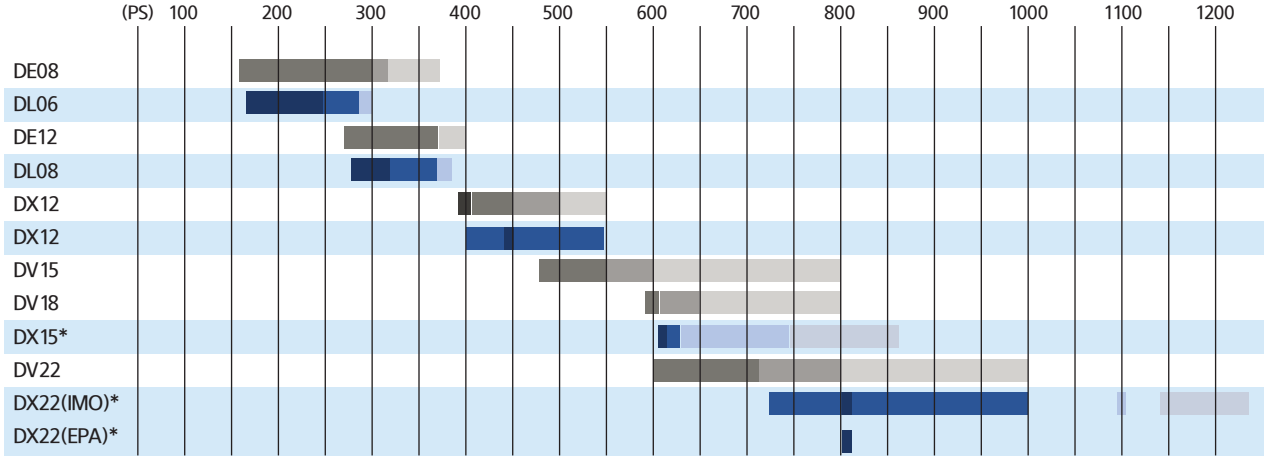
- Maximum 3 years warranty provided through extended warranty option

• TMS (Telematics Service)

- Prevention of work loss through preventive inspection and rapid fault diagnosis by providing telematics as standard
- Consumable replacement management and equipment use efficiency increase through real-time engine information check and management

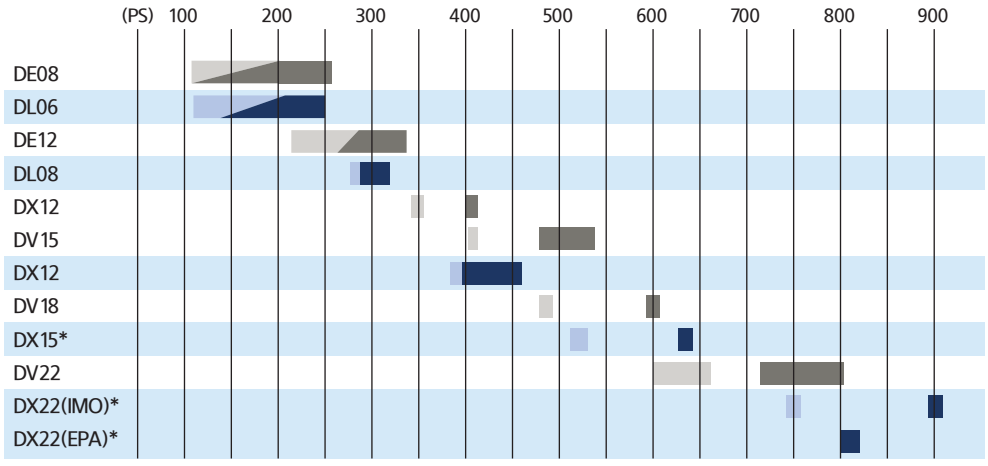
Power range for marine propulsion engines

CD HD MD LD Mechanical engines** (IMO Tier 1/2)
CD HD MD LD Electronic engines (IMO Tier2/3, EPA Tier3)



Power range for marine auxiliary engines

50HZ 60HZ Mechanical engines** (IMO Tier 1/2)
50HZ 60HZ Electronic engines (IMO Tier 2/3, EPA Tier3)



*) DX15 : Will be launched at '24.Aug
DX22 : Will be launched at IMO T2/T3 '23.Nov, EPA T3 '24.Apr
: Electronic Engines

**) Mechanical engines will be discontinued sequentially from '24.JAN

Marine Propulsion Engines

Engines	Model	No. of Cyl	Aspiration	Displacement (Liter)	Bore x Stroke (mm)	Output (ISO 3046)				Emission
						Continuous Duty kW(PS)/ rpm	Heavy Duty kW(PS)/rpm	Medium Duty kW(PS)/rpm	Light Duty kW(PS)/rpm	
DL06	4L066C	6	TI	5.9	100 x 125	184(250)/1,800 162(220)/1,800 129(176)/1,800	210(285)/2,100 184(250)/2,100 169(230)/2,100 129(176)/2,100 96(130)/2,100	221(300)/2,300 199(270)/2,300 177(240)/2,300	-	IMO Tier 2/3
DL08	4L086C	6	TI	7.6	108 x 139	235(320)/1,800 206(280)/1,800	265(360)/2,000 235(320)/2,000	279(380)/2,100 243(330)/2,100	-	EPA Tier3
DX12	4L126C	6	TI	11.1	123 x 155	331(450)/1,800	405(550)/2,100 368(500)/2,000 294(400)/2,000	-	-	EU Stage5**
DX15*	4V158C	8	TI	14.6	128 x 142	449(610)/1800	463(630)/1800 405(550)/1800	550(750)/2100 478(650)/2100	640(870)/2300	IMO Tier2/3
							463(630)/1800	550(750)/2100	588(800)/2300	EPA Tier3
DX22*	4V222C	12	TI	21.9	128 x 142	596(810)/1800	736(1000)/1800 588(800)/1800 530(720)/1800	809(1100)/2100	908(1235)/2300 846(1150)/2300	IMO Tier2/3
							-	-	-	EPA Tier3

Marine Auxiliary Engines

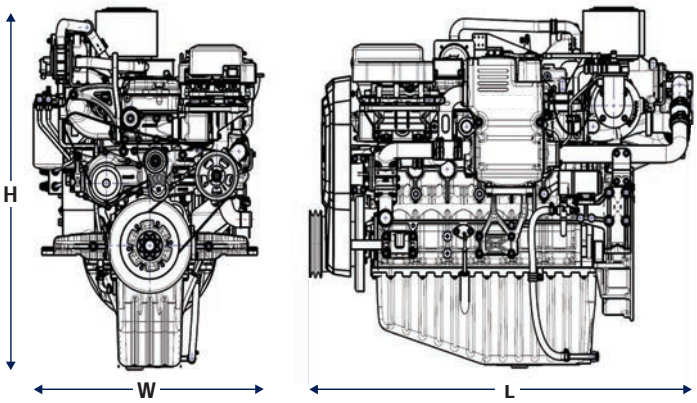
Engines	Model	No. of Cyl	Aspiration	Displacement (Liter)	Bore x Stroke (mm)	Output (ISO 3046)		Emission
						kW(PS)@1800rpm	kW(PS)@1500rpm	
DL06	4AD066C	6	TI	5.9	100 x 125	184(250) 140(190) 120(163) 100(136)	154(209) 129(175) 100(136) 80(109)	IMO Tier 2/3
DL08	4AD086C	6	TI	7.6	108 x 139	235(320) 200(272)	199(271)	EPA Tier3
DX12	4AD126C	6	TI	11.1	123 x 155	335(455) 280(381)	287(390)	EU Stage5**
DX15*	4AD158C	8	TI	14.6	128 x 142	463(630)	386(525)	IMO Tier2/3
							-	EPA Tier3
DX22*	4AD222C	12	TI	21.9	128 x 142	664(903)	553(752)	IMO Tier2/3
						596(810)	-	EPA Tier3

***) DX15 : Will be launched at '24.Aug**
DX22 : Will be launched at IMO T2/T3 '23.Nov, EPA T3 '24.Apr
****) EU Stage5 will be launched at '24.Mar**

※ Specifications are subject to change without prior notice

DL06

■ Dimensions



Dimension(mm)			Dry Weight (kg)
L	W	H	
1,408	837	1,155	753

■ General Information

Engine Type	**Common rail, 4 cycle, In-line, Water cooled with turbo charger & Inter-cooler**
Cyl No. & Bore x Storke	**6 & 100 x 125**
Displacement (Liter)	**5.9L**

■ Commercial Ratings

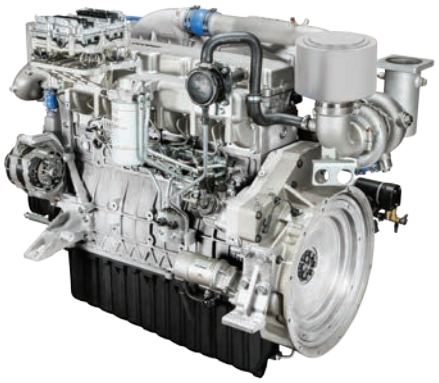
Base Engine	Rating	Model	Max. Power			Max. Torque	
			kW	PS	rpm	Nm	rpm
4L066C (Propulsion)	Continuous Duty	4L066CA(C)	184	250	1800	1033	1700
		4L066CB(C)	162	220	1800	954	1600
		4L066CC(C)	129	176	1800	824	1500
	Heavy Duty	4L066CA(H)	210	285	2100	987	1900
		4L066CB(H)	184	250	2100	976	1800
		4L066CC(H)	169	230	2100	954	1600
		4L066CD(H)	129	176	2100	824	1500
		4L066CE(H)	96	130	2100	652	1400
	Medium Duty	4L066CA(M)	221	300	2300	987	1900
		4L066CB(M)	199	270	2300	987	1900
		4L066CC(M)	177	240	2300	968	1700
4AD066C (Auxiliary)	50Hz	4AD066CA(F)	154	209	1500		
		4AD066CB(F)	129	175	1500		
		4AD066CC(F)	100	136	1500		
		4AD066CD(F)	180	109	1500		
	60Hz	4AD066CA(S)	184	250	1800		
		4AD066CB(S)	140	190	1800		
		4AD066CC(S)	120	163	1800		
		4AD066CD(S)	100	136	1800		

■ Specification

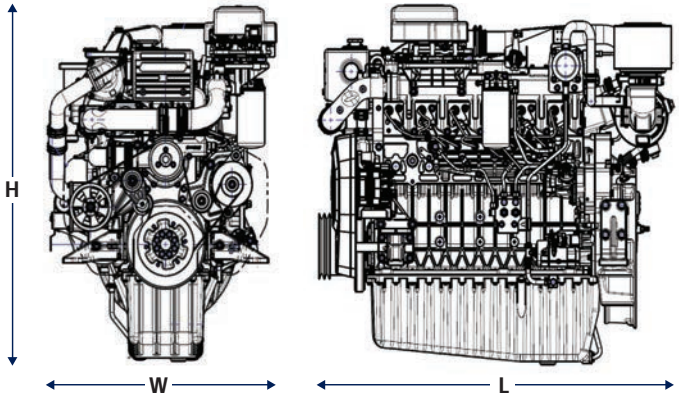
Item	Unit	Specification
Flywheel housing & Fly wheel		FWH : SAE#2 / FW : 11.5"
Compression ratio		17:1
Firing order		1-5-3-6-2-4
Governor type of injection pump		Controlled by ECU
Starting System	V - kW	Electric Starting by starter motor
Starter motor capacity	V - A	24 - 6.0
Alternator capacity	V - Ah	24 - 80
Battery		24 - 200

Item		Unit	Specification
Cooling System			Indirect sea water cooling with heat exchanger / Keel Cooling
Cooling Water Capacity		Lit.	26
Fresh Water Pump Type			Centrifual (Pulley type)
Sea Water Pump Type			Rubber Impeller
Lubricating oil (Engine)	Oil pan Capacity	Lit.	Max : 32, Min : 14 (Engine Total 34)
	Pressure	kg/cm^2	Full load : 3.0, Idle : 1.0
Direction of Revolution			Counterclockwise viewed from stern side

DL08



■ Dimensions



Dimension(mm)			Dry Weight (kg)
L	W	H	
1,394	882	1,220	920

■ General Information

Engine Type	**Common rail, 4 cycle, In-line, Water cooled with turbo charger & Inter-cooler**
Cyl No. & Bore x Storke	**6 & 108 x 139**
Displacement (Liter)	**7.6L**

■ Commercial Ratings

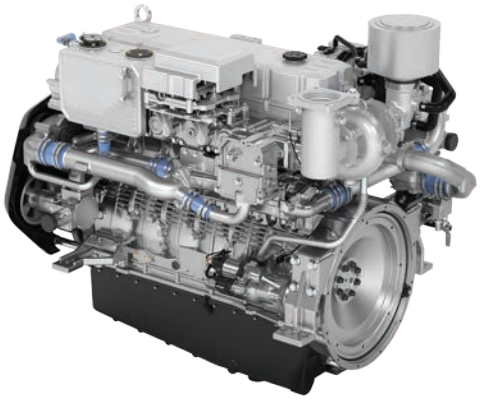
Base Engine	Rating	Model	Max. Power			Max. Torque	
			kW	PS	rpm	Nm	rpm
4L086C (Propulsion)	Continuous Duty	4L086CA(C)	235	320	1800	1374.6	1400
		4L086CB(C)	206	280	1800	1374.6	1400
	Heavy Duty	4L086CA(H)	265	360	2000	1374.6	1400
		4L086CB(H)	235	320	2000	1374.6	1400
	Medium Duty	4L086CA(M)	279	380	2100	1374.6	1400
		4L086CB(M)	243	330	2100	1374.6	1400
4AD086C (Auxiliary)	50Hz	4AD086CA(F)	199	271	1500		
	60Hz	4AD086CA(S)	235	320	1800		
		4AD086CB(S)	200	272	1800		

■ Specification

Item	Unit	Specification
Flywheel housing & Fly wheel		FWH : SAE#1 / FW : 14"
Compression ratio		16:1
Firing order		1-5-3-6-2-4
Governor type of injection pump		Controlled by ECU
Starting System	V - kW	Electric Starting by starter motor
Starter motor capacity	V - A	24 - 6.0
Alternator capacity	V - Ah	24 - 80
Battery		24 - 200

Item		Unit	Specification
Cooling System			Indirect sea water cooling with heat exchanger / Keel Cooling
Cooling Water Capacity		Lit.	28
Fresh Water Pump Type			Centrifual (Pulley type)
Sea Water Pump Type			Rubber Impeller
Lubricating oil (Engine)	Oil pan Capacity	Lit.	Max : 47, Min : 23 (Engine Total 50)
	Pressure	kg/cm^2	Full load : 3.0, Idle : 1.0
Direction of Revolution			Counterclockwise viewed from stern side

DX12



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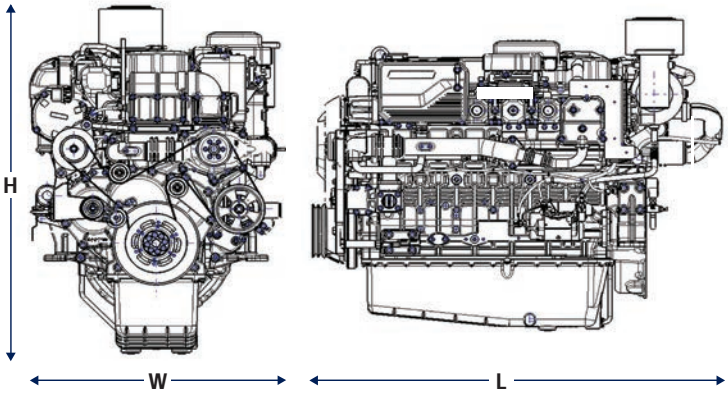


Dimension(mm)			Dry Weight (kg)
L	W	H	
1,607	912	1,287	1,182

■ General Information

Engine Type	**Common rail, 4 cycle, In-line, Water cooled with turbo charger & Inter-cooler**
Cyl No. & Bore x Storke	**6 & 123 x 155**
Displacement (Liter)	**11.1L**

■ Commercial Ratings

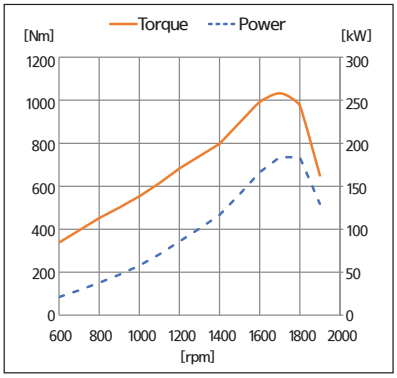
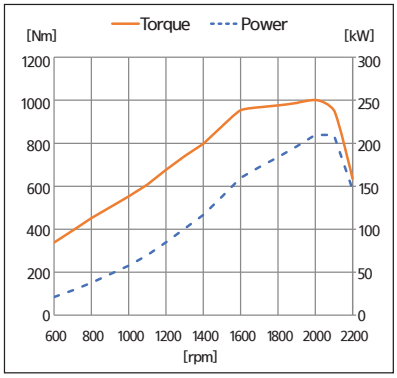
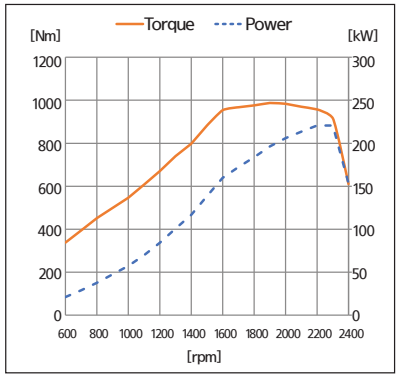
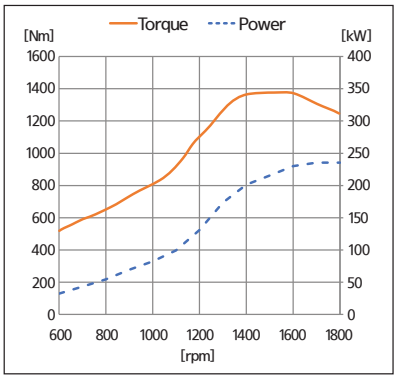
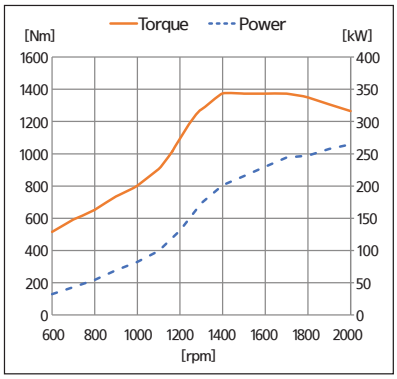
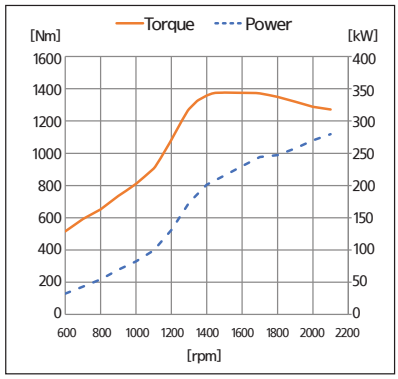
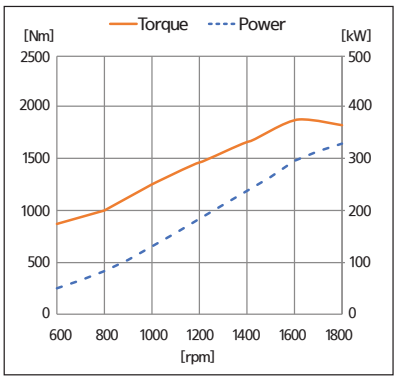
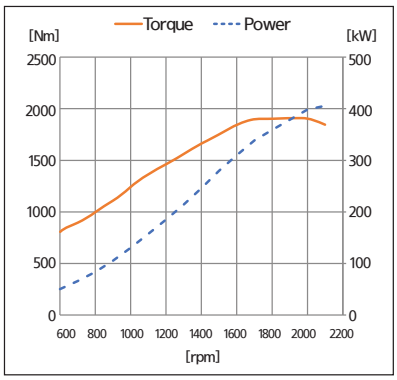
Base Engine	Rating	Model	Max. Power			Max. Torque	
			kW	PS	rpm	Nm	rpm
4L126C (Propulsion)	Continuous duty	4L126CA(C)	331	450	1800	1775	1600
	Heavy duty	4L126CA-II(H)	405	550	2100	1900	1700
		4L126CA(H)	368	500	2000	1775	1600
		4L126CB(H)	294	400	2000	1450	1300
4AD126C (Auxiliary)	50Hz	4AD126CA(F)	287	390	1500		
	60Hz	4AD126CA(S)	335	455	1800		
		4AD126CB(S)	280	381	1800		

■ Specification

Item	Unit	Specification
Flywheel housing & Fly wheel		FWH : SAE#1 / FW : 14"
Compression ratio		15.5 : 1
Firing order		1-5-3-6-2-4
Governor type of injection pump		Controlled by ECU
Starting System	V - kW	Electric Starting by starter motor
Starter motor capacity	V - A	24 - 7.0
Alternator capacity	V - Ah	24 - 80
Battery		24 - 200

Item		Unit	Specification
Cooling System			Indirect sea water cooling with heat exchanger / Keel Cooling
Cooling Water Capacity		Lit.	Max 42 / Min 39
Fresh Water Pump Type			Centrifugal (Pulley Type)
Sea Water Pump Type			Rubber Impeller
Lubricating oil (Engine)	Oil pan Capacity	Lit.	Max : 44, Min : 20 (Engine Total 47)
	Pressure	kg/cm^2	Full load : 3.0, Idle : 1.0
Direction of Revolution			Counterclockwise viewed from stern side

■Power Performance Curve

	Continuous duty	Heavy duty	Medium duty
DL06			
DL08			
DX12			

■Rating Guide

- Marine rating to ISO 3046

Continuous Duty

- Operation hours : unlimited per year, unlimited per day
- Average load application : up to 100%
- Percentages of time at full load : up to 100%
- Typical gearbox ratio : 2.5~6 * Application : Fishing trawler, Tug boat, Pushing vessel, Cargo boat, Freighter

Heavy Duty

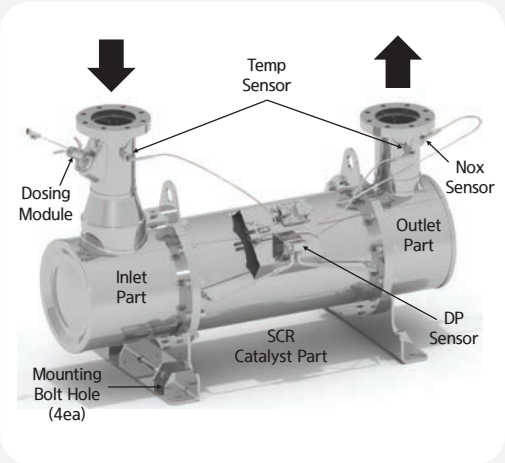
- Operation hours : unlimited per year, unlimited per day
- Average load application : up to 90%
- Percentages of time at full load : up to 80%
- Typical gearbox ratio : 2.5~6 * Application : Fishing trawler, Tug boat, Pushing vessel, Cargo boat, Freighter

Medium Duty

- Operation hours : up to 3,000hrs per year, up to 10hrs per day
- Average load application : up to 70%
- Percentages of time at full load : up to 30%
- Typical gearbox ratio : 2~3.5 * Pilot boat, Escort boat, Passenger boat, Freighter, Ferry, Cruising vessel

■Eco Friendly Solution

HYUNDAI advanced combustion and after treatment control technologies are best-in-class, which greatly reduce NOx at low fuel consumption level, satisfying both IMO Tier2 and IMO Tier3 emission regulations.



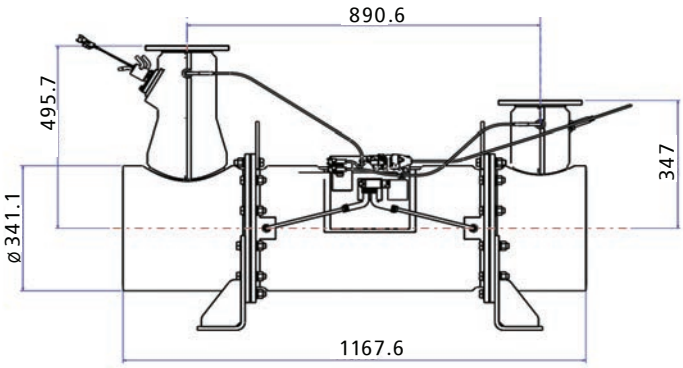
Parts supply scope

Part Name	HYUNDAI	Vessel
Supply Module	O	
Dosing Module	O	
SCR Muffler (DX12) SCR Muffler (DL06/08)	O	
DEF Tank	O	
Exhaust Gas Temparture Sensor	O	
Differential Pressure Sensor	O	
Nox Sensor	O	
Urea Hose (Pressure Line)	O	
Urea Hose (Suction Line)	O	
Urea Hose (Backflow Line)	O	
Hose (for Urea Tank heating)		O
Hose (for Dosing module cooling)		O
Coolant Control Valve (for Tank heating)	O	

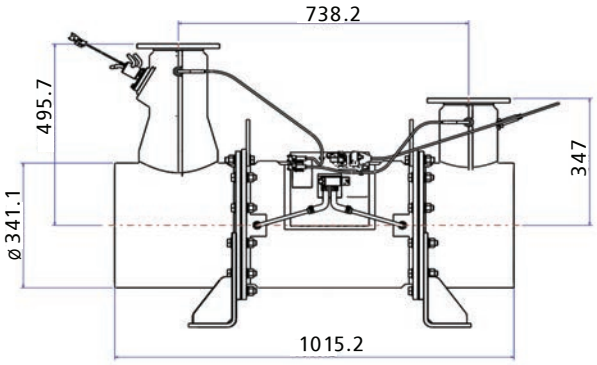
SCR(Selective Catalytic Reduction) system is used for IMO Tier3 engines.

■SCR Muffler

[DX12]



[DL06/DL08]



■Urea Tank