

**BARRUS**

Est. 1917

# E. P. Barrus Ltd. Special Products Division



BAE SYSTEMS

**DELTA**

# Specialist Design and Engineering Solutions

The Special Products Division is a dedicated team set up to design and develop custom-built engines and accessories to meet the specific operational requirements of its customers. The team has the experience and knowledge to solve the stringent requirements and applications of specialist organisations including professional rescue services, the military and other government and commercial organisations.

Barrus has developed close relationships with many of its major customers working as consultants and suppliers. These include organisations such as the RNLI, UK MoD, US DoD, HM Coastguard, Overseas Government Forces, Local Authorities, Police and Fire Service Search and Rescue Units.

Barrus has created the innovative FAST PIRS for the military, commercial and rescue services which enables an engine to be rapidly started after being submerged. This is an enormous advance for self-righting search and rescue vessels.

Barrus were proud to be awarded a long term partnering agreement with the UK MoD. This covers the supply, overhaul and repair of all outboard engines, Seatek and Yanmar inboard diesel engines and related post-design services and in-service support.

Another example of Barrus innovation is the multi-fuel outboard engine. This was designed and developed for the UK MoD and is capable of running on four different NATO fuels , NATO F34 AVTUR (JP8), NATO F44 AVCAT (JP5), NATO F67 (Gasoline – unleaded) and NATO F76 (Diesel – Naval).









# Special Products Team



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# Multifuel Outboard

F67 (Gasoline) / F34 (JP8) / F44 (JP5) / F76 (NATO Diesel)

## Specifications :-

Maximum Output	
F76*	30.00kW @ 6000rpm
F44	32.28kW @ 6000rpm
Gasoline F67	34.42kW @ 5700rpm
Full Speed Operation Range	5400 - 6000rpm
Transom Height	403mm Shortshaft / 530mm Longshaft
Total Weight	89.5kg without Tilt Trim / 96.5kg with Tilt Trim
Displacement/No. Cylinders	697cc/3
Bore x Stroke	68mm x 64mm
Induction System	Reed Valve
Cooling System	Thermostat with Rubber Impeller
Lubrication	Automix- Oil Injection
Fuel Requirement	Unleaded/F44/F76
Gear Ratio	13 : 24 (1.85 : 1)
Gearshift	Forward-Neutral-Reverse
Trim Positions	6 (4-24 degrees)
Starting System	Electric Standard (Key Switch on Engine)
Ignition System	Capacity Discharge with Electronic Advance
Alternator	12 Volt 280 Watt
Propeller	Splined Rubber Hub (8"-19" Pitch)
Oil	2-Stroke Optimax

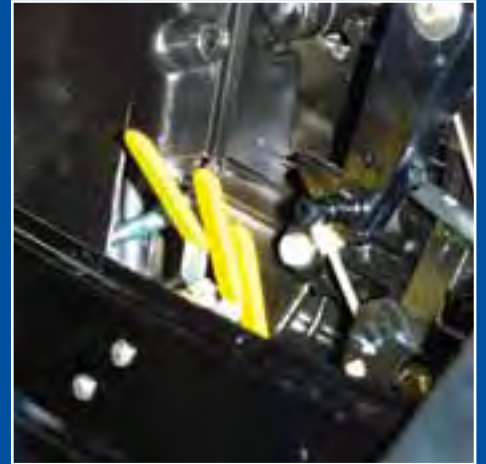




# Post.Immersion.Restart.System.



The Barrus PIRS system can be fitted to most of our 2 stroke engine range and provides a system to drain the vital elements of the engine of water following a capsize.



PIRS drain taps shown on 50hp engine.



# FAST Post.Immersion.Restart.System.

## Specifications :-

Maximum Output	29.4kW/36.8kW (40hp/50hp @ 5800RPM)
Full Speed Operation Range	5000 - 5700RPM
Transom Height	403mm Shortshaft: 530mm Longshaft
Total Weight	75kg
Displacement / No. Cylinders	697 / 3
Bore / Stroke	68mm x 64mm
Induction System	Reed Valve
Carburetors	3
Cooling System	Thermostat with Rubber Impeller
Lubrication	50 : 1 pre mix
Fuel Requirement	Leaded or Unleaded 89 Octane Minimum
Gear Ratio	13 : 24 (1.85 : 1)
Gearshift	Forward - Neutral - Reverse
Trim Positions	6 (4 - 24 degrees)
Starting System	Manual and Electric Standard (Key Switch on Engine)
Ignition System	Capacity Discharge with Mechanical Advance
Alternator	12 Volt 120 Watt
Propeller	Splined Rubber Hub (8" - 19" Pitch)



## Re-starting times after submersion :-

Manual Starting	After 15 clearing pulls (not under compression)
Electric starting (using starter motor)	Within 60 seconds

(1) Engine running. (2) Engine submerged. (3) Engine righted and single FAST PIRS lever pulled open. (4) Operate electric starter for 20 seconds or 15 clearing pulls manually. (5) FAST PIRS lever is closed. (6) Engines fuel system is reprimed. (7) Restart the engine. (8) Engine running and underway within 60 seconds using electric starter or 120 seconds when starting manually.



Electric restart procedure shown.



# Mariner 2 Stroke Outboards

Models	Kilowatts <sup>(1)</sup>	Max. RPM at Full Throttle	Cylinders/ Displacement	Starting	Gear Ratio	Alternator System <sup>(2)</sup>	Weight <sup>(4)</sup>
<b>MARINER OPTIMAX</b>							
225 - 200 OptiMax	165 - 147 kW	5000 - 5750	V6 / 3032 cc	Electric	1.75:1	Belt-Driven 60 amp (756 watt)	225 kg
175 - 150 - 135	129 - 110 - 99.2 kW	175 - 150: 5250 - 5750 135: 5000 - 5600	V6 / 2507 cc	Electric	175 - 150: 1.87:1 135: 2.00:1	Belt-Driven 60 amp	195 kg
115 - 90 - 75 OptiMax	84.5 - 66.2 - 55.1 kW	5000 - 5750	3 / 1526 cc	Electric	115: 2.07:1 90 - 75: 2.33:1	Belt-Driven 60 amp (756 watt)	170 kg
<b>MARINER 2 STROKE</b>							
90 - 75	66.2 - 55.1 kW	90: 5000 - 5500 75: 4750 - 5250	3 / 1386 cc	Electric	2.33:1	18 amp (227 watt)	139 kg
60 + BIGFOOT	44.1 kW	5000 - 5500	3 / 967 cc	Electric	60: 1.64:1 60 BIGFOOT: 2.33:1	16 amp (201 watt)	60: 100 kg 60 BF: 109 kg
50	36.8kW	5150 - 5850	3 / 697 cc	Manual or Electric	1.85:1	11 amp (130 watt)	75 kg
40	29.4 kW	4500 - 5500	2 / 644 cc	Manual or Electric	2.00:1	Electric: 18 amp (227 watt) Man: 10 amp (126 watt)	75 kg
30	22.1 kW	4800 - 5500	2 / 429 cc	Manual or Electric	1.92:1	60 amp (80 watt)	51 kg
25	18.4 kW	5000 - 5800	2 / 429 cc	Manual or Electric	1.92:1	60 amp (80 watt)	51 kg
15	11 kW	5000 - 6000	2 / 262 cc	Manual	2.00:1	Standard: ML Optional: M	35 kg
5 <sup>(4)</sup>	3.68 kW	4000 - 5000	1 / 102 cc	Manual	2.15:1	Optional 4 amp (50 watt) lighting	20 kg
3.3 - 2.5	2.4 - 1.8kW	3.3: 4500 - 5500 2.5: 4200 - 5200	1 / 74.6 cc	Manual	3.3: 2.15:1 2.5: 1.85:1	N/A	13 kg

**(1)** Measured at propshaft in accordance with ICOMIA 28. **(2)** Requires rectifier to complete installation manual versions.

**(3)** Dry weight specification is for lightest model and excludes engine oil, rigging hardware and propeller. **(4)** Standard + integrated fuel tank 2.5 litres.





# Custom Accessories

## Engine Transit Frames

This rigid alloy tube frame protects the engine and fuel tanks from damage whilst in transit. The frame has also been designed to be used as a mobile workshop and includes a tool accessory box.



## Outboard Cowl Covers

Our outboard cowl covers are designed for the toughest environments and are UV stable, water resistant, soft lined and breathable.



## Rotationally Cast Fuel Tanks

These polyethylene rotationally moulded petrol and diesel fuel tanks are exceptionally strong and can be stacked easily for optimum storage. The Special Products division also manufacture a low magnetic signature version for mine clearance duties.



# Custom Accessories

## Twin Engine Single Tiller

Twin Mariner outboard motors are controlled with a single tiller arm. This tough, patented, quick release system is designed to provide ease of use. Each outboard may also be used as a single unit.



## Engine Lifting Harness

A harness to allow outboards to be hoisted safely during the loading and unloading of vessels.



## Outboard Trolley

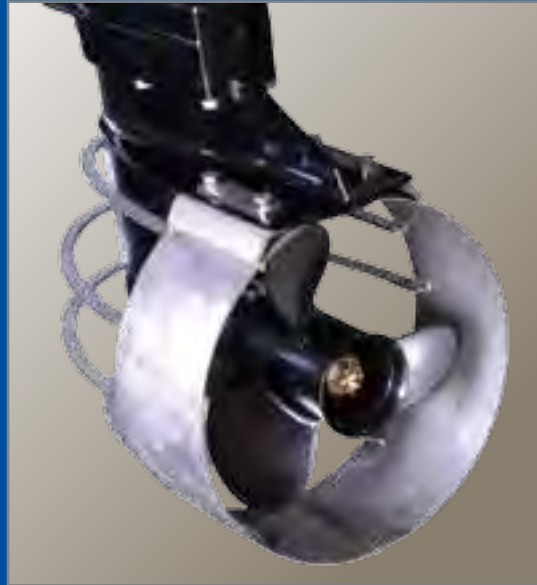
This rigid steel trolley enables easy transportation of outboards around the workshop. Can transport engines up to 50hp.





## Propeller Guards

This simple attachment gives effective protection to the propeller and driver, without significant detracting from the engine's performance.



## Carrying Handles

These tough, balanced handles simplify engine installation or removal and enhance portability. They are also designed to offer optimum protection for the engine whilst in transportation.



# Mercury 4 Stroke Outboards

Models	Kilowatts <sup>(1)</sup>	Max. RPM at Full Throttle	Cylinders/ Displacement	Starting	Gear Ratio	Alternator System <sup>(2)</sup>	Weight <sup>(4)</sup>
<b>MERCURY VERADO</b>							
200 - 150	147 - 129 kW	5800 - 6400	4 / 1732 cc	Electric	2.08:1	Fully regulated Belt-Driven 70 amp (882 watt)	231 kg
300 - 250	221 - 184 kW	5800 - 6400	6 / 2598 cc	Electric	300: 1.75:1 250: 1.85:1	Fully regulated Belt-Driven 70 amp (882 watt)	288 kg

# VariMax Electric Outboards

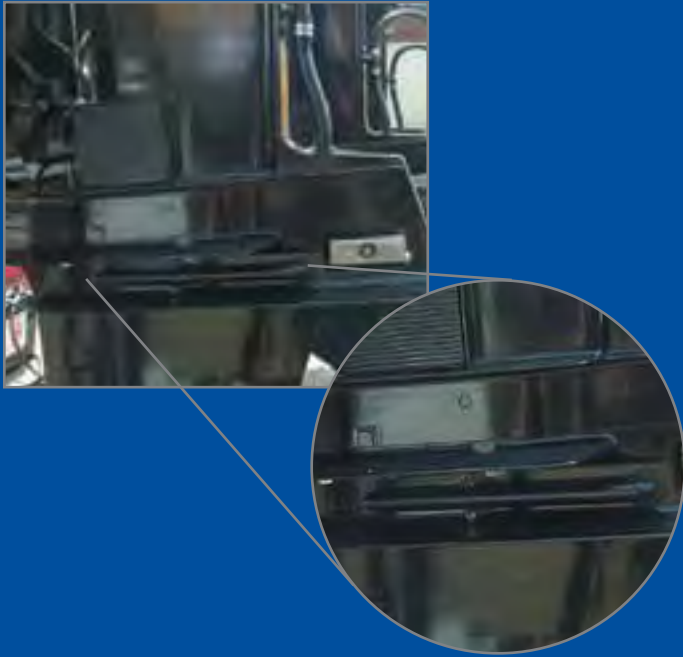
Type	Model Number	Model Name	Voltage	Shaft Length	Peak Thrust	Mount	Tiller Control Control	Speed
Transom Mount	966010010	VariMAX V40 HT 30" 12V TLMT	12	30" / 76cm	40	Taper Lock Transom Mount	Twist extendable	Digital Variable
Transom Mount	966010020	VariMAX V40 HT 36" 12V TLMT	12	36" / 91cm	40	Taper Lock Transom Mount	Twist extendable	Digital Variable
Transom Mount	966010030	VariMAX V45 HT 36" 12V TLMT	12	36" / 91cm	45	Taper Lock Transom Mount	Twist extendable	Digital Variable
Transom Mount	966010050	VariMAX V55 HT 36" 12V TLXMT	12	36" / 91cm	55	Taper Lock Transom Mount	Twist extendable	Digital Variable
Transom Mount	966010060	VariMAX V55 HT 42" 12V TLXMT	12	42" / 107cm	55	Taper Lock Transom Mount	Twist extendable	Digital Variable
Transom Mount	966010070	VariMAX V70 HT 42" 12V TLMT	24	42" / 107cm	70	Taper Lock Transom Mount	Twist extendable	Digital Variable





## Umbilical Tube

The umbilical tube enables the engine to be run from the ship's own water supply. Engines can be run out of the water. As a result they can be lowered ready to run and servicing is made much easier.



## Waterproof Hour Meters

Engine usage can be monitored in any condition, by keeping constant checks on operational times with this waterproof hour meter.



## 12 Volt Auxilliary Power Supply

A regulator/rectifier can be fitted to most engines along with a quick release connection to give a convenient power supply up to 12v.



# Rescue and Disaster Relief

## Air Lifiable Pump

Utilised by H.M. Coastguard search and rescue helicopters is a 2" trash pump designed with a lightweight, air-portable frame that can be used for salvage, fire fighting and general pumping. the pump weighs just 48kg and has a maximum flow of 820 litres (180 gallons) per minute.



## Salt Water Pump

A Yanmar powered Barrus supplied salt-water rescue pump is an integral part of the RNLI all-weather lifeboat fleet. This 2" pump is ideal for applications on salt water and mild base chemical (PH 4-9). It has a maximum flow of 865 litres (190 gallons) per minute and weights just 40kg.





# SeaSearch Inflatables

SeaSearch inflatables are easy to store, transport and are ready in minutes. They range from 3.9 to 4.2 metres and can be rowed or powered by Mariner outboards up to 30hp. Other features include:

## Aluminium Floor

This anodised double thickness floor is light and durable thanks to it's special cavity design. The ribbed patterning gives extra grip underfoot, whilst the sectional design makes it easy to store.

## Inflatable Keel

All SeaSearch dinghies feature an inflatable keel as standard. It gives better under-power control and better directional control at speed.

## Handles and Seating

Handles on the inside of the tubes in case of rough conditions. There are also non-slip reinforcement patches for seating and safety plus an easily removable wooden seat.

## Fuel Strap and Oar Clips

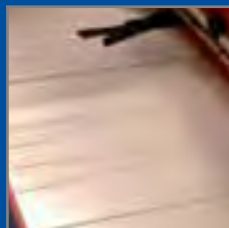
The fuel tanks tie-down strap keeps the hose neatly to the side preventing a trip or fuel spill hazard whilst the oar clips let you store the oars when an outboard is in use.

## Rubbing Strake

The double thickness strake is designed to take the knocks and provide the best protection possible for the inflated tube.

## Bow Roller

The bow roller feature enables you to anchor wherever you need to, with an additional cleat handle inside the boat to.



Aluminium Floor



Inflatable Keel



Handles and Seating



Fuel Strap & Oar Clips



Rubbing Strake



Bow Roller



# MoD 5.5kVa Emergency Relief Generator

## Specifications :-

Yanmar L100N low noise, air cooled, single cylinder diesel

Electric / manual start

5.5kVa continuous (50Hz)

3.5hrs running @ 5kVa

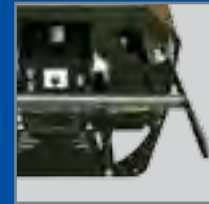
230V 16A, 115V 16A  
+ 32A receptacles (50Hz)

Overload trips & voltage selection switch

Dimensions (LxWxH)  
788mm x 708mm x 728mm

Total weight 150kg

Durable Electrophoretic Coating



Easy Moving Handles



Rugged Frame  
with Electrophoretic  
Coating



Lifting Frame



Earthing Rod

# 2kVa Compact Inverter Generator

## Specifications :-

Single cylinder, 4 stroke, forced cooling OHV

2.1hp rated output

Fuel consumption:  $\leq 395\text{g/kW h}$

50 - 60Hz rated frequency

230/120 rated voltage

1.0 power factor

12V DC voltage

8.3A DC current

Recoil starting system

Noise: 61dBA @  $\leq 7\text{m}$

Dimensions (L x W x H mm): 499 x 285 x 455

21kg net weight





# Outboard Options Matrix

Engine	Brand	Std Prop	Props	Lengths	PIRS	Fast PIRS	Carrying Handle	Transit Frame	Prop Guard	Quick Release Transom	Hour Meter	HIPS	Umbilical	Tool Kit
2.5	MARINER/MERCURY	6	6-7	S, L	-	-	-	-	-	-	YES	-	-	-
3.3	MARINER/MERCURY	6	6-7	S, L	-	-	-	-	-	-	YES	-	-	-
5	MARINER/MERCURY	-	6-9	S, L	YES	-	-	-	-	-	YES	-	-	-
15	MARINER/MERCURY	9	5.5-10	L	YES	-	YES	YES	YES	-	YES	YES	-	YES
25	MARINER/MERCURY	11L/13S	8-14	S, L	YES	-	YES	YES	YES	YES	YES	YES	YES	YES
30	MARINER/MERCURY	11L/13S	8-14	S, L	YES	-	YES	YES	YES	YES	YES	YES	YES	YES
40	MARINER/MERCURY	N/A	8-19	S, L	YES	-	YES	YES	YES	-	YES	YES	YES	YES
50	MARINER/MERCURY	N/A	8-19	S, L	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
60	MARINER/MERCURY	N/A	8-19	L	YES	-	YES	YES	YES	-	YES	-	YES	YES
60BF	MARINER/MERCURY	N/A	9-28	L	YES	-	-	YES	YES	-	YES	-	YES	YES
75	MARINER/MERCURY	N/A	9-28	L, XL	YES	-	-	YES	YES	-	YES	-	YES	YES
90	MARINER/MERCURY	N/A	9-28	L, XL	YES	-	-	YES	YES	-	YES	-	YES	YES
75Opti	MARINER/MERCURY	N/A	9-28	L, XL	YES	-	-	YES	YES	-	YES	-	YES	YES
90Opti	MARINER/MERCURY	N/A	9-28	L, XL	YES	-	-	YES	YES	-	YES	-	YES	YES
115Opti	MARINER/MERCURY	N/A	9-28	L, XL	YES	-	-	YES	YES	-	YES	-	YES	YES
135Opti	MARINER/MERCURY	N/A	11-36	XL	YES	-	-	YES	-	-	YES	-	YES	YES
150Opti	MARINER/MERCURY	N/A	11-36	XL	YES	-	-	YES	-	-	YES	-	YES	YES
200Opti	MARINER/MERCURY	N/A	11-36	XL	-	-	-	YES	-	-	YES	-	YES	YES
225Opti	MARINER/MERCURY	N/A	11-36	XL	-	-	-	YES	-	-	YES	-	YES	YES
150Ver	MERCURY	N/A	11-36	L, XL, XXL	-	-	-	-	-	-	YES	-	YES	YES
200Ver	MERCURY	N/A	11-36	L, XL, XXL	-	-	-	-	-	-	YES	-	YES	YES
250Ver	MERCURY	N/A	11-36	L, XL, XXL	-	-	-	-	-	-	YES	-	YES	YES
300Ver	MERCURY	N/A	11-36	L, XL, XXL	-	-	-	-	-	-	YES	-	YES	YES



# Inboard Engines

Yanmar Light Duty Commercial						
Engine Model	Displacement (Litres)	Horsepower (MHP)	RPM	Dry Weight (KG)	Annual Usage Hours	Rating
4JH5E	2.2	53	3000	201	1000	LDC
4JH5-TE	2.0	75	3200	207	1000	LDC
4JH5-HTE	2.0	110	3200	207	1000	LDC
4BY2-150	2.0	150	4000	258	1000	LDC
6BY2-220	3.0	220	4000	315	1000	LDC
4LHA-STP	3.5	240	3300	365	1000	LDC
6LPA-STP2	4.2	315	3800	408	1000	LDC
6LYA-STP	5.8	370	3300	535	1000	LDC
6LY2A-STP	5.9	440	3300	530	1000	LDC
6CX-530	7.4	530	2900	837	1000	LDC

Yanmar Commercial High Speed						
Engine Model	Displacement (Litres)	Horsepower (MHP)	RPM	Dry Weight (KG)	Annual Usage Hours	Rating
4CHE3	4.3	78	2550	500	3000	M
4CHE3	4.3	85	2600	500	2000	L
6CHE3	6.5	115	2550	630	3000	M
6CHE3	6.5	130	2600	630	2000	L
6CH-HTE3	6.5	170	2550	675	3000	M
6CH-HTE3	6.5	190	2600	675	2000	L
6CH-WDT	6.5	210	2550	690	3000	M
6CH-WDT	6.5	230	2600	690	2000	L
6CH-WUT	6.5	255	2550	730	3000	M
6CH-WUT	6.5	280	2600	730	2000	L
6LY2-ST	5.8	380	3200	535	2000	L
6CXBM-GT	7.4	360	2400	856	4000	H
6CXBM-GT	7.4	400	2500	856	3000	M
6CXBM-GT	7.4	464	2700	856	2000	L
6CXBM-GT	7.4	509	2700	856	1000	S
6HA2M-WHT	13.1	278	1880	1340	4000	H
6HA2M-WHT	13.1	350	1950	1340	3000	M
6HA2M-WDT	13.1	405	1950	1340	3000	M
6HYM-WET	13.7	500	2100	1385	4000	H





## Yanmar Commercial High Speed cont.

Engine Model	Displacement (Litres)	Horsepower (MHP)	RPM	Dry Weight (KG)	Annual Usage Hours	Rating
6HYM-WET	13.7	600	2150	1385	3000	M
6HYM-WET	13.7	650	2150	1385	2000	L
6HYM-WET	13.7	700	2200	1385	1000	S
6AYM-WST	20.4	659	1900	2365	4000	H
6AYM-WET	20.4	755	1840	2365	4000	H
6AYM-WET	20.4	829	1900	2365	3000	M
6AYM-WGT	20.4	911	1938	2365	2000	L
6AYM-WGT	20.4	1000	2000	2365	1000	S

## John Deere

Engine Model	Displacement (Litres)	Horsepower (MHP)	RPM	Dry Weight (KG)	Annual Usage Hours	Rating
4045TFM75	4.5	107	2400	462	4000	M1
4045TFM75	4.5	121	2500	462	3000	M2
4045TFM75	4.5	135	2600	462	2000	M3
6068TFM75	6.8	158	2400	730	4000	M1
6068TFM75	6.8	178	2500	730	3000	M2
6068TFM75	6.8	201	2600	730	2000	M3
6068SFM50	6.8	236	2400	793	2000	M3
6068SFM50	6.8	267	2500	793	800	M4
6068SFM50	6.8	300	2600	793	300	M5
6090SFM75	9	325	2100	1066	4000	M1
6090SFM75	9	375	2200	1066	3000	M2
6090SFM75	9	425	2300	1066	2000	M3
6090SFM75	9	500	2400	1066	800	M4
6125SFM75	12.5	380	1800	1475	4000	M1
6125SFM75	12.5	449	1900	1475	3000	M2
6125SFM75	12.5	526	2000	1475	2000	M3
6125SFM75	12.5	610	2100	1475	800	M4
6135SFM75	13.5	425	1800	1525	4000	M1
6135SFM75	13.5	500	1900	1525	3000	M2
6135SFM75	13.5	575	2000	1525	2000	M3
6135SFM75	13.5	650	2100	1525	800	M4
6135SFM75	13.5	750	2200	1525	300	M5



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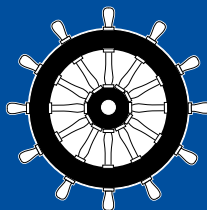
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Barrus' commitment to research and development is reflected in the substantial investment it has made in creating one of the world's largest custom engine building facilities.



- DUTCH NAVY
- FRENCH NAVY
- IRISH NAVY
- NORWEGIAN NAVY
- SOUTH KOREAN NAVY
- TAIWAN NAVY
- SULTAN OF OMAN SPECIAL FORCES
- UK MINISTRY OF DEFENCE
- USA DEPARTMENT OF DEFENCE

- BAE SYSTEMS
- MARITIME & COASTGUARD AGENCY (MCA)
- NORTH STAR SHIPPING (FAST RESCUE CRAFT)
- NORTHERN AQUA POWER (T/A DELTA)
- PORT OF LONDON AUTHORITY
- RNLI (TRADING) LTD
- UK FIRE & RESCUE SERVICES – MARINE UNITS
- UK POLICE UNDERWATER SEARCH & RESCUE UNITS
- UK INDEPENDENT SURF LIFE SAVING CLUBS
- UK INDEPENDENT LIFEBOAT TRUSTS



Suppliers of SOLAS approved  
outboard & inboard engines.



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