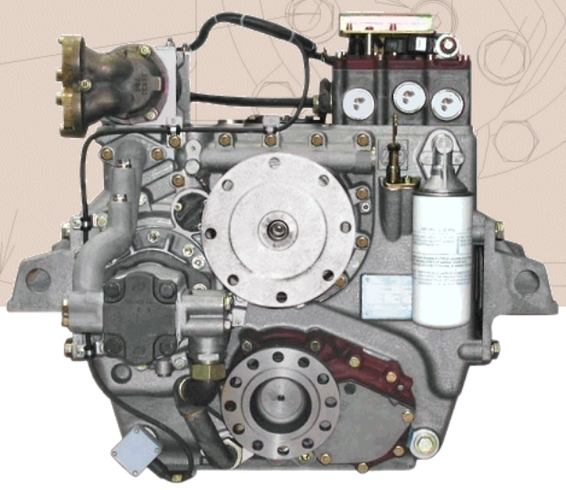


ZF 2000 V

10° V-drive, remote mount marine transmission.
Maximum rated input: 1006kW (1349hp)

Description

- 3 shaft, reverse reduction transmission with hydraulic clutch mounted on the input shaft and another one mounted on the reverse shaft. Input drive on the same side to output drive.
- Non-reversing NR version also available.
- Fully works tested, reliable and simple to install.
- Suitable for high performance applications in luxury motoryachts, sport fishers, express cruisers etc.
- Design, manufacture and quality control standards comply with ISO 9001.
- Compatible with all types of engines and propulsion systems, including waterjets and surface- piercing propellers, as applicable.

Features

- Lightweight and robust aluminum alloy casing (sea water resistant).
- Case hardened and precisely ground gear teeth for long life and smooth running.
- Output shaft thrust bearing designed to take maximum propeller thrust astern and ahead.
- Compact, space-saving design, complete with oil cooler, pump and full flow filter.
- Smooth and reliable hydraulic shifting with electric actuation.
- Suitable for twin engine installations (same ratio and torque capacity in ahead or astern mode).
- Emergency "get home" capability.
- "SUPERSHIFT" clutch control.
- Ratios: 1.267, 1.512, 1.763, 2.029, 2.250, 2.467, 2.714, 2.920, 3.250
- Capable of input speeds up to 2600rpm.

Options

- Mounting brackets.
- Propeller shaft flange.
- Live PTO's: Pump shaft driven, TOP PTO.
- Mechanical actuation with lever for attachment of push-pull cable.
- Monitoring kit.
- Trailing pump.
- Classification by all major Classification Societies on request.
- "EASIDOCK".
- "AUTOTROLL".

ZF 2000 V

P Duty

RATIOS	MAX. TORQUE		POWER/RPM		SAMPLE POWER CAPACITIES						MAX. RPM
	NM	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
					1800 rpm		2100 rpm		2300 rpm		
1.267*, 1.512*, 1.763, 2.029, 2.250*, 2.467, 2.714*, 2.920	4181	3084	0.4378	0.5871	788	1057	919	1233	1007	1350	2600
3.250*	3097	2284	0.3243	0.4349	584	783	681	913	746	1000	2600

L Duty

RATIOS	MAX. TORQUE		POWER/RPM		SAMPLE POWER CAPACITIES						MAX. RPM
	NM	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
					1800 rpm		2100 rpm		2300 rpm		
1.267*, 1.512*, 1.763, 2.029, 2.250*, 2.467, 2.714*, 2.920	3878	2860	0.4061	0.5446	731	980	853	1144	934	1252	2600
3.250*	2794	2061	0.2926	0.3923	527	706	614	824	673	902	2600

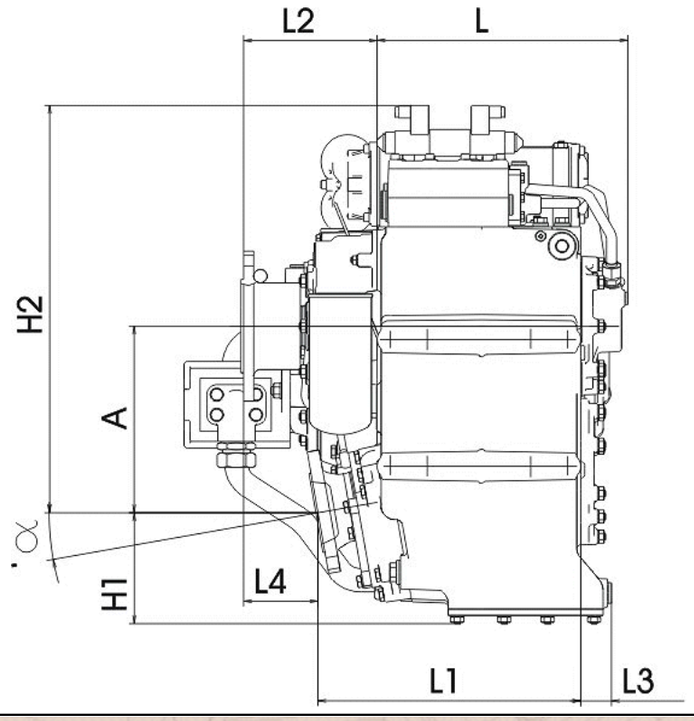
M Duty

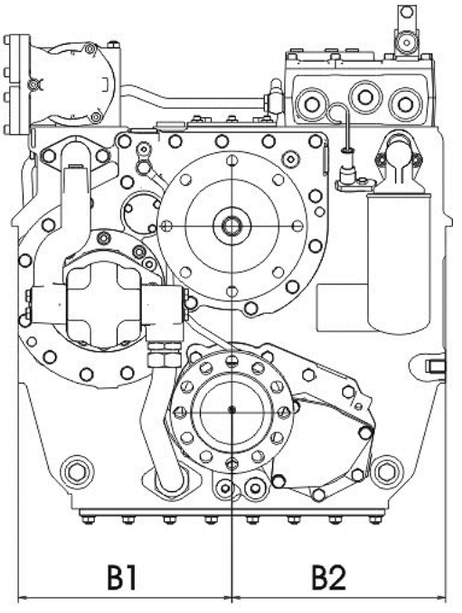
RATIOS	MAX. TORQUE		POWER/RPM		SAMPLE POWER CAPACITIES						MAX. RPM
	NM	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
					1800 rpm		1900 rpm		2100 rpm		
1.267*, 1.512*, 1.763, 2.029, 2.250*, 2.467, 2.714*	3047	2247	0.3191	0.4279	574	770	606	813	670	899	2600
2.920	2934	2164	0.3072	0.4120	553	742	584	783	645	865	2600
3.250*	2731	2014	0.2860	0.3835	515	690	543	729	601	805	2600

C Duty

RATIOS	MAX. TORQUE		POWER/RPM		SAMPLE POWER CAPACITIES						MAX. RPM
	NM	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
					1200 rpm		1600 rpm		1800 rpm		
1.267*, 1.512*, 1.763, 2.029, 2.250*, 2.467, 2.714*	2690	1984	0.2817	0.3777	338	453	451	604	507	680	2600
2.920	2435	1796	0.2550	0.3419	306	410	408	547	459	615	2600
3.250*	2065	1523	0.2162	0.2900	259	348	346	464	389	522	2600

ZF 2000 V

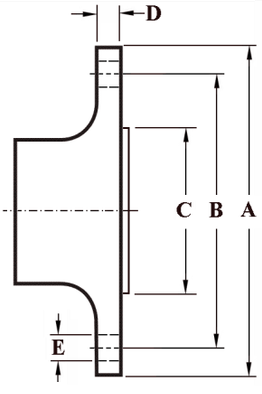




mm (inches)											
Angle	A	B_1	B_2	H_1	H_2	L	L_1	L_2	L_3	Bell Hsg.	L_4
10.0	280 (11.0)	320 (12.6)	320 (12.6)	167 (6.57)	575 (22.6)	375 (14.8)	394 (15.5)	200 (7.87)	50.0 (1.97)		111 (4.37)
Weight kg (lb)						Oil Capacity Litre (US qt)					
338 (745)						21.0 (22.3)					

Output Coupling Dimensions

A		B		C		D		Bolt Holes		
								No.	Diameter (E)	
mm	in	mm	in	mm	in	mm	in		mm	in
185	7.28	156	6.12	120	4.72	18.0	0.71	12	18.2	0.72



Refer to Installation Drawing for detailed dimensions.

Technical Notes

Duty Definitions

Duty	Description	Average Engine Operating Hours	Typical Hull Forms	Typical Applications
P Duty	Highly intermittent operation with very large variations in engine speed and power	500 hours/year 300 hours/year for mechanical transmissions	Planing.	Private, non-commercial, non-charter sport/leisure activities.
L Duty	Intermittent operation with large variations in engine speed and power	2500 hours/year (for hydraulic transmissions smaller than the ZF 650 series, 2000 hours/year).	Planing and semi-displacement.	Private and charter, sport/leisure activities, naval and police activities.
M Duty	Intermittent operation with some variations in engine speed and power	4000 hours/year. 3500 hours/year for gearboxes smaller than ZF 1900 series and workboat ZF W2700 series.	Semi-displacement and displacement.	Charter and commercial craft (example: crew boats and fast ferries), and naval and police activities
C Duty	Continuous operation with little or no variations in engine speed and power	Unlimited	Displacement.	Heavy duty commercial vessels, tugs, fishing boats.

Duty Ratings

Ratings apply to marine diesel engines at the indicated speeds. At other engine speeds, the respective power capacity (kW) of the transmission can be obtained by multiplying the Power/Speed ratio by the speed.
Approximate conversion factors:
1 kW = 1.36 metric hp
1 kW = 1.34 U.S. hp (SAE)
1 U.S. hp = 1.014 metric hp
1 Nm = 0.74 lb.ft.
Ratings apply to right hand turning engines, i.e. engines having counterclockwise rotating flywheels when viewing the flywheel end of the engine. These ratings allow full power through forward and reverse gear trains, unless otherwise stated.
Contact your nearest ZF Sales and Service office for ratings applicable to gas turbines, gasoline (petrol) engines, as well as left hand turning engines, and marine transmissions for large horsepower capacity engines.
Ratings apply to marine transmissions currently in production or in development and are subject to change without prior notice.

Safe Operating Notice

The safe operation of ZF products depends upon adherence to technical data presented in our brochures. Safe operation also depends upon proper installation, operation and routine maintenance and inspection under prevailing conditions and recommendations set forth by ZF. Damage to transmission caused by repeated or continuous emergency manoeuvres or abnormal operation is not covered under warranty. It is the responsibility of users and not ZF to provide and install guards and safety devices, which may be required by recognized safety standards of the respective country (e.g. for U.S.A. the Occupational Safety Act of 1970 and its subsequent provisions).

Monitoring Notice

The safe operation of ZF products depends upon adherence to ZF monitoring recommendations presented in our operating manuals, etc. It is the responsibility of users and not ZF to provide and install monitoring devices and safety interlock systems as may be deemed prudent by ZF. Consult ZF for details and recommendations.

Torsional Responsibility and Torsional Couplings

The responsibility for ensuring torsional compatibility rests with the assembler of the drive and driven equipment. ZF can accept no liability for gearbox noise caused by vibrations or for damage to the gearbox, the flexible coupling or to other parts of the drive unit caused by this kind of vibration. Contact ZF for further information and assistance. ZF recommends the use of a torsional limit stop for single engine powered boats, wherein loss of propulsion power can result in loss of control. It is the buyer's responsibility to specify this option, which can result in additional cost and a possible increase in installation length.
ZF can accept no liability for personal injury, loss of life, or damage or loss of property due to the failure of the buyer to specify a torsional limit stop. ZF selects torsional couplings on the basis of nominal input torque ratings and commonly accepted rated engine governed speeds. Consult ZF for details concerning speed limits of standard offering torsional couplings, which can be less than the transmission limit. Special torsional couplings may be required for Survey Society Ice Classification requirements.

Classification

In most cases, the maximum medium and continuous duty ratings permittcd by ZF are accepted in full by major classification societies. If classification is required, contact ZF regarding proper procedures (also for yacht service, and ice classifications).

Trolling Valves

Trolling valves are available as an option on most models of marine transmissions. In most cases, trolling valves are easily retrofitted. A thermostatic oil by-pass valve and remote oil cooler may be required to maintain proper operation and recommended oil temperature. Consult ZF for details and limits.

Non Reversing and 'U' Drive Options

In principle, all transmissions are available as non-reversing units (for instance, for controllable pitch propeller applications). Many parallel shaft transmissions can also be supplied with input and output on the same side (U-drive). Consult ZF for details.

Power Take Offs (PTO's)

All PTO'S are retrofittable except where stated otherwise. Most transmissions can be offered with clutchable or permanently driven (live) PTO'S. Consult ZF for details and limits.