

0438849387

SHANE LOFTS T/A BILGE RATS

A.B.N. 61 873 144 783
PO BOX 167 TIN CAN BAY QLD 4580
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Invoice No.: BQU6056
Date: 26/02/2014

RAY SAMPSON
5 SCULLET DRIVE
COOLOOLA COVE QLD 4580

Deliver To:
EMAIL INVOICE

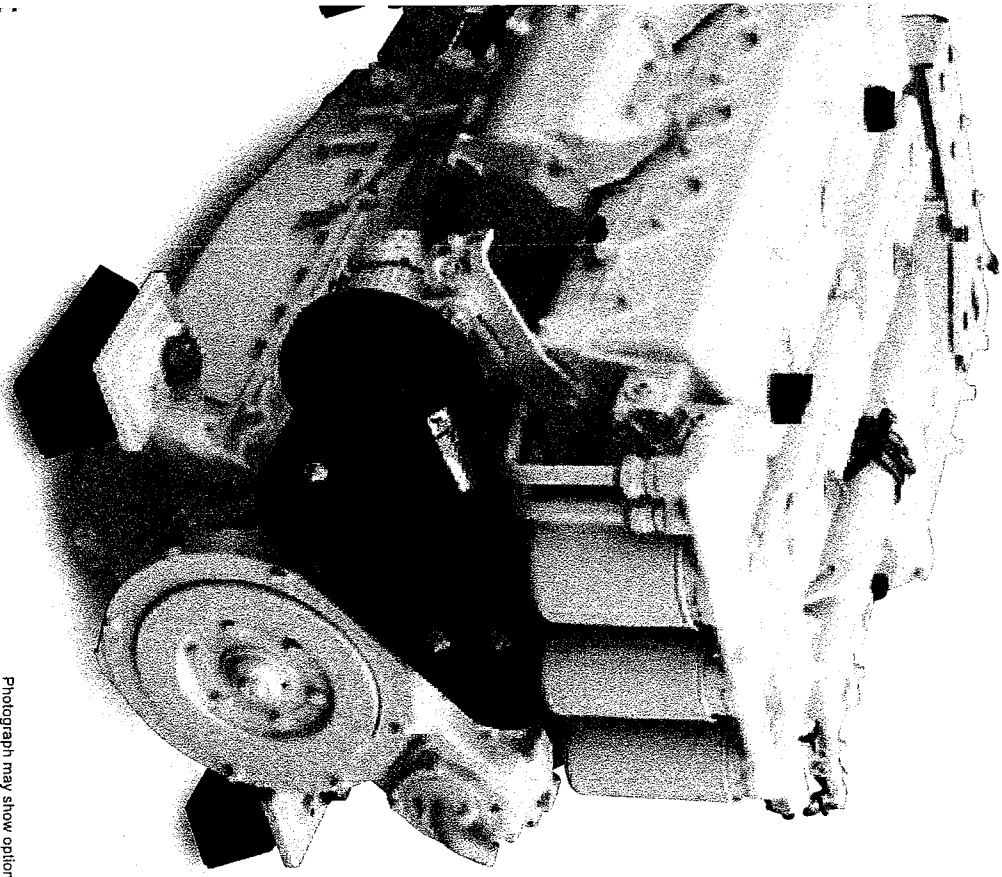
Quotation

Description	Unit Price	Quantity	GST	Total
6CXBM-GT BOBTAIL 464MHP @ 2700 RPM 24 VOLT 4 X FLEXIBLE ENGINE MOUNTS EXHAUST GAS TEMP GAUGE 2 X 6 METRE HARNESS 2 POLE WIRING 2 POLE STOP SOLENOID TURBO MOUNTED 90 DEGREE ELBOW LUBE OIL EVACUATION PUMP YELLOW INFORMATION PACK.	77564.30	2	14102.60	155128.60
COMPLETE WITH CLOSE COUPLED ZF286-IV V-DRIVE MARINE TRANSMISSION WITH 2.01:1 RATIO				
STAINLESS STEEL ELBOW Please note that this is just the mixer section. The elbow is not included, Boat Builder supply subject to exhaust height requirements.	1000.45	2	181.90	2000.90
OIL FILL - 33 LITRES	123.58	2	22.47	247.16
COOLANT FILL - 40.5 LITRES	178.90	2	32.53	357.80

INCLUSIVE IN THE PRICE OF THE ENGINE IS FREIGHT
CHARGES.
THIS QUOTE IS VALID UNTIL 28/03/14

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Total excluding GST	\$143394.96
GST	\$14339.50
Total including GST	\$157734.46
Amount Received	\$0.00
Invoice Balance	\$157734.46



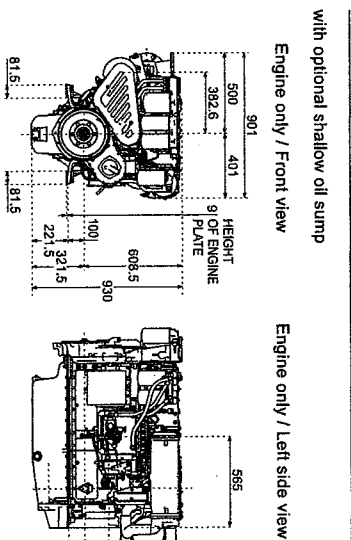
Photograph may show optional equipment.

Cooling system		With Heat exchanger
Cooling fresh water capacity	lit.	40.5 + 3.4 (reservoir tank)
Lubricating system		Forced lubrication with gear pump
Lubricating oil capacity	lit.	33 (standard sump) / 22 (shallow sump)
Lubricating oil grade		SAE15W-40
Starting system		Electric starting motor (DC 24V-5kW)
Flywheel housing size	inch	SAE #3 and 11-1/2
Dry weight	kg	856

Marine Gear Specifications

Engine Model	6CXBΜ-GT	
Marine gear model	YX-75	
Type	Hydraulic multi-disc clutch	
Reduction ratio	2.07	
Direction of rotation	Clockwise or Counter-clockwise viewed from stern	
Dry weight	kg	204

Dimensions (Unit: mm)

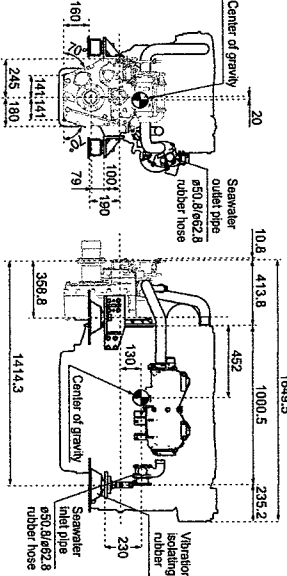


Engine only / Front view

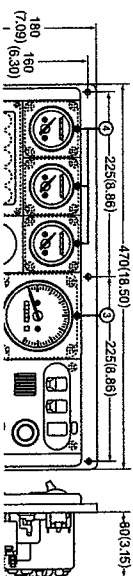
Engine only / Left side view

With YX75 gearbox / Rear view

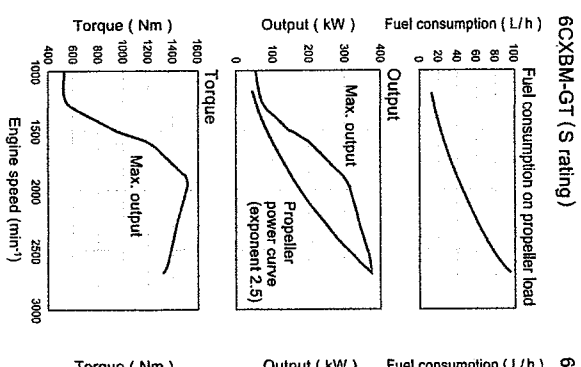
With YX75 gearbox / Right side view



Detail of instrument panel D-type (Unit: mm)

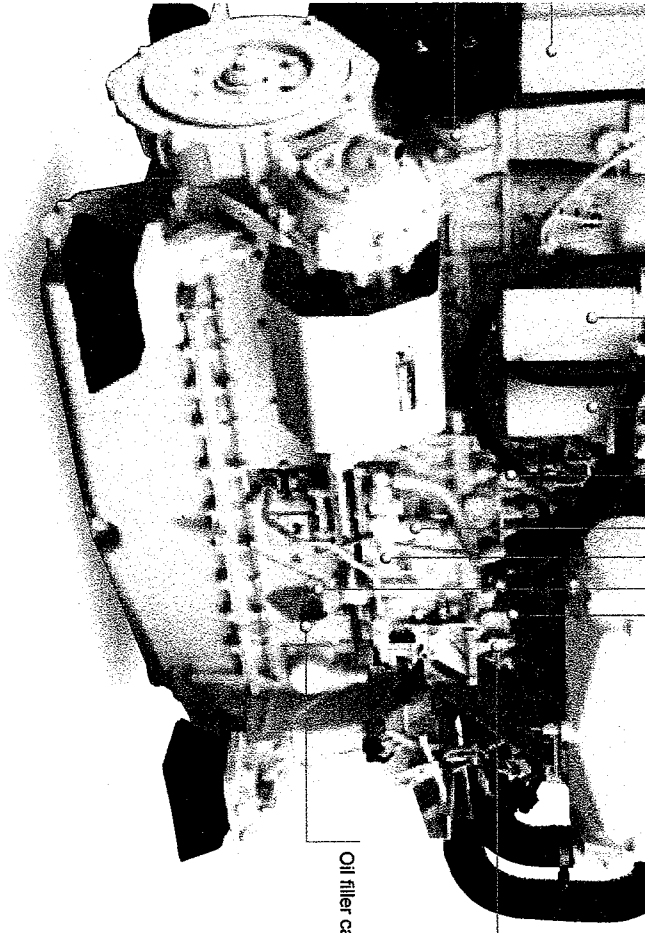


Performance Curves



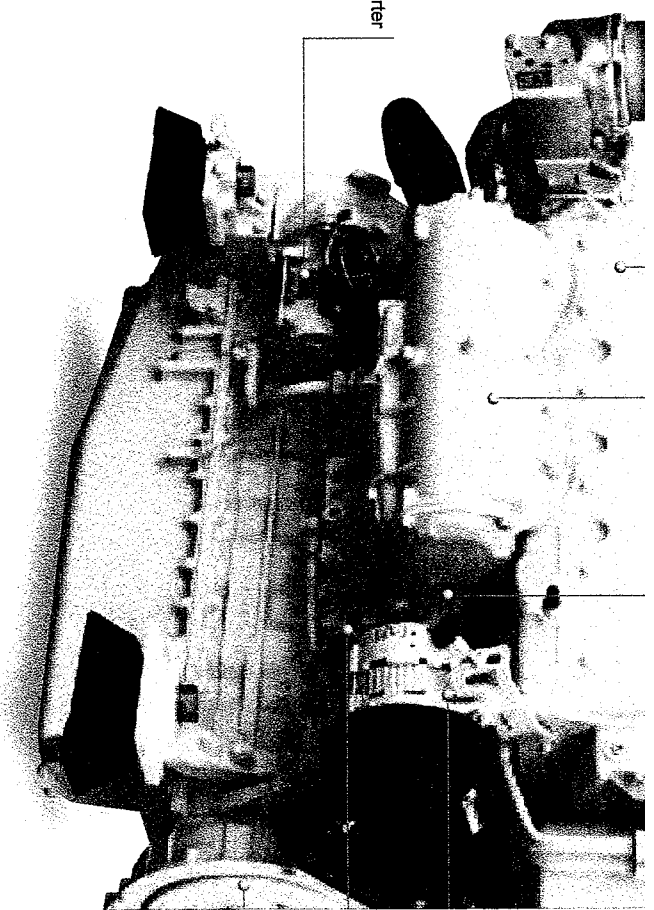
Rating definitions : hp=0.7355kW Ratings are based on cor S=For applications where use of rated power is less than 30 and operation is less than 1000 hours per year. When cont which allows the engine rated speed to be achieved in a full the reduced-power operation can be at or below 100 rpm of L=For applications where use of rated power is less than 21 and operation is less than 2000 hours per year. When cont which allows the engine rated speed to be achieved in a full the reduced-power operation can be at or below 100 rpm of Fuel rates : Specific gravity 0.835g/cc, low calorific value 42

- ① Switch unit
- ② Alarm lamp unit with Alarm monitor device
- ③ Key switch
- ④ Alarm buzzer
- ⑤ Alarm buzzer stop switch
- ⑥ Battery not charging
- ⑦ C.W. high temp.
- ⑧ L.O. low pressure
- ⑨ Clutch oil pressure
- ⑩ Illumination



Boost compensator

Oil filler cap



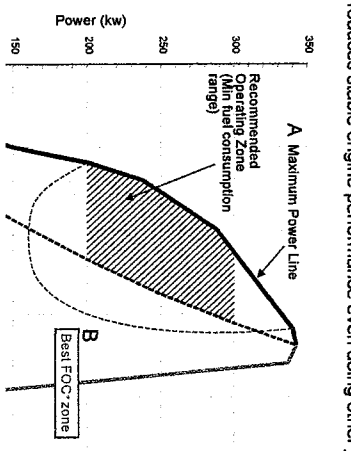
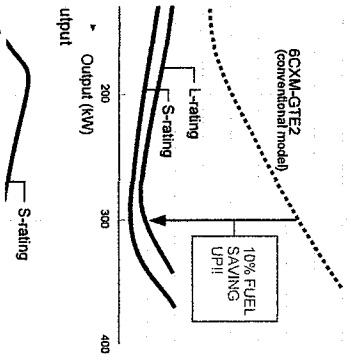
Starter

High Torque

Excellent Torque-Rise Characteristics in High Speed and High Load Range Enable Stable Performance of Job Duties even at High Load

The Engine Performance Gives Following Advantages:

1. The engine torque-rise characteristics having much in reserve.
→Stable cruising with least speed reduction against sudden load changes.
2. Wide Max. Power Range. (Line A)
→A wide range propeller matching, from the passenger ship (light/medium duty) to tug boat (heavy duty), is possible.
3. Min. Fuel Consumption Range is Wide. (Line B) [Best FOC zone]
→Economical with wide min. fuel consumption range both during cruising or performing job duties. * FOC: Fuel Oil Consumption
4. Wide Medium Load Range. (Line C)
→Produces stable engine performance even doing other job duties.

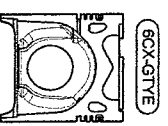


Toughness

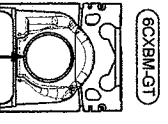
Purpose built marine engine with replaceable cylinder liners, water cooled exhaust manifold and type approved.



The fatigue strength against cylinder pressure & torsional vibration is improved by raising the pin diameter.



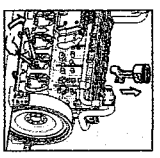
The fatigue strength of piston-pin-boss is improved by using the bush.



Lower Down Time

Easier Routine Inspection, Easier Maintenance.

Large inspection windows on the side of the block allow in-site replacement of pistons. Lubo Oil filler is easy-to-replace cartridge type. Full mechanical engine management avoids the chance of delicate and expensive electronics falling in hot, marine engine room conditions. 500 hours service interval.



YANMAR origin: marine gear that can be adal to a wide range of applications

YANMAR provides our origin which enables us to supply the marine engineering & service

- **High-Performance Marine**
YANMAR's original marine gear is performance of YANMAR engines.
- **Cast Iron Gear Case (Appl)**
For heavy duty applications.
- **Damping of Fluctuating To**
High-performance coupling reduce that is input to the marine gear. Th torsional vibration to protect the pc
- **Accessories**
Optional Trolling Device.
Propeller shaft half coupling (cour

High capacity front PTO

400

Take Off Method

210
170
YANMAR original rubber

ZF 286 IV

Technical Notes

Duty Definitions

PLEASURE DUTY DEFINITION Highly intermittent operation with very large variations in engine speed and power

Average engine operating 500 hours/year
hours limit: 300 hours/year for mechanical gearboxes

Typical hull forms: Planing.

Typical applications: Private, non-commercial, non-charter sport/leisure activities.

LIGHT DUTY DEFINITION Intermittent operation with large variations in engine speed and power

Average engine operating 2500 hours/year
hours limit: (for hydraulic gearboxes smaller than the ZF 650 series, 2000 hours/year).

Typical hull forms: Planing and semi-displacement.

Typical applications: Private and charter, sport/leisure activities, naval and police activities.

MEDIUM DUTY DEFINITION Intermittent operation with some variations in engine speed and power

Average engine operating 4000 hours/year.
hours limit: 3500 hours/year for gearboxes smaller than ZF 2000 series and workboat ZF W2700 series.

Typical hull forms: Semi-displacement and displacement

Typical applications: Charter and commercial craft (example: crew boats and fast ferries), and naval and police activities.

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.

NOTE: THE MAXIMUM RATED INPUT POWER MUST NOT BE EXCEEDED (SEE RESPECTIVE RATINGS IN THE TECHNICAL DATA SHEETS)

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

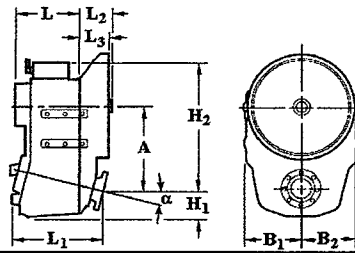
The responsibility for ensuring torsional compatibility rests with the assembler of the drive and driven equipment. ZF can accept no liability for gearbox noise caused by vibrations or for damage to the gearbox, the flexible coupling or to other parts of the drive unit caused by this kind of vibration. 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.



ZF 286 IV

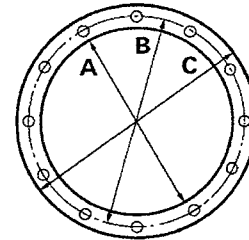
Dimensions



mm (inches)										
Angle	A	B ₁	B ₂	H ₁	H ₂	L	L ₁	L ₂	L ₃	Bell Hsg.
14.0	358 (14.1)	185 (7.28)	225 (8.86)	100 (3.94)	-	212 (8.35)	322 (12.7)	165 (6.50)	223 (8.76)	
Weight kg (lb)					Oil Capacity Litre (US qt)					
130 (286)					5.00 (5.30)					

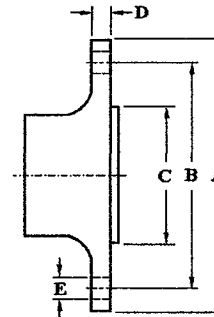
SAE Bell Housing Dimensions

SAE No.	A		B		C		Bolt Holes No.	Bolt Holes Diameter	
	mm	in	mm	in	mm	in		mm	in
1	511.18	20.125	530.23	20.875	552.45	21.75	12	11.91	15/32
2	447.68	17.625	466.73	18.375	488.95	19.25	12	10.32	13/32
3	409.58	16.125	428.63	16.875	450.85	17.75	12	10.32	13/32



Output Coupling Dimensions

A		B		C		D		Bolt Holes No.	Bolt Holes Diameter (E)	
mm	in	mm	in	mm	in	mm	in		mm	in
146	5.75	121	4.75	76.2	3.00	14.0	0.55	6	16.2	0.64



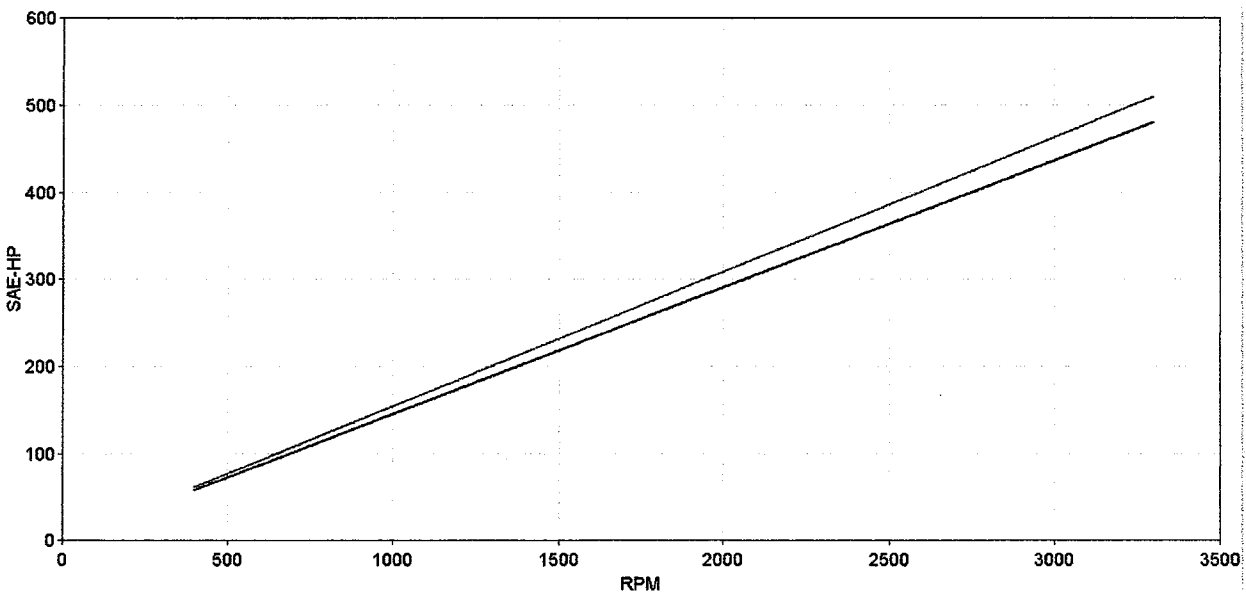
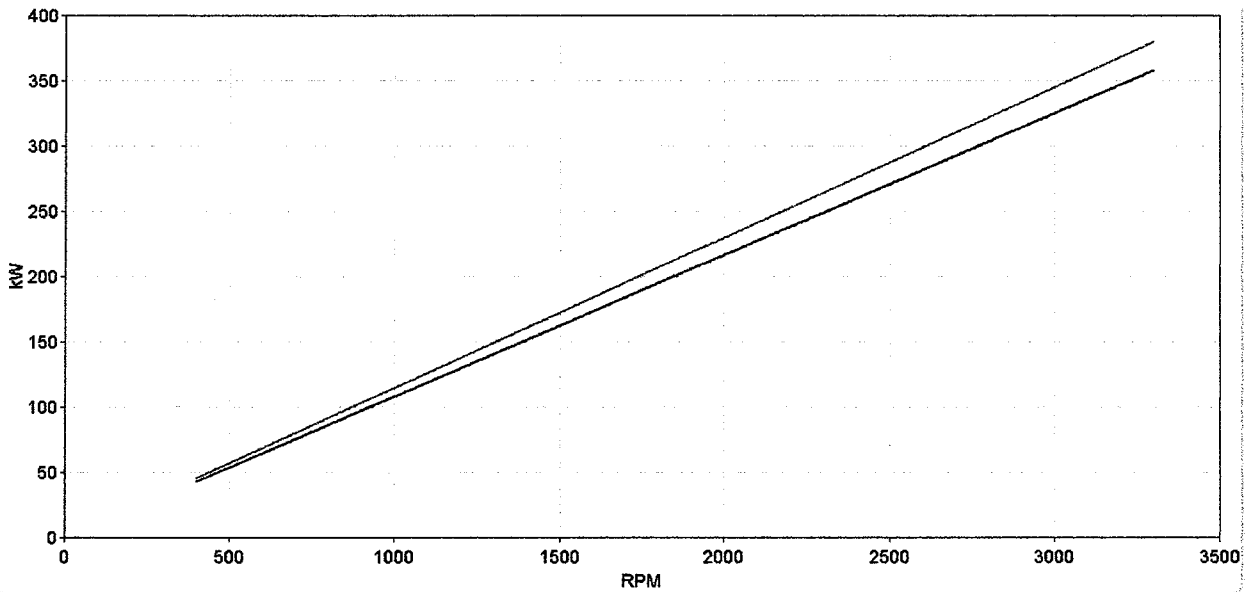
ZF 286 IV

Ratings

Medium Duty

RATIOS	MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
	Nm	ftlb	kW	hp	2100 rpm		2500 rpm		2800 rpm		
					kW	hp	kW	hp	kW	hp	
■ 1.266, 1.535, 1.815, 2.011	1100	811	0.1152	0.1545	242	324	288	386	323	432	3300
■ 2.322	1037	765	0.1086	0.1456	228	306	271	364	304	408	3300
□ 2.539	1006	742	0.1053	0.1413	221	297	263	353	295	396	3300

* Special Order Ratio.



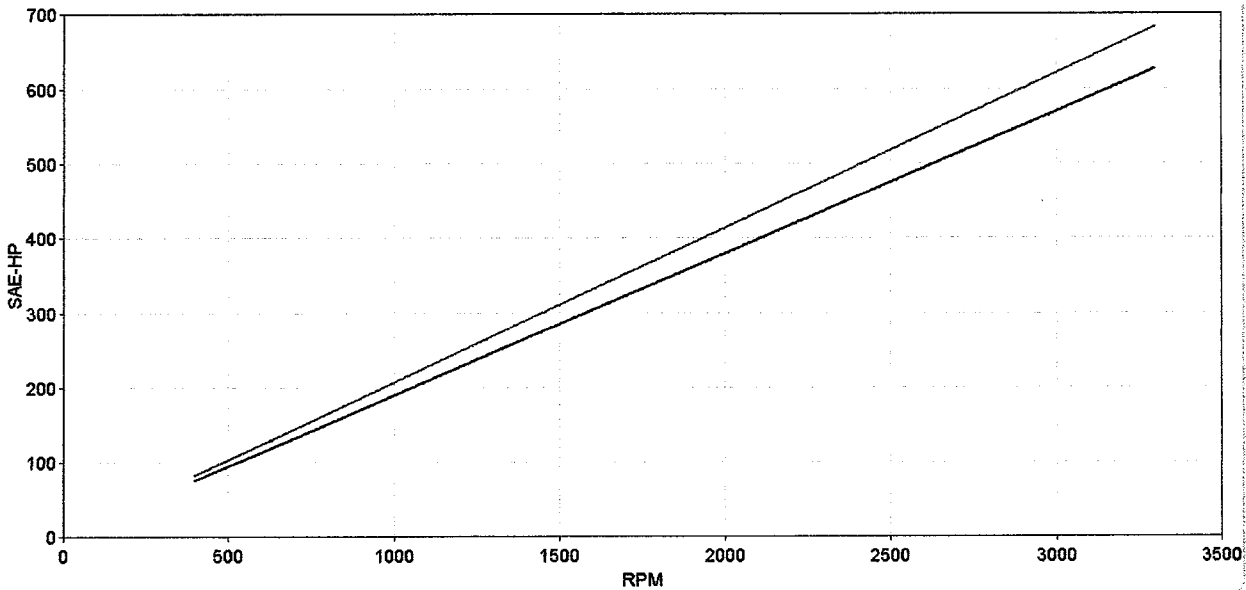
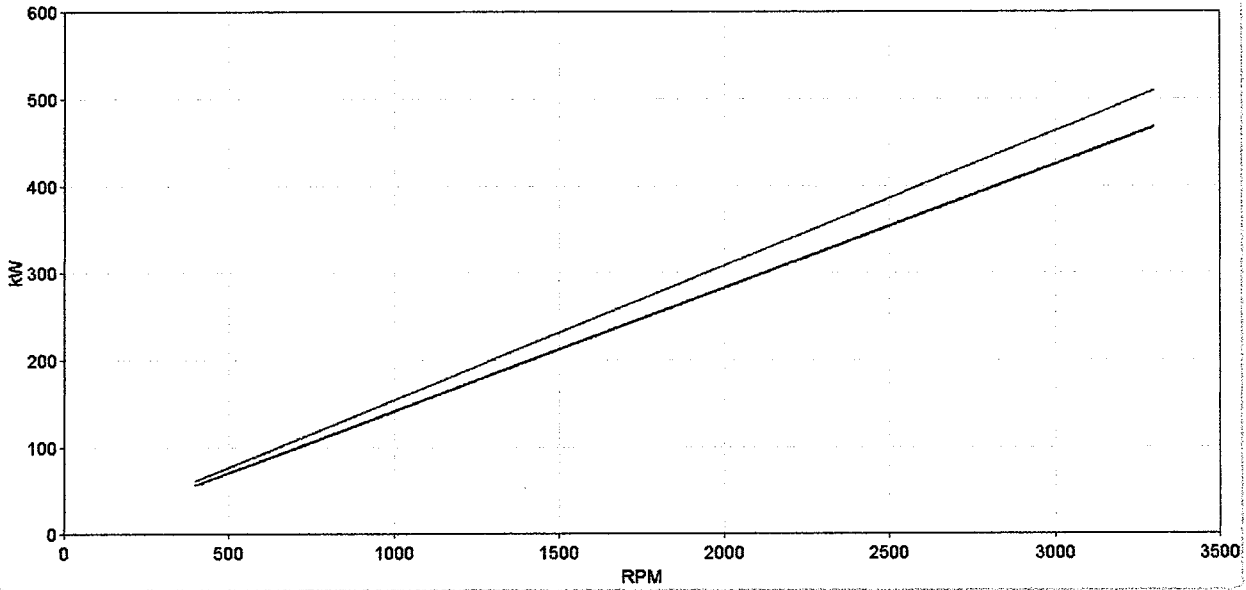
ZF 286 IV

Ratings

Light Duty

RATIOS	MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
	Nm	ftlb	kW	hp	2100 rpm		2500 rpm		2800 rpm		
					kW	hp	kW	hp	kW	hp	
■ 1.266, 1.535, 1.815, 2.011	1475	1088	0.1545	0.2071	324	435	386	518	432	580	3300
■ 2.322	1353	998	0.1417	0.1900	298	399	354	475	397	532	3300
□ 2.539	1310	966	0.1372	0.1840	288	386	343	460	384	515	3300

* Special Order Ratio.



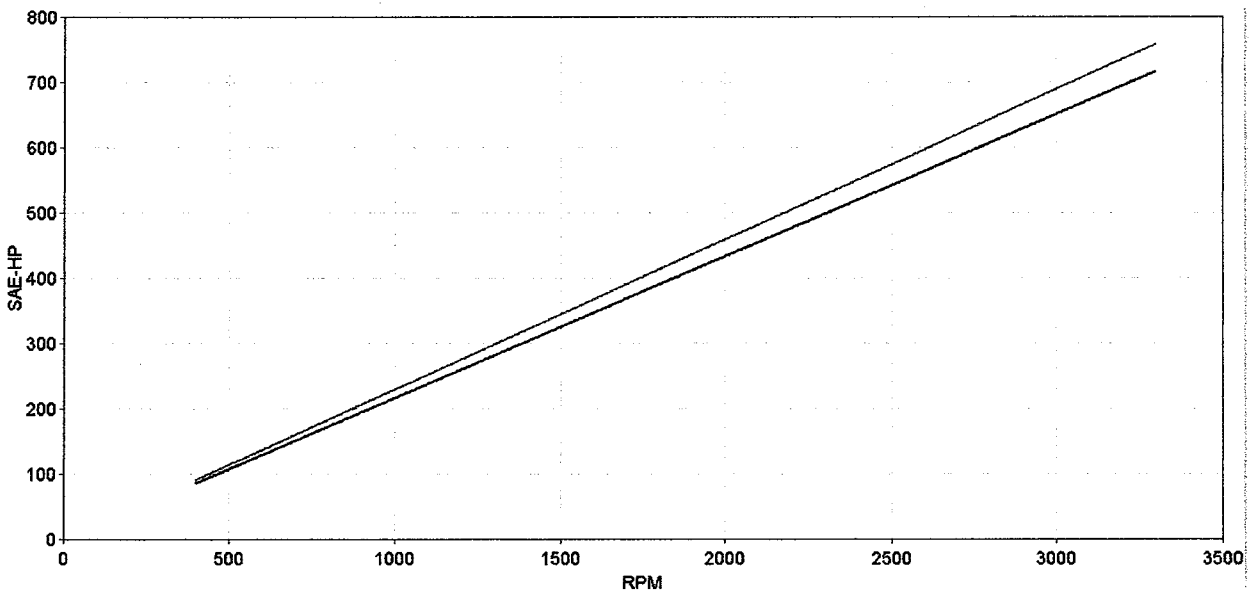
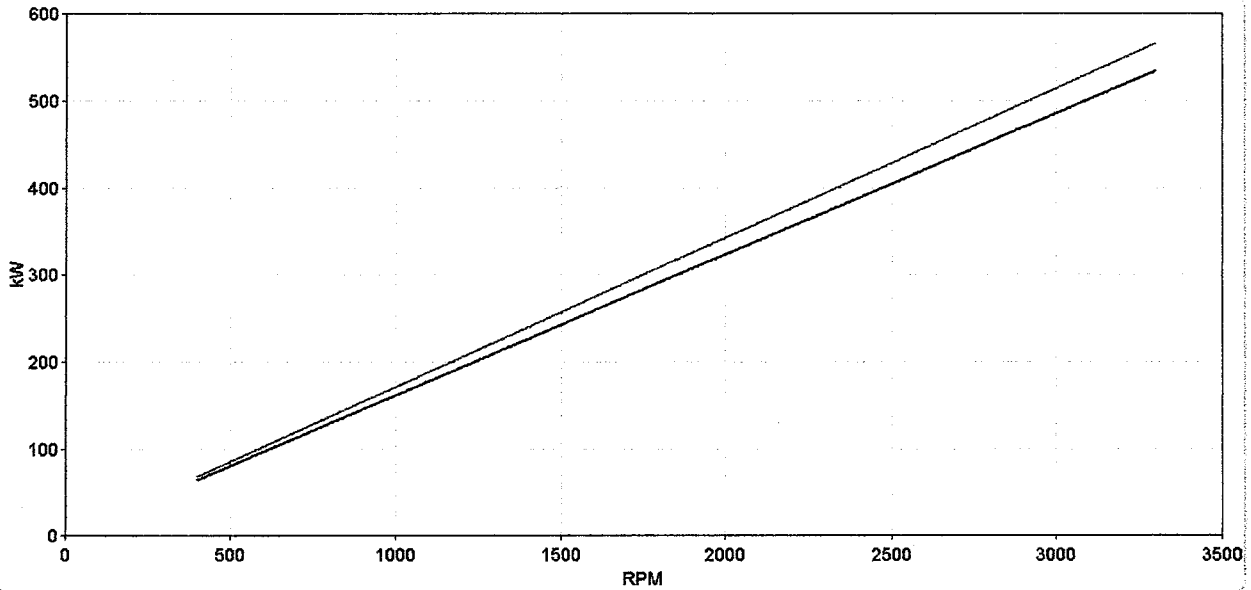
ZF 286 IV

Ratings

Pleasure Duty

RATIOS	MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
	Nm	ftlb	kW	hp	2500 rpm		2800 rpm		3300 rpm		
					kW	hp	kW	hp	kW	hp	
■ 1.266, 1.535, 1.815, 2.011	1638	1208	0.1715	0.2300	429	575	480	644	566	759	3300
■ 2.322	1547	1141	0.1620	0.2172	405	543	454	608	535	717	3300
□ 2.539	1424	1050	0.1491	0.2000	373	500	418	560	492	660	3300

* Special Order Ratio.





ZF 286 IV

14° V-drive, direct mount marine transmission.

Description

- Reverse reduction marine transmission with hydraulically actuated multi-disc clutches .
- Suitable for high performance applications in luxury motoryachts, sport fishers, express cruisers etc .
- Robust design also withstands continuous duty in workboat applications .
- Fully works tested, reliable and simple to install .
- Compatible with all types of engines and propulsion systems, including waterjets and surface- piercing propellers, as applicable .
- Design, manufacture and quality control standards comply with ISO 9001 .

Features

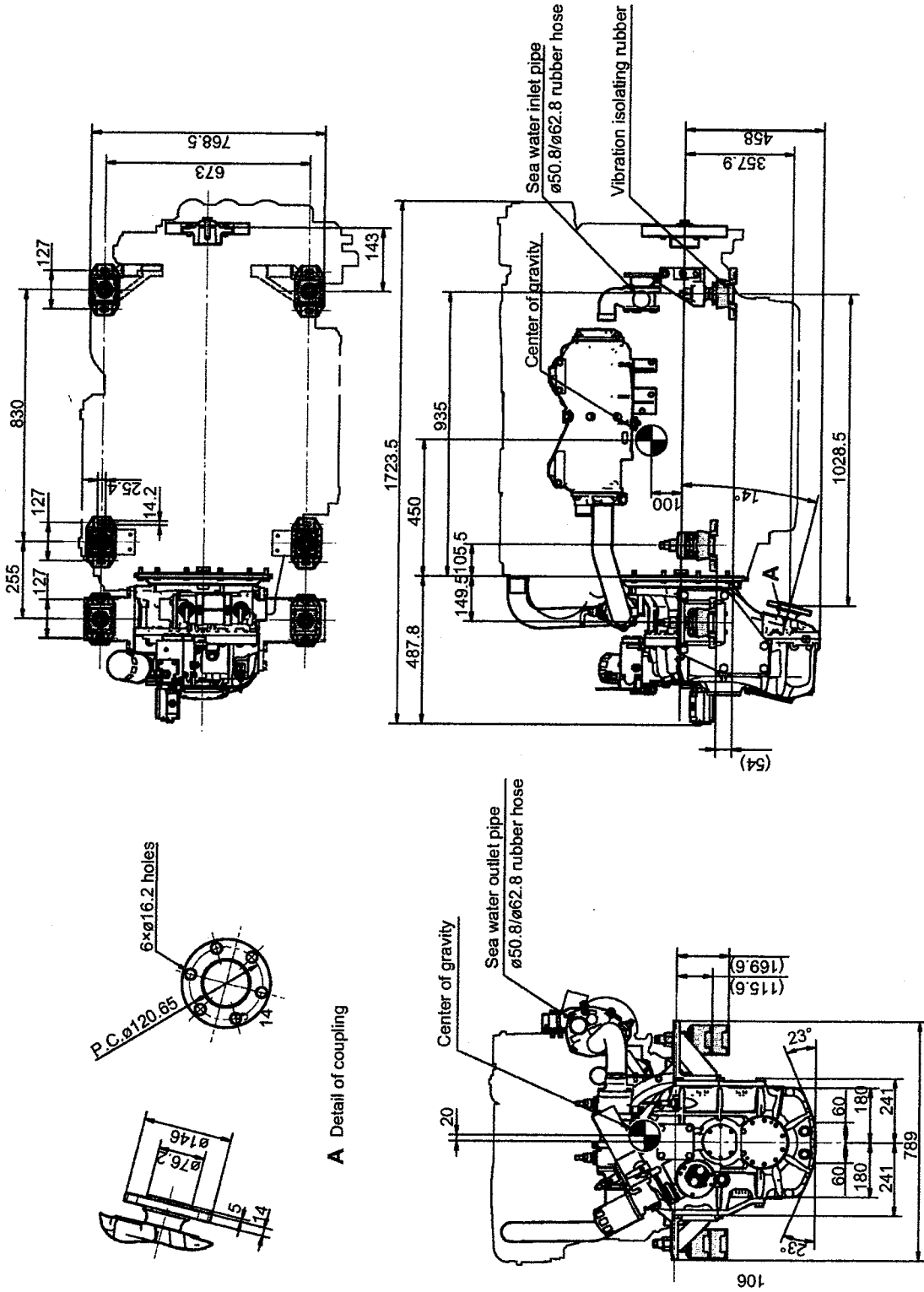
- Lightweight and robust aluminum alloy casing (sea water resistant) .
- Case hardened and precisely ground gear teeth for long life and smooth running .
- Output shaft thrust bearing designed to take maximum propeller thrust astern and ahead .
- Smooth and reliable hydraulic shifting with control lever for attachment of push-pull cable .
- Suitable for twin engine installations (same ratio and torque capacity in ahead or astern mode) .
- Replaceable oil filter cartridge .
- "SUPERSHIFT" clutch control .

Options

- SAE 1, SAE 2 and SAE 3 bell housings .
- Engine-matched torsional coupling .
- Electric clutch control (12 or 24 VDC) .
- Oil cooler complete with fittings and flexible oil hoses .
- Propeller shaft flange and coupling bolt sets .
- Mounting brackets .
- Classification by all major Classification Societies on request .
- Mechanical or Electrical Trolling Valve for slow-speed drive .
- Supershift (with Autotroll and Easidock) .

Draw. 5 6CXBM-GT with ZF286IV outline and Barry vibration isolation mounting (for reference)
 Only the standard oil pan can correspond to ZF286IV

DWG. No. B2-27699-0010 (7/7)
 0.33965-00801



Barry vibration isolation mounting	
Barry P/N	27391-5
Discrimination	white

Shaft Diameter	
Max. Diameter	65mm or below

*For holding the clearance 20mm or above between the bottom of the oil pan and the propeller shaft.

Eng.model	M/G model
6CXBM-GT	ZF286IV
Total mass (approx.) 988 kg	

Draw 5 6CXBM-GT with ZF286IV outline and Barry vibration isolation mounting (for reference)
 Only the standard oil pan can correspond to ZF286IV

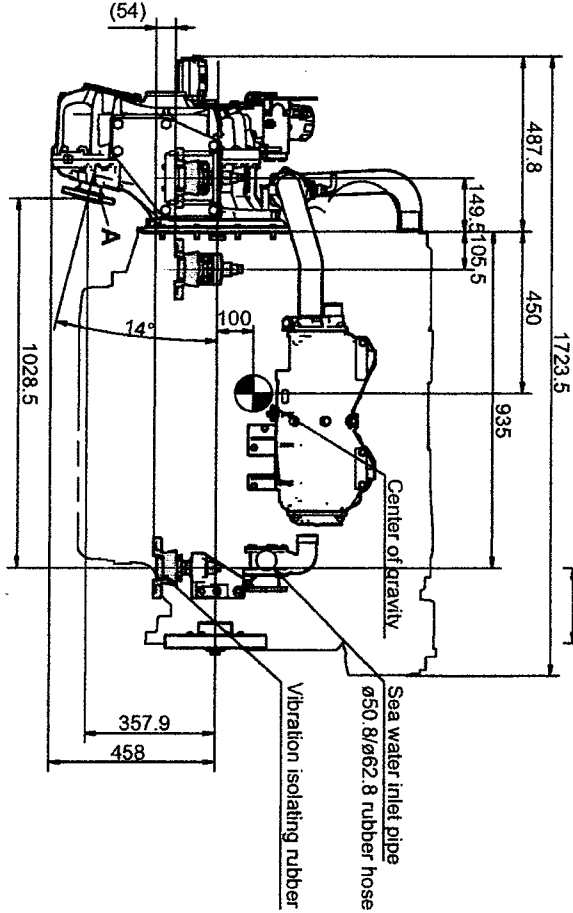
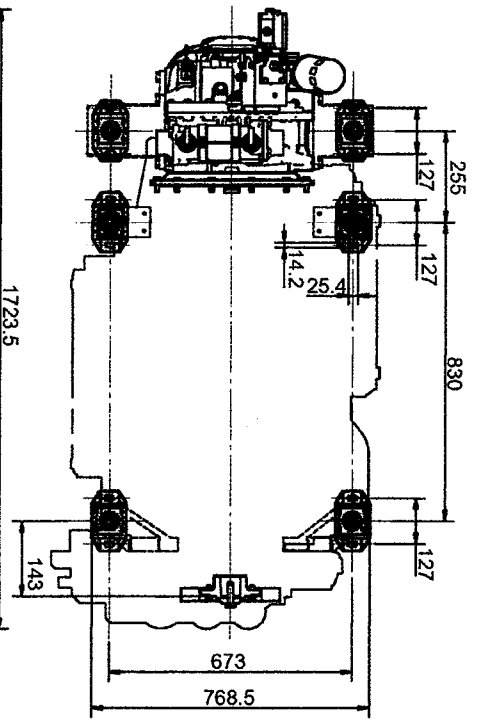
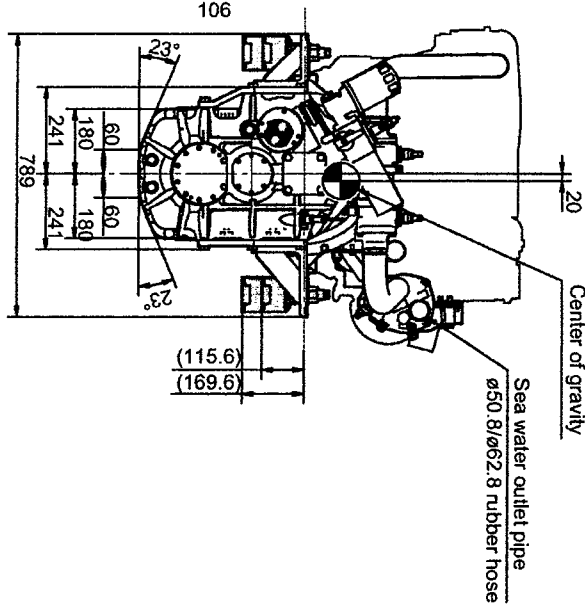
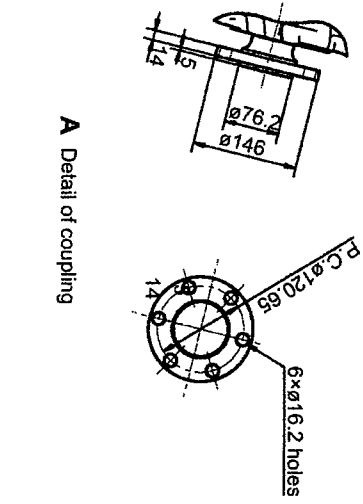
Barry P/N	27391-5	Discrimination	White
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Shaft Diameter

Max. Diameter	65mm or below
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*For holding the clearance 20mm or above

Eng.model	6CXBM-GT	Total mass (approx.)	988 kg
M/G model	ZF286IV		



DWG. No. B2-27699-0010 (7/7)
 033969-00EN1

propeller shaft.