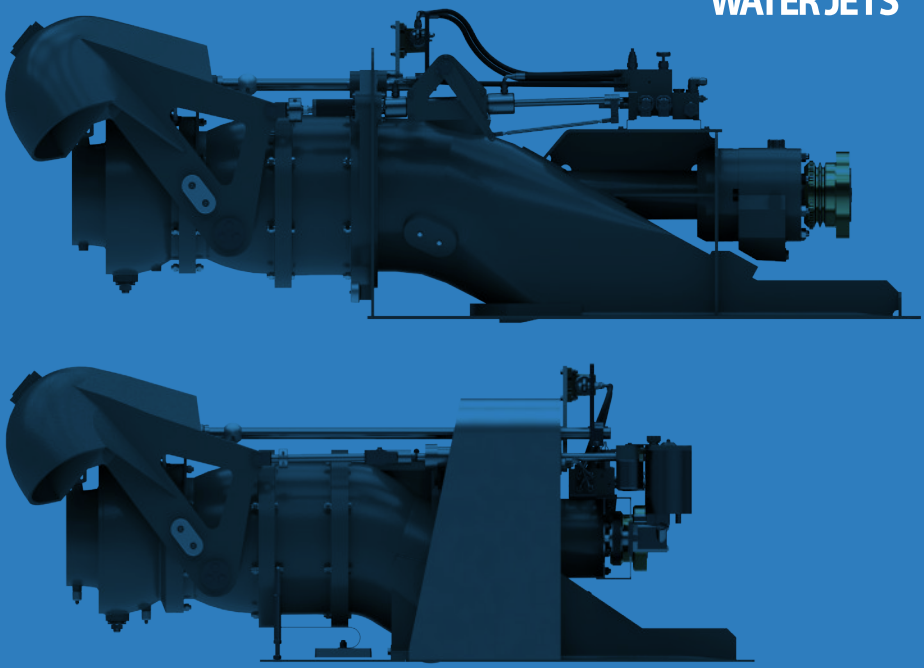
DOEN
WATER JETS



Product Range Guide

PERFORMANCE RELIABILITY SIMPLICITY

CELEBRATING
50
YEARS

DESIGNED & MANUFACTURED
IN AUSTRALIA

Waterjet propulsion solutions

Established in 1971 in Melbourne, Australia, Doen WaterJets is a leading designer and manufacturer of high-performance waterjet propulsion systems.

Doen WaterJets offers one of the most extensive and versatile waterjet portfolios in the market. We work closely with boat designers, builders and operators to ensure our class-leading technology stays ahead of the evolving operational demands of diverse vessels and applications.

Our mission is to provide superior PERFORMANCE, RELIABILITY & SIMPLICITY at every stage of a vessels' life-cycle. Enabled by ongoing R&D, supported by Computational Fluid Dynamic (CFD) tools and a track record of 50 years of in field service, our waterjets deliver unmatched performance, efficiency and uptime.

Utilising an almost exclusive Australian supply chain, and its own cutting-edge capabilities, Doen WaterJets proudly showcases the very best that the country's advanced manufacturing has to offer.

Doen WaterJets an ISO 9001: 2015 Quality Management System certified company, accredited by DNV.

Kompakt Series

Minimum footprint, maximum thrust

With their distinctly small installation footprint, we have developed the Kompakt Series to present users with a cost-effective range of high performing products that provide maximum flexibility of placement so confined space or a limited budget no longer prohibit you from selecting and installing the correct size waterjet. There are now seven models in the Series, matching engine powers up to 710kW (950hp).

Kompakt Series incorporates our latest impeller and pump technology, which has been perfected over half a century of continual refinement to provide excellent high-speed performance, exceptional fuel efficiency, superior load carrying capacity and cavitation margins.

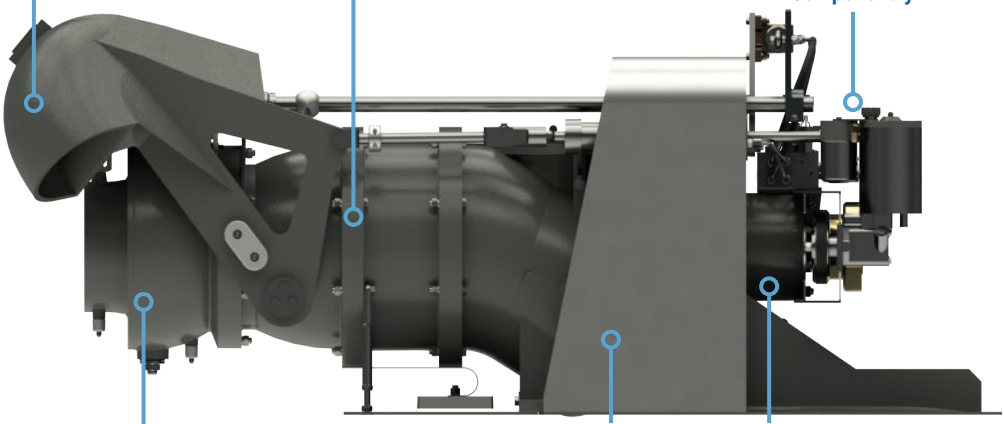
These waterjets offer the lowest cost of ownership in the market thanks to their robust design and the use of high-grade materials, the specially developed multi coat powdercoat paint system and best-in-class corrosion protection.

Installation of Kompakt Series is fast, flexible and easy using the transom mount method that was pioneered by Doen WaterJets. Key to this installation method is a hull insert which is made from the hull material and used to form the initial part of the intake tunnel and provide a strong and leak proof mounting face for the waterjet. The hull insert can be fabricated by yard or sourced from us.

The flexible longitudinal positioning provided by the Kompakt Series transom mount method has proven invaluable to designers and builders who have to manage confined inboard spaces, or for retrofit installations that require the existing engine machinery layout to be retained.

Kompakt Series overview

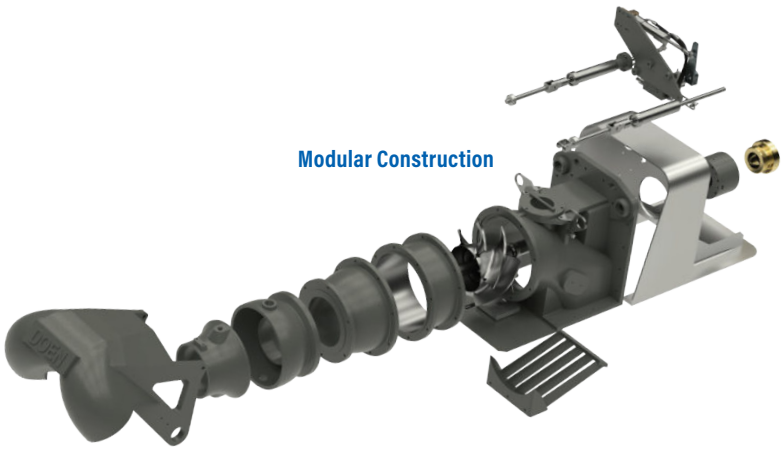
- Excellent performance, load carrying capacity and cavitation margin
- Flexible, quick and easy installation in any hull type and material
- Different supply models and versatile configurations to suit all budgets
- Exceptional reliability, and extended component life
- No special tools needed for repair and maintenance tasks



Installation into aluminium or steel hulls by way of weld-in hull insert

Installation into fibreglass hulls by way of FRP insert in the mould

Short-tail installation by way of deep recessed insert



Dual coat powder coat paint system with cathodic protection

Kompakt Series

MODELS

Waterjet Model	DJ85	DJ100	DJ112	DJ120	DJ142	DJ152	DJ172
Impeller Size Ø mm (in)	217 (8.5)	254 (10)	280 (11)	310 (12.2)	356 (14)	381 (15)	432 (17)
Max Power [1] kW (hp)	200 (270)	300 (400)	360 (480)	485 (650)	560 (750)	670 (900)	710 (950)
Max. RPM	4200	3400	3055	2800	2400	2250	1975
Dry Weight [2] Kg	85	105	175	225	315	380	470
Jet Variants [3]	DT	G	DT	DT, HE	DT, HE	DT, HE	DT, HE

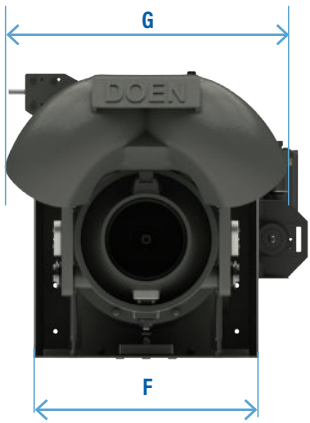
Notes

(1) Max Rec. Power for standard model (subject to application eng. review)

(2) Includes Std. Reverse Control System - Excludes Entrained Water

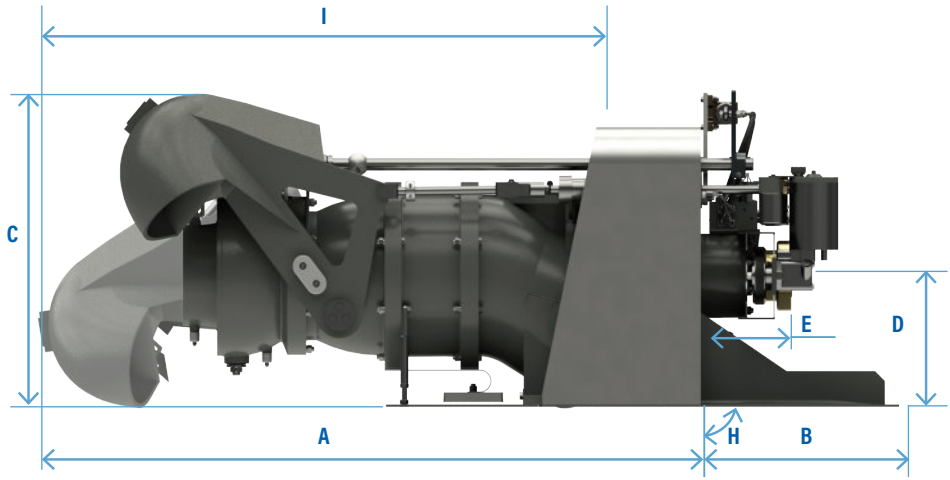
(3) DT: Direct Thrust | G: Integrated Gearbox | HE: Hybrid Electric

(4) Typical only - not to be used for construction purposes



DIMENSIONS (4)

Waterjet Model		DJ85	DJ100	DJ112	DJ120	DJ142	DJ152	DJ172
Dimensions (mm)	A	905	1105	1180	1340	1535	1655	1825
	B	305	400	535	490	570	500	620
	C	400	550	540	620	720	770	835
	D	212	250	250	265	320	335	375
	E	145	176	200	225	236	260	260
	F	450	540	610	680	775	810	940
	G	350	390	490	500	612	645	700
	H	95°	95°	90°	90°	90°	90°	90°
	I	730-810	890-990	720-1125	860-1170	965-1350	1060-1500	1185-1620



Optima Series

The state-of-the-art

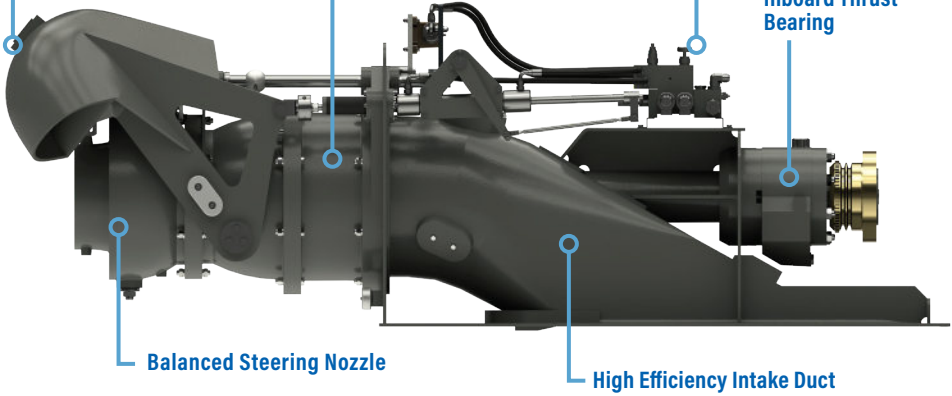
Matching engine power up to 6500 kW (8700 HP), Optima Series waterjets are developed to meet and exceed the most demanding propulsion requirements of the government and commercial vessels across all applications.

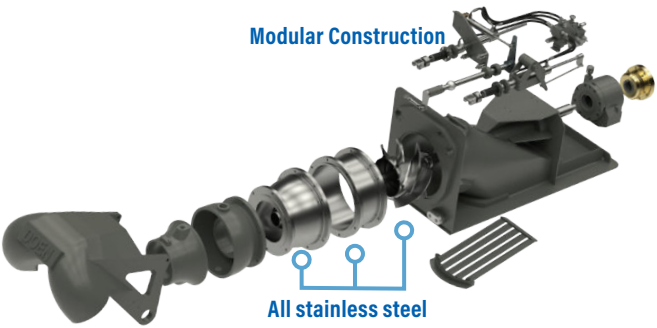
The Optima Series represents the state-of-the-art in waterjet propulsion technology. They feature our cutting edge impeller technology to deliver mixed flow type, high speed performance, within an axial build; which together with their hydrodynamically advanced intake designs ensure superior efficiency across all operational speeds, with unmatched acceleration, excellent load carrying and superior cavitation margins.

The waterjets in this Series also feature our flexible intake geometry that allows us to design tailored fabricated intake ducts to deliver optimized performance and or achieved the most effective installation across all hull types, materials and challenging machinery layouts.

Optima Series Overview

- Cutting-edge pump design and optimized intake ducts unlock class leading high-speed performance, together with unmatched acceleration time and superior cavitation margins
- Enhanced reliability thanks to best-in-class corrosion protection systems and high grade materials, including a pump assembly made entirely from stainless steel
- Fabricated Intake ducts from hull matching materials delivered ready to installed, offer significant weight saving, optimal performance, simplest hull integration and machinery interfacing
- Service is simple and straightforward due to the modular construction and the fact that no special tools are required for maintenance or repair tasks





Best of class marine material, coating system and cathodic protection

Integration into aluminium or steel hulls

Integration into fibreglass hulls

Optima Series

MODELS

Waterjet Model	DJ150HP	DJ170HP	DJ200	DJ220	DJ240	DJ260	DJ290	DJ310	DJ350	DJ400	DJ450
Impeller Size Ø mm (in)	381 (15)	432 (17)	520 (20.5)	559 (22)	610 (24)	660 (26)	736 (29)	788 (31)	890 (35)	1015 (40)	1145 (45)
Max Power[1] kW (hp)	745 (1000)	970 (1300)	1265 (1700)	1450 (1950)	1775 (2380)	2010 (2700)	2535 (3400)	2900 (3900)	3725 (5000)	5350 (7150)	6500 (8700)
Max. RPM	2250	1975	1680	1525	1370	1290	1160	1085	970	850	750
Dry Weight [2] Kg	430	510	875	1050	1400	1700	2340	2780	3650	4900	6900
Jet Variants [3]	DT, IWJ, HE	DT, IWJ, HE	DT, IWJ, HE	DT, IWJ, HE	DT, IWJ, HE	DT, IWJ, HE	DT, IWJ, HE	DT	DT	DT	DT

Notes

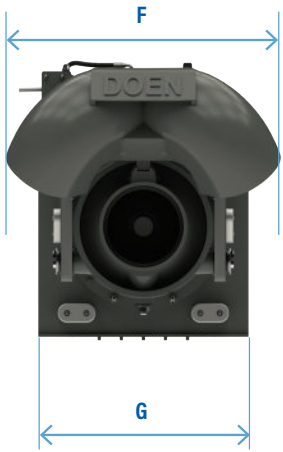
(1) Max Rec. Power for standard model (subject to application eng. review)

(2) Includes std. Reverse control system. Excludes entrained water

(3) DT: Direct Thrust | IWJ: Integrated Waterjet | HE: Hybrid Electric

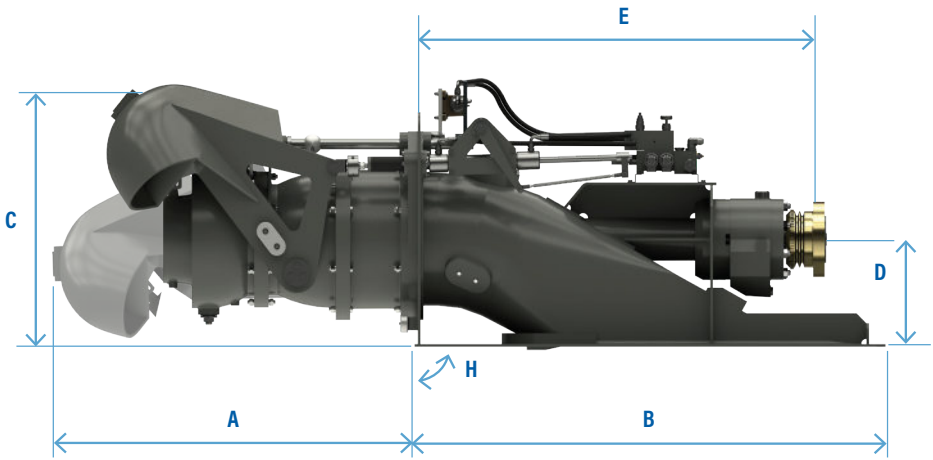
(4) Typical only – not to be used for construction purposes

(5) Standard stated – tailor made intake tunnel, narrow reverse bucket and custom shaft angel available



DIMENSIONS [4]

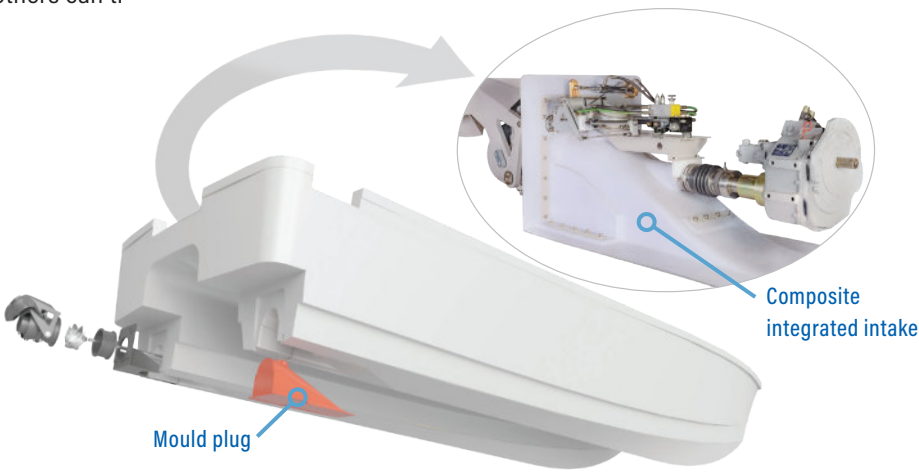
Waterjet Model		DJ150HP	DJ170HP	DJ200	DJ220	DJ240	DJ260	DJ290	DJ310	DJ350	DJ400	DJ450
Dimensions (mm)	A	1105	1225	1420	1775	1695	1975	2195	2155	2415	2645	3075
	B [5]	1420	1670	1935	2170	1695	2520	2850	3420	3520	4455	5000
	C	755	815	1015	1210	1210	1365	1565	1590	1755	1725	2175
	D [5]	320	350	430	460	510	540	600	640	685	785	880
	E [5]	1225	1355	1540	1785	1835	1945	2195	2305	2630	3065	3445
	F [5]	810	940	1100	1200	1315	1475	1700	1815	2040	2200	2200
	G [5]	620	690	830	840	900	950	1040	1175	1250	1430	1610
	H [5]	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°



Exclusive technologies

Leveraging half a century of R&D and propulsion system engineering, Doen WaterJets has developed ground-breaking and innovative waterjet technologies that remain exclusive to the Kompakt and Optima Series.

With a long list of product variants available across both ranges utilizing our unique proprietary technologies, ensures that Doen WaterJets can deliver a more integrated, seamless solution to overcome design, engineering and operational challenges when others can't.



Integrated Waterjets

Unique solution for elegant and seamless fibreglass and composite hull installations

Integrated Waterjets (IWJ) provide for the simplest and most cost-effective method of installing waterjets into composite vessels.

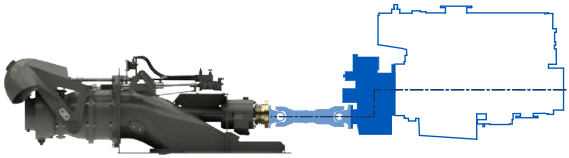
IWJs use a re-usable plug in the hull mould to laminate over and form the intake duct surface. The IWJ assembly is then bolted directly to the intake as moulded into the hull without any need for large cut-outs or internal flange bolting that could affect a vessel's structural integrity.

Direct Thrust Waterjets

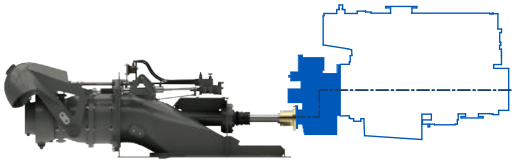
Simplified driveline, lower life-cycle costs and less maintenance

Our Direct Thrust (DT) waterjets have the impeller main shaft arranged to thrust directly to the gearbox, just like a conventional propeller arrangement. The DT variant is available on the majority of our waterjets.

DT waterjets are mechanically simpler, and more cost-effective to operate and maintain than competing systems and because they eliminate the need for any waterjet thrust bearing system and intermediate shafting. They require less longitudinal space than conventional waterjets models so offer even more installation flexibility.



Typical machinery arrangement for standard waterjets



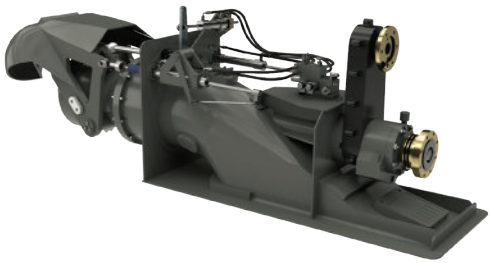
Typical machinery arrangement for DT waterjets

Hybrid Electric Waterjets

Significantly reduce fuel consumption and environmental impact

Our Hybrid-Electric Waterjets have a unique integrated Power Take In (PTI) feature with a forward-facing input coupling for the connection and matching of an electric motor in parallel to the main engine. The PTI can be used for retrofit or new-build installations.

Together with our advanced ECS400 control platform which can interface to both the electric and conventional diesel powertrains, our Hybrid-Electric Waterjets deliver seamless control and performance regardless of power mode.



Control Systems

Complete control

Flexible control configurations for diverse operational and budget requirements

Further securing our position as a dependable waterjet propulsion solution provider is our flexible range of rugged hydro-mechanical and sophisticated electronic control systems.

We can provide control systems for all budgets and operational levels, ensuring that the integral responsiveness and manoeuvring capabilities of our Kompakt and Optima Series waterjets can be harnessed with ease and confidence.

ECS400

The class compliant, CAN bus based, fully programmable ECS400 has an unmatched set of features, offering integrated controls for waterjet steering and reverse, engine throttle and marine gear in a single state-of-the-art system. All Doen Waterjet models across both the Kompakt Series and Optima Series can be configured with an ECS400 system

Ultimate safety – An easy to operate colour touchscreen interface for display information and alarms along with high level redundancies built into the system's architecture empower safe operations.

Turnkey supply – Delivered fully factory tested and ready to use out of the box, the ECS400 is designed for fast, trouble-free and seamless commissioning.

Unlimited possibilities –There are practically no limits to configuration and customization, and integration with third party systems such as dynamic positioning (DP) and USV remote control systems.

Control Systems

ECS-Lite

ECS-lite is a simpler and feature focused electronic control system for smaller vessels and budget conscious applications that combines bucket reverse and engine throttle controls into a single double function lever, with gear select and basic alarms.

Steering can be by an independent manual or power-assisted hydraulic system, however integrated electronic steering is available as an option.

All waterjet models across the Kompakt Series and Optima Series, in single or twin installation, can be configured with ECS-lite.

Cost effective – Ideal for budget driven projects that don't require all of the features of the ECS400.

Simplified installation – A plug & play system that is fully factory tested and ready to use out of the box for fast, trouble-free commissioning.

Flexible configuration – Single or twin station options for LCD screens for information and alarms, integrating electronic steering and eDOCK control.

eDock

Improving safety and operational convenience, ECS installations can be augmented with our dedicated single joystick eDOCK control for ultimate docking vector control and low speed manoeuvring.

Precise & intuitive control – Push for directional thrust and twist for yaw to deliver a smooth and effortless docking experience.

Flexible setup – Can be added as a panel device adjacent to the main controls or as a standalone docking station, and is fully programmable to accommodate operational requirements.

Easy integration – A plug and play upgrade for ECS400 and an easy add-on for ECS-lite.

Remote eDOCK panel

Rotary Servo Control (RSC)

Our RSC unit is an integrated hydraulic control system providing proportionate and precise follow up control of waterjet reverse buckets by conventional lever, via a push-pull cable.

Steering is independent and by way of manual or power-assisted hydraulic systems. RSC is typically reserved for Kompakt Series waterjets but is also available for some Optima Series if requested.

Dependable operation – An intrinsically simple and reliable system that can be easily maintained without the need for special knowledge or training.

Easy commissioning – The RSC unit and all hydraulic components are mounted to the waterjet and supplied fully set up and factory-tested.

Configuration flexibility – Options include neutral bucket position, while start interlock and indication can be built into the system if required.

Support

Global customer support

We recognise that our customers need reliable equipment and minimal down time. And for over five decades, we have put in place effective measures throughout our design, manufacturing, engineering application and the after-sales service & support processes to underpin the industry-leading reliability and simplicity of maintenance and routine repair across our product range.

Should an unexpected issue occur, directly or with our Global Partners network we are ready to help in an instant, remotely or in-person, and if you prefer to take the lead, we can provide the training, detailed product manuals and parts to empower your team to do so.

Application engineering

Our vigorous application engineering process ensures that the correct size waterjet is selected to underpin reliability and superior performance throughout the life of the vessel, not just the warranty period.

Commissioning & sea trials

We can provide engineering and technical assistance to customers during the commissioning and sea trial to verify acceptable performance of the equipment and the attainment of the required design and performance parameters. This service is standard as part of all waterjet packages with ECS electronic control systems.

Global partners

We utilise the latest communication tools to optimise our response to service tickets, while our extensive and ever-growing global Service and Support partners network ensures that a technician is always available to help, in any region, at any time.

Service agreements

With a Doen WaterJets Service Agreement operators can further underpin reliability and plan for high availability of their waterjets with servicing and priority support for up to two more years after the standard warranty finishes.

Right to repair

Doen WaterJets supports our customers' right to maintain, diagnose, and repair their equipment. Detailed operation & maintenance manuals as well as spare parts catalogues are readily available to all our customers. We can supply diagnosis software for our electronic control systems. And we provide basic or comprehensive training, tailored to suit individual operators at our HQ or anywhere in the world.

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