

www.fnm-marine.it

FNM Marine Diesel Engine

Marine diesel engines and innovative solutions
for the marine ecosystem safeguard.



FNM MARINE designs, develops, produces and distributes worldwide cutting edge in-outboard diesel marine diesel engines.
Reliability and high performances are our most important engines features.



Founded by **Negri's family**, **FNM Marine** is a brand of CMD's Group (Costruzioni Motori Diesel) SPA, involved in design, prototyping and production of marine engines and innovative solution for automotive, marine and aeronautical fields.

Our goal is to **find solutions for customers who share what we believe in**, and work with them to realize our aspirations. Customers and partners choose us because we provide tailor-made and cutting-edge solutions.





An aerial photograph of a vibrant turquoise lake, likely a fjord or a large lake, surrounded by a dense, lush green forest of evergreen trees. The water is exceptionally clear, showing a deep blue-green hue. In the upper part of the image, a small rocky outcrop protrudes into the water. The overall scene is serene and natural, emphasizing environmental beauty and sustainability.

Our main purpose is to give a precious contribute for guaranteeing a comfortable, fast and safety navigation, safeguarding at same time the environment, thanks to continuous technological evolution.

We can do it not only through marine diesel engines production, that ensure to each boat the right balance between power and reliability, but even through efficient solutions for a “zero emissions” navigation.

For this reason, over the years, FNM Marine has become a worldwide reference for all marine field.

Team Each people working in FNM Marine team contributes for a **strong customer-oriented service**, which has the **qualified assistance** as main strength.

In our **R&D team** each engineer contributes with his high marine industry experience and skills to increase the FNM **know-how** (more than thirty years). In this way, the best practices are enriched every day, as well as the personal life's stories, which are increasingly connected with that of the company.

FNM in-outboard diesel marine engines are appreciated by our fellow and experts in the field for their always advanced and functional technologies.



Why choose FNM Marine diesel engines

+30

years of experience
in marine field



Renowned
for their endurance
and reliability



Perfect mix between
technology, design
and performances



Easy maintenance
and reduced
management costs



High performances,
efficiency and endurance
standards



Worldwide sales
network and assistance



Energy saving
and eco-sustainability



Zero emission
and noiseless
navigation choice



You can find our brand in each part of the world.



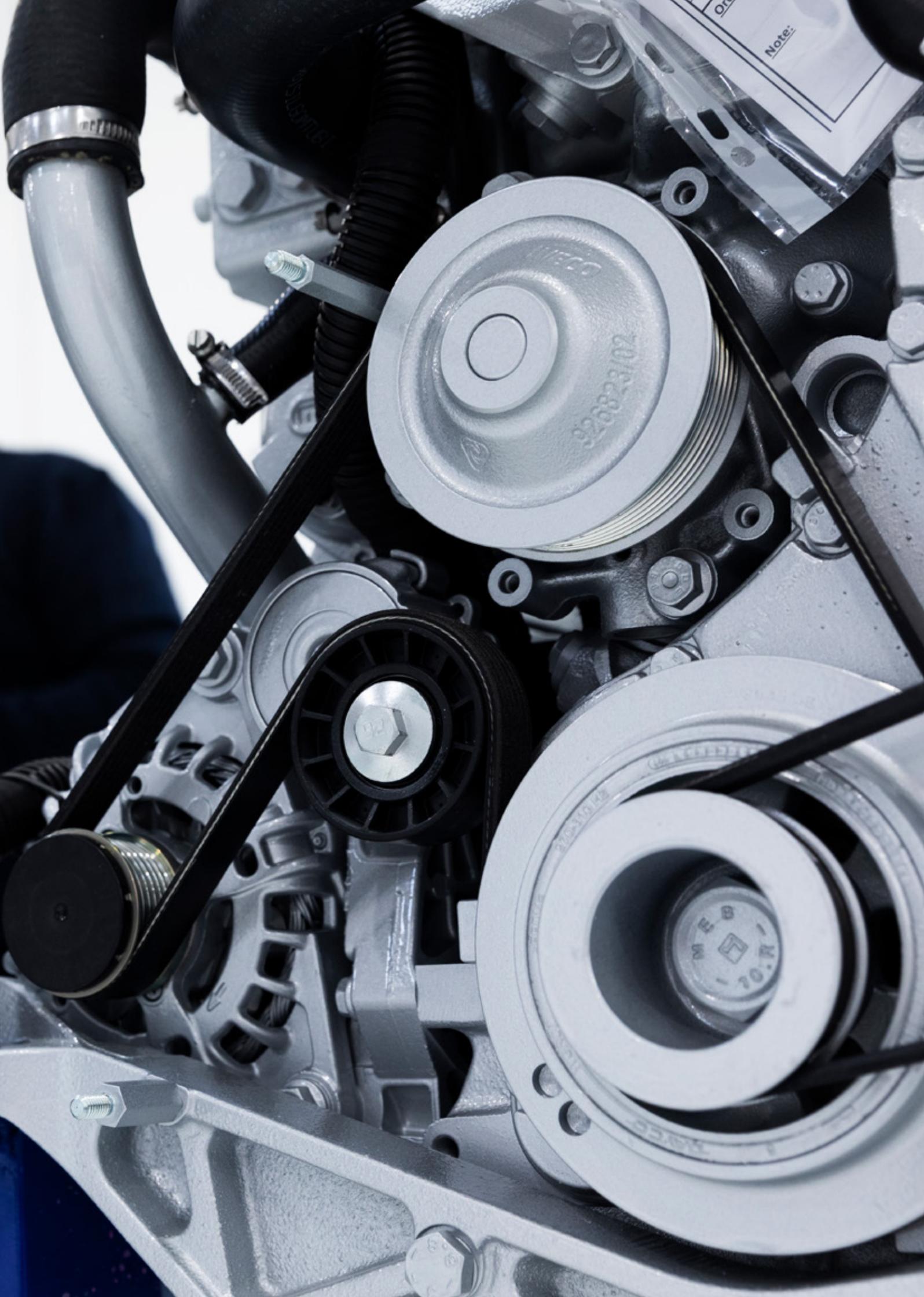
When you choose a FNM Marine engine, you can be sure to choose **cutting edge technology and performances**. Our reputation for reliability is based on a solid dedication to innovative engineering and manufacturing excellence.



Our company combines experience, competences and passion during the development of each engine. Our commitment to provide the best propulsion solutions for our customers never stops, even when an engine leaves the production line.



Thanks to our FNM Marine **service centers network** located in each part of the world, our company is renowned for its expert and localized **after-sales support** for you can rely on them.



Production plants



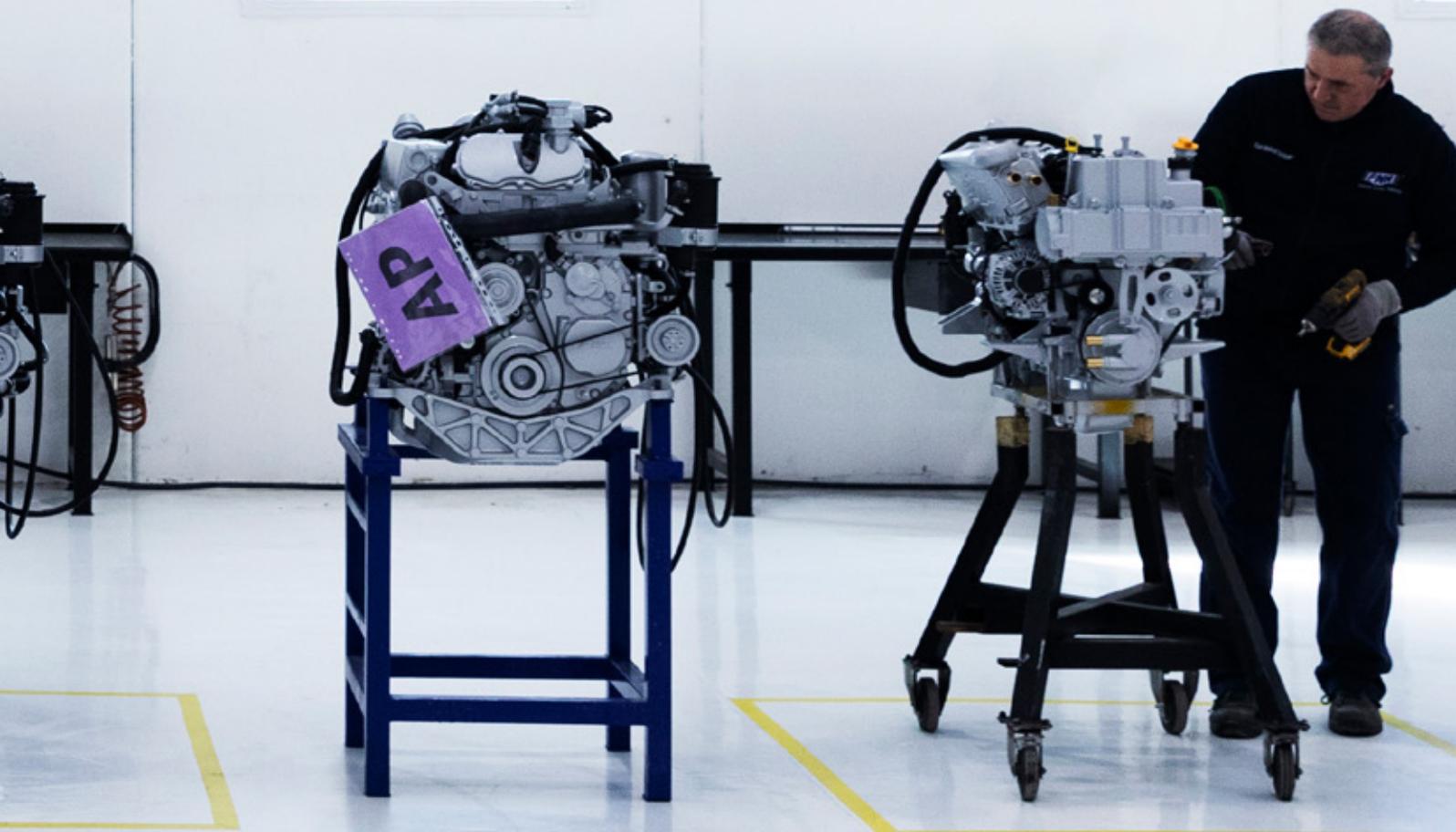
We have always supported **the sustainability in production processes, in the emission standards respect and in principles of the economy of consumption.**

These guidelines are precious for us and our work and they are always present in our Engine Development and Production Technical Center.

A modern and cutting-edge facility, where about 60 people work, all with proven experience in the nautical sector.

This allows us to achieve a high-level production, which is based on complex procedures.

Before the delivery, every single engine is tested to certify the quality and reliability.



FNM Research & Development

FNM R&D Dept. is composed of **highly skilled in mechatronics engineers and technicians.**

This allows us to have more autonomy in the Research phase and in the development of new products, but also in tailor-made solutions to satisfy the most specific needs of our customers.

Our company offers support in each process stage: **from design to testing and development of marine engine.** We also have all technologies and competences for providing **emissions certification** and all documents for engines and spare parts sales.

Our company adopts important **3D design and prototype systems**, helping us both in the development phase and in sales costs reducing.

The right balance among experience, creativity and technology to create an innovative **made in Italy engine.**





FNM Services

Here below all services that FNM can provide to its customers



Design

FNM designs engines to satisfy all customers' needs following all European quality and reliability standards. The CAD design and modeling phases are among the most relevant for us and for our customers.



Parts Management

In addition to the design and testing of each engine, we also guarantee you the engine components management. We create a technical specification that meets the customer's needs.



Technical documentation

We make all documentation for engine management internally:

- Engine use and maintenance manual
 - Spare parts manual
 - Bill of materials coding
 - Manuals for workshops
-



Certification

Thanks to their low emissions, FNM marine engines meet the requirements of current laws for the reduction of exhaust emissions.



Production for third parties

FNM designs and produces marine propulsion for third parties.

Design, testing and production are carried out in our plants.

For this reason, our engine development costs are very competitive on the international market: a comparison with similar other players is enough to confirm this.



Testing

The testing phase is essential for us. We make it on every FNM Marine engine. We have a certified testing center, where we submit the engines to the technical checks and stress tests necessary to evaluate the performance and response of the engine to the various stresses.



Diagnostics

FNM submits engines to all technical checks necessary to assess their condition and performances.

Thanks to the tools at our disposal, we obtain maximum precision datas, which we collect and present in a detailed report.

In our tests we verify:

- Performances
- Consumptions
- Temperatures
- Pressures
- analysis of operating loads
- Gas emissions analysis
- Acoustic emissions analysis



Spare parts logistics

FNM has an internal spare parts warehouse and an integrated logistics asset to ensure high standards and reducing times in the supply chain of spare parts to dealers or customers, especially in the after market.



Assistance

FNM Marine's global support network provides quality service and parts worldwide.



Engine Warranty

FNM Marine engines are supplied with a long warranty and support of our extensive network of services, so you can sail with confidence.



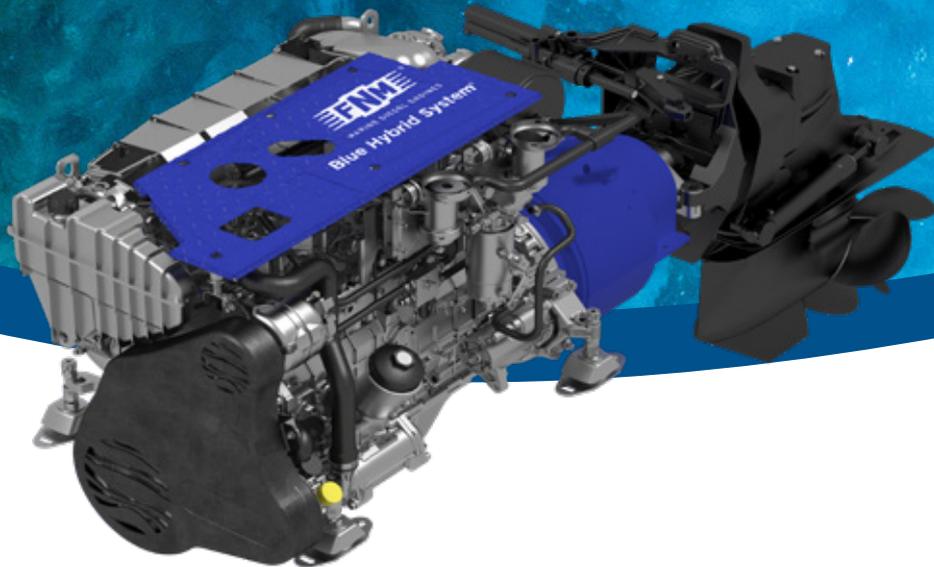
FNM Hybrid System

The image is a vertical composition. The top half shows a sunset over a calm ocean with a bright sun low on the horizon, creating a lens flare and reflecting on the water's surface. The bottom half is an underwater scene with several streams of bubbles rising from the bottom, illuminated by light rays filtering down from above. The overall color palette is dominated by various shades of blue, from light sky blue to deep, dark ocean blue.

Noiseless and low emissions:
FNM for the marine ecosystem
safeguard.

Blue Hybrid System[®]

Blue Hybrid System is a marine hybrid system entirely designed and developed by CMD.



The pleasure of silent navigation and low-emission mobility.

It's the perfect combination of all advantages between conventional drive system and an electric motor.

The Hybrid system **combines a traditional marine endothermic engine and an electric motor with batteries and on-board units**, exploring new opportunities to incorporate varying degrees of hybrid power into recreational or commercial boats.

Suitable for all types of transmission and boats such as



**FISHING
BOAT**



**PASSENGER
TRANSPORT BOATS**



**SMALL OR MEDIUM
YACHTS**



The Blue Hybrid System is a high engineering system, **unique** in its kind, that offers the following benefits:

FAST AND EASY

Thanks to our high technology, your boat can easily switch from an operation mode to another one (electric/endothermic and endothermic/electric) in easy and fast way. Propulsion management takes place instantly thanks to a single selection on the dashboard.

MORE POWER IN SHORT TIME

Blue Hybrid System uses different configurations of navigation modalities thanks to a **HCU** (Hybrid Control Unit) supervision device entirely designed by CMD. With a quick engine throttle gear change, both in forward that turns backwards, HCU allows to change propulsion from electric to internal combustion in a moment, providing maximum power in case of emergency maneuver or during docking maneuvers.

TAILOR – MADE SOLUTION

CMD supports its customers throughout an integrated solution. The Blue Hybrid System is not only highly customizable but is designed, developed and equipped with the electrical system supplied as standard equipment.

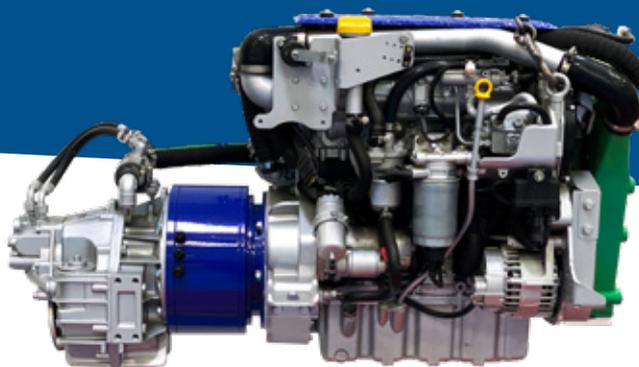
NO LIMITS DURING THE NAVIGATION

Due to electric zero emissions mobility is possible to navigate everywhere, in protected marine areas, safeguarding the environment.

TECHNICAL DATA

Blue Hybrid System®

HYBRID KIT FOR MARINE ENGINES



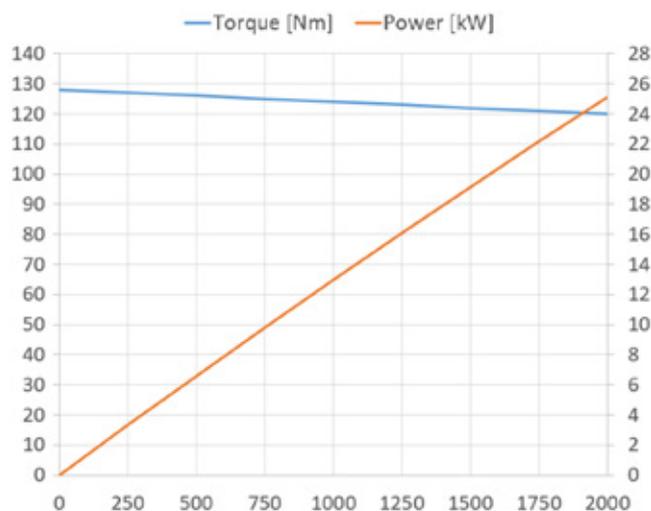
Blue Hybrid System® opens up new perspectives for recreational and commercial boats. Unique and compact, with minimal dimensions, **Blue Hybrid System®** allows you to **navigate with zero emissions** for producing energy and propulsion.

Designed for navigating in **protected and silent areas**, hence, it can be integrated with marine diesel engines which allow you to switch from traditional to electric navigation easily.

The boat equipped with this system can be used for eco-tourism as well as protected natural areas without polluting or making noise.

Electric motor / generator

Type	Brushless
Cooling	Liquid type
Number of poles	12
Nominal speed	2000 rpm
Nominal power	25 Kw
Nominal torque	120 Nm
Nominal current	265 A
Nominal efficiency	96 %



Wiring

Standard equipment	Up to 8 m boats
Type	Power, signal

Battery

Type	LiNMC
BMS	YES
Nominal Voltage	88.8 Vdc
Capacity	148 Ah
Standard discharge	0,5 C
Fast discharge	1 C
Maximum discharge	1,3 C
Energy density	104 Wh/kg
IP Rating	IP65

Aquarius system - Electrical Panel

IP Rating	IP66
Nominal Voltage	96Vdc
Minimum - Maximum voltage	39 - 116 Vdc
Current (60 min.)	220 A
Hybrid Control Unit – HCU	
Safety Power Contractor	
Cooling plate	

Engine types and characteristics may be subject to modification without prior notice.

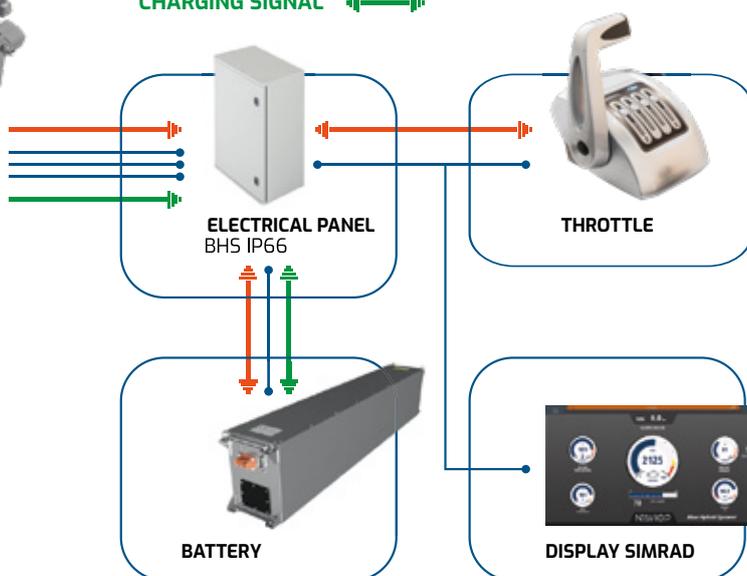
TECHNICAL DATA

Blue Hybrid System®

HYBRID KIT FOR MARINE ENGINES



CAN BUS SIGNAL 
 CHARGING SIGNAL 



Display SIMRAD

Series	GO XSE with OP box
Standard equipment	7 inches
Optional	9 inches; 12 inches
Power Supply	12-24 Vdc

Throttle

Series	All powertrain is managed by original engine throttle
Type	Electronic with CAN BUS

Cooling kit

Components	Pumps and heat exchangers
Operation	Cooling of electronic components and auxiliaries working during electric mode

Battery charger (on request)

Type	Standard	Fast	Super
Supply	230 Vac	400 Vac	400 Vac
Charging power	3 kW	10 kW	20-30 kW
IP Rating	IP20	IP65	IP54
Location	On board	On board	Quay

Engine types and characteristics may be subject to modification without prior notice.

TECHNICAL DATA

Blue Hybrid System[®]

HYBRID KIT FOR MARINE ENGINES



Everything under control

Thanks to the collaboration with SYMRAD, an innovative app has been developed for showing you the main information during navigation:

- engine/generator data
- battery status
- all parameters necessary to navigation and whole system's control.

Everything is under control and clearly visible through the supplied display.

Choose your navigation style

The entire powertrain is managed by a single engine throttle enable to switch from endothermic to electric navigation with a simple action.

ECU developed in house

All system is controlled by a CMD ECU entirely designed by CMD. This control unit uses CANBUS technology to communicate with all powertrain's components and decides the operating status of the hybrid system.

Operating time

The battery capacity can be customized according to the customer's navigation needs. Protected and insulated in an inox box of 1.5mm thickness, LiNMC batteries cells ensure great reliability. CMD uses an advanced systems simulation software to define the right battery pack capacity based on the mission profile such as: MATLAB / SIMULINK.





MARINE DIESEL ENGINES

DIESEL MARINE ENGINES CATALOGUE



INBOARD MARINE ENGINE

13HPE

Models:
13HPE 110 - 13HPE 80 - 13HPE 40

FNM® 4-cylinder 13HPE marine engine is built according to 1,3 Multijet II propulsion features, a key product for small diesel engines in automotive industry. **The engine uses a common-rail fuel injection system** controlled by an ECU (Electronic Control Unit), made specifically for this unit.

ECU (Electronic Control Unit)

ECU has been developed entirely in house



This unit guarantees excellent performances with low emissions



It has been conceived after a 10-year development project carried out by R&D team



It is especially designed for HPE marine engines application



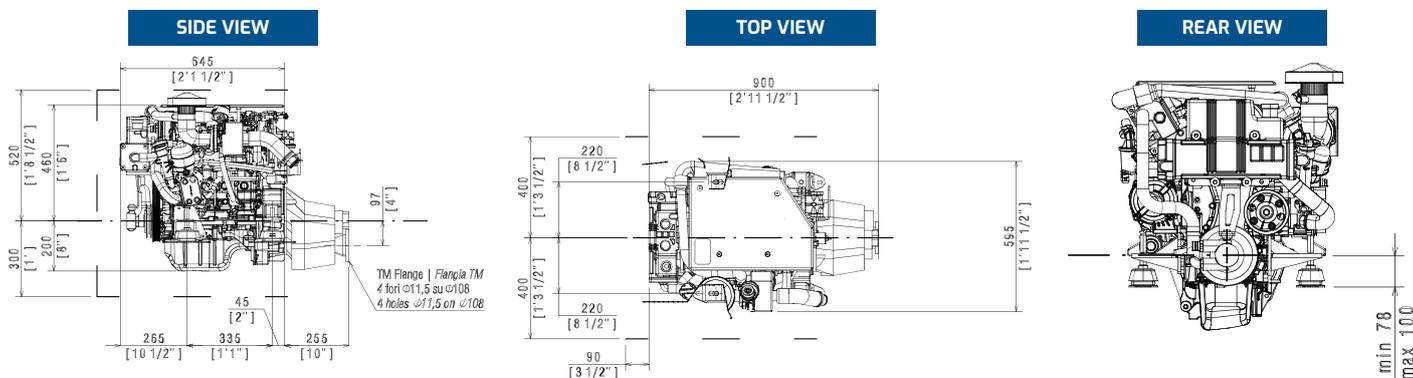
It controls common rail system parts



It includes unique control strategies which can be personalized according customers' request

Dimensional

FNM13HPE
with inverter TM345



Technical data

Engine model	13 HPE 110	13 HPE 80	13 HPE 40
Crankshaft Power [kW] (hp)	81 (110)	59 (80)	29 (40)
Propeller shaft power [kW] (hp)	78 (107)	57 (78)	27 (38)
Engine speed [min-1]	4400	4000	4000
Displacement l - (cc) - (cu in)	1.3l - 1248 cc - 76 cu in		
Number of cylinders	4		
Bore/stroke [mm] (in)	69,6/82 (2.74/3.23)		
Compression ratio	17,6:1		
Dry weight with TM 345 [kg]	203		
Dry weight with ZF 25 [kg]	202		
Emission compliance	Directive 2013/53/UE		

Technical data according to ISO8665. Fuel complies EN590. Merchant fuel may differ in specification and may influence engine power output and consumption. Production tolerance within 5% (of power). Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.

Standard technical equipment

ENGINE BLOCK AND HEAD

- Cylinder block made of cast-iron
- Cylinder head made of aluminium
- 4-valve per cylinder technology with hydraulic lash adjusters
- Double overhead camshafts
- Automotive-class availability of service and parts
- Metal chain gear

ENGINE MOUNTING

- Flexible engine mounting

LUBRICATION SYSTEM

- Easily replaceable oil filter, on top of engine
- Easily to inspect or replace oil separator
- Oil vapour filter
- Integrated cooler with engine's coolant

FUEL SYSTEM

- Common rail fuel injection system
- CMD proprietary ECU
- Fuel filter with water separator and alarm

AIR INLET AND EXHAUST SYSTEM

- Air filter
- Oil vapours vented into inlet air
- Exhaust elbow or raiser depending on application
- Variable geometry turbocharger
- Raw-water cooled intercooler

COOLING SYSTEM

- Thermostatically regulated freshwater cooling
- Thermal unit that integrates tubular heat exchanger and expansion tank
- Easily accessible seawater impeller pump

ELECTRICAL SYSTEM

- 12V standard two-pole electrical system
- 12V-1,3kW starter
- Alternator 12V-90A
- Emergency stop button on engine's ECU
- Engine information indicator panel

Technical Specification Indicator Ø85mm - OmniLink type

- Hole mounting: Ø86mm;
- Dial: Black or White backlighted;
- Bezel: Round in black plastic;
- Cover lens: RQ - Anti-fog plexiglass;
- Case material: Polyamide PA66 White color;
- Mounting: Flush mounting (backpanel);
- Backlight: With LED and light diffuser internal;
- Power supply: 9 ÷ 32Vdc;
- Absorption: <100mA with backlight;
- Connection: M12 - 5 pin connector - M12 - 12 pins connector
- Protection grade: IP65 on the front
- Operating temperature: -20 ÷ 70°C
- Technical reference: IEC60945 (Vibration, climatic and electromagnetic compatibility)



Gears

ANGLED GEARBOXES

- TM345A (8°): R. 1,54:1, 2,00:1, 2,47:1
- ZF25A (8°): R. 1,55:1, 1,93:1, 2,48:1, 2,29:1, 2,71:1

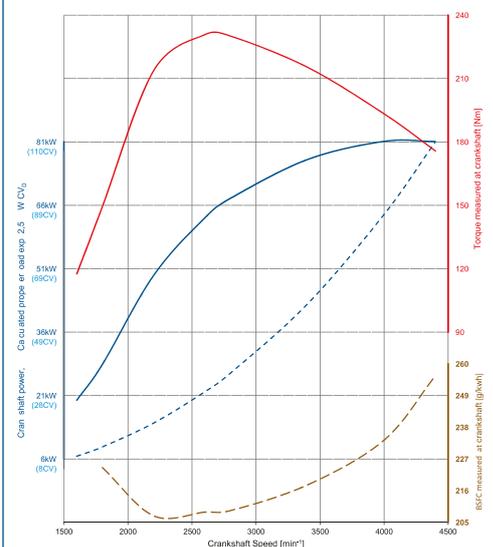
IN-LINE AND COAXIAL GEARBOXES

- TM345 (in line): R. 1,54:1, 2,00:1, 2,47:1
- ZF25 (in line): R. 1,97:1, 2,80:1

Optionals

- Single or double electronic CANBUS control station
- Boiler kit for heating
- Various length panel extension
- Second control panel for flybridge installations
- RACOR and Mediterraneo filters
- Trolling Valve
- NMEA2000 compatibility kit
- Wide range of additional instruments

Performance curves



Referred to 13HPE 110



MARINE DIESEL ENGINES

IN/OUTBOARD MARINE
ENGINE JETDRIVE

13HPE JD

Models:
13HPE 110



FNM® 4-cylinder 13HPE marine engine is built according to 1,3 Multijet II propulsion features, a key product for small diesel engines in automotive industry.

The engine uses a common-rail fuel injection system controlled by an ECU (Electronic Control Unit), made specifically for this unit.

ECU (Electronic Control Unit)

ECU has been developed entirely in house



This unit guarantees excellent performances with low emissions



It has been conceived after a 10-year development project carried out by R&D team



It is especially designed for HPE marine engines application



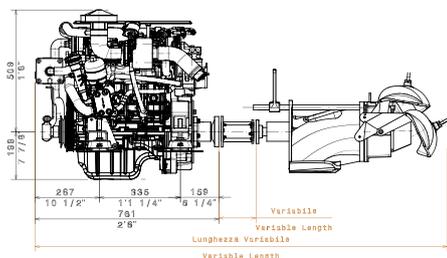
It controls common rail system parts



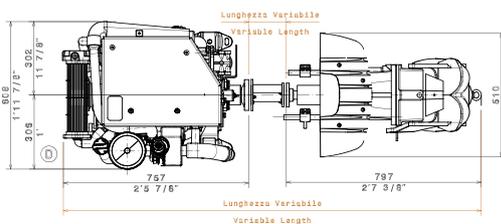
It includes unique control strategies which can be personalized according customers' request

Dimensional FNM 13HPE with Jet Drive 160

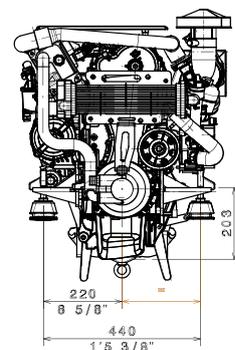
SIDE VIEW



TOP VIEW



REAR VIEW



Technical data

Engine model	13 HPE 110
Crankshaft Power [kW] (hp)	81 (110)
Propeller shaft power [kW] (hp)	78 (107)
Engine speed [min-1]	4400
Displacement [l]	1,3
Number of cylinders	4
Bore/stroke [mm] (in)	69,6/82 (2,74/3,23)
Compression ratio	17,6:1
Dry weight without Jetdrive [kg]	175
Dry weight with Jetdrive [kg]	216
Emission compliance	Directive 2013/53/UE

Technical data according to ISO8665. Fuel complies EN590. Merchant fuel may differ in specification and may influence engine power output and consumption. Production tolerance within 5% (of power). Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.

Standard technical equipment

ENGINE BLOCK AND HEAD

- Cylinder block made of cast-iron
- Cylinder head made of aluminium
- 4-valve per cylinder technology with hydraulic lash adjusters
- Double overhead camshafts
- Automotive-class availability of service and parts
- Metal chain gear

ENGINE MOUNTING

- Flexible engine mounting

LUBRICATION SYSTEM

- Easily replaceable oil filter, on top of engine
- Easily to inspect or replace oil separator
- Oil vapour filter
- Integrated cooler with engine's coolant

FUEL SYSTEM

- Common rail fuel injection system
- CMD proprietary ECU
- Fuel filter with water separator and alarm

AIR INLET AND EXHAUST SYSTEM

- Air filter
- Oil vapours vented into inlet air
- Exhaust elbow or raiser depending on application
- Variable geometry turbocharger
- Raw-water cooled intercooler

COOLING SYSTEM

- Thermostatically regulated freshwater cooling
- Thermal unit that integrates tubular heat exchanger and expansion tank
- Easily accessible seawater impeller pump

ELECTRICAL SYSTEM

- 12V standard two-pole electrical system
- 12V-1,3kW starter
- Alternator 12V
- Emergency stop button on engine's ECU
- CANBUS Panel with 8m extension and digital display of engine data

Panel instrument CANBUS

Panel Instrument **high brightness 5" TFT display**, with **touchscreen** and a very simple and intuitive interface.

- Engine data acquisition with CANBUS J1939 interface.
- Data acquisition from traditional sensors for up to eight analog inputs, five digital inputs and one frequency input
- Acquisition of navigation data with NMEA0183 interface
- Up to five relay command outputs for signals and simple activations
- Alarm monitoring according to approved safety standards
- Automatic brightness adjustment and day / night mode
- USB local connectivity for firmware update and configuration

The unit is supplied already programmed and ready to work.



Gears

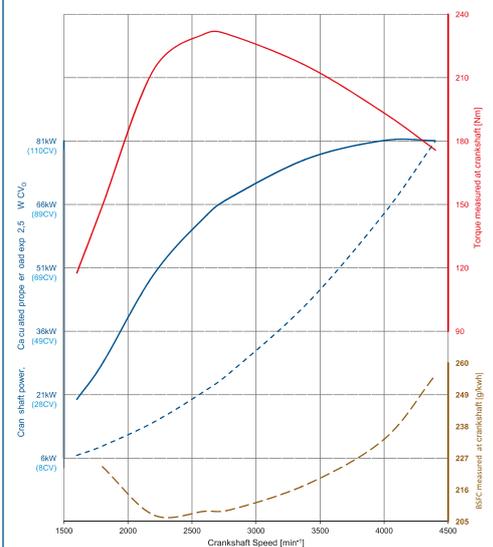
IN-LINE AND COAXIAL GEARBOXES

- ZF45C (coaxial): R. 1,00:1
- Alamarin jet-160

Optionals

- Single or double electronic CANBUS control station
- Boiler kit for heating
- Various length panel extension
- Second control panel for flybridge installations
- RACOR and Mediterraneo filters
- Trolling Valve
- NMEA2000 compatibility kit
- Wide range of additional instruments

Performance curves



Referred to **13HPE 110**



MARINE DIESEL ENGINES



SAIL DRIVE MARINE ENGINE 13HPE SD

Models:
13HPE 80

FNM® 4-cylinder 13HPE marine engine is built according to 1,3 Multijet II propulsion features. It has always been a key product for small diesel engines in automotive industry. **The engine uses a common-rail fuel injection system** controlled by an ECU (Electronic Control Unit), made specifically for this unit.

ECU (Electronic Control Unit)

ECU has been developed entirely in house



This unit guarantees excellent performances with low emissions



It has been conceived after a 10-year development project carried out by R&D team



It is especially designed for HPE marine engines application



It controls common rail system parts

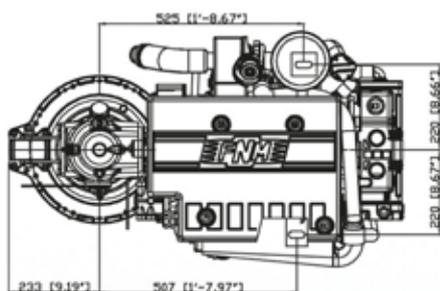


It includes unique control strategies which can be personalized according customers' request

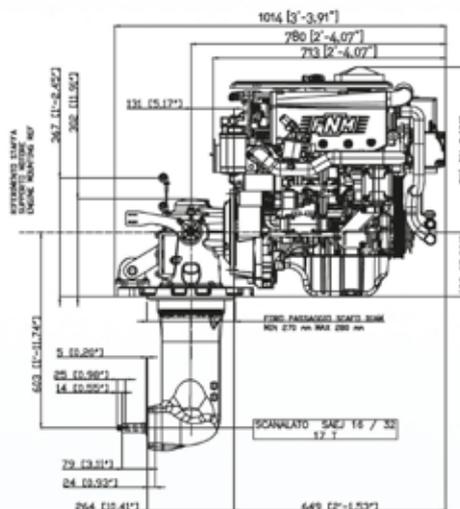
Dimensional

FNM 13HPE SP
with
SEADROP 60

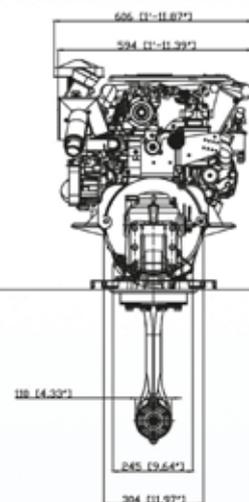
TOP VIEW



SIDE VIEW



REAR VIEW



Technical data

Engine designation	13 HPE 80
Crankshaft Power [kW] (hp)	59 (80)
Propeller shaft power [kW] (hp)	57 (78)
Propeller shaft power [min-1]	3800
Displacement [l]	1,3
Number of cylinders	4
Bore/stroke [mm] (in)	69,6/82 (2,74/3,23)
Compression ratio	17,6:1
Dry weight with Sail Drive [kg]	220
Emission compliance	Directive 2013/53/UE

Technical data according to ISO8665. Fuel complies EN590. Merchant fuel may differ in specification and may influence engine power output and consumption. Production tolerance within 5% (of power). Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.

Standard technical equipment

ENGINE BLOCK AND HEAD

- Cylinder block made of cast-iron
- Cylinder head made of aluminium
- 4-valve per cylinder technology with hydraulic lash adjusters
- Double overhead camshafts
- Automotive-class availability of service and parts
- Metal chain gear

ENGINE MOUNTING

- Flexible engine mounting

LUBRICATION SYSTEM

- Easily replaceable oil filter, on top of engine
- Easily to inspect or replace oil separator
- Oil vapour filter
- Integrated cooler with engine's coolant

FUEL SYSTEM

- Common rail fuel injection system
- CMD proprietary ECU
- Fuel filter with water separator and alarm

AIR INLET AND EXHAUST SYSTEM

- Air filter
- Oil vapours vented into inlet air
- Exhaust elbow or raiser depending on application
- Variable geometry turbocharger
- Raw-water cooled intercooler

COOLING SYSTEM

- Thermostatically regulated freshwater cooling
- Thermal unit that integrates tubular heat exchanger and expansion tank
- Easily accessible seawater impeller pump

ELECTRICAL SYSTEM

- 12V standard two-pole electrical system
- 12V-1,3kW starter
- Alternator 12V
- Emergency stop button on engine's ECU
- CANBUS Panel with 8m extension and digital display of engine data

Gears

- Saildrive SD60

Optionals

- Spinner for fixed blade propellers
- VTR Tecnodrive engine base
- Boats template
- Single or double electronic CANBUS control station
- Boiler kit for heating
- Various length panel extension
- Second control panel for flybridge installations
- RACOR and Mediterraneo filters
- 90A alternator
- Wide range of additional instruments
- Flange for application without VTR base
- Water Sensor

Panel instrument CANBUS

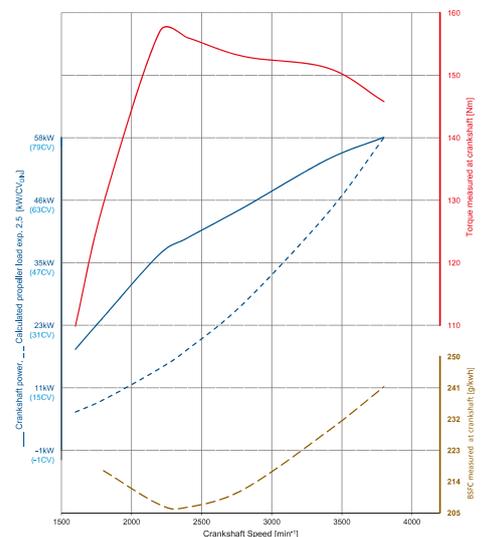
Panel Instrument **high brightness 5" TFT display**, with **touchscreen** and a very simple and intuitive interface.

- Engine data acquisition with CANBUS J1939 interface.
- Data acquisition from traditional sensors for up to eight analog inputs, five digital inputs and one frequency input
- Acquisition of navigation data with NMEA0183 interface
- Up to five relay command outputs for signals and simple activations
- Alarm monitoring according to approved safety standards
- Automatic brightness adjustment and day / night mode
- USB local connectivity for firmware update and configuration

The unit is supplied already programmed and ready to work.



Performance curves



Referred to **13HPE SD 80**



INBOARD MARINE ENGINE

20HPE

Models:
20HPE 180 - 20HPE 150 - 20HPE 120

FNM® 4-cylinder 20HPE marine engine is based on the new 2LT Multijet engine, that equips a large number of small and medium size cars in Europe. The engine uses a common-rail fuel injection system controlled by an ECU (Electronic Control Unit), especially made for it. The engine is small and powerful, its wide distribution is the proof of its reliability and wide availability of spare parts.

ECU (Electronic Control Unit)

ECU has been developed entirely in house



This unit guarantees excellent performances with low emissions



It has been conceived after a 10-year development project carried out by R&D team



It is especially designed for HPE marine engines application

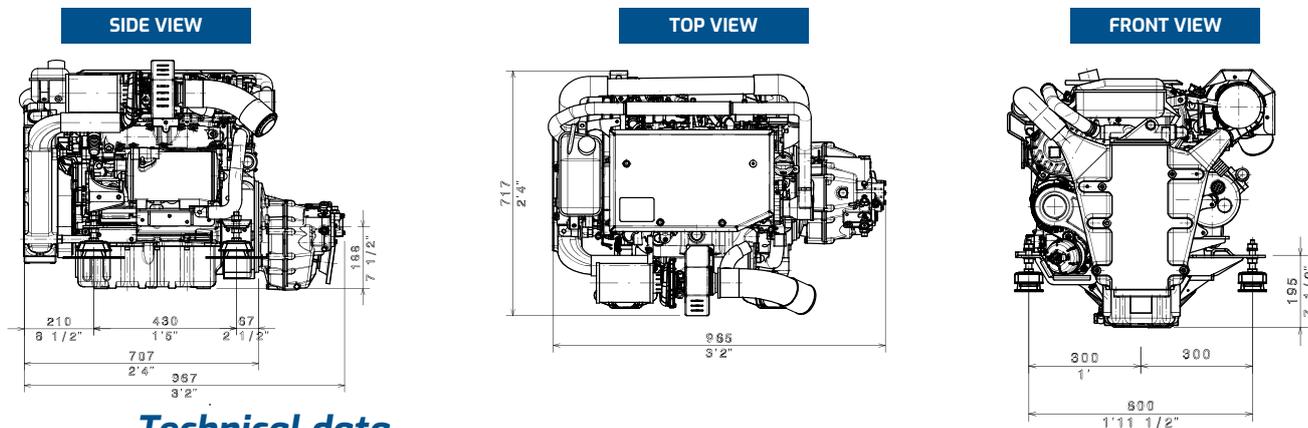


It controls Bosch common rail system parts



It includes unique control strategies as: anti-shut-down in situations of gear engagement for installations with high inertia or rapid gear changes

Dimensional FNM 20HPE with inverter TM485A



Technical data

Engine designation	20 HPE 180	20 HPE 150	20 HPE 120
Crankshaft Power [kW] (hp)	129 (175)	108 (147)	88 (120)
Propeller shaft power [kW] (hp)	125 (170)	105 (143)	85 (116)
Engine speed [min-1]	4100	4100	3800
Displacement [l]	2,0		
Number of cylinders	4		
Bore/stroke [mm] (in)	83,0/90,4 (3,27/3,56)		
Compression ratio	16,5:1		
Dry weight with TM 485 [kg]	301		
Dry weight with ZF 48 [kg]	312		
Emission compliance	Directive 2013/53/UE		

Technical data according to ISO8665. Fuel complies EN590. Merchant fuel may differ in specification and may influence engine power output and consumption. Production tolerance within 5% (of power). Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.

Standard technical equipment

ENGINE BLOCK AND HEAD

- Cylinder block made of cast-iron
- Cylinder head made of aluminium
- 4-valve per cylinder technology with hydraulic lash adjusters
- Double overhead camshafts
- Automotive-class availability of service and parts
- Metal chain gear

ENGINE MOUNTING

- Flexible engine mounting

LUBRICATION SYSTEM

- Easily replaceable oil filter, on top of engine
- Easily to inspect or replace oil separator
- Oil vapour filter
- Integrated cooler with engine's coolant

FUEL SYSTEM

- Common rail fuel injection system
- CMD proprietary ECU
- Fuel filter with water separator and alarm

AIR INLET AND EXHAUST SYSTEM

- Air filter
- Oil vapours vented into inlet air
- Exhaust elbow or raiser depending on application
- Variable geometry turbocharger
- Raw-water cooled intercooler

COOLING SYSTEM

- Thermostatically regulated freshwater cooling
- Thermal unit that integrates tubular heat exchanger and expansion tank
- Easily accessible seawater impeller pump

ELECTRICAL SYSTEM

- 12V standard two-pole electrical system
- 12V-1,3kW starter
- Alternator 12V
- Emergency stop button on engine's ECU
- CANBUS Panel with 8m extension and digital display of engine data

Gears

ANGLED GEARBOXES

- TM485A1 (8°): R. 1,51:1, 2,09:1, 2,40:1
- ZF48A (8°): R. 1,26:1, 1,51:1, 2,03:1, 2,43:1

V-LINE GEARBOXES

- ZF48-IV (20°): R. 1,21:1, 1,46:1

IN-LINE AND COAXIAL GEARBOXES

- ZF48-1 (in line): R. 2,20:1, 2,5:1, 3,03:1, 3,74:1
- ZF48C (coaxial): R. 1,00:1

Optionals

- Single or double electronic CANBUS control station
- Boiler kit for heating
- Various length panel extension
- Second control panel for flybridge installations
- RACOR and Mediterraneo filters
- Trolling Valve
- NMEA2000 compatibility kit
- Wide range of additional instruments

Panel instrument CANBUS

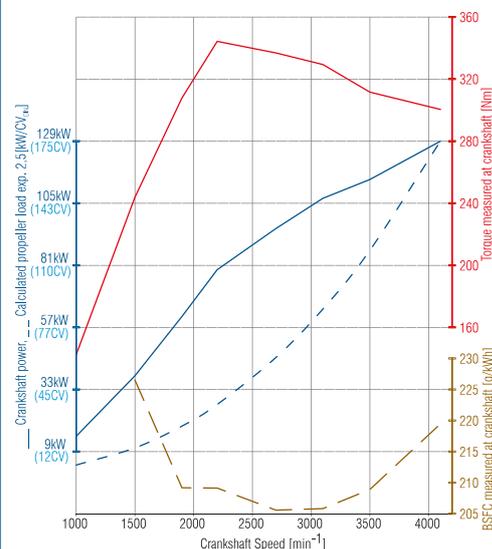
Panel Instrument **high brightness 5 "TFT display**, with **touchscreen** and a very simple and intuitive interface.

- Engine data acquisition with CANBUS J1939 interface.
- Data acquisition from traditional sensors for up to eight analog inputs, five digital inputs and one frequency input
- Acquisition of navigation data with NMEA0183 interface
- Up to five relay command outputs for signals and simple activations
- Alarm monitoring according to approved safety standards
- Automatic brightness adjustment and day / night mode
- USB local connectivity for firmware update and configuration

The unit is supplied already programmed and ready to work.



Performance curves



Referred to 20HPE 180



IN/OUTBOARD MARINE ENGINE **20HPEP**

Models:
20HPEP 180 - 20HPEP 150 - 20HPEP 120

FNM® 4-cylinder 20HPEP marine engine is based on the new 2LT Multijet engine, that equips a large number of small and medium size cars in Europe. The engine uses a common-rail fuel injection system controlled by an ECU (Electronic Control Unit), especially made for it. The engine is small and powerful, its wide distribution is the proof of its reliability and wide availability of spare parts.

ECU (Electronic Control Unit)

ECU has been developed entirely in house



This unit guarantees excellent performances with low emissions



It has been conceived after a 10-year development project carried out by R&D team



It is especially designed for HPE marine engines application



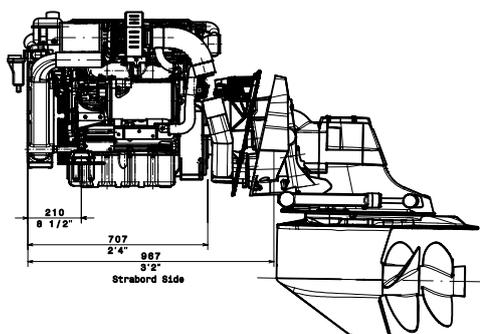
It controls Bosch common rail system parts



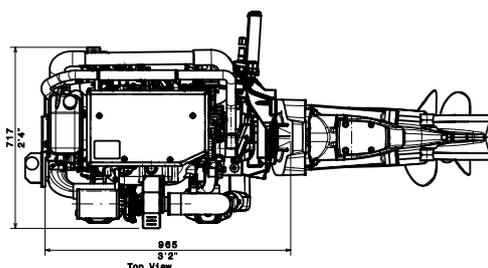
It includes unique control strategies as: anti-shut-down in situations of gear engagement for installations with high inertia or rapid gear changes

Dimensional *FNM 20HPEP BRAVO 3*

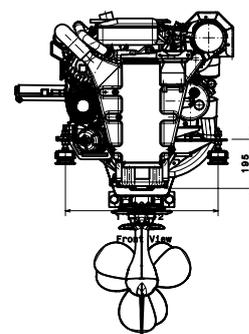
SIDE VIEW



TOP VIEW



FRONT VIEW



Technical data

Engine designation	20 HPEP 180	20 HPEP 150	20 HPEP 120
Crankshaft Power [kW] (hp)	129 (175)	108 (147)	88 (120)
Propeller shaft power [kW] (hp)	125 (170)	105 (143)	85 (116)
Engine speed [min-1]	4100	4100	3800
Displacement [l]	2,0		
Number of cylinders	4		
Bore/stroke [mm] (in)	83,0/90,4 (3,27/3,56)		
Compression ratio	16,5:1		
Emission compliance	Directive 2013/53/UE		

Technical data according to ISO8665. Fuel complies EN590. Merchant fuel may differ in specification and may influence engine power output and consumption. Production tolerance within 5% (of power). Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.

Standard technical equipment

ENGINE BLOCK AND HEAD

- Cylinder block made of cast-iron
- Cylinder head made of aluminium
- 4-valve per cylinder technology with hydraulic lash adjusters
- Double overhead camshafts
- Automotive-class availability of service and parts
- Metal chain gear

ENGINE MOUNTING

- Flexible engine mounting

LUBRICATION SYSTEM

- Easily replaceable oil filter, on top of engine
- Easily to inspect or replace oil separator
- Oil vapour filter
- Integrated cooler with engine's coolant

FUEL SYSTEM

- Common rail fuel injection system
- CMD proprietary ECU
- Fuel filter with water separator and alarm

AIR INLET AND EXHAUST SYSTEM

- Air filter
- Oil vapours vented into inlet air
- Exhaust elbow or raiser depending on application
- Variable geometry turbocharger
- Raw-water cooled intercooler

COOLING SYSTEM

- Thermostatically regulated freshwater cooling
- Thermal unit that integrates tubular heat exchanger and expansion tank
- Easily accessible seawater impeller pump

ELECTRICAL SYSTEM

- 12V standard two-pole electrical system
- 12V-1,3kW starter
- Alternator 12V
- Emergency stop button on engine's ECU
- CANBUS Panel with 8m extension and digital display of engine data

Optionals

- Single or double electronic CANBUS control station
- Boiler kit for heating
- Various length panel extension
- Second control panel for flybridge installations
- RACOR and Mediterraneo filters
- Trolling Valve
- Additional PTO (ISO4183 Z/SPZ)
- Steering pump
- NMEA2000 compatibility kit
- Wide range of additional instruments
- BRAVO X-1 stern drive Red. 1,65:1 or BRAVO 2 Red.2:1 - BRAVO 3 Red. 2:1
- Stainless steel propeller for BRAVO X-1
- Aluminium propeller for BRAVO X-2
- Stainless steel propeller for BRAVO X-3
- Multiple Sterndrive Steering Tie for twin-engine
- Alignment tool
- Volvo coupler kit

Panel instrument CANBUS

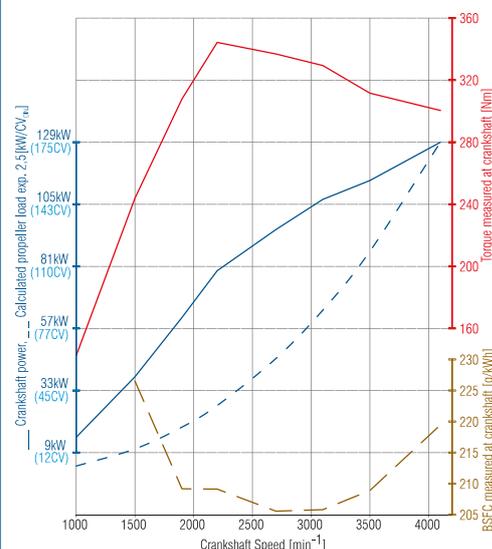
Panel Instrument **high brightness 5" TFT display**, with **touchscreen** and a very simple and intuitive interface.

- Engine data acquisition with CANBUS J1939 interface.
- Data acquisition from traditional sensors for up to eight analog inputs, five digital inputs and one frequency input
- Acquisition of navigation data with NMEA0183 interface
- Up to five relay command outputs for signals and simple activations
- Alarm monitoring according to approved safety standards
- Automatic brightness adjustment and day / night mode
- USB local connectivity for firmware update and configuration

The unit is supplied already programmed and ready to work.



Performance curves



Referred to **20HPEP 180**



INBOARD MARINE ENGINE **30HPE**

Models:
30HPE 270 - 30HPE 250
30HPE 225 - 30HPE 180

FNM® 30HPE engine is based on the tested **FPT 30 4-cylinder Common Rail engine**.

This inboard marine engine uses a **common-rail fuel injection system** controlled by an **ECU** especially made for it. The result is a high power-to-displacement ratio unit.

The **engine electronic control unit (ECU)** has been conceived after a 10-year development project carried out by R&D team and it is especially designed for HPE marine engines application.



It controls Bosch common rail system parts



It includes unique control strategies as: anti-shut-down in situations of gear engagement for installations with high inertia or rapid gear changes

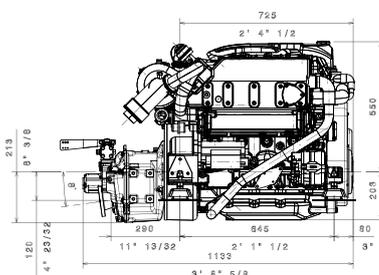


It guarantees excellent performances with low emissions

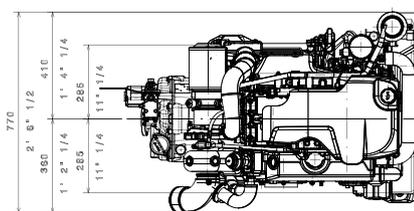
Dimensional

FNM 30HPE
with gearboxes
TM485 A

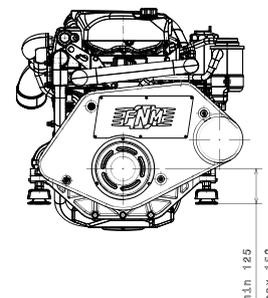
SIDE VIEW



TOP VIEW



FRONT VIEW



Technical data

Engine model	NEW			
	30 HPE 270	30 HPE 250	30 HPE 225	30 HPE 180
Max Power	198,5 kW 270 HP 4100 rpm	184 kW 250 HP 4100 rpm	165 kW 225 HP 4100 rpm	132 kW 180 HP 3800 rpm
Max Torque	530 Nm 2300 rpm	N.D.	N.D.	N.D.
Number of cylinders	4 in line			
Displacement	2.934 cc			
Bore and Stroke	95,8x104 mm			
Dry weight	320 kg			
Cooling	Water			
Combustion	Direct Injection Common Rail			
Induction	Turbocharged and intercooled			
Dimension (mm)	753(h) x 730(l) x 750(w)			
Emission	Directive 2013/53/UE			

Technical data according to ISO8665. Fuel complies EN590. Merchant fuel may differ in specification and may influence engine power output and consumption. Production tolerance within 5% (of power). Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.

Standard technical equipment

ENGINE BLOCK AND HEAD

- Cylinder block made of cast-iron
- Cylinder head made of aluminium
- 4-valve per cylinder technology with hydraulic lash adjusters
- Double overhead camshafts
- Automotive-class availability of service and parts
- Metal chain gear

ENGINE MOUNTING

- Flexible engine mounting

LUBRICATION SYSTEM

- Easily replaceable oil filter, on top of engine
- Easily to inspect or replace oil separator
- Double oil vapour filter technology
- Integrated cooler with engine's coolant

FUEL SYSTEM

- Common rail fuel injection system
- CMD proprietary ECU
- Fuel filter with water separator and alarm

AIR INLET AND EXHAUST SYSTEM

- Air filter
- Oil vapours vented into inlet air
- Exhaust elbow or raiser depending on application
- Coolant-cooled turbocharger
- Raw-water cooled intercooler

COOLING SYSTEM

- Thermostatically regulated freshwater cooling
- Thermal unit that integrates tubular heat exchanger and expansion tank
- Easily accessible seawater impeller pump

ELECTRICAL SYSTEM

- 12V standard two-pole electrical system
- 12V-1,3kW starter
- Alternator 12V-110A
- Emergency stop button on engine's ECU
- CANBUS Panel with 8m extension and digital display of engine data

Panel instrument CANBUS

Panel Instrument **high brightness 5 "TFT display**, with **touchscreen** and a very simple and intuitive interface.

- Engine data acquisition with CANBUS J1939 interface.
- Data acquisition from traditional sensors for up to eight analog inputs, five digital inputs and one frequency input
- Acquisition of navigation data with NMEA0183 interface
- Up to five relay command outputs for signals and simple activations
- Alarm monitoring according to approved safety standards
- Automatic brightness adjustment and day / night mode
- USB local connectivity for firmware update and configuration

The unit is supplied already programmed and ready to work.



Gears

ANGLED GEARBOXES

- TM485 A (10°): R. 1,53:1, 2,08:1, 2,60:1

V-LINE GEARBOXES

- ZF68-IV (12°): R. 1,29:1, 1,56:1, 1,99:1, 2,48:1

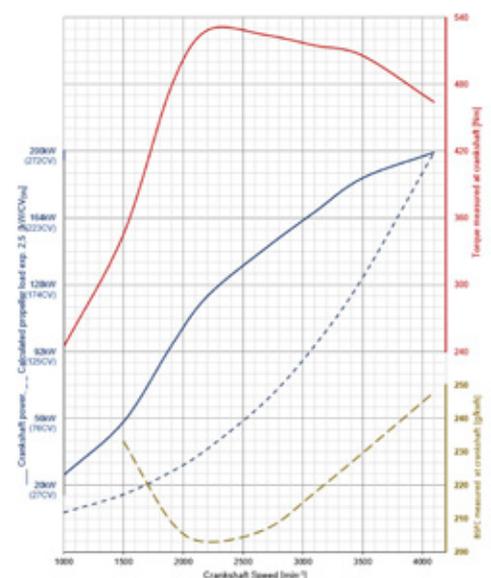
IN-LINE AND COAXIAL GEARBOXES

- ZF45-1 (in line): R. 1,26:1, 1,51:1, 1,75:1, 1,93:1, 2,48:1, 2,78:1

Optionals

- Single or double electronic CANBUS control station
- Boiler kit for heating
- Various length panel extension
- Second control panel for flybridge installations
- RACOR and Mediterraneo filters
- Trolling Valve
- Additional PTO (ISO4183 Z/SPZ)
- Steering pump
- NMEA2000 compatibility kit
- Wide range of additional instruments

Performance curves



Referred to **30HPE 270**



MARINE DIESEL ENGINES

IN/OUTBOARD MARINE ENGINE **30HPEP**

Models:
30HPEP 270 - 30HPEP 250
30HPEP 225 - 30HPEP 180



FNM® 30HPEP engine is based on the tested FPT 30 4-cylinder Common Rail engine.

This marine engine uses a common-rail fuel injection system controlled by an ECU specifically made for it. The result is a high power-to-displacement ratio unit.

The engine electronic control unit (ECU) has been conceived after a 10-year development project carried out by R&D team and it is especially designed for HPE marine engines application.



It controls Bosch common rail system parts



It includes unique control strategies as: anti-shut-down in situations of gear engagement for installations with high inertia or rapid gear changes

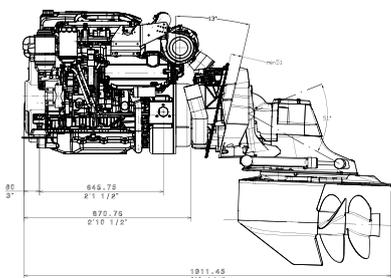


It guarantees excellent performances with low emissions

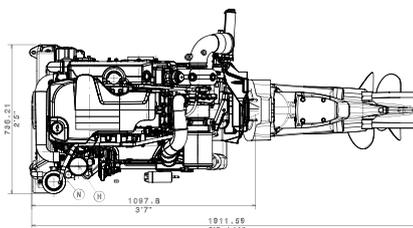
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FNM 30HPEP
BRAVO 3

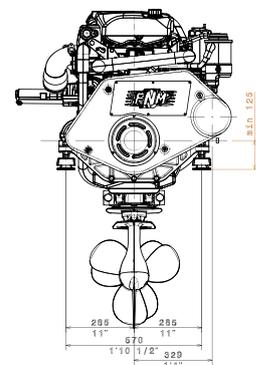
SIDE VIEW



TOP VIEW



FRONT VIEW



Technical data

Engine model	NEW			
	30 HPEP 270	30 HPEP 250	30 HPEP 225	30 HPEP 180
Max Power	198,5 kW 270 HP 4100 rpm	184 kW 250 HP 4100 rpm	165 kW 225 HP 4100 rpm	132 kW 180 HP 3800 rpm
Max Torque	530 Nm 2300 rpm	N.D.	N.D.	N.D.
Number of cylinders	4 in line			
Displacement	2.934 cc			
Bore and Stroke	95,8x104 mm			
Dry weight	320 kg			
Cooling	Water			
Combustion	Direct Injection Common Rail			
Induction	Turbocharged and intercooled			
Dimension (mm)	753(h) x 730(l) x 750(w)			
Emission	Directive 2013/53/UE			

Technical data according to ISO8665. Fuel complies EN590. Merchant fuel may differ in specification and may influence engine power output and consumption. Production tolerance within 5% (of power). Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.

Standard technical equipment

ENGINE BLOCK AND HEAD

- Cylinder block made of cast-iron
- Cylinder head made of aluminium
- 4-valve per cylinder technology with hydraulic lash adjusters
- Double overhead camshafts
- Automotive-class availability of service and parts
- Metal chain gear

ENGINE MOUNTING

- Flexible engine mounting

LUBRICATION SYSTEM

- Easily replaceable oil filter, on top of engine
- Easily to inspect or replace oil separator
- Double oil vapour filter technology
- Integrated cooler with engine's coolant

FUEL SYSTEM

- Common rail fuel injection system
- CMD proprietary ECU
- Fuel filter with water separator and alarm

AIR INLET AND EXHAUST SYSTEM

- Commercial-grade air filter
- Oil vapours vented into inlet air
- Exhaust elbow or raiser depending on application
- Coolant-cooled turbocharger
- Raw-water cooled intercooler

COOLING SYSTEM

- Thermostatically regulated freshwater cooling
- Thermal unit that integrates tubular heat exchanger and expansion tank
- Easily accessible seawater impeller pump

ELECTRICAL SYSTEM

- 12V standard two-pole electrical system
- 12V-1,3kW starter
- Alternator 12V-110A
- Emergency stop button on engine's ECU
- CANBUS Panel with 8m extension and digital display of engine data

Panel instrument CANBUS

Panel Instrument **high brightness 5 "TFT display**, with **touchscreen** and a very simple and intuitive interface.

- Engine data acquisition with CANBUS J1939 interface.
- Data acquisition from traditional sensors for up to eight analog inputs, five digital inputs and one frequency input
- Acquisition of navigation data with NMEA0183 interface
- Up to five relay command outputs for signals and simple activations
- Alarm monitoring according to approved safety standards
- Automatic brightness adjustment and day / night mode
- USB local connectivity for firmware update and configuration

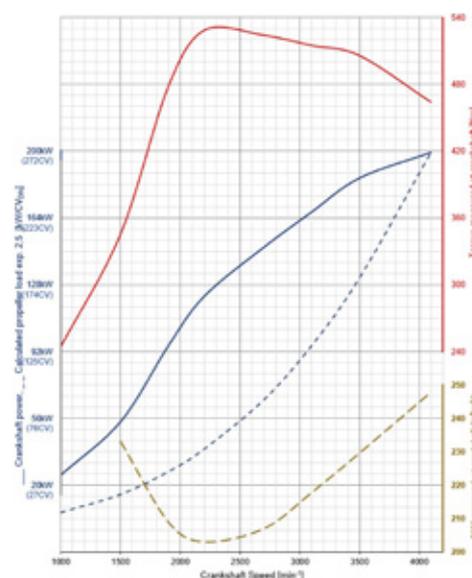
The unit is supplied already programmed and ready to work.



Optionals

- Single or double electronic CANBUS control station
- Boiler kit for heating
- Various length panel extension
- Second control panel for flybridge installations
- RACOR and Mediterraneo filters
- Trolling Valve
- Additional PTO (ISO4183 Z/SPZ)
- Steering pump
- NMEA2000 compatibility kit
- Wide range of additional instruments BRAVO X-1 stern drive Red. 1,65:1 or BRAVO 2
- Red.2:1 - BRAVO 3 Red. 2:1
- Stainless steel propeller for BRAVO X-1
- Aluminium propeller for BRAVO X-2
- Stainless steel propeller for BRAVO X-3
- Multiple Sterndrive Steering Tie for twinengine
- Alignment tool
- Volvo coupler kit

Performance curves



Referred to 30HPE 270



MARINE DIESEL ENGINES

INBOARD MARINE ENGINE 42HPE

Models:

42HPE 350 - 42HPE 330 - 42HPE 300
42HPE 280 - 42HPE 250 - 42HPE 150



The 42HPE engine was developed on a VM engine basis.

The 42HPE Inboard Marine Engine has these features:



4 stroke turbocharged and aftercooled, direct injection diesel engine with electronically controlled common rail injection.



Cooling controlled by separate fresh and salt water circuits, with extractable hoses for easy maintenance.



Lube oil, water and air circuits designed to reduce external flexible pipes to a minimum to reduce loss of liquids in the bilge.



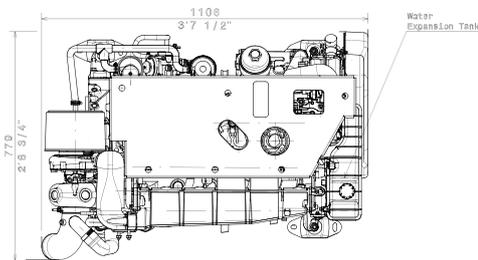
Auxiliary devices driven by Poly-V belt to ensure excellent power transfer and long life compared to traditional versions



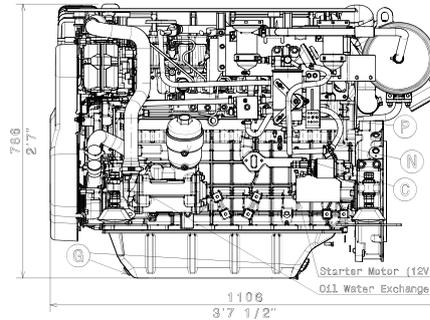
Electrical circuit protected by reactivatable valves.

Dimensional FNM 42HPE

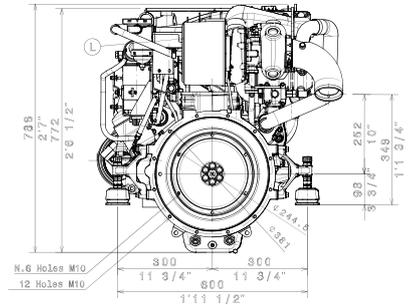
TOP VIEW



SIDE VIEW



REAR VIEW



Technical data

Engine model	42 HPE 350	42 HPE 330	42 HPE 300	42 HPE 280	NEW	42 HPE 250	42 HPE 150
Max Power	257 kW 350 HP 3800 rpm	242,6 kW 330 HP 3800 rpm	220,6 kW 300 HP 3800 rpm	206 kW 280 HP 3800 rpm		184 kW 250 HP 3800 rpm	110 kW 350 150 HP 3800 rpm
Max Torque	700 Nm 71.4 Kgm 2700 rpm	657 Nm 67 Kgm 2700 rpm	657 Nm 67 Kgm 2700 rpm	657 Nm 67 Kgm 2700 rpm		530 Nm 54 Kgm 2700 rpm	330 Nm 33.6 Kgm 2700 rpm
Number of cylinders	6 in line						
Displacement	4.164 cc						
Bore and Stroke	94x100 mm						
Dry Weight	460kg - 1014 lbs						
Cooling	Water						
Combustion	Direct Injection Common Rail						
Induction	Turbocharged and intercooled						
Dimension (mm)	806(h) x 1188(l) x 762(w)						
Emissions	Directive 2013/53/UE						

Technical data according to ISO8665. Fuel complies EN590. Merchant fuel may differ in specification and may influence engine power output and consumption. Production tolerance within 5% (of power). Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.

Standard technical equipment

- SAE flywheel housing
- Starter motor 12V
- Alternator 12V-110A
- Oil and fuel filters
- Air filter
- Freshwater engine cooling system with seawater heat exchanger
- Engine lubricating oil cooled by heat exchanger seawater cooled
- Freshwater cooled exhaust manifold and freshwater turbocharger
- Bronze seawater circulating pump with impeller in special rubber
- Centrifugal pump for freshwater circulation

- Drain oil pump
- Expansion tank integrated
- Stainless steel exhaust gas/seawater mixer
- Flexible mounts
- Electrical instrument panel with alarms
- 8 m. panel cable extension
- White paint finish

Gears

ANGLED GEARBOXES

- TM880 A (10°): R. 1,53:1, 2,08:1, 2,60:1
- ZF 68 D - A

V-LINE GEARBOXES

- ZF68-IV (12°): R. 1,29:1, 1,56:1, 1,99:1, 2,48:1

IN-LINE AND COAXIAL GEARBOXES

- ZF68C (coaxial): R. 1,00:1

Optionals

- Single or double electronic CANBUS
- Boiler kit for heating
- Various length panel extension
- Second control panel for flybridge installations
- Fuel and seawater filters
- Power steering pump
- Trolling Valve
- NMEA2000 compatibility kit
- Wide range of additional instruments

Panel instrument CANBUS

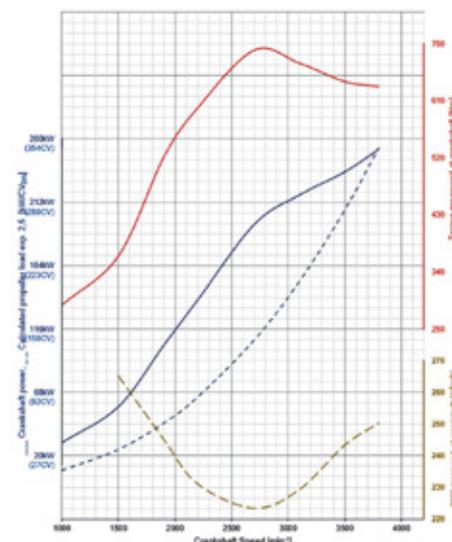
Panel Instrument **high brightness 5" TFT display**, with **touchscreen** and a very simple and intuitive interface.

- Engine data acquisition with CANBUS J1939 interface.
- Data acquisition from traditional sensors for up to eight analog inputs, five digital inputs and one frequency input
- Acquisition of navigation data with NMEA0183 interface
- Up to five relay command outputs for signals and simple activations
- Alarm monitoring according to approved safety standards
- Automatic brightness adjustment and day / night mode
- USB local connectivity for firmware update and configuration

The unit is supplied already programmed and ready to work.



Performance curves



Referred to **42HPE 350**



MARINE DIESEL ENGINES

IN/OUTBOARD MARINE ENGINE 42HPEP

Models:

42HPEP 350 - 42HPEP 330 - 42HPEP 300
42HPEP 280 - 42HPEP 250 - 42HPEP 150



The 42HPEP engine was developed on a VM engine basis.

The 42HPEP In/outboard Marine Engine has these features:



4 stroke turbocharged and aftercooled, direct injection diesel engine with electronically controlled common rail injection.



Cooling controlled by separate fresh and salt water circuits, with extractable hoses for easy maintenance.



Lube oil, water and air circuits designed to reduce external flexible pipes to a minimum to reduce loss of liquids in the bilge.



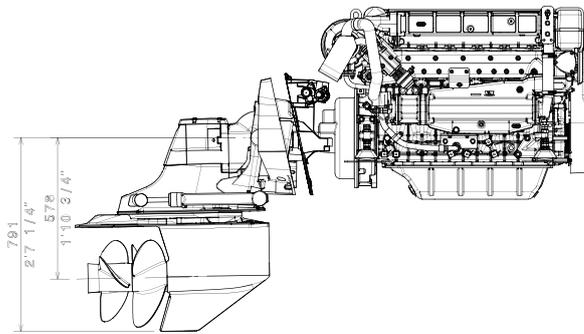
Auxiliary devices driven by Poly-V belt to ensure excellent power transfer and long life compared to traditional versions



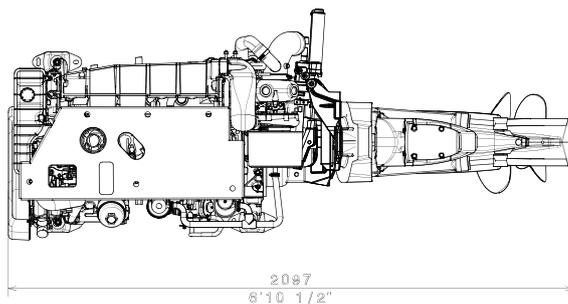
Electrical circuit protected by reactivateable valves.

Dimensional FNM 42HPEP BRAVO 3

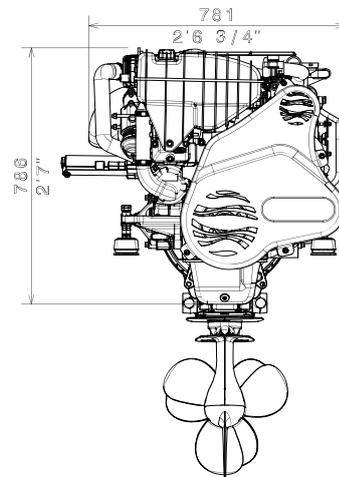
SIDE VIEW



TOP VIEW



FRONT VIEW



Dati tecnici

Engine model	NEW					
	42 HPEP 350	42 HPEP 330	42 HPEP 300	42 HPEP 280	42 HPEP 250	42 HPEP 150
Max Power	257 kW 350 HP 3800 rpm	242,6 kW 330 HP 3800 rpm	220,6 kW 300 HP 3800 rpm	206 kW 280 HP 3800 rpm	184 kW 250 HP 3800 rpm	110 kW 350 150 HP 3800 rpm
Max Torque	700 Nm 71.4 Kgm 2700 rpm	657 Nm 67 Kgm 2700 rpm	657 Nm 67 Kgm 2700 rpm	657 Nm 67 Kgm 2700 rpm	530 Nm 54 Kgm 2700 rpm	330 Nm 33.6 Kgm 2700 rpm
Number of cylinders	6 in line					
Displacement	4.164 cc					
Bore and Stroke	94x100 mm					
Dry weight	460kg - 1014 lbs					
Cooling	Water					
Combustion	Direct Injection Common Rail					
Induction	Turbocharged and intercooled					
Dimension (mm)	806(h) x 1188(l) x 762(w)					
Emissions	Directive 2013/53/UE					

Technical data according to ISO8665. Fuel complies EN590. Merchant fuel may differ in specification and may influence engine power output and consumption. Production tolerance within 5% (of power). Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.

Standard technical equipment

- SAE flywheel housing
- Starter motor 12V
- Alternator 12V-110A
- Oil and fuel filters
- Air filter
- Freshwater engine cooling system with seawater heat exchanger
- Engine lubricating oil cooled by heat exchanger seawater cooled
- Freshwater cooled exhaust manifold and freshwater turbocharger
- Bronze seawater circulating pump with impeller in special rubber
- Centrifugal pump for freshwater circulation

- Drain oil pump
- Expansion tank integrated
- Stainless steel exhaust gas/seawater mixer
- Flexible mounts
- Electrical instrument panel with alarms
- 8m. panel cable extension
- White paint finish

Gears

ANGLED GEARBOXES

- TM880 A (10°): R. 1,53:1, 2,08:1, 2,60:1
- ZF 68 D - A

V-LINE GEARBOXES

- ZF68-IV (12°): R. 1,29:1, 1,56:1, 1,99:1, 2,48:1

IN-LINE AND COAXIAL GEARBOXES

- ZF68C (coaxial): R. 1,00:1

Optionals

- Single or double electronic CANBUS
- Boiler kit for heating
- Various lenght panel extension
- Second control panel for flybridge installations
- Fuel and seawater filters
- BRAVO X-1 stern drive Red. 1,65:1 or BRAVO 2 Red. 2:1 - BRAVO 3 Red. 2:1
- Stainless steel propeller for BRAVO X-1
- Aluminium propeller for BRAVO X-2
- Stainless steel propeller for BRAVO X-3
- Multiple Sterndrive Steering Tie for twin-engine
- Alignment tool
- Coupler kit
- NMEA2000 compatibility kit
- Wide range of additional instruments

Panel instrument CANBUS

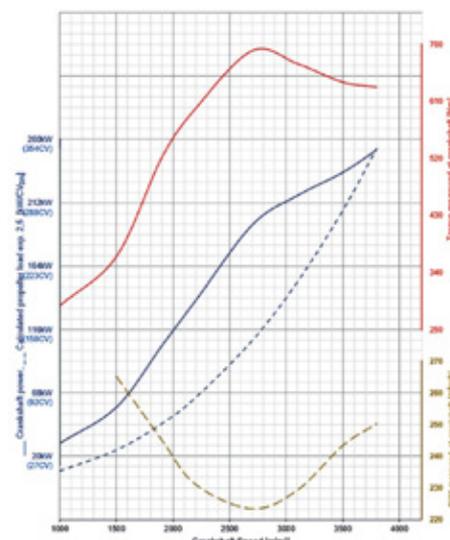
Panel Instrument **high brightness 5" TFT display**, with **touchscreen** and a very simple and intuitive interface.

- Engine data acquisition with CANBUS J1939 interface.
- Data acquisition from traditional sensors for up to eight analog inputs, five digital inputs and one frequency input
- Acquisition of navigation data with NMEA0183 interface
- Up to five relay command outputs for signals and simple activations
- Alarm monitoring according to approved safety standards
- Automatic brightness adjustment and day / night mode
- USB local connectivity for firmware update and configuration

The unit is supplied already programmed and ready to work.



Performance curves





MARINE DIESEL ENGINES

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CROP - cropstudio.it



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