



ZF 10 M

Vertical offset, direct mount marine transmission.

Description

- Reverse reduction marine transmission with mechanically actuated multi-disc clutches .
- Suitable for high performance applications in luxury sailboats, motoryachts, fishing boats, etc. .
- Robust design also withstands continuous duty in workboat applications .
- Fully works tested, reliable and simple to install .
- 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 .
- Compact, space saving design .



Options

- Engine-matched torsional coupling .
- BW, SAE 4, SAE 5 and SAE 6 bell housings .
- Oil cooler. To be used when input power exceeds following values: - Pos. «A» not required - Pos. «B» 25kW .
- Control cable bracket for mounting of push-pull cable to the control lever .
- Classification by all major Classification Societies on request .

ZF 10 M

Ratings

Pleasure Duty

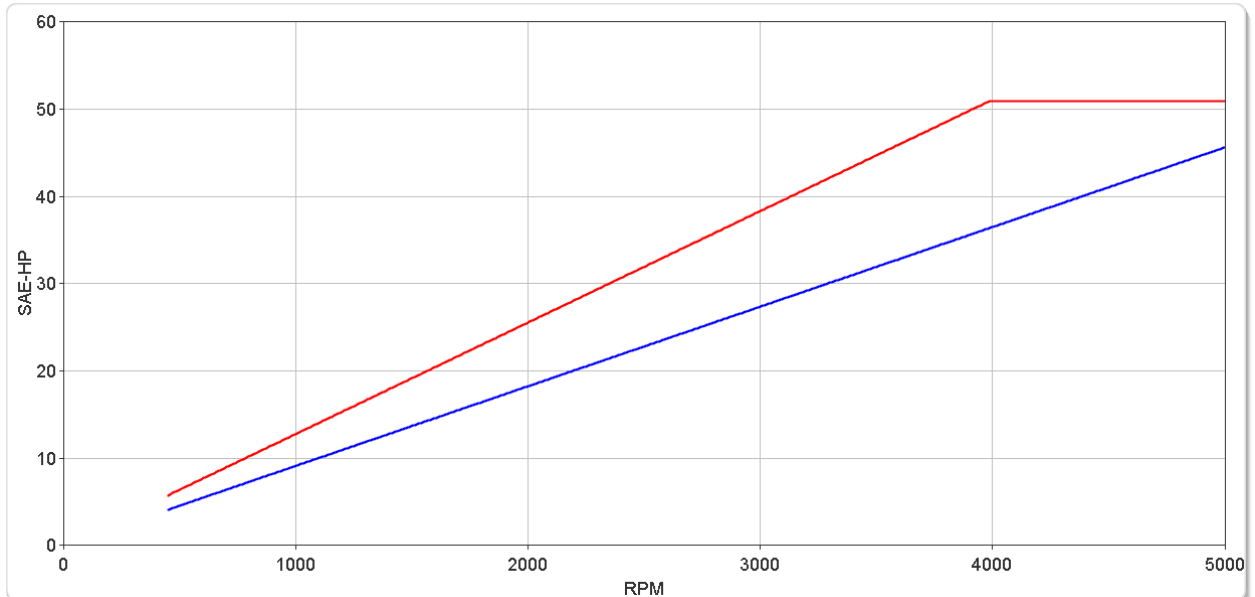
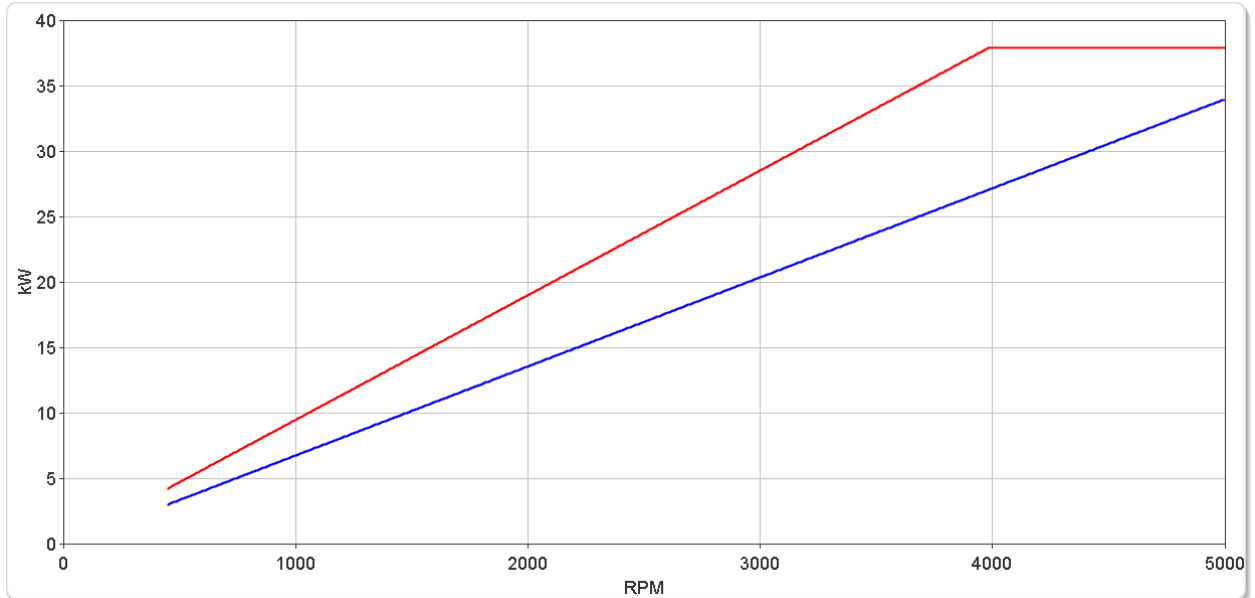
RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	2800 rpm		3000 rpm		3600 rpm		
	2.045	1.864		91	67	0.0095	0.0128	27	36	29	38	34	46	5000
	2.722	2.150		65	48	0.0068	0.0091	19	26	20	27	25	33	5000

Ratio 2.045 Max input power 38 kW, Ratio 2.722 Max input power 34 kW

'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.

For all "M" (Mechanical) transmissions reduce power capacity by the following shock factors:



1 cylinder engine ÷ 1.25, 2 cylinder engine ÷ 1.20, 3 cylinder engine ÷ 1.15



ZF 10 M

Ratings

Light Duty

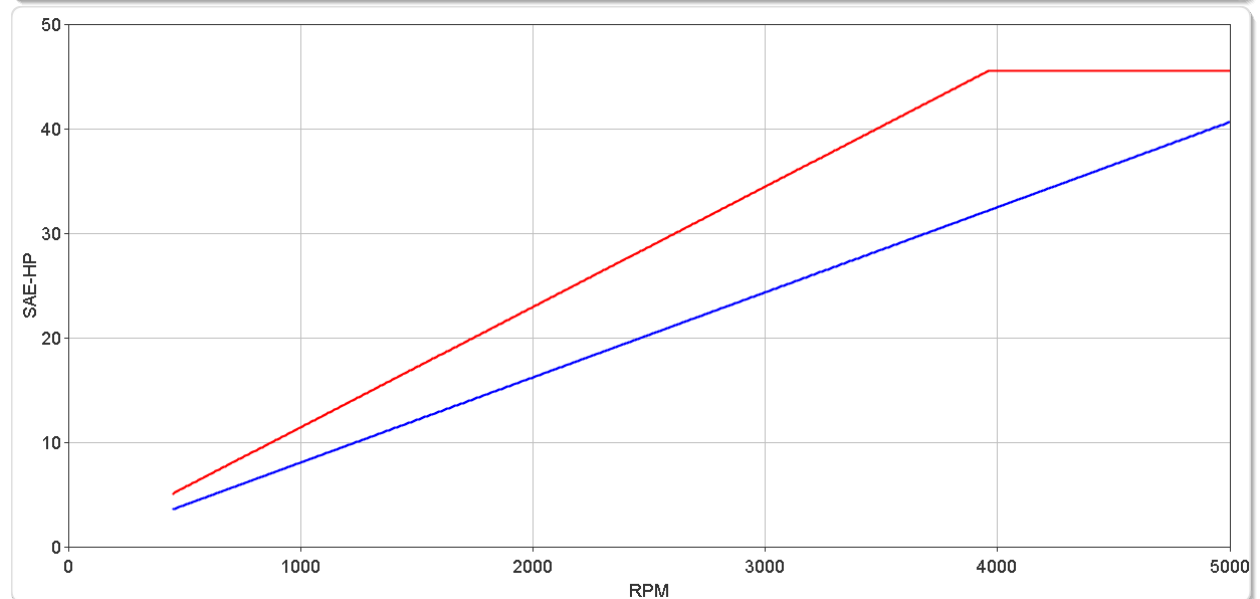
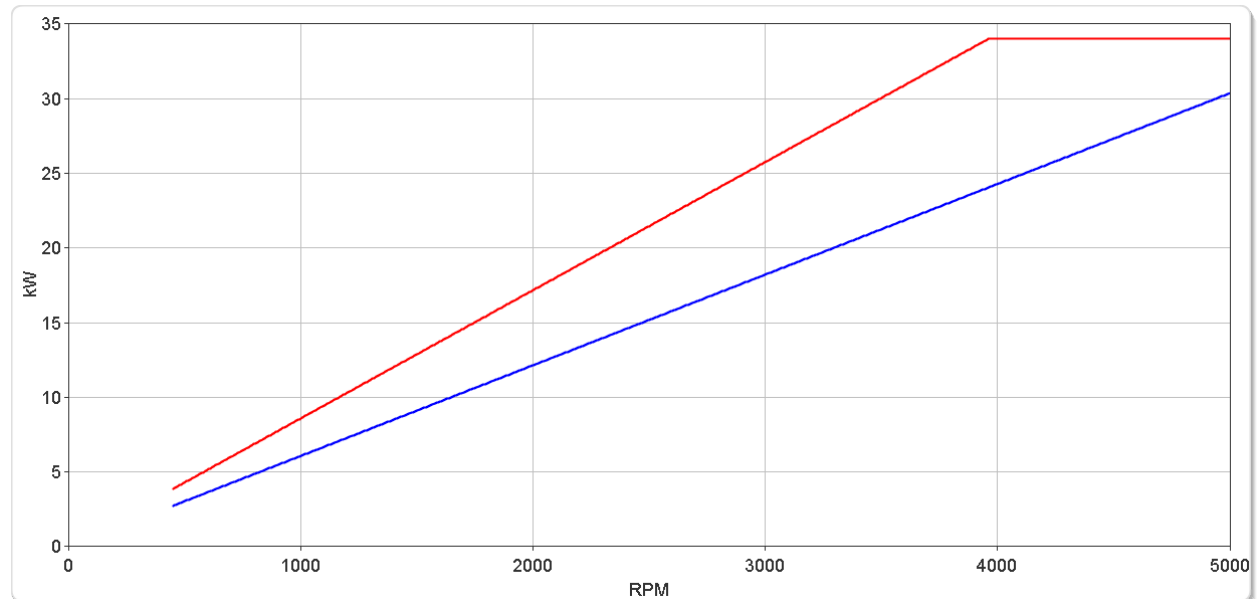
RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	2800 rpm		3000 rpm		3600 rpm		
	2.045	1.864		82	60	0.0086	0.0115	24	32	26	35	31	41	5000
	2.722	2.150		58	43	0.0061	0.0081	17	23	18	24	22	29	5000

Ratio 2.045 Max input power 34 kW, Ratio 2.722 Max input power 32 kW

'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.

For all "M" (Mechanical) transmissions reduce power capacity by the following shock factors:



1 cylinder engine + 1.25, 2 cylinder engine + 1.20, 3 cylinder engine + 1.15



ZF 10 M

Ratings

Medium Duty

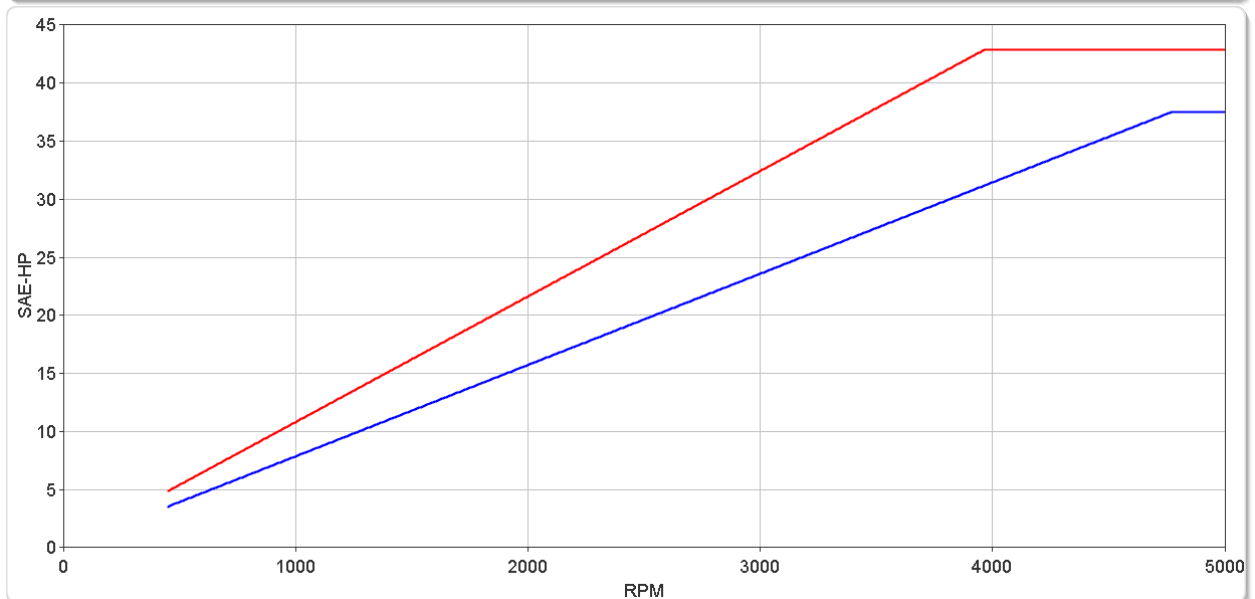
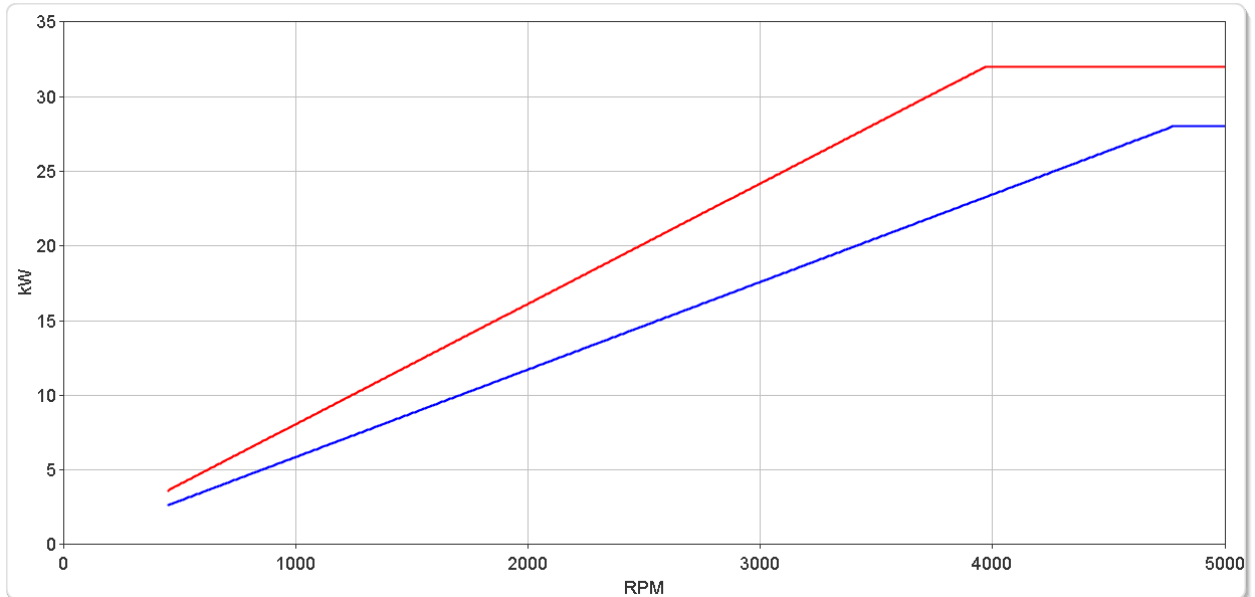
RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	2100 rpm		2500 rpm		2800 rpm		
	2.045	1.864		77	57	0.0081	0.0108	17	23	20	27	23	30	5000
	2.722	2.150		56	41	0.0059	0.0079	12	17	15	20	16	22	5000

Ratio 2.045 Max input power 32 kW, Ratio 2.722 Max input power 28 kW

'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.

For all "M" (Mechanical) transmissions reduce power capacity by the following shock factors:



1 cylinder engine + 1.25, 2 cylinder engine + 1.20, 3 cylinder engine + 1.15



ZF 10 M

Ratings

Continuous Duty

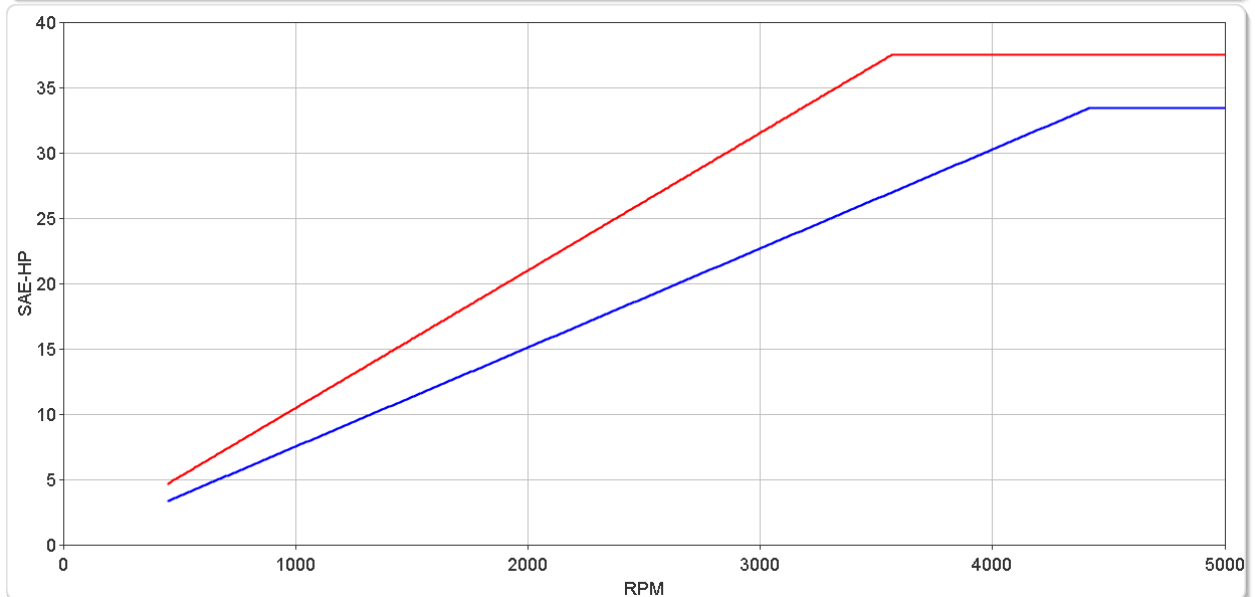
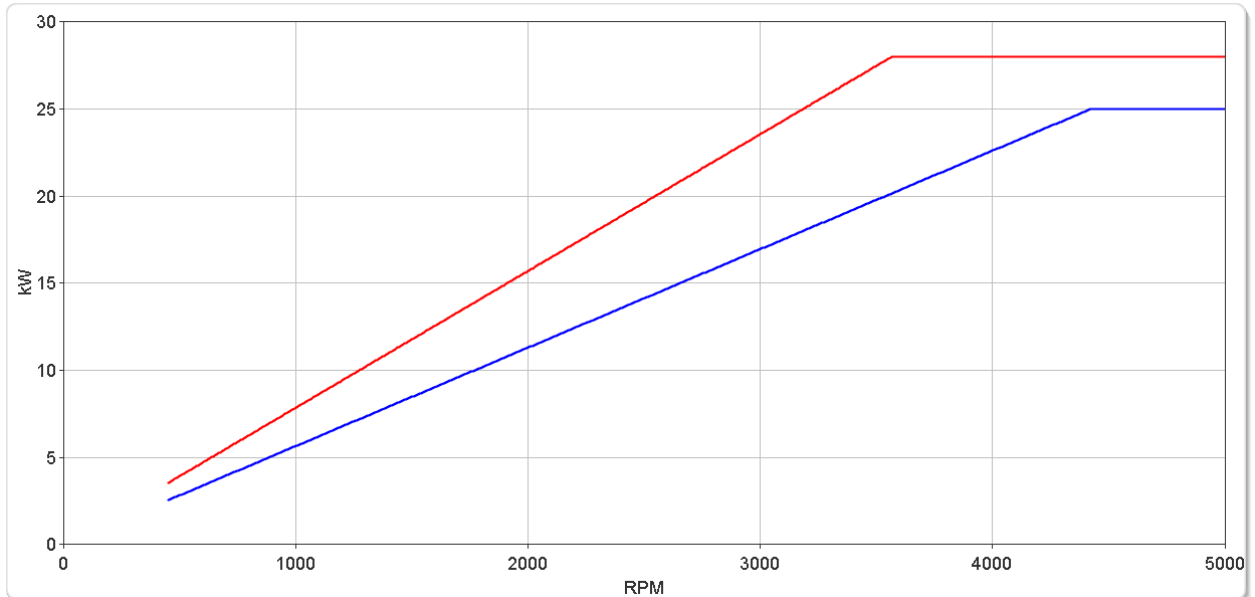
RATIOS			MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos	Nm	ftlb	kW	hp	1800 rpm		2300 rpm		2600 rpm		
	2.045	1.864	75	55	0.0079	0.0105	14	19	18	24	20	27	5000
	2.722	2.150	54	40	0.0057	0.0076	10	14	13	17	15	20	5000

Ratio 2.045 Max input power 28 kW, Ratio 2.722 Max input power 25 kW

'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.

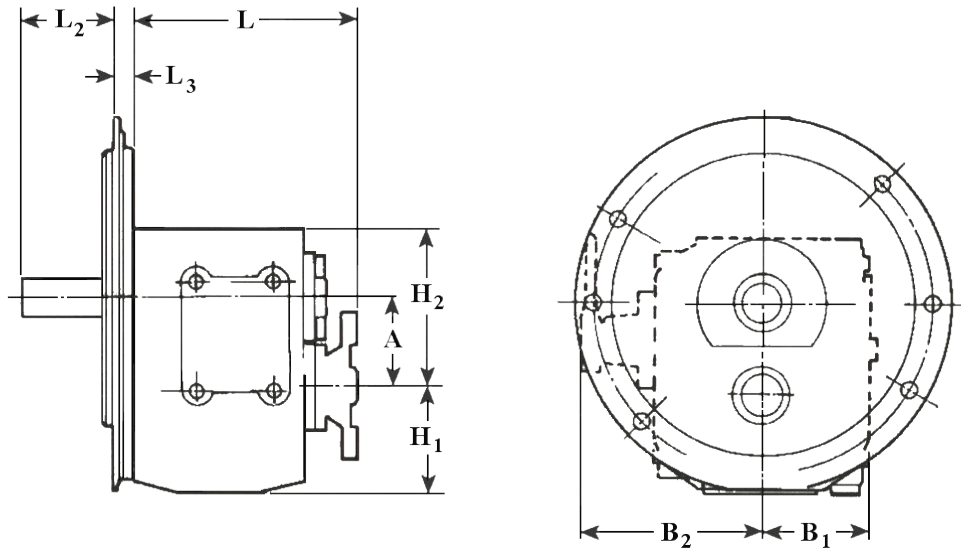
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1 cylinder engine + 1.25, 2 cylinder engine + 1.20, 3 cylinder engine + 1.15



ZF 10 M

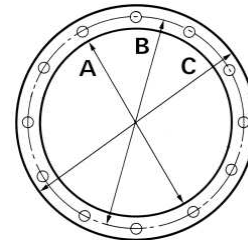
Dimensions



mm (inches)									
A	B ₁	B ₂	C	H ₁	H ₂	L	L ₂	L ₃	Bell Hsg.
62.0 (2.44)	75.0 (2.95)	128 (5.04)	-	110 (4.33)	73.0 (2.87)	180 (7.09)	60.0 (2.36)	15.0 (0.59)	B/W
Weight kg (lb)						Oil Capacity Litre (US qt)			
10.3 (23.0)						0.42 (0.45)			

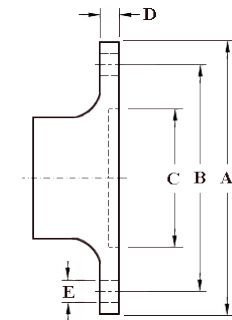
SAE Bell Housing Dimensions

SAE No.	A		B		C		Bolt Holes		
							No.	Diameter	
	mm	in	mm	in	mm	in		mm	in
4	361.95	14.25	381.0	15.0	403.23	15.875	12	10.32	13/32
5	314.33	12.375	333.38	13.125	355.6	14.0	8	10.32	13/32
6	266.7	10.5	285.75	11.25	307.98	12.125	8	10.32	13/32



Output Coupling Dimensions

A		B		C		D		Bolt Holes		
								No.	Diameter (E)	
mm	in	mm	in	mm	in	mm	in		mm	in
102	4.02	82.5	3.25	63.5	2.50	10.0	0.39	4	10.5	0.41



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.
CONTINUOUS DUTY DEFINITION	Continuous operation with little or no variations in engine speed and power
Average engine operating	Unlimited
hours limit:	
Typical hull forms:	Displacement.
Typical applications:	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.
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 15 M

Vertical offset, direct mount marine transmission.

Description

- Reverse reduction marine transmission with mechanically actuated multi-disc clutches .
- Suitable for high performance applications in luxury sailboats, motoryachts, fishing boats, etc. .
- Robust design also withstands continuous duty in workboat applications .
- Fully works tested, reliable and simple to install .
- 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 .
- Compact, space saving design .

Options

- Engine-matched torsional coupling .
- BW, SAE 4 or SAE 5 bell housings .
- Oil cooler. To be used when input power exceeds following values:- Pos. «A» 40 kW - Pos. «B» 25 kW .
- Control cable bracket for mounting of push-pull cable to the control lever .
- Classification by all major Classification Societies on request .

ZF 15 M

Ratings

Pleasure Duty

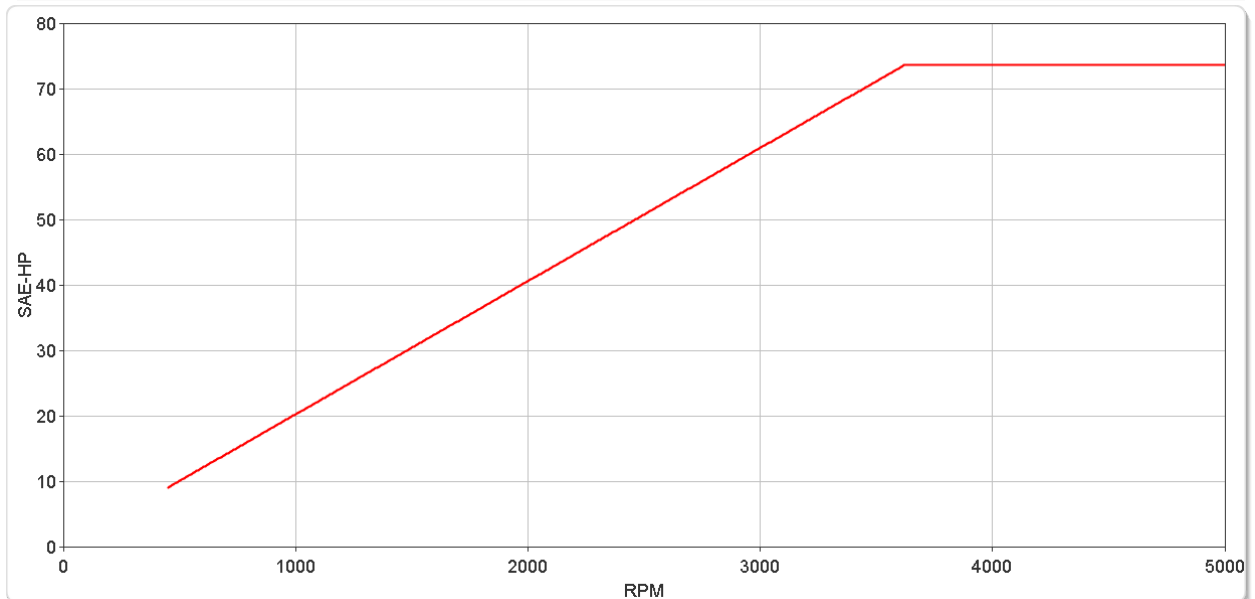
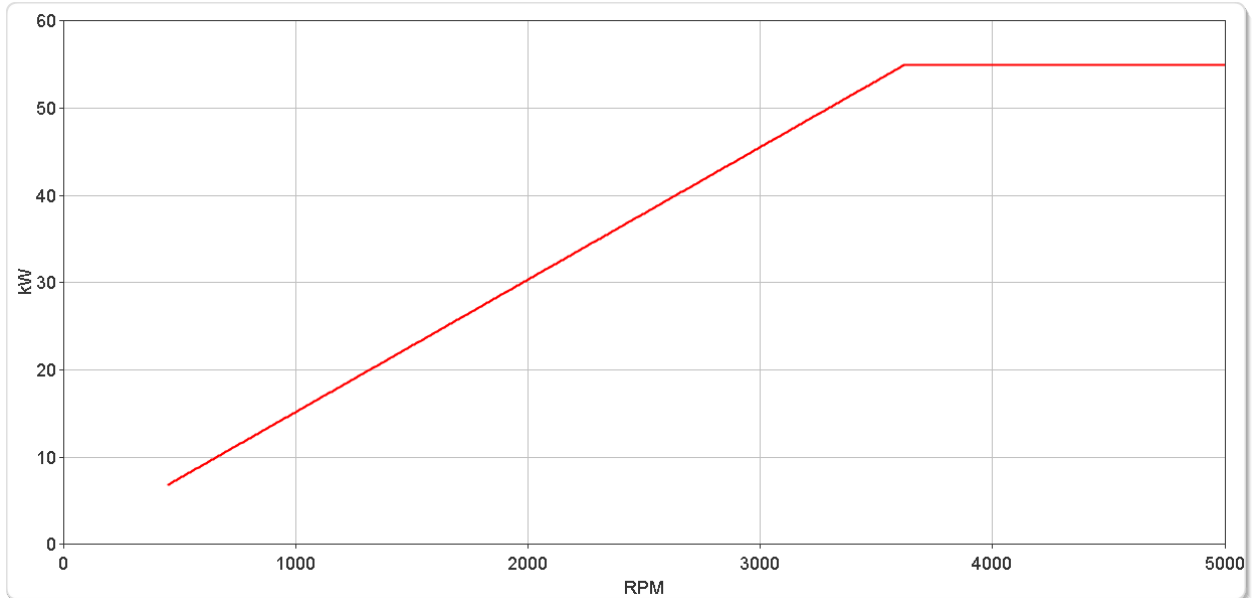
	RATIOS		MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
	'A' Pos	'B' Pos	Nm	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
							3000 rpm		3600 rpm		3800 rpm		
■	1.556	1.955	145	107	0.0152	0.0204	46	61	55	73	55	74	5000
■	1.875	1.955	145	107	0.0152	0.0204	46	61	55	73	55	74	5000

Ratio 1.875 Max input power 55 kW

'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.

For all "M" (Mechanical) transmissions reduce power capacity by the following shock factors:

1 cylinder engine ÷ 1.25, 2 cylinder engine ÷ 1.20, 3 cylinder engine ÷ 1.15



ZF 15 M

Ratings

Light Duty

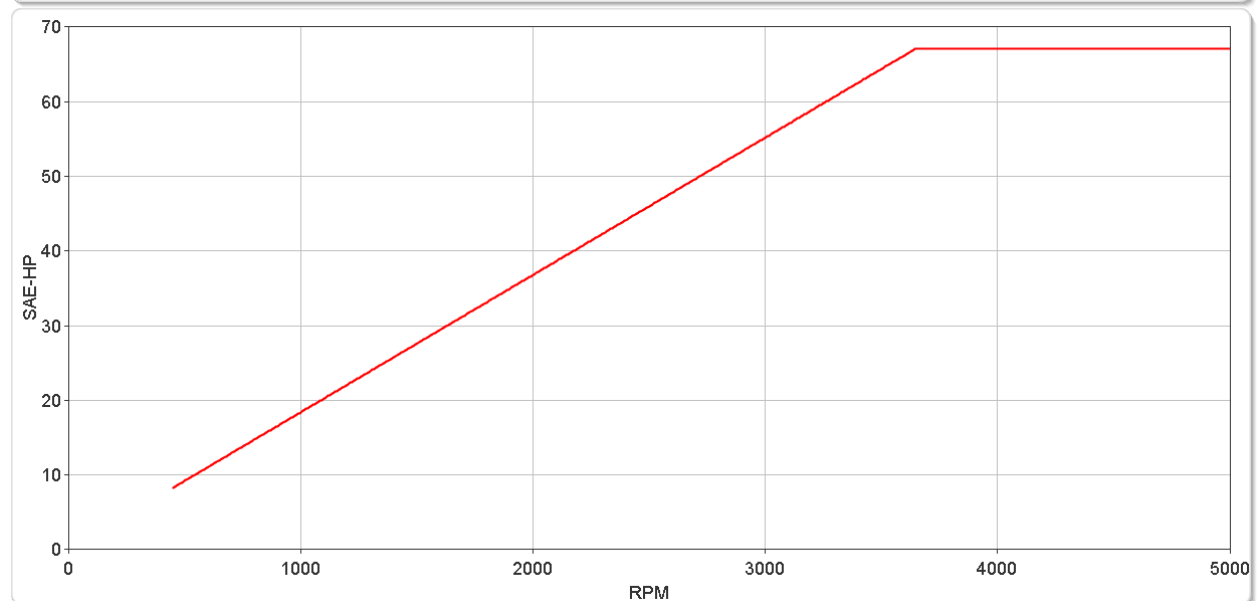
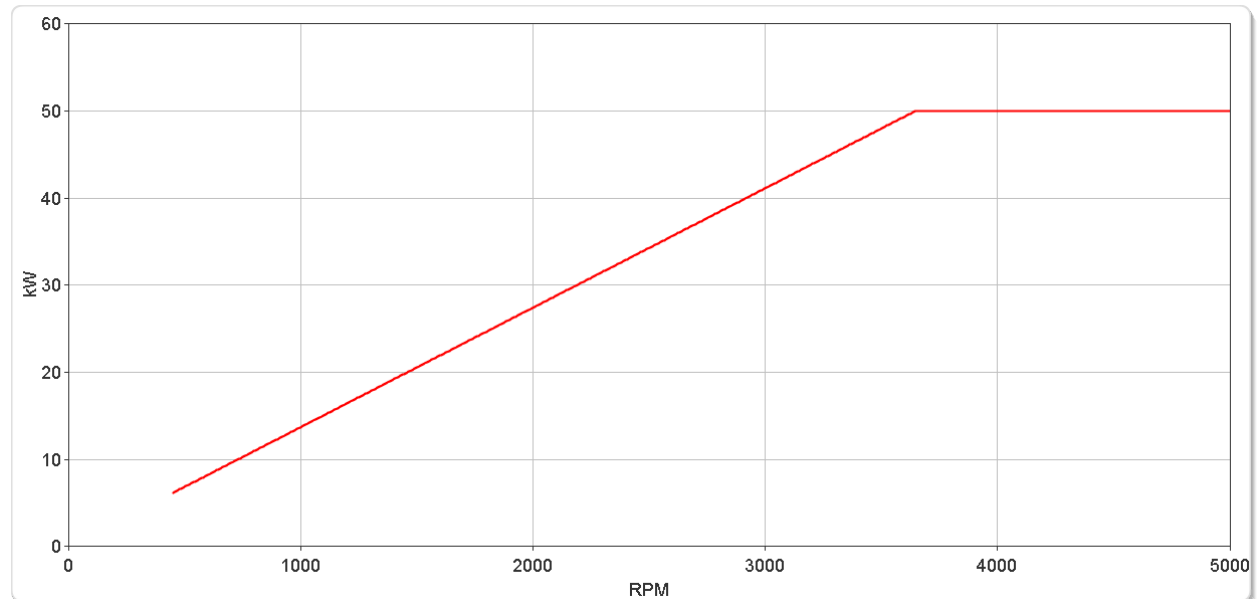
RATIOS		MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos	'B' Pos	Nm	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
						2800 rpm		3000 rpm		3600 rpm		
1.556	1.955	131	97	0.0137	0.0184	38	52	41	55	49	66	5000
1.875	1.955	131	97	0.0137	0.0184	38	52	41	55	49	66	5000

Ratio 1.875 Max input power 50 kW

'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.

For all "M" (Mechanical) transmissions reduce power capacity by the following shock factors:



1 cylinder engine ÷ 1.25, 2 cylinder engine ÷ 1.20, 3 cylinder engine ÷ 1.15



ZF 15 M

Ratings

Medium Duty

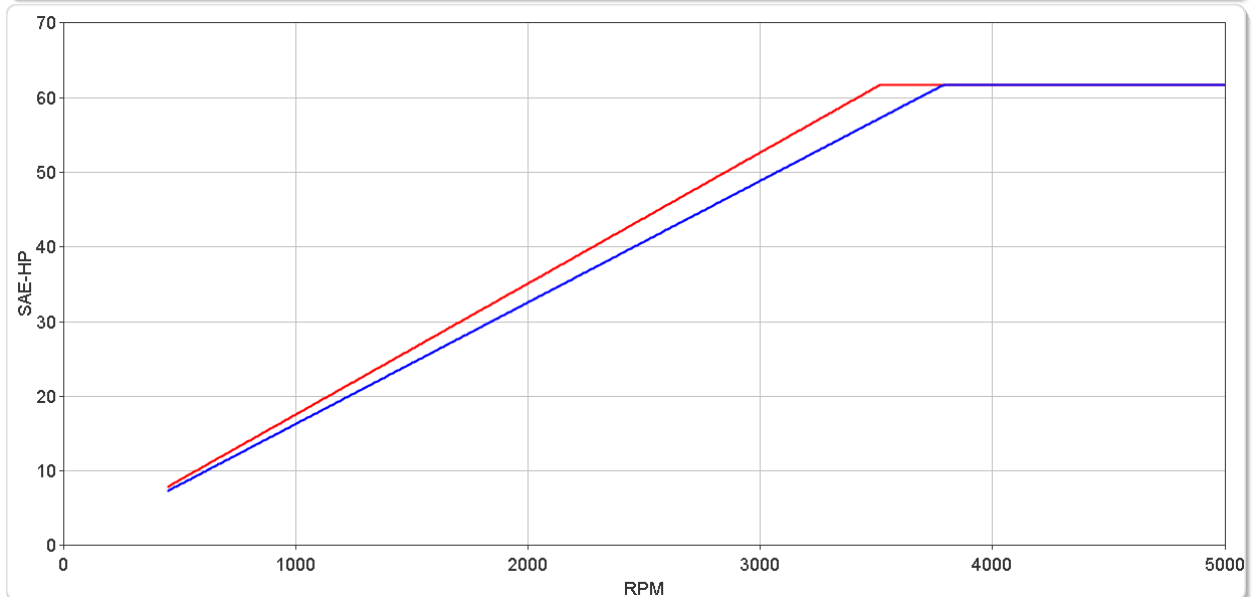
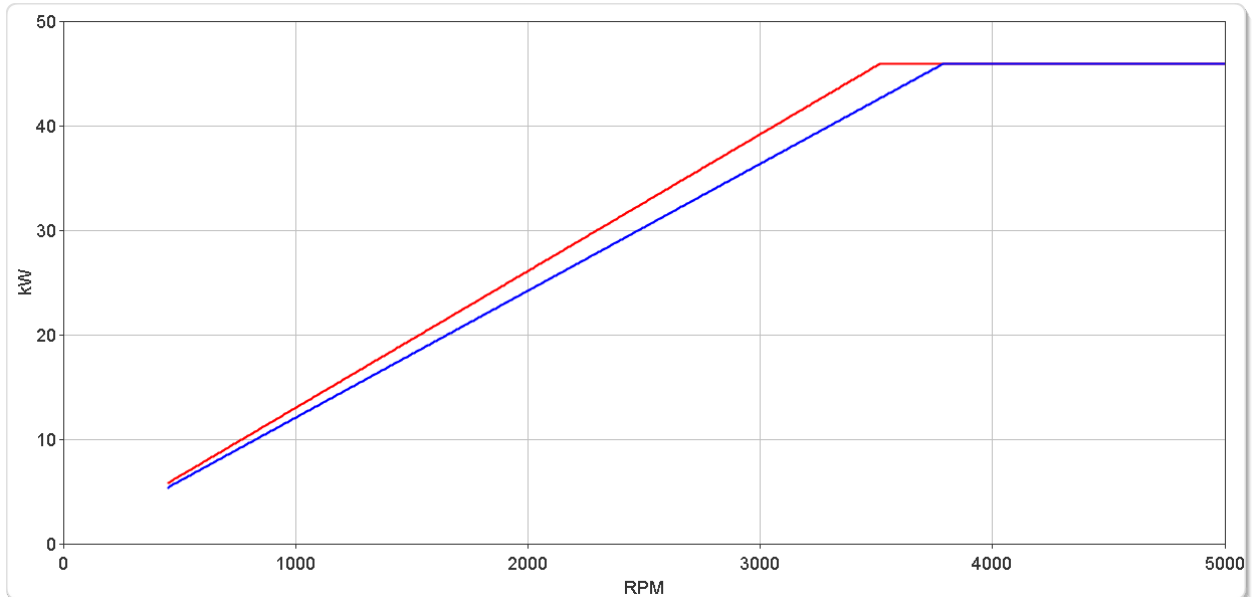
RATIOS			MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos	Nm	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
							2100 rpm		2500 rpm		2800 rpm		
	1.556	1.955	125	92	0.0131	0.0176	27	37	33	44	37	49	5000
	1.875	1.955	116	86	0.0121	0.0163	26	34	30	41	34	46	5000

Ratio 1.875 Max input power 46 kW

'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.

For all "M" (Mechanical) transmissions reduce power capacity by the following shock factors:

1 cylinder engine ÷ 1.25, 2 cylinder engine ÷ 1.20, 3 cylinder engine ÷ 1.15



ZF 15 M

Ratings

Continuous Duty

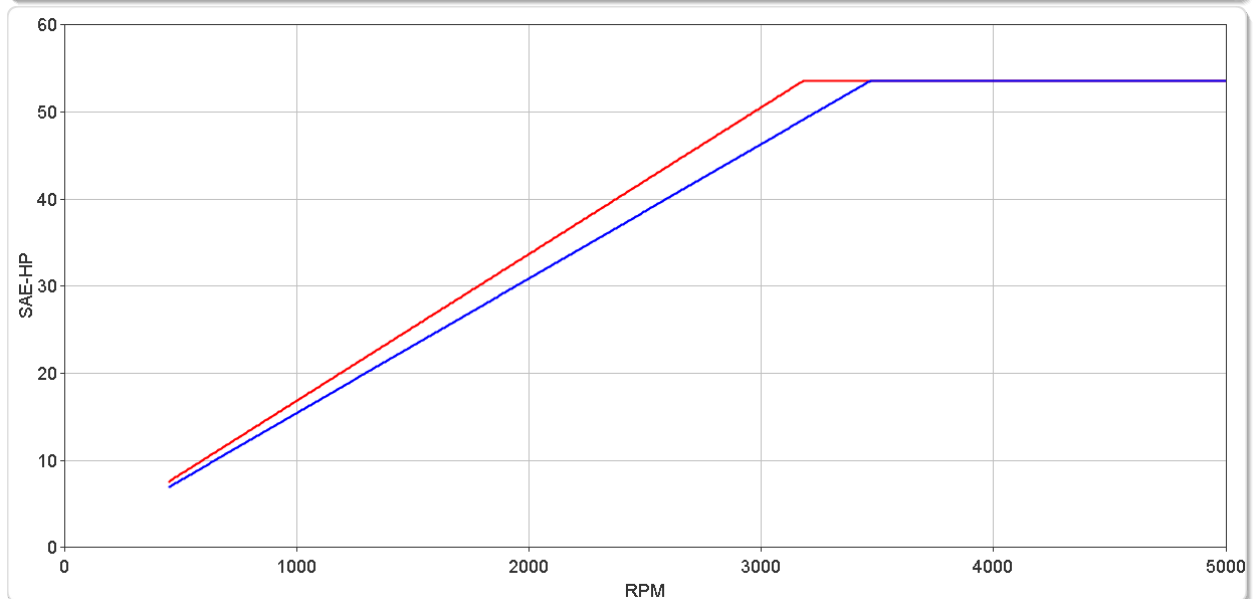
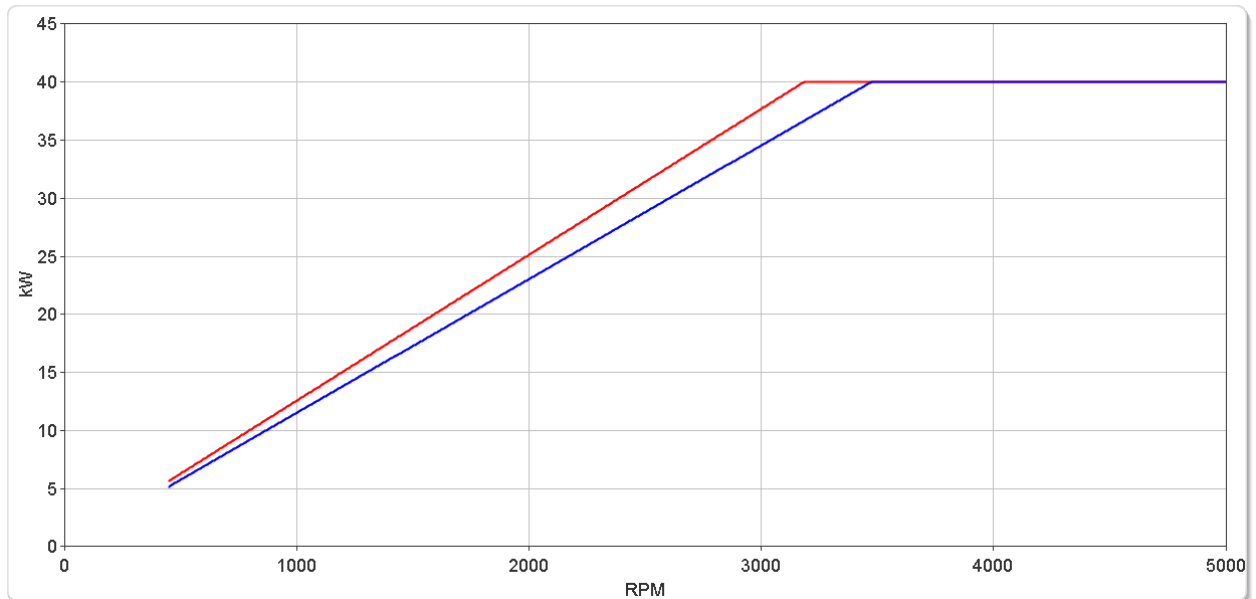
	RATIOS		MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
	'A' Pos	'B' Pos	Nm	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
							1800 rpm		2300 rpm		2600 rpm		
■	1.556	1.955	120	89	0.0126	0.0169	23	30	29	39	33	44	5000
■	1.875	1.955	110	81	0.0115	0.0154	21	28	26	36	30	40	5000

Ratio 1.875 Max input power 40 kW

'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.

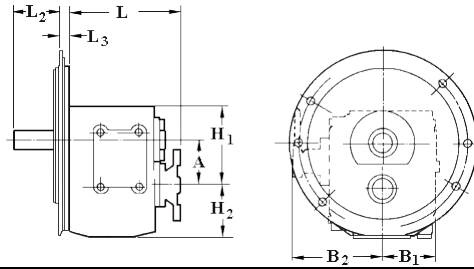
For all "M" (Mechanical) transmissions reduce power capacity by the following shock factors:

1 cylinder engine ÷ 1.25, 2 cylinder engine ÷ 1.20, 3 cylinder engine ÷ 1.15



ZF 15 M

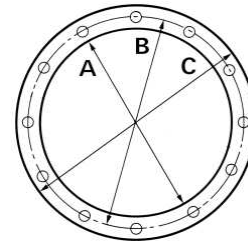
Dimensions



mm (inches)									
A	B ₁	B ₂	C	H ₁	H ₂	L	L ₂	L ₃	Bell Hsg.
72.0 (2.83)	80.0 (3.17)	134 (5.25)	-	122 (4.80)	89.0 (3.50)	193 (7.58)	60.0 (2.36)	15.0 (0.59)	B/W
Weight kg (lb)					Oil Capacity Litre (US qt)				
13.0 (29.0)					0.60 (0.66)				

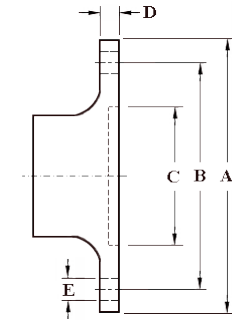
SAE Bell Housing Dimensions

SAE No.	A		B		C		Bolt Holes		
							No.	Diameter	
	mm	in	mm	in	mm	in		mm	in
4	361.95	14.25	381.0	15.0	403.23	15.875	12	10.32	13/32
5	314.33	12.375	333.38	13.125	355.6	14.0	8	10.32	13/32
6	266.7	10.5	285.75	11.25	307.98	12.125	8	10.32	13/32



Output Coupling Dimensions

A		B		C		D		Bolt Holes		
								No.	Diameter (E)	
mm	in	mm	in	mm	in	mm	in		mm	in
102	4.02	82.5	3.25	63.5	2.50	10.0	0.39	4	10.5	0.41



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.
CONTINUOUS DUTY DEFINITION	Continuous operation with little or no variations in engine speed and power
Average engine operating	Unlimited
hours limit:	
Typical hull forms:	Displacement.
Typical applications:	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.

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Torsional Responsibility and Torsional Couplings

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ZF 25

Vertical offset, 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 .
- 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 .
- 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

- Engine-matched dual stage coupling .
- SAE 3, SAE 4, SAE 5 and B.W. adapters .
- Oil cooler complete with fittings and flexible oil hoses .
- Propeller shaft flange .
- Control cable bracket for mounting of push-pull cable to the control lever .
- Classification by all major Classification Societies on request .
- SAE «A» Power Take Off .
- Thermostatic valve for better performance of trolling valve in cold sea water .
- Trolling valve (mechanical) for slow-speed drive .
- Electric Trolling .
- Supershift (with Autotroll and Easidock) .

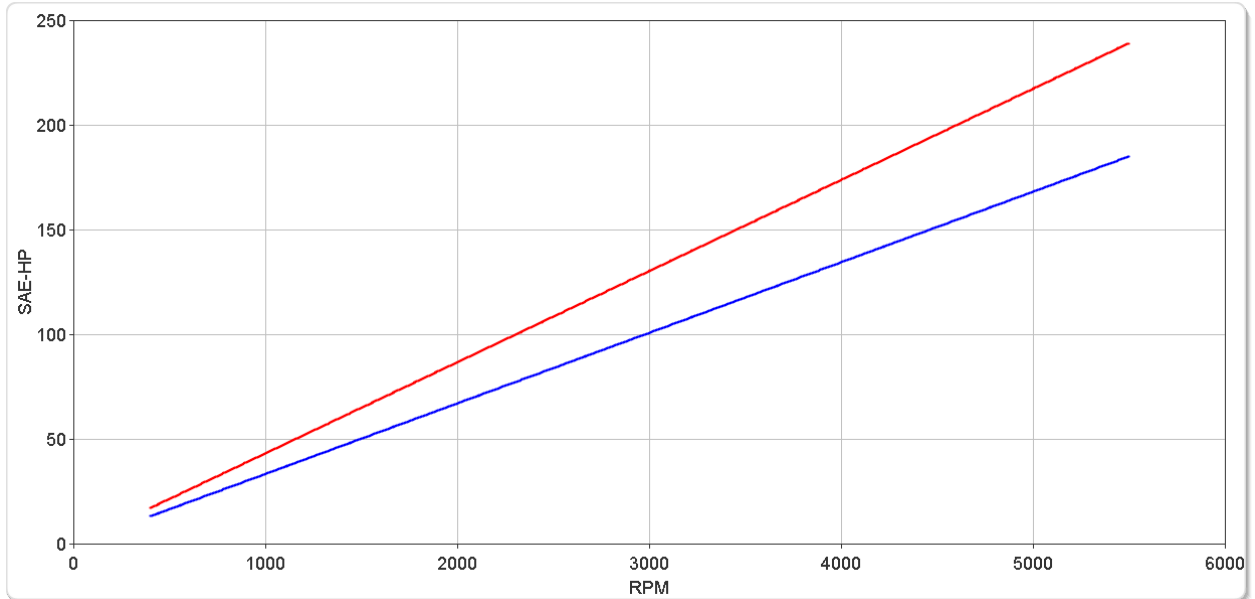
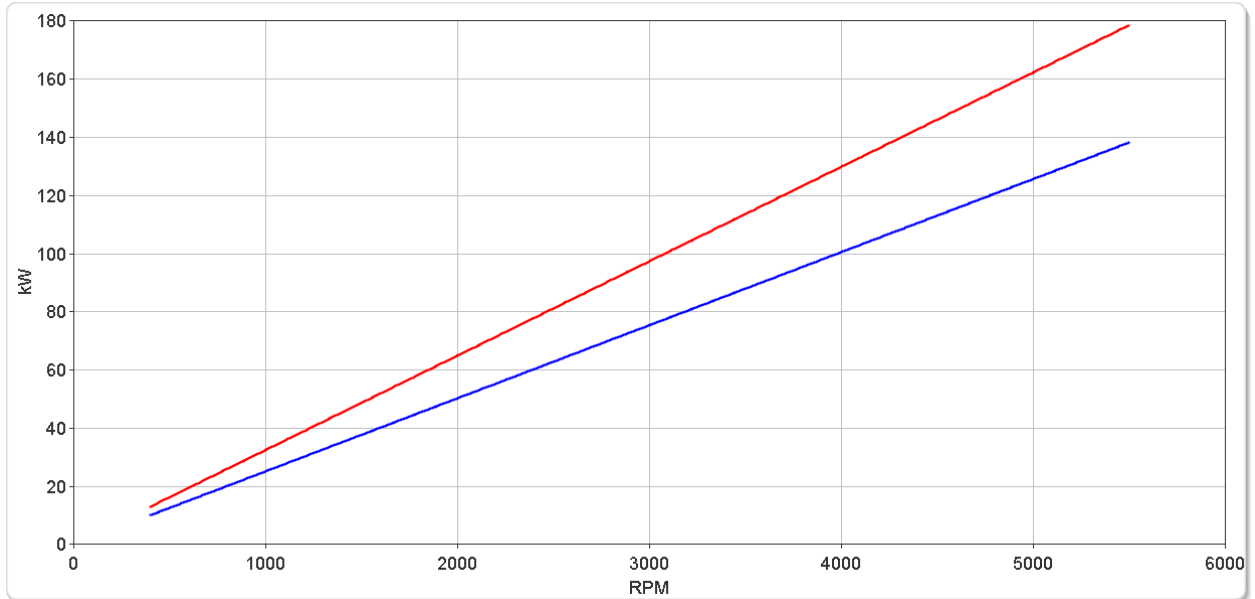
ZF 25

Ratings



Pleasure Duty

RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	3000 rpm		3600 rpm		3800 rpm		
	1.969	1.969		310	229	0.0325	0.0435	97	131	117	157	123	165	5500
	2.800	2.800		240	177	0.0251	0.0337	75	101	90	121	95	128	5500

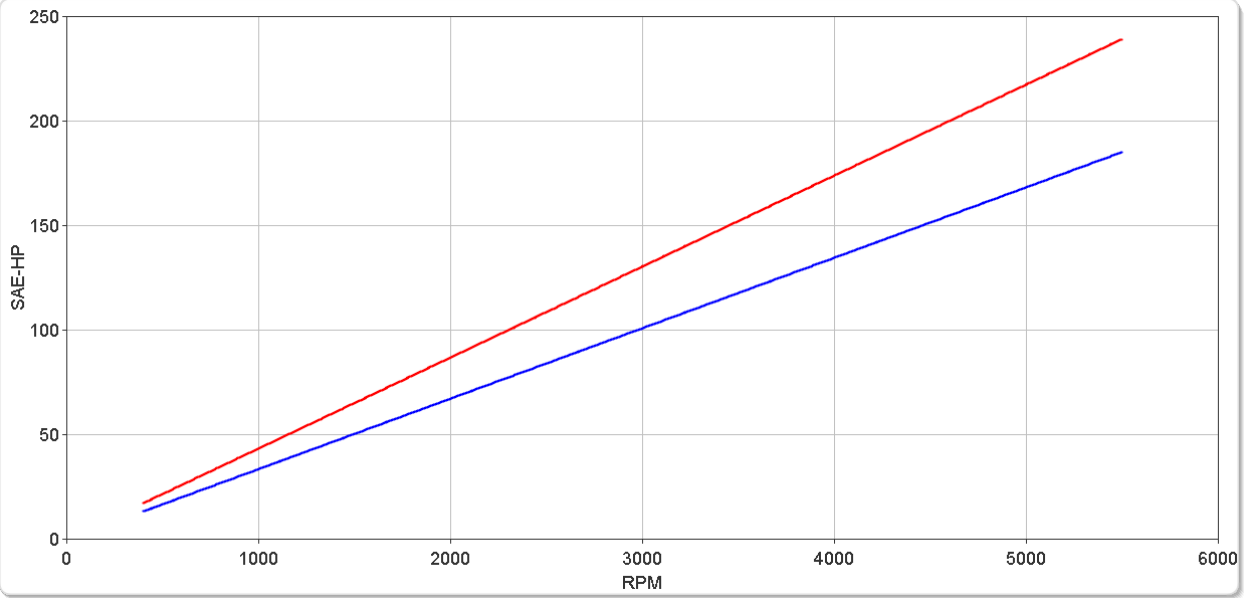
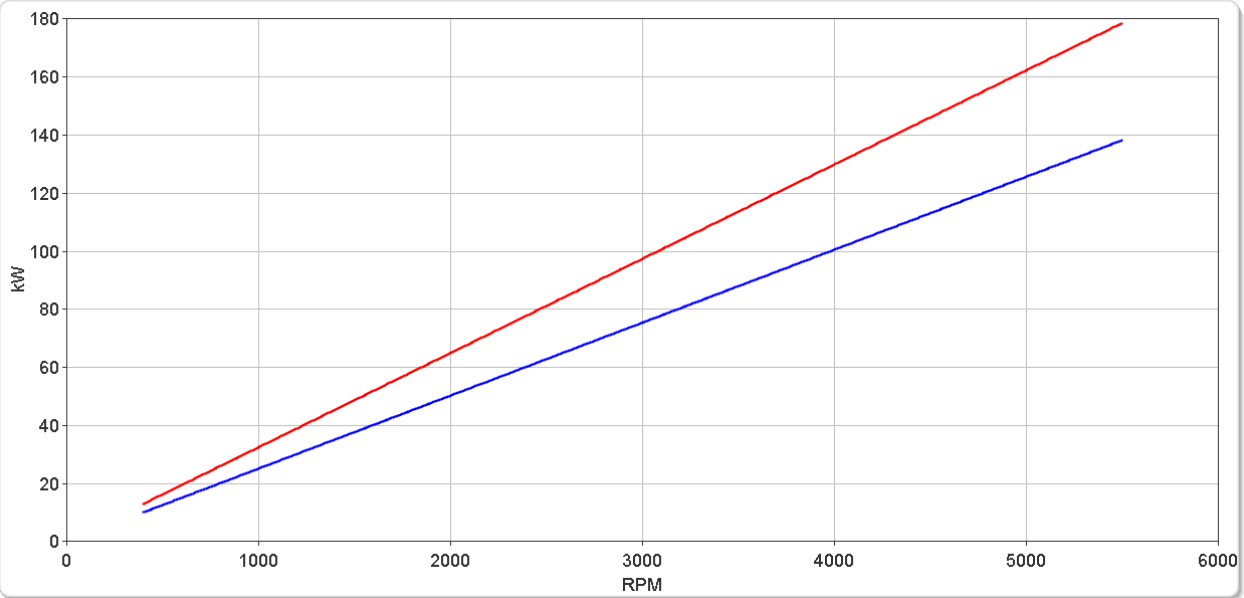
'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.





Pleasure Duty Gasoline

RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
								4000 rpm		4400 rpm		4800 rpm		
	1.969	1.969		310	229	0.0325	0.0435	130	174	143	192	156	209	5500
	2.800	2.800		240	177	0.0251	0.0337	101	135	111	148	121	162	5500

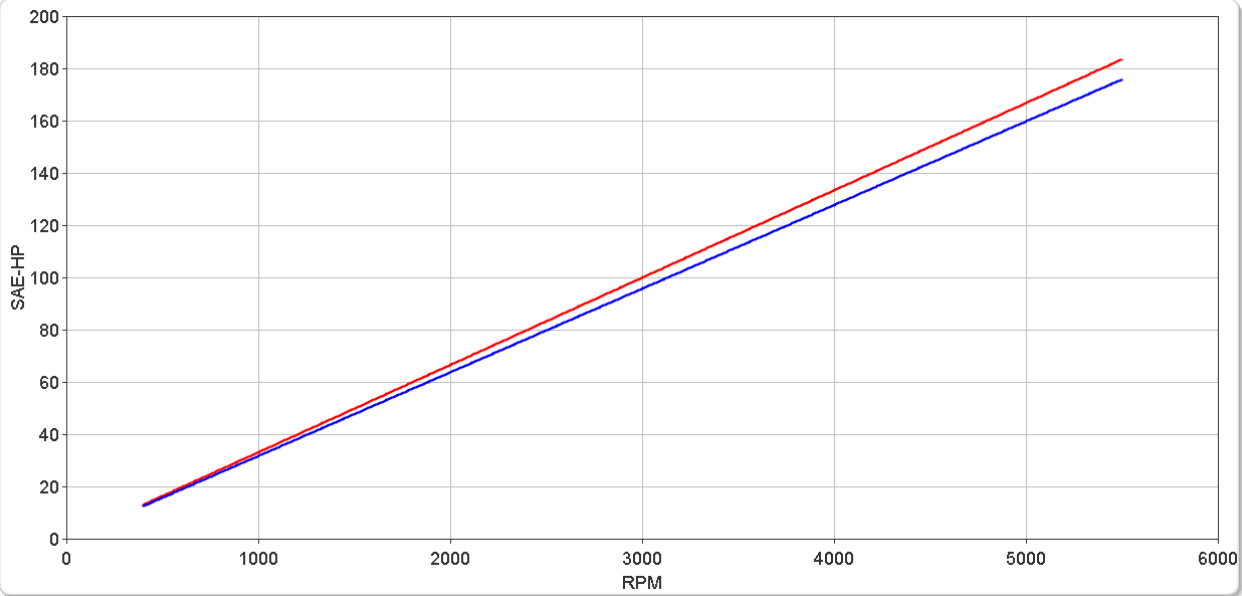
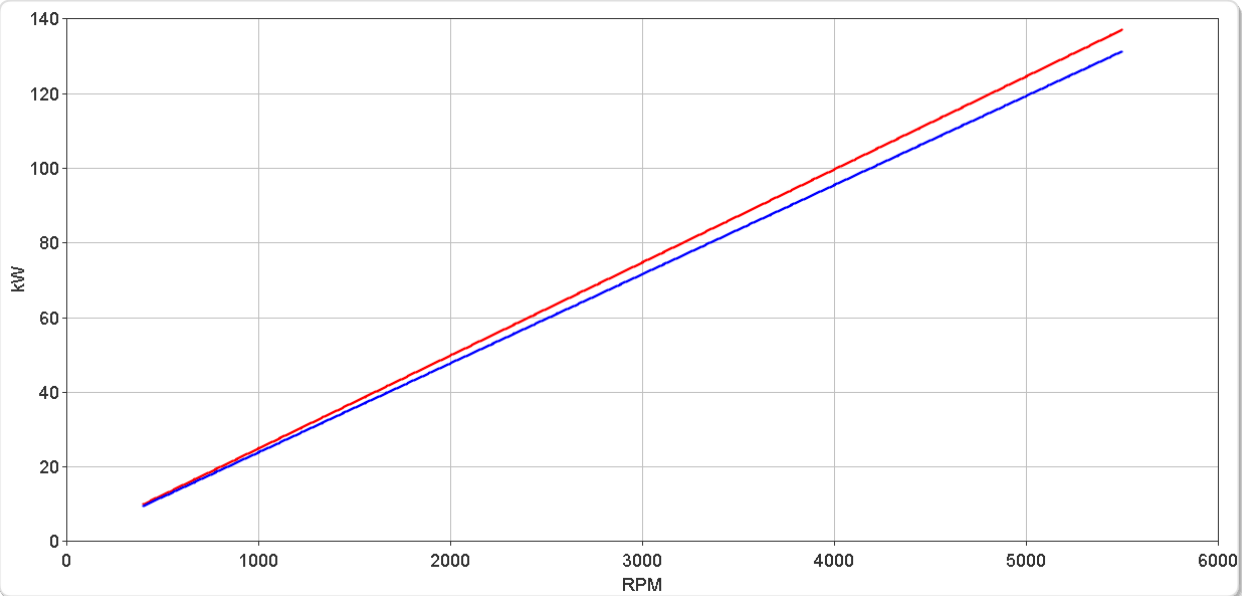
'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.





Light Duty

RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	2100 rpm		2500 rpm		2800 rpm		
								kW	hp	kW	hp	kW	hp	
	1.969	1.969		238	176	0.0249	0.0334	52	70	62	84	70	94	5500
	2.800	2.800		228	168	0.0239	0.0320	50	67	60	80	67	90	5500

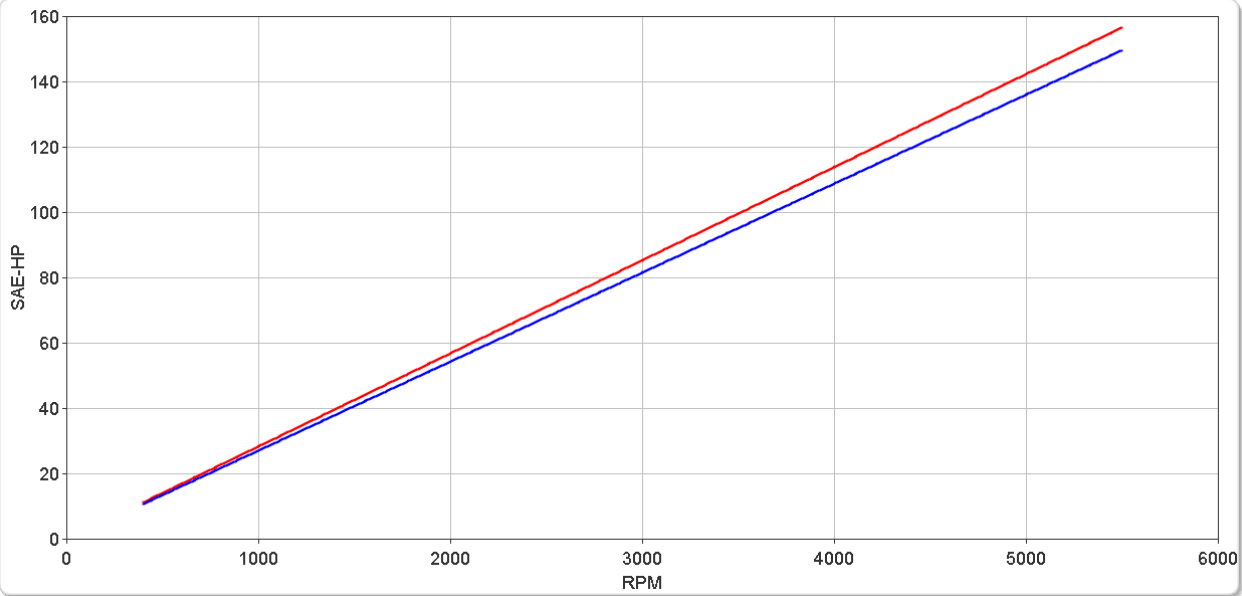
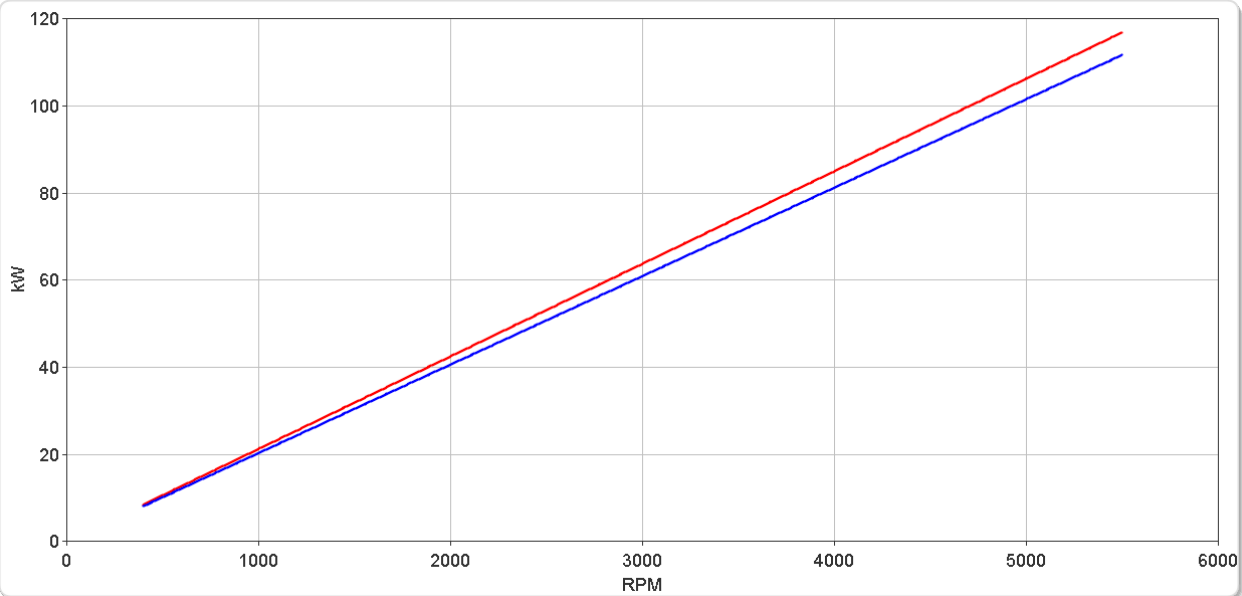
'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



Medium Duty

RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	2100 rpm		2500 rpm		2800 rpm		
								kW	hp	kW	hp	kW	hp	
	1.969	1.969		203	150	0.0213	0.0285	45	60	53	71	60	80	5500
	2.800	2.800		194	143	0.0203	0.0272	43	57	51	68	57	76	5500

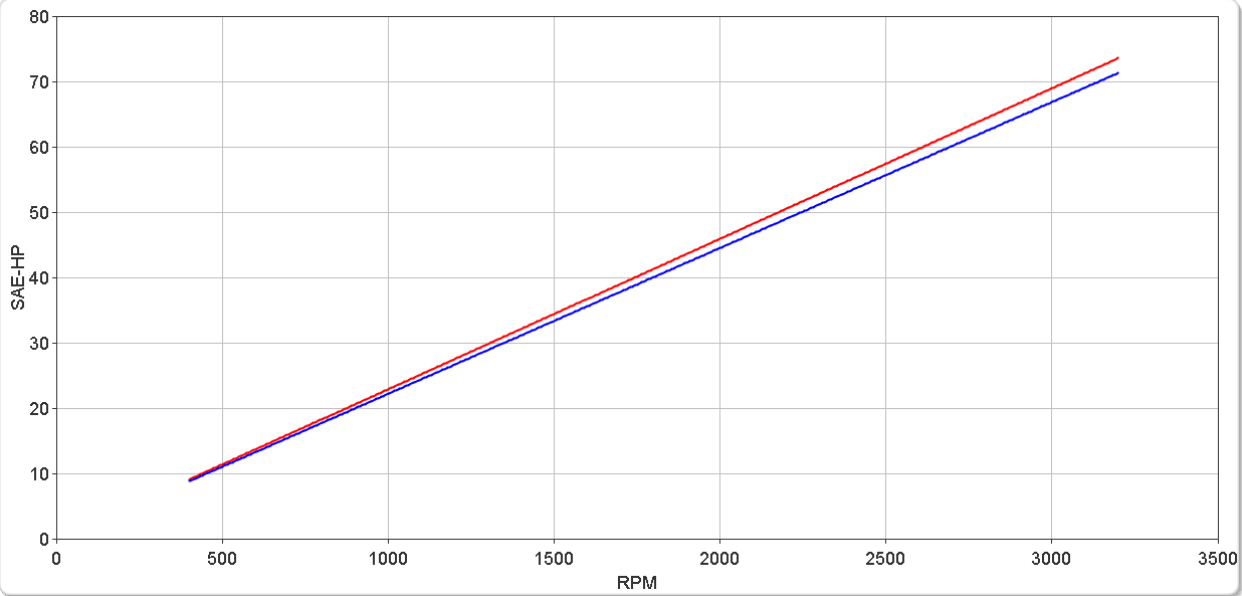
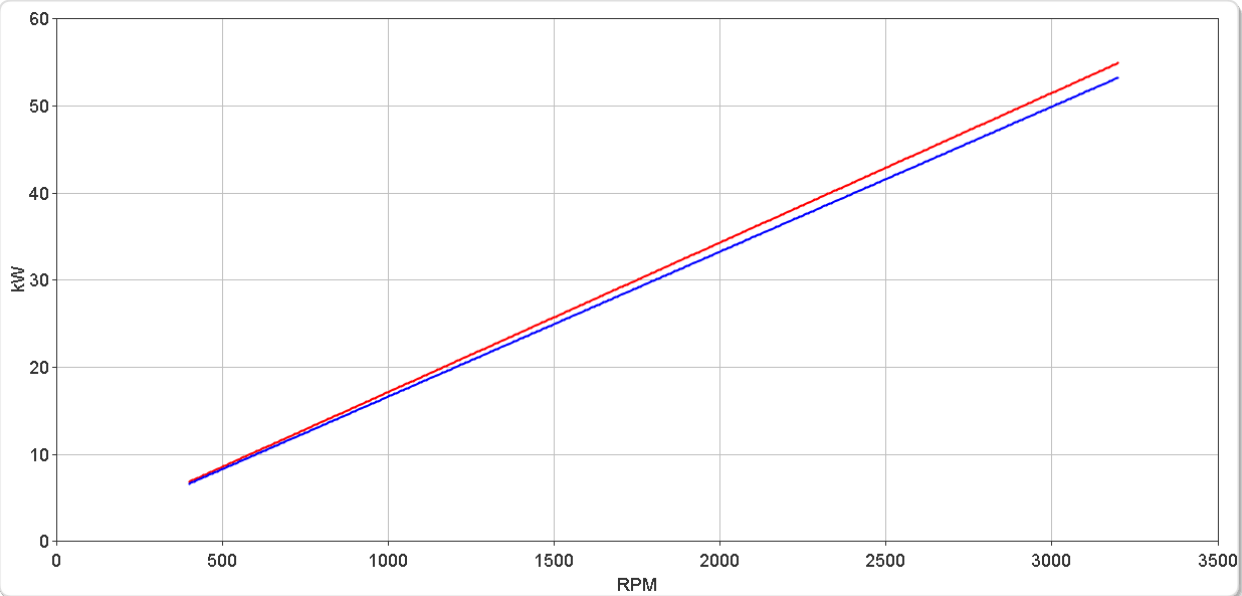
'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



Continuous Duty

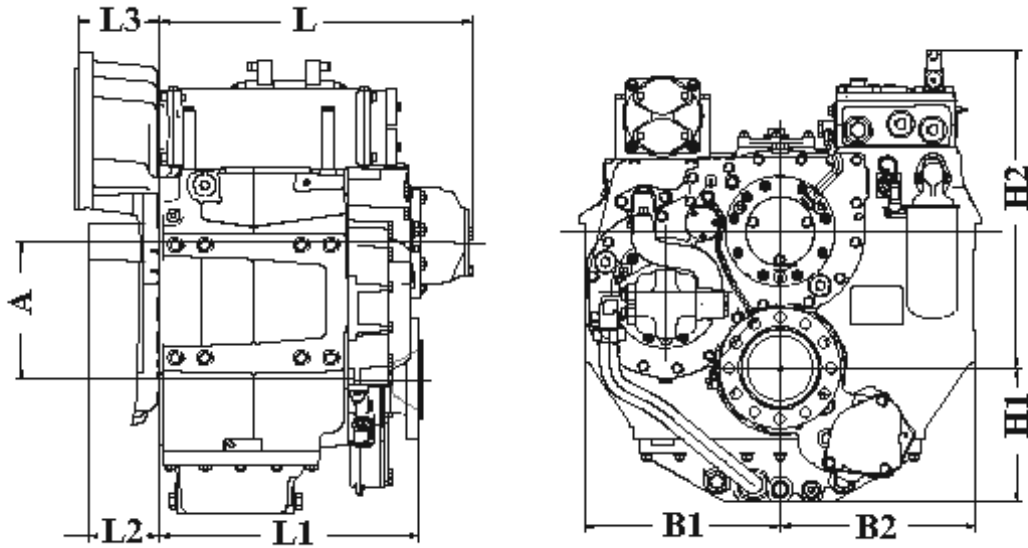
RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	1800 rpm		2100 rpm		2400 rpm		
								kW	hp	kW	hp	kW	hp	
<div></div>	1.969	1.969		164	121	0.0172	0.0230	31	41	36	48	41	55	3200
<div></div>	2.800	2.800		159	117	0.0166	0.0223	30	40	35	47	40	54	3200

'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



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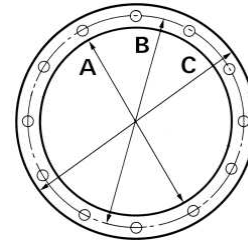
Dimensions



mm (inches)									
A	B ₁	B ₂	H ₁	H ₂	L	L ₁	L ₂	L ₃	Bell Hsg.
99.0 (3.90)	147 (5.79)	147 (5.79)	101 (3.98)	212 (8.35)	296 (11.7)	270 (10.6)	82.5 (3.25)	17.5 (0.69)	B/W
Weight kg (lb)					Oil Capacity Litre (US qt)				
24.0 (53.0)					2.00 (2.10)				

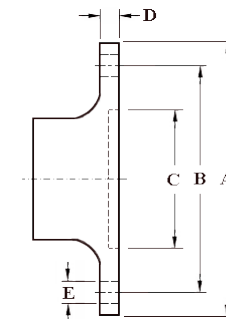
SAE Bell Housing Dimensions

SAE No.	A		B		C		Bolt Holes		
	mm	in	mm	in	mm	in	No.	Diameter	
								mm	in
3	409.58	16.125	428.63	16.875	450.85	17.75	12	10.32	13/32
4	361.95	14.25	381.0	15.0	403.23	15.875	12	10.32	13/32
5	314.33	12.375	333.38	13.125	355.6	14.0	8	10.32	13/32



Output Coupling Dimensions

A		B		C		D		Bolt Holes		
								No.	Diameter (E)	
mm	in	mm	in	mm	in	mm	in		mm	in
102	4.00	82.5	3.25	63.5	2.50	10.0	0.39	4	11.5	0.45



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.
CONTINUOUS DUTY DEFINITION	Continuous operation with little or no variations in engine speed and power
Average engine operating	Unlimited
hours limit:	
Typical hull forms:	Displacement.
Typical applications:	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.

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 63 A

8° Down angle, 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 .
- 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 .
- B/W connection integrated with casing .
- Smooth and reliable hydraulic shifting with control lever for attachment of push-pull cable .
- Suitable for twin engine installations (same torque capacity in ahead or astern mode. Reduction Ratios in ahead or astern are very close.) .
- Replaceable oil filter cartridge .
- Compact, space saving design due to 8° down-angle and beveloid gear principle .
- "SUPERSHIFT" clutch control .

Options

- Engine-matched dual stage coupling .
- SAE 3 and SAE 4 bell housings .
- Oil cooler complete with fittings and flexible oil hoses .
- Mounting brackets .
- Propeller shaft flange .
- Control cable bracket for mounting of push-pull cable to the control lever .
- Classification by all major Classification Societies on request .
- SAE «A» Power Take Off .
- Trolling valve (mechanical) for slow-speed drive .
- Thermostatic valve for better performance of trolling valve in cold sea water .
- Electric Trolling .
- Supershift (with Autotroll and Easidock) .

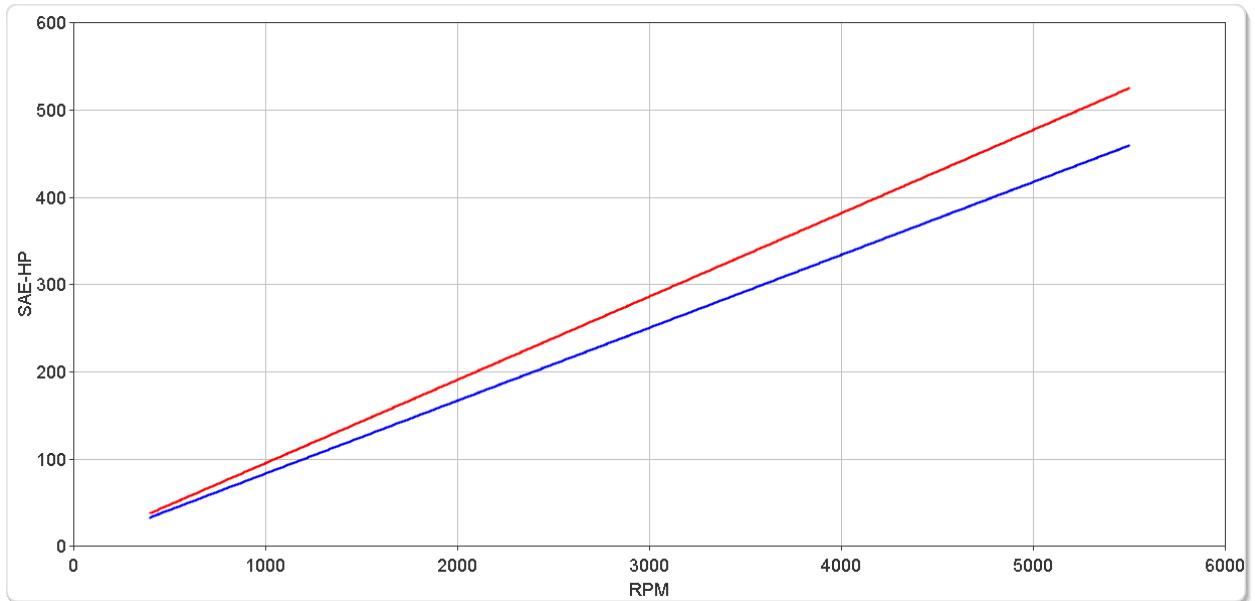
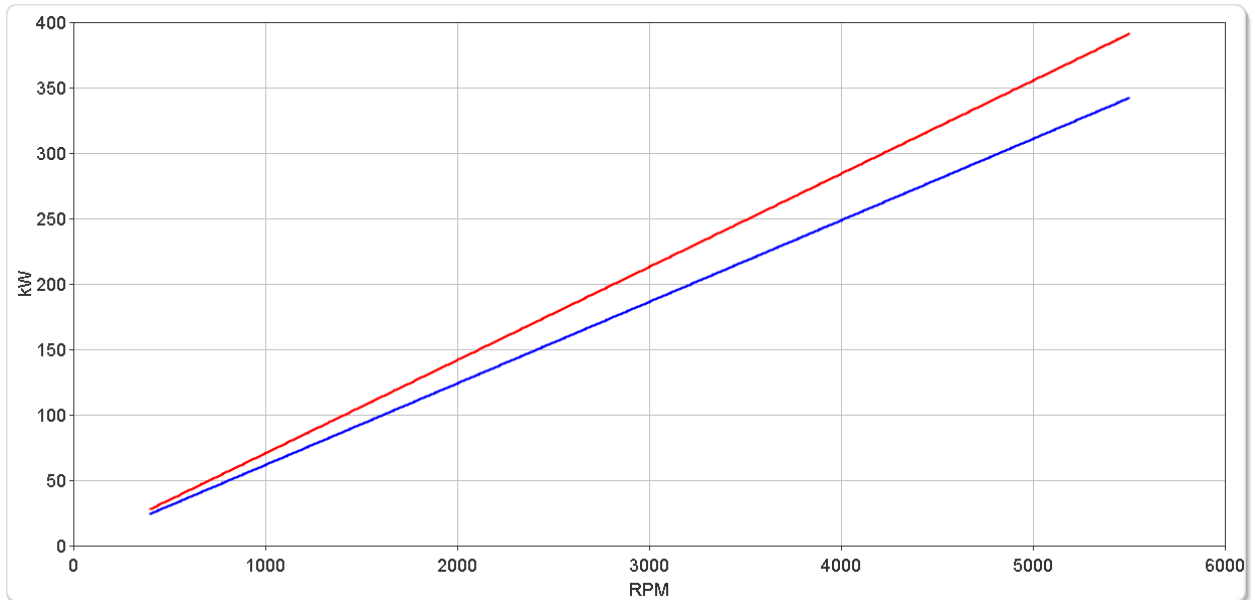
ZF 63 A

Ratings

Pleasure Duty

		RATIOS		MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
		'A' Pos	'B' Pos	Nm	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
								2800 rpm	3300 rpm	3800 rpm				
■		1.216	1.215	680	502	0.0712	0.0955	199	267	235	315	271	363	5500
■		1.563	1.583	680	502	0.0712	0.0955	199	267	235	315	271	363	5500
■		2.037	2.017	680	502	0.0712	0.0955	199	267	235	315	271	363	5500
■		2.522	2.536	595	439	0.0623	0.0836	174	234	206	276	237	317	5500
■		2.682	2.709	595	439	0.0623	0.0836	174	234	206	276	237	317	5500

'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



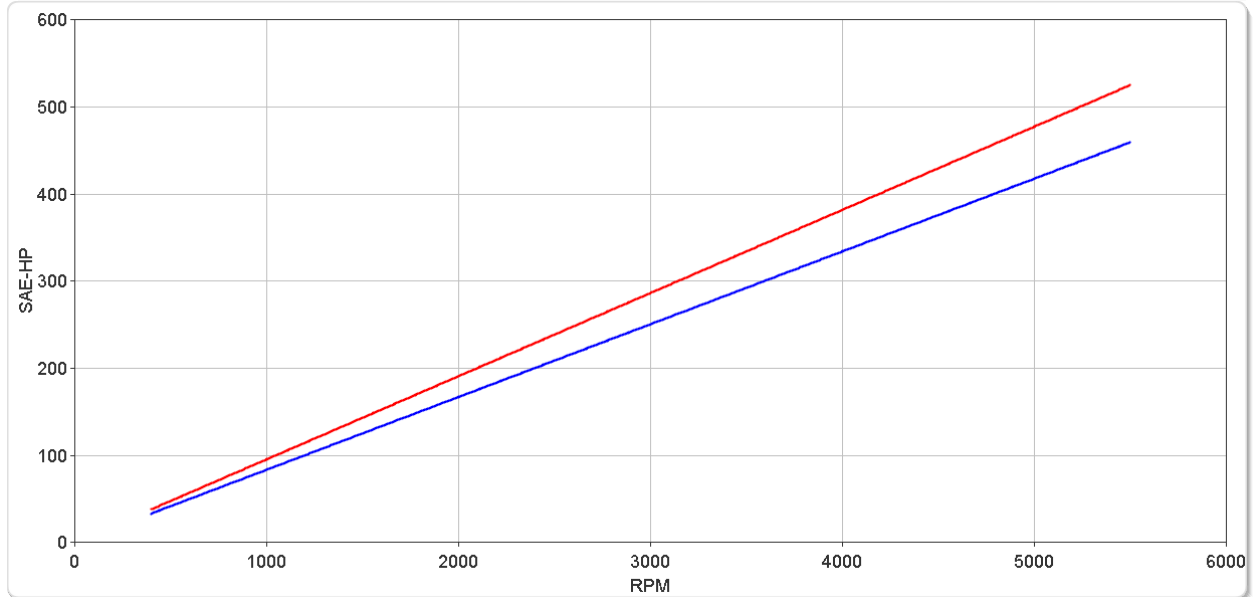
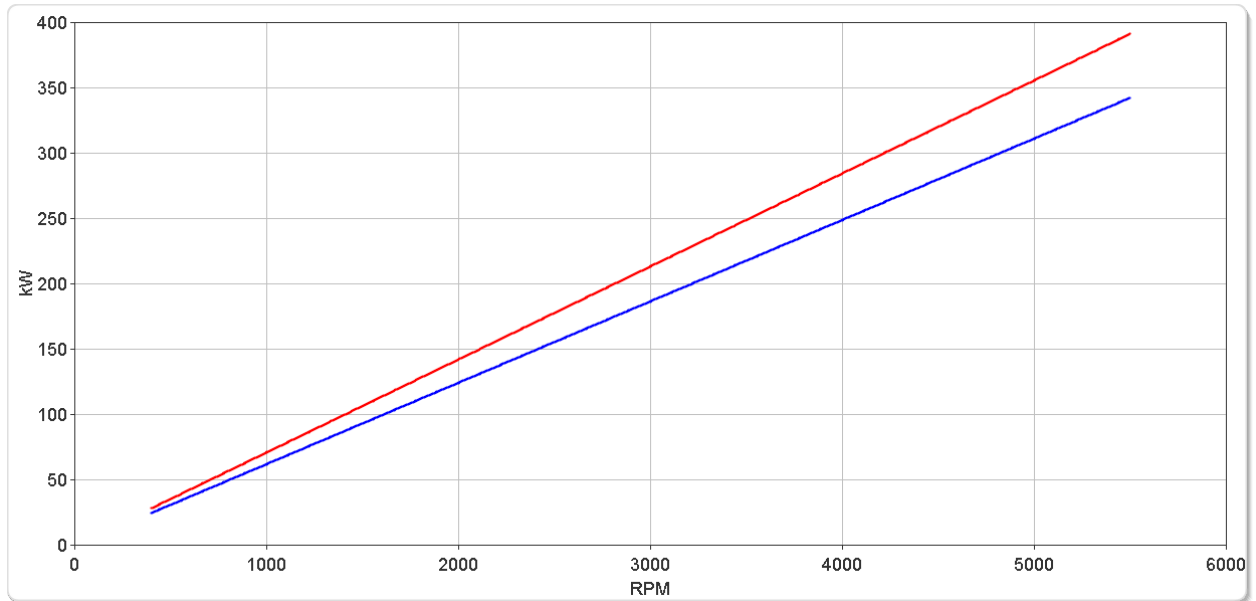
ZF 63 A

Ratings

Pleasure Duty Gasoline

RATIOS		MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos	'B' Pos	Nm	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
						4000 rpm		4400 rpm		4800 rpm		
1.216	1.215	680	502	0.0712	0.0955	285	382	313	420	342	458	5500
1.563	1.583	680	502	0.0712	0.0955	285	382	313	420	342	458	5500
2.037	2.017	680	502	0.0712	0.0955	285	382	313	420	342	458	5500
2.522	2.536	595	439	0.0623	0.0836	249	334	274	368	299	401	5500
2.682	2.709	595	439	0.0623	0.0836	249	334	274	368	299	401	5500






'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



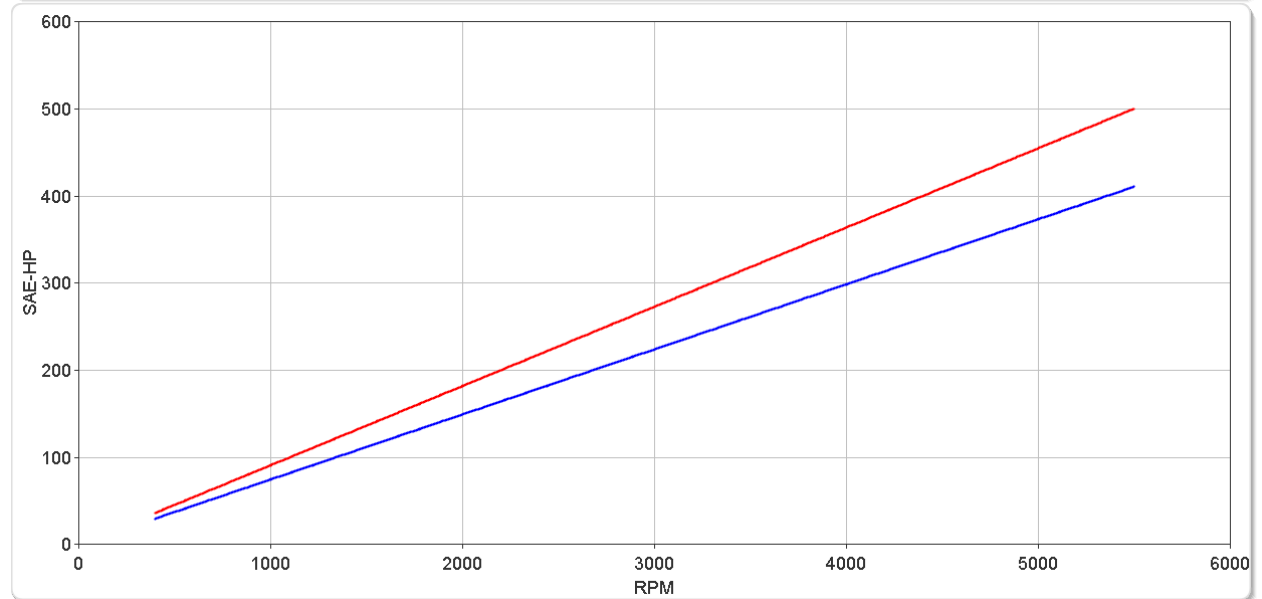
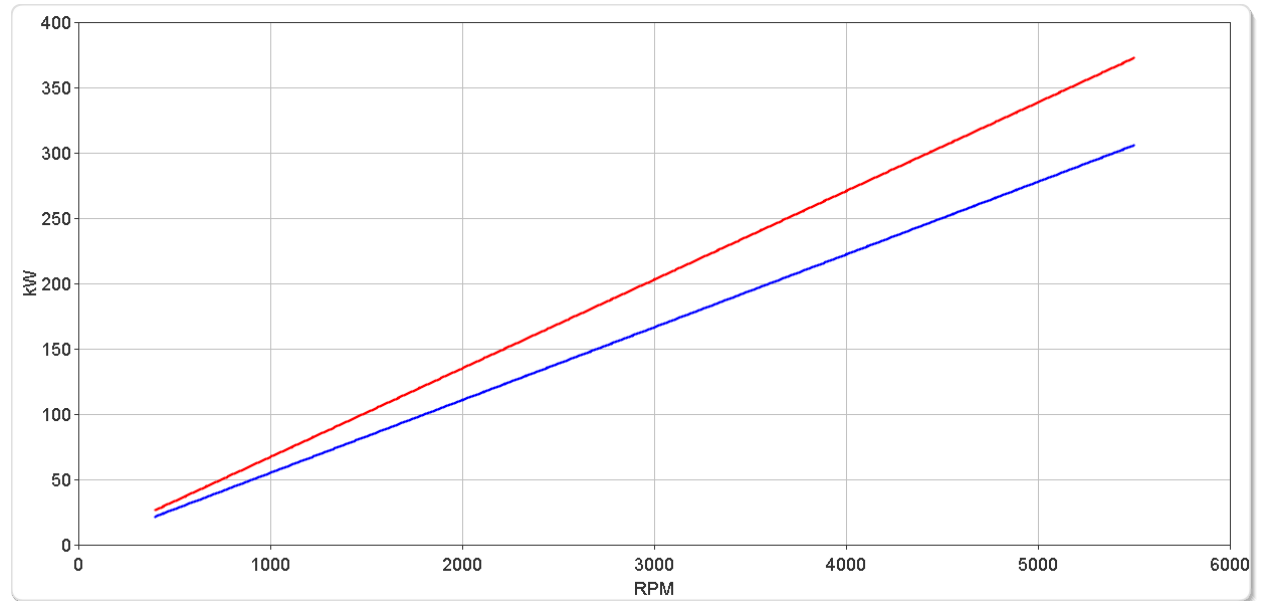
ZF 63 A

Ratings

Light Duty

RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	2100 rpm		2500 rpm		2800 rpm		
	1.216	1.215		648	478	0.0679	0.0910	142	191	170	227	190	255	5500
	1.563	1.583		648	478	0.0679	0.0910	142	191	170	227	190	255	5500
	2.037	2.017		648	478	0.0679	0.0910	142	191	170	227	190	255	5500
	2.522	2.536		532	392	0.0557	0.0747	117	157	139	187	156	209	5500
	2.682	2.709		532	392	0.0557	0.0747	117	157	139	187	156	209	5500






'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



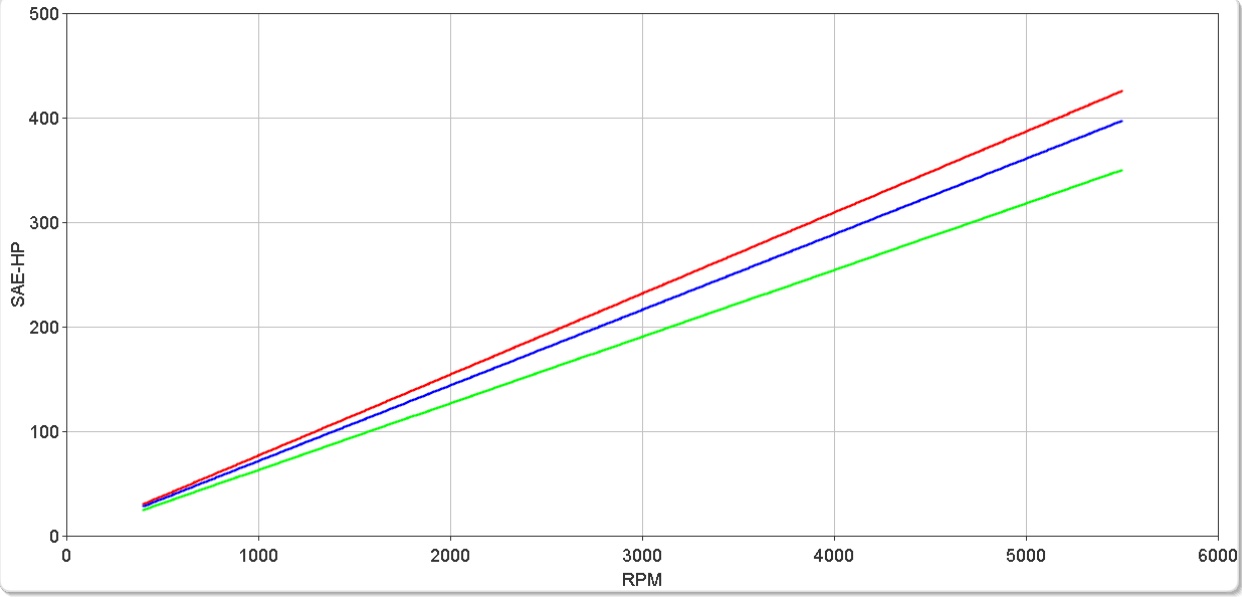
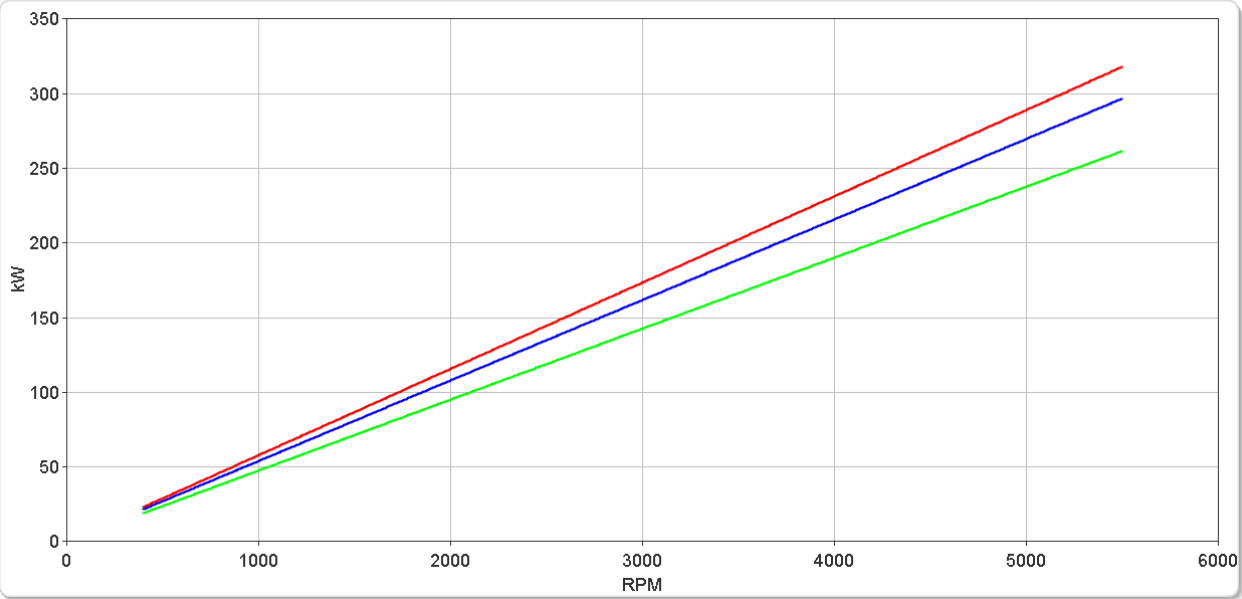
ZF 63 A

Ratings

Medium Duty

RATIOS			MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos	Nm	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
							2100 rpm	2500 rpm	2800 rpm				
	1.216	1.215	552	407	0.0578	0.0775	121	163	145	194	162	217	5500
	1.563	1.583	515	380	0.0539	0.0723	113	152	135	181	151	202	5500
	2.037	2.017	515	380	0.0539	0.0723	113	152	135	181	151	202	5500
	2.522	2.536	454	335	0.0475	0.0638	100	134	119	159	133	179	5500
	2.682	2.709	454	335	0.0475	0.0638	100	134	119	159	133	179	5500






'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



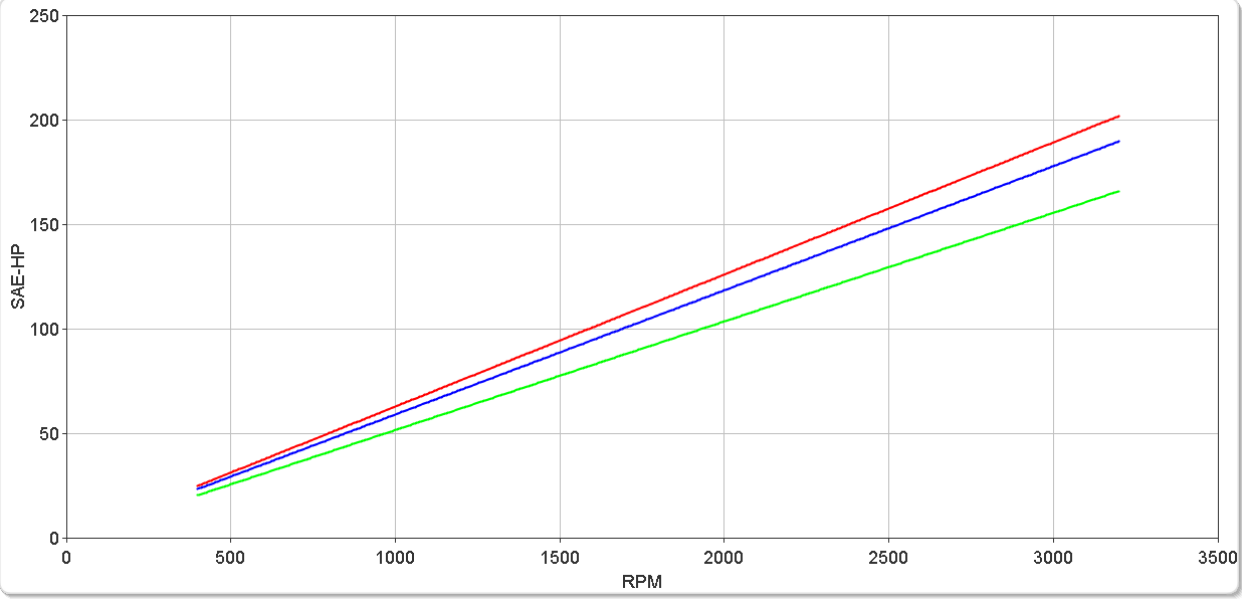
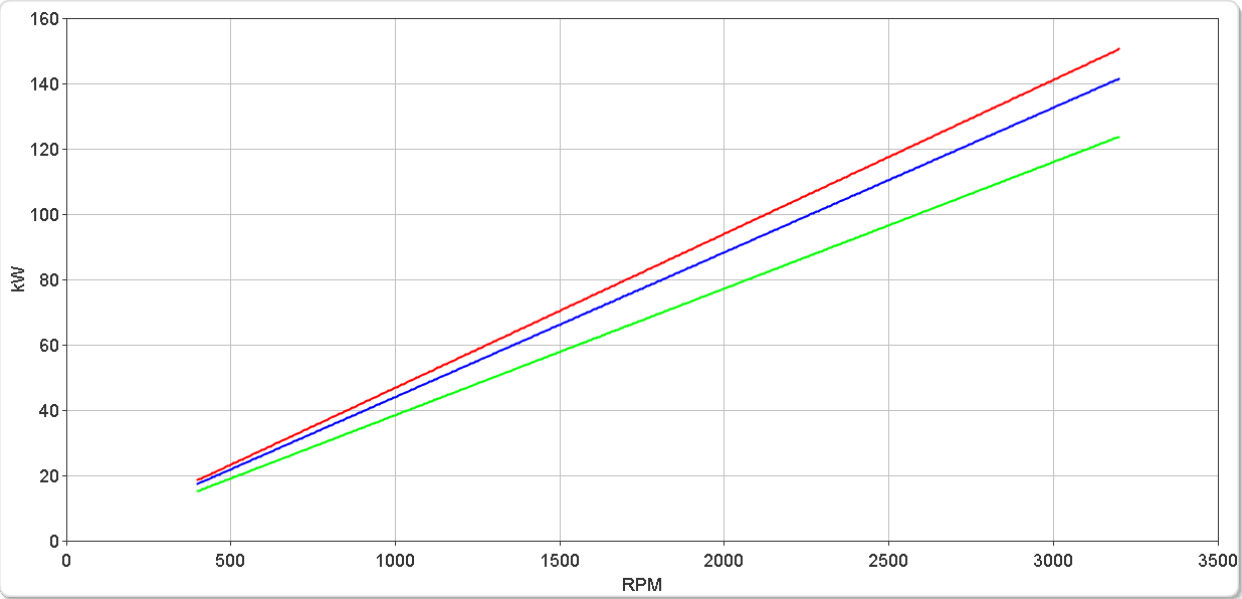
ZF 63 A

Ratings

Continuous Duty

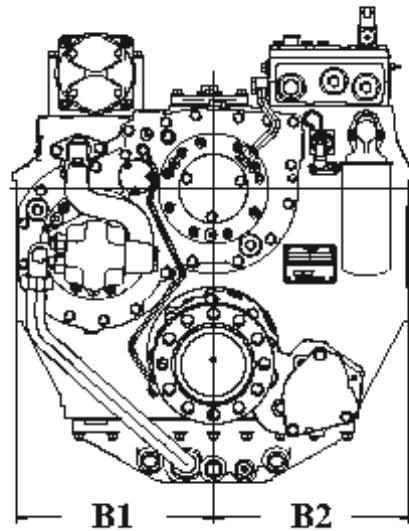
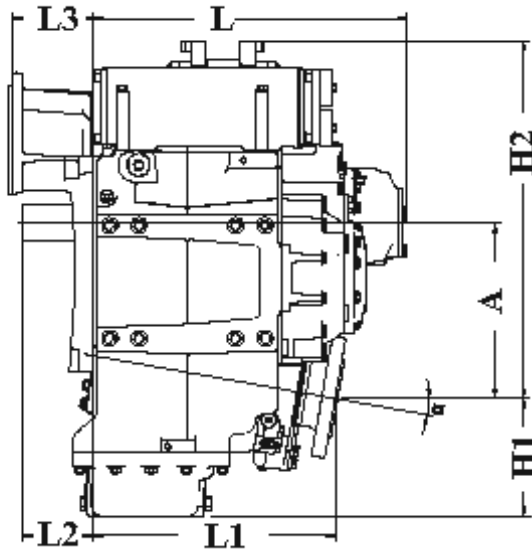
RATIOS			MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos	Nm	ftlb	kW	hp	kW	hp	kW	hp	kW	hp	
							1800 rpm	2100 rpm	2400 rpm				
	1.216	1.215	450	332	0.0471	0.0632	85	114	99	133	113	152	3200
	1.563	1.583	423	312	0.0443	0.0594	80	107	93	125	106	143	3200
	2.037	2.017	423	312	0.0443	0.0594	80	107	93	125	106	143	3200
	2.522	2.536	370	273	0.0387	0.0520	70	94	81	109	93	125	3200
	2.682	2.709	370	273	0.0387	0.0520	70	94	81	109	93	125	3200

'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



ZF 63 A

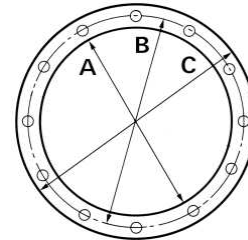
Dimensions



mm (inches)										
Angle	A	B ₁	B ₂	H ₁	H ₂	L	L ₁	L ₂	L ₃	Bell Hsg.
8.0	144 (5.67)	178 (6.99)	178 (6.99)	82.0 (3.23)	284 (11.2)	329 (13.0)	265 (10.4)	65.0 (2.56)	11.0 (0.43)	3
Weight kg (lb)						Oil Capacity Litre (US qt)				
44.0 (97.0)						4.00 (4.20)				

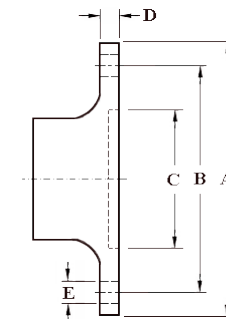
SAE Bell Housing Dimensions

SAE No.	A		B		C		Bolt Holes		
	mm	in	mm	in	mm	in	No.	Diameter	
3	409.58	16.125	428.63	16.875	450.85	17.75	12	10.32	13/32
4	361.95	14.25	381.0	15.0	403.23	15.875	12	10.32	13/32
5	314.33	12.375	333.38	13.125	355.6	14.0	8	10.32	13/32



Output Coupling Dimensions

A		B		C		D		Bolt Holes	
mm	in	mm	in	mm	in	mm	in	No.	Diameter (E)
133	5.24	108	4.25	63.5	2.50	9.50	0.37	4	11.5
									0.45



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.
CONTINUOUS DUTY DEFINITION	Continuous operation with little or no variations in engine speed and power
Average engine operating	Unlimited
hours limit:	
Typical hull forms:	Displacement.
Typical applications:	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.
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 63 IV

12° 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 .
- 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 .
- B/W connection integrated with casing .
- Smooth and reliable hydraulic shifting with control lever for attachment of push-pull cable .
- Suitable for twin engine installations (same torque capacity in ahead or astern mode. Reduction Ratios in ahead or astern are very close.) .
- Replaceable oil filter cartridge .
- Compact, space saving design; 12° vee-angle and beveloid gear .
- "SUPERSHIFT" clutch control .

Options

- Engine-matched dual stage coupling .
- SAE 3 and SAE 4 bell housings .
- Oil cooler complete with fittings and flexible oil hoses .
- Mounting brackets .
- Propeller shaft flange .
- Control cable bracket for mounting of push-pull cable to the control lever .
- Classification by all major Classification Societies on request .
- SAE «A» Power Take Off .
- Thermostatic valve for better performance of trolling valve in cold sea water .
- Trolling valve (mechanical) for slow-speed drive .
- Electric Trolling .





- Supershift (with Autotroll and Easidock) .

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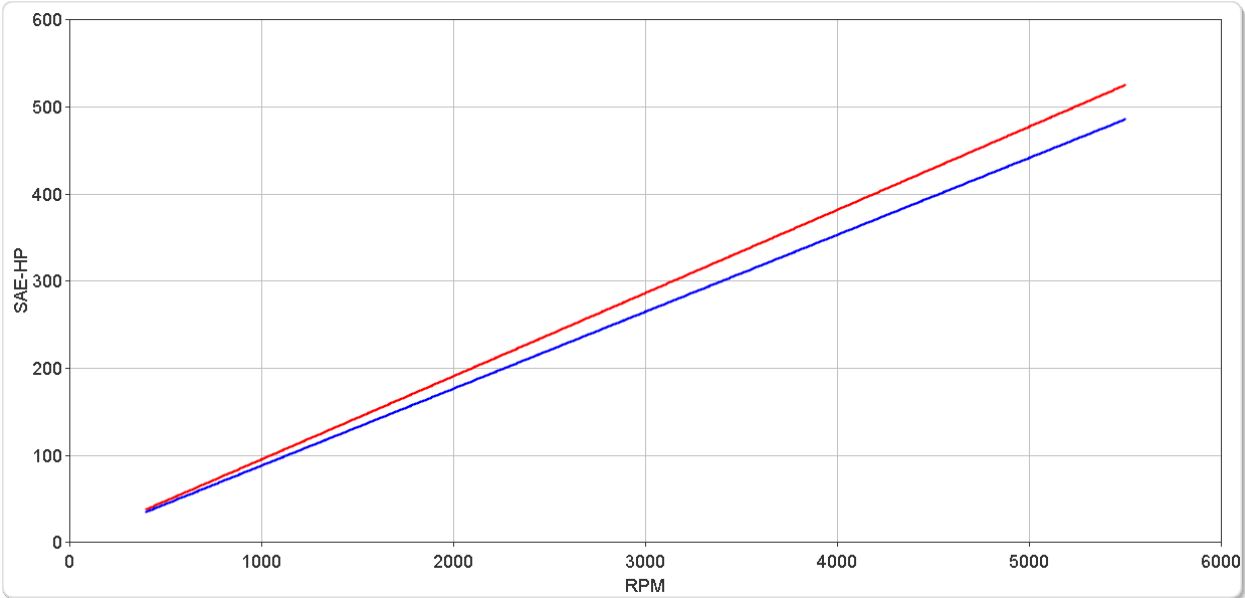
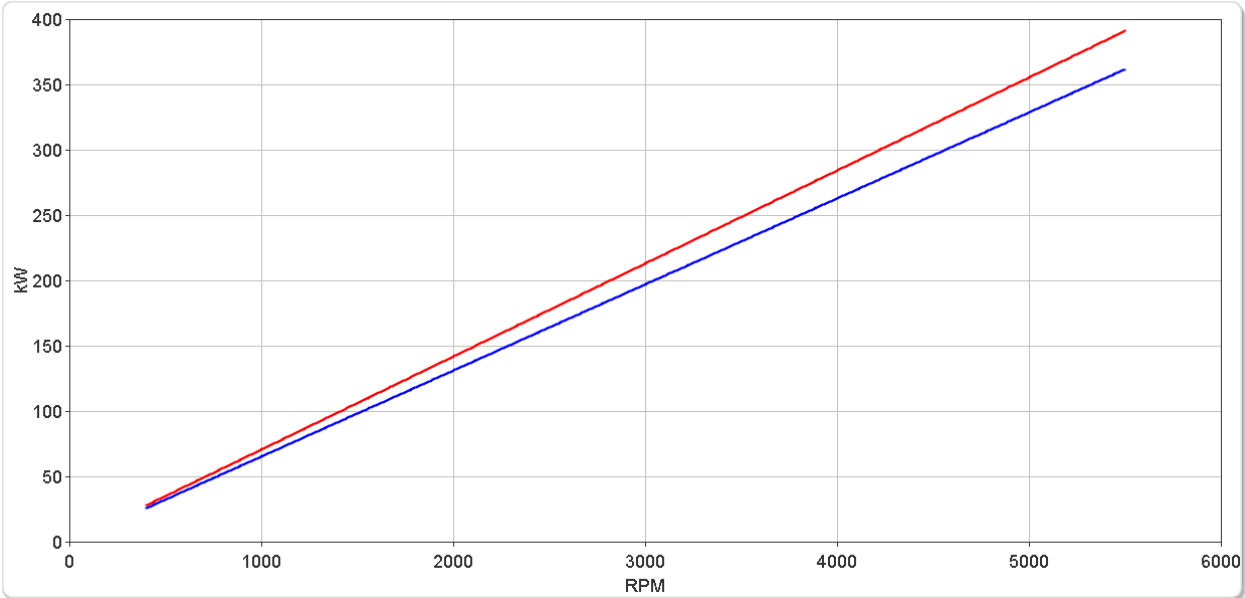
ZF 63 IV

Ratings

Pleasure Duty

RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	kW	hp	kW	hp			
								2800 rpm		3300 rpm		3800 rpm		
	1.294	1.288	680	502	0.0712	0.0955	199	267	235	315	271	363	5500	
	1.560	1.567	680	502	0.0712	0.0955	199	267	235	315	271	363	5500	
	1.992	2.033	680	502	0.0712	0.0955	199	267	235	315	271	363	5500	
	2.477	2.528	629	464	0.0659	0.0883	184	247	217	291	250	336	5500	





'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



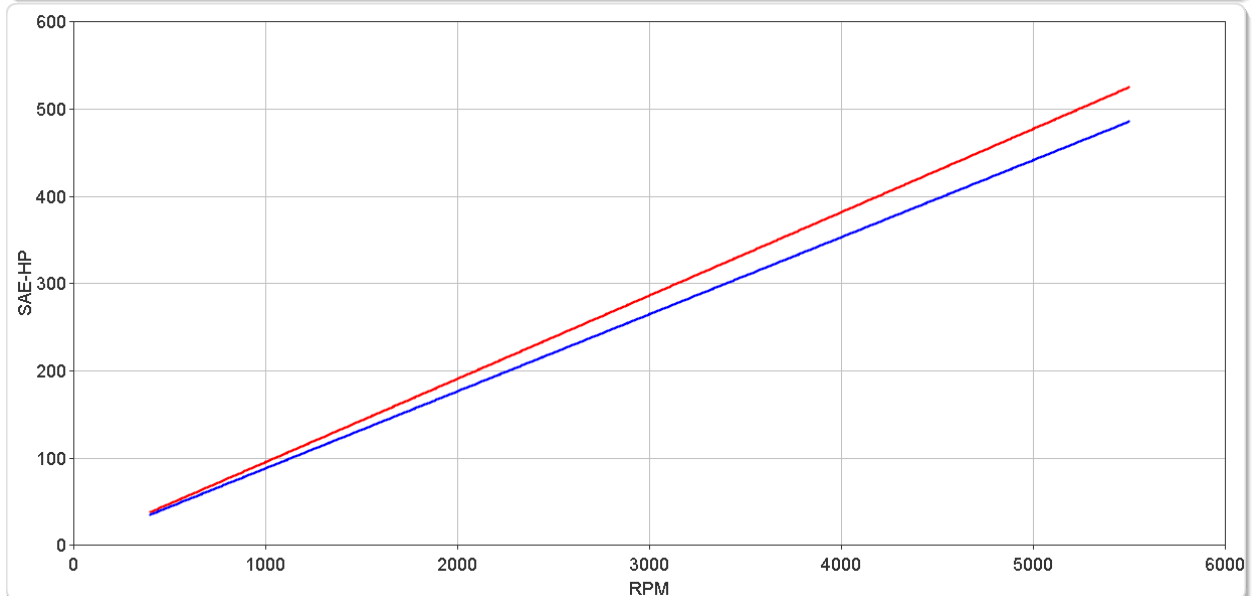
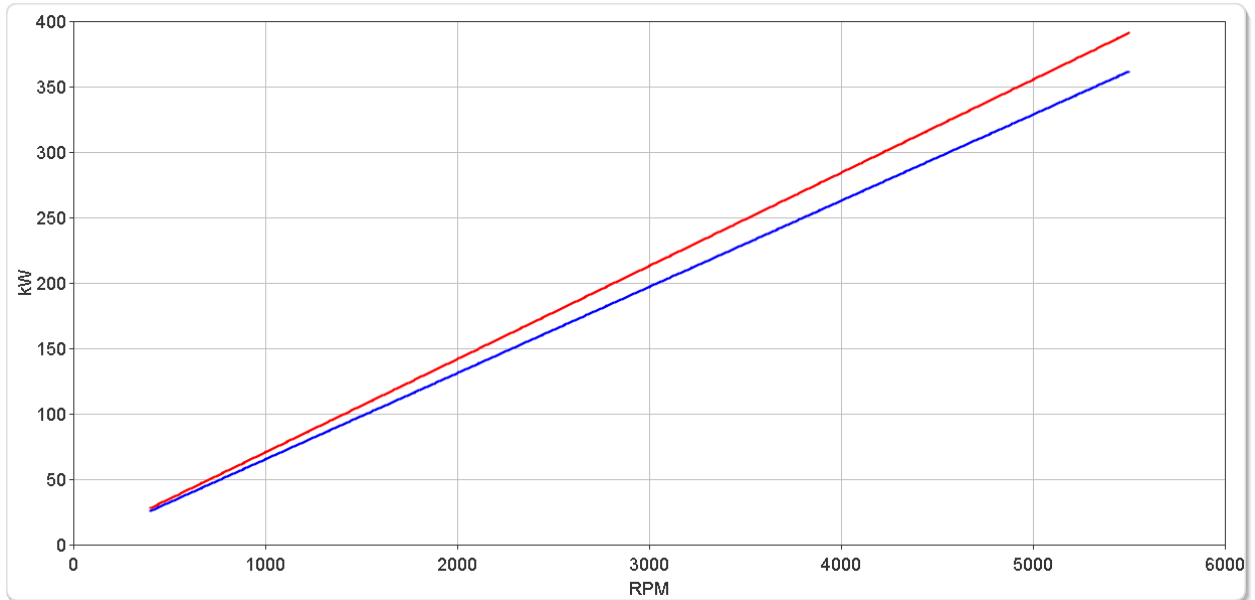
ZF 63 IV

Ratings

Pleasure Duty Gasoline

RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	4000 rpm		4400 rpm		4800 rpm		
	1.294	1.288		680	502	0.0712	0.0955	285	382	313	420	342	458	5500
	1.560	1.567		680	502	0.0712	0.0955	285	382	313	420	342	458	5500
	1.992	2.033		680	502	0.0712	0.0955	285	382	313	420	342	458	5500
	2.477	2.528		629	464	0.0659	0.0883	263	353	290	389	316	424	5500





'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



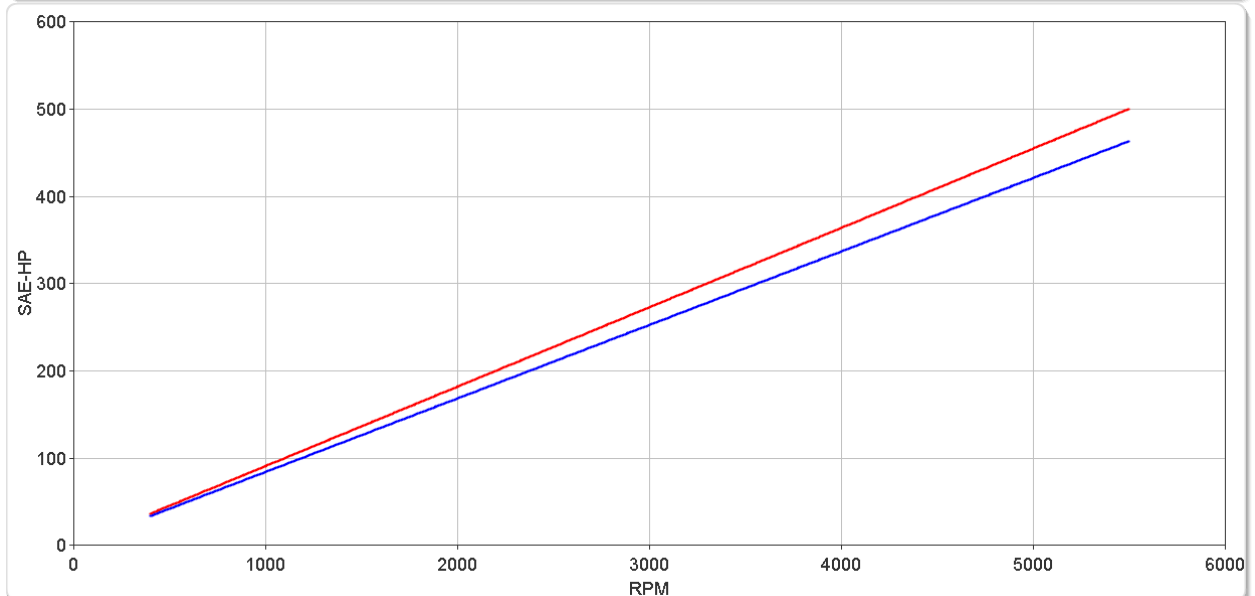
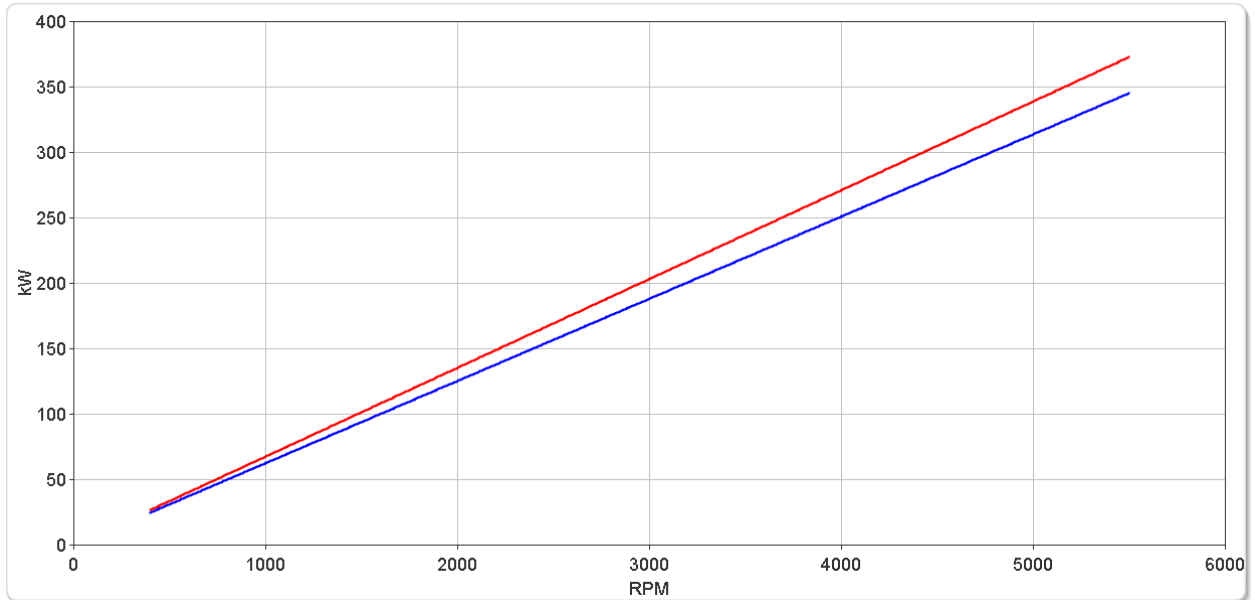
ZF 63 IV

Ratings

Light Duty

RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	2100 rpm		2500 rpm		2800 rpm		
								kW	hp	kW	hp	kW	hp	
	1.294	1.288		648	478	0.0679	0.0910	142	191	170	227	190	255	5500
	1.560	1.567		648	478	0.0679	0.0910	142	191	170	227	190	255	5500
	1.992	2.033		648	478	0.0679	0.0910	142	191	170	227	190	255	5500
	2.477	2.528		600	443	0.0628	0.0843	132	177	157	211	176	236	5500





'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



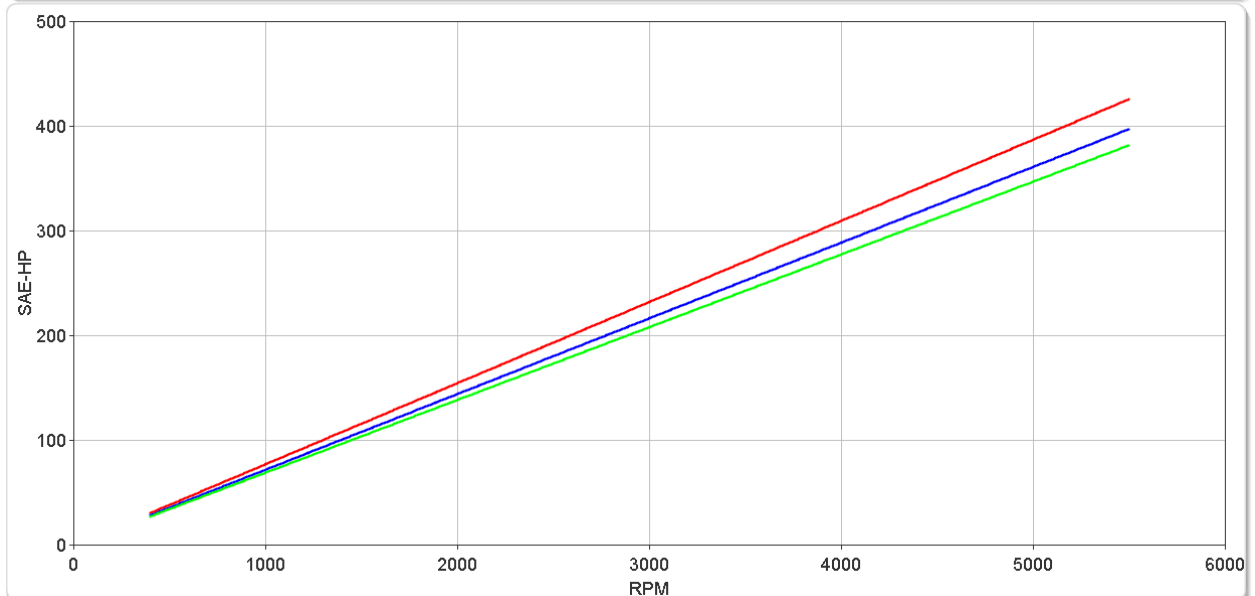
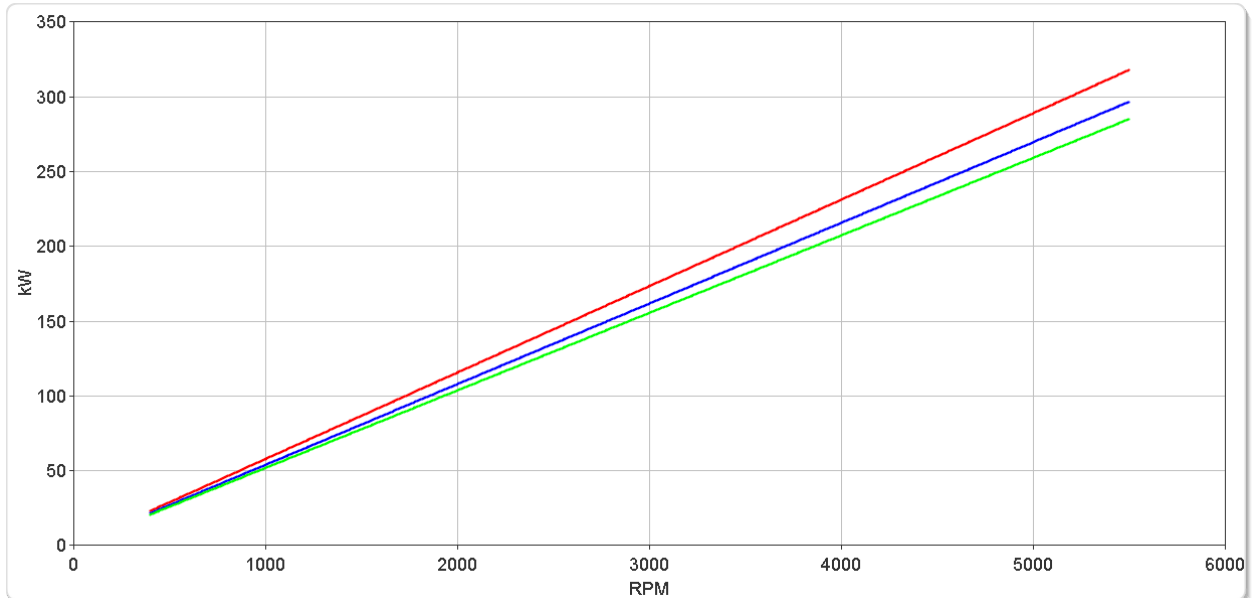
ZF 63 IV

Ratings

Medium Duty

RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	2100 rpm		2500 rpm		2800 rpm		
	1.294	1.288		552	407	0.0578	0.0775	121	163	145	194	162	217	5500
	1.560	1.567		515	380	0.0539	0.0723	113	152	135	181	151	202	5500
	1.992	2.033		515	380	0.0539	0.0723	113	152	135	181	151	202	5500
	2.477	2.528		495	365	0.0518	0.0695	109	146	130	174	145	195	5500





'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



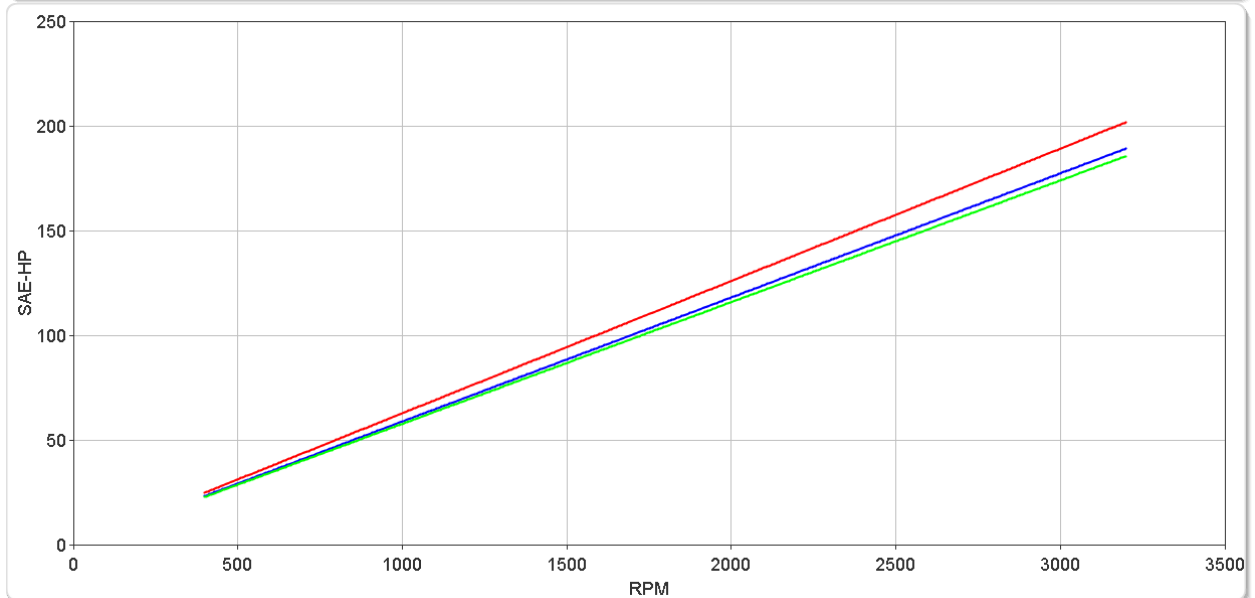
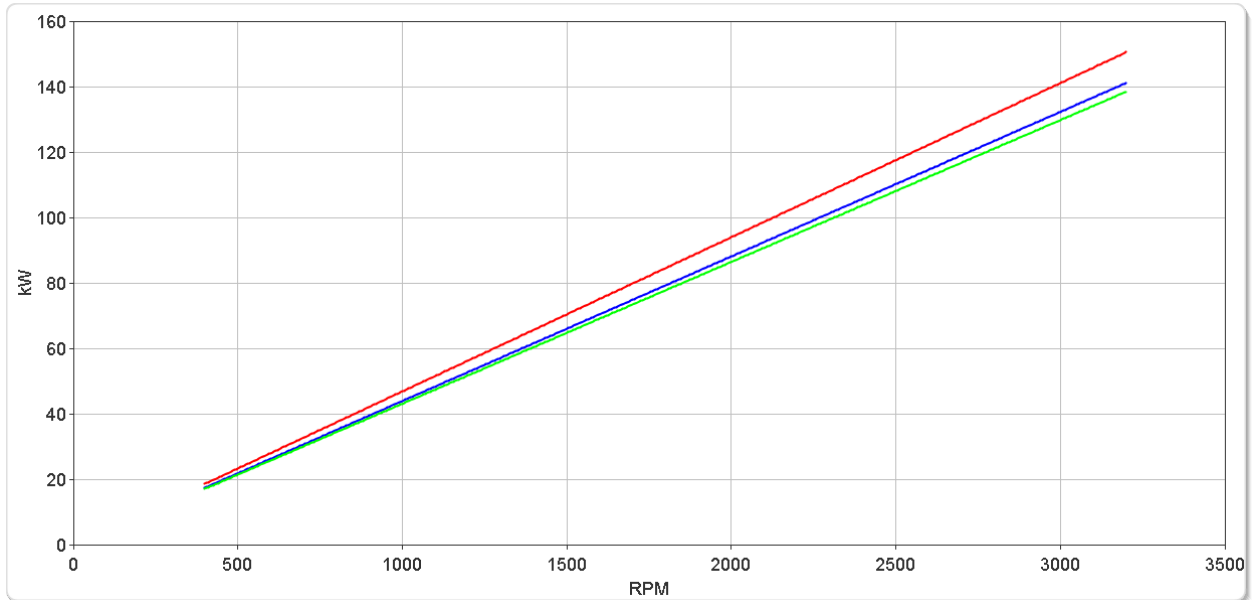
ZF 63 IV

Ratings

Continuous Duty

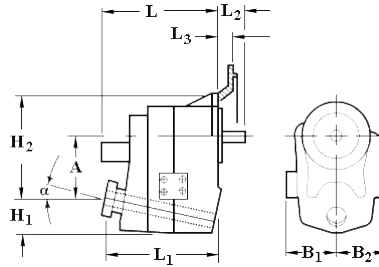
RATIOS				MAX. TORQUE		POWER/RPM		INPUT POWER CAPACITY						MAX. RPM
'A' Pos		'B' Pos		Nm	ftlb	kW	hp	1800 rpm		2100 rpm		2400 rpm		
								kW	hp	kW	hp	kW	hp	
	1.294	1.288		450	332	0.0471	0.0632	85	114	99	133	113	152	3200
	1.560	1.567		422	311	0.0442	0.0593	80	107	93	124	106	142	3200
	1.992	2.033		422	311	0.0442	0.0593	80	107	93	124	106	142	3200
	2.477	2.528		414	305	0.0434	0.0581	78	105	91	122	104	140	3200

'A' POS = continuous running position (normally AHEAD). 'B' POS = reverse position.



ZF 63 IV

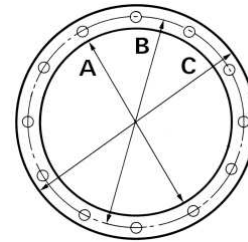
Dimensions



mm (inches)										
Angle	A	B ₁	B ₂	H ₁	H ₂	L	L ₁	L ₂	L ₃	Bell Hsg.
12.0	219 (8.61)	178 (6.99)	178 (6.99)	107 (4.22)	355 (14.0)	329 (12.9)	326 (12.8)	65.0 (2.56)	11.0 (0.43)	3
Weight kg (lb)						Oil Capacity Litre (US qt)				
62.0 (136)						4.00 (4.20)				

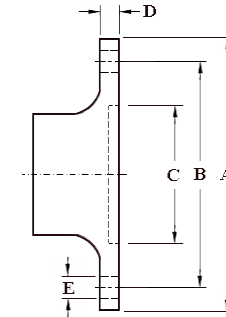
SAE Bell Housing Dimensions

SAE No.	A		B		C		Bolt Holes		
							No.	Diameter	
	mm	in	mm	in	mm	in		mm	in
3	409.58	16.125	428.63	16.875	450.85	17.75	12	10.32	13/32
4	361.95	14.25	381.0	15.0	403.23	15.875	12	10.32	13/32
5	314.33	12.375	333.38	13.125	355.6	14.0	8	10.32	13/32



Output Coupling Dimensions

A		B		C		D		Bolt Holes		
								No.	Diameter (E)	
mm	in	mm	in	mm	in	mm	in		mm	in
133	5.24	108	4.25	63.5	2.50	9.50	0.37	4	11.5	0.45



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.
CONTINUOUS DUTY DEFINITION	Continuous operation with little or no variations in engine speed and power
Average engine operating	Unlimited
hours limit:	
Typical hull forms:	Displacement.
Typical applications:	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

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