



# Largest Dredger Ever Built in Japan, Delivered to the Suez Canal Authority of Egypt

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Due to the recent worldwide trend toward larger trailing suction hopper dredgers, dredgers of the 46,000 m<sup>3</sup> class are being built today. So far all these mega dredgers have been constructed in Europe which is known for its advanced dredging work and construction of dredgers. The largest dredger previously ever built in Japan was 6,000 m<sup>3</sup> and was also built by Mitsubishi Heavy Industries (MHI) for the Suez Canal Authority. Finally the time arrived to construct a dredger which was genuinely large in the worldwide sense.

## 1. Outline and features of this vessel

**Table 1** shows the principal particulars of the vessel while **Fig. 1** shows its general arrangement. This is the largest trailing suction hopper dredger ever built in Japan and is also in the largest class in the world, having a hopper capacity of 10,000 m<sup>3</sup> and a maximum dredging depth of 35 m (the title picture shows this dredger).

From the viewpoint of diversity in discharging dredged soil, this dredger has reached the world's top level. A total of three discharge methods are available,

**Table 1 Principal particulars**

Flag of registry	Arab Republic of Egypt	Speed when free running	15.57 kt
Ship owner	Suez Canal Authority of Egypt	Speed when dredging	2 – 5 kt
Ship classification	BV, <del>HULL</del> , <del>MACH</del> , Hopper dredger, Unrestricted navigation, Dredging over 15 miles from shore, + AUT-UMS, SDS	Main engine	MAN B&W 8L48/60 8 060 kW x 2
		Propeller	4 blades CPP
		Main generator	3 800 kW x 2 2 300 kW x 2
		Auxiliary generator	920 kW x 2
Overall length	127.5 m	Emergency generator	180 kW x 1
Length between perpendiculars	122.0 m	Suction pipe	Port-side/starboard-side drag type φ 1.1 m
Breadth, moulded	26.0 m		
Depth, moulded	10.7 m	Draghead	California type x 2 Universal type x 2
Dredging draught, moulded	9.315 m - within 15 miles from shore		
		Electric motor for driving dredge pump	3 300 kW x 2
	8.65 m - over 15 miles from shore	Jet pump	2 500 m <sup>3</sup> /h x 100 m TH x 2
		Electric motor for driving jet pump	1 150 kW x 2
International navigation draught, moulded	5.5 m	Conical bottom valve	φ 3 m x 20
Gross tonnage	11 316 t	Dredging depth	Max. 35m
Dead weight tonnage	16 865 t		
Hopper capacity	10 211 m <sup>3</sup>		
Complement	74		
Others	Mosque	Major dredging equipment	Overflow duct, swell compensator, bow discharge nozzle, bow quick coupling

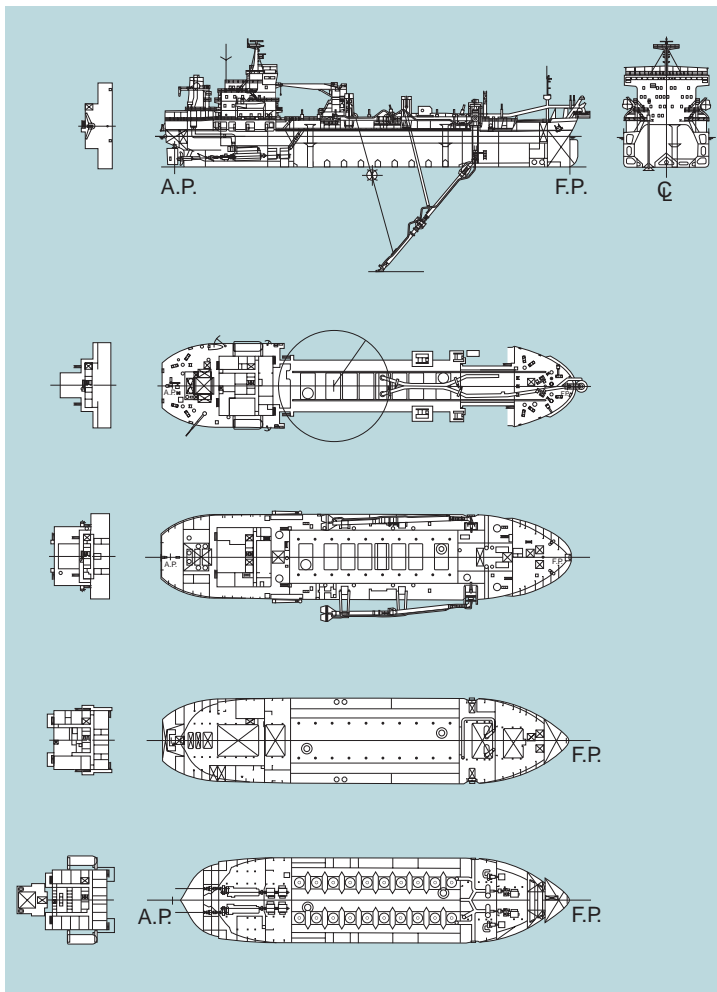


Fig. 1 General arrangement



Fig. 2 Discharging by bow discharge nozzle (Rainbow)



Fig. 3 Dredge Control Monitoring System (DCMS)

with conventional conical bottom valves and bow quick coupling for shore discharging and also a bow discharge nozzle for a special discharge function called Rainbow which is used for large-scale reclamation (Fig. 2).

This dredger employs a state-of-the-art dredge control and monitoring system (DCMS) developed jointly by Vosta LMG of Netherlands and SAM Electronics of Germany. This system is equipped with consoles on both wings of the bridge which serve to control the suction pipes, while the console in the center of the bridge serves to monitor and control all the dredging process conditions such as the dredged soil, the dredge pump, the piping system, and the overflow system. Further, despite its multifunctionality by having such functions as dredge log creation and abnormality diagnosis, the system ensures high usability based on simple operation screens (Fig. 3).

## 2. On-site performance test

After being completed at the MHI Kobe Shipyard and

Machinery Works, the vessel was sailed to the Suez Canal in Egypt, where on-site test operations were conducted. After verification of the speed performance in shallow water, dredging performance at three locations with different soil qualities, and equipment reliability under the climatic conditions of Egypt where the temperature reaches as high as 45°C in midsummer, the vessel was delivered to the Suez Canal Authority of Egypt.

## 3. Operation of this vessel

Along with the rapid expansion of worldwide logistics operations in recent years, the importance of the Suez Canal as a hub of sea transportation has been increasingly recognized. Meanwhile, as the Suez Canal is close to the mouth of the River Nile and is surrounded by desert, the maintenance of the waterway to secure a specified depth is a crucial issue. This dredger is provided with large, state-of-the-art equipment and contributes to efficient waterway maintenance work.