



# Customer Information Pack



**M300C & M250C**







## **Perkins M300C and M250C**

### **Contents**

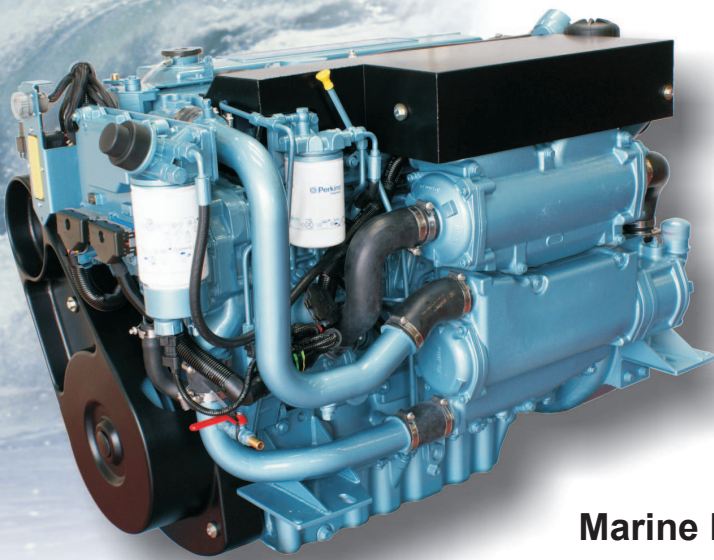
- **Perkins 1100 Series Specification Sheet**
- **M300C & M250C Technical Data Sheet**
- **M300C General Arrangement Drawing**
- **M300C Power Curves**
- **M250C Power Curves**
- **M300C & M250C Fuel System**
- **M300C & M250C Fresh Water Cooling System**
- **M300C & M250C Raw Water Cooling System**
- **M300C & M250C Keel Cooling System**
- **Basic Control Panel**
- **Main Station Control Panel**
- **Mini Marine Power Display**
- **Control Panel Flexibility**
- **Possible Panel Configurations**
- **Panel Wiring Layout**





# 1100 Series

## Marine Propulsion Engine M250C and M300C



These are the latest addition to the common platform concept of 1100 Series diesel engines. Assembled on a new high technology production line, these ultra clean engines will provide a superior replacement for all marine six cylinder models. Frequent computerised checks during the production process ensure high build quality excellence is maintained.

The new engines boast considerable increases to delivered power, torque and noise reduction. These have been achieved through changes to combustion areas, turbocharger geometry, increased cylinder displacement and significantly, the inclusion of a high pressure, common rail fuel system. These new engines incorporate components of Caterpillar ACERT™ technology.

A complete fuel system, air cleaner and heat exchanger is supplied as standard. Choice is provided to customers through the availability of a large variety of standard specifications incorporating a choice of alternator and front PTO.

### Powered by Your Needs

These engines offer a choice of standard build configurations to match the needs of customers for a diverse range of applications.

### State of the Art Design

These engines utilise components of Caterpillar ACERT™ technology. This provides excellent fuel economy and low heat rejection.

### Worldwide Power Solution

They have been designed to be worldwide fuel tolerant, including kerosene, jet aviation fuel and B20 biofuel (RME). Options are available to meet local market needs.

### World Class Product Support

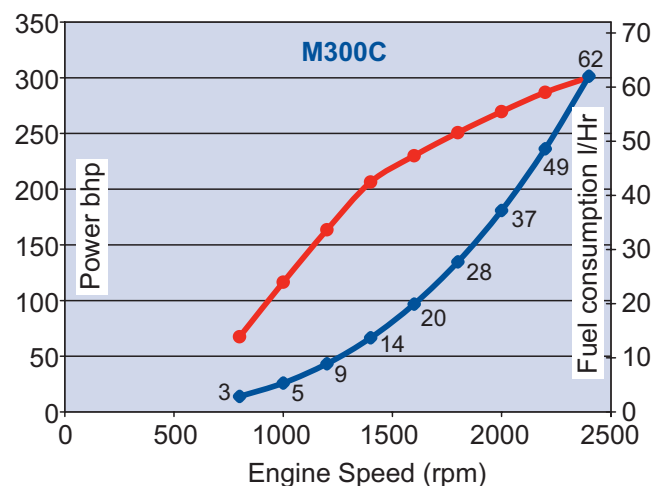
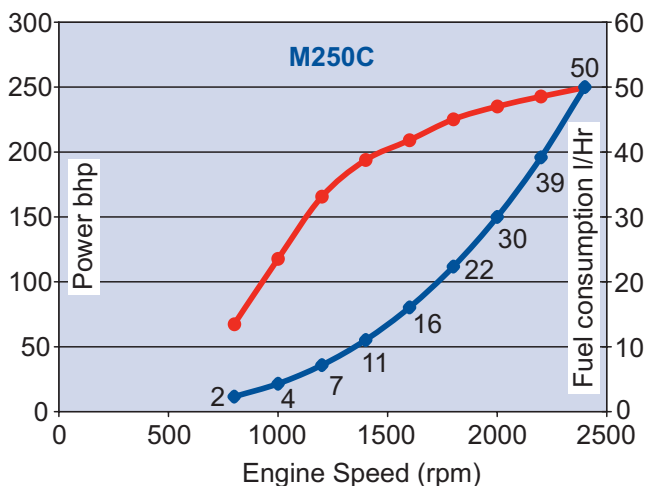
At Perkins we are constantly researching, developing and investing in our products and services. Total worldwide support is provided through a network of distributors and service outlets in 160 countries, providing access to over 50,000 parts and exchange units 24 hours a day, 365 days a year. This support is enhanced by TIPSS (The Integrated Parts and Service System). TIPSS enables customers to electronically specify and order parts as well as service 1100 series engines with online guides and service tools.

### Lower Operating Costs

Service intervals are set at 500 hours as standard and Perkins provides comprehensive warranty cover for 2 years (up to 3000 hours), with 3 years on major engine components. Low usage warranty package is also available.

Model	Rating	Peak Torque (Nm)	Rating
M300C	300 hp (225 kW) @ 2400 rpm	1050 @1400rpm	LD
M250C	250 hp (186 kW) @ 2400 rpm	986 @1400rpm	MD

Meets EPA Tier 2, IMO, RCD and CCNR stage 2.



## Features:

- Common rail fuel system
- Electronic engine control
- Automatic cold start control
- Multi shot fuel injection
- Optimised combustion
- Gear driven auxiliary and jacket water pumps
- Integral oil cooler
- Heat exchanger & keel cooling
- Isolated timing case & sump
- High capacity heat exchanger with cupro-nickel charge cooler

## Benefits:

- Excellent power to weight
- Ease of Installation
- Clean, quiet, smooth operation
- Excellent fuel economy
- Easy to maintain with 500hr Service interval
- Reliability
- Bio Diesel up to B20
- Approved for use with Military fuels

## Standard features

- 500 hour service interval
- CuNi sea water charge air cooler
- Common rail fuel system
- SAE3 backend
- Primary & secondary fuel filter, with integrated water in fuel alarm
- Watercooled exhaust manifold, with integral header tank
- Dry wrapped turbocharger
- Electronic governor
- Filtered crankcase breather
- Oil filter, high level dipstick, and twin oil fillers
- Shallow sump
- Integral oil cooler
- Gear driven self priming auxiliary water pump
- Gear driven centrifugal jacket water pump
- 90 Amp 12 Volt alternator
- 12 Volt starter motor
- J1939 fault diagnostics
- Insulated electrics
- US Coast Guard, MCA & RCD approved oil and fuel lines

## Optional Equipment

- 24 Volt starting
- 55 & 100 Amp 24 Volt charging alternators
- 175 Amp 12 Volt charging alternator
- Analogue & digital marine displays
- Anti-vibration engine mounts
- Dry & wet exhaust elbows
- Heat exchanger & keel cooling
- Marine transmission adaption kits
- Factory installed marine transmission
- Gearbox oil cooler
- Conversion kit for control cables
- Power Take Off - crankshaft PTO extension shaft with pulley drives

## General Data

Number of cylinders	Vertical in-line 6 cylinder
Bore and stroke	105 mm x 127 mm
Displacement	6.6 litres
Aspiration	Turbocharged aftercooling
Cycle	4 stroke
Combustion system	Direct injection
Compression ratio	16.2:1
Rotation	Anti-clockwise viewed on flywheel
Cooling system	Water
PTO	Refer to installation guide
Operational angle (max)	20° nose up. Heel 25° constant, 35° intermittent
Dimensions	Length 1328 mm Width 805 mm Height 828 mm
Dry weight	700 kg
Wet weight	738 kg

Final weight and dimensions will depend on completed specification

## Rating Definitions

### Pleasure Duty

For vessels operating up to 30% load factor. This rating is intended for pleasure/non-revenue generating applications that operate less than 500 hours a year. Typical applications could include but are not limited to: High speed planning craft.

### Light Duty

For vessels operating up to 50% load factor. This rating is intended for applications that operate less than 1500 hours a year in variable load applications where full power is limited to 2 hours out of every 12 hours of operation and reduced power must be at or below 200 rpm of the maximum rated rpm. Typical applications could include but are not limited to: planing / semi displacement craft such as customs and police launches, sport fish charter vessels, passenger carriers, survey craft and long distance cruisers etc.

### Medium Duty

For vessels operating up to 60% load factor. This rating is intended for applications that operate less than 4000 hours a year. Typical applications could include but are not limited to: Semi-displacement / displacement craft such as customs and police launches, high speed commercial fishing, passenger carriers, survey craft, ferries and long distance cruisers etc.

### Heavy Duty

For vessels operating up to 80% load factor. This rating is intended for applications that operate less than 4000 hours a year. Typical applications could include but are not limited to: semi-displacement / displacement craft such as customs and police launches, high speed commercial fishing, passenger carriers, survey craft and ferries etc.



## Wimborne Marine Power Centre

22 Cobham Road,  
Ferndown Industrial Estate,  
Wimborne,  
Dorset, BH21 7PW,  
England.

Tel: +44 (0)1202 893720, Fax: +44 (0)1202 851700

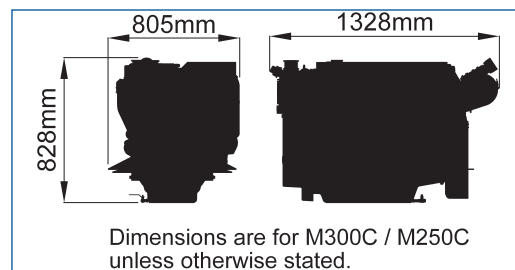
E-mail: PerkinsSabre@Perkins.com

Web: [www.Perkins-Sabre.com](http://www.Perkins-Sabre.com)

All information in this document is substantially correct at time of printing and may be altered subsequently.

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## Perkins M300C and M250C - Technical Data

	M300C	M250C
Rated power	300bhp	250bhp
Rated engine speed	2400	
Number of cylinders	6	
Cylinder arrangement	In-line	
Cycle	4 Stroke	
Induction System	Turbocharged, charge air cooled	
Bore	105mm	
Stroke	127mm	
Compression Ratio	16.2:1	
Cubic Capacity	6.6 L	
Valves per Cylinder	4	
Direction of Rotation	Anti-clockwise viewed from flywheel	
Firing Order	1-5-3-6-4-2	
Total Weight (wet)	738kg	
<b>Cooling System</b>		
Recommended Coolant	Extended Life Coolant 50/50 Mix	
Fresh water flow	220 L/min @ 2400rpm	
Coolant pump speed and method of drive	Gear driven	
System capacity	26.3 Litres – Heat Exchanger cooled	
Pressure cap setting	50 kPa	
Protection switch setting	103 Deg C	
Sea water pump type	Gear driven full cam	
Sea water suggested inlet hose diameter	32 mm	
Sea cock	Full Flow 32 mm	
Strainer	Raw water strainer <b>must</b> be included in suction side of the circuit	
Maximum sea water temperature	39 Deg C	
Sea water flow	137 L/min @ 2400rpm	
<b>Fuel System</b>		
Recommended fuel specifications	DIN E 590 DERV (class A-F & 0-4) BS2869 Class A2 (Off highway, gas oil, red diesel) ASTM D975-91 Class 1-1DA & Class 2-2DA JIS K2204 (1997) Grades 1, 2, 3 & Special grade 3	
Fuel injection pump	CR200	
Fuel lift pump	Manual	
Fuel feed pressure (static)	0.3 to 0.6 Bar	
Governor type	A4E2	

Correct at time of print.

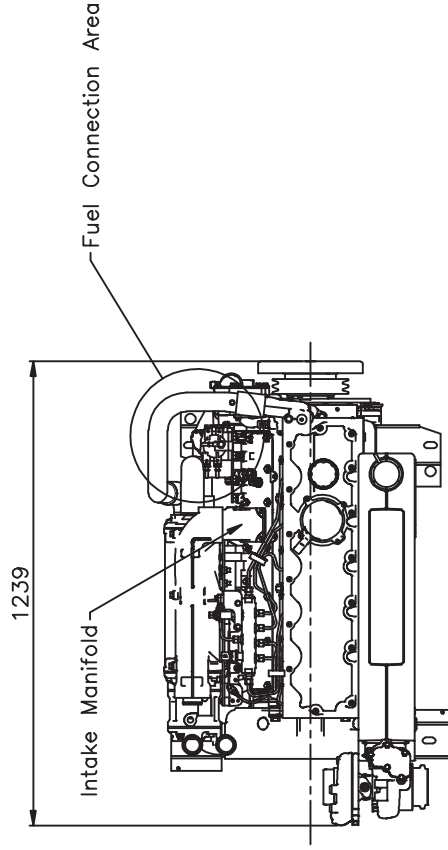
Pipe size: • Supply - bore • Return - bore	10 mm 10 mm	
Maximum lift pump lift	1.8 m	
Maximum fuel lift pump depression at inlet	127 mm ( Hg )	
Fuel consumption at full power	62 Litres/hr	51.9 Litres/hr
<b>Air Intake</b>		
Combustion airflow	15.7 m3/min	13.8 m3/min
Maximum engine compartment air temperature	60°C	
Maximum air temperature at engine inlet	50°C	
Ventilation - maximum engine room depression	125 mm WG	
Suggested ventilation airflow including combustion air	31.9 m3/min	28 m3/min
Minimum cross section of air duct (per engine)	968 cm2 Hot Climate	807 cm2 Hot Climate
	484 cm2 Temperate Climate	403 cm2 Temperate Climate
<b>Exhaust</b>		
Exhaust gas flow	45.9 m3/min	36.8 m3/min
Maximum restriction measured within (305 mm) 12" of turbocharger outlet	15kPa	
Recommended pipe bore (wet exhaust)	127 mm	
Recommended pipe bore (dry)	69 mm	
Minimum rise from sea water level to exhaust outlet centre-line	203 mm	
<b>Lubricating System</b>		
Recommended lubricating oil	API / CH4 / CI-4	
Sump capacity maximum	15 Litres	
Maximum installation angle plus planing angle for continuous operation	20 Deg. Nose up, Heel angle 25 Deg. constant, 35 Deg. intermittent	
Oil pressure in operating speed range (steady state)	3.6 Bar	
Low oil pressure switch setting	Factory set on ECM	
<b>Electrical System</b>		
Alternator	Insulated Return 12 Volt-100 amp or 24 Volt-55 amp	
Starter type	4.0 Kw	
Number of teeth in flywheel	126	
Number of teeth on starter	10	
<b>Cold Start Limits</b>		
Minimum cold start temperature (with aid)	-15 Deg C	
Batteries	Two 12 Volt 510 Amp (BS3911) or Two 12 Volt 790 Amp (SAE J537)	



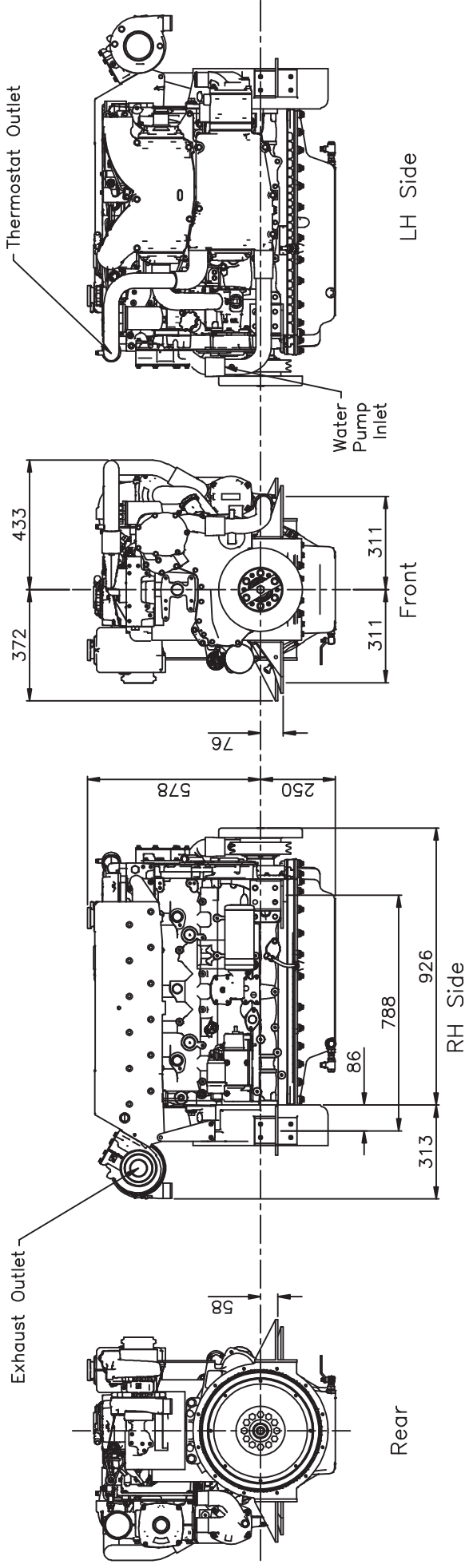


Perkins Sabre M300C Marine Diesel Engine  
(622 mm transverse mounting centres)

CATERPILLAR MARINE POWER UK LTD  
Wimborne, Dorset, England.  
Tel. +44(0)1202 893720  
Fax. +44(0)1202 851700  
E-mail. Wimborne\_MPC\_post@cat.com  
www.Perkins-Sabre.com

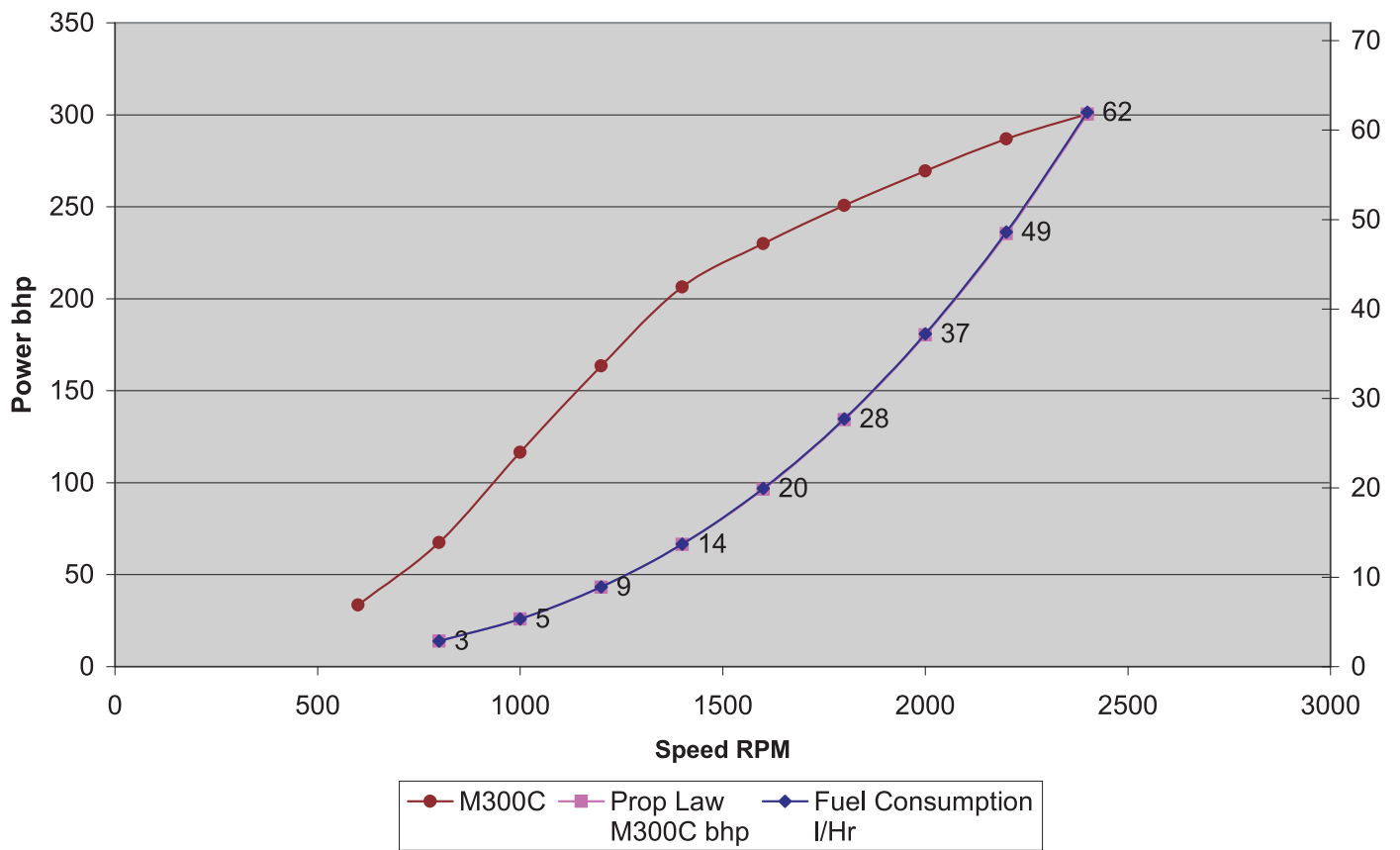


Plan

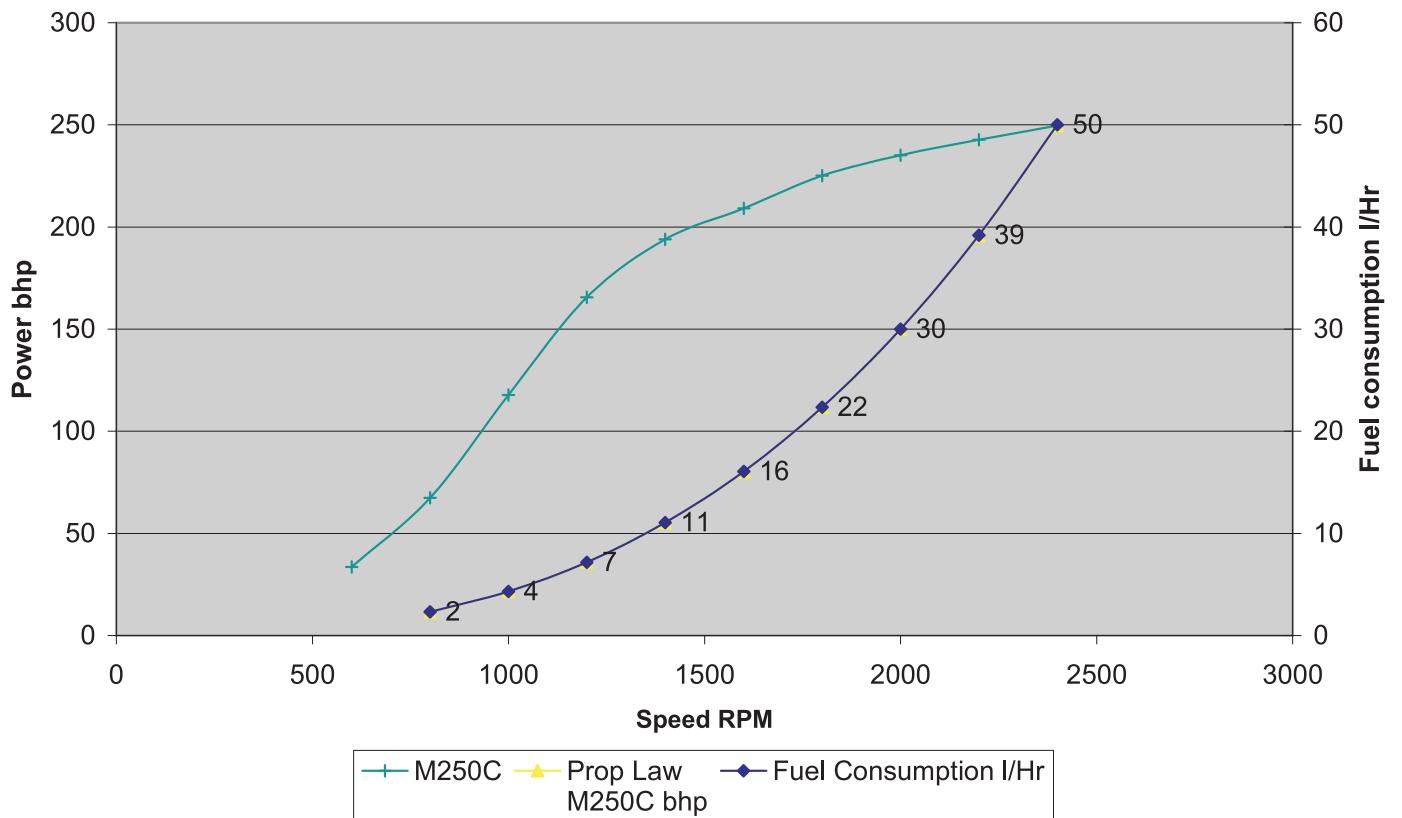


PROVISIONAL

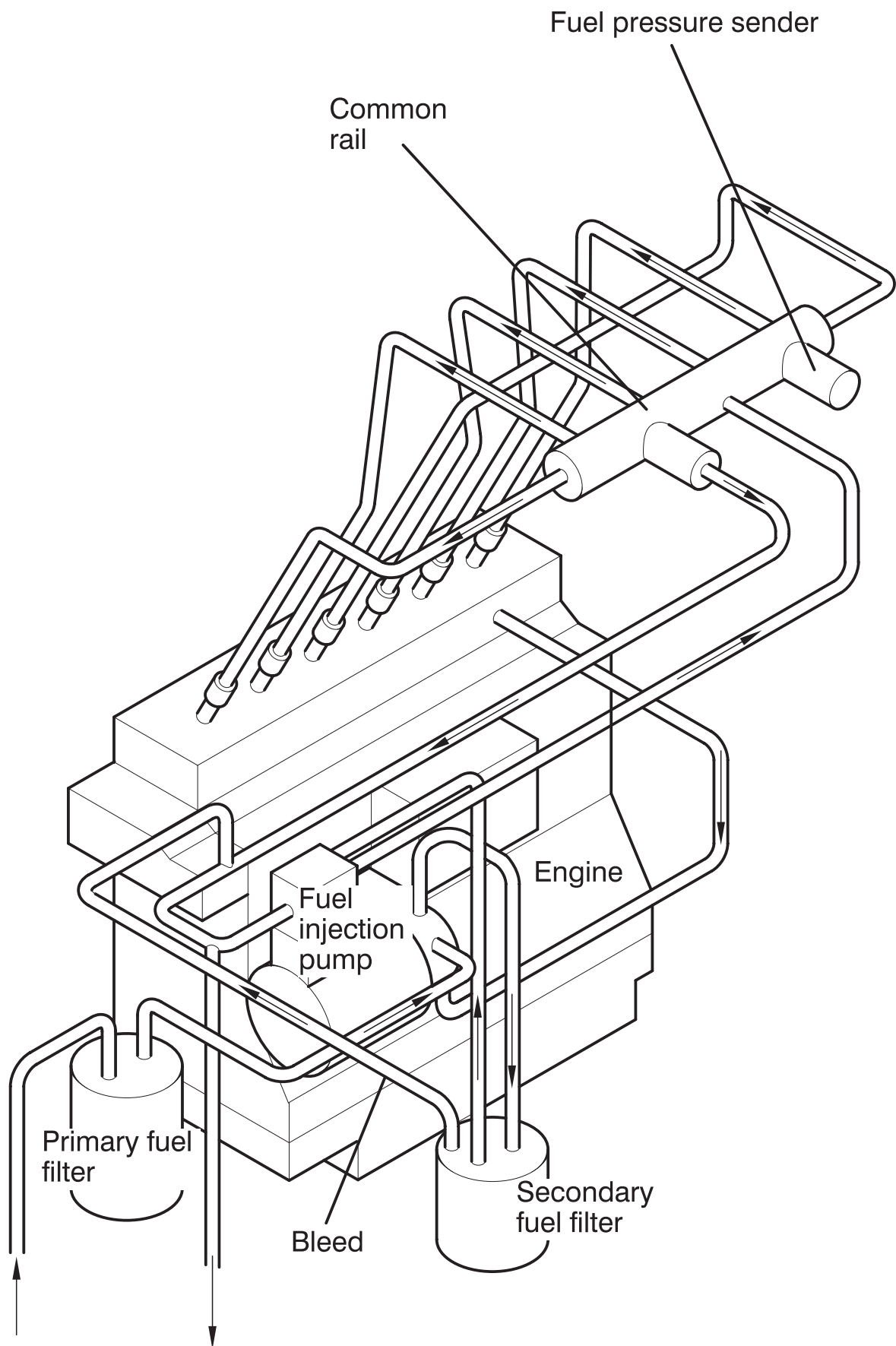
# M300C power curves



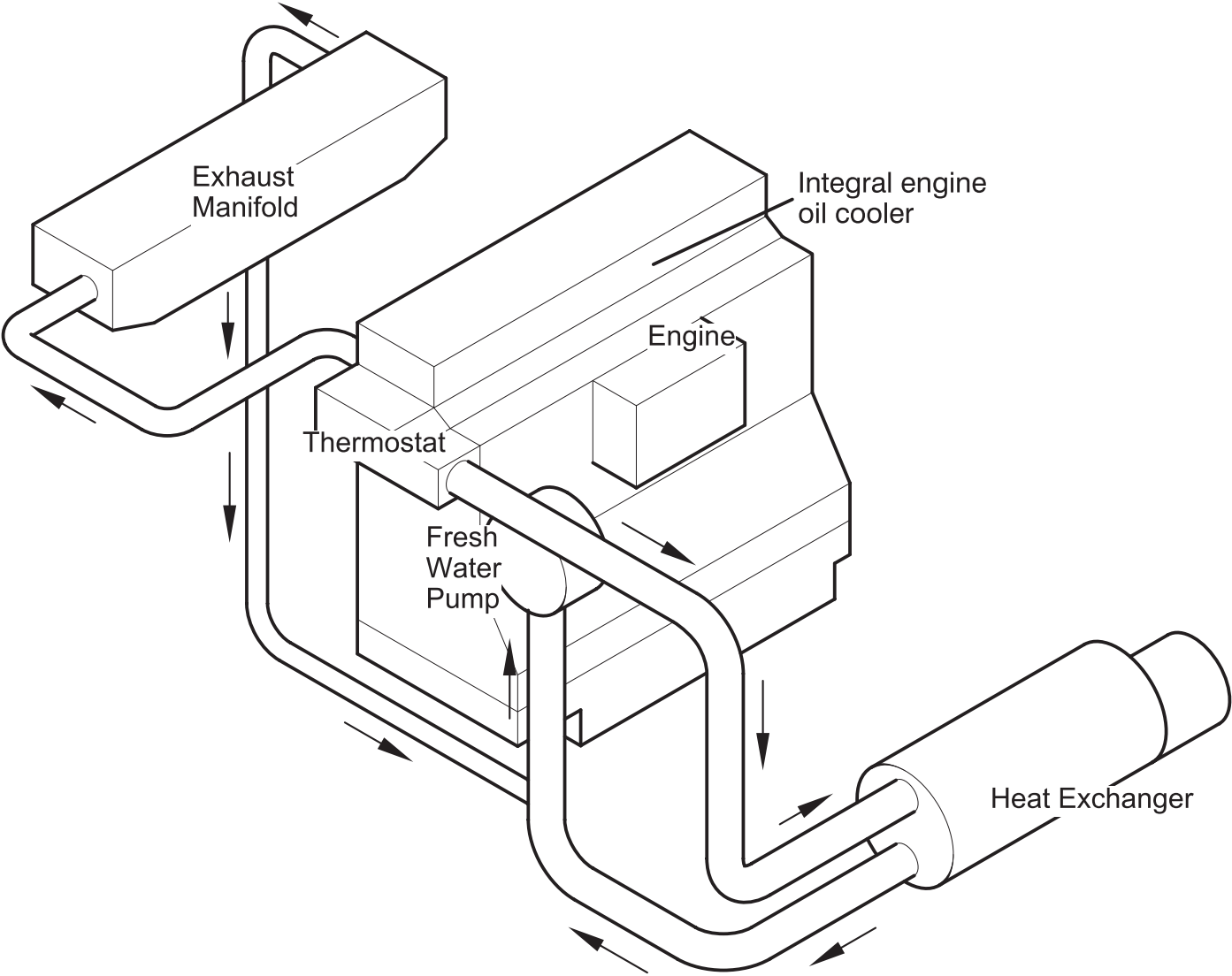
# M250C power curves



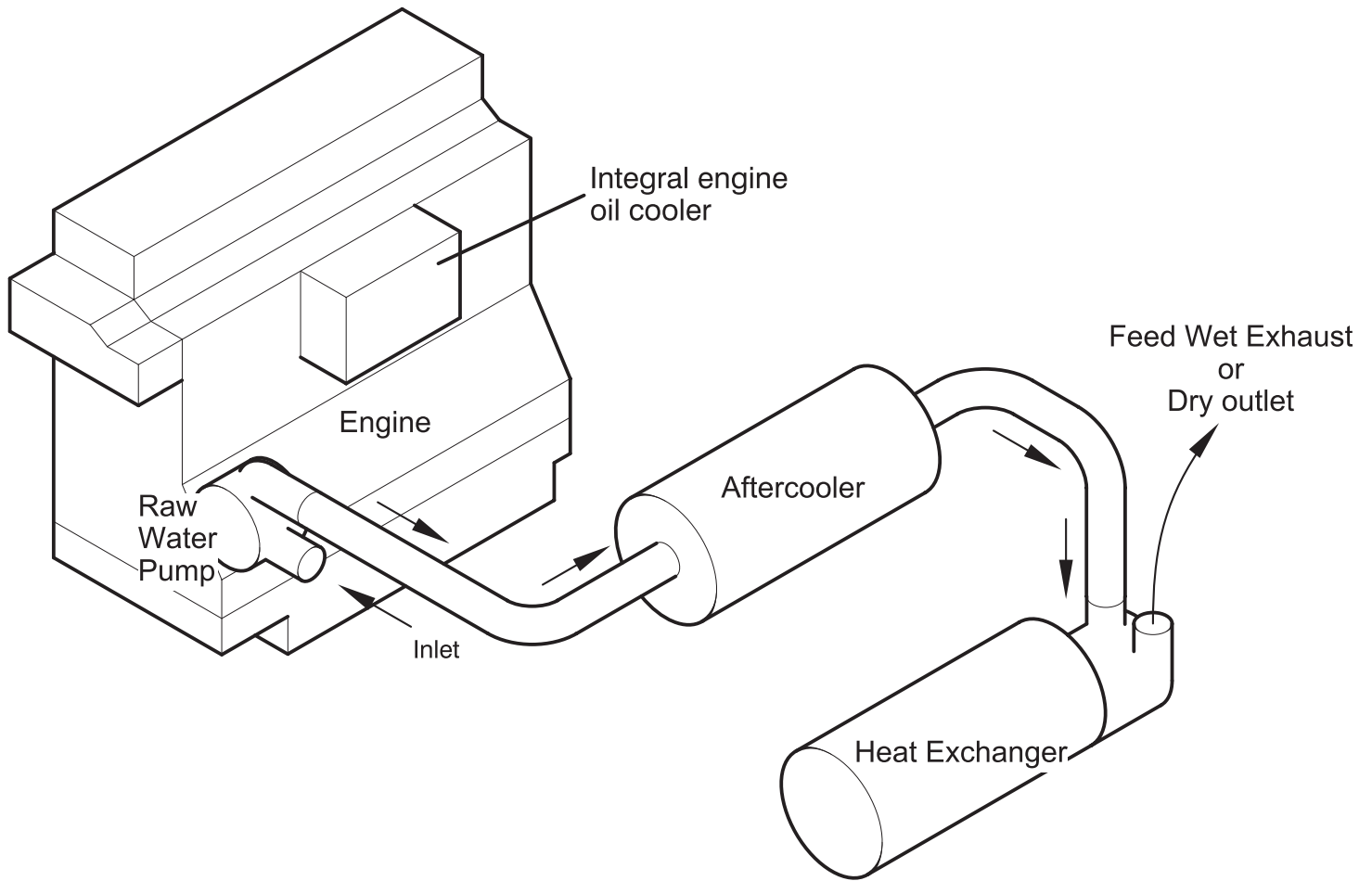
# M300C, M250C fuel system



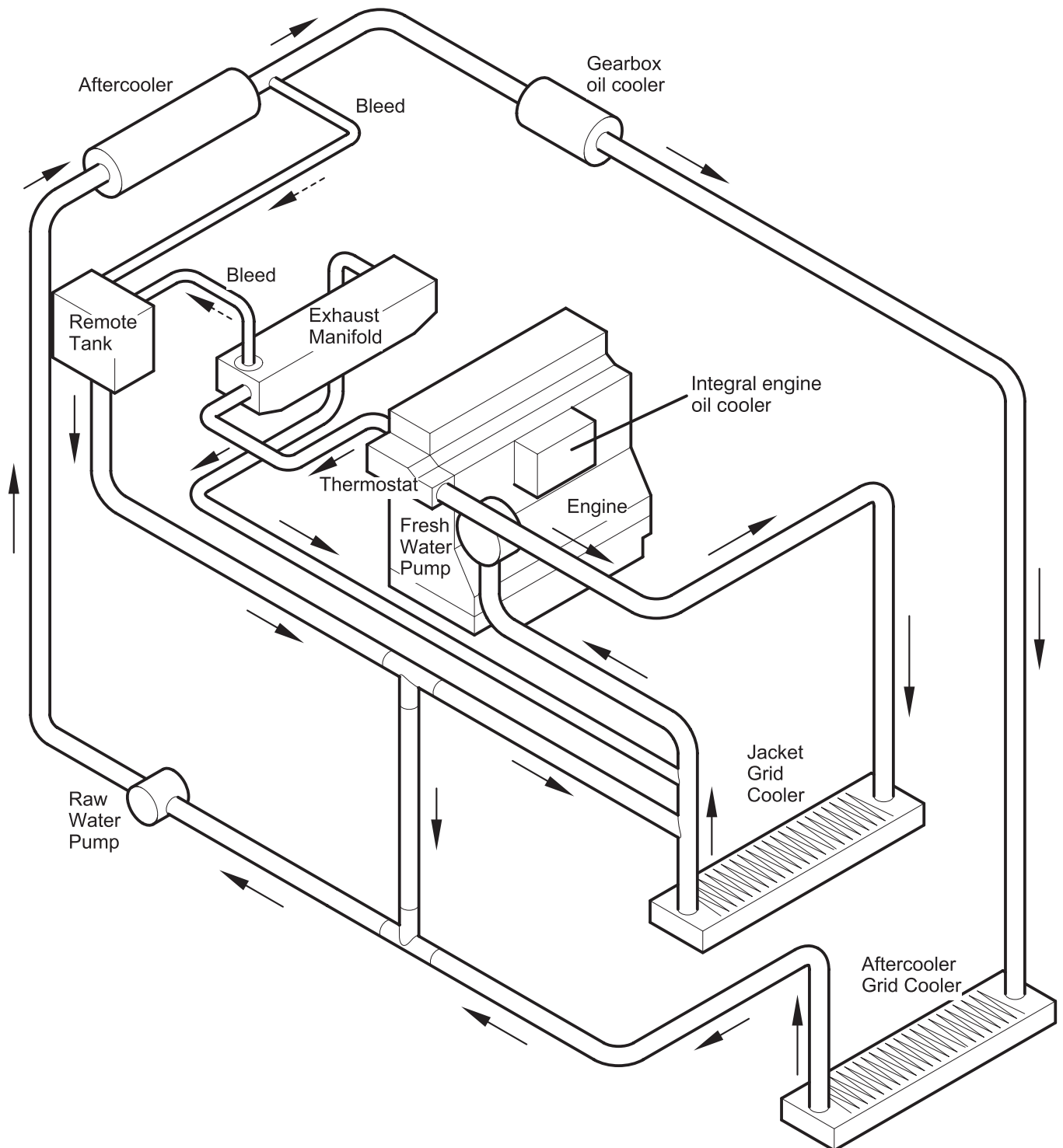
# M300C, M250C fresh water cooling system



# M300C, M250C raw water cooling system



# M300C, M250C keel cooling system



# Main station control panel.

## Features:

Tach/Hr meter with integral fault code display.

Oil pressure, water temperature and volt gauge as standard.

Warning and diagnostics lamps.

Audible alarm.

Panel on/off switch.

Crank switch.

Stop button.

10 position dimmer.

## Benefits:

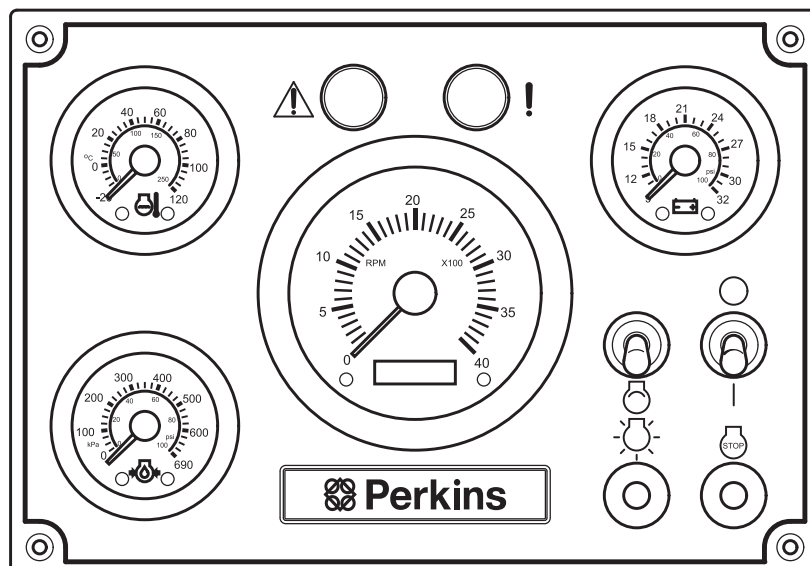
Common look and feel to existing main station panel with increased functionality.

Dimensionally the same as existing main station panel, ideal for re-power.

12 or 24 volt operation from same panel.

Provision for additional factory supplied gauges to be installed e.g. fuel rate, exhaust temp etc.

IP 65 rated from front facia, switches/gauges IP67 rated





# Basic control panel.

## Features:

Tach/Hr meter with integral fault code display.

Warning and diagnostics lamps.

Audible alarm.

Panel on/off switch.

Crank switch.

Stop button.

10 position dimmer.

## Benefits:

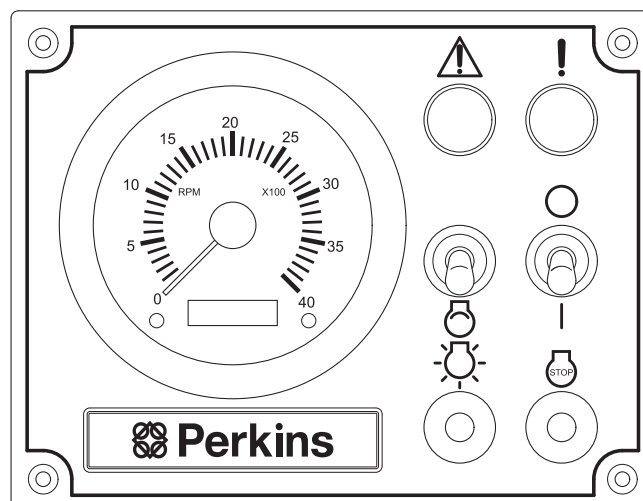
Common look and feel to existing basic control panel with increased functionality.

Dimensionally the same as existing basic control panel, ideal for re-power.

12 or 24 volt operation from same panel.

Provision for additional factory supplied gauges to be installed e.g. fuel rate, exhaust temp etc.

IP 65 rated from front facia, switches/gauges IP67 rated



# Mini marine power display

## Features:

Single engine support.

Displays engine parameters and fault codes with audible alarm.

5 display screens.

High resolution display 320 X 240 DPI

Transflective screen improves readability by reflecting more or less light conditions as ambient light changes.

Display brightness fully adjustable.

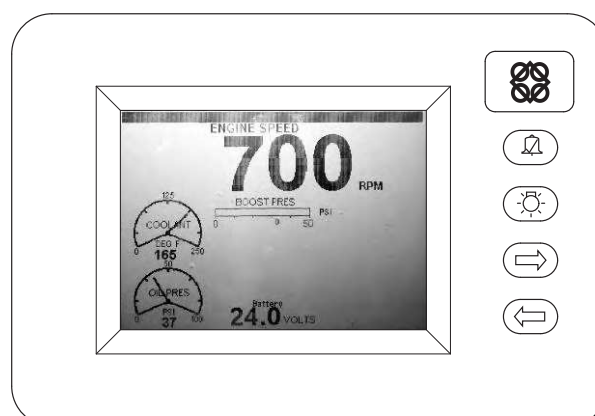
Operates on 12 or 24 V systems

Supports several languages

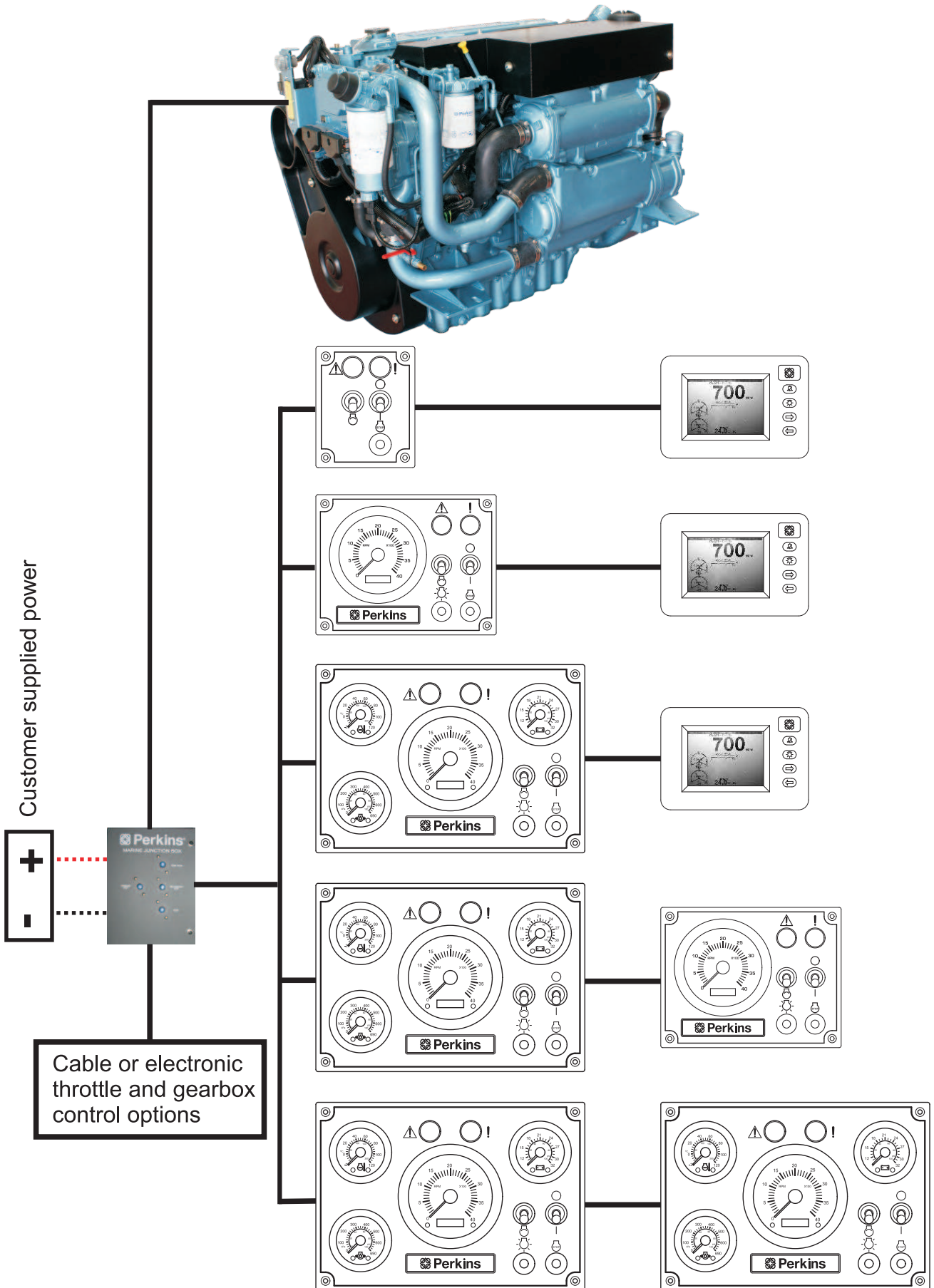
IP 67 rated from front facia

## J1939 Engine parameters

- Engine speed
- Percent load
- Engine hours
- Fuel rate
- Fuel pressure
- Fuel temperature
- Oil pressure
- Boost pressure
- Coolant temperature
- Engine Diagnostic & Events
- Inlet manifold air temperature
- Battery voltage
- Engine totals - current & trip
- Transmission oil pressure

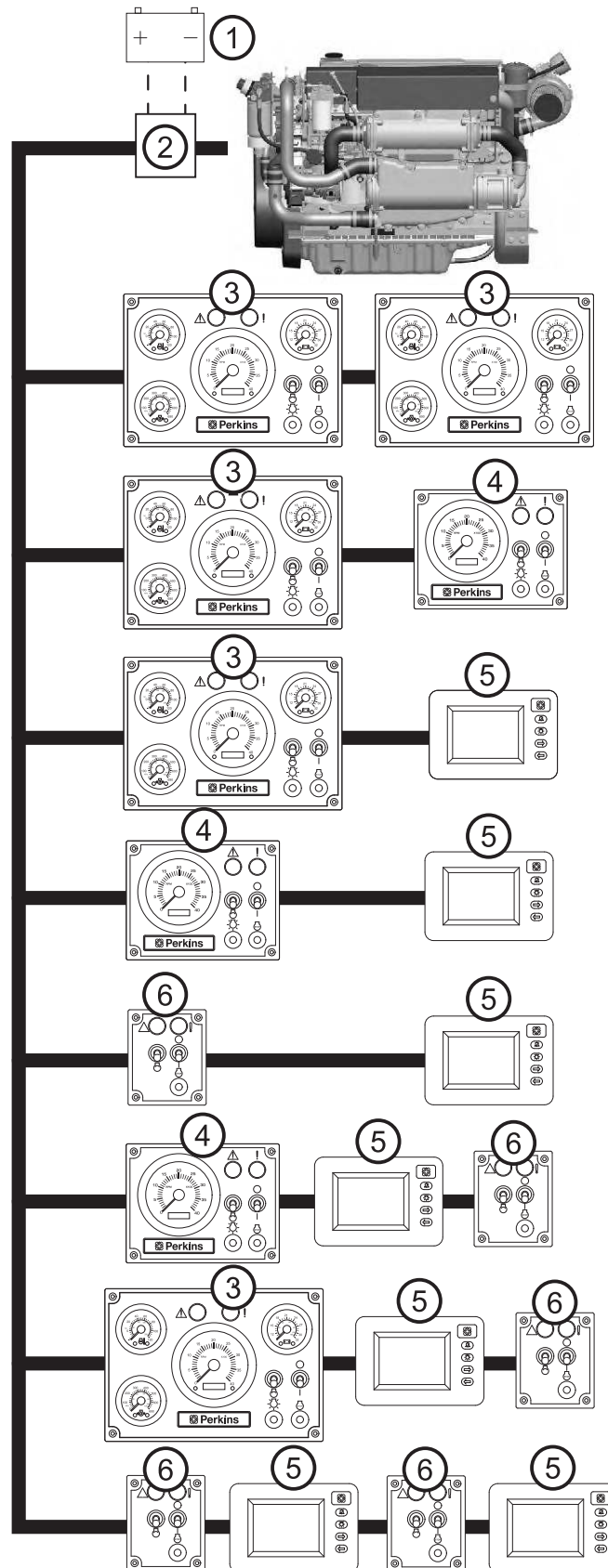


# Flexibility



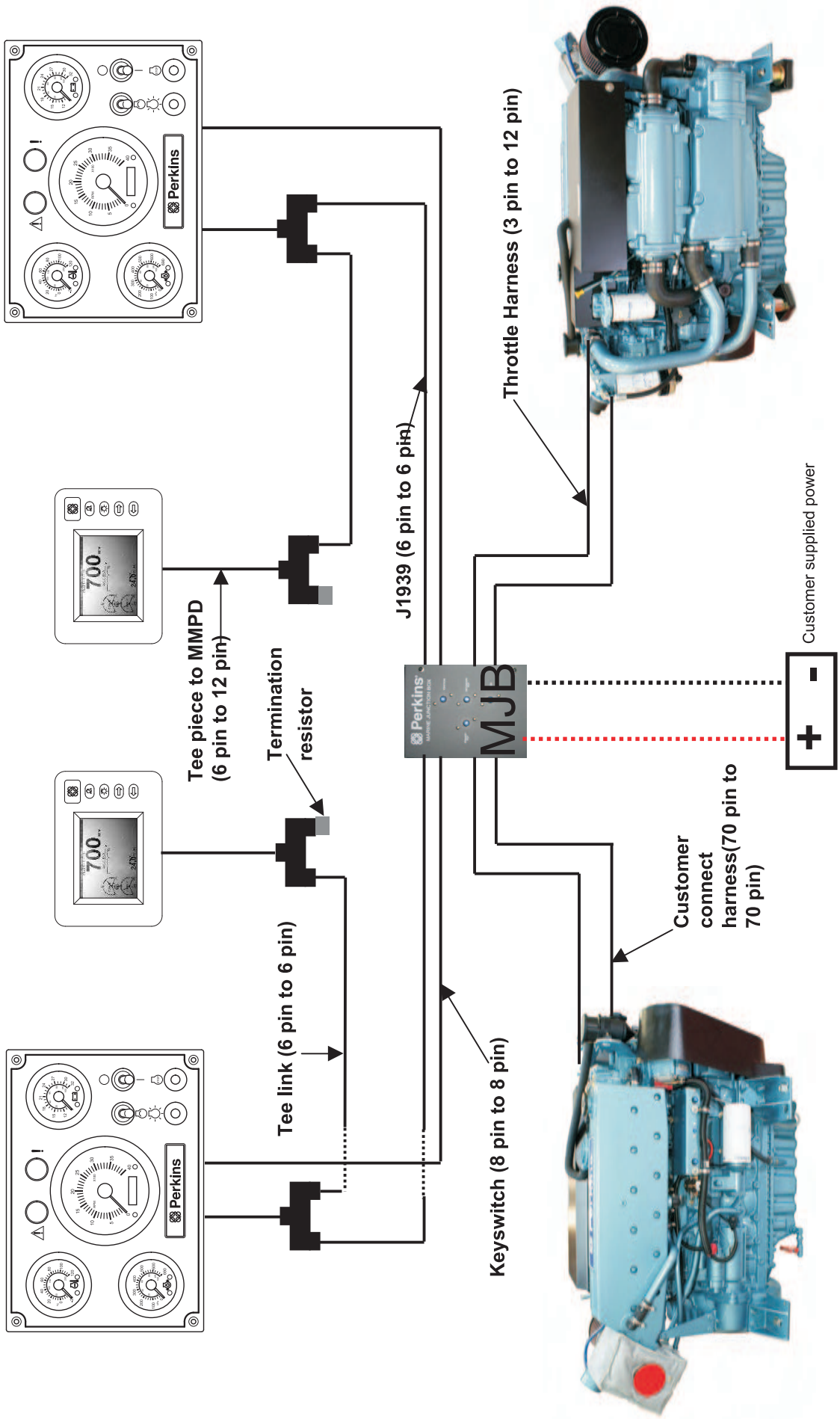
# Possible panel configurations

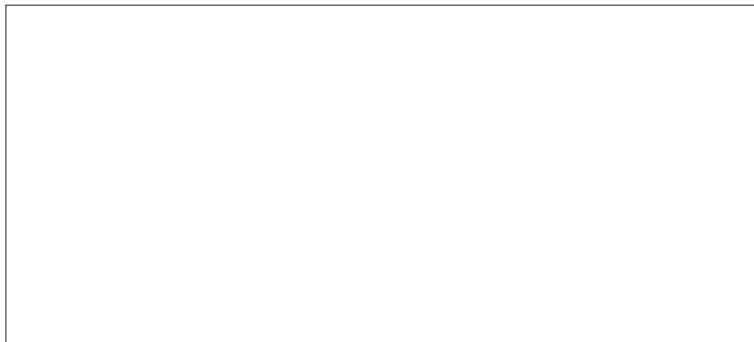
A variety of panels may be run simultaneously, in any of the combinations as shown below per engine.



1. Power supply.
2. Cable or electronic throttle and gearbox control options.
3. Main panel.
4. Auxiliary panel.
5. Mini Marine Power Display (MMPD) digital panel.
6. Keyswitch panel.

# Wiring Layout





## **Wimborne Marine Power Centre**

22 Cobham Road, Ferndown Industrial Estate, Wimborne, Dorset, BH21 7PW, England.

**Tel:** +44 (0)1202 893720, **Fax:** +44 (0)1202 851700

**E-mail:** [PerkinsSabre@Perkins.com](mailto:PerkinsSabre@Perkins.com), **Web:** [www.Perkins-Sabre.com](http://www.Perkins-Sabre.com)