## A History of Excellence





PATROL BOATS - PASSENGER BOATS - PILOT BOATS SURVEY BOATS - DHOWS - AMBULANCE BOATS MOORING BOATS - TRAWLERS - ABRA



## Moving ahead with time



Established in 1976, Riviera is one of the most reputed companies in the Middle East. For the past 40 years we have established a great standing in the market through strong client relationships. Having constantly worked towards upholding old traditions while developing new technology, we make our products safe and reliable for our clients.

Over the years we have managed to carve a niche for ourselves. With the world changing fast and new methods of travel and lifestyle coming into light, we continue our quest towards providing solutions that adhere to international standards of reliability, luxury as well as safety.

Riviera Pool was the rst boat builder in the Middle East region to build the traditional 'Dhow' in GRP material as shing and pleasure boats. Consequently the company added yachts, stern-boom trawlers, tour boats, pilot boats and work boats in its range of boats designed in collaboration with German and Swedish naval architects. The motivation of the company was to full a local need with international quality. Quality at minimal cost and with excellent aer-sales service was to be the primary focus.

With a factory capacity of around 800,000kg GRP moldings per annum and a product line comprising of commercial boats, shing, pleasure, patrol, pilot and work, yachts, marinas, swimming pools and various multi-purpose GRP products and advanced composites, the company Riviera has set market standards.

Riviera boat maintenance facility at Hamriyah Free Zone is a state-of-the-art unit oering a wide range of servicing and upkeep options. Riviera houses one of the few boat liing equipments in the region. Our straddle carrier can li boats up to 300 tones. is helps the task to be undertaken with no harm coming to the body.

Riviera's journey to success has been possible by its persistent endeavor to keep in view of the requirements of growing customers, to adopt the latest technologies and to enhance and improve the production line.



### **INDEX**

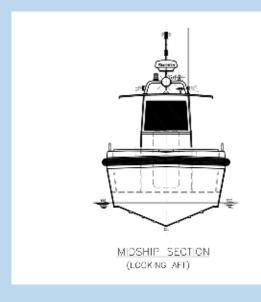
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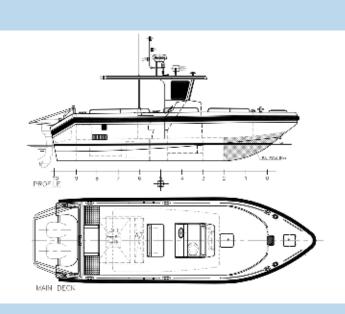
## **8.5M PATROL BOAT**



### **SPECIFICATIONS**

L. O. A	8.75 M
L. W. L	7.00 M
BEAM	2.50 M
DRAFT LOADED	0.52 M
DISPLACEMENT (LOADED)	4TONS (APPROX.)
MAXIMUM SPEED	UP TO 45 KNOTS
ENGINES	OUTBOARDS
FUEL TANKS	500 LTRS.
WATER TANKS	150 LTRS.



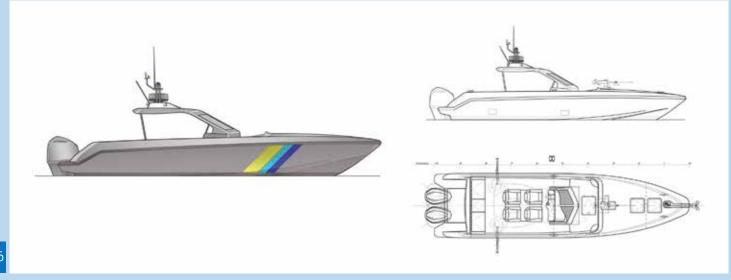




## 9.5M INTERCEPTOR / PATROL BOAT



L. O. A MOLDED	9.50 M
L. W. L	7.75 M
BEAM	2.63 M
DRAFT	0.50 M
DISPLACEMENT (FULL LOAD)	4.2 TONS (APPROX.)
FUEL TANKS	650 LTRS.
FRESHWATER TANK	150 LTRS.
MAX. SPEED	50+ KNOTS
NUMBER OF CREWS	FOUR (4)



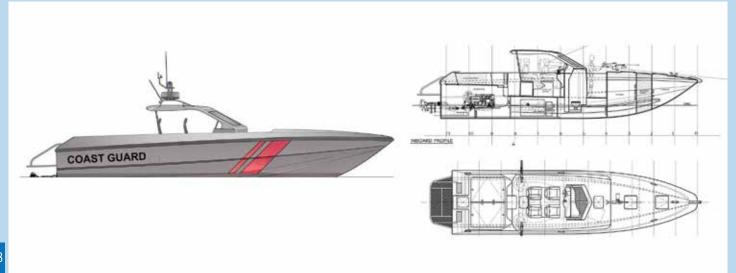


L. O. A	10.40 M
BEAM	3.94 M
DRAFT LOADED	0.90 M
DISPLACEMENT (LOADED)	4 TONS (APPROX.)
MAXIMUM SPEED	50 KNOTS
FUEL TANKS	600 LTRS.
WATER TANKS	200 LTRS.



## 11M INTERCEPTOR/PATROL BOAT (INBOARD ENGINES)





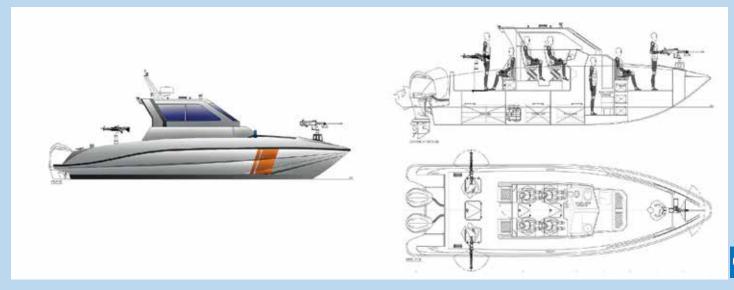


# 11M INTERCEPTOR/PATROL BOAT (CLOSED CABIN)



### **SPECIFICATIONS**

L. O. A	11.10 M
BEAM	2.90 M
DRAFT LOADED	0.50 M
DISPLACEMENT (LOADED)	4.5 TONS (APPROX.)
MAXIMUM SPEED	40 +KNOTS
FUEL TANKS	800 LTRS.
WATER TANKS	200 LTRS.

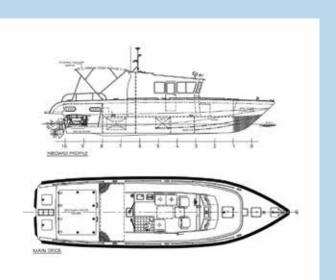






### **SPECIFICATIONS**

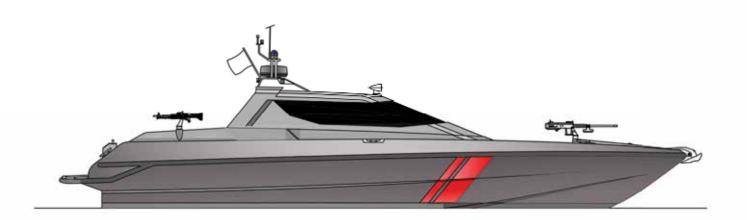
L.O.A MOLDED	12.40 M
L.W.L	10.10 M
BEAM	3.14 M
DRAFT	0.75 M
DISPLACEMENT (FULL LOAD)	5.5 TONS (APPROX.)
FUEL TANKS	700 LTRS.
FRESHWATER TANK	200 LTRS.
MAX. SPEED	45+ KNOTS
NUMBER OF CREWS	FOUR (4)





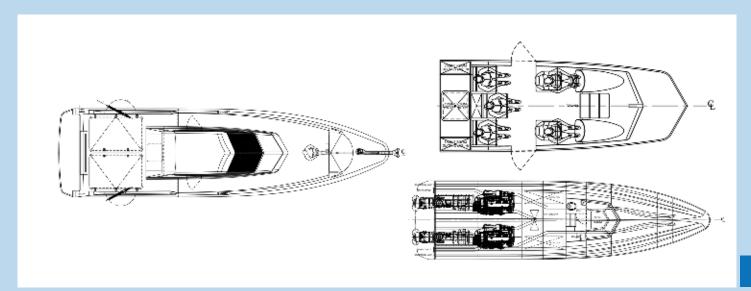


## 13M INTERCEPTOR / PATROL BOAT



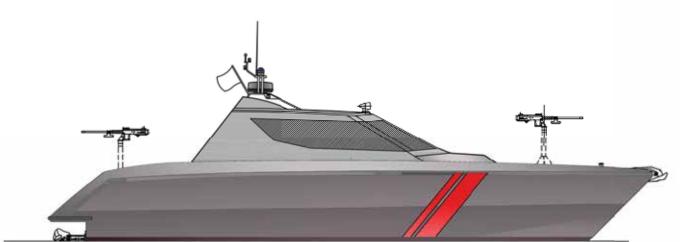
### **SPECIFICATIONS**

L. O. A (INCLUDING PLATFORM)	13.90 M
L. O. A (MOULDED)	13.00 M
D. W. L	11.30 M
BEAM	3.80M
DRAFT LOADED	0.77 M
DISPLACEMENT (LOADED)	13TONS (APPROX.)
MAXIMUM SPEED	50+ KNOTS
FUEL TANKS	1500 LTRS.
WATER TANKS	150 LTRS.



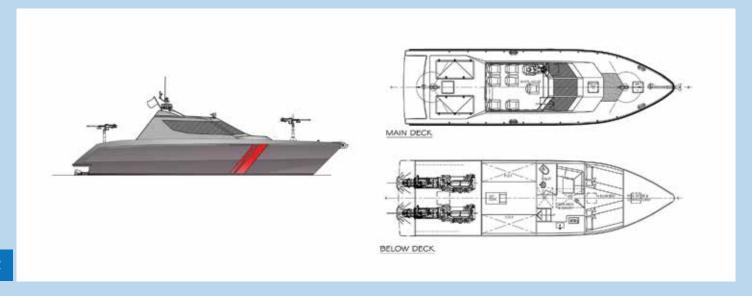
## **14.5M PATROL BOAT**





### **SPECIFICATIONS**

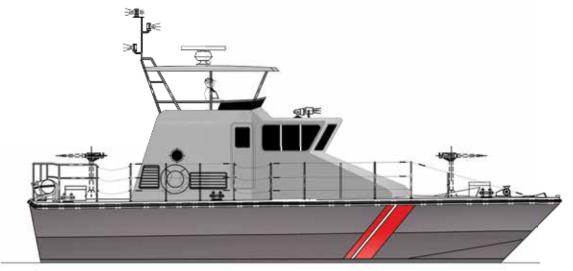
L. O. A	14.50 M
L. W. L	12.09 M
BEAM	4.000 M
DRAFT LOADED	0.65 M
DISPLACEMENT (LOADED)	15TONS (APPROX.)
MAXIMUM SPEED	45 KNOTS
FUEL TANKS	2000 LTRS.
WATER TANKS	500 LTRS.



## **15M PATROL BOAT**



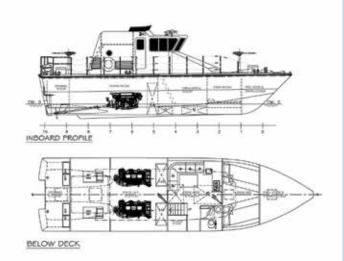
Riviera Boat



### **SPECIFICATIONS**

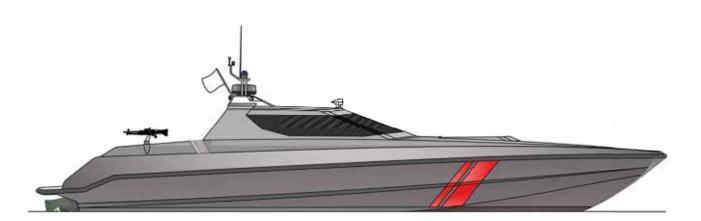
L. O. A	15.000 M
L.W.L	13.57 M
BEAM	4.000 M
DRAFT LOADED	0.85 M
DISPLACEMENT (LOADED)	23TONS (APPROX.)
MAXIMUM SPEED	30 KNOTS
SERVICE SPEED	24 KNOTS
FUEL TANKS	2000 LTRS.
WATER TANKS	500 LTRS.





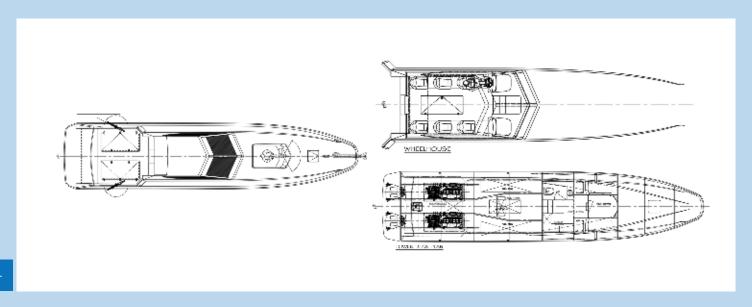


# 15M INTERCEPTOR / PATROL BOAT



### **SPECIFICATIONS**

L. O. A	15.50 M
D. W. L	12.85 M
BEAM	3.40 M
DRAFT MOULDED	0.65 M
DISPLACEMENT (LOADED)	9TONS (APPROX.)
MAXIMUM SPEED	50 KNOTS
SERVICE SPEED	20 KNOTS
FUEL TANKS	1500 LTRS.
WATER TANKS	150 LTRS.



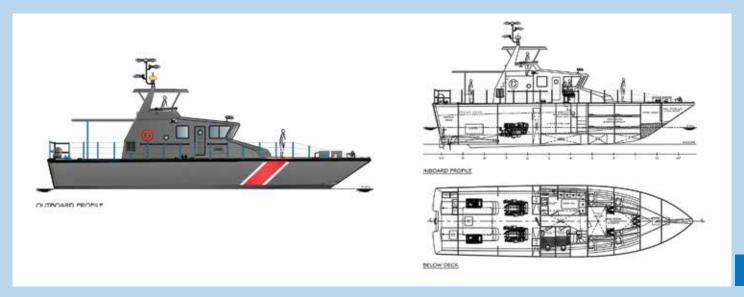
## **20M PATROL BOAT**





### **SPECIFICATIONS**

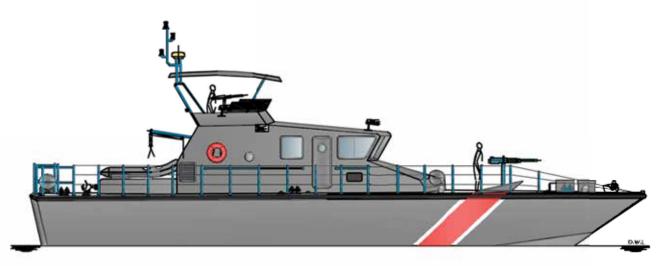
L. O. A	20.00 M
L. W. L	17.10 M
BEAM	5.50 M
DRAFT	1.30 M
DISPLACEMENT (LOADED)	35TONS (APPROX.)
MAXIMUM SPEED	24 KNOTS
SERVICE SPEED	20 KNOTS
FUEL TANKS	4000 LTRS.
WATER TANKS	1000 LTRS.



## **22M PATROL BOAT**

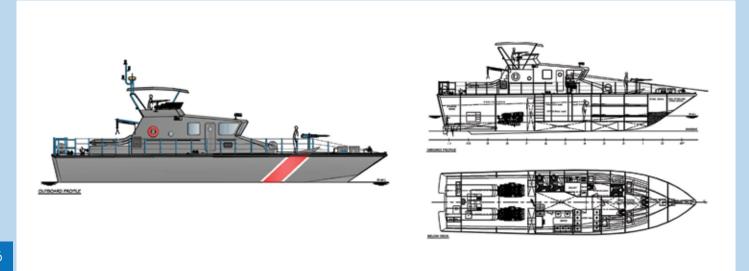






### **SPECIFICATIONS**

22.00 M
19.10 M
5.50 M
1.30 M
45TONS (APPROX.)
24 KNOTS
20 KNOTS
4000 LTRS.
1500 LTRS.



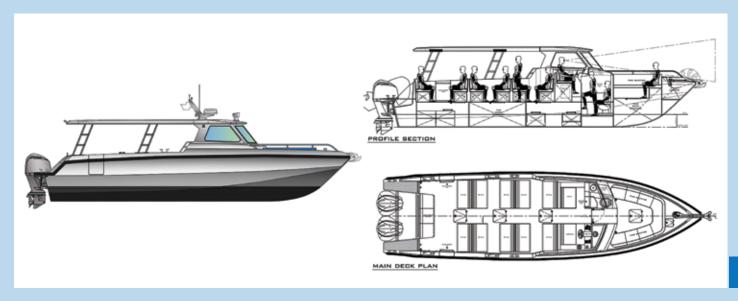


## 11M OPEN PASSENGER BOAT

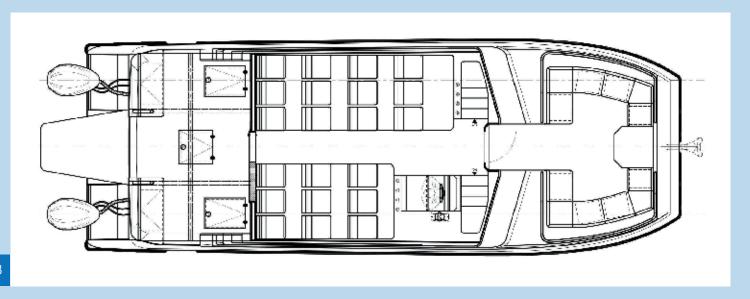


### **SPECIFICATIONS**

L. O. A	12.50 M
BEAM	3.14 M
DRAFT LOADED	0.65 M
DISPLACEMENT (LOADED)	10 TONS (APPROX.)
PASSENGERS	30 PAX
MAXIMUM SPEED	30 + KNOTS
FUEL TANKS	800 LTRS.
WATER TANKS	200 LTRS.







1,500 LTRS.

21 PASSENGER'S +9

**200 LTRS** 

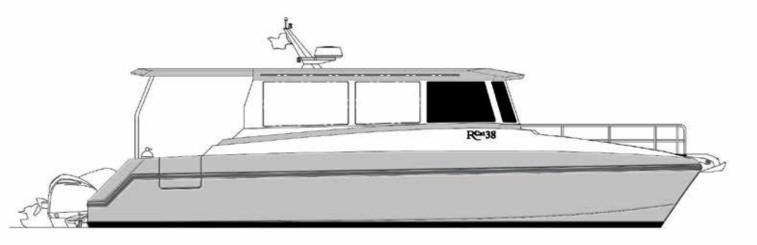
**FUEL TANKS** 

WATER TANKS

**COMPLIMENTS** 

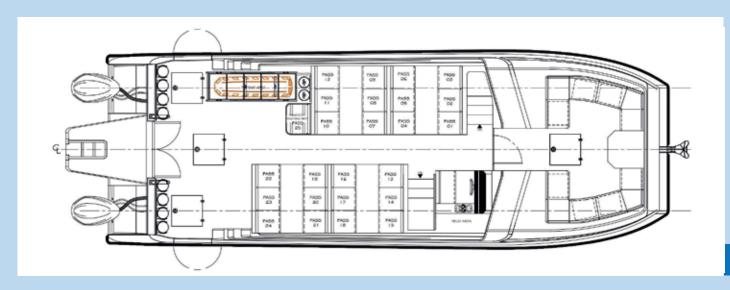


## 12M OPEN CATAMARAN BOAT



### **SPECIFICATIONS**

L. O. A	12.000 M
L. W. L	11.09 M
BEAM	4.16 M
DRAFT LOADED	0.64 M
DISPLACEMENT (FULL LOADED)	9.5 TONS (APPROX.)
PASSENGERS	33 PASSANGERS
MAXIMUM SPEED	30 KNOTS
SERVICE SPEED	24 KNOTS
FUEL TANKS	1500 LTRS.
WATER TANKS	200 LTRS.

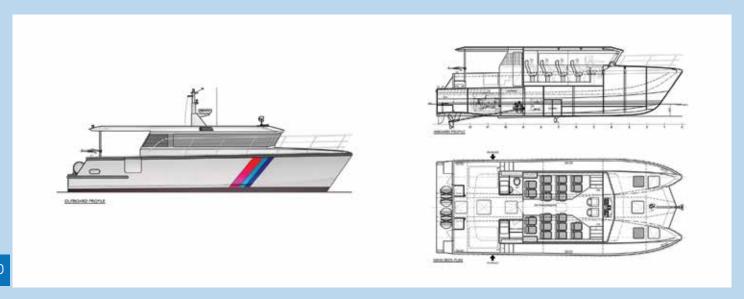




25 TONS (APPROX.)

2,000 LTRS.

300 LTRS.



30 KNOTS (@ FULL LOAD CONDITION)

20 PASSENGER'S + 3 CREWS

**DISPLACEMENT (LOADED)** 

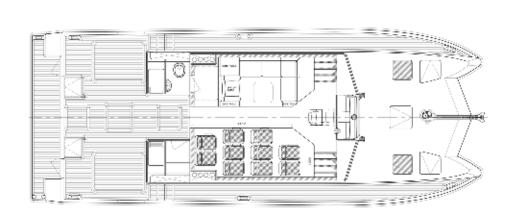
MAXIMUM SPEED FUEL TANKS

WATER TANKS

**COMPLIMENTS** 

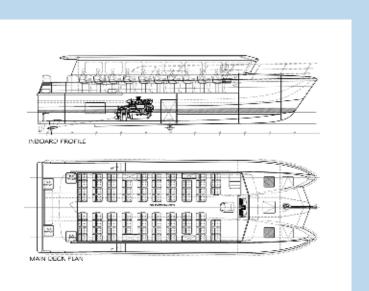


L. O. A	13.570 M
L. O. HULL	13.450 M
D. W. L	12.170 M
BEAM	5.620 M
DRAFT LIGHT @ PROP. TIP	1.350 M
DRAFT LIGHT @ ABOVE KEEL	0.645 M
DISPLACEMENT (LOADED)	25 TONS (APPROX.)
MAXIMUM SPEED	30 KNOTS (@ FULL LOAD CONDITION)
FUEL TANKS	2,000 LTRS.
WATER TANKS	300 LTRS.
COMPLIMENTS	20 PASSENGER'S + 3 CREWS





L. O. A	16.000 M
L. W. L	14.70 M
BEAM	5.62 M
DRAFT LOADED	0.64 M
DISPLACEMENT (LOADED)	32 TONS (APPROX.)
PASSENGERS	80 PASSANGERS
MAXIMUM SPEED	30 KNOTS
SERVICE SPEED	24 KNOTS
FUEL TANKS	3000 LTRS.
WATER TANKS	300 LTRS.



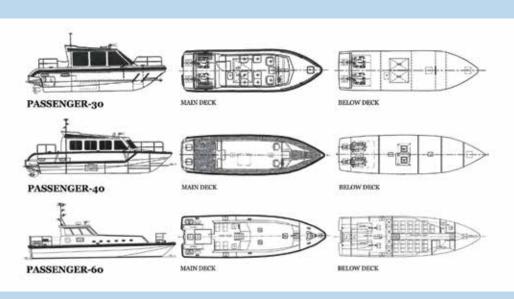
OUTBOARD PROFILE



### **OTHER PASSENGER BOATS**



#### **PARTICULARS** PASSENGER-30 PASSENGER-40 PASSENGER-60 L. O. A (M) 9 12 18 L. W. L. (M) 7.35 10.1 15.9 BEAM (M) 2.5 3.14 4.9 DRAFT (M) 0.6 0.65 0.85 4.5 8.5 30 **DISPLACEMENT (TONS)** RECOMMENDED POWER (HP)X 2 300 350 1000 SPEED (KNOTS) **UP TO 45 UP TO 38 UP TO 35** FIXED PITCH /STERN DRIVE PROPULSION SYSTEM **OUTBOARD / STERN DRIVE** FIXED PITCH /SURFACE DRIVE FUEL TANKS CAPACITY (LTRS.) 500 600-1000 2000-3500 AIR CONDITIONING N/A **OPTIONAL AVAILABILITY AVAILABLE BILGE SYSTEM** INDEPENDENT **INDEPENDENT INDEPENDENT CLASSIFICATION (OPTIONAL)** B.V, G.L, DNV B.V, G.L, DNV B.V, G.L, DNV



## 13.5M PILOT BOAT



### **SPECIFICATIONS**

L. O. A	13.50 M
D. W. L	11.560 M
BEAM	3.90 M
DRAFT LIGHT	0.800 M
DISPLACEMENT (LOADED)	15 TONS (APPROX.)
MAXIMUM SPEED	24+ KNOTS
FUEL TANKS	1,500 LTRS.
WATER TANKS	300 LTRS.



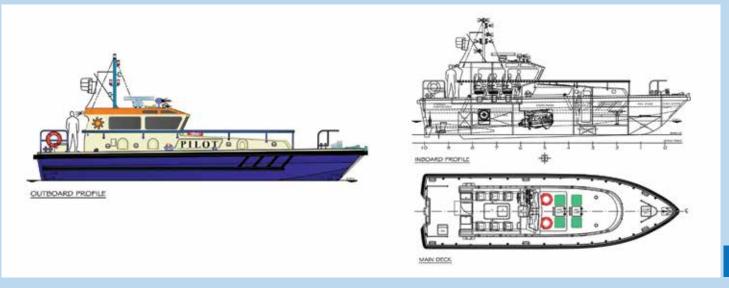
## **15M PILOT BOAT V1**



L. O. A	15.000 M
L. O. HULL	13.05 M
D. W. L	12.650 M
BEAM	4.000 M
DRAFT LOADED	1.05 M
DISPLACEMENT (LOADED)	23TONS (APPROX.)
MAXIMUM SPEED	24 KNOTS
SERVICE SPEED	20 KNOTS
FUEL TANKS	2000 LTRS.

500 LTRS.

WATER TANKS



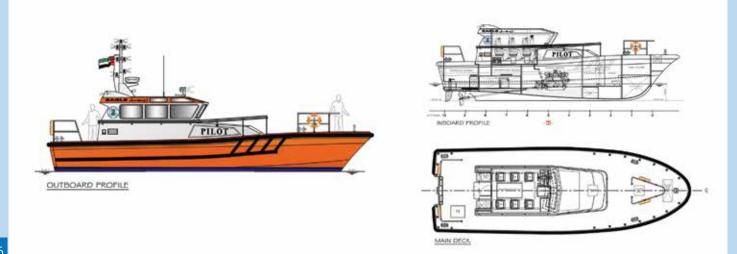


## 15M PILOT BOAT V2



### **SPECIFICATIONS**

L. O. A	15.00 M
L. O. HULL	13.05 M
D. W. L	12.65 M
BEAM	5.10 M
DRAFT LOADED	1.15 M
DISPLACEMENT (LOADED)	25TONS (APPROX.)
MAXIMUM SPEED	24 KNOTS
SERVICE SPEED	20 KNOTS
FUEL TANKS	2500 LTRS.
WATER TANKS	300 LTRS.



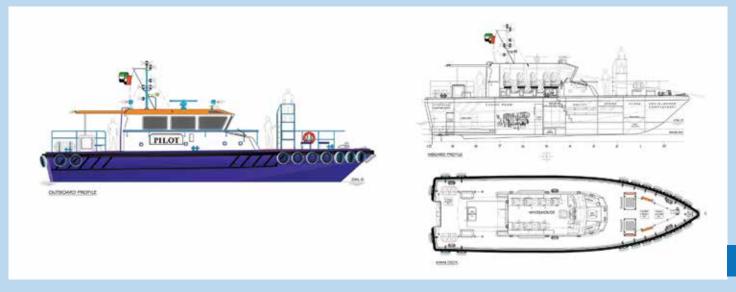
## **18M PILOT BOAT**



MURSHID PILOT

### **SPECIFICATIONS**

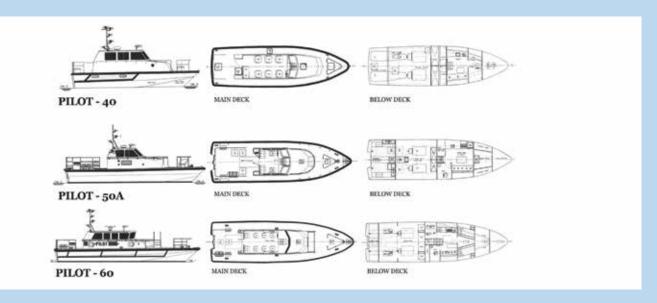
L. O. A	18.00 M
L. W. L	16.00 M
BEAM	4.90 M
DRAFT	0.85 M
DISPLACEMENT (LOADED)	35TONS (APPROX.)
MAXIMUM SPEED	24 KNOTS
SERVICE SPEED	22 KNOTS
FUEL TANKS	4000 LTRS.
WATER TANKS	200 LTRS.





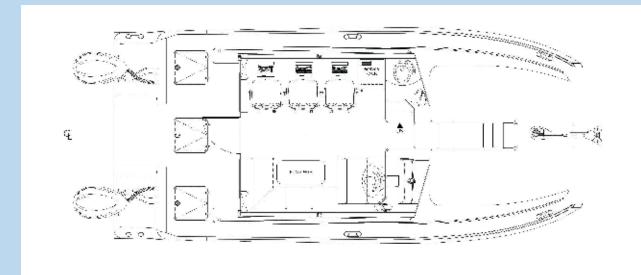
#### **SPECIFICATIONS**

PARTICULARS	PILOT-40	PILOT-50	PILOT-60
L. O. A (M)	12	15	18
L. W. L (M)	10.1	13.05	15.9
BEAM (M)	3.14	4	4.9
DRAFT (M)	0.65	0.75	0.85
DISPLACEMENT (TONS)	8.5	20	30
RECOMMENDED POWER (HP)X 2	350	700	1000
SPEED (KNOTS)	UP TO 38	UP TO 35	UP TO 35
PROPULSION SYSTEM	FIXED PITCH /STERN DRIVE	FIXED PITCH	FIXED PITCH
FUEL TANKS CAPACITY (LTRS.)	600-1000	1500-2500	2000-3500
AIR CONDITIONING	OPTIONAL AVAILABILITY	AVAILABLE	AVAILABLE
BILGE SYSTEM	INDEPENDENT	INDEPENDENT	INDEPENDENT
CLASSIFICATION (OPTIONAL)	B.V, G.L, DNV	B.V, G.L, DNV	B.V, G.L, DNV





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0.52 M

23 KNOTS

1,000 LTRS.

150 LTRS.

5TONS (APPROX.)

**DRAFT LIGHT** 

**FUEL TANKS** 

**WATER TANKS** 

**MAXIMUM SPEED** 

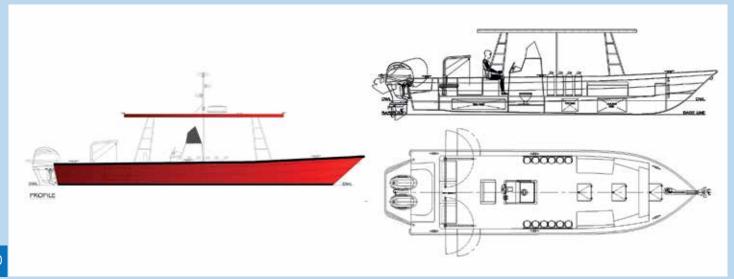
**DISPLACEMENT (LOADED)** 

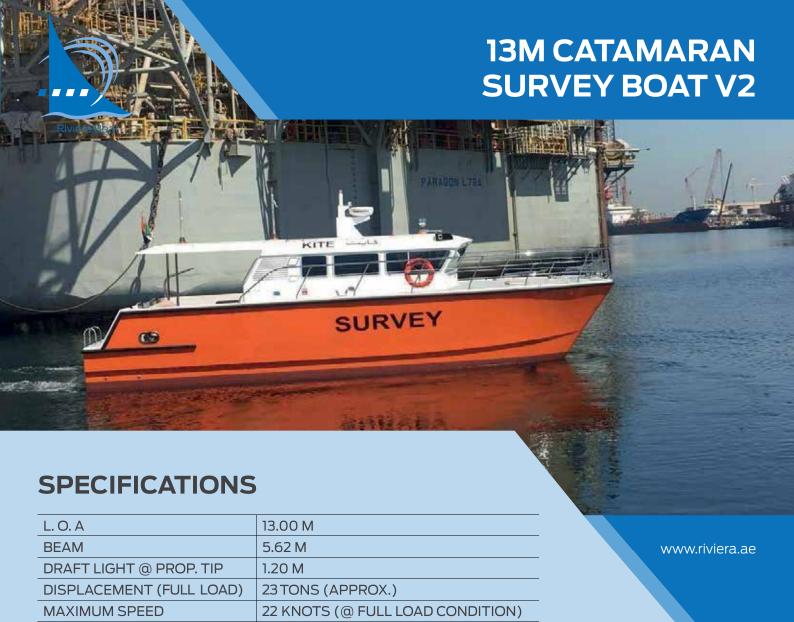


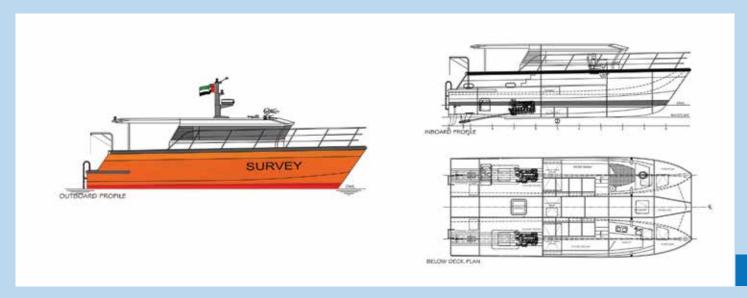
## **10M SURVEY BOAT**



L. O. A	10.000 M
D. W. L	8.86 M
BEAM	2.900 M
DRAFT	0.45 M
DISPLACEMENT (LOADED)	3 TONS (APPROX.)
MAXIMUM SPEED	30 KNOTS (@ FULL LOAD CONDITION)
FUEL TANKS	500 LTRS.
WATER TANKS	200 LTRS.







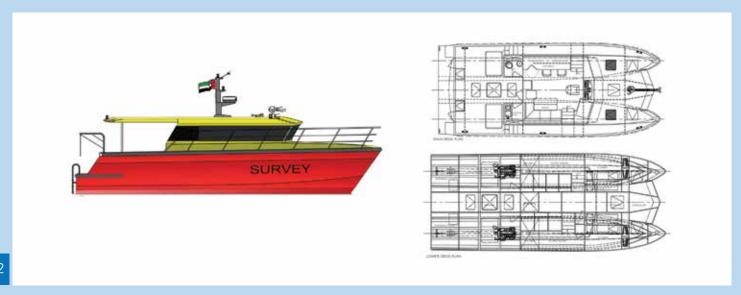
2,000 LTRS.

300 LTRS.

**FUEL TANKS** 

WATER TANKS





22 KNOTS (@ FULL LOAD CONDITION)

23 TONS (APPROX.)

2,000 LTRS.

300 LTRS.

**DISPLACEMENT (LOADED)** 

MAXIMUM SPEED FUEL TANKS

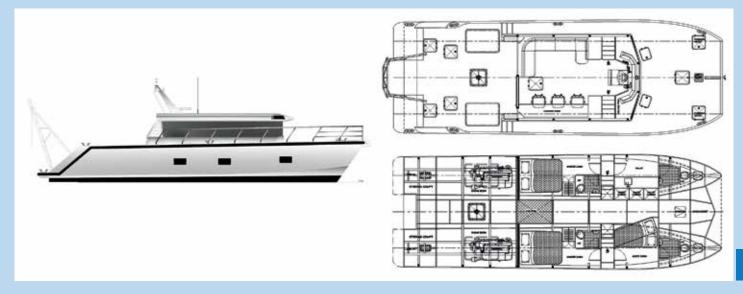
WATER TANKS



### 15M CATAMARAN SURVEY BOAT

#### **SPECIFICATIONS**

L. O. A	15.00 M
BEAM	5.620 M
DRAFT LIGHT @ PROP. TIP	1.20 M
DISPLACEMENT (FULL LOAD)	26 TONS (APPROX.)
MAXIMUM SPEED	25 KNOTS (@ FULL LOAD
CONDITION) FUEL TANKS	3,000 LTRS.
WATER TANKS	400 LTRS.



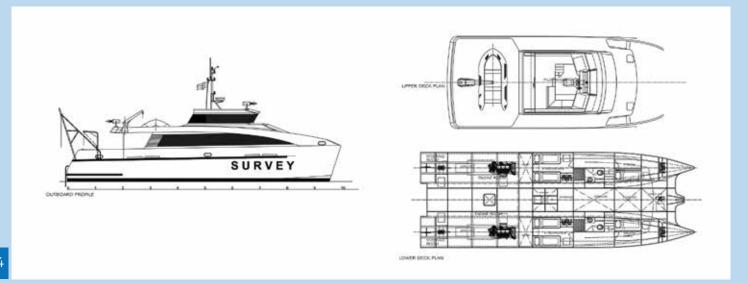


## 20M CATAMARAN SURVEY BOAT



### **SPECIFICATIONS**

L. O. A	20.000 M
L. W. L	19.13 M
BEAM	7.000 M
DRAFT MOULDED	0.85 M
DISPLACEMENT (FULL LOAD)	40 TONS (APPROX.)
MAXIMUM SPEED	20+ KNOTS
FUEL TANKS	4000 LTRS.
WATER TANKS	500 LTRS.



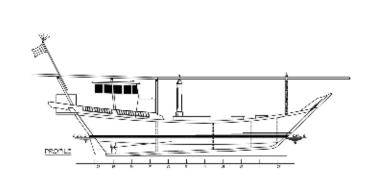
## **45FT DHOW**

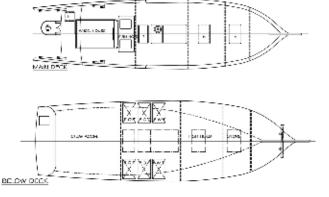




**SPECIFICATIONS** 

1 0 1 (1)	
L. O. A (M)	15.5
L. W. L (M)	10.32
BEAM (M)	4
DRAFT (M)	1.2
DISPLACEMENT (TONS)	18
RECOMMENDED POWER (HP) X1	150
SPEED (KNOTS)	UPTO 12
PROPULSION SYSTEM	FIXED PITCH
STEERING SYSTEM	MANUAL
FUEL TANK CAPACITY (LTRS)	3000
AIR CONDITIONING	OPTIONAL AVAILABILITY
FISH HOLD CAPACITY (M3)	16
ELECTRICAL SYSTEM AC	220V-240V





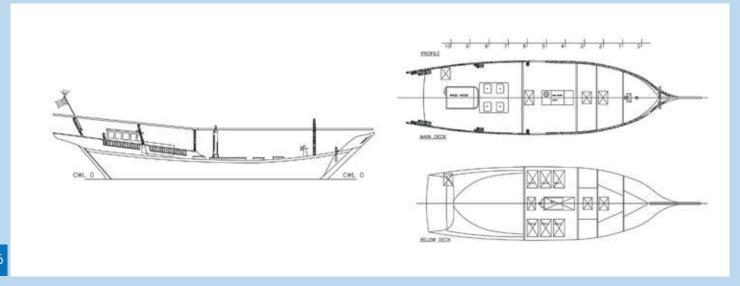
## **55FT DHOW**





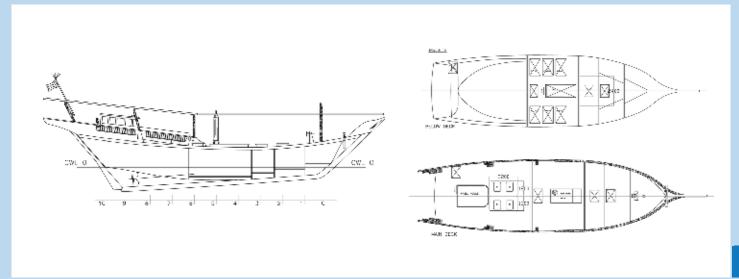
### **SPECIFICATIONS**

L. O. A (M)	20.8
L. W. L (M)	14.03
BEAM (M)	5.9
DRAFT (M)	1.85
DISPLACEMENT (TONS)	26
RECOMMENDED POWER (HP) X1	250
SPEED (KNOTS)	UPTO 12
PROPULSION SYSTEM	FIXED PITCH
STEERING SYSTEM	MANUAL
FUEL TANK CAPACITY (LTRS)	4000
AIR CONDITIONING	OPTIONAL AVAILABILITY
FISH HOLD CAPACITY (M3)	25

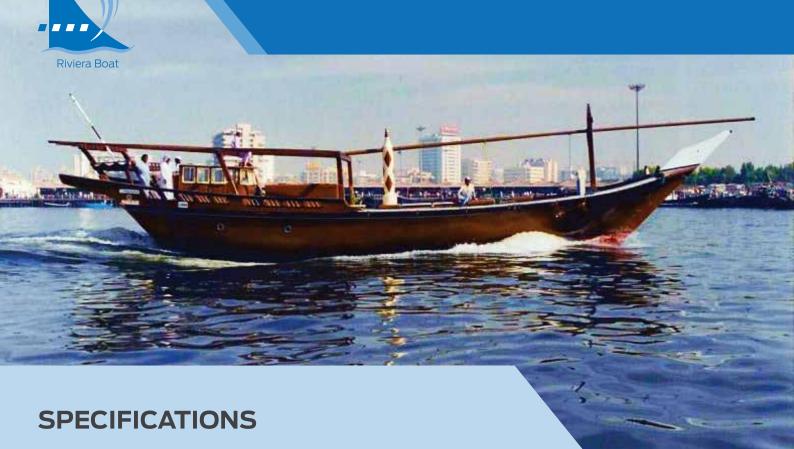




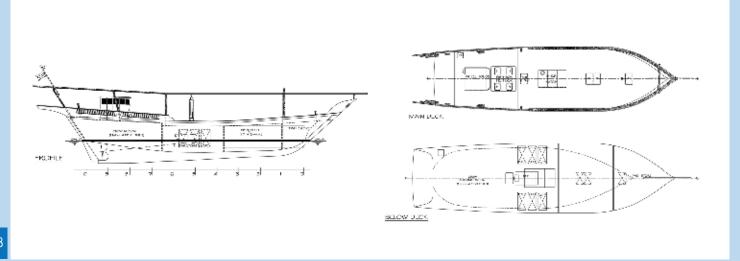
L. O. A (M)	23.6
L. W. L (M)	15
BEAM (M)	5.9
DRAFT (M)	2
DISPLACEMENT (TONS)	35
RECOMMENDED POWER (HP) X 1	400
SPEED (KNOTS)	UPTO 14
PROPULSION SYSTEM	FIXED PITCH
STEERING SYSTEM	MANUAL
FUEL TANK CAPACITY (LTRS)	4000
AIR CONDITIONING	OPTIONAL AVAILABILITY
BILGE SYSTEM	INDEPENDENT
FISH HOLD CAPACITY (M3)	35



## 75FT DHOW



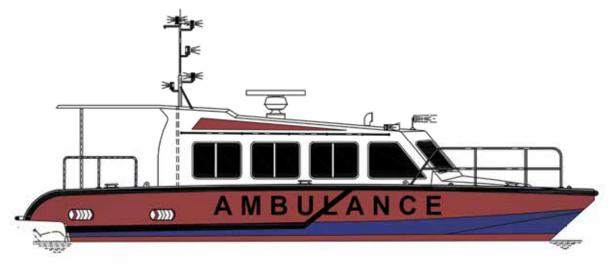
L. O. A (M)	27.4
L. W. L (M)	18.5
BEAM (M)	6.4
DRAFT (M)	2.3
DISPLACEMENT (TONS)	80
RECOMMENDED POWER (HP) X 1	500
SPEED (KNOTS)	UPTO 14
PROPULSION SYSTEM	FIXED PITCH
STEERING SYSTEM	MANUAL
FUEL TANK CAPACITY (LTRS)	5000
AIR CONDITIONING	OPTIONAL AVAILABILITY
BILGE SYSTEM	INDEPENDENT
FISH HOLD CAPACITY (M3)	90
ELECTRICAL SYSTEM AC	220V-240V





#### 12M AMBULANCE BOAT **INBOARD ENGINES**

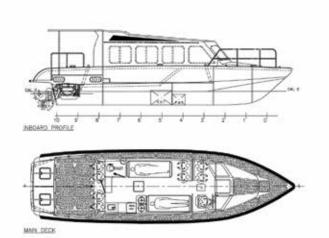




#### **SPECIFICATIONS**

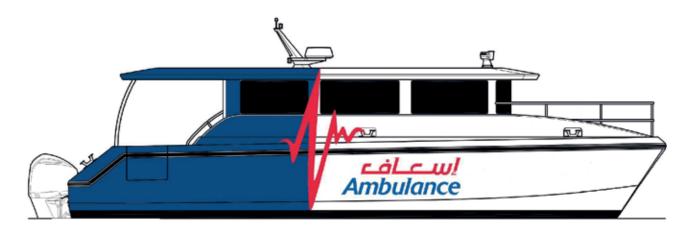
L.O.A (M)	12.40
BEAM (M)	3.14
DEPTH (M)	1.70
DRAFT (M)	0.75
DISPLACEMENT (FULL LOAD)	8 TONS (APPROX.)
MAXIMUM SPEED	25+ KNOTS
	, ,







## 12M AMBULANCE CATAMARAN BOAT



#### **SPECIFICATIONS**

L.O.A (M)	12.00 L
W.L (M)	10.06
BEAM (M)	4.16 M
DEPTH (M)	1.70
DRAFT (M)	0.58
DISPLACEMENT (FULL LOAD)	8.5 TONS (APPROX.)
MAXIMUM SPEED	30+KNOTS
FUEL TANKS	800 LTRS.
WATER TANKS	300 LTRS.



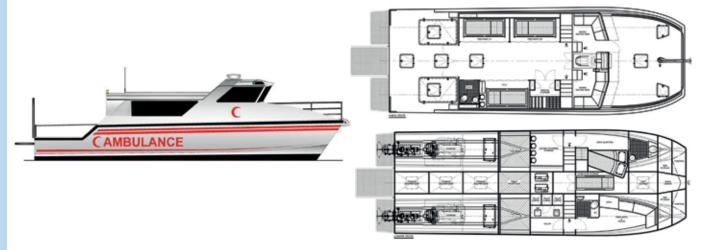


## **16M AMBULANCE CATAMARAN BOAT**



#### **SPECIFICATIONS**

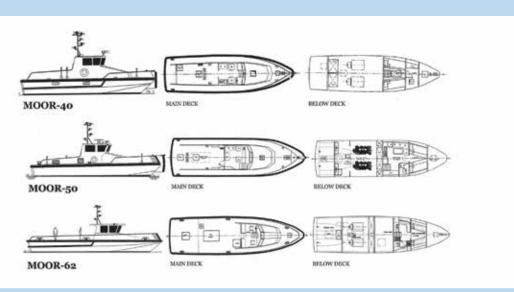
16.00
15.00
13.73
5.40
0.68
30 TONS (APPROX.)
30+ KNOTS
3000 LTRS.
500 LTRS.



## **MOORING BOATS**



PARTICULARS	MOOR-40	MOOR-50	MOOR-62
L. O. A (M)	12	15.2	19
L. W. L (M)	10.1	13.15	16.6
BEAM (M)	3.14	4	4.9
DRAFT (M)	0.65	0.85	0.95
DISPLACEMENT (TONS)	9.5	22	35
RECOMMENDED POWER (HP)X 2	350	700	1000
SPEED (KNOTS)	UP TO 33	UP TO 33	UP TO 35
PROPULSION SYSTEM	STERN DRIVE/FIXED PITCH	FIXED PITCH	FIXED PITCH
FUEL TANKS CAPACITY (LTRS.)	600-1000	1500-2500	2000-3500
AIR CONDITIONING	OPTIONAL AVAILABILITY	AVAILABLE	AVAILABLE
BILGE SYSTEM	INDEPENDENT	INDEPENDENT	INDEPENDENT
CLASSIFICATION (OPTIONAL)	B.V,G.L, DNV	B.V,G.L, DNV	B.V,G.L, DNV

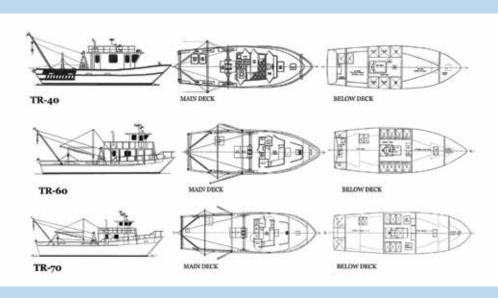


## **TRAWLERS**





PARTICULARS	TR-40	TR-60	TR-70
L. O. A (M)	13.8	17.5	21.8
L. W. L (M)	10.3	14.6	18.1
BEAM (M)	4.1	5.9	6.4
DRAFT (M)	1.17	1.85	2
DISPLACEMENT (TONS)	20	30	80
RECOMMENDED POWER (HP)X 2	250	500	600
SPEED (KNOTS)	UP TO 12	UP TO 14	14-OCT
PROPULSION SYSTEM	FIXED PITCH	FIXED PITCH	FIXED PITCH
FUEL TANKS CAPACITY (LTRS.)	1500-3000	3000-5000	3500-6000
AIR CONDITIONING	OPTIONAL AVAILABILITY	OPTIONAL AVAILABILITY	OPTIONAL AVAILABILITY
BILGE SYSTEM	INDEPENDENT	INDEPENDENT	INDEPENDENT
FISH HOLD CAPACITY (M3)	15	35	90



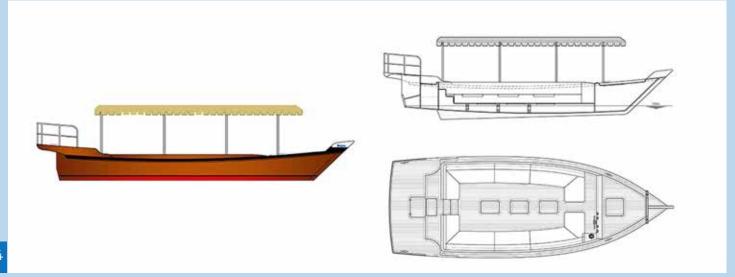
## **SOLAR ABRA BOATS**



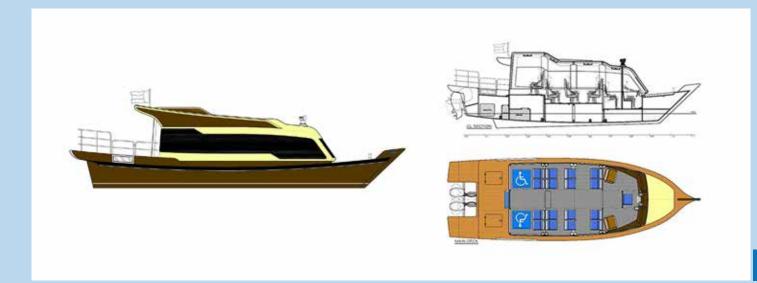
L. O. A	10.00 M
L. W. L	8.53 M
BEAM (MLD)	3.84 M

**DESIGN DRAFT** 

0.60 M



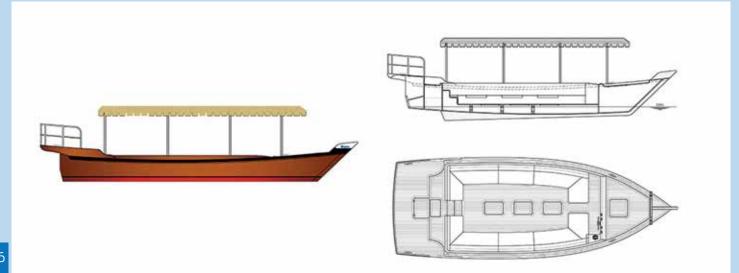






#### **SPECIFICATIONS**

L. O. A	10.00 M
L. W. L	8.53 M
BEAM (MLD)	3.84 M
DESIGN DRAFT	0.60 M





# 20M SUPPORT FISHING BOAT



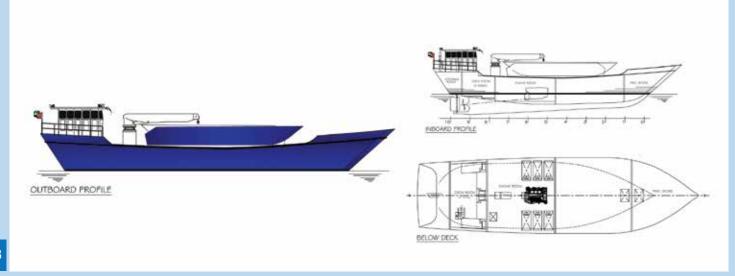
**SPECIFICATIONS** 

L. O. A	20.75 M
L. W. L	17.71 M
BEAM (MOULDED)	5.50 M
DISPLACEMENT	50.00 TONS (APPROX.)
MAXIMUM SPEED	32 KNOTS @ HALF LOAD CONDITION
FUEL TANKS	10,000 LTRS.
WATER TANKS	800 LTRS.
BAIT HOLD CAPACITY	6,184 LTRS. TOTAL





L. O. A	23.30 M
L. W. L	18.60 M
BEAM (MOULDED)	6.40 M
DISPLACEMENT	30.00 TONS (APPROX.)
MAXIMUM SPEED	12 KNOTS
FUELTANKS	6000 LTRS.
WATER TANKS	2000 LTRS.



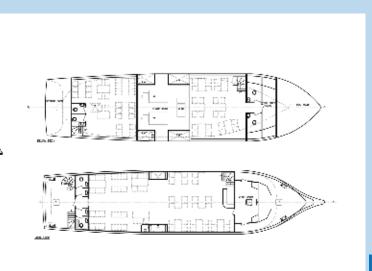
## **RESTAURANT BOAT**





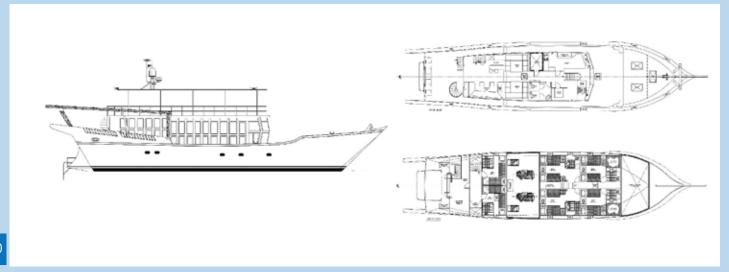
#### **SPECIFICATIONS**

L. O. A (M)	27.80
L. W. L (M)	21.00
BEAM (M)	6.54
DEPTH (M)	3.40
DRAFT – AT MIDSHIP (LIGHT) (M)	1.75
DRAFT – AT MIDSHIP (LOADED)(M)	1.90
DISPLACEMENT (FULL LOAD)	50 TONS (APPROX.)
MAXIMUM SPEED	12 KNOTS
FUELTANKS	6000 LTRS.
WATERTANKS	3000 LTRS.





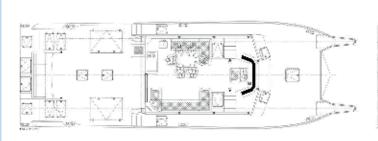
L. O. A	31.00 M
L. W. L	21.00 M
BEAM (MOULDED)	6.20 M
DISPLACEMENT	90.00 TONS (APPROX.)
MAXIMUM SPEED	12 KNOTS
FUEL TANKS	6000 LTRS.
WATER TANKS	3000 LTRS.





3000 LTRS.

700 LTRS.



**FUEL TANKS** 

**WATER TANKS** 



#### **Material Evaluation for Small Crafts**

(Especially Pilot Boats and Fast Patrol Boats of length less than 25 m and a displacement below 35 ft.)

evaluation considers only the suitability of mild steel, alluminium alloy and GRP as hull material for pilot boats and small fast patrol boats operating in the Arabic Gulf and adjacent waters.

**Strength:** Although steen has about double tensile and shear strength than normal GRP structures this advantage of steel can't be exploited due to the fact, that for blister resistance of steel panels the thickness of steel plates have to be about 3-4 mm taking into account also a rust increase of thickness as corrosion reserve. AL is in the strength values at about the same level as GRP. As far as structural strength is concerned the respective hull materials are equally suitable.

**Weight:** For crafts upto 20 m length the hull weight of GRP structures is considerably less than steel structures and again similar to AL.

**Corrosion: Significant advantages of GRP:** GRP has no electrochemical corrosion with adjacent metallic material. Steel has to be carefully protected against rust (more regular maintenance). As far as hull maintenance is concerned many positive points in favour of GRP.

**Repair:** The envisaged materials are easy to be repaired. Welding of steel and AL is without any problem, while requirement for machinery such as welding machines is necessary to carry out the repairs as well as qualified personnel to perform welding and denting. GRP repair can be carried out by any GRP manufacturer, as well as training of the maintenance crew of the boat to carry out such repairs with custom tool without requirement for specialised machinery is quite easy solution for the GRP repair.

Impact and fire Resistance: In this aspect the high elasticity and deformation properties of steel in case of heavy collision have to be considered as an advantage, on the other hand the GRP structures withstands less severe collision and impacts without any damage while for the same impact steel structures are deformed. As far as fire hazard is concerned Steel vessels have advantages but this advantage cannot be seriously considered specially when considering the very small probability

of such an event taking place, this fact is reflected clearly in considerable numbers of small fire fighting vessels have been built recently in GRP in different parts of the worlds proving that fire hazard is not a problem for GRP vessels.

Building Costs: As far as cost aspects are concerned

Fig. 48 Comparative impact resistance

ness

Material

Thick- Weight

building of GRP craft up to 20m length is the most economical material as soon as a series production of the vessels hull is possible.

**Performance:** The steel and GRP crafts are equally suitable in performance wise, on the other hand when considering the weight savings of GRP boats in comparison to mild steel have also some other very favourable side effects for the operation of the boat.

• Less weight means less power demand for the same speed.

A pilot boat of the same dimensions and same performance needs about 25% less power to reach 30km and that means that instead of  $2 \times 850$  Kw,  $2 \times 600$  Kw are sufficient to operate the boat above 30 Kn.

Since the engines are of less power they are far lighter, the whole impact on the system is really snow balling.

- Lighter boat needs less power.
- · Less power means lighter engines
- Lighter engines need less fuel.
- · Less fuel saves costs and weight

Finally one has more reserves in cost, maintenance and operation time.

**Conclusion:** All materials are suitable with advantages for GRP as far as durability, maintenance, handling, weight and costs are concerned. For the local conditions in the Arabic Gulf and adjacent waters all aspects favour GRP due to the following reasons.

- Maintenance and repair are easier to be conducted due to local manufacturers.
- Price of GRP boats is better than those of mild steel.
- Local supplier can be within few hours at the operators site.
- Boats are of proven design.

FO. Thisteres for social registeres to bonding

• A high number of pilot boats of GRP are being run in different ports in the region successfully.

	Steel	Aluminium	Chopped strand mat laminate		
			25% glass 3/1	33% glass 2/1	50% glass 1/1
Modulus GN/m²	210	68	6-2	8-3	12-4
Weight of CSM g/m² Thickness mm	0.8	1-1	2.5	2:3	4650
Weight of CSM g/m² Thickness mm	1.0	1-4	3-2	1350	2000
Weight of CSM g/m <sup>2</sup> Thickness mm	1.3	1-8	1350 4=10	3:7	(2500) 3=3)
Weight of CSM g/m² Thickness mm	1.6	2.3	5:2	4-7	3200 4=2
Weight comparison	1.0	0.5	0-67	0-65	0.66

	mm	g/m²	4	E Thickness mm Weight comparison		1.6
18 s.w.g. mild steel	1.3	9800	No damage			
14 s.w.g. aluminium	2.0	5400	Small dent			
Asbestos cement sheet	6.3	10700	Fractured	Januarea		
Hardboard.	3.2	3400	No damage	No damage slight marking	Fractured	
FRP* 2 layers - 2:1 450 g. m*	1.9	2700	No damage	No damage	Slight	Slight
2 layers -3:1 600 g/m²	3-6	4900	Slight	crazing	crazing	General





#### **CERTIFICATIONS**





BSCIC ISO 14001:2018

BSCIC ISO 140001:2015



Shop Approval

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TUV ISO 20:900115

SHOP APPROVAL



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