

hollow shaft gearboxes GDH-2S

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An innovative enterprise in drive technique

**Jahnel-Kestermann
Getriebewerke GmbH**

For more than four decades, the company Jahnel-Kestermann, formerly Jahnel and after 1981 Jahnel-Kestermann, has been one of the leading enterprises in technology for the drive technique. Operations underwater and on board, loosening and transport of sand and stones – under most difficult conditions – around the world, Jahnel-Kestermann is your experienced partner for the drive technique.

Decades of experience in the dredging field, up-to-date calculation programs and fabrication methods being optimal and related to the products offer safety and grant reliability for your plants. Competent engineers advise you on site by planning and realization of your special drives. Our experiences are the result of decades of close cooperation with the famous shipyards and engineering companies as well as the criticism by the great international companies.

Therefore, already 40 years ago Jahnel-Kestermann had the task to develop cutter-head gearboxes and have had it up to the current Hard-Rock-Cutter-Suction Dredgers of highest power. These gearboxes, designed for extreme load, have integrated axial-thrust bearings for absorption of the axial load from cutter head.

Already in 1970 we delivered the propeller and pump gearbox for the ship „Humber River“ – with a hopper capacity of 10,000 m³. This hopper dredger was a milestone in further development!

Meanwhile, Jahnel-Kestermann has equipped a great variety of cutter-suction, cutter-wheel and hopper-suction dredgers with gearboxes and couplings – for operation underwater and on board, and according to the regulations and standards of Classification Societies including ice class.

Jahnel-Kestermann's highest priorities are special solutions for the customers, reliability of operation and our proverbial service.

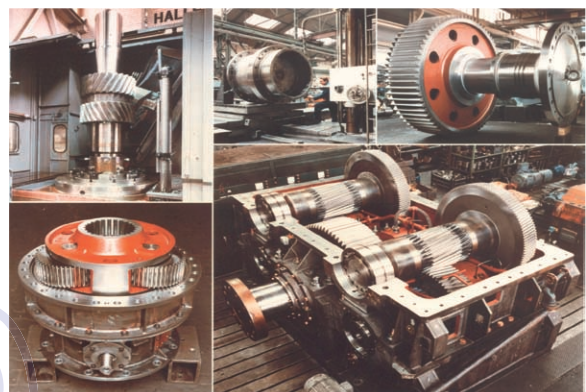
No wonder, that Jahnel-Kestermann gets orders to design and manufacture the propeller, generator, jet- and dredgepump gearboxes as well as cutter drives for the largest dredgers.

In the field of offshore technique **Ja)(Ke's** gearboxes are in operation for deep-sea cutter, pipe fitter and oil platforms. Great crane ships lift their loads by means of **Ja)(Ke's** gearboxes.

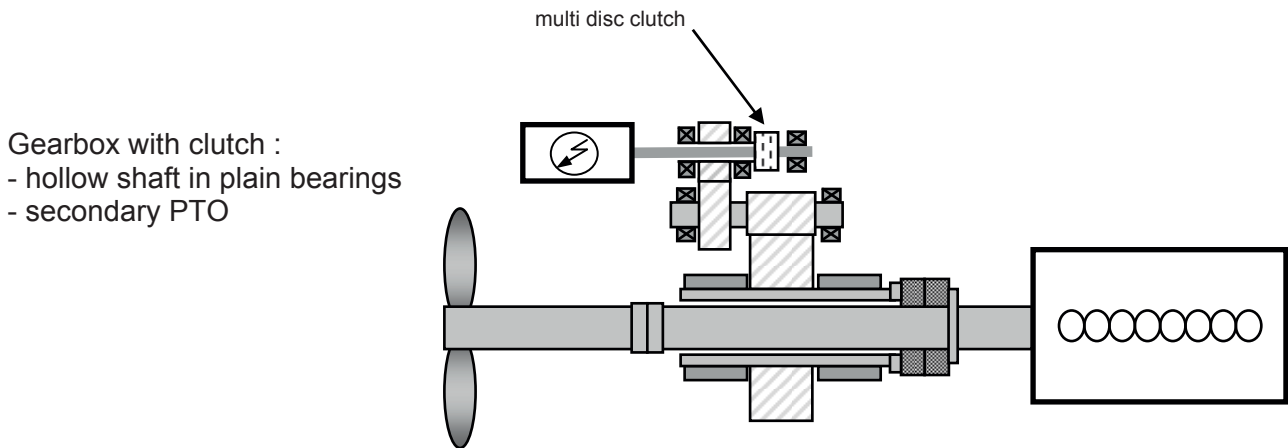
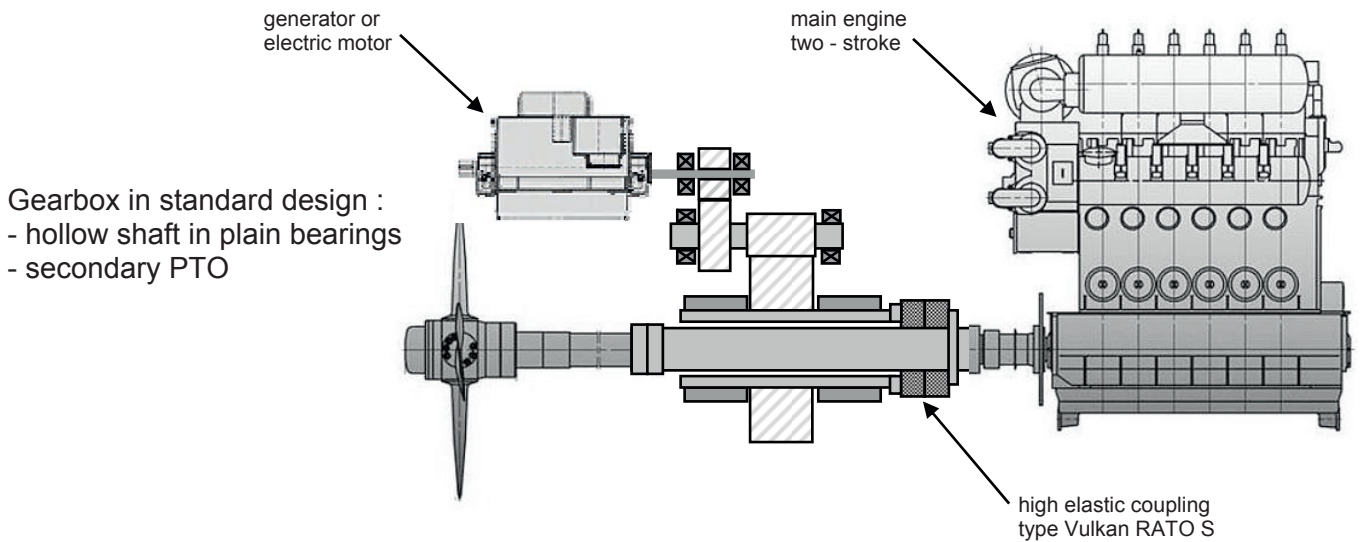
Many years of experience flow into toothing design, selection of bearings, construction of casing and sealing of high-stress gearboxes. We make a point of our service availability e. g. the inspection of axial-thrust pads. Here, a check is possible without essential gearbox disassembly.

Calculation methods according to the latest state of engineering, torsional-vibration simulations and FEM analysis have been executed in our workshop. Thus, constructional influences regarding torsional deflection and stress concentration may be identified at a very early state. For **Ja)(Ke's** engineers it is important to know not only the gearbox but also the complete ambient conditions, consequently, to know all working conditions of the vessel.

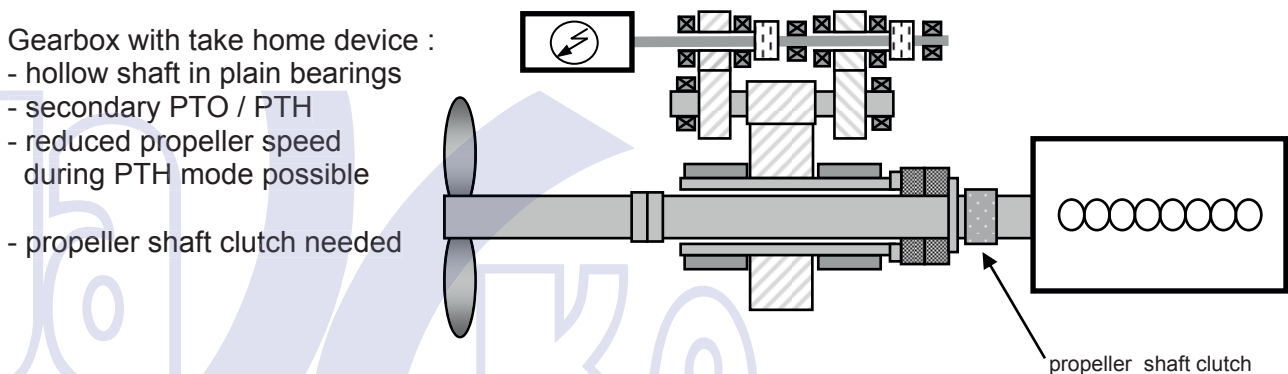
We offer these experiences for the selection of gearboxes and couplings of any kind.



The generator gearboxes **GDH-2S** enables the shipboard production of electricity by means of the low speed main engine of the vessel. The gear units are of two-stage design to increase the propeller speed to the requested generator speed. The transmission ratios are between 1:5 and 1:18



Additionally safety in case of main engine breakdown :



Shafts

Gearbox output shaft equipped with cylindrical shaft end for connection of a gear- or flexible coupling. Hollow shaft prepared for connection of a high elastic Vulkan coupling type RATO S.

Housing

The gearbox casing is designed as torsion-proof welded steel construction, suitable for accepting the outer forces and leading them to the basement. The internal ribs are optimized due to vibrational properties and carrying-off of heat.

Bearings

The hollow shaft is equipped with plain bearings while the intermediate- and PTO-shaft is usually fitted with roller bearings.

Gearing

The pinion is made of case hardened steel while the bull wheel can be made of case hardened or through hardened steel.

The pinion and the wheel have single helical and precision-ground teeth with optimum corrections to ensure long lifetime and low structure born noise level.

Lubrication and control system

Gearing and all bearing points are lubricated with forced oil by means of a mounted lubrication oil device.

Oil circulating system is completely built-on, including electrical driven stand-by pump.

Further parts of the oil station are:

- pressure relief valve
- non-return valves
- double filter with difference pressure indicator
- oil cooler for fresh water (other design possible)
- pressure switch
- temperature switch
- pressure gauge
- thermometer
- level switch

Monitoring system is completely built-on, including switchboard and interface.

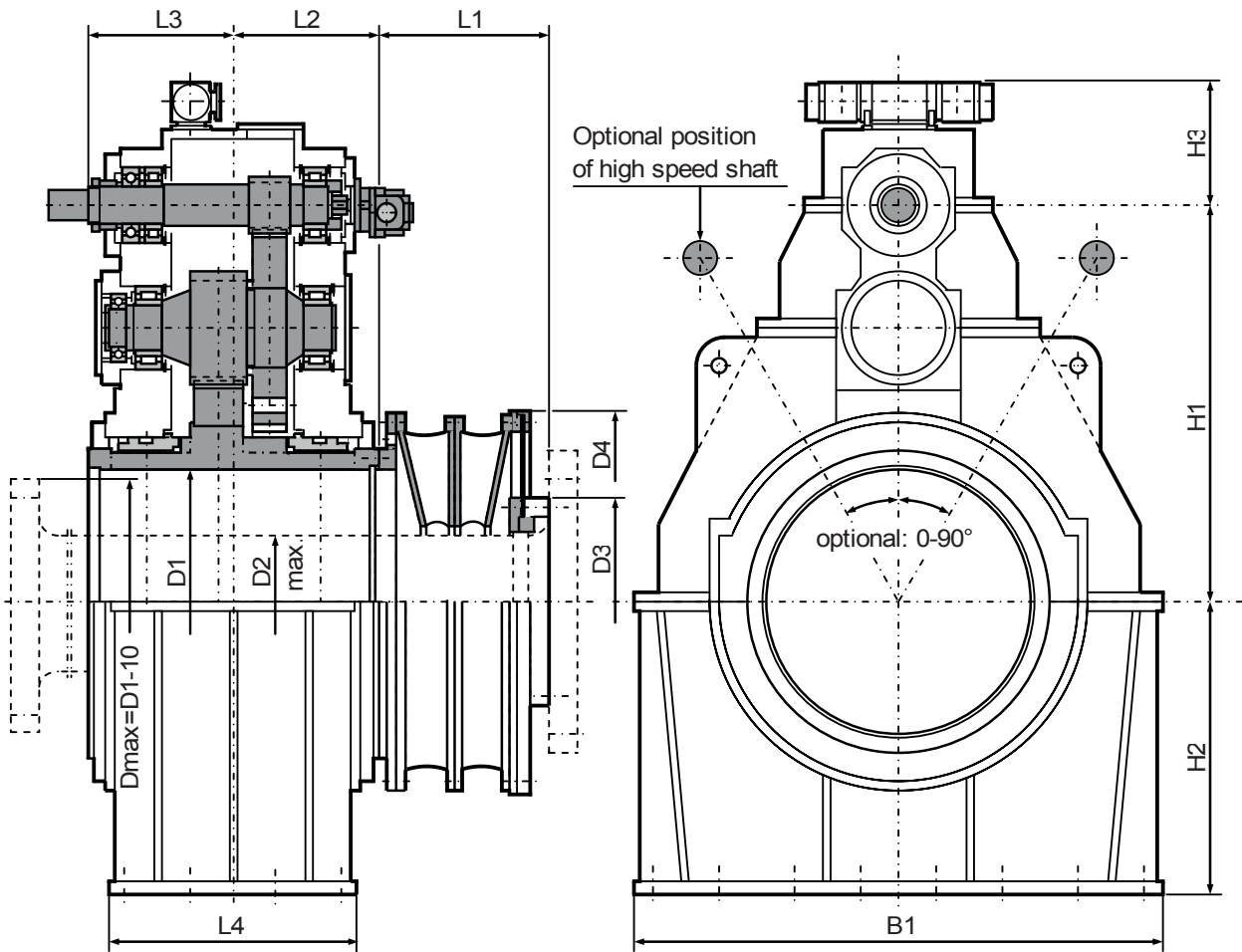
Clutch

The PTO shaft can be equipped with hydraulic operated multi disc clutch(es). The clutch is operated and lubricated by the hydraulic system of the gearbox.

Others

Gearbox outside painting RAL 5010 or according to customer's requirements.

Spare parts according to classification requirements.



GEARBOX TYP GDH SIZE	RATING 1) P / N1 KW / RPM	MAIN DIMENSIONS IN MM 2) 3)											WEIGHT DRY 4) KG	
		SHAFT / COUPLING				INPUT / OUTPUT				HOUSING				
		D1	D2	D3	D4	H1	L1	L2	L3	B1	H2	H3	L4	
1120 - 600	10,5	610	430	663	1175	1120	500	500	440	1600	1000	550	840	6000
1120 - 750	10,5	760	430	663	1175	1120	500	500	440	1600	1000	550	840	6400
1250 - 600	13,1	610	465	719	1255	1259	539	599	449	1800	1000	600	840	6700
1250 - 750	13,1	760	465	719	1255	1250	530	500	440	1800	1000	600	840	7200
1250 - 900	13,1	910	465	719	1255	1250	530	500	440	1800	1000	600	840	7600
1400 - 600	20,9	610	535	799	1480	1400	665	585	530	1950	1250	650	980	9700
1400 - 750	20,9	760	535	799	1480	1400	665	585	530	1950	1250	650	980	10200
1400 - 900	20,9	910	535	799	1480	1400	665	585	530	1950	1250	650	980	10700
1600 - 750	26,1	760	580	854	1585	1600	700	585	530	2150	1250	700	980	11500
1600 - 900	26,1	910	580	854	1585	1600	700	585	530	2150	1250	700	980	12000
1600 - 1060	26,1	1070	580	854	1585	1600	700	585	530	2150	1250	700	980	12600
1800 - 900	41,9	910	685	980	1815	1800	780	725	620	2400	1400	750	1220	18300
1800 - 1060	41,9	1070	685	980	1815	1800	780	725	620	2400	1400	750	1220	19100
1800 - 1180	41,9	1190	685	980	1815	1800	780	725	620	2400	1400	750	1220	19800

NOTE:

- 1) Max. rating factor $P / n1 =$ generator power / engine speed [kW / rpm]. Higher rating factors on request.
- 2) Other dimensions for centre distance H1 and hollow shaft dia. D1 on request.
- 3) Dimensions D2, D3, D4 and L1 are valid for the appropriate size of coupling for the stated max. rating factor.
- 4) Weights (dry) including mounted oil supply and monitoring system, but without VULKAN RATO - S coupling.

That's service at any time - In all places - Under guarantee

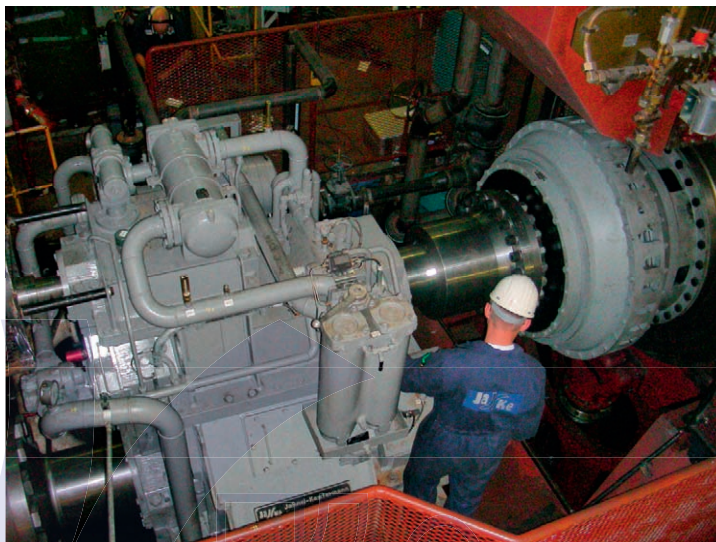
As specialists in special gears and transmission technology, we follow innovative methods, utilise latest technology, find solutions which are forward-looking, economical and safe. Our most powerful drive is our experience.

Ja)(Ke-drives are installed worldwide for use under the hardest of conditions such as in the

fields of mining, chemical industry, shipbuilding and general industry (steel and rolling mill construction, cement, wind, sugar, rubber and synthetic industries). In order to secure flawless operation at all times in all places and to prevent down-time, we have improved our already well-known service still further.

We offer you :

- 1. Preventive maintenance**
to ensure availability
- 2. Operation plan for our specialists**
within 48 hours our service specialists are on the spot throughout Europe.
- 3. Spare part supply**
supply of spare parts for both Ja)(Ke and other manufacturers' gears illustrates our broad spectrum.
- 4. 6-months minimum guarantee on repaired gears**
following guidelines given by us
- 5. Performance and quality guarantee**
we modernise your gears according to latest technology.





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