



VM Motori

Technical Review

MY 2007
Marine Engines

Cento - I

December 6th , 2005



Product Profile Timing Plan



New Marine Engine Product Line

Summary

Marine Engine Product Line:

MR704 Family (2.8L)

- Engine Data & Performance
- Features & Layout
- Project Schedule

MR706 Family (4.2L)

- Engine Data & Performance
- Features & Layout
- Project Schedule



MR704
2.8L – 4 Cylinders



MR704 2.8L – 4 Cyl

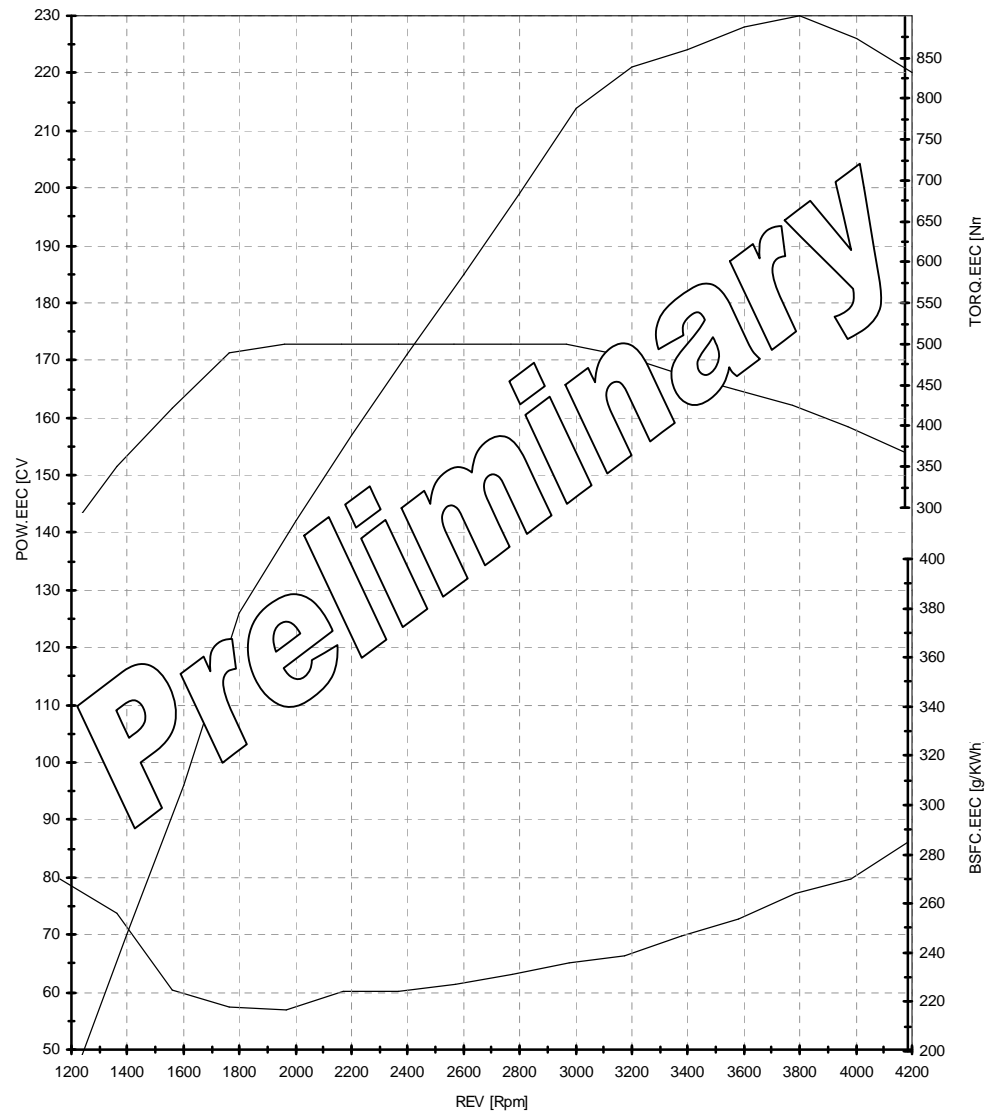
Engine Data & Performance (1/2)

Type:	MR704 - 4 Cylinders - 8Valves Turbocharged/Sea Water Aftercooled Common Rail
Bore x Stroke:	94.0 x 100.0 mm
Displacement:	694 cc/cylinder – 2.776 liters total
Compression Ratio:	17.5:1
Power:	169 kW - 230 CV @ 3,900 RPM
Peak Torque:	470 Nm @ 2,200 RPM
Application:	Pleasure Craft



MR704 2.8L – 4 Cyl

Engine Data & Performance (2/2)





MR704 2.8L – 4 Cyl

Engine Features

- **4 Cylinders, 2 Valves per Cylinder:**
 - Camshaft in Block
- **Common Rail Technology:**
 - Bosch Injection Pump (CP3.2)
 - Injection Pressure: 1600 bar
- **Gear Timing System**
- **Poly V-Belt for Accessories Drive:**
 - Alternator, Sea Water Pump, Steering Pump
- **Marine Solution:**
 - Configuration based on MD704LH experience
 - Compactness
- **Emission Legislation:**
 - EPA-ECE 2007, to be implemented for future emission limits
 - RCD (Recreational Craft Directive)



MR704 2.8L – 4 Cyl

Engine Dimension & Weight

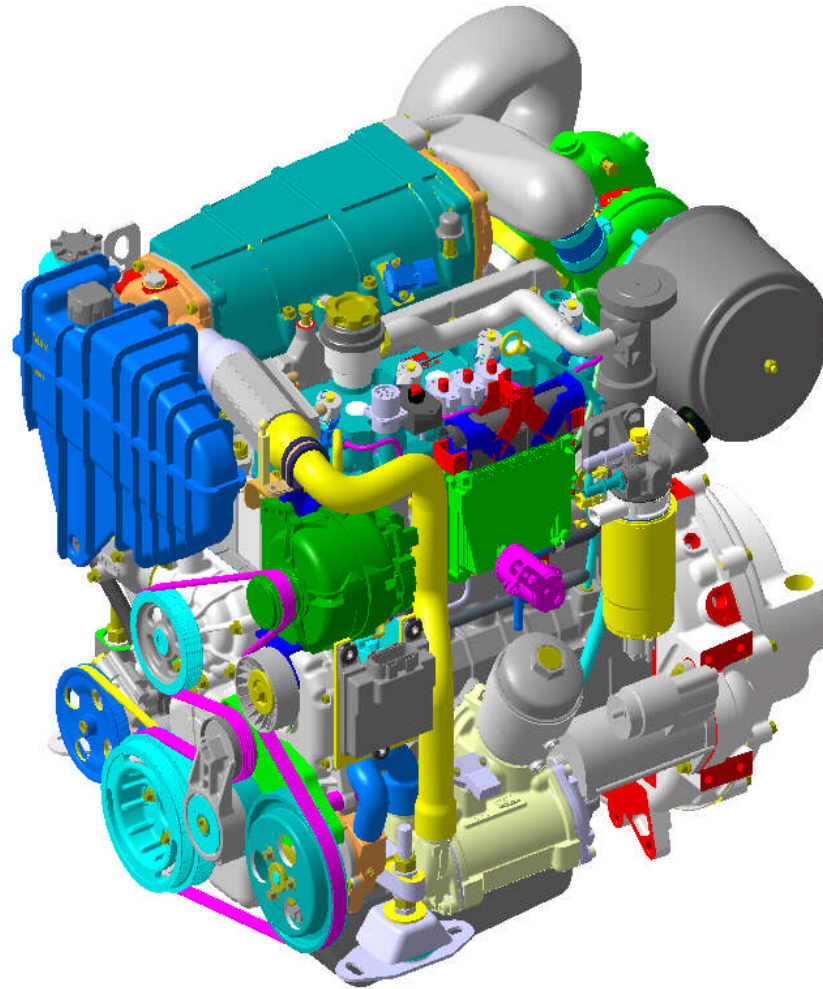
MR704:

- Length: 708 mm
- Height: 790 mm
- Width: 760 mm
- Weight: 360 kg (dry)
- Alternator: 110A
- Counterweight shafts: yes



MR704 2.8L – 4 Cyl

Concept Layout





MR704 2.8L – 4 Cyl

Project Schedule:

Project Milestones:

- Concept Study: Completed
- Project Kick-off February '05
- Pre-Series (F4 Phase) June '06
 - VM Field Test
- **Start of Production:** October '06



MR706
4.2L – 6 Cylinders



MR706 – 4.2L – 6 Cyl

Engine Data & Performance (1/2)

Type: MR706LH - 6 Cylinders
Turbocharged/Sea Water Aftercooled
Common Rail – 12V

Bore x Stroke: 94.0 x 100.0 mm

Displacement: 694 cc/cylinder – 4.164 liters total

Compression Ratio: 17:1

Power: MR706: 257 kW - 350 CV @ 3,900 RPM

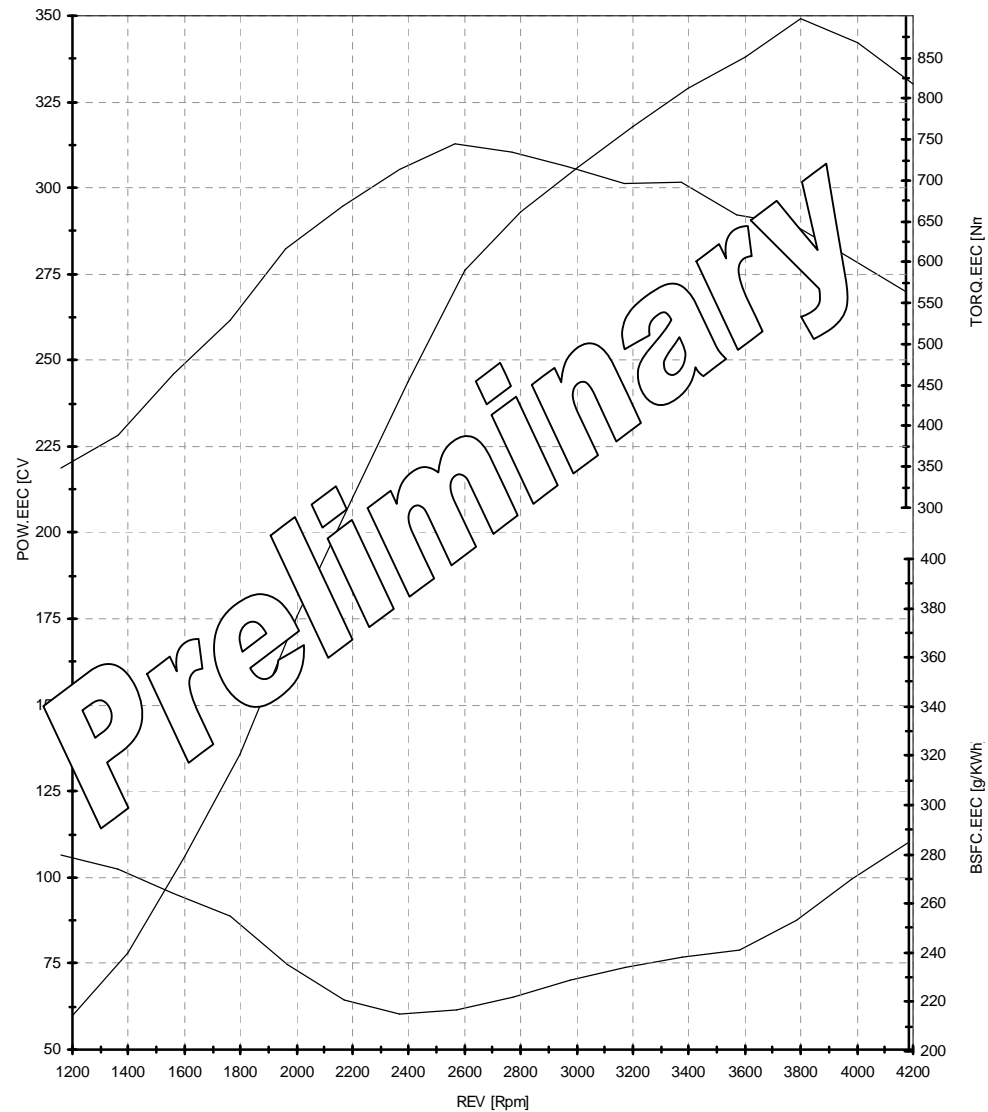
Peak Torque: MR706: 700 Nm @ 2,500 RPM

Application: Pleasure Craft



MR706 – 4.2L – 6 Cyl

Engine Data & Performance (2/2)





MR706 – 4.2L – 6 Cyl

Engine Features

- **6 Cylinders, 2 Valves per Cylinder**
- **Common Rail Technology:**
 - Bosch Injection Pump (CP3.2)
 - Injection Pressure: 1600 bar
- **Gear Timing System**
- **Poly V-Belt for Accessories Drive:**
 - Alternator, Sea Water Pump, Steering Pump
- **Marine Solution:**
 - Configuration based on MD704LH experience
 - Compactness
- **Emission Legislation:**
 - EPA-ECE 2007, to be implemented for future emission limits
 - RCD (Recreational Craft Directive)



MR706 – 4.2L – 6 Cyl

Engine Dimension & Weight

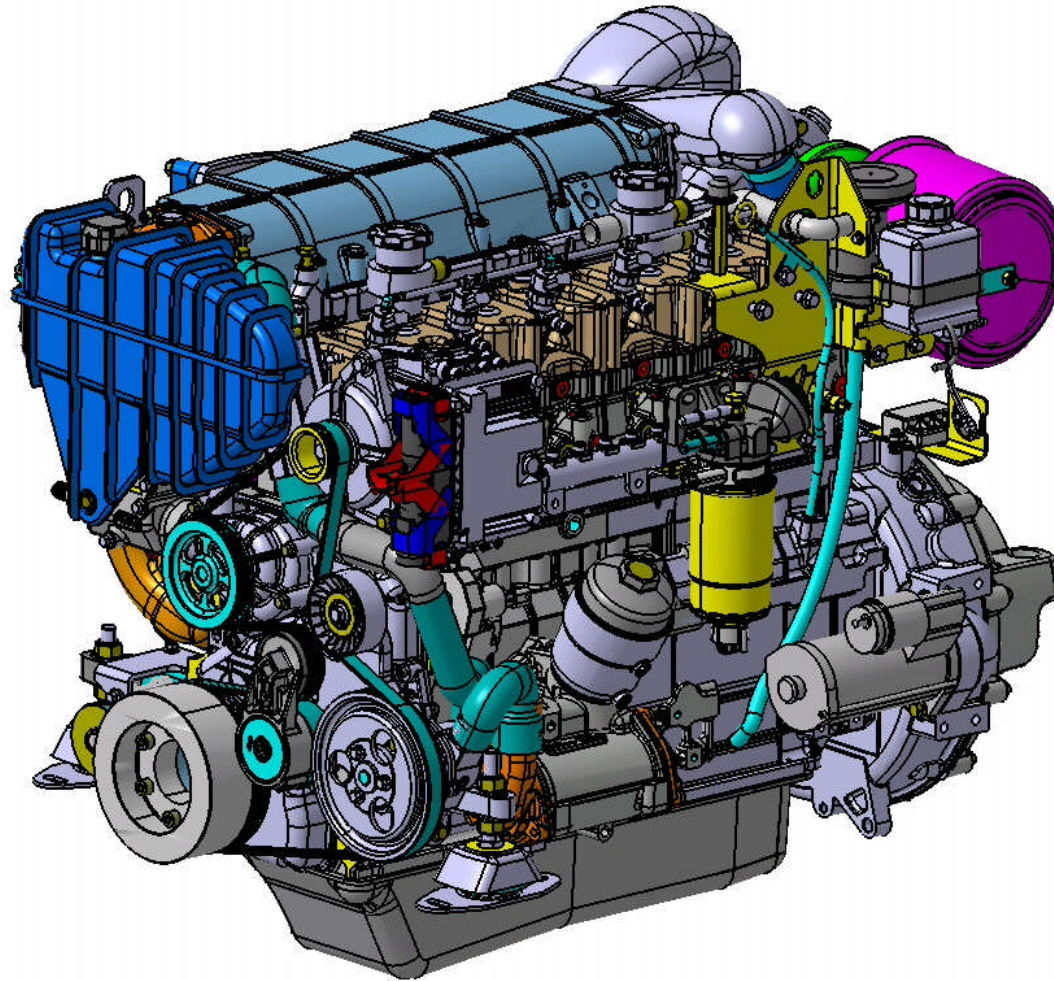
MR706:

- Length: 950 mm
- Height: 784 mm
- Width: 778 mm
- Weight: 460 kg (dry)
- Alternator: 110A



MR706 – 4.2L – 6 Cyl

Concept Layout





MR706 – 4.2L – 6 Cyl

Project Schedule:

Project Milestones:

- Concept Study: Completed
- Project Kick-off: November '04
- Pre-Series (F4 Phase): May '06
 - VM Field Test
- **Start of Production:** October '06