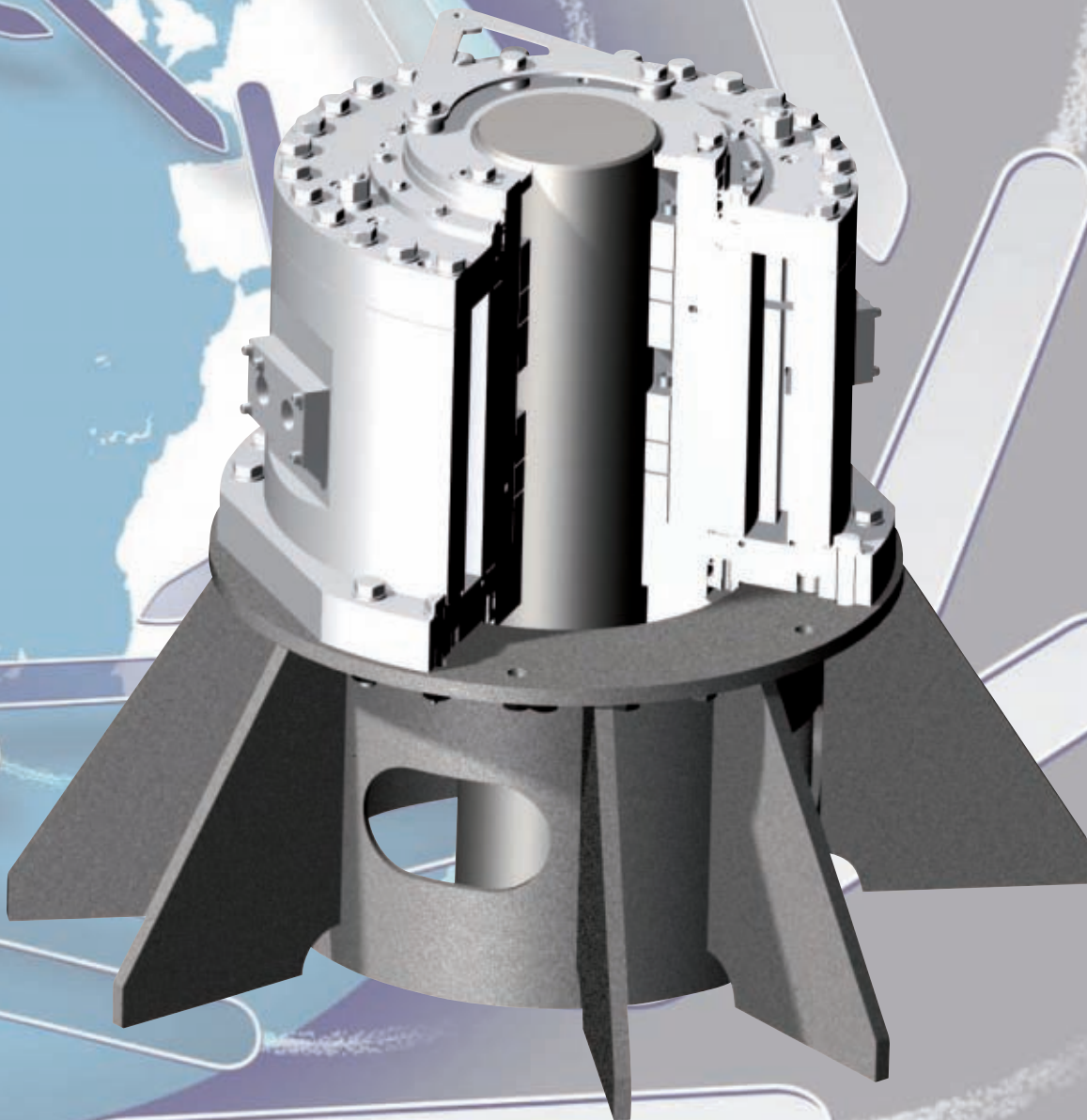


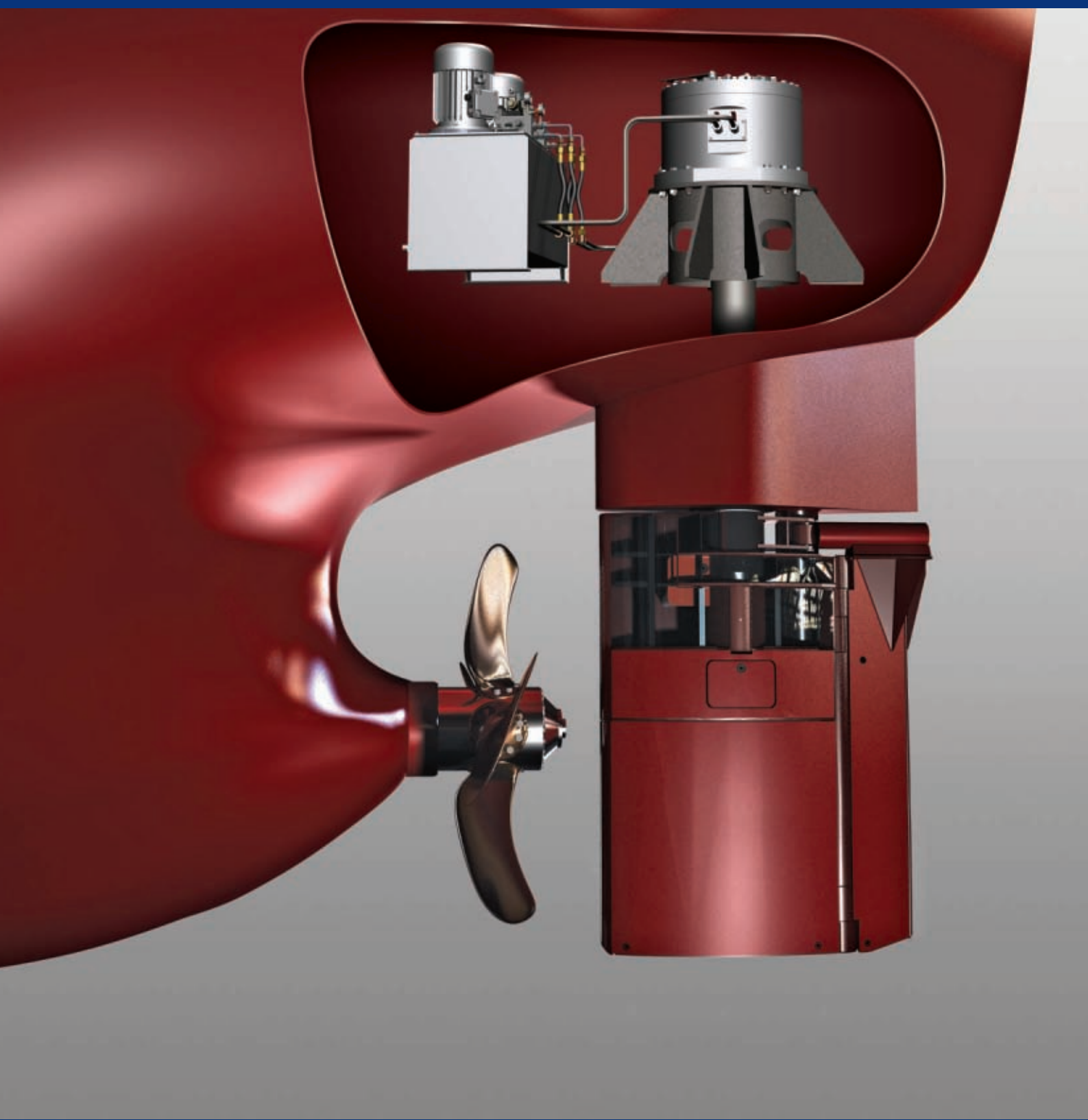
WHEN MANOEUVRABILITY MATTERS

Van der Velden Commander™ steering gear



ROTARY VANE

Smart Maritime Solutions



Decades of experience

Van der Velden Barkemeyer has specialised in the design, engineering and production of premium rudders, sophisticated compact steering gear and propulsion systems for almost half a century. All this innovative and some award-winning equipment can be integrated within a complete Van der Velden package, tailor-made to each vessel and its specific application.

Our triple-A designers work with the latest computer-based technologies such as AutoCAD, Solid Works and FEM programs. Van der Velden R&D specialists are focused on premium quality, safety, reliability and cost efficiency.

This brochure is dedicated to the Van der Velden **COMMANDER™**, part of a comprehensive portfolio of steering gear that ranges from ram-type to rotary vane, from 25 kNm to over 6300 kNm torque. What all the different Van der Velden steering gear have in common is the unique features that ensure superior course stability.

YOU THE MASTER...

The Van der Velden **COMMANDER™** rotary vane steering gear leverages on the very latest design principles in order to meet the operational demands of every type of high tech vessel. It is manufactured from the most sophisticated materials that are light in weight yet exceptionally strong.

Combined with its incredible low requirement of maintenance and the fact that there is only one movable part, Van der Velden **COMMANDER™** steering gear has an industry-leading lifespan. With trouble-free operation, many units will outlive their mother vessel. The advanced components in this new generation of rotary vane steering gear have also been fitted with a simple, robust and compact design that simplifies layout issues for naval designers.

...AND COMMANDER

All in all, the installation of a Van der Velden **COMMANDER™** steering gear is an investment in the future in many ways. It offers you significant cost savings in the long run, while the assurance of having steering gear of such quality reduces costly vessel downtime to an absolute minimum.

What's more, leaving nothing to chance, you will be backed up by Van der Velden's renowned global support network. This ensures short lines of communication between customers and local offices.

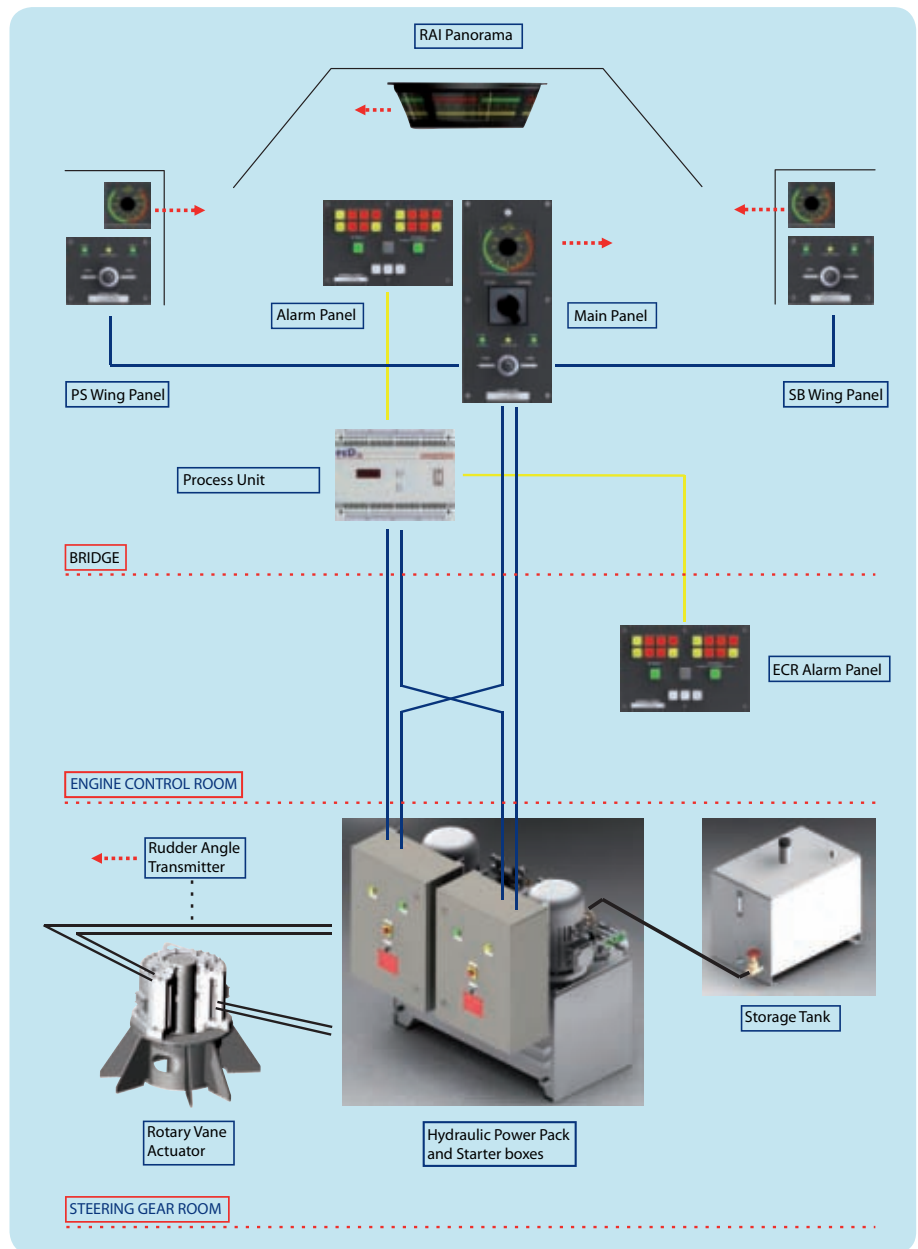
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p. 6-11	Van der Velden COMMANDER™ steering gear (rotary vane and ram-type)
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Steering system lay-out

Van der Velden Marine Systems delivers all types of remote controls and interfaces:

- **Non Follow Up (NFU) Steering**
NFU Tiller must be kept in the specific position when steering
- **Follow Up (FU) Steering**
In FU mode, the rudder follows the position where the FU controller (wheel or lever) is adjusted
- **Auto Pilot (AP) Interface**
Enables vessels to be controlled automatically on a set course
- **Dynamic Positioning (DP) Interface**
Suitable for all common DP system suppliers



Van der Velden COMMANDER™ steering gear comes with a complete electrical system which includes starters, frequency converters, follow up-, alarm- and rudder indication systems.

All equipment components are designed specifically for steering gear operation and approved by all major classification societies. Modern and reliable remote controls with a simple interface to dynamic positioning, auto pilot, joystick systems and voyage data recorder are essential on today's sophisticated vessels. The Van der Velden remote control system accepts both analogue and digital command signals from the auto-pilot.

From the Van der Velden remote control portfolio we deliver non-follow up and follow up controls for single and multiple rudders. On vessels with twin rudders we mostly deliver electronically synchronised steering gears, which can also operate individually at the turn of a switch. This provides you with *maximum flexibility when manoeuvring*.

TAKING CONTROL

The central modular panel, which includes a control panel and a monitoring & alarm panel, combines long experience with proven engineering and design technology. Available in touch screen format, the panels are plug & play for simple installation and meet the very latest safety requirements. Night-time monitoring is made easy thanks to the use of type approved dimmers.

RUDDER INDICATION SYSTEM

Rudder angle transmitters and indicators of different types and dimensions are a part of the Van der Velden delivery programme. Our indicators can be mounted as panels on panorama ceilings or walls, and are available in IP 54 and IP 66 waterproof versions for open bridge wing installation. All instruments are type approved by the relevant classification authorities.

ALARM PROCESS UNIT

Our alarm unit monitors all check points of the entire steering gear system, with constant display on the panels in the engine control room, wheelhouse and VDR systems. All these standard alarms are also linked to the main ship alarm system for *maximum safety*.

STARTER BOXES FOR HYDRAULIC POWER PACKS

Hydraulic Power Pack starters are made especially robust to resist the high vibration levels often encountered in steering gear compartments. The starters are available in DOL (Direct OnLine) or Star/Delta types, or with frequency motor controls. The box is IP 54 sealed, equipped with terminals for all wiring and with glands for all in and out cables.



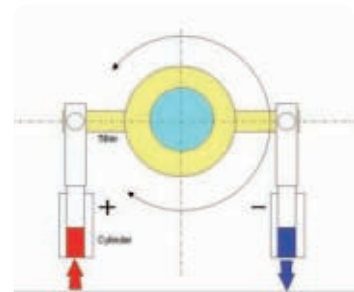
Van der Velden COMMANDER™ ram-type actuator

MEETING THE NEEDS OF SHIPOWNERS AND OPERATORS:

- Reliability
- Exceptionally low requirement of service & maintenance
- Clear layout of all bridge panels, alarm panels, ECR panels and hydraulic power packs: completely integrated system
- Series and custom built depending on requirements
- Proportional hydraulics integrated for precise manoeuvring
- Maximum redundancy for continued safe operation
- Easy maintenance

MAKING LIFE EASY FOR YARDS:

- Easy plug & play installation
- No fitting bolts on foundation
- Compact design
- No on-site alignment required



ram-type (cylinder) BST actuator

THESE VESSELS ARE EQUIPPED WITH VAN DER VELDEN COMMANDER™ RAM-TYPE STEERING GEAR:



Ameland



Grampian Confidence



Wilson North

Van der Velden COMMANDER™ rotary vane actuator

MEETING THE NEEDS OF SHIPOWNERS AND OPERATORS:

- Reliability
- Compact design
- Low noise level by using hydraulic vane pumps
- Unique self compensating sealing system to prevent internal leakage and wearing
- Superior lifespan of the bearings and seal cycles
- No routine wear measurement of the installation required: no down-times
- Low requirement of maintenance
- Automatic hydraulic isolation in case of piping failure
- Consistent layout of all bridge panels, alarm panels, ECR panels and hydraulic power packs: complete integrated system
- Hydraulic cross-over safety valve
- Mechanical torque overload protection for maximum safety (cylindrical interface with clamping rings)
- More compact design thanks to unique working pressure

MAKING LIFE EASY FOR YARDS:

- Easy installation
- Simple and efficient steering gear connection with clamping rings to rudder stock for torques up to 400 kNm (cylindrical interface)
- Actuator is mounted directly to the rudder stock
- Oil-injected keyless fit to rudder stock > 400 kNm (conical interface)
- No fitting bolts on foundation
- Mechanical stoppers on outer ring
- Simple alignment with steel wedges and shock-fast
- Integrated rudder carrier
- Constant operation torque

THESE VESSELS ARE EQUIPPED WITH VAN DER VELDEN COMMANDER™ ROTARY VANE STEERING GEAR:



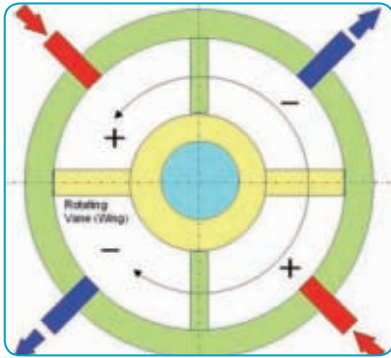
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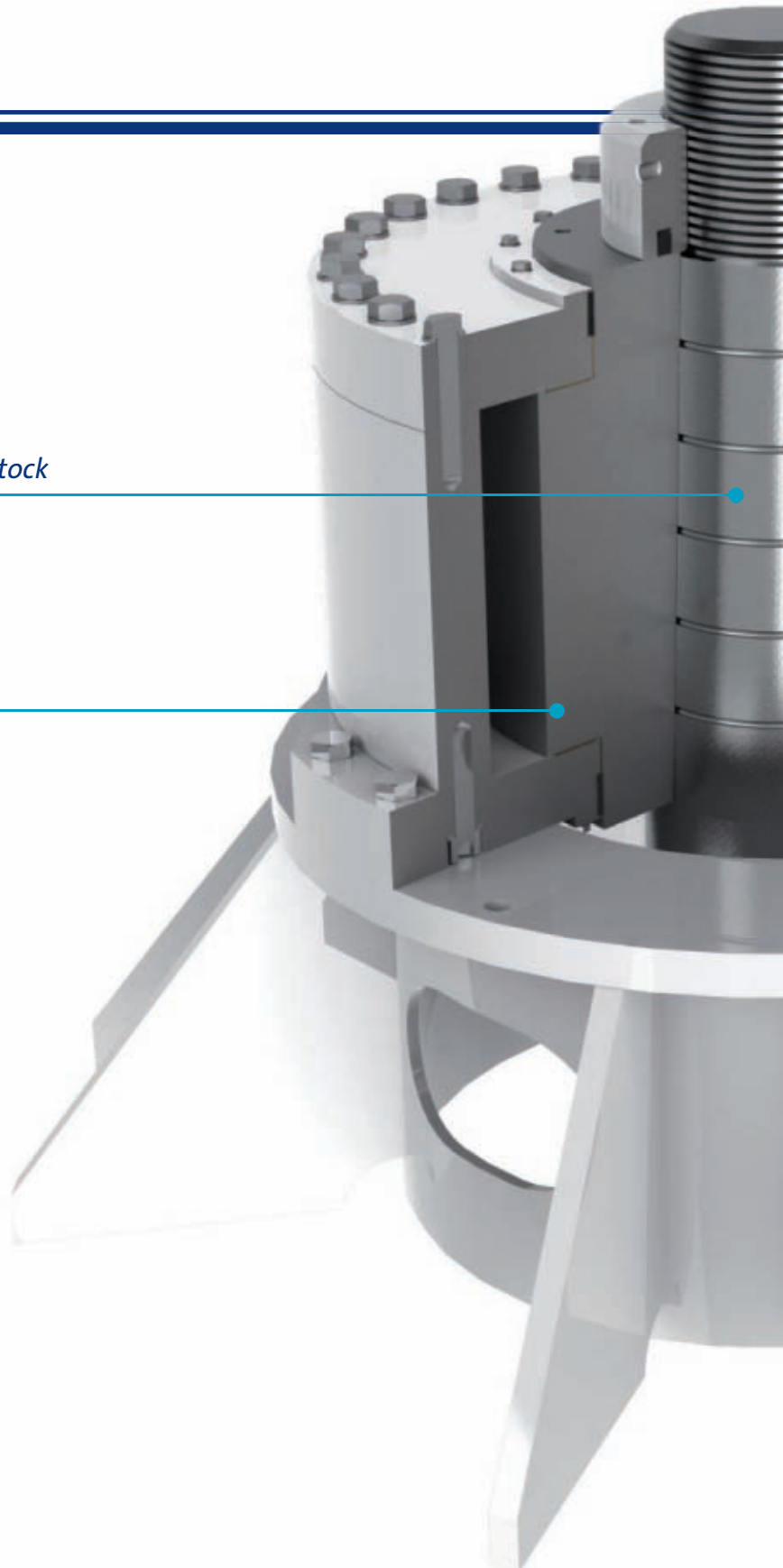
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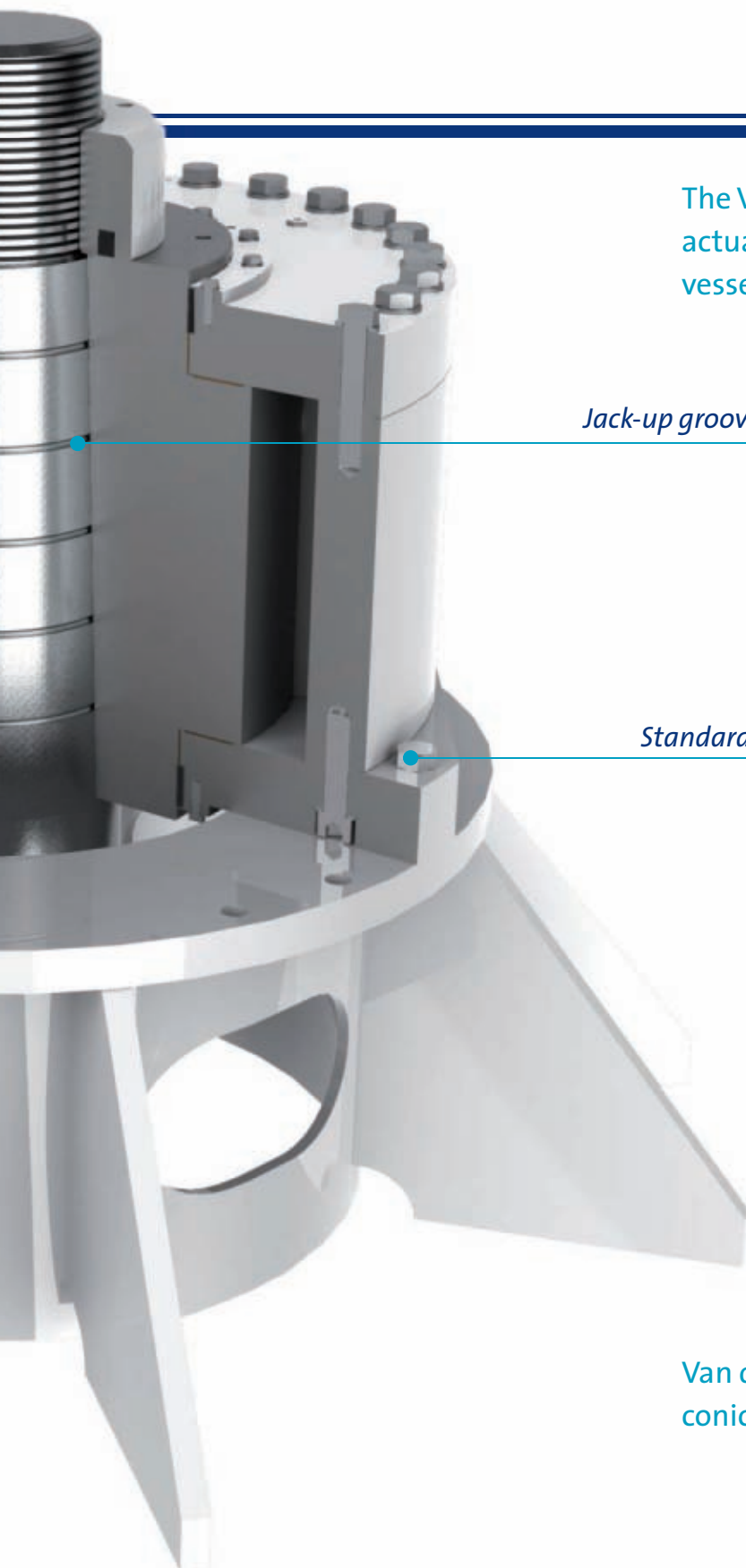


rotary vane (wing) type BRV

Rudderstock

Rotor





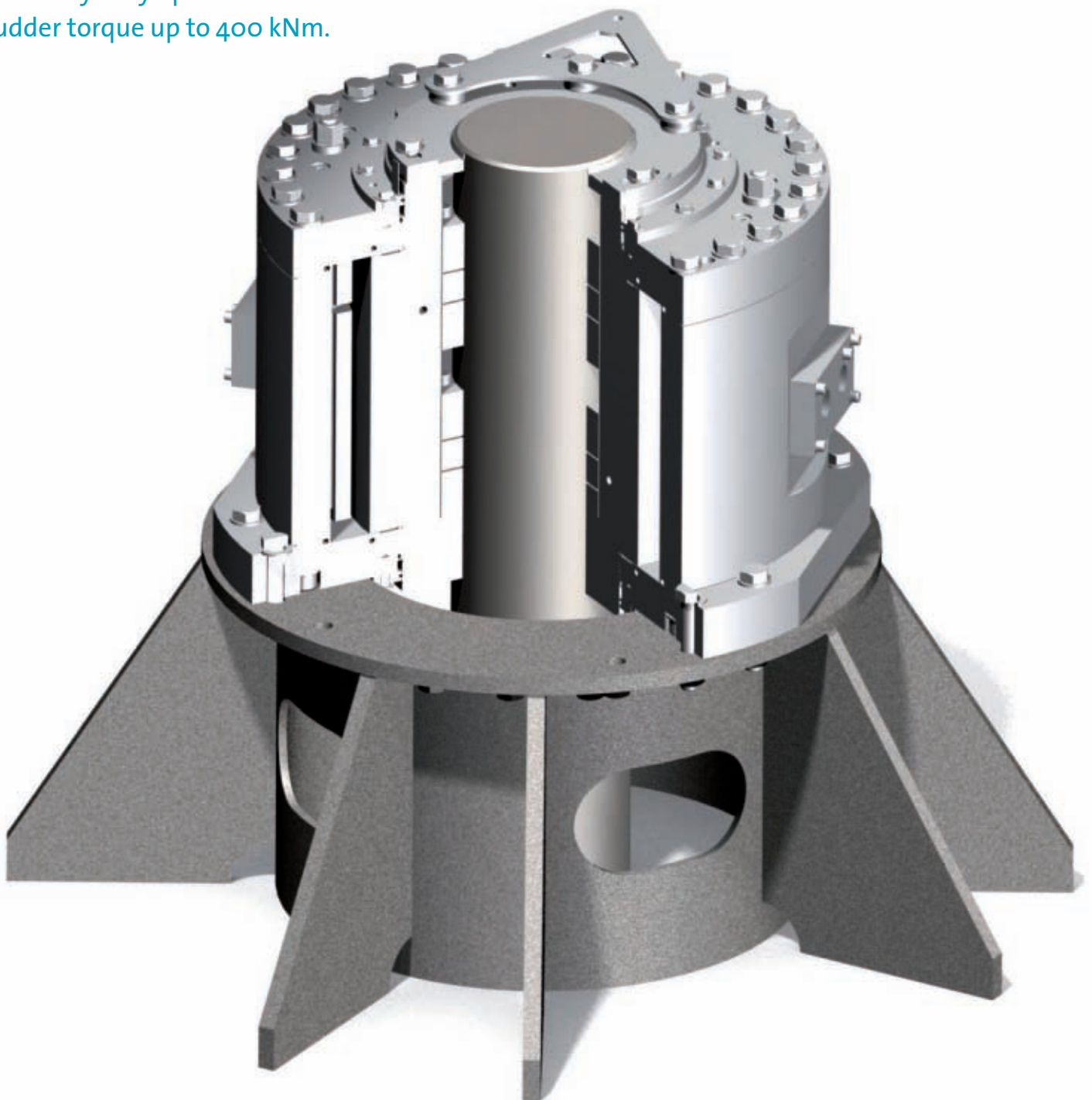
The Van der Velden COMMANDER™ rotary vane actuator is designed for heavy duty operation for vessels with a rudder torque up to 6300 kNm.

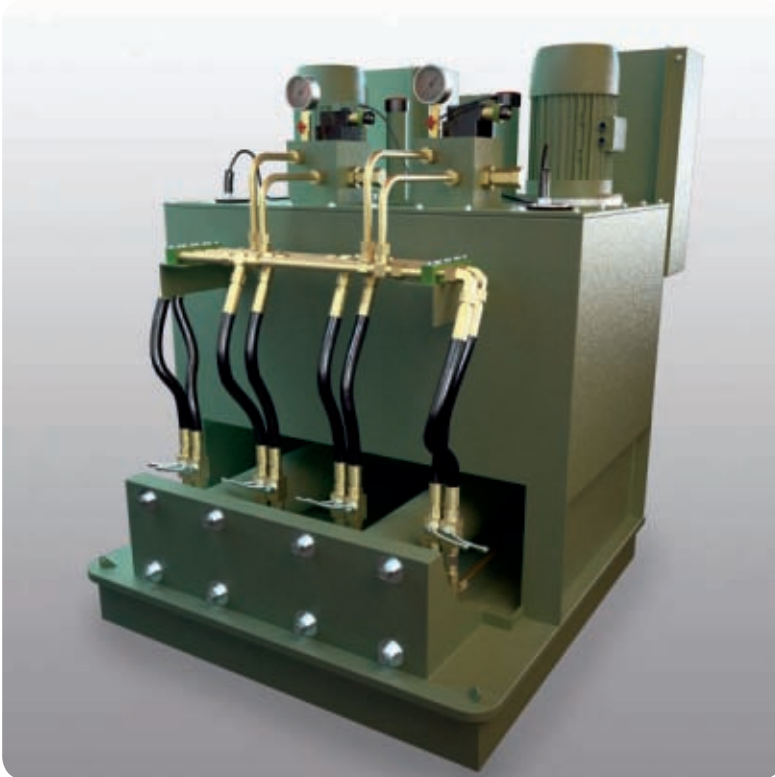
Jack-up grooves

Standard bolts

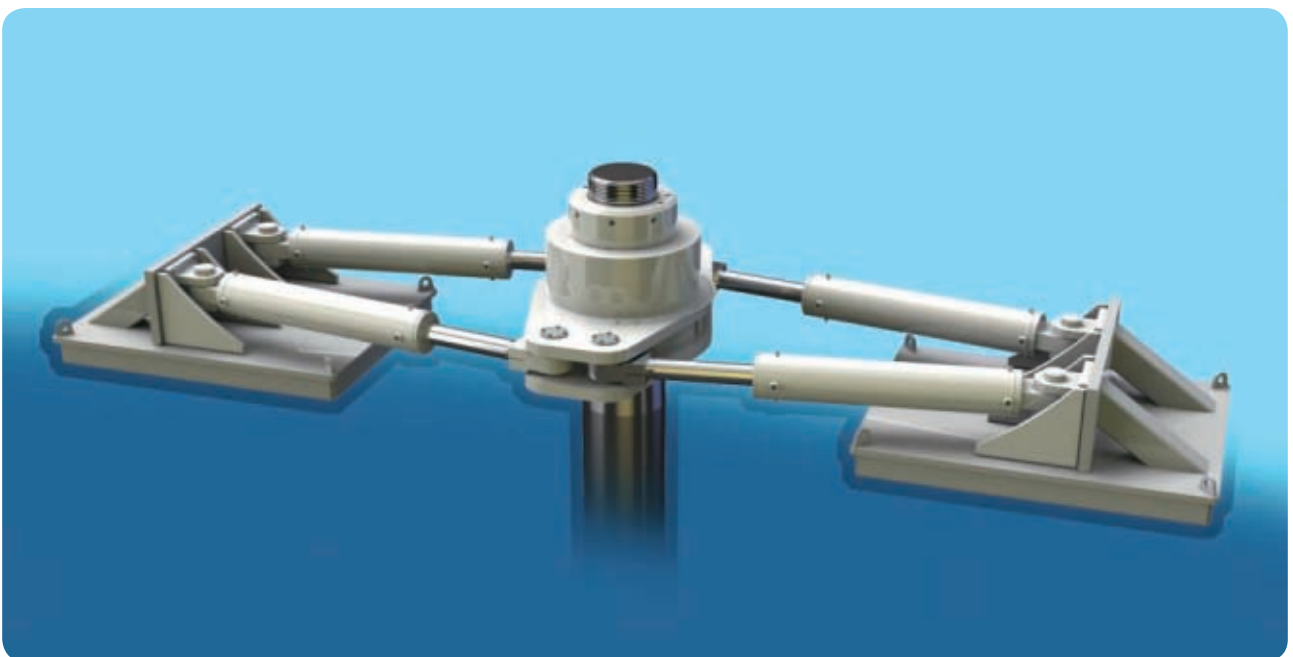
Van der Velden COMMANDER™ steering gear with conical interface, with oil injected keyless fit.

Van der Velden COMMANDER™ rotary vane steering gear with cylindrical interface and clamping ring. For heavy duty operation for vessels with a rudder torque up to 400 kNm.





Van der Velden COMMANDER™ ram-type actuator is a plug-and-play system, with conical and cylindrical rudderstock and steering gear interfaces. Designed for vessels with a rudder torque up to 650 kNm.



Van der Velden COMMANDER™ ram-type steering gear configured with two actuators type BST 325 (BST 650).

Hydraulic power packs and Frequency control

HYDRAULIC POWER PACKS

The hydraulic power packs from Van der Velden Marine Systems are specially developed for the Van der Velden COMMANDER™ steering gear. A good power pack enables a precise adjustment of the rudder position and rudder speed. As a reliable power pack is of vital importance for safety we have taken great care in designing and constructing hydraulic power packs to the highest standards, using the latest technology and advanced materials.

Main features:

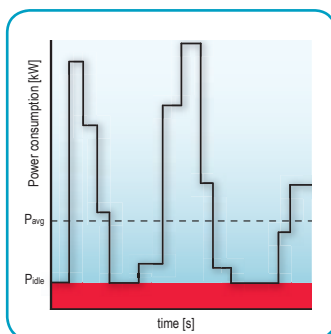
- Incorporated oil reservoir
- Submerged low noise hydraulic pump
- 100 bar vane pump operated pressure system (rotary vane actuator)
- 150 bar piston pump operated pressure system (ram-type actuator)
- Hydraulic shock loads are reduced by special loop and valve configuration

FREQUENCY CONTROL

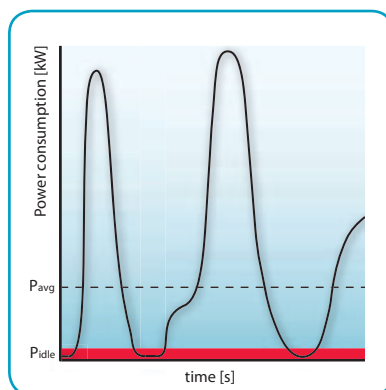
A further option on Van der Velden's hydraulic power packs is a frequency control box, offering the following major benefits:

- Hydraulic oil remains at a steady low temperature and therefore lasts longer
- More efficient energy use (low power consumption)
- More comfort thanks to smoother sailing and vibration-free operation
- Less wear
- Compact construction

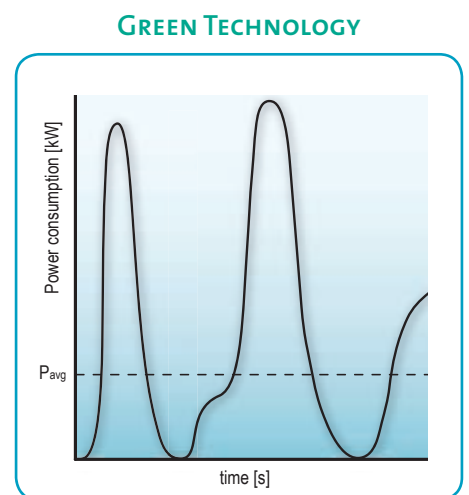
*red = constant loss of energy



Conventional



Proportional



Frequency control

Bearings and Sealings

BEARINGS

Bearings are designed to take the full load of the rudder. Our bearings are unique and specially developed for Van der Velden COMMANDER™ rotary vane steering gear in order to extend the lifespan. As the bearings are integrated there is no need for yards to fit an additional rudder carrier.

Features of axial (thrust) bearing:

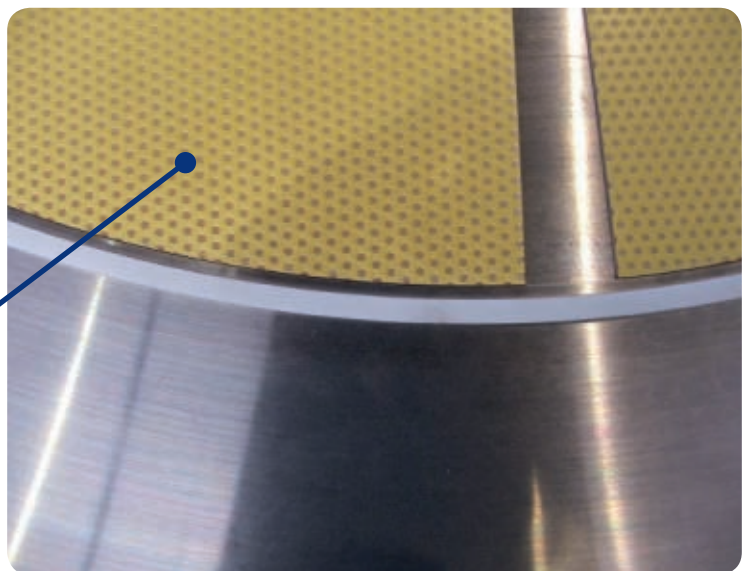
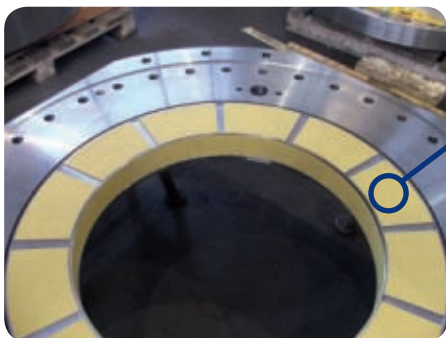
- Thrust bearings on both the top and bottom
- Twelve equal segments laid out in a ring
- Low friction solution
- DX® material: steel plate and porous bronze and acetal (polymer)
- Surface pockets contain oil to keep surface lubricated.

Features of radial bearing:

- DX® material: steel plate and porous bronze and acetyl acetal (polymer)
- Surface pockets contain oil to keep surface lubricated

SEALINGS

- Superior lifespan of sealing cycles
- Low friction sealings

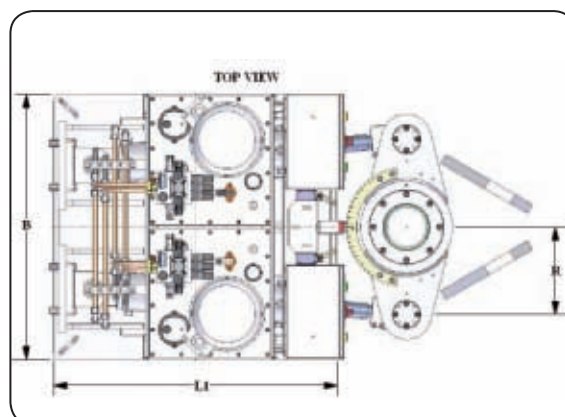
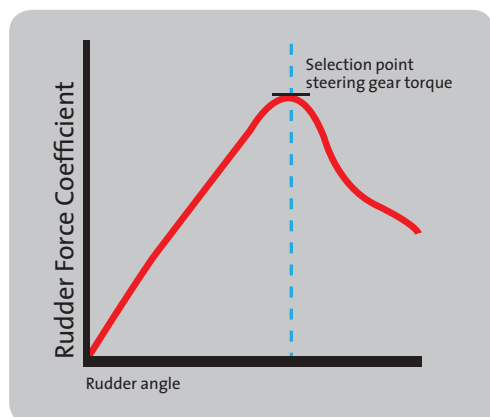
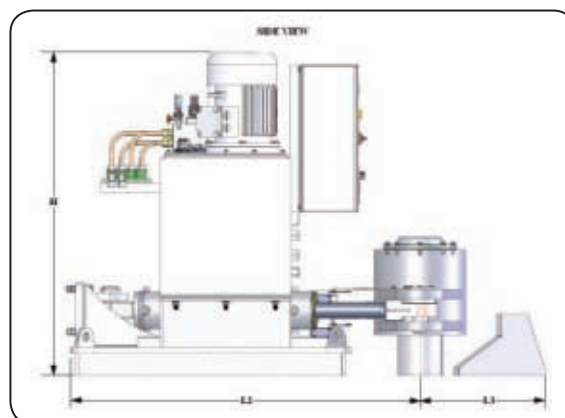


Specifications Van der Velden COMMANDER™ steering gear

Technical data Van der Velden COMMANDER™ ram-type steering gear

Type	Design torque [kNm]	L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	H [mm]	R [mm]	Total weight [kg] without tiller, starters	Tank capacity [ltr.]	Header tank [ltr.] / [kg] Optional	El. Motor power [kW] S6 / (S1)	Hydraulic cylinders [mm]
B(E)ST 039	030-039	1075	1385	500	1060	1298	450	790	2 x 125	150 / 90	3/(2,2)	100/56-520
B(E)ST 050	040-050	1075	1385	500	1060	1298	450	810	2 x 125	150 / 90	4/(3,0)	100/56-520
B(E)ST 056	051-056	1130	1410	510	1060	1298	450	840	2 x 125	150 / 90	4/(3,0)	120/60-520
B(E)ST 074	057-074	1130	1410	510	1060	1298	450	900	2 x 125	150 / 90	5,5/(4,0)	120/60-520
B(E)ST 090	075-090	1400	1830	620	1300	1328	635	1090	2 x 175	225 / 125	7,5/(5,0)	120/60-770
BST 110	091-110	1400	1830	620	1300	1445	635	1200	2 x 175	225 / 125	11/(7,5)	120/60-770
BST 150	111-150	1400	1880	620	1460	1605	635	1500	2 x 250	300 / 135	11/(7,5)	140/70-770
BST 195	151-195	1460	1990	655	1460	1635	635	1840	2 x 250	300 / 135	15/(11,0)	160/80-770
BST 240	196-240	1600	2250	725	1650	1790	745	1960	2 x 350	400 / 150	18,5/(15,0)	160/80-940
BST 325	240-325	1800	2435	950	1650	2050	770	2700	2 x 350	400 / 150	30/(22,0)	160/100-940

Specific data on larger types are available on request

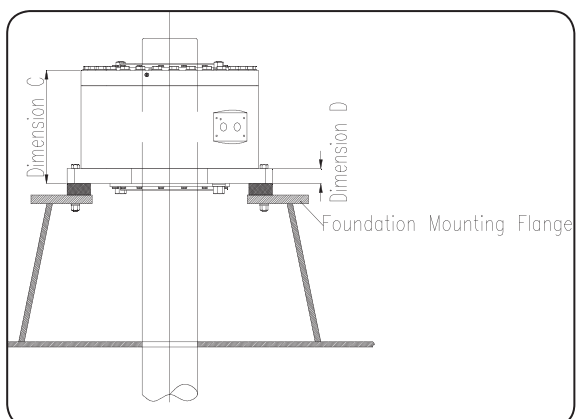
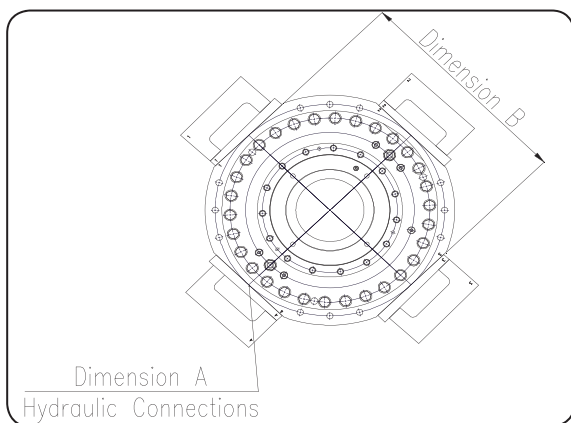


Technical data Van der Velden COMMANDER™ rotary vane steering gear

Type	Working torque max. [kNm]	Rudder angle max.***	Number vanes	Working pressure max. [bar]	Rudder stock dia. max. [mm]	Dimension A DIN	Dimension B [mm]	Dimension C [mm]	Dimension D [mm]	Weight actuator [kg] 1
BRV25	25	2x65	2	100	150	3/4"	530	380	45	500
BRV40	40	2x65	2	100	180	3/4"	590	470	50	800
BRV63	63	2x65	2	100	200	3/4"	680	495	60	1000
BRV100	100	2x65	2	100	240	3/4"	760	494	60	1300
BRV160	160	2x65	2	100	280	1"	886	545	76	2000
BRV250	250	2x65	2	100	320	1 1/4"	1000	625	76	2600
BRV400	400*	2x45	3	100	380	1 1/4"	1160	665	76	3800
BRV630	630*	2x45	3	100	430	1 1/2"	1235	695	76	4500
BRV1000	1000**	2x45	3	100	500	2"	1474	865	108	8200
BRV1600	1600**	2x45	3	100	590	2"	1720	995	110	12000

* = cylindrical and conical interface ** = tapered connection only *** = other rudder angles on requirement 1 = including weight Clamping ring

Specific data on larger types are available on request



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RUDDERS

STEERING GEAR

BARKE®

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