

**ELECTRO MOTIVE**



*reliability... durability... availability...*

## 710 Series

Type	Two-cycle—45 Vee
Crankcase and oil pan construction	Welded steel
Cylinder air inlet	Ports in cylinder liner
Exhaust	Four valves in cylinder head
Piston cooling	Oil-direct pressure stream
Main bearing lubrication	Full pressure
Lube oil pumps	Main oil, piston cooling, scavenging engine driven, positive displacement, helical gear type
Engine overspeed trip	Centrifugal*
Governor	Woodward Hydraulic or EMDEC Electronic*
Fuel supply pump	Positive displacement, engine driven
Fuel injectors	Electronic Unit injectors—needle valve*
Engine starting	Air motor*
Engine cooling water pumps	Engine driven—centrifugal
Number of Turbochargers	1
Type	Centrifugal Flow
Driven by	Exhaust Gas and/or Engine Gears through an Over-Running Clutch
Main Journal diameter	8.5 inches (215.9 mm)
Piston pin diameter	6.5 inches (165.1 mm)
Rotation facing the flywheel	Counterclockwise*



\* Options Available

### CLEARING THE AIR

- Meet EPA Standards
- Low Risk
- Proven EMD Reliability

*Since EMD is the only two-cycle medium speed diesel manufacturer in the world, we are the experts. The fact is the EMD 710 family of engines has been EPA Tier 2 certified since January 2005. EMD received our EPA Marine Tier 2 certifications in May 2006. So how did we do it? Common rail fuel injection, adding another turbocharger, new electronic controls? No, none of these were required.*

*The EMD 710 engine series achieved Tier 2 EPA certification with only minor setting changes and subtle internal component changes to already proven components. We were able to accomplish Tier 2, to insure industry leading reliability and durability, without significant design changes.*

# P O W E R P R O D U C T S

## TAKING ON THE LOAD

- *Responsiveness Means Predictability and Safety*
- *Reduced Spinning HP Means Reduced Fuel Usage and Wear*

*Today's marine, drilling and stationary power designs are becoming increasingly sophisticated. A typical diesel electric anchor handling tug supply boat will need to operate in a variety of environments. With dynamic positioning equipment, multiple drive motors, fire fighting equipment, and uncertain seas, the load demands can and do shift dramatically. The need for instant engine response from any load position is a hallmark of the EMD engine.*

*The EMD engine utilizes a single turbocharger, which includes an externally mounted clutch. In the lower load ranges the turbocharger is driven by the gear train like a supercharger. Once engine load reaches about 65%, the clutch disengages allowing exhaust gas to drive the turbine. So what does this mean to the operator? A 90% step load, full load in less than 30 seconds, and a reduction in spinning HP required "just in case."*

*And what about overload capability? At EMD we design overload capability that you can use when you need it, and not just to pass sea trials. All EMD engines are advertised at full continuous horsepower and are fully capable of 10% overload for 2 out of every 24 hours.*

Engine	900 RPM		800 RPM		720 / 750 RPM	
	BHP	kW	BHP	kW	BHP	kW
<b>710 Series (GB, GC or GC-T2)</b>						
8-710G	2000	1491	1760	1312	1675	1249
12-710G	3000	2237	2650	1976	2495	1861
16-710G	4000	2983	3525	2629	3325	2479
20-710G	5000	3729	4400	3281	4155	3098

## DURABILITY AND LIFE CYCLE

- *Clear and Honest Measurements*
- *Lowest Life Cycle Costs*
- *Proven EMD Design for Reliability & Durability*

*EMD has been developing and refining the two cycle engine for 60 years. During that time we have spent countless hours developing components that last and last. In addition to component development, the medium speed diesel is inherently more durable as a result of slower piston speeds and reduced firing pressures.*

*EMD has continued to stretch the overhaul period and has achieved and published a recommendation of 30,000 hours of operation for an average duty cycle.*

*All Category 2 engine manufacturers will need to certify to EPA Marine Tier 2 regulations by January 1, 2007. EMD has Marine Tier 2 certifications for E3, E2, and C1 duty cycles. Our challenge is simple, just pick one of these US EPA duty cycles and ask our competitors for their time to overhaul at that cycle. EMD will provide life cycle costs against the duty cycle, and will provide results in dollars, fuel burn, time, total KW, total HP or any other measurement you choose.*



## **LEARNING FROM A PROVEN LOCOMOTIVE ENGINE**

*Our competitors like to talk about the fact that EMD engines start as a locomotive engine and that we adapt them to marine, drilling and power applications. Maybe, but EMD engines are developed to withstand 3G shock loads, perform while requiring a detailed inspection only once every 184 days, operate in environments with severe thermal swings and operating conditions, and operate at near full HP while starving for air at 10,000 feet elevation. Chances are you won't run into many of these conditions in your applications, but isn't it comforting to know they could?*

*The locomotive market brings an added benefit to you. EMD has delivered over 50,000 engines worldwide and over 7,000 of our current 710 series engines. We have delivered over 11,000 engines into the marine, drilling and power generation equipment markets in over 40 countries. EMD has a worldwide distributor network to provide both parts and services for your engines anywhere.*

*You might also like to know that if you did have a problem with your EMD engine, we have a few basic design features to get you up and running quickly, such as a cylinder assembly that can be changed in four hours with hand tools, a turbocharger that can be replaced in twelve hours, and a fabricated steel crankcase that can be repaired in place. Think about the last time your equipment was down, for how long and at what cost.*

**ELECTRO-MOTIVE**

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