



Outline Specification

MED-A2350

RAmparts 2300MM

23 m – 50 TBP Terminal / Support Tug

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Prepared for:

Misurata Port, Libya

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PART 100 – GENERAL

This Outline Specification describes a vessel which will be designed and constructed as a Terminal / Support Tug of 23 m, delivering 50 tons of Bollard Pull. The RAmparts 2300MM series of tugs are intended as a multi-purpose tug, working off a forward towing winch for ship handling and also equipped with an aft tow hook.

The vessel will be powered by an azimuth stern drive propulsion system. The propulsion arrangement will consist of two main diesel engines connected to drive shafts and Z-drive units. Fixed pitch propellers with high efficiency nozzles assure high bollard pull.

The vessel will be constructed in welded steel and the hull will be fitted with internal watertight bulkheads dividing fore-peak compartment and fresh water tanks, accommodation, engine room, diesel oil tanks, Z-Drive compartment and aft peak tanks.

101. PARTICULARS

101.1 Dimensions

Length, overall (ex. fenders)	23,00 m
Breadth, moulded	10,90 m
Depth, moulded	4,40 m
Draft, navigational	5,05 m
Gross Tonnage	290

101.3 Tank Capacities (Approx.)

Fuel Oil	61,9 m ³
Fresh Water Ballast	21,8 m ³
Potable Water	11,4 m ³
Lube Oil	1,8 m ³
Oily Water	3,2 m ³
Sludge	1,5 m ³
Foam	3,2 m ³
Sewage	10,3 m ³

101.4 Complement

Crew	7 persons
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101.5 Performance

Bollard pull, ahead	50 tons
Free running speed, ahead	12 knots

103. SERVICE CONDITIONS

Vessel will be designed for operation in seawater, in the conditions defined below:

Maximum atmosphere air temperature	45 °C
Minimum atmosphere air temperature	0 °C
Maximum seawater temperature	35 °C
Minimum seawater temperature	5 °C

104. REGULATIONS AND CLASSIFICATION

104.2 International Rules and Regulations

Vessel will be constructed in compliance with all statutes and regulations for this type of vessel, including but not limited to:

- International Regulations for Preventing Collisions at Sea, 1972 (COLREG)
- International Convention on Tonnage Measurement of Ships, 1969
- Intact Stability for All Types of Ships Covered by IMO Instruments, 2008 with Res. MSC.415(97) (IS CODE)
- International Convention for the Prevention of Pollution from Ships and all applicable amendments. (MARPOL)
- Radio Communications regulations to Flag State, and International Regulations
- ILO Maritime Labour Convention (MLC) 2006
- International Convention for the Control and Management of Ships' Ballast Water and Sediments
- The Code on Noise Levels on Board Ships, Resolution A.468(XII)

104.3 Classification Society

Vessels will be constructed to meet all requirements of RINA (hereinafter called the Class) for compliance with the following notations:

C ✕ TUG, UNRESTRICTED NAVIGATION, FIREFIGHTING SHIP E WITH WATER SPRAY,
INWATERSURVEY, MLC DESIGN



105. REGISTRY AND CERTIFICATION

All necessary forms and certificates will be provided to ensure vessel satisfies all applicable international and national regulations.

105.1 Registry

- | | |
|--------------------|-----|
| - Registry | TBD |
| - Port of Registry | TBD |

It is owner's responsibility to register vessel with the requested Flag.

110. HABITABILITY

110.1 Sound Level Requirements

The following maximum noise levels are achieved:

- Machinery Spaces	110 dB (A)
- Wheelhouse	65 dB (A)
- Cabins	60 dB (A)
- Mess rooms, recreation rooms, offices	65 dB (A)
- Galley, serveries, pantries	75 dB (A)
- Working area on deck	85 dB (A)





PART 200 - HULL STRUCTURE AND DETAILS

205. CONSTRUCTION MATERIALS

Materials:

- steel Class Grade A
- stainless steel Grade 304 for interior, 316/316 for exterior
- aluminum 5086-H116 plates, 6061-T6 shapes

Welding:

- to Class requirements
- penetration welds in way of: major machinery foundations areas of high stress
- double continuous welds in way of: areas susceptible to corrosion (exterior, ballast tanks, potable tanks, main machinery space bottom structure)

Construction:

- | | |
|--------------|-------|
| - hull | steel |
| - deckhouse | steel |
| - wheelhouse | steel |
| - mast | steel |





PART 300 - OUTFIT AND FURNISHINGS

304. DOORS

- | | |
|-----------------|--|
| - weather tight | steel in steel frame, single lever, hinged, stainless steel hardware |
| - watertight | steel in steel frame, multi-dog, single lever hinged door |
| - interior | joiner or fire rated to suit location |

305. MANHOLES, HATCHES, AND ACCESS PLATES

Manholes

- fitted to tanks, voids
- bolted plate cover on welded angle frame

Hatches

- steel covers, stainless steel hardware, quick-acting type

306. WINDOWS AND PORTLIGHTS

Marine quality windows and port lights will be fitted in all locations indicated on Drawings. Water tightness of all fixtures will be proven.

- tempered glass
- wheelhouse overhead windows tinted
- mounted in steel frames
- straight line wipers

310. LININGS AND PARTITIONS

Linings/partitions

- 25 mm linings/50 mm partitions
- vinyl-faced steel/Rockwool sandwich type panel system
- stainless steel facing in galley
- mounted to welded steel coaming in wet spaces

Deck head liners

- acoustic, linear "plank" style ceiling
- perforated finish except in washrooms and galley

315. INSULATION

Machinery Spaces

- acoustic and fire barrier insulation

Accommodation

- fire barrier insulation where required
- thermal insulation around periphery of all accommodation areas including wheelhouse

320. FLOOR COVERINGS

Accommodation

- two-layer damping system comprised of visco-elastic damping layer and cement based constraining layer
- waterproof floor coverings extending 100 mm all round above finished floor height for wet spaces (except pantry)

330. ACCOMMODATION OUTFIT

Cabins

- see General Arrangement
- minimum outfit (per occupant):
 - berth
 - berth light
 - locker
 - bookshelf
 - coat hook

Mess room/lounge

- settees; heavy duty vinyl upholstery, storage under
- mess tables, with fiddles

Washrooms

- as shown on General Arrangement
- pre-fabricated Ensar units

Laundry

- one washing machine and one dryer

Pantry

- one combination refrigerator and freezer; approx. 500 lt
- one electric marine range
- microwave
- range hood

Wheelhouse

- split style console
- professional mariner helm chair

360. FIRE SAFETY EQUIPMENT

Fire detection

- constantly monitored system with detectors and annunciation throughout

Engine room

- NOVEC MX1230 gas flooding system, manually controlled

Elsewhere

- hydrants with hoses and nozzles
- dry chemical and CO₂ portable extinguishers

365. LIFESAVING EQUIPMENT

Life rafts

- 2 x 8-person inflatable life rafts

Lifejackets

- per administration requirements

Lifebuoys

- per administration requirements

380. PAINTING AND COATINGS

Paint system

- top quality marine paint system
- non-skid system on decks



Cathodic protection

- zinc anodes
- 60-month protection
- electric cathodic protection system to be provided for box coolers



PART 400 - DECK MACHINERY AND OUTFIT

405. ANCHORING SYSTEM

Windlass

- one (1) electrically powered independent anchor windlass
- arranged per General Arrangement
- THR MARINE / EACV – 19 U2

Anchor and chain

- 1 x 240 kg HHP type in pocket
- 19 mm, stud link

410. LINE HANDLING/MOORING EQUIPMENT

Bollards and bitts

- as shown on General Arrangement

Mooring pipes

- bulwark mounted chocks

Capstan

- one (1) electric capstan
- arranged per General Arrangement
- THR MARINE / ECV – 50 kN

415. TOWING EQUIPMENT

Forward towing system

- terminal support operation
- ship assist
- comprised of winch and staple

Aft towing system

- line towing
- comprised of post with tow hook, capstan mounted on top



415.1 Forward Winch

Winch Make / Model	THR MARINE / EFTW 250 kN
Winch type	electric frequency controlled
Drum configuration	single drum
Line capacity	200 m of 44 mm diameter synthetic line
Force and speed ranges	200 kN at 0-10 m/min 65 kN at 0-30 m/min
Brake holding force in 1st layer	1150 kN

Safety features: emergency quick release and other safety features in accordance with Class Rules

415.5 Tow Hook

Aft tow hook

- disc type
- safe working load 50 tons
- local/wheelhouse quick release

415.6 Towing Fittings

Forward staple	stainless steel lined, mild steel chock, in a heavy steel frame
Towing hook fitting	a foundation is installed on the aft capstan

420. CARGO HANDLING EQUIPMENT (OPTIONAL)

420.1 Deck Crane

Make / Model	TOIMIL MARINE / T12505M/3
Type	foldable
Safe working load	1,03 tons at 10,1 m
Power	dedicated electro-hydraulic power pack

450. FENDERING SYSTEM

Bow	cylindrical: 800 mm outside diameter, "W" fender: 480 mm x 300 mm thick
Sheer	"D" fender: 300 mm
Stern	"W" fender: 480 mm x 300 mm thick



Attachment

cylindrical fenders secured with chain pennant, and nylon web sling straps
"D" and "W" fenders secured between steel fender bars with stainless steel pins





PART 500 - PROPULSION MACHINERY

510. MAIN PROPULSION ENGINES

Quantity	two
Type	high speed marine diesel engine
Make/Model	CAT 3512C
Rated power (kW)	1500
Rated speed (rpm)	1600
Emissions standard	IMO Tier II
Starting	electric (battery)
Rotation	standard
Turbocharger	standard configuration
Mounting	resilient
Fuel oil	marine distillate fuel (ISO 8217:2012 DMA)
Cooling	box cooler
Controls	local and wheelhouse Battery charger for M/E control batteries

520. CLUTCHES

Port Side	Z-drive engage / disengage
	Firefighting pump engage / disengage
Stbd Side	Z-drive engage / disengage

525. SHAFTING SYSTEM

Shafts	port and starboard composite lines
Couplings	torsional and misalignment
Bearings	spherical roller type in pedestal or bulkhead mount housings
Seals	watertight seals at bulkheads

530. PROPULSION UNITS

Quantity	two
Make/Model	SCHOTTEL / SRP 360
Type	Z-drive propulsion unit
Installation	bolted
Propeller type	fixed pitch
Propeller diameter (mm)	2200





PART 600 - ELECTRICAL SYSTEMS

601. SYSTEM DESCRIPTION

Primary power	400 V, 50 Hz, 3-phase, 3-wire ungrounded
Secondary power	230 V, 50 Hz, 3 & 1 phase, 3-wire ungrounded
DC power	24 V
Power supply	
	<ul style="list-style-type: none">- two identical ship's service generators; each sized to independently carry full vessel load with the exception of the forward winch; and to carry full vessel load including the forward winch in parallel operation- shore power connection, capacity as determined by Load Analysis- seamless transfer between sources
Emergency power	<ul style="list-style-type: none">- dedicated set of 24 V DC emergency batteries housed in well ventilated battery boxes sized to meet regulatory requirements

605. POWER GENERATION

605.1 Ship's Service Generator Set

Quantity	two
Make	CATERPILLAR C4.4
Rated power	86 ekW
Output voltage	primary system, see section 601
Starting	electric (battery)
Cooling	heat exchanger
Mounting	resilient
Controls	local and switchboard start/stop

605.5 Batteries and Chargers

Type	lead acid, heavy duty maintenance free
Services	emergency services essential services navigation equipment



Chargers	radios heavy duty marine type one per battery set
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610. MAIN SWITCHBOARDS

Type	dead front and front access steel enclosure hinged access panels
Sections	one per generator set shore power primary and secondary voltage distribution
Breakers	moulded case bus tie breaker

616. TRANSFORMERS

Ship service	primary and standby transformers
Shore power	1 x shore power isolation transformer

625. LIGHTING AND FITTINGS

Accommodation	LED type fixtures
Machinery spaces	LED type fixtures
Emergency lights	24 V DC for exit routes, life raft stations
Floodlights	500W quartz halogen located to illuminate working areas
Searchlights	2 x halogen on wheelhouse top, remote controlled
Navigation lights	LED type simplex arrangement for all lights configured for single operating direction

PART 700 - SHIP'S SERVICES

701. PIPING SYSTEMS, GENERAL

Pipe, flanges, fittings DIN standard

Pipe materials

- steel, standard thickness, for fuel oil, lube oil, sludge, oily water, fresh water cooling
- steel, standard thickness, galvanized after fabrication for bilge, fire/GS, seawater cooling, fire-fighting
- polished stainless steel tailpipes above funnel, steel elsewhere, for exhausts

705. FILL, VENT, AND SOUNDING (TANKS)

Fills

- fuel (port and starboard), Camlock connector
- fresh water, threaded
- spill containment for oil fills

Vents

- common vent for fuel tanks with overflow tank
- self-closing ball type vent heads

Sounding

- magnetic gauge system for fuel day and FW tanks
- sounding pipes for tanks in general
- sight glasses for small tanks

710. FUEL OIL SYSTEM

Tanks

port and starboard day tanks

bunker tanks

Primary filter

each engine fitted with duplex fuel filter/water separator

Transfer pumps

One (1) Horizontal, gear type, single stage

- 5 m³/h at 3,0 bar discharge pressure
- Electric driven

One (1) oil purifier.

715. BILGE SYSTEM

Configuration

- bilge alarms in each watertight compartment
- bilge main system with suctions in each of the hull watertight compartments
- emergency and direct suctions in the engine room

Bilge/fire/GS pump

- primary bilge pump, backup fire/GS pump
- electrically driven, vertical centrifugal, single stage
- 25 m³/h at 4,5 bar discharge pressure

Bilge hand pump

- 5 m³/h capacity

725. FIRE AND GENERAL SERVICE SYSTEM

Services

fire hydrants supply

deck wash-down

Fire/GS/bilge pump

- primary fire/GS pump, backup bilge pump
- electrically driven, vertical centrifugal, single stage
- 25 m³/h at 4,5 bar discharge pressure

730. EXTERNAL FIRE-FIGHTING SYSTEM

Pump

- 1 x 1400 m³/h at 10,5 mlc
- centrifugal
- end suction, top discharge

Monitors

- 1 x 1200 m³/h water / 300 m³/h foam for one monitor
- remote electric operation/local hand-wheels

Auxiliary equipment

- hydrants, outfits, breathing air compressor to Class
- water spray system to protect house

735. MACHINERY COOLING SYSTEM

Class approved box type cooler will be provided for;

- port and starboard main engines
- each generator set
- Z-drives are cooled by a branch taken from main engine LT

HVAC Cooling

- Sea water cooling

Pumps

- engine driven
- electric driven primary/standby pumps for auxiliary circuit

740. COMPRESSED AIR SYSTEM

Two (2) service compressors

- to serve the following (as needed):
 - towing hook
 - sea chest blowdown
 - utility air

Air receivers

- to suit duties listed
- nominally 10 bar

Air compressors

- electrically driven
- air cooled, single-stage
- pressure as per receivers
- sized to suit receiver replenishment

Air treatment

- Y type strainers
- filters
- air dryers as required for service



750. WASTE OIL AND OILY WATER SYSTEM

Tanks

dedicated Oily Water and Sludge tanks

Oily water pump

- electrically driven, horizontal, gear type, single stage
- 2 m³/h at 5,0 bar discharge pressure

Oily water pump duties:

- collection system with wandering suction hose
- tank pump out

Sludge pump

- electrically driven, horizontal, gear type, single stage
- 2 m³/h at 5,0 bar discharge pressure

Sludge pump duties:

- tank pump out

755. HYDRAULIC SYSTEMS

Steering

drive unit standard

Deck Crane

manufacturer's standard electro-hydraulic power pack

760. EXHAUST SYSTEMS

Silencers (all engines)

high attenuation, minimum 35 dB at 125 Hz octave band

integral spark arrestors

Insulation

removable blanket type

Mounting

entire system resiliently mounted

PART 800 - DOMESTIC SYSTEMS

811. VENTILATION, MAIN MACHINERY SPACE

Supply air

- two electrically driven axial flow fans
- fans sized to provide sufficient cooling to limit max engine room air temperature to 45 °C
- inlet silencers
- fire and weather closures
- mist eliminating louvres

Relief air

- natural exhaust through funnel louvres
- fire and weather closures as required

815. HEATING and AIR-CONDITIONING SYSTEM

Air conditioned spaces

wheelhouse and accommodations

Summer:

outside 45°C

inside 25°C

sea water temp. 35°C

Re-circulation quantity will be approx. 50% and will allow 30 m³/hr fresh air per person. Air from the mess rooms will not be recirculated.

Winter:

outside 0°C

inside 22°C

Accommodation

central unit with ducting to accommodation spaces

Wheelhouse

two top-mounted split type air conditioning unit

each rated for 50% of maximum load

825. POTABLE WATER SYSTEM

Pressure set

primary and standby electrically driven pumps

1 x 100 L (approx.) expansion tank

Hot water tank

electric, 150 L capacity

Treatment

ultraviolet sterilizer



830. BLACK and GREY WATER SYSTEM

Collection

gravity

Sewage pump

- Monobloc centrifugal self-priming horizontal pump 3
- 3 m³/h at 3,0 bar discharge pressure





PART 900 - CONTROL, COMMUNICATION, AND NAVIGATION

905. STEERING SYSTEMS

Type	Wheelhouse controllers drive manufacturer's standard joystick
Autopilot	single unit integrated with steering system and follow up from the compass

915. INSTRUMENTATION, MONITORING, AND ALARM SYSTEMS

Comprehensive alarms and monitoring parameters including:

- machinery
- bilge levels
- fire / smoke detection
- tank levels
- general alarm

in accordance with Class requirement for periodically Unattended Machinery Space (AUT-UMS)
BNWAS (Bridge Navigation Watch Alarm System)

920. NAVIGATION AIDS

- 1 x X-band ARPA radar
- 1 x weather station
- 1 x satellite compass
- 1 x DGPS
- 1 x AIS, Class A
- 1 x echo sounder
- 1 x Doppler speed log
- 1 x magnetic compass
- 1 x chart plotter

930. COMMUNICATIONS EQUIPMENT

GMDSS	Sea Area A2
Radios	

- 2 x VHF/DSC radio telephone
- 1 x MF/HF radio telephone
- 2 x hand-held VHF

Navtex

- 1 x NAVTEX receiver

Distress Signals

- 1 x float free EPIRB
- 1 x SART radar transponder
- 1 x shipset of flares

Internal communications

- intercom stations in each cabin, mess galley, wheelhouse
- weatherproof intercom stations on working decks, in engine and drive unit rooms
- sound powered telephone in wheelhouse, engine room and drive compartment



MAKER LIST

MAIN ENGINE	CATERPILLAR	USA
THRUSTER	SCHOTTEL	GERMANY
AUXILARY DIESEL ENGINE	CATERPILLAR	USA
SHAFT	VULKAN	GERMANY
FIFI SYSTEM (FIFI-E)	FFS	NORWAY
COMPRESSOR	DENO	EUROPE
COOLERS	KELVION GEA BLOKSMA	NETHERLANDS
FENDERS	LION RUBBER	INDIA
AIR WHISTLE	KOCKUM SONIC	GERMANY
SEARCHLIGHTS	SEEMATZ	GERMANY
INTERNAL & EXTERNAL LIGHTS	BAKER-IS	TURKEY
NAVIGATION LIGHTS	K2W	GERMANY
ENGINE TELEGRAPH	MARIN ELEC	FRANCE
ANCHOR & CHAIN	YAPAS	TURKEY
NAVIGATION EQUIPMENT	FURUNO	JAPAN
ENGINE ROOM PUMPS	MAS DAF	TURKEY
INSULATION MATERIALS	ROCKWOOL, PAROC, IZOCAM	EUROPE
WINDOWS & PORTLIGHTS	IDE MARINE	TURKEY
WIPER	WYNN	UK
ALARM & AUTOMATION SYSTEM	PRAXIS	NETHERLANDS
FIRE DETECTION & EXTINGUISHING	MINIMAX	GERMANY
HVAC	HEINEN HOPMAN	NETHERLANDS
PANELS & INTERIOR DOORS	ENSAR	TURKEY
PAINT	JOTUN	NORWAY
DIESEL OIL SEPERATOR	WESTFALIA	GERMANY
WINCHES	THR MARINE	NETHERLANDS
TOWING HOOK	DATA HIDROLIK	TURKEY
VALVES	DIKKAN/SOYVALVE/VALFTEK	TURKEY
DECK CRANE (OPTIONAL)	TOIMIL MARINE	SPAIN
LIFE RAFT	VIKING	NORWAY
CAPTAIN CHAIR	NORSAP	NORWAY