

Single Marine Gear Solutions
Type RSV(L) / RSH(L) 1,000 – 22,000 kW

RSV/RSH Gearboxes – High performance, energy-efficient, reliable.



RSV(H)(L)

R = RENK
S = Single Marine
V = Vertical Offset
H = Horizontal Offset
L = Multiple Disc Clutch
C = Compact Version

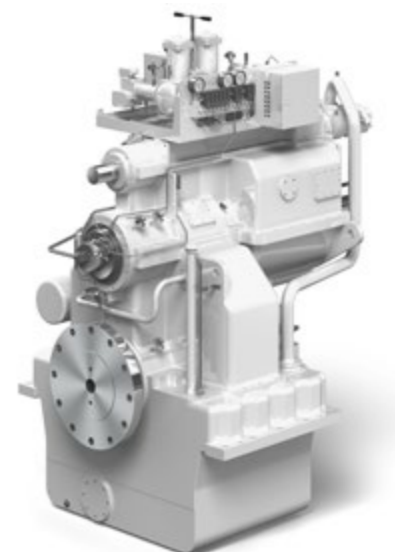
More than 140 years of experience are the basis for the production of highly developed and efficient gearboxes, which are used in thousands of ships all over the world today. Precisely fitting gearboxes are our specialty. We can develop customized solutions for our customers' demands. RENK gearboxes extend the performance of single engine marine propulsion by offering a number of additional features. Propeller speed is optimized and power transmission to the main engine is regulated.

RENK gearboxes are manufactured according to international standards, which together with our own quality criteria, show a unique consistency. Taking every standard and our own quality criteria into consideration we can provide our customers with customized versions of our standard specifications.

The RENK quality standards

Due to the high standards of our internal quality control, RENK offers our customers consistent high quality in the development and design of the relevant gearbox components: from gearing technology and axial bearing to the multi-disc clutch. Precision and diligence in every step of the production as well as elaborate fine tuning of the separate components regarding the overall system are the key to our quality.

RENK is able to manufacture durable gearboxes which prove their reliability and high-standard performance for decades and over thousands of miles.



Reliability through precision – The three pillars of RSV/RSH technology

Gears which mesh perfectly

Our gears are designed for maximum safety as well as minimum noise and vibration. The technological basis is the optimum fine tuning of the macro and micro gear geometry.

A solid foundation and strong casing withstand high strain

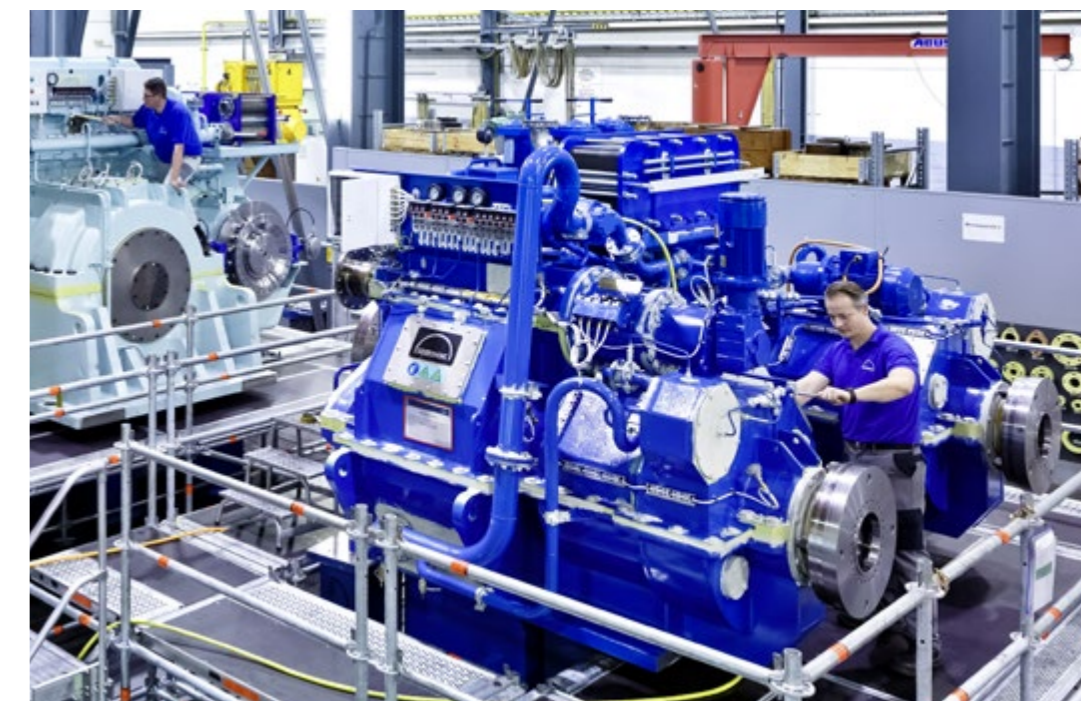
The design of the casing and foundation has a considerable influence on the load-carrying characteristics of the gears and bearings as well as noise absorption and vibration during operation. RENK casings have high stiffness due to the use of torsion-resistant materials with especially resilient strengthening ribs.

The thrust bearing is usually located on the engine side. This results in a high stiffness of the whole structure in the area of the thrust bearing. A solid connection between gearbox and engine foundation creates a system which ensures optimal absorption of the propeller thrust.

Sleeve bearings with leading qualities

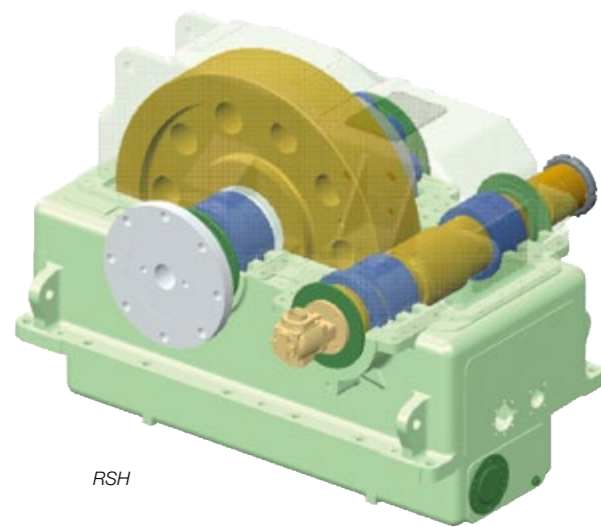
High-quality gearboxes need bearings with special features like low-friction sleeve bearings. The RSV/RSH gearboxes use extremely durable high-performance plain bearings with an unlimited life time. Thick-walled axial bearings with circular thrust pads made for reliable operation and durability.

The following aspects are of particular benefit. Maintenance of the thrust bearing is feasible without draining the oil and disassembling the gearbox housing. Aft and forward thrust pads are identical, a fact that simplifies replacement and maintenance to a considerable extent.

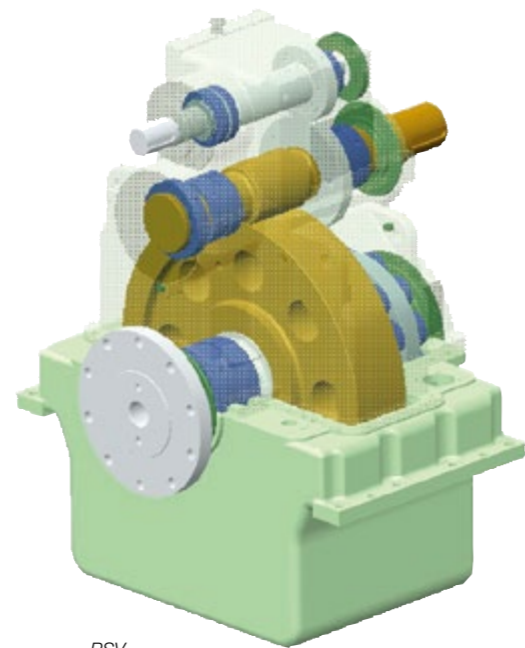


Customized gearbox solutions

- Reduction from main engine to propeller is realized in one step with optimized efficiency
- RSV(L)/RSH(L) are supported on sleeve bearings according to DIN 7474
- To absorb the axial forces of the propeller, RENK supplies all gearboxes with an integrated thrust bearing
- Assembly and Instrumentation according to the rules and regulations of the relevant classification society. In addition to this we ensure the high-standard RENK quality of all gearbox components.
- Stiff housings (grey cast iron or welded steel) and high quality internal ribs ensure maximum stiffness
- Case-hardened helical gearing with high-addendum toothing allows minimal torsion even under full loads.
- Ready-to-use auxiliary equipment: pumps, coolers, control and monitoring systems are readily piped and wired and mounted on the gearbox.
- Spare parts according to classification society standards are included.



RSH



RSV

Our customized gearbox solutions are setting standards at sea

Numerous optional specifications and the quality of our RSV/RSH gearboxes are the result of our extensive research and development as well as the experience we have gained from decades of use of our gearboxes at sea.



Optional Equipment

Turning Device

Enables the turning of the propeller shaft on ships with electrical propulsion for safe and comfortable maintenance work.

CPP Pump Drive

Additional mechanical pump drive at the PTO-shaft for mounting of oil pump to supply oil to the propeller.

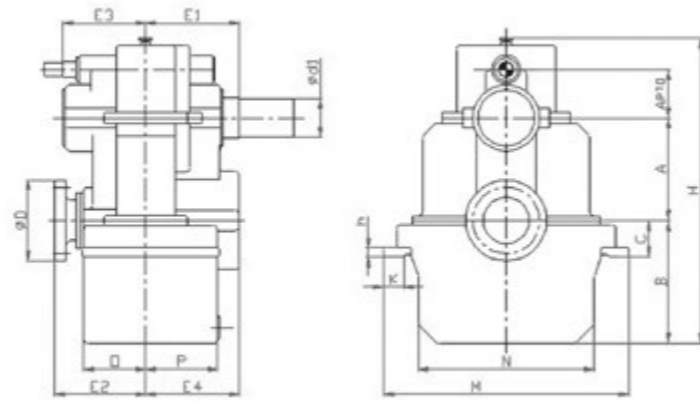
Multiple Disc Clutch(es)

Can be installed at the main shaft and PTO/PTH/PTI shaft to offer variable drive systems.

Optional Holding Brakes

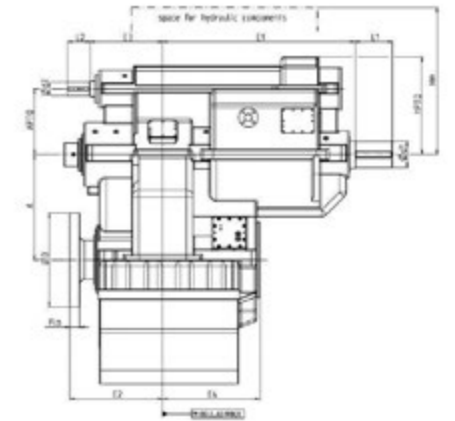
For propulsion systems it is possible to lock the propeller for safer and easier maintenance work.

Main Dimensions RSV



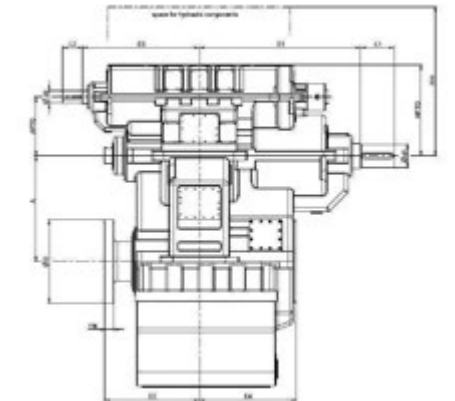
| RSV Size | RSV C-Version | A _{PTO} Position | Shaft Position | | | Casing | | | | | | Thrust [kN] | ~ Weight [t] |
|----------|---------------|---------------------------|----------------|------|-----|--------|-----|------|------|------|------|-------------|--------------|
| | | | E1 | E2 | E3 | B | C | G | H | M | N | | |
| A | A | A _{PTO} | E1 | E2 | E3 | B | C | G | H | M | N | | |
| 500 | 560 | 315 | 500 | 450 | 360 | 600 | 180 | 690 | 2100 | 1230 | 960 | 245 | 2,5 |
| 560 | 630 | 315 | 530 | 500 | 380 | 670 | 200 | 770 | 2250 | 1360 | 1060 | 302 | 3,5 |
| 630 | 670 | 335 | 580 | 560 | 450 | 750 | 225 | 850 | 2400 | 1510 | 1200 | 366 | 4,7 |
| 670 | 710 | 335 | 630 | 600 | 460 | 800 | 250 | 900 | 2650 | 1590 | 1130 | 472 | 5,6 |
| 710 | 750 | 355 | 650 | 630 | 490 | 850 | 250 | 950 | 2750 | 1700 | 1220 | 472 | 6,4 |
| 750 | 800 | 375 | 670 | 670 | 500 | 900 | 280 | 1020 | 2850 | 1780 | 1280 | 592 | 7,3 |
| 800 | 850 | 400 | 700 | 700 | 550 | 950 | 280 | 1070 | 3000 | 1910 | 1380 | 592 | 8,8 |
| 850 | 900 | 425 | 780 | 750 | 570 | 1000 | 315 | 1140 | 3150 | 1990 | 1440 | 774 | 10,5 |
| 900 | 950 | 450 | 800 | 800 | 610 | 1060 | 315 | 1200 | 3250 | 2110 | 1530 | 774 | 12,5 |
| 950 | 1000 | 450 | 850 | 850 | 650 | 1120 | 355 | 1270 | 3350 | 2220 | 1620 | 979 | 14,5 |
| 1000 | 1060 | 475 | 900 | 900 | 680 | 1180 | 355 | 1370 | 3800 | 2320 | 1700 | 979 | 17,0 |
| 1060 | 1120 | 500 | 950 | 950 | 710 | 1250 | 400 | 1940 | 3950 | 2460 | 1660 | 1068 | 20,6 |
| 1120 | 1180 | 530 | 1020 | 1000 | 760 | 1320 | 400 | 2030 | 3380 | 2560 | 1720 | 1209 | 23,8 |
| 1180 | 1250 | 530 | 1050 | 1000 | 790 | 1360 | 450 | 2100 | 3520 | 2720 | 1850 | 1319 | 26,8 |
| 1250 | 1320 | 560 | 1100 | 1050 | 820 | 1400 | 450 | 2190 | 3630 | 2880 | 1990 | 1319 | 31,2 |
| 1320 | 1400 | 560 | 1180 | 1120 | 880 | 1450 | 500 | 2330 | 3750 | 3020 | 2100 | 1530 | 37,2 |
| 1400 | | 600 | 1240 | 1180 | 900 | 1500 | 500 | 2440 | 3900 | 3180 | 2230 | 1669 | 44,0 |

Main Dimensions RSVL (PPTO/PTI)



| RSVL | C-Version | Head option | A _{PTO} | E1 | E3 | ∅d1 ¹⁾ standard/enlarged | L1 standard/enlarged | ∅d2 | L2 |
|------|-----------|-------------|------------------|------|-----|-------------------------------------|----------------------|-----|-----|
| 710 | 750 | small | 500 | 1430 | 490 | 180/200 | 250/280 | 110 | 160 |
| 750 | – | | | | | 180/200 | 250/280 | 110 | 160 |
| – | 800 | middle | 530 | 1525 | 560 | 200/220 | 280/310 | 120 | 170 |
| 800 | 850 | | | | | 200/220 | 280/310 | 120 | 170 |
| 850 | 900 | | | | | 200/220 | 280/310 | 120 | 170 |
| 900 | 950 | large | 560 | 1710 | 660 | 220/250 | 310/350 | 130 | 180 |
| 950 | 1000 | | | | | 220/250 | 310/350 | 130 | 180 |
| – | 1060 | | | | | 220/250 | 310/350 | 130 | 180 |

Main Dimensions RSVL (PTO/PTH/PTI) with Quillshaft design



| RSVL | C-Version | Head option | A _{PTO} | E1 | E3 | ∅d1 ¹⁾ standard/enlarged | L1 standard/enlarged | ∅d2 | L2 |
|------|-----------|-------------|------------------|------|-----|-------------------------------------|----------------------|-----|-----|
| 710 | 750 | small | 530 | 1515 | 490 | 180/200 | 250/280 | 110 | 160 |
| 750 | – | | | | | 180/200 | 250/280 | 110 | 160 |
| – | 800 | middle | 600 | 1625 | 560 | 200/220 | 280/310 | 120 | 170 |
| 800 | 850 | | | | | 200/220 | 280/310 | 120 | 170 |
| 850 | 900 | | | | | 200/220 | 280/310 | 120 | 170 |
| 900 | 950 | large | 630 | 1840 | 660 | 220/250 | 310/350 | 130 | 180 |
| 950 | 1000 | | | | | 220/250 | 310/350 | 130 | 180 |
| – | 1060 | | | | | 220/250 | 310/350 | 130 | 180 |

1) „Enlarged“ means that connecting pin and input shaft bearing are in the enlarged version. The „enlarged“ version is selected whenever shaft calculation requires this because of the torque.

Efficient energy management for your ship

Efficient and flexible distribution of the complete energy available on board. In this way you can reduce energy costs, increase comfort and keep your ship maneuverable in case of emergency.

PTO – more power flexibility for your ship

PTO offers additional electrical power possibilities for different applications.

Secondary PTO (SPTO)

Simultaneous operation of shaft generator and propeller

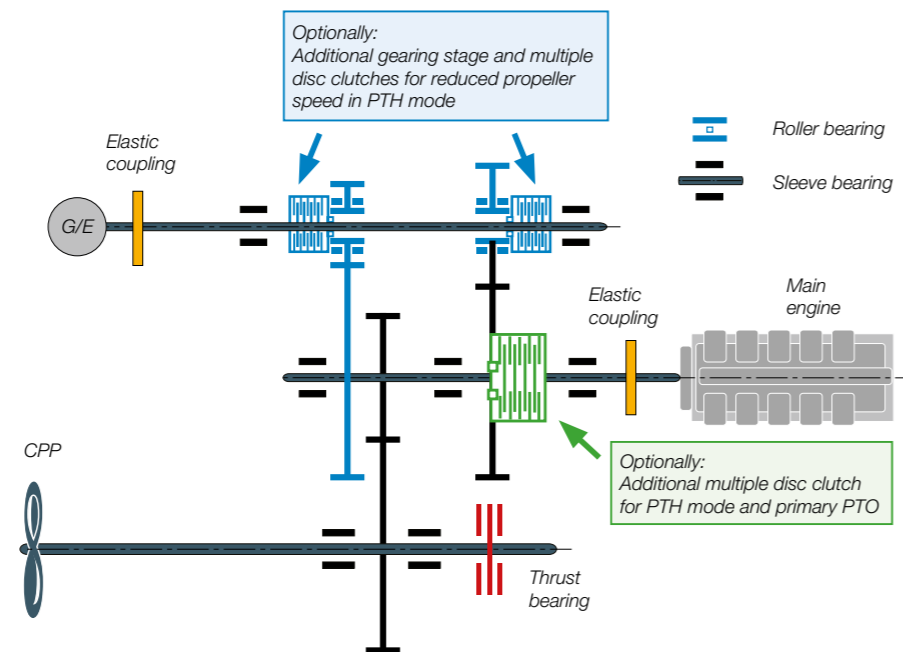
Primary PTO (PPTO)

Independent shaft generator operation without propeller

PTI & PTH – Higher power and additional safety for ship propulsion systems

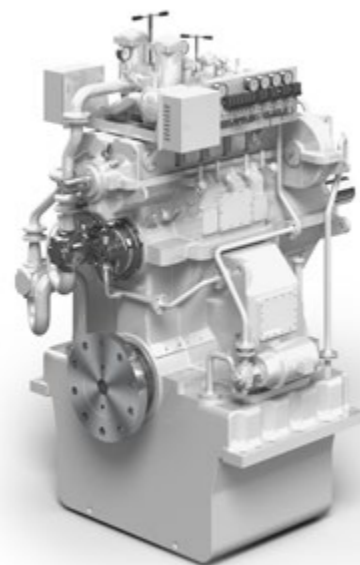
In PTI-mode the energy of the generator is used as an additional source of energy for the ship propulsion, to complement the power of the main diesel engine as a booster.

The PTH-mode is meant as emergency propulsion in case of failure of the main engine or as hybrid propulsion.



The Quillshaft version RSVL (PTO/PTH/PTI) with tubular shaft coupling

The Quillshaft version of the gearbox can also supply energy from the propulsion shaft generators and pumps on the SPTO as PPTO. PTI and PTH modes can also be integrated into this version of the gearbox. PTH enables the use of the electric generators as auxiliary propulsion to be able to guarantee the emergency propulsion of the ship in case of unforeseen failure of the main diesel engine. The reduced speed in PTH mode can be alternatively used to navigate critical passages at sea or in ports. PTI works as a booster to generate additional power for the propulsion from an optional electric generator.



RSVL Quill

RENK product support – competent, effective and always there for you

Our customer service is the central contact point for our whole service, be it for general questions about our products and services or maintenance and repair enquiries. A team of experienced engineers and highly qualified personnel supports you in your choice of individual solutions and accompanies the quick realization of the process – from development to implementation of our gearbox into the propulsion system of your ship. – Even after delivery and professional implementation of the RENK gearbox our team stays a competent partner for all your concerns.

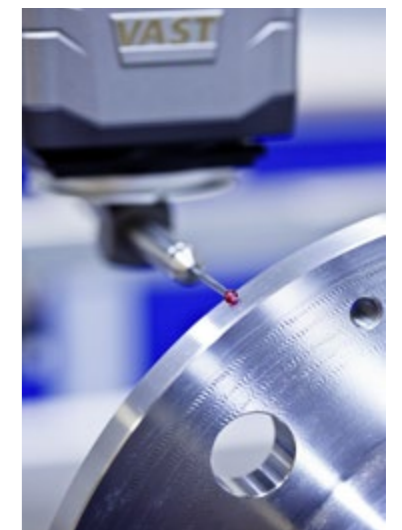
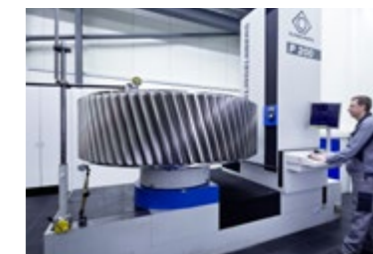
The RENK maintenance and repair service – maximized capacity and service life for ship gearboxes

Our state-of-the-art maintenance and repair equipment ensures first class service:

- 3D gear teeth measurement
- 3D coordinate measuring machine
- Crack testing, surface testing and ultrasonic testing
- Endoscope for internal inspection

Upon completion of the analysis, you will receive a study report containing prevention measures and repair recommendations for all components of the gearbox.

We are available 24/7 for you, we help answer all your questions and even on short notice we are able to provide technical personnel to help you complete your tasks quickly and straightforwardly. Our competent team is kept up to date by regular training and is able to answer any current questions.





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