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25m Hovercraft - Freedom 90



Listing ID - 1633

Description Freedom 90

Date 1990

Launched

Length 25.4m (83ft 4in)

Beam 11.2m (36ft 8in)

Location UK

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The AP1-88 is a well proven design, which is operational in over 15 locations around the world. Set in a passenger configuration, the craft had a major overhaul in 2009.

The Freedom 90 PAPI - 88/100S hovercraft is manufactured mainly from welded marine aluminium and is powered by four diesel engines. The primary structure comprises buoyancy tanks, fore and aft shear walls and engine and fan mounting structures. The flexible skirt is attached to the secondary structure which is out-board of the primary structure and contains the lift engines and lift fans.

The passenger cabin contains seating for 95 passengers and is entered at port and starboard doors at the rear of the cabin. A door at the front of the cabin is for crew only but may be used in an emergency. Hand baggage racks are provided at the rear of the cabin. Panniers on the aft side decks carry the heavier luggage.

The control cabin is raised above the passenger cabin at the forward end. Access is by a door in the port side of the control cabin which may be gained by a ladder from the fore deck or by a ladder from the port aft side deck. Alternative access is by an internal ladder from the passenger cabin through a hatch in the control cabin floor.

SPECIFICATION SUMMARY

Type: PAP1-88/100 S Hovercraft

Name: Freedom 90

Year built: 1989/1990

Dimensions when hovering-

Length: 25.4m

Beam: 11.2m

Maximum passengers: 95

Maximum crew: 4 (Captain, Navigator & two crew)

Maximum Operational Speed (at full payload): 45 knots

Standard Endurance*: 10 hours

Maximum All-up weight: 44250 kg

Maximum sea state: 1.5m to 2.4m

Obstacle clearance: 0.9m to 1.1m

* Based on 300 litres per hour at cruise speed with all tanks full, inc a 10% reserve

Forward propulsion is provided by two 12 cylinder MTU water cooled diesel engines driving carbon fibre shafts by toothed driving belts.

Thrust is provided by two Hoffmann, fixed pitch, four bladed propellers in ducted enclosures. The slipstream from each propeller passes over three rudders for directional control.

Port and starboard bow thrusters provide additional directional side force control and a rolling moment to the resulting turn. They can also be operated in an astern mode. The thrust from the bow thrusters is proportional to lift engine rpm.

The craft 28v dc electrical system is powered by four engine driven generators. Distribution is by a main busbar with emergency services drawing power from an emergency battery and an essential services busbar.

An intercom and public address system is incorporated and external communications can be made by a VHF radio set and by an SSB radio. The latter is fitted with a GMDSS facility. A DECCA BRIDGEMASTER radar installation is provided for collision avoidance in conjunction with the compass and as a navigational aid. A Magnivox DGPS navigation system is also fitted.

The engine bays are equipped with fire detection and double discharge fire suppression systems. Portable, hand operated extinguishers are also carried in the passenger and control cabin.

POWER UNITS AND TRANSMISSION

Lift Engines

Two Deutz - BF 12L 513 C air cooled, turbo charged diesels, 525 hp, (386 kw) at 2300 rpm fitted with Bosch mechanically governed, in line injection pumps to Hovertravel spec. ARG 90 / DPO / 000 - 5% derated.

Propulsion Engines

Two MTU - 12v 183 TB 32 water cooled, turbo charged diesels, 820 hp, (613 kw) at 2100 rpm fitted with Bosch mechanically governed, in line injection pumps with RQV speed governors.

Propellers

Two Hoffmann 2.755 mtr. (9 ft.) diameter, fixed pitch propeller type HO - E - 214U. Pitch angle is pre-set at 22 deg. Positive.

Lift Fans

Bow thrusters - Two pairs, one port and one starboard, of centrifugal fans 840mm (33 in.) diameter.

Lift - Four pairs, two port and two starboard, of centrifugal fans 885mm (34.84in.) diameter).

Propeller Drive

Engine and propeller shaft coupled by a toothed driving belt. Ratio - 1 : 1.406

ENGINES

Two 12 cylinder DEUTZ air cooled diesel engines are mounted within the port and starboard side structures, each driving three pairs of centrifugal fans. The forward pair in each case are used to supply air to the bow thrusters and the other two pairs supply lift to the cushion.

ENGINE HOURS

Lift Engine (port) 1323* TSO

Lift Engine (stbd) 2585* TSO

Prop Engine (port) 2761* TSO

Prop Engine (stbd) 6023* TSO

* These were the hours on the 18th October 2015

FUEL SYSTEM

Engine fuel is carried in 3 welded aluminium tanks, two forward and one aft and is also used for ballast trim purposes. The fuel system is fitted with electrically operated shut off cocks, fuel booster pumps and filters with water separators.

Fuel Capacity (usable):

Maximum 3400 litres

Normal 2500 litres

Fuel consumption (at cruise speed):

300 litres per hour

SAFETY EQUIPMENT

The safety equipment comprises:- first aid chest, signalling light, parachute and hand held flares, axes, torches, crew and seat stowed lifejackets for each passenger. Two lifebuoys are provided by the passenger doors equipped with a 30 metre lifeline. The fitted liferafts are capable of carrying all passengers and crew members.

ENGINE LUBRICATION OIL SYSTEM

Function: Lubrication of engines

Oil: Lift and Propulsion engines - Castrol RX

Super Plus, SAE 15-40

Lift Engine: 29 litre (6.379 gal.)

Propulsion Engine: 41 to 50 litres

PROPULSION ENGINE COOLING SYSTEM

Coolant: Castrol Anti-Freeze NF. 50 / 50 with water Transmission Lubrication

Function: Lubrication of transmission bearings and gear couplings.

Grease: All bearings - Castrol Spheerol EPL 2

Gear Couplings - Castrol Spheerol EPL 1

Oil: Propeller rear bearing - Castrol Alpha SP 220

HYDRAULIC OIL SYSTEM

Function: Power assistance to the rudders

FUEL SYSTEM

Fuel Spec: Marine Gas Oil LS - (to BS 2869 1970 Class A1)

Max. Contents: 3 x 1136.5 litre (3 x 250 gal) fuel tanks.

Normal Operational Contents: 3182.2 litre (700 gal)

ELECTRICAL SYSTEM

System: 28 volt dc

Supply: Prestolite 155 Amp

Batteries: Start / Service S1 -2 x 12v 200 Amp Essential Service -2 x 12v 70 Amp

MARINE EQUIPMENT

Radios:

VHF-1 Sailor RT 5022 VHF DSC

VHF-2 Icom IC M505

Thrane & Thrane Cap Satellite Maritime

Radar:

Furuno MU 190

GPS:

Magnavox – MX 420 (DGPS)

Compass:

Marine Date MD59-MD77HR

Compass Standby:

Type E2B





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