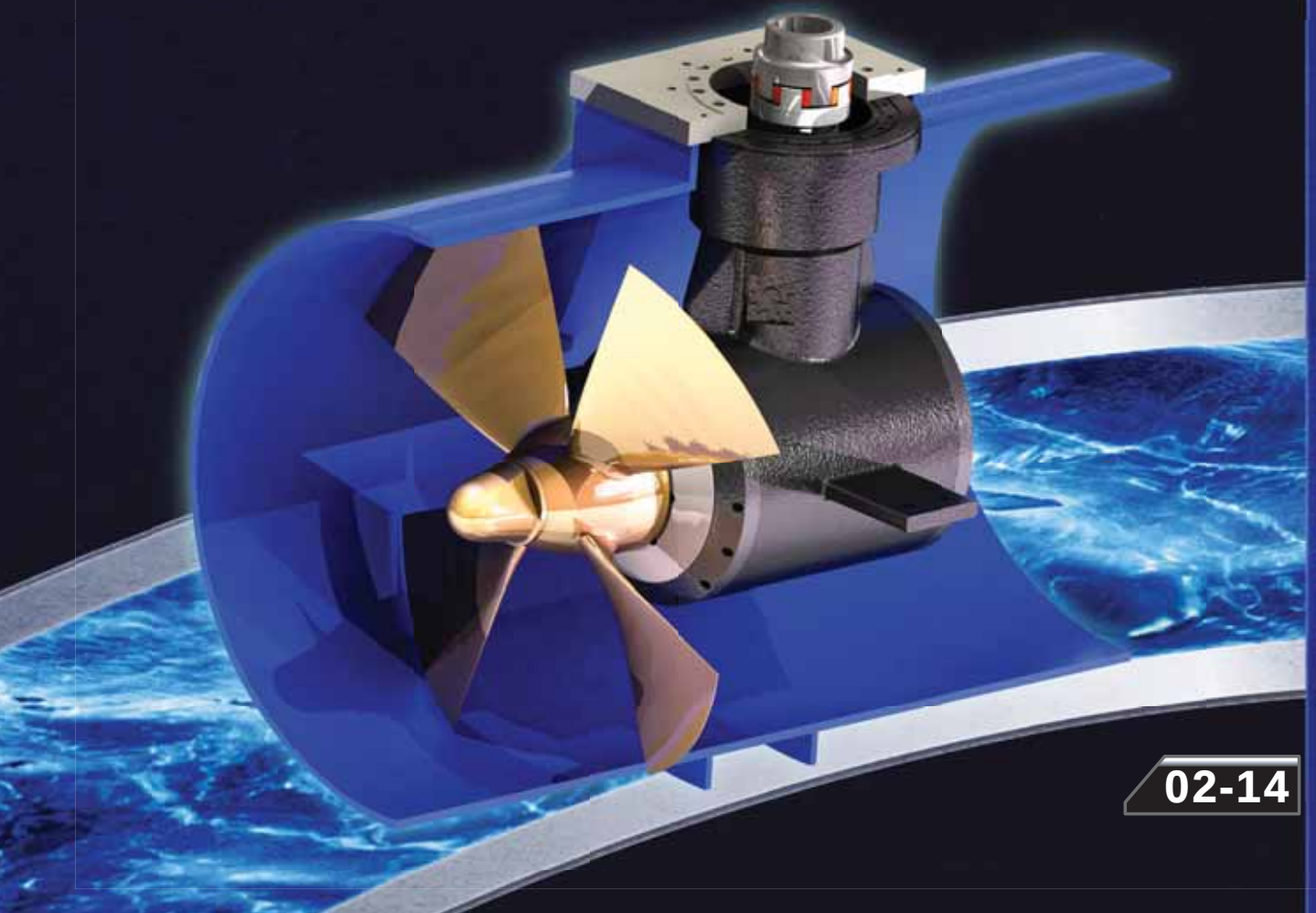
Thrusters

ROMAGNOLI
MARINE SOLUTION



INNOVATION TECNOLOGY-DP MODE

02-14

L'uso del Bow-thruster rende agevole la manovra di barche di qualsiasi tipo e dimensione.Una sicurezza in più quando ci si appresta all'ormeggio in acque ristrette, con equipaggio ridotto od avverse condizioni metereologiche.
I thruster OR-SYSTEM sono stati studiati per la massima efficienza ed affidabilità; sono di facile installazione e richiedono minima manutenzione. Sono disponibili in una vasta gamma di potenze e configurazioni per adattarsi alle più svariate esigenze d'impiego. Il controllo della propulsione viene gestito sia idraulicamente che elettricamente mediante stazioni di telecomando.

I prodotti sono costantemente verificati sia in fase di produzione che in fase di collaudo. Quest'ultimo viene eseguito utilizzando un banco prova, garantendo qualità e sicurezza. La politica interna è orientata allo sviluppo tecnologico e questo, sebbene oneroso, ci permette di mettere sul mercato eccellenti prodotti.

The bow-thruster makes manoeuvering operations easier for vessel of whatever size. It also means an increased margin of safety when docking in crowed waters, shorthandedly or in rough weather.
The OR-SYSTEM thrusters are easy to install and need minimal servicing. They have been designed for the maximum efficiency and reliability.
A wide range of models is available to meet the most different power and configuration requirements.
The control of propulsion is supplied using both hydraulic and electronic devices assembled in stations remotecontrolled.

The products are constantly tested both over the production time and in the final acceptance test.
This one is conducted making use of a test bench, warranting quality and security. The internal political trend is bound to technological development and this, although it is expensive, allows to throw on the market excellent products.

QUALITY CERTIFIED MANUFACTURING

ROMAGNOLI Marine Solution *has high technical competence and our staff work daily with mechanical, electric and hydraulic construction, assembly and testing. Our organization is very flexible, with high accessibility and fast decision-making.*

We follow our partner from engineering side to commissioning.
ROMAGNOLI Marine Solution *is certified according to ISO 9001:2012 with RINA and we are very careful with documenting our systems, our progress and our unique solutions.*

We have repeatedly succeeded, with very good results, in the further development of deck machinery solutions for one special industry, with the help of experience amassed from another.

Customized turn-key solutions are our specialty. Module-built winches, thrusters, capstans represent the most part of our sales. Using different combinations of our own standard products, we can offer price-valued, perfectly customized solutions to a great many areas of use. Feel free to ask how we can offer you secure cost-efficient, one-stop solutions within deck machinary systems.


RINA
CERTIFICATO N.
CERTIFICATE No. 25871/12/S
ROMAGNOLI OFFICINA MECCANICA S.R.L.
ISO 9001:2008


IQNet
CERTIFICATE
IQNet and its partner
CISQ/RINA
hereby certify that the organisation
ROMAGNOLI OFFICINA MECCANICA S.R.L.
Quality Management System
ISO 9001:2008
Registration Number: IT-82395

FLEXIBILITY, SERVICE AND TOP QUALITY

ROMAGNOLI Marine Solution is a Italian company that develops, manufactures, markets and maintains everything concern winches and deck machinery for industrial and marine applications. The company was founded in 1892 dedicated to fishing Vessel industry. We have been the first company introducing hydraulic winches in Italy for marine application in 1948. Since then, our work involved many sectors but the marine systems had been always the main core business of companies production.

It is organized with a network of regional, European and Italian companies for the Service around world and the production of semi-finished or finished components destined to final assembly, which is always fulfilled in our factories.

All components installed in our product are from European (Germany, NL, SW, NO) and USA supplayer. During the last few years ROMAGNOLI Marine Solution has expanded strongly. Our systems are for example used in large vessels, within the offshore, harbour and docking zone, oil and energy sector.. Most of our customers are located in Europe, Turkie, Asia and Arabia. Our products are mounted in large military vessels (Navy), oil tankers, freight vessels, ferries, luxury yachts, Tug , supply vessel, PSV, AHTS, Escort tug, heavy lift/pipelay vessel, FPSO, Crew speed vessel, Lending Craft Tankers, Patrol vessel.

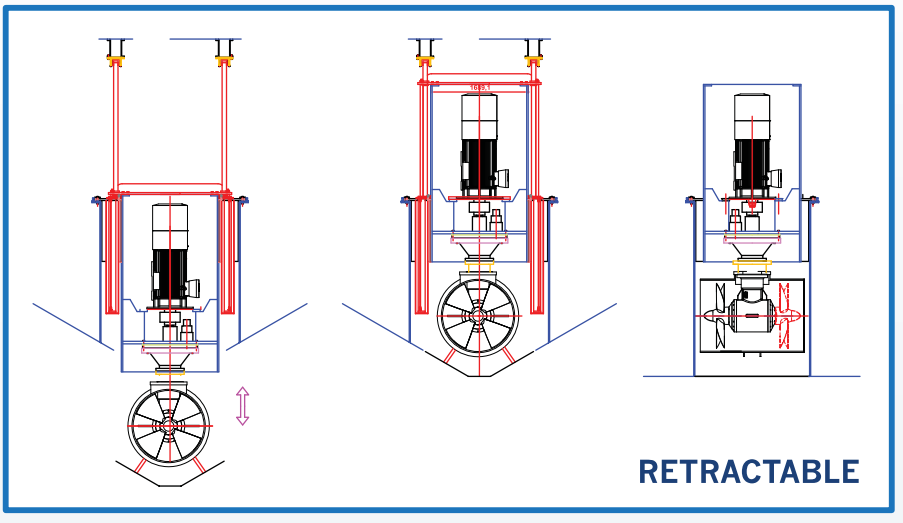
Among the hystoric customers we have Fincantieri, Saipem Eni, Micoperi group, Offshore companies (in Singapore), gas terminal, oil gas platform.
We are on the market for over 50 years, and we have a significant Reference and lot of experience in the sectors where we work.
ROMAGNOLI Marine Solution has high technical competence and our staff work daily with mechanical, electric and hydraulic construction, assembly and testing.

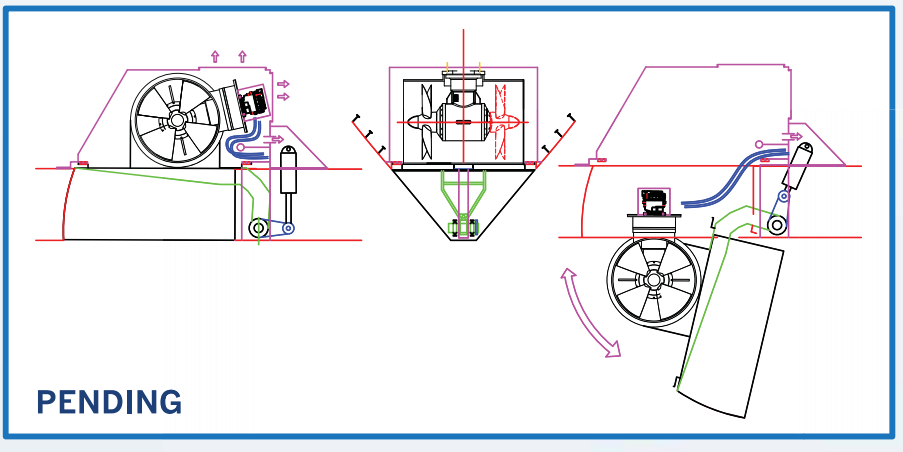
The machineries can be developed, designed, produced, certified and tested in full accordance with all the Naval registers as RINA, ABS, CCS, BV, DNV, GL, LR, CR, RRR, RMRS ….

WORLD-LEADING PRODUCTS DEVELOPED TOGETHER WITH OUR CUSTOMERS

Producing customized products in close collaboration with our customers is part of our day-to-day work. Requirements from a world-leading, Thruster application (from 15 to 650kW) in DP (Dynamic Positioning), low maintenance machinery, Complicated projects, Big winches (up to 450 ton), FEM Analysis …. Are a "must" for our activity.
All our mechanical solutions are distinguished by a robust, reliable design.

new projects





La scelta del tipo d'elica da adottare e la progettazione del profilo migliore di pala sono "steps" importanti che influenzano il buon funzionamento dell'apparato propulsivo.
La **ROMAGNOLI Marine Solution** è in grado di fornire profili ottimizzati, frutto di continui studi e perfezionamenti.

The choice of the kind of propeller to be used and the design of the best blade contour are important steps that affect the efficiency of the propulsion system.
*The **ROMAGNOLI Marine Solution** is able to give excellent profiles, as results of continuous studie and improvings.*

I MOTORI IDRAULICI/ELETTRICI SONO ESTERNI AL THRUSTER

the hydraulic/electric motor are esternal to the thruster

Valori medi approssimati dell'opera morta (VW)

average values of the vessel windage

Tipo di imbarcazione Vessel Chategory		L_{FT} [m] Length over-all	Numero ponti Deck number	K
Yacht		15< L_{FT} <25	1	2
			2	3
		26< L_{FT} <35	1	3
			2	3.5
		36< L_{FT} <55	3	4.5
		56< L_{FT} <85	3	5.5
Special Craft	Rimorchiatore *Tug*	15< L_{FT} <25	1	2.5
		26< L_{FT} <35	1	3
			2	3.5
		36< L_{FT} <55	3	5
	Supply Vessel AHTS-PSV	26< L_{FT} <35	2	3.5
		36< L_{FT} <85	3	5
	Fishing Vessel	15< L_{FT} <25	2	2.8
		26< L_{FT} <35	2	3
		36< L_{FT} <55	3	3.6
		56< L_{FT} <85	3	5
Gas-carrier, Ro-Ro, Ferry, General-Cargo, Bulk-carrier, Chemical-carrier, Container-Vessel, Crude oil carrier, Pipe layer, FPSO, Military Unit (Navy), Frigate, Cruiser, Landing craft tankers		24< L_{FT} <54	2	3.6
		55< L_{FT} <85	3	4
		86< L_{FT} <105	3/4	5
		106< L_{FT} <130	3/5	6.2
		131< L_{FT} <250	3/5	7.5
		251< L_{FT} <350	3/5	8.5

Opera Morta / Vessel windage: **$VW = K^* L_{FT} = [m^2]$** K: medium experimental coefficient

Come scegliere il giusto BT (Metodo pratico)

1. *Prima di tutto si deve calcolare, attraverso le opportune formule, il valore di VW dell'opera morta media stimata. In questa fase si devono considerare alcuni coefficienti correttivi moltiplicativi presenti in tabella.*

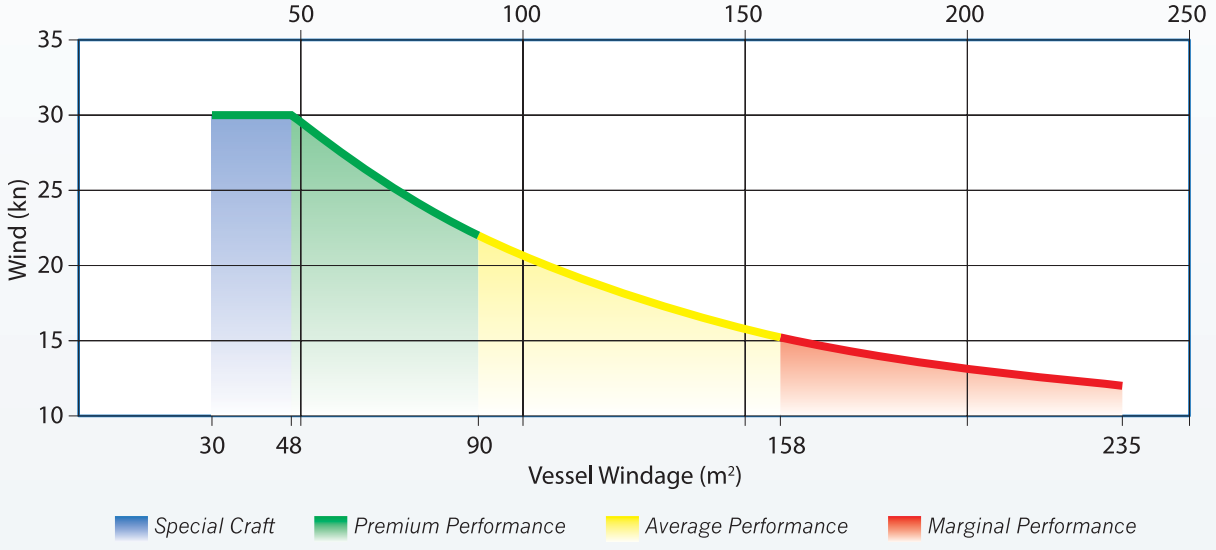
Chiaramente il valore VW cambia a seconda del tipo di imbarcazione perché variano i parametri fisici;

2. *Utilizzando il valore di VW si deve entrare nei differenti grafici di scelta per i BT tenendo in considerazione le condizioni operative di lavoro (velocità del vento in nodi);*
3. *Nei grafici si deve scegliere il giusto BT facendo attenzione di restare nella zona della linea verde (gli special craft hanno la loro zona specifica).*

How to choose a correct BT (Practical method)

1. *Firstly you have to use the specific table related to the determination of the VW (VW: medium Vessel Windage) value of the vessel windage in square metre. In this step you have to consider same multiply factors available in the table. Clearly the VW value changes because, for different vessel categories, physical parameters change;*
2. *Using the VW value you have to enter in the different BT graphics taking into consideration the operative working conditions (Wind speed in knots);*
3. *In the graphics you have to choose the right BT, taking care to keep in the green line zone (special craft has their specific zone).*

I nostril fornitori standard per I motori elettrici/inverter – Our standard suppliers for the electric motors/inverter:
SIEMENS, Elettroadda, Marelli, VEM, Stadt/VACON, DANFOSS, OMERON



A-H/E: [P20-4P-30-15E]

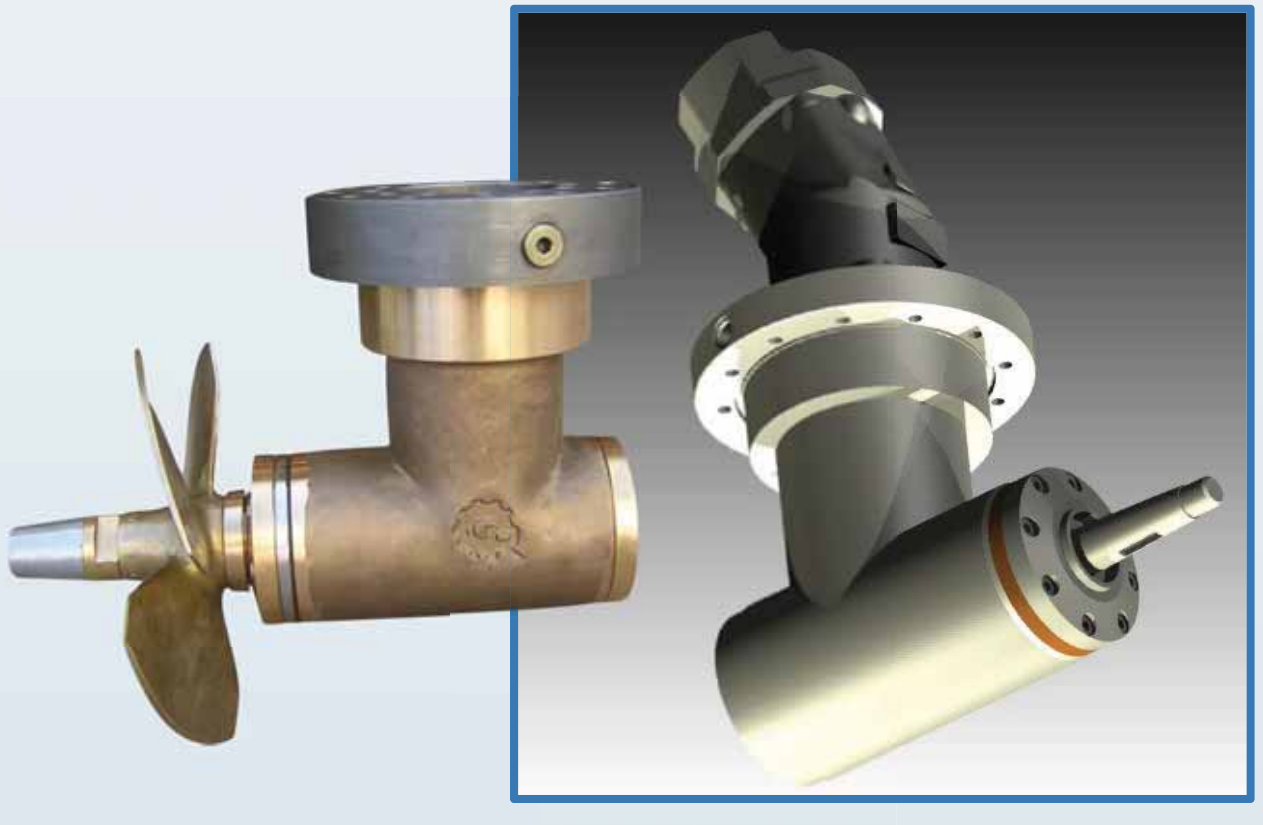
N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
2020	145	60	280	15

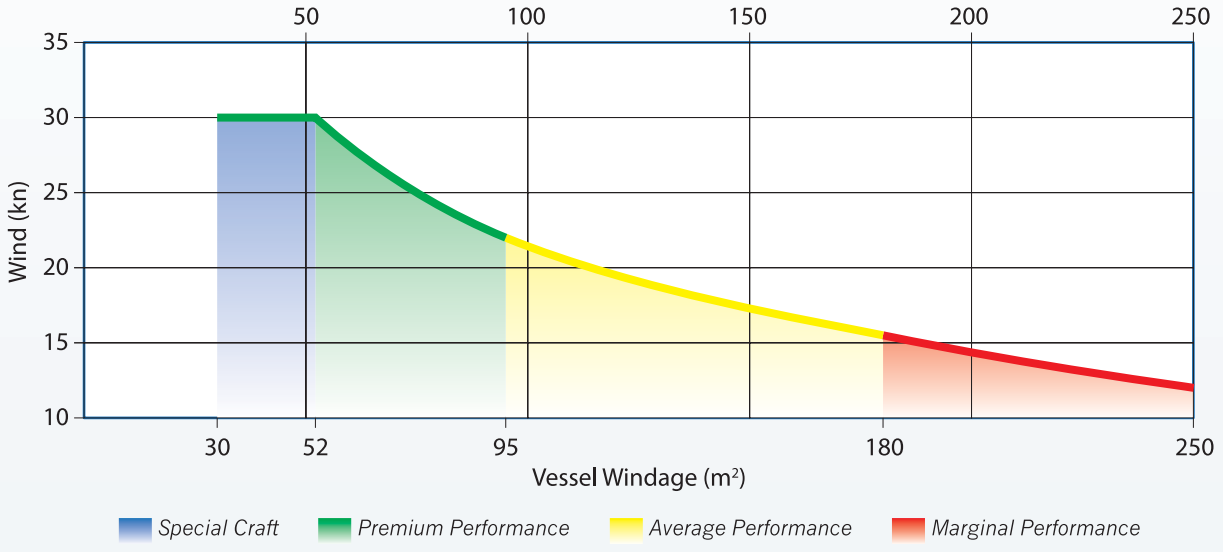
B-H/E: [P20-4P-30-15E]

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
2300	188	72	350	22

E Version: *Electric Motor 4 poles,3ph AC 50/60 Hz , duty S1-S3, IP56, heater, negative brake, up to 45°C, in accordance with Naval Register, frequency controlled*
H Version: *Fixed displacement axial piston motors with fluschng valve integrated*

Thruster main frame component material - Standard: Cast Iron GS400 - Optional: Bronze (with waterproofing coating)





A-H/E: [P20-4P-40-30E]

N (rpm)	Δp (bar)**	Q (l/min)	T (kg)*	Power (kW)
2520	175	108	460	30

E Version: *Electric Motor 4 poles,3ph AC 50/60 Hz , duty S1-S3, IP56, heater, negative brake, up to 45°C, in accordance with Naval Register, frequency controlled*
H Version: *Fixed displacement axial piston motors with fluschng valve integrated*

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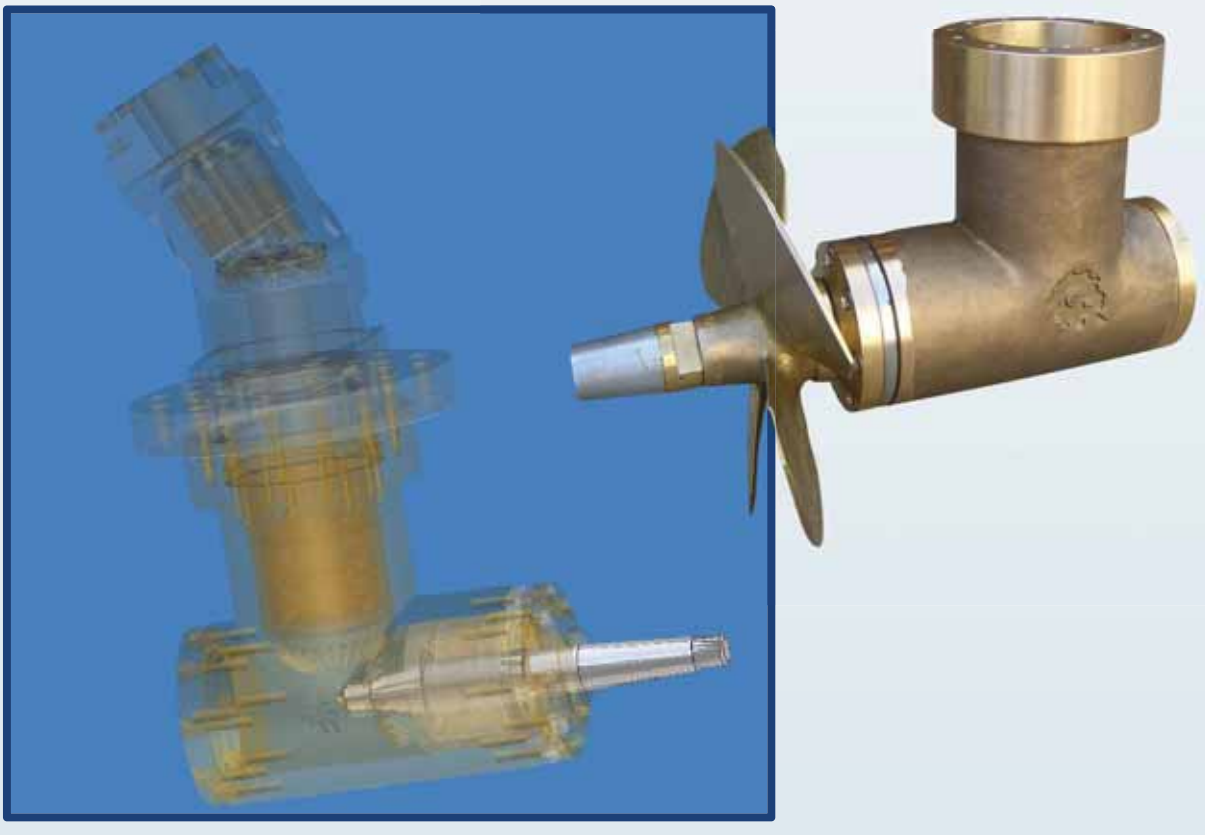
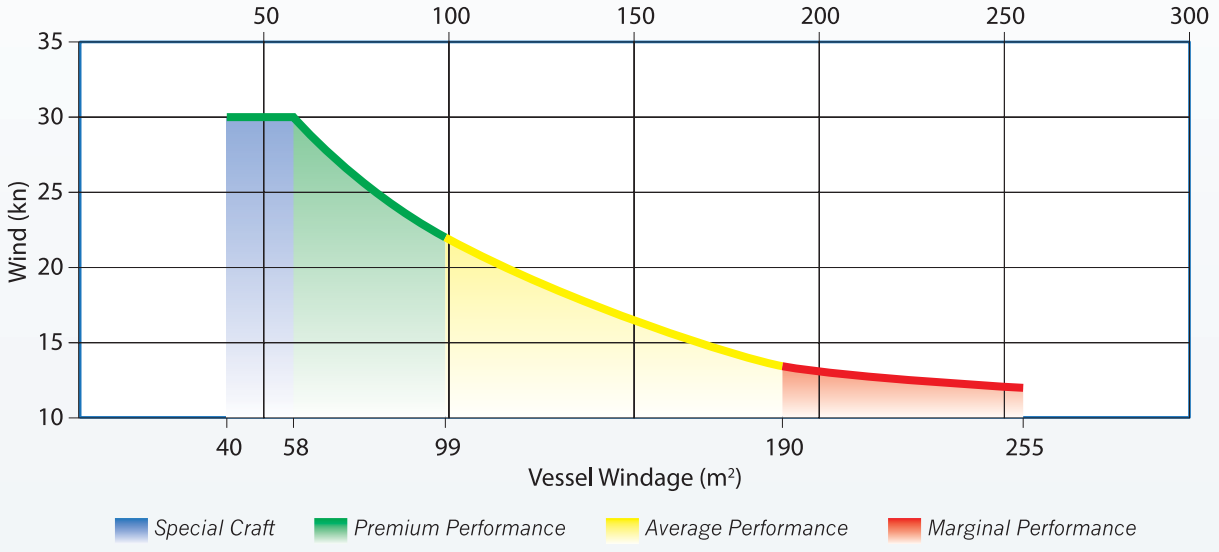




A-H/E: [P40B-5P-55-37E]

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
1300	300	72	620	37

B-H/E: [P52-5P-55-37E]

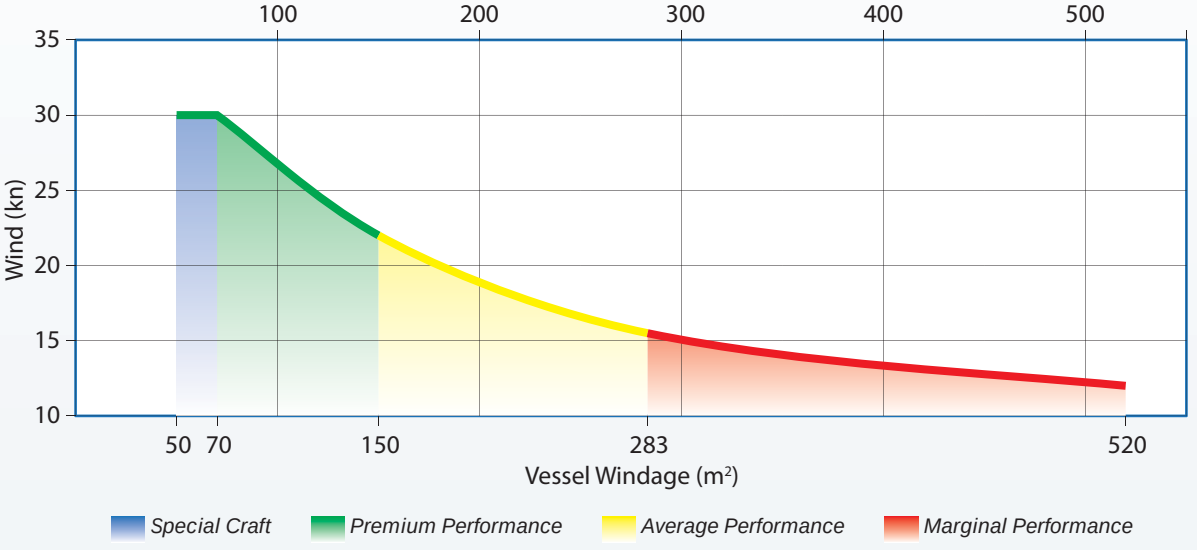
N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
1520	265	85	640	37

C-H/E: [2-P52D-5P-55-37E] **TWIN-SCREW**

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
1450	296	80	660	37

E Version: *Electric Motor 4 poles,3ph AC 50/60 Hz , duty S1-S3, IP56, heater, negative brake, up to 45°C, in accordance with Naval Register, frequency controlled*
H Version: *Fixed displacement axial piston motors with fluschng valve integrated*

Thruster main frame component material - Standard: Cast Iron GS400 - Optional: Bronze (with waterproofing coating)



A-H/E: [P40B-5P-75-45E]

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
1400	250	105	850	45

B-H/E: [P52B-5P-84-45E]

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
1230	255	105	875	45

C-H/E: [2-P52C-5P-75-45E] **TWIN-SCREW**

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
1450	260	110	890	45

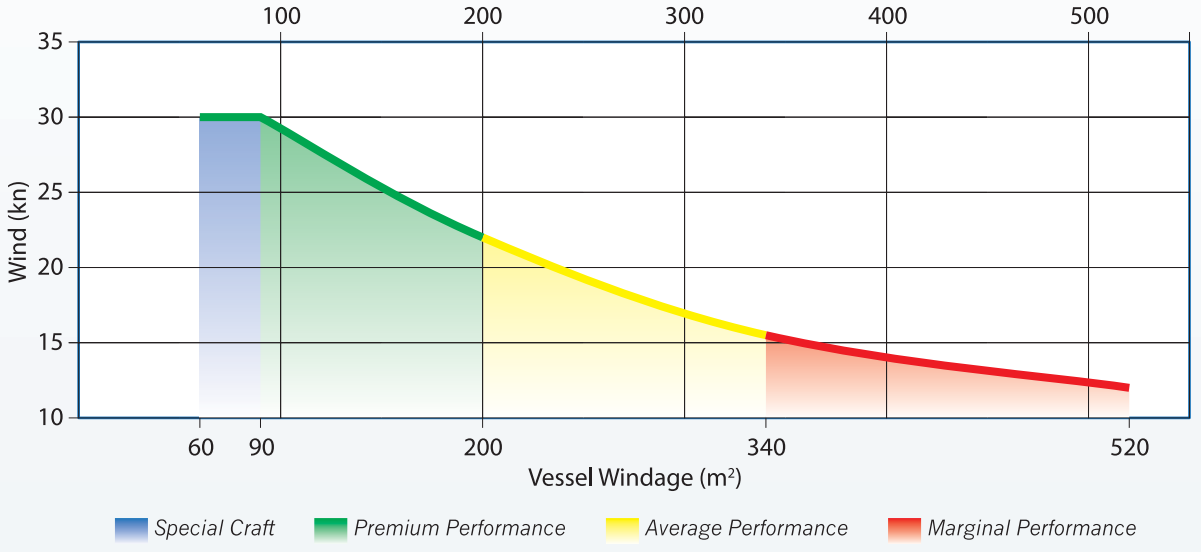
D-H/E: [P52-5P-75-45E]

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
1680	240	127	860	46

E Version: *Electric Motor 4 poles,3ph AC 50/60 Hz, duty S1-S3, IP56, heater, negative brake, up to 45°C, in accordance with Naval Register, frequency controlled*

H Version: *Fixed displacement axial piston motors with fluschng valve integrated*

Thruster main frame component material - Standard: Cast Iron GS400 - Optional: Bronze (with waterproofing coating)



A-H/E: [2-P52-5P-108-55E]

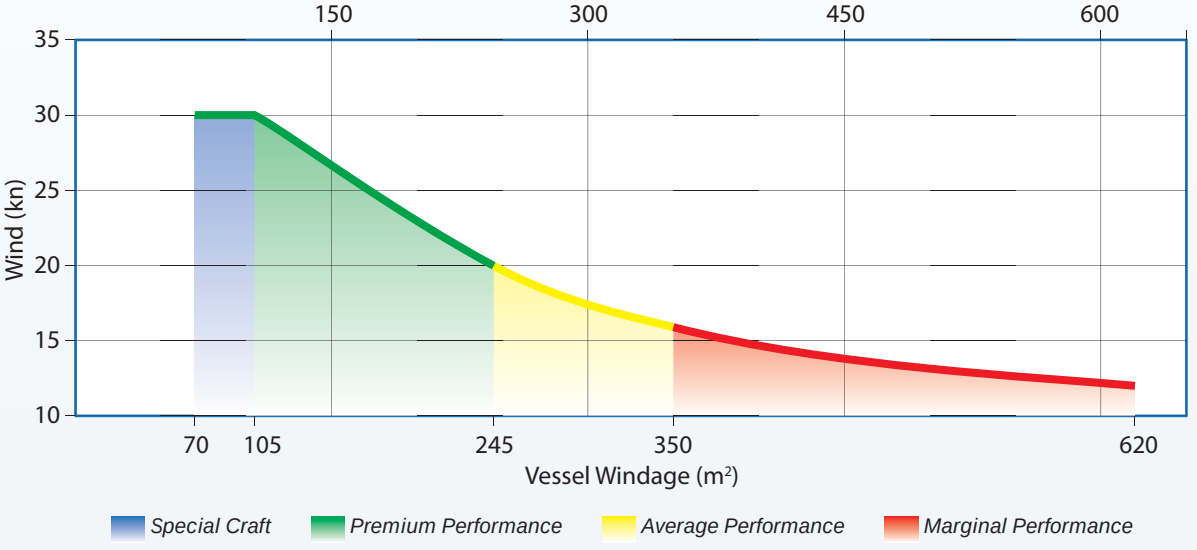
N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
1350	210	145	1200	55

B-H: [2-P52B-5P-108]

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
1020	280	110	1200	55

E Version: *Electric Motor 4 poles,3ph AC 50/60 Hz , duty S1-S3, IP56, heater, negative brake, up to 45°C, in accordance with Naval Register, frequency controlled*
H Version: *Fixed displacement axial piston motors with fluschng valve integrated*

Thruster main frame component material - Standard: Cast Iron GS400 - Optional: Bronze (with waterproofing coating)



A-H/E: [P60-4P-160-75E]

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
675	220	210	1320	75

B-H/E: [P60-4P-160-90E]

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
695	240	230	1470	90

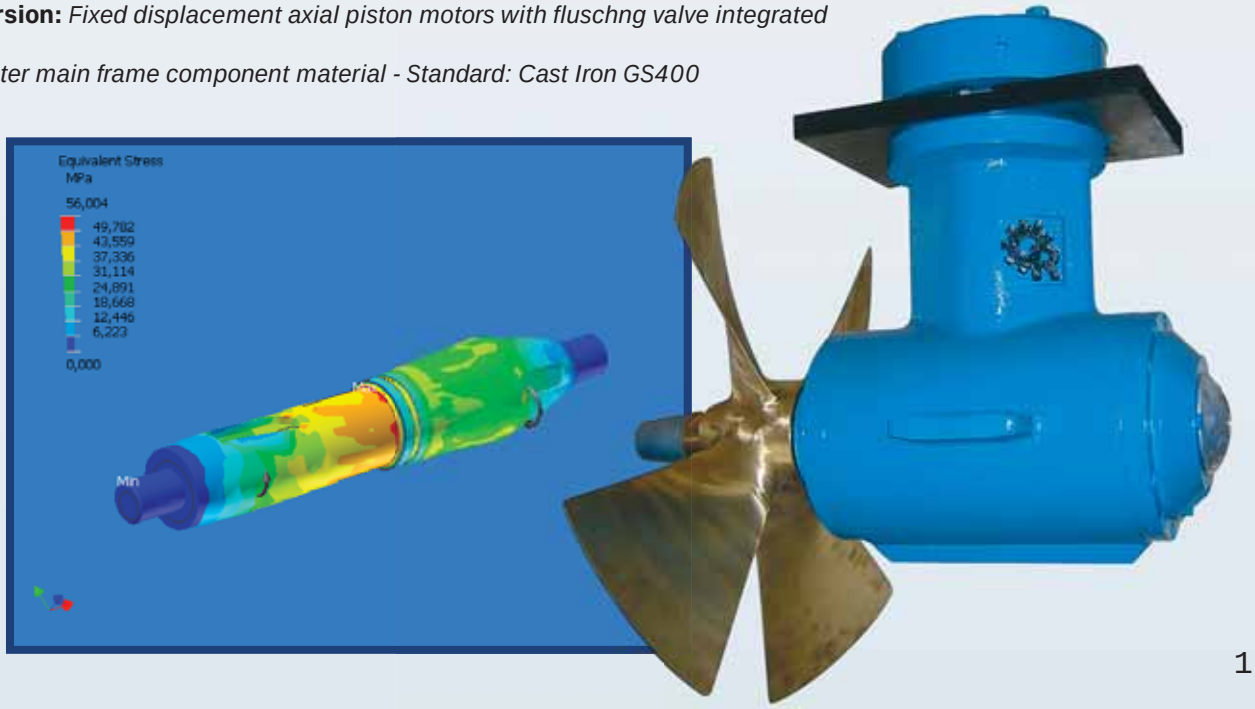
C-H/E: [P60-4P-160-110E] PLUS

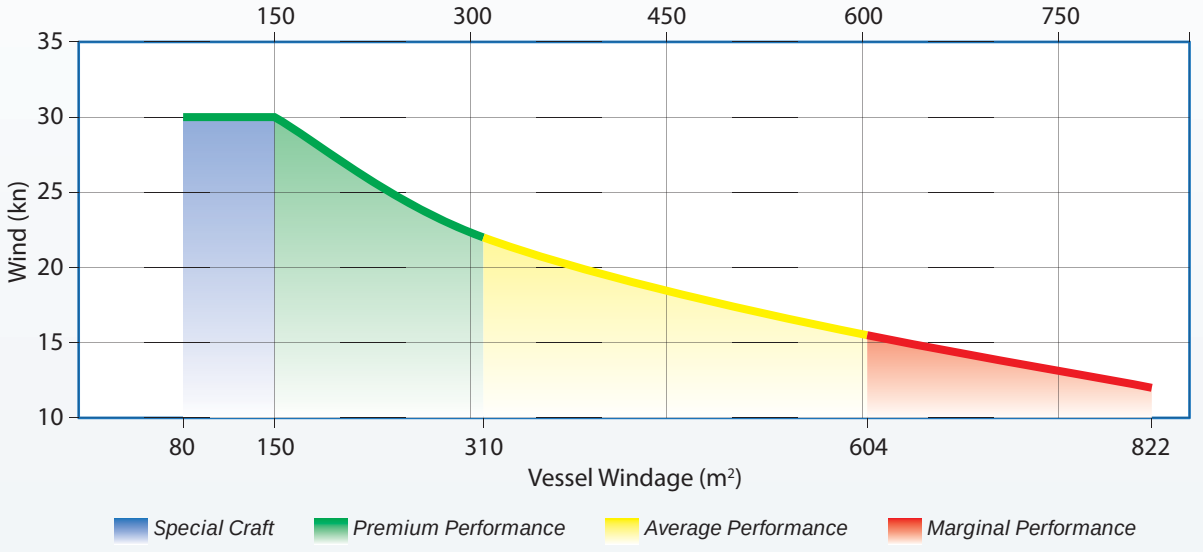
N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
750	280	240	1590	100

E Version: *Electric Motor 4 poles,3ph AC 50/60 Hz , duty S1-S3, IP56, heater, negative brake, up to 45°C, in accordance with Naval Register, frequency controlled*

H Version: *Fixed displacement axial piston motors with fluschng valve integrated*

Thruster main frame component material - Standard: Cast Iron GS400





A-H/E: [P70-4P-226-110E]

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
520	235	276	1600	110

B-H/E: [P70-4P-226-132E]

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
562	270	300	2280	132

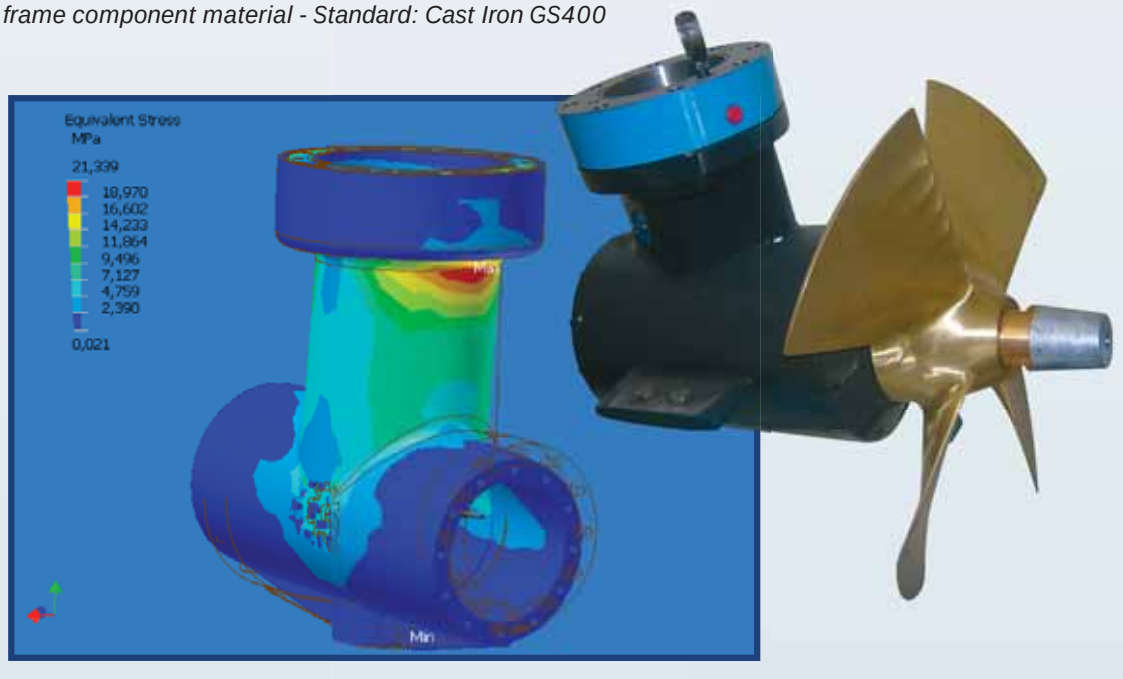
C-H/E: [P70-4P-280-150E]

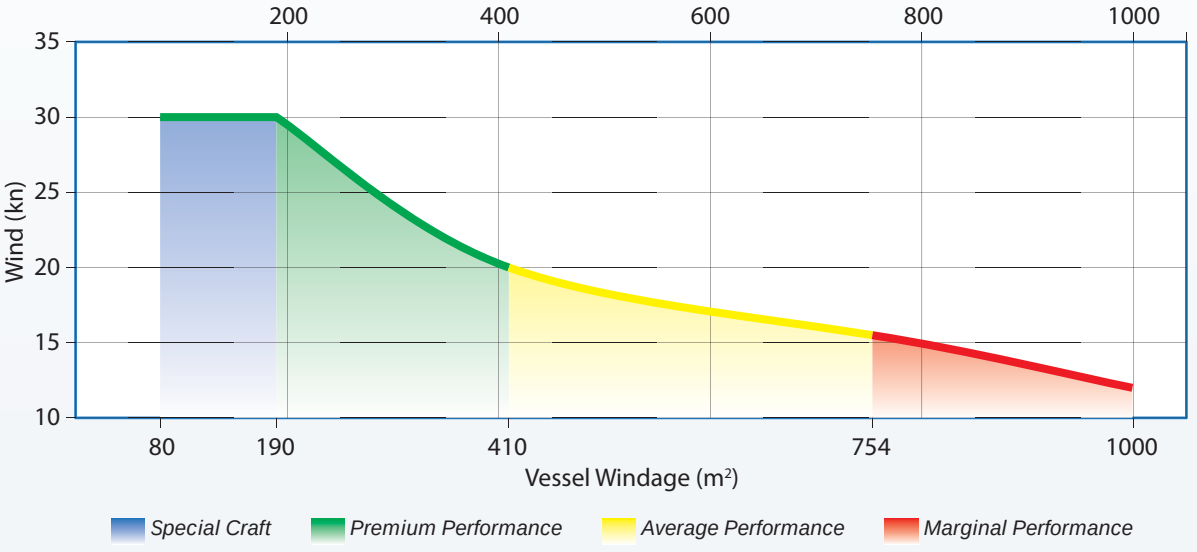
N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
590	244	388	2670	150

E Version: *Electric Motor 4 poles,3ph AC 50/60 Hz , duty S1-S3, IP56, heater, negative brake, up to 45°C, in accordance with Naval Register, frequency controlled*

H Version: *Fixed displacement axial piston motors with fluschng valve integrated*

Thruster main frame component material - Standard: Cast Iron GS400



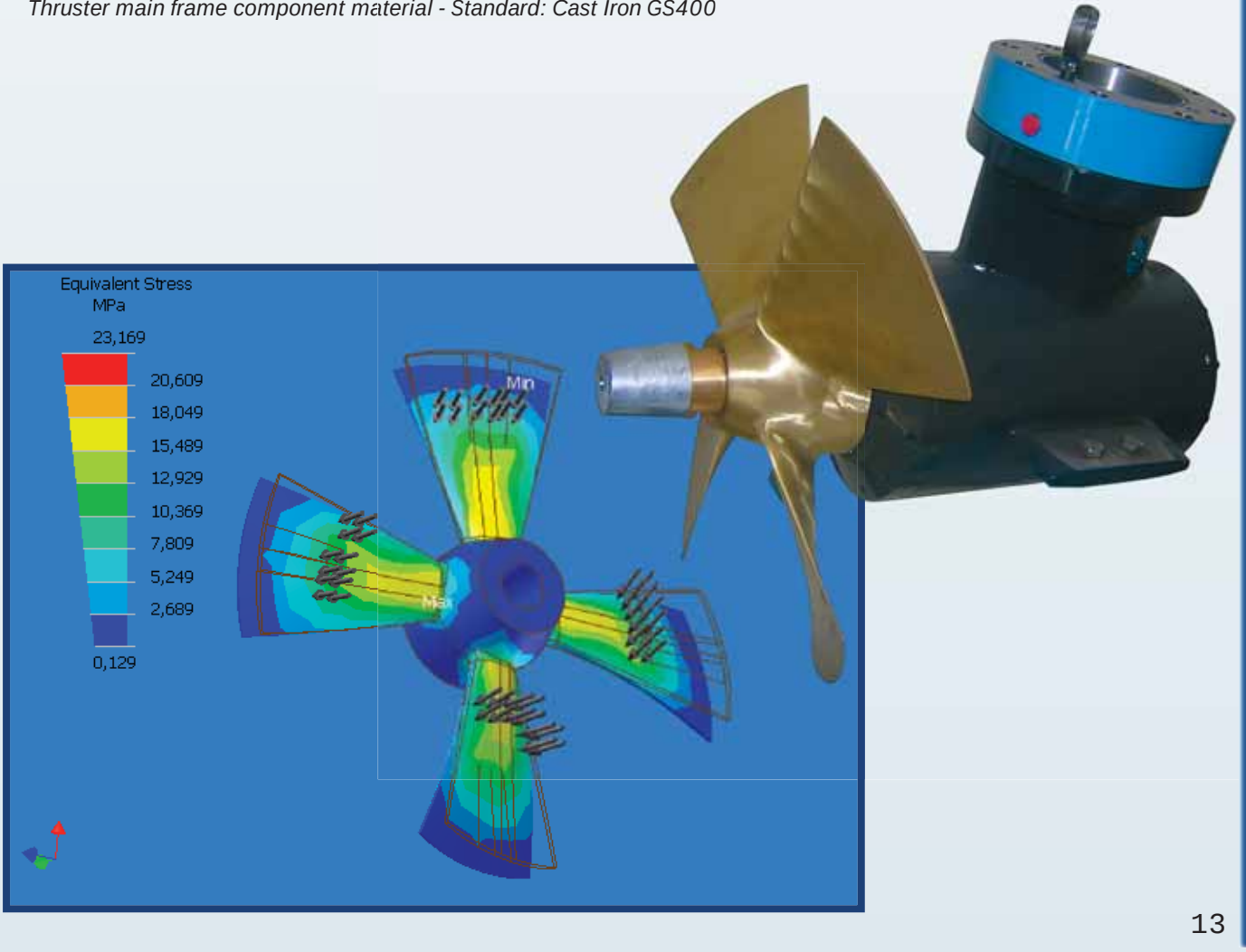


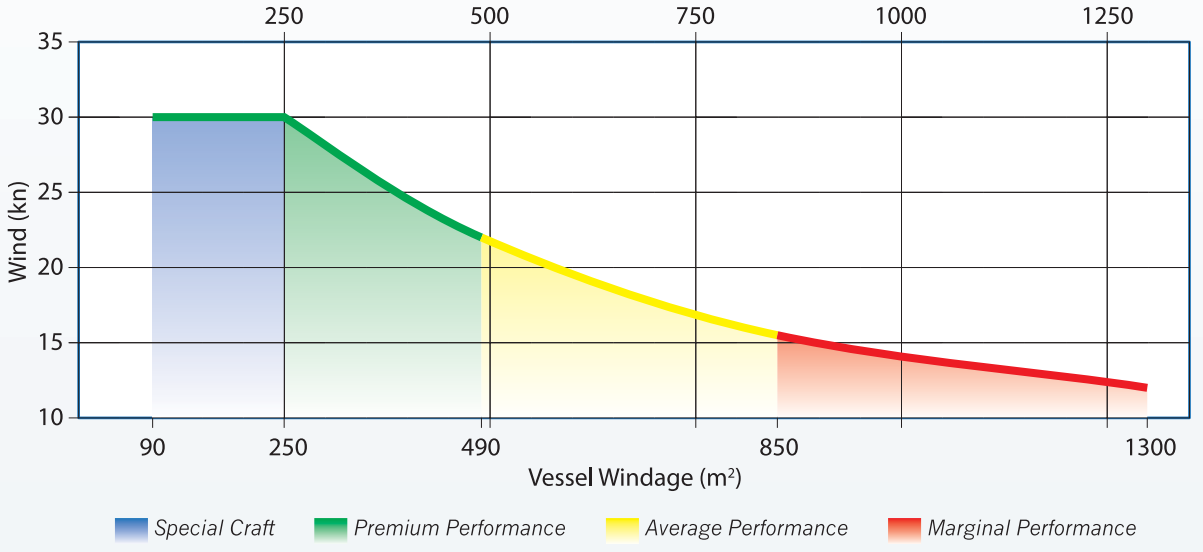
A-H: [P70-4P-280-200E]

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
650	290	427	3120	200

E Version: *Electric Motor 4 poles,3ph AC 50/60 Hz , duty S1-S3, IP56, heater, negative brake, up to 45°C, in accordance with Naval Register, frequency controlled*
H Version: *Fixed displacement axial piston motors with fluschng valve integrated*

Thruster main frame component material - Standard: Cast Iron GS400





A-H: [P80H-4P-530]

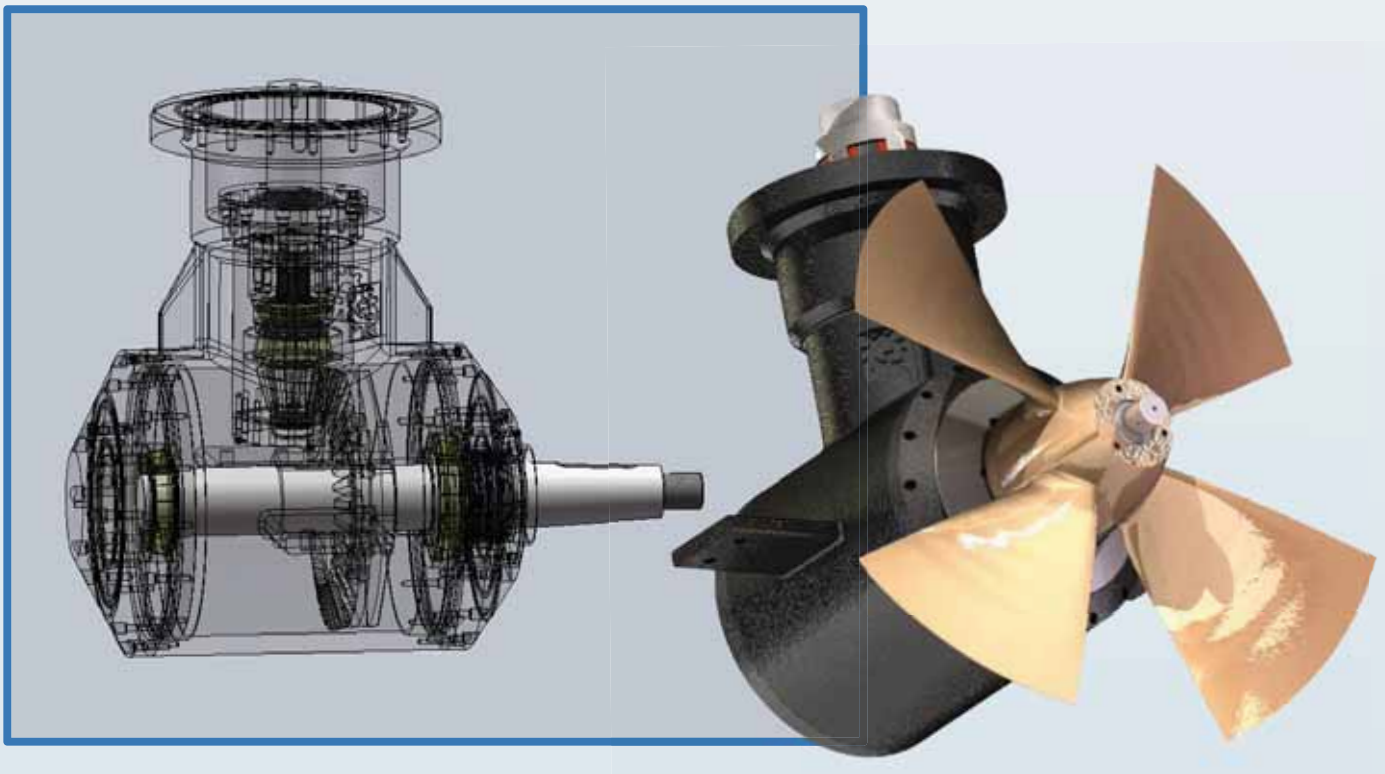
N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
400	230	750	4530	300

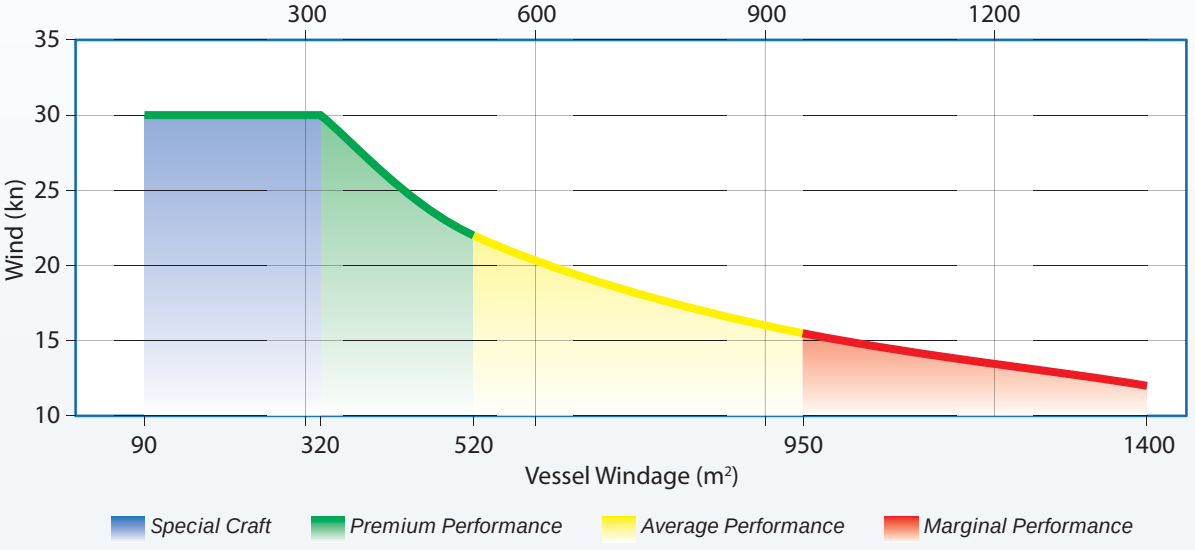
A-E: [P80E-4P-315E]

N (rpm)	T (kg)*	Power (kW)
470	4830	315

E Version: *Electric Motor 4 poles,3ph AC 50/60 Hz , duty S1-S3, IP56, heater, negative brake, up to 45°C, in accordance with Naval Register, frequency controlled*
H Version: *Fixed displacement axial piston motors with fluschng valve integrated*

Thruster main frame component material - Standard: Cast Iron GS400





A-H: [P80H -4P-800]

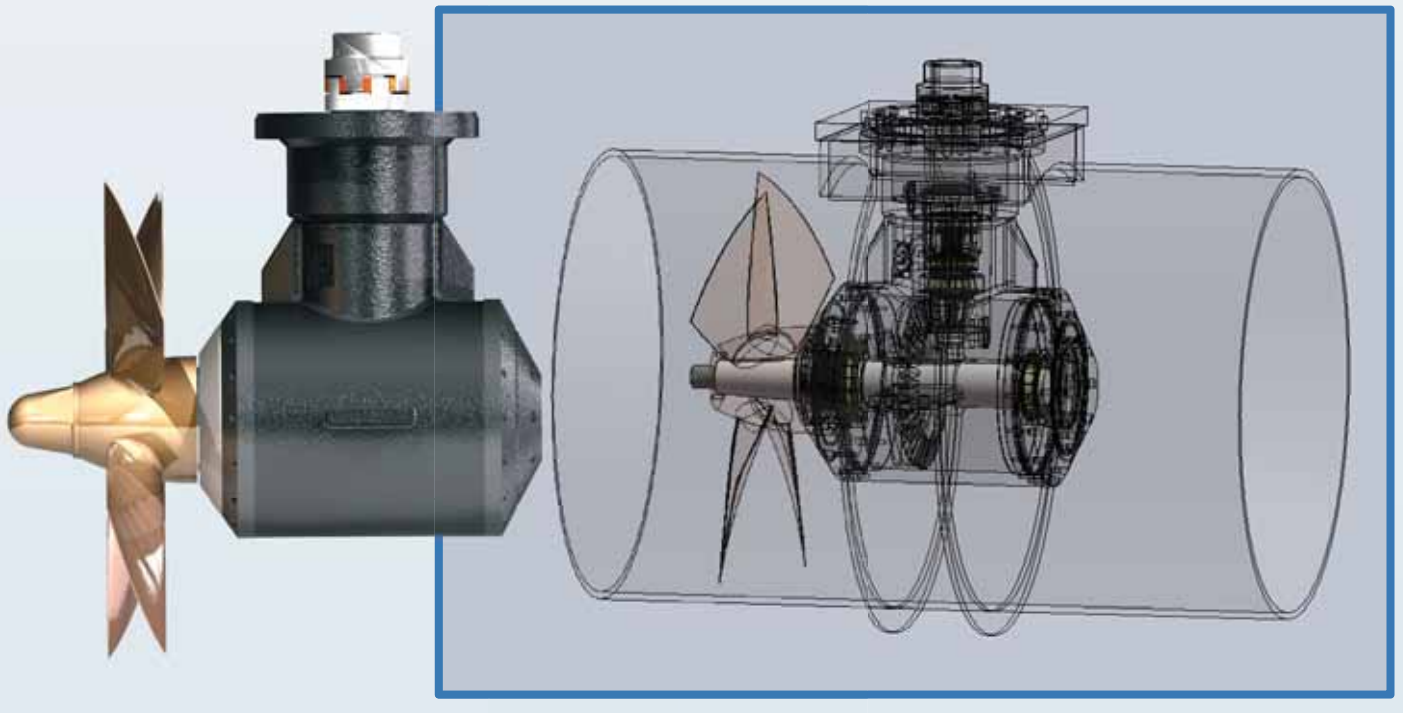
N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
315	250	960	5230	400

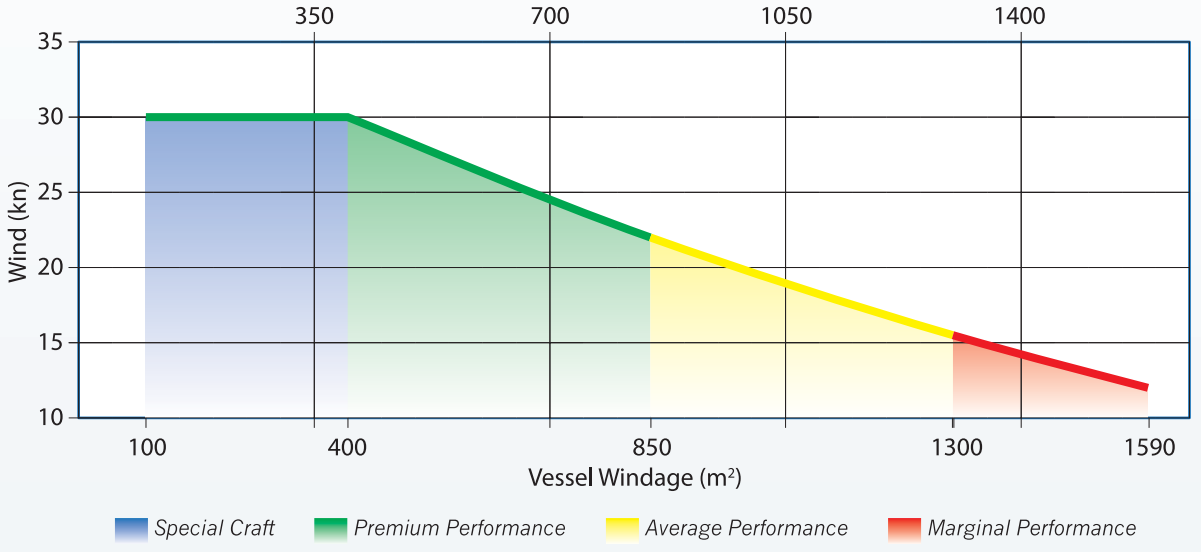
A-E: [P80E-4P-400E]

N (rpm)	T (kg)*	Power (kW)
515	5130	400

E Version: *Electric Motor 4 poles,3ph AC 50/60 Hz , duty S1-S3, IP56, heater, negative brake, up to 45°C, in accordance with Naval Register, frequency controlled*
H Version: *Fixed displacement axial piston motors with fluschng valve integrated*

Thruster main frame component material - Standard: Cast Iron GS400





A-H: [P90H-4P-800]

N (rpm)	Δp (bar)	Q (l/min)	T (kg)*	Power (kW)
315	280	960	6930	500

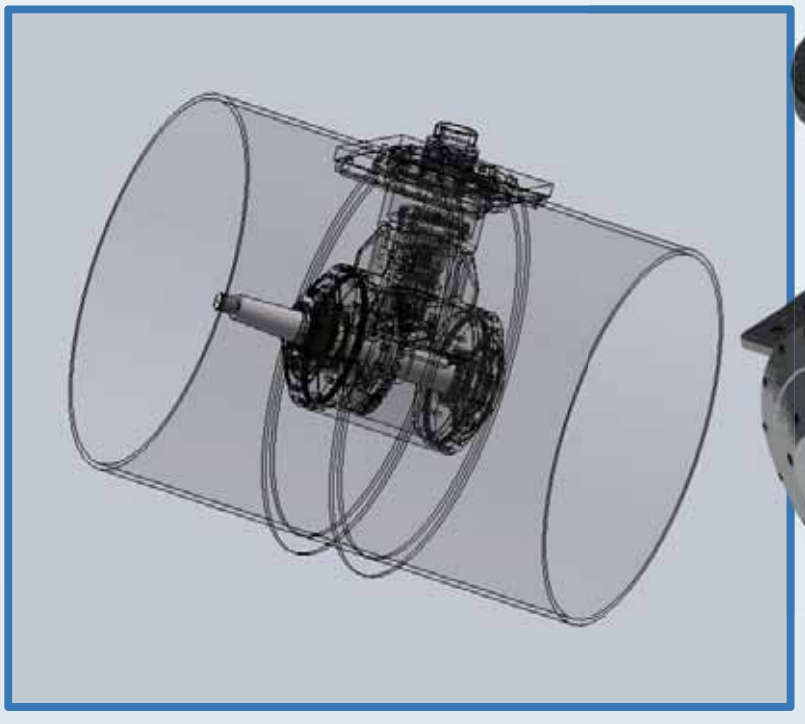
A-E: [P90E-4P-500E]

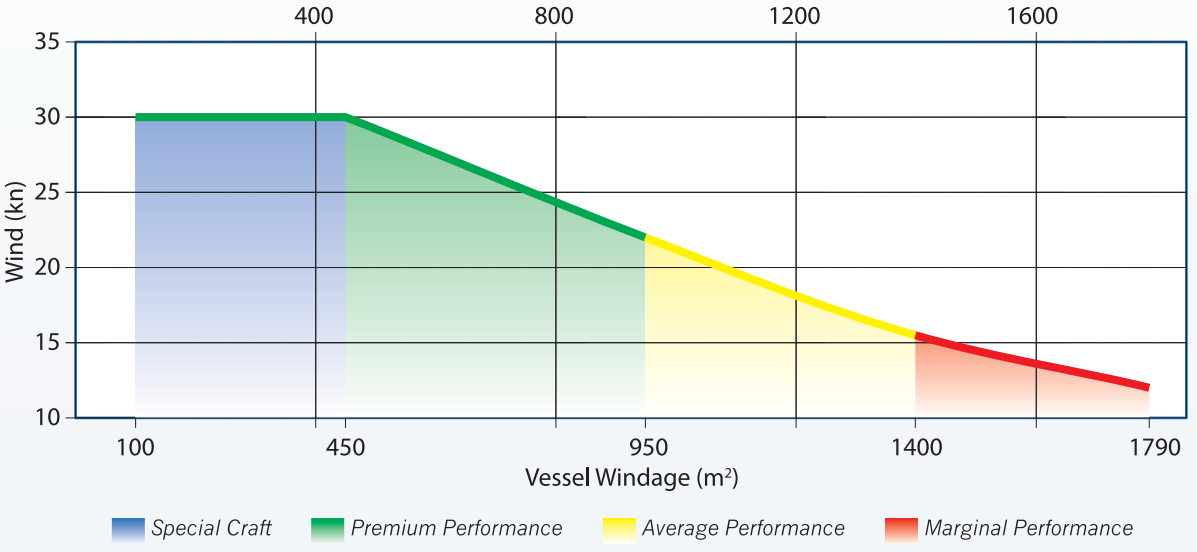
N (rpm)	T (kg)*	Power (kW)
420	6920	500

E Version: *Electric Motor 4 poles,3ph AC 50/60 Hz , duty S1-S3, IP56, heater, negative brake, up to 45°C, in accordance with Naval Register, frequency controlled*

H Version: *Fixed displacement axial piston motors with fluschng valve integrated*

Thruster main frame component material - Standard: Cast Iron GS400





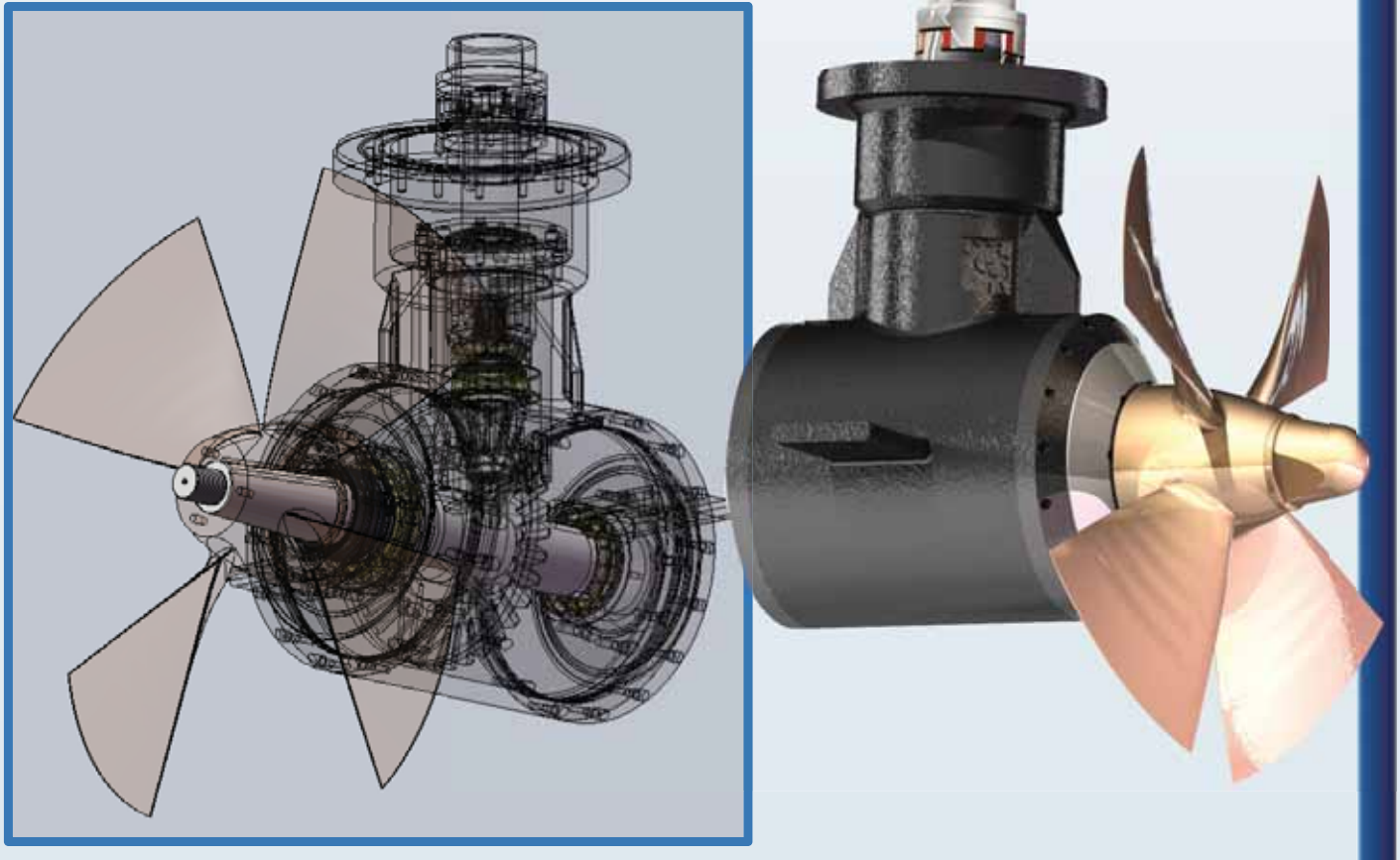
A-E: [P90E-4P-600E]

N (rpm)	T (kg)*	Power (kW)
444	7720	600

E Version: *Electric Motor 4 poles,3ph AC 50/60 Hz , duty S1-S3, IP56, heater, negative brake, up to 45°C, in accordance with Naval Register, frequency controlled*

H Version: *Fixed displacement axial piston motors with fluschng valve integrated*

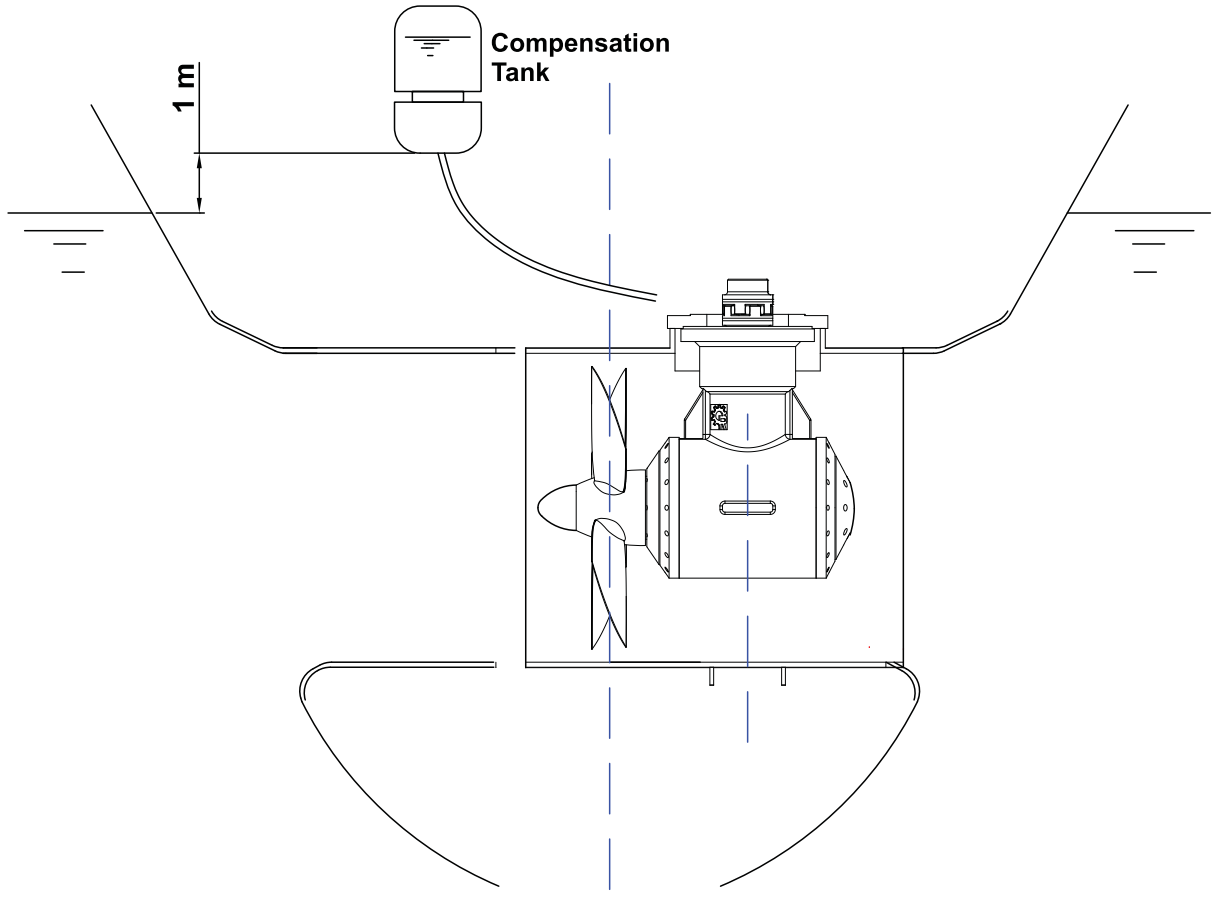
Thruster main frame component material - Standard: Cast Iron GS400



Sono le particolari esigenze di manovra che determinano l'elica più appropriata.
Le nostre eliche sono progettate per ridurre al minimo l'effetto della cavitazione, aumentandone le prestazioni e riducendone al massimo la rumorosità.

The particular manoeuvering requirements decide on the most appropriate screw propellers to be installed.
Our screws are designed to reduce to minimum the cavitation phenomenon, then improving their performance and reducing the noise to maximum.

	per convertire to convert		Moltiplicare per Multiply by	per convertire to convert		Moltiplicare per Multiply by
	da / from	a/to		da / from	a/to	
Q (portata/flow)	l/min	U.S.gpm	0.264	U.S.gpm	l/min	3.79
Δp (pressione/pressure)	bar	psi	14.5	psi	bar	0.06895

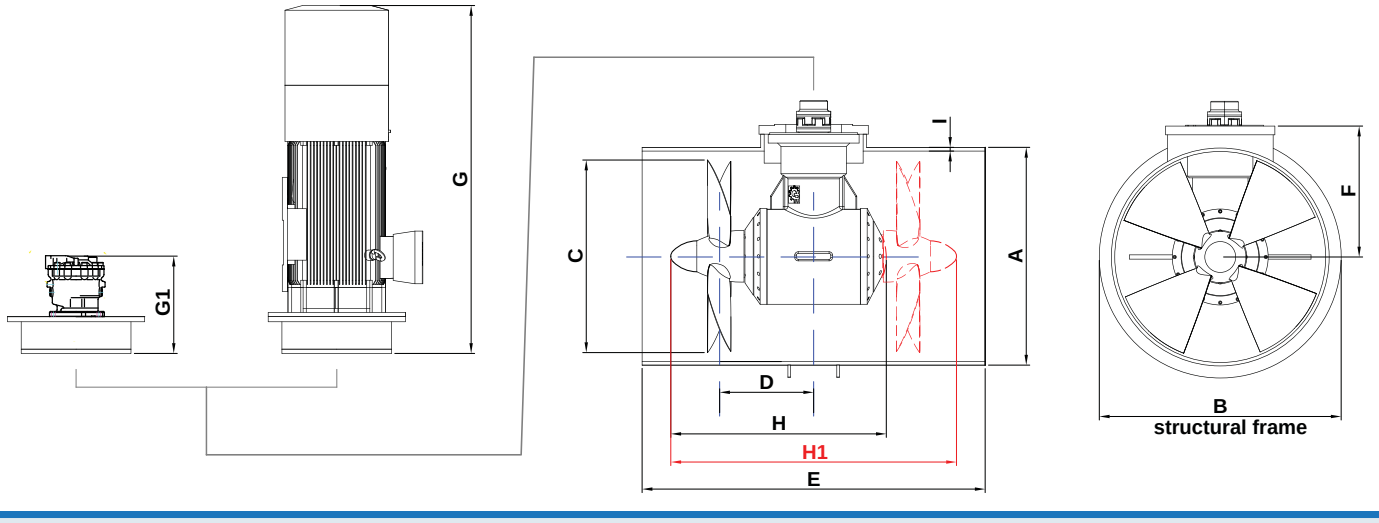


GENERAL DIMENSIONS

Dimensioni Generali

	mm [in]										
	A	**B**	**C**	**D**	**E**	**F**	**G**	**G1**	**H**	**H1**	**I**
BTX 350CC *(A/B-H/E)*	300 [11.7]	-	270 [10.5]	200 [7.8]	600 [23.4]	179 [6.9]	723 [28.2]	246 [9.5]	416 [16.22]	-	10 [0.39]
BTX 450CC	300 [11.7]	-	270 [10.5]	200 [7.8]	600 [23.4]	179 [6.9]	798 [31.12]	296 [11.54]	416 [16.22]	-	10 [0.39]
BTX 600CC *(A-H/E)*	420 [16.38]	-	375 [14.62]	227.5 [8.87]	900 [35.1]	234 [9.9]	903 [35.45]	305 [11.89]	532 [20.74]	-	15 [0.58]
(B-H/E)	457 [17.82]	-	420 [16.38]	227.5 [8.87]	900 [35.1]	254 [9.9]	933 [36.38]	335 [13.06]	532 [20.74]	-	10 [0.39]
(C-H/E)	457 [17.82]	-	420 [16.38]	227.5 [8.87]	900 [35.1]	254 [9.9]	903 [35.45]	305 [11.89]	-	725 [28.27]	10 [0.39]
BTX 900CC *(A-H/E)*	420 [16.38]	-	375 [14.62]	227.5 [8.87]	900 [35.1]	254 [9.9]	933 [36.38]	375 [13.06]	532 [20.74]	-	15 [0.58]
(B/D-H/E)	457 [17.82]	-	420 [16.38]	227.5 [8.87]	900 [35.1]	254 [9.9]	933 [36.38]	375 [13.06]	532 [20.74]	-	10 [0.39]
(C-H/E)	457 [17.82]	-	420 [16.38]	227.5 [8.87]	900 [35.1]	254 [9.9]	933 [36.38]	375 [13.06]	-	725 [28.27]	10 [0.39]
BTX 1200CC *(A/B-H/E)*	457 [17.82]	-	420 [16.38]	227.5 [8.87]	900 [35.1]	254 [9.9]	933 [36.38]	450 [17.55]	-	725 [28.27]	10 [0.39]
BTX 1500CC *(A/B-H/E)*	762 [29.71]	-	705 [27.49]	310 [12.09]	1000 [39]	369 [14.39]	1154 [45]	432 [16.84]	720 [28.08]	-	15/16 [0.58]
(C-H/E)	762 [29.71]	-	705 [27.49]	310 [12.09]	1000 [39]	369 [14.39]	1250 [49.2]	432 [16.84]	720 [28.08]	-	15/16 [0.58]
BTX 2500CC *(A/B/C-H/E)*	864 [33.69]	-	800 [31.2]	427.5 [16.67]	1000 [39]	500 [19.5]	1100 [42.9]	446 [17.39]	952 [37.12]	-	15 [0.58]
BTX 2500CC plus	864 [33.69]	-	800 [31.2]	427.5 [16.67]	1000 [39]	500 [19.5]	1200 [46.8]	454 [17.7]	952 [37.12]	-	15 [0.58]
BTX 5000CC	1270 [49.53]	1410 [54.99]	1200 [46.8]	548 [22.77]	1500 [58.5]	763 [29.75]	2027 [79.05]	627 [24.45]	1258 [49.06]	-	20 [0.78]
BTX 5000CC plus	1270 [49.53]	1410 [54.99]	1200 [46.8]	548 [22.77]	1500 [58.5]	763 [29.75]	2107 [82.17]	637 [24.84]	1258 [49.06]	-	20 [0.78]
BTX 8000CC	1480 [57.72]	1620 [63.18]	1400 [54.6]	548 [22.77]	1500 [58.5]	763 [29.75]	2300 [89.7]	670 [26.13]	1258 [49.06]	-	20 [0.78]
BTX 8000CC plus	1480 [57.72]	1620 [63.18]	1400 [54.6]	548 [22.77]	1500 [58.5]	763 [29.75]	2400 [93.6]	-	1258 [49.06]	-	20 [0.78]

(*) the values as been experimental tested using a laboratory condition with a length of tunnel of 2D. Final actual results may vary in relation to the boundary conditions (geometrical factors, longest tunnel, shorter tunnel, depth, hull shape, type of keel,…)
Due to that reason the Thruster choice must be made referring to the installed power
The Hyd. motors used are designed both for open circuit and close circuit, with a required minimum contamination class of NAS 9



The Romagnoli Company may modify the product characteristics described in the catalogue, without previous notice.

some pictures has been offered from TTM

MARINE SOLUTION

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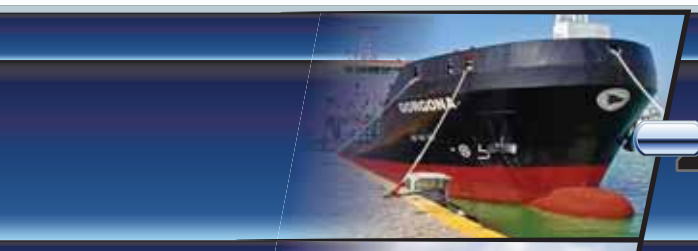

Thrusters

Offshore Winch

Heavy Deck Equipment

Special Winch

Capstans

Luxury yacht winch

ACTIVE GRAF/X

Member of CISQ Federation
RINA
ISO 9001:2008
Certified Quality System

ROMAGNOLI
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