



# ASD Tug 2312

AZIMUTH STERN DRIVE TUG

**DAMEN**









# The compact ship-handling tool.

» With its strong focus on safety, reliability, sustainability and efficiency, this is a vessel for now and for the future.





# Evolution of the fittest.

» **The ASD Tug 2312** draws on proven technology from the Damen portfolio - including the successful ASD Tug 2813, an exemplar of compact versatility.

ASD Tug 2312 offers nearly the same functionality as its larger sister, the ASD Tug 2813.





» **The ASD Tug 2312** is based on the design of the ASD Tug 2411, a frontrunner in compact towage that has become an industry benchmark. Since introducing the vessel in 2004, Damen has delivered more than 110 ASD Tugs 2411.



## Compact versatility

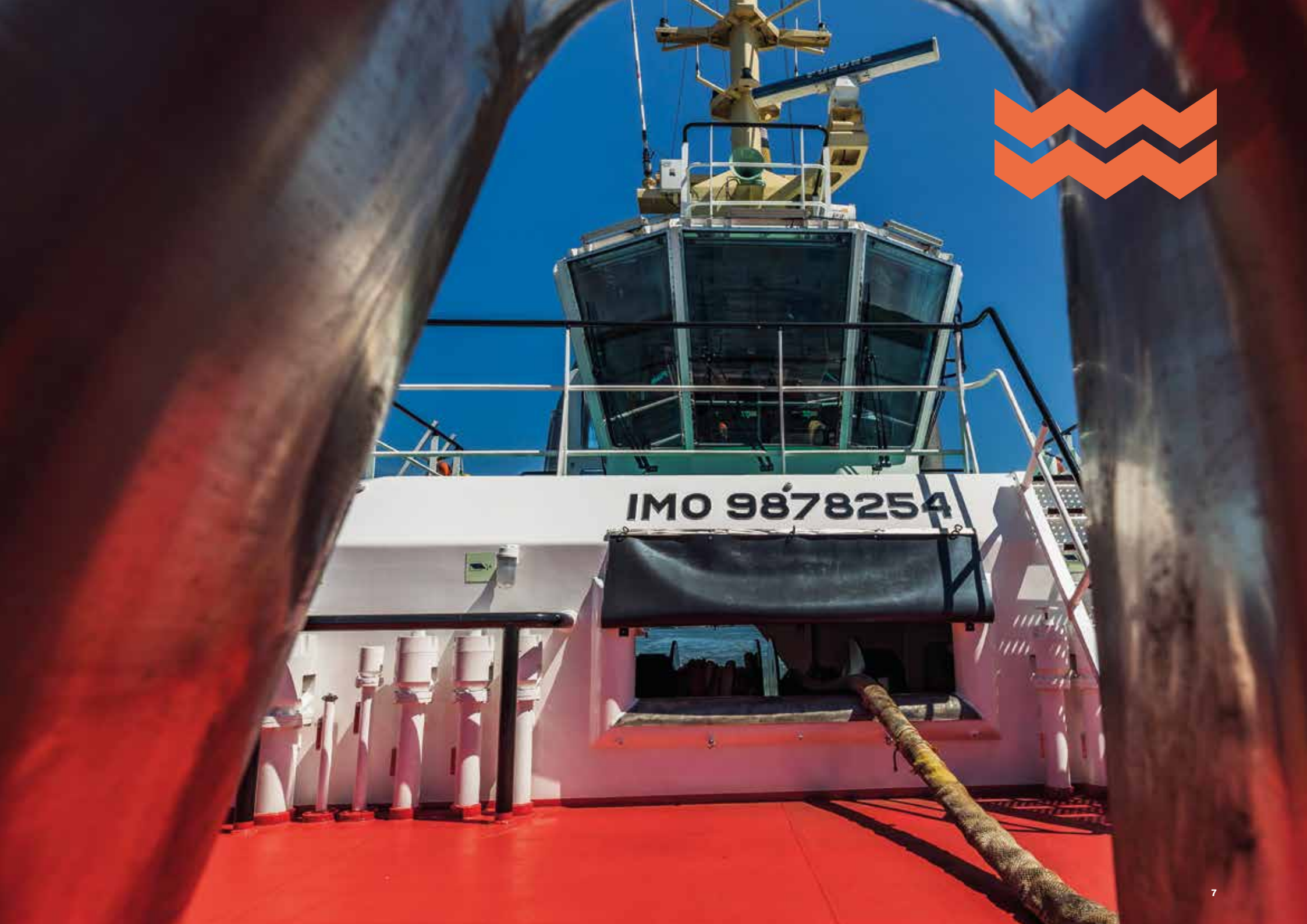
The uniqueness of this vessel is characterised by a smart layout. The ASD Tug 2312 offers a clean deck with a centrally-located double drum winch for working a towline over the fore and aft deck.

The compact design delivers excellent control in both sailing directions thanks to its patented Twin Fins and

high power output. The ASD Tug 2312 can also be equipped with coupling bollards for pushing barges.







IMO 9878254



# Research and development

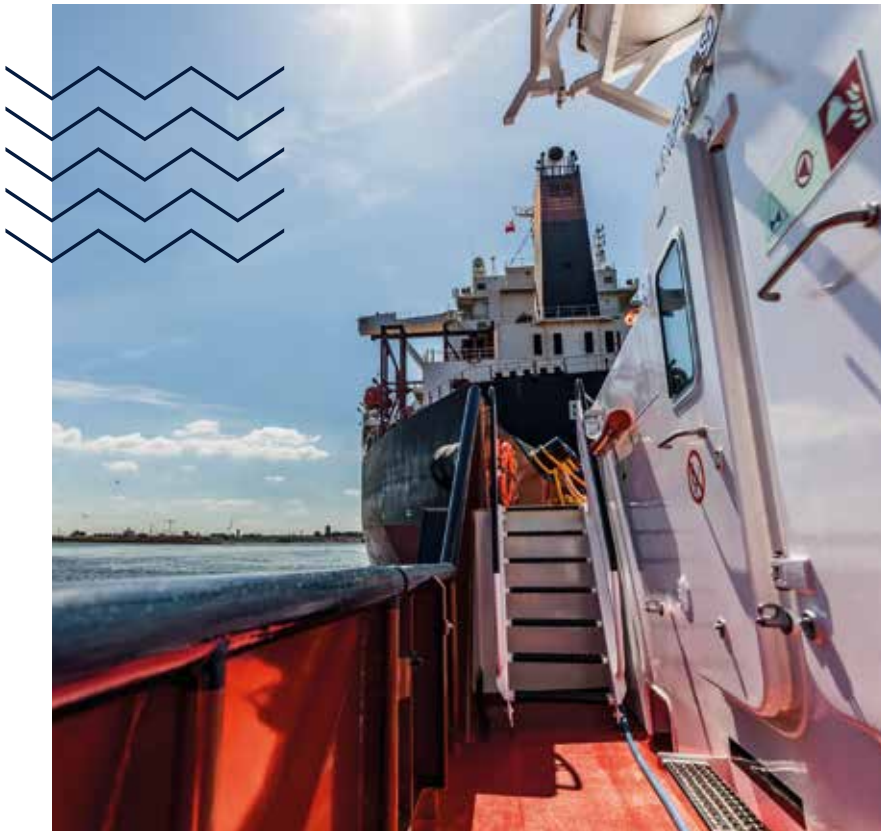
**Damen vessels benefit from broad knowledge gathered during ongoing research programmes within the Damen Group. Damen works alongside world-renowned research institutes, universities and companies.**

We have applied this expertise to our vessels to deliver the highest standards of crew comfort, including the effective minimisation of sound and vibration levels.

Our research programmes continually look ahead to address the needs and objectives of the maritime sector, now and in the future. We are able to bring cutting edge technologies to the market such as fully-electric propulsion, minimal emissions and much more.







# Quality is in the details

**Realising that our customers have to excel in their operations, Damen is committed to continuously improving its products and services.**

The result is quality, based on knowledge, experience, a controlled production process and craftsmanship, from concept design to the smallest onboard detail. Quality is a characteristic for which Damen Tugs have long been renowned - a reputation we intend to maintain.

Our offer is a vessel that is simple to use, reliable to operate and easy to maintain. All of which means an asset that holds its value throughout its lifetime.



# The Damen ASD Tug 2312 design in detail.

The ASD Tug 2312 is an innovative vessel setting the new standard of technology within the tug market.

## Principal dimensions

Length overall	<b>22.80 m</b>
Beam overall	<b>12.03 m</b>
Depth at sides	<b>4.40 m</b>
Draught aft	<b>5.50 m</b>
Displacement approx.	<b>485 t</b>
Power main engines	<b>3,804 bkW (5,102 bhp) at 1800 rpm</b> <i>Caterpillar 3512C TA HD/D</i>
Bollard pull ahead	<b>70 t</b>
Bollard pull astern	<b>65 t</b>
Speed ahead	<b>12.2 kn</b>
Speed astern	<b>12.8 kn</b>
Azimuth thrusters	<b>Kongsberg US 205S</b>
Towing winch	<b>Hydraulically driven double drum,</b> pull up to 31 and speed up to 38 m/min on second layer, 175 t brake



### Mast

Lightweight compact structure with folding option.

### Damen safety glass

High impact resistance (cat. P3A). All-round visibility.

### Towing bitt

Towing bitt positioned before rudders in order to ensure good manoeuvrability when towing over aft deck.

### Fire Fighting

Optionally equipped with main engine driven pump 1200 m<sup>3</sup>/h or 2400 m<sup>3</sup>/h (FIFI 1).

### Low and easy maintenance

Closed and integrated construction details result in reduced corrosion and easy-to-paint surfaces.

### Obstacle-free working deck

Open, clean deck layout with no obstructions for safe working conditions.

### Bulwark

1.1 metre height for added crew safety.

1.4 m

### Hull paint system

Tin-free anti-fouling. 5-year life-span.

### Thrusters

Proven Kongsberg rudder propulsion with two 360 degree rotating fixed pitch propellers in stainless steel inner rings in the aft.

### Keel cooling

Maintenance free cooling system.





**Wheelhouse**

Excellent view lines due to thin window frames.

**Spacious accommodation & workshops**

87.5 m<sup>2</sup> accommodation  
25.9 m<sup>2</sup> stores and workshops

**Covered and easy accessible winch location**

One winch for forward and aft operations.

**Towing bitt**

Excellent load-bearing capacity and facilitates smooth rope guidance, leading to less rope wear.

**Fenders**

Optimised fendering system for impact absorption and force distribution.

**Electronic stability feedback**  
Know your limits

3.1 m

<12°

>12°

>17°

**Low fuel consumption**

Fuel efficiency is aided by smooth hull lines and optimal water flows in any sailing direction.

**262 gross tonnage**

Compact efficiency.

**Twin Fin**

Predictable sailing with a compact hull in both directions.





## Safety.

The ASD Tug 2312 is the new benchmark in compact versatility. The design incorporates safety as a main priority throughout the vessel. Its main mission is to bring vessels - and those aboard them - safely in and out of port.

Damen Tugs are designed according to the latest stability rules, even before they enter into force, setting new standards for safe operations.

The shatterproof Damen Safety Glass guarantees crew protection in the wheelhouse. The decks are spacious and uncluttered, while the high freeboard ensures that water is kept from the deck.

## Getting everyone home



**Paramount for safe operations are good, predictable handling characteristics, along with extreme stability. This comes courtesy of the vessel's low profile, wide-beam combination with a patented Twin Fin skeg design.**

Clean, uncluttered, non-slip decks free of fittings and obstructions minimise the possibilities for slipping or tripping.





## Reliability.

The ASD Tug 2312 benefits from Damen's philosophy of standardised shipbuilding. It draws on long experience and the continual improvement of the Damen Tugs range. In its design and construction, Damen applies proven, modular systems and equipment.

The end result is a proven, efficient vessel, guaranteeing the latest technological improvements and offering commonality and familiarisation with other vessels from the Damen range.

# A vessel you can trust



**The ASD Tug 2312 is the result of in-depth R&D in consultation with the towage industry. Damen believes that listening to its clients is the best way to ensure that the vessels it builds are fit for purpose.**

Keel cooling ensures optimal cooling in all conditions and is maintenance free. This system has been proven over many decades on our workboats.

While building on the past, the ASD Tug 2312 embraces the future with digital

connectivity. The feedback provided guarantees maximum uptime via timely replacement of worn parts and full condition-based maintenance. It also offers analysis of sailing performance for fully-optimised operations.



## Sustainability.

The sustainability of the ASD Tug 2312 is the result of a holistic approach running through the entire vessel. The smooth hull form provides optimal efficiency, while energy saving measures including double-glazed windows and LED lighting contribute to the approach. A modular certified NOx emission reduction system makes the vessel IMO Tier III compliant.

## A clean and quiet vessel



**Damen has developed a Class approved modular NOx reduction system based on the selective catalyst reduction (SCR) system to lower the threshold for IMO Tier III compliance. This modular system can be applied off the shelf, at any stage of construction, or as a retrofit.**

The ASD Tug 2312 is also a pleasant place to work, thanks to extreme low levels of noise and vibration. Numerous steps have been taken in the

development of the vessel to achieve its COMF-NOISE 3 and COMF-VIB 3 Class notation.





## Efficiency.

The ASD Tug 2312 is based on years of research, development and experience gained over successive generations of constructing Damen Tugs. This evolution has led to a solution that is both smart and simple, facilitating a smooth flow of work and optimised ergonomics for captain and crew.

Due to the centralised double drum winch the ASD Tug 2312 can be operated either over the fore deck or the aft deck.

## A vessel that cuts costs



Following the Damen philosophy of standardised shipbuilding, the ASD Tug 2312 reduces spare parts and maintenance requirements to a minimum, via the application of modular systems and components which are used throughout the Damen Tugs portfolio.

Modifications designed to simplify operations and maintenance include the fitting of a single covered winch and the application of keel cooling. Its versatility also delivers cost-effectiveness as the ASD Tug 2312 can undertake numerous other roles, including seagoing

towage and barge handling, without compromising on its compact, efficient capabilities in harbour.

Despite its compact design, the highly capable ASD Tug 2312 comes packed with functionality.

## DECK

# Optimal work space

**The ASD Tug 2312 is a vessel designed to do the job. Whether it is assisting, towing or barge handling, clean and spacious working decks are essential.**

### » Safe space

The highest incident rates on board tugs are those associated with slippage and tripping. Here, Damen has taken every opportunity to reduce these risks to an absolute minimum. The result is a spacious, uncluttered working area with closed, smooth surfaces and omitting all equipment not essential for towing operations. Simple and effective.

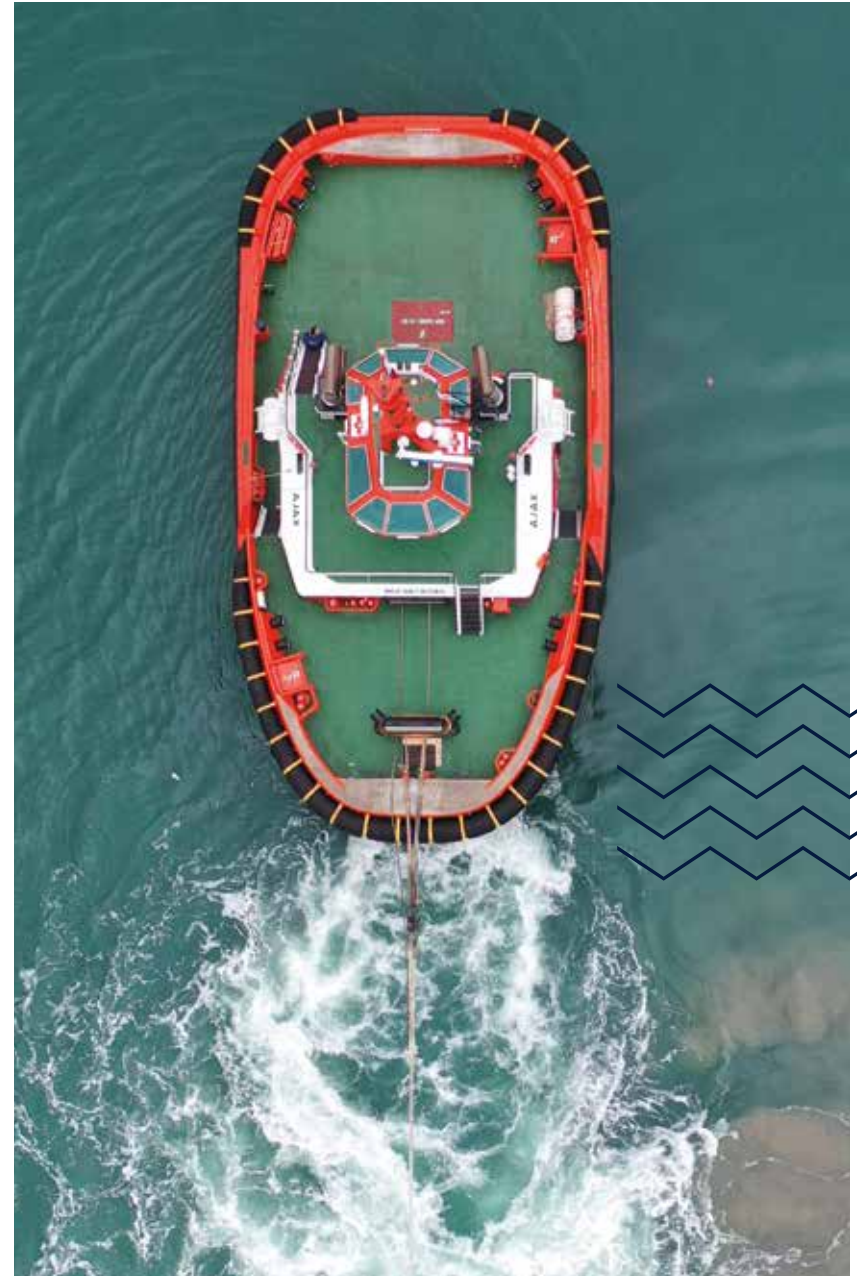
Anti-slip paint on deck, coupled with a bulwark height of 1.1 metres gives crew confidence when working in all conditions.

### » A robust working area

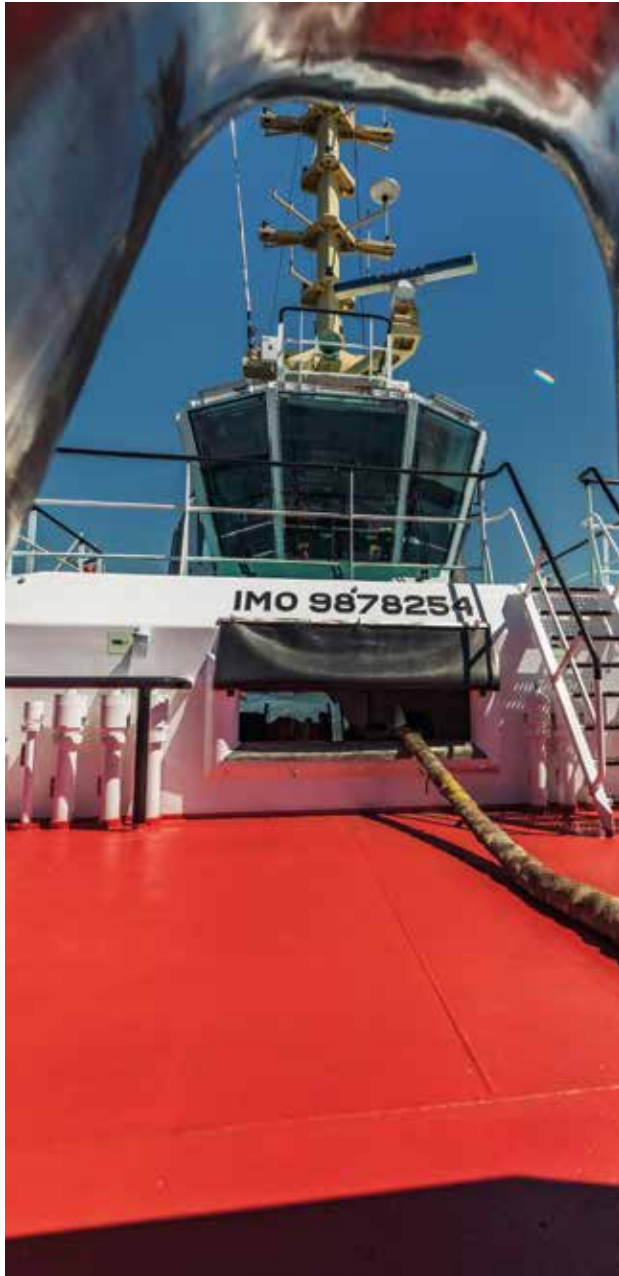
Stainless steel is applied to parts of the vessel that are vulnerable to wear and tear.

Key features include:

- ▶ A double drum winch with a high speed hydraulic torque system.
- ▶ Stainless steel fitted to those parts of the vessel that are vulnerable to wear and tear.
- ▶ Ample deck space in which the crew can safely work.
- ▶ One continuous working deck from bow to stern.







#### **Standardised winch technology**

The vessel features a winch designed by Damen Winch Technology and built by Damen Marine Components. Applying the Damen philosophy of standardisation, the winch offers reliability and easy, fast maintenance. The winch is full flame zinc-coated with an epoxy paint system on top and features just two grease nipples. All rotating parts have 5,000 hours of lifetime.

The winch is combined with a solid, variable speed, high torque hydraulic drive system enabling the captain to haul and veer the towing line at the highest speed possible for the force applied.



## ENGINE ROOM

# The heart of the vessel

Using the vessel's wide beam, Damen has created an engine room boasting extreme spaciousness and easy access to all equipment necessary for regular operation. This facilitates increased reliability through straightforward, quick maintenance.

### » Standardised systems

The ASD Tug's standardised, modular systems utilise globally available components, further ensuring maximum uptime and easy maintainability.

### » Rapid acceleration

The ASD Tug 2312 is powered by strong 1,800 rpm engines that, along with the vessel's compact design, ensure notably rapid acceleration and deceleration for a tug offering up to 70 tonnes bollard pull. Quick responsiveness increases the safe use of a tug.

### » Quality that lasts

Throughout the vessel, durable

systems and components are used, matching the environment they operate in. Minimising seawater systems in the engine room is of paramount importance to a reliable, durable operation. Therefore, on the ASD Tug 2312, cooling is taken care of with a closed fresh water cooling system, a proven method to be found on all Damen Tugs.

The exclusion of a ballast water system is a further example of this. This is made possible by a smart tank layout in combination with a hull form capable of safe operation at all loading conditions.





### **Unmanned engine room**

The operator can exercise full control of the engine room from either the wheelhouse or the main deck during operation through our alarm monitoring and control system with its comprehensive Damen user interface.



## WHEELHOUSE

# 5,102 HP at your fingertips

The wheelhouse of the ASD Tug 2312 is the ultimate in ergonomics, providing a safe, comfortable and efficient path to full control.

Special attention has been paid to the layout of the consoles. Essential controls are via push buttons, while nautical and technical information is displayed on two large screens. This results in an ergonomic and clean control station for increased safety.

### » Premium view

Visibility from the wheelhouse is unrivalled in all directions, ensuring the operator of distraction-free control. Shatterproof Damen Safety Glass offers crew protection.

### » A new sensation

The ASD Tug 2312 redefines master feeling. Minimal vibration and robust

movement of the vessel provide a new dimension in towing.

### » Know your limits

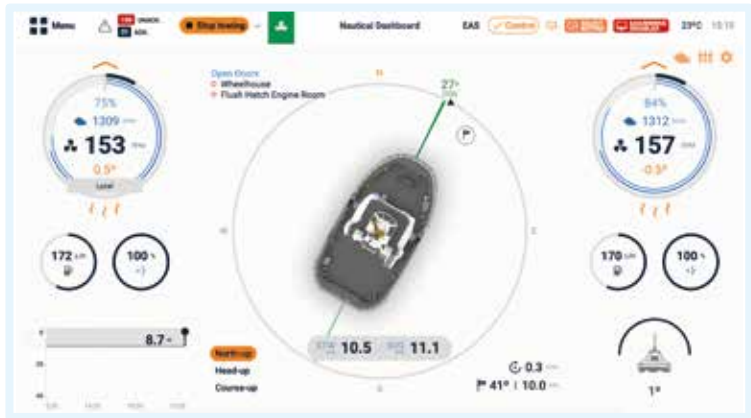
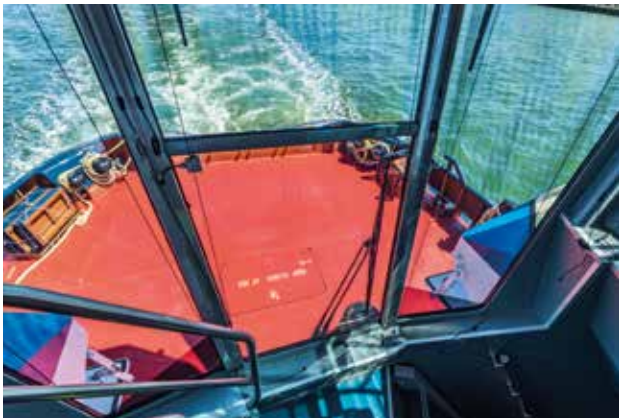
Electronic stability feedback technology assists the operator in assessing the vessel's limitations. This safety conscious feature is the first step towards Damen's active stability system currently under development.

### » Everything to hand

The captain can remain hands on at all times during an operation, courtesy of the integrated push-to-talk VHF button on the propulsion control & winch operation pedals.







**Clear, supportive screens**

The consoles and their displays are the result of five years in-depth R&D and client feedback. The screens are clear, supporting the captain by showing only what he needs during operations, whilst allowing operators to select more detailed data when desired.



## INTERIOR

# Home from home

**The safety and comfort of the ASD Tug 2312 go beyond the working spaces.**

**The accommodation and interior spaces are significantly larger than would be expected on a vessel so compact in nature, including generous sized cabins, galley and mess.**

The galley/mess and crew cabins are located on the accommodation deck. Sanitary facilities and switchboard room are situated on the lower deck. Noise and vibration has been minimised and large windows provide maximal daylight entry.

### » A place to live

The presence of natural light is an important factor in making the crew

feel at home. At the same time, black-out curtains are provided to ensure sleep during daytime when necessary.

### » Good vibrations

The vessel's superstructure is resiliently mounted, which means noise and vibration are reduced to an absolute minimum for premium on-board comfort.





**Daily crew comfort**

No stone has been left unturned in the pursuit of onboard comfort. Examples include telephone shelving and conveniently located USB ports to allow charging.



# Remote monitoring



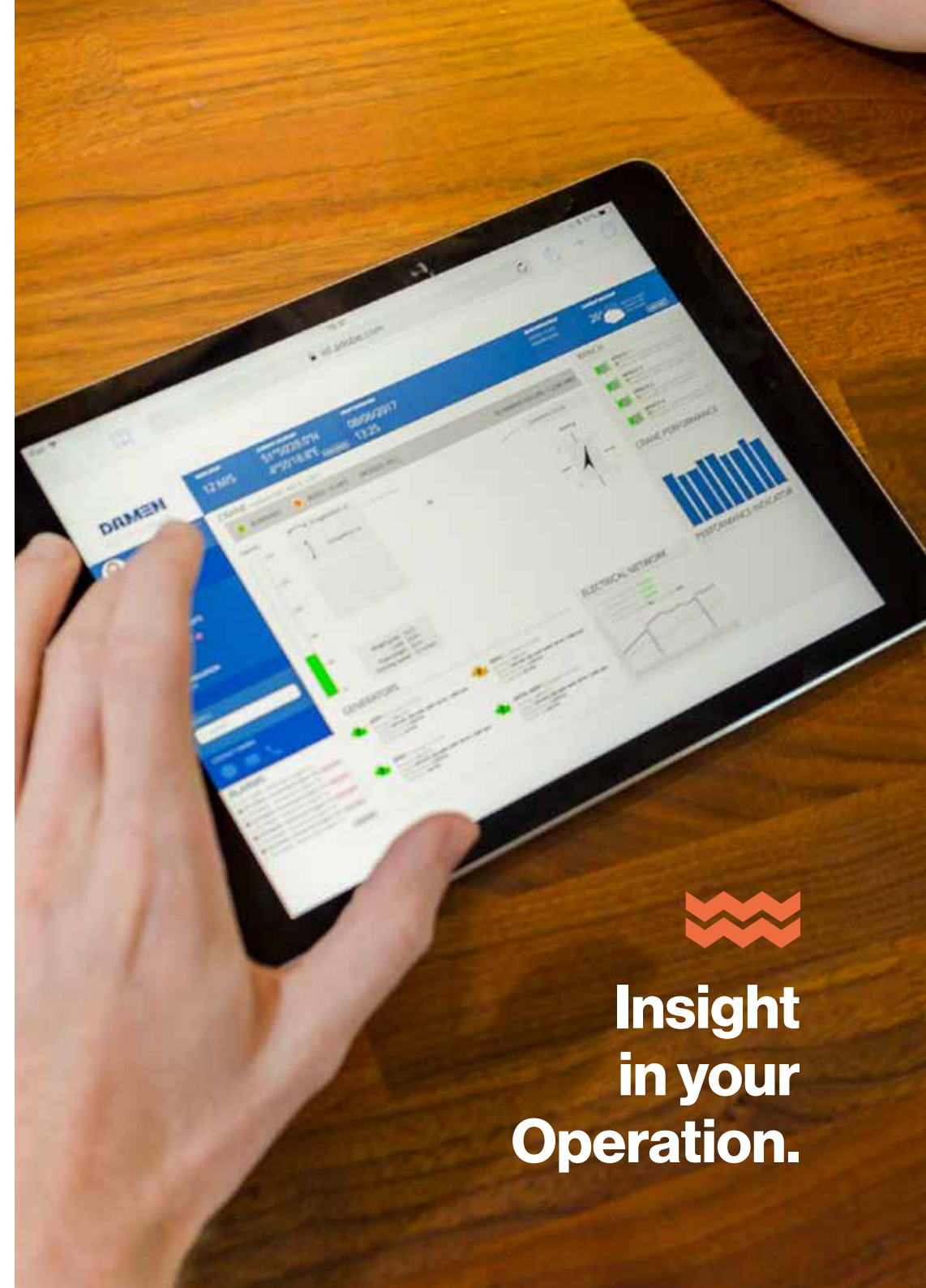
**Damen has long kept a close eye on the increasing pace of digitalisation. Damen Digital is the gateway from which all data from systems and equipment aboard Damen vessels is channelled.**

This includes the remote monitoring of fuel consumption patterns. Remote monitoring can also shed light on equipment performance, to ensure the correct equipment is used for a given application.

Digital monitoring paves the way to more precise scheduled maintenance planning, extending the periods between maintenance based on

accurate monitoring of, for example, fuel and oil quality.

Similar practice has had much success in the automotive industry where such in-depth knowledge of components and parts wear has led to demonstrable cost savings and maximised uptime. Damen is working closely with its clients in the development of Damen Digital.



**Insight  
in your  
Operation.**



# Damen Services

NEVER SET SAIL ALONE

Damen Services intends to provide added value to every Damen vessel, whether this involves a single intervention or a complete package such as integrated logistics support or a long-term service agreement.



## » Integrated Logistics Support

Integrated Logistics Support (ILS) is increasingly applied in the commercial and coastguard sectors today. If requested, Damen can supply a customised ILS program with our newly built products.

## » Getting started

Damen Services is able to tailor its service packages to specific requirements. In this way we ensure our clients can begin their operations as soon as we deliver their vessel on location.

## » Keeping you going

Downtime is becoming more and more expensive. Damen Services' portfolio enables reduction of downtime, either upfront via taking over the entire maintenance strategy or via quick intervention if a malfunction occurs.



## » Long-term services agreement

Due to the large number and complexity of different systems on board of a vessel, maintenance can be a challenging process. Damen Services is your partner in managing your assets and keeping them in optimal condition.

## » Warranty Support

Customer satisfaction is of utmost importance to us. Customers can reach out to a dedicated service team 24 hours a day, seven days a week. As well as having access to Damen via our mobile app, customers are visited by a Damen technician, regardless of whether there is an issue or not.

## » Innovation & development

We respond to the rapidly changing world with the continuous development of our services. This includes an expanding focus on digitalisation and sustainability. Examples include remote monitoring, a personal webportal for maintenance management, 3D parts printing and intelligent asset management.

## » Worldwide service hubs

To fulfill our customers' need for short reaction times and understanding of local languages and cultures, Damen Services has a worldwide network of Service Hubs. These Service Hubs are tailored to regional demands and are able to supply all necessary services from our portfolio.



### GETTING STARTED

### KEEPING YOU GOING

#### INTEGRATED LOGISTICS SUPPORT

- Reliability, availability and maintainability analysis
- Reliability centered maintenance analysis
- Logistic support analysis

#### DELIVERY

- Warranty support
- My Damen
- Commissioning



#### COMBINED SERVICES PACKAGE

- Ship delivery
- Initial spare parts package
- Vessel operating manual
- Training
- Maintenance management solutions

#### LONG-TERM SERVICE AGREEMENT

- All-round services
- Fleet support:
  - Parts, maintenance and repair
- Consultancy
- Conversion
- Refit







### **Colophon**

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