

OPTIONAL FRONT COVER SHOWN

NOTE: CG DOES NOT INCLUDE TRANSMISSION.

- NOTES:
- (1) REFER TO THE APPLICATION MANUAL FOR COMPLETE PRODUCT INSTALLATION REQUIREMENTS.
  - (2) DIMENSIONS REQUIRE A MINIMUM OF 1/2 in. (13 mm) CLEARANCE FOR MOTOR MOUNT DEFLECTION.
  - (3) INNER AND OUTER SURFACES OF TRANSOM MUST BE PARALLEL WITHIN 1/8 in. (3 mm) IN AREA COVERED BY TRANSOM PLATES AND REMAIN WITHIN TRANSOM THICKNESS LIMITS.
  - (4) REFER TO "TRANSOM CUTOUT" IN THE INSTALLATION MANUAL TO FIND THE CRANKSHAFT CENTERLINE VS. BOAT BOTTOM.

V3-DIESEL\_V6\_68IV

REVISION

A

UNITS

mm  
(in)

SCALE

25.4 mm = 305 mm  
1" = 1'

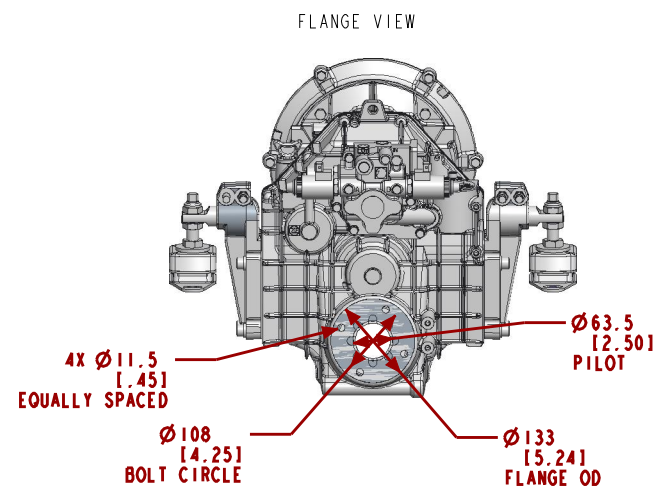
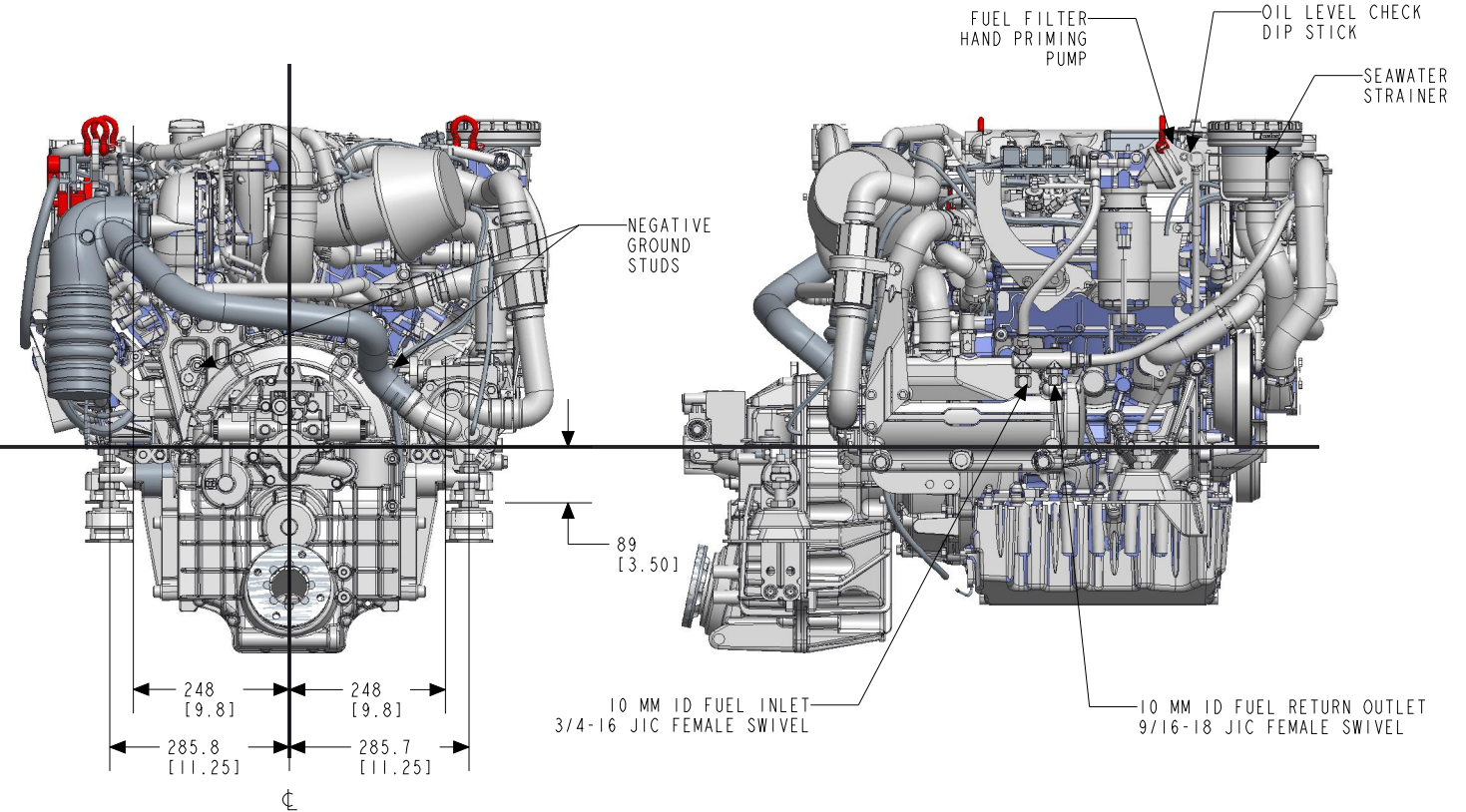
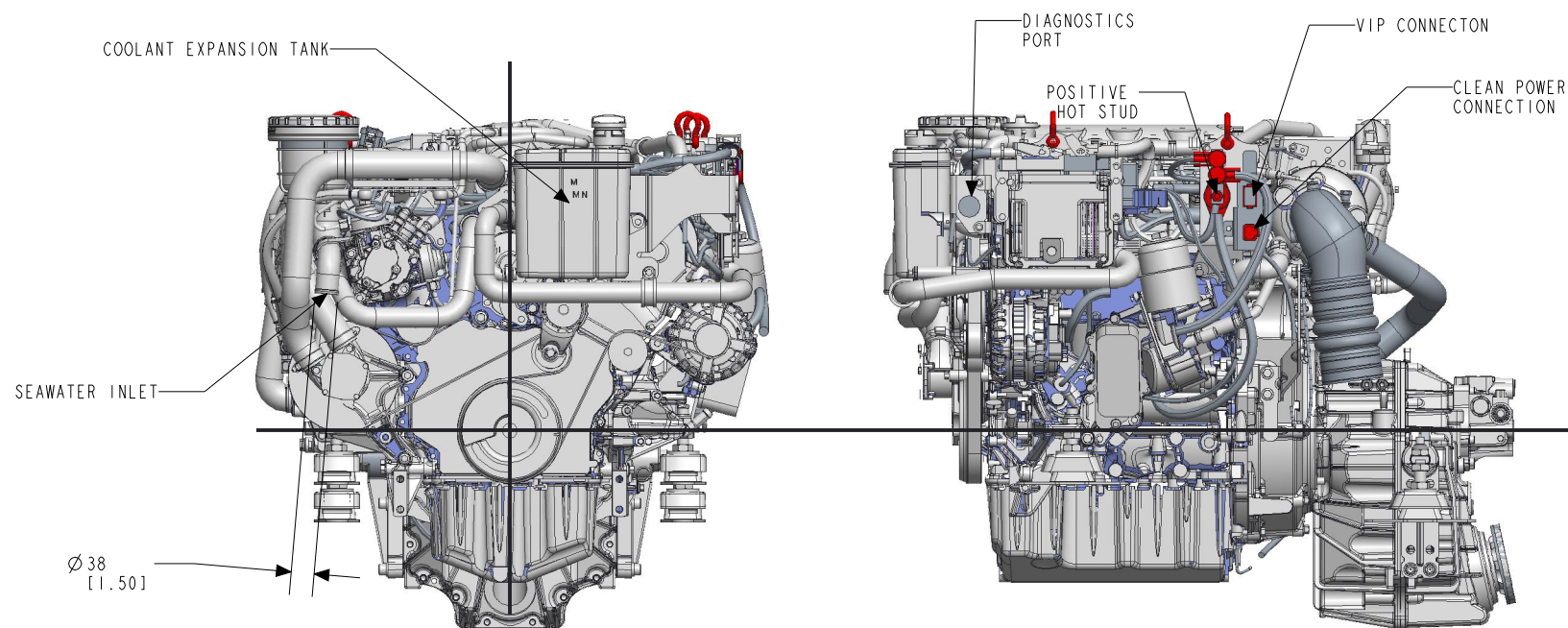
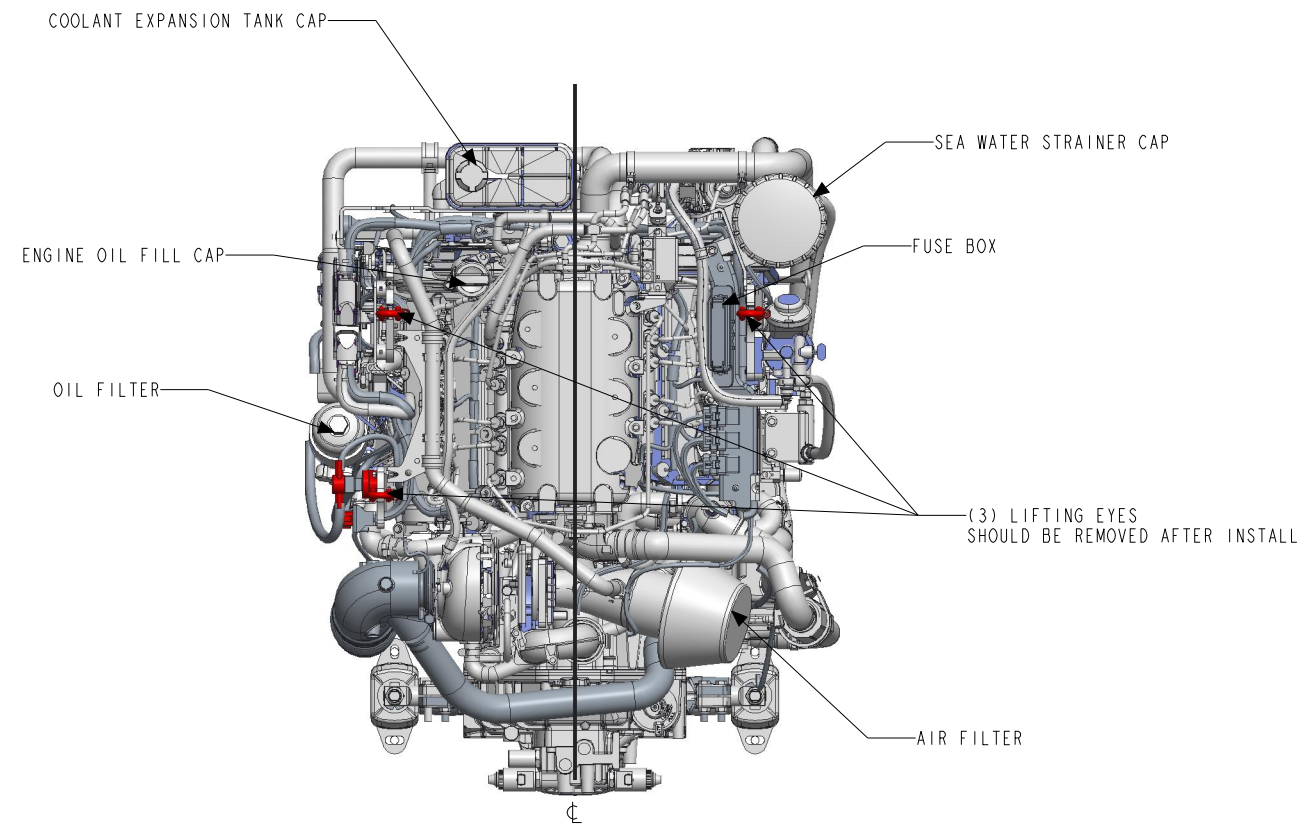
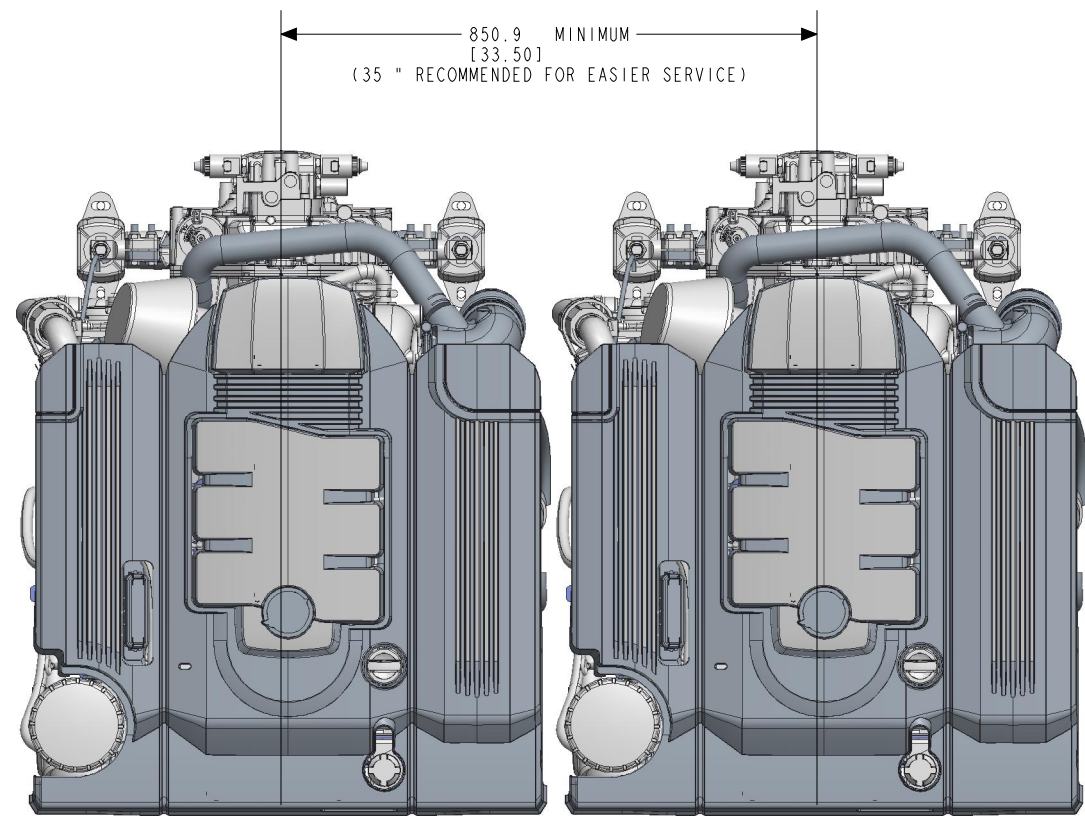
SHEETS

1 OF 3

**MERCURY**  
MerCruiser

FORMAT B SIZE





\*VIEWS ARE SHOWN WITH STANDARD TOP AND OPTIONAL FRONT ENGINE COVERS REMOVED\*

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V3-DIESEL\_V6\_68IV

REVISION  
A

UNITS  
mm  
(in)

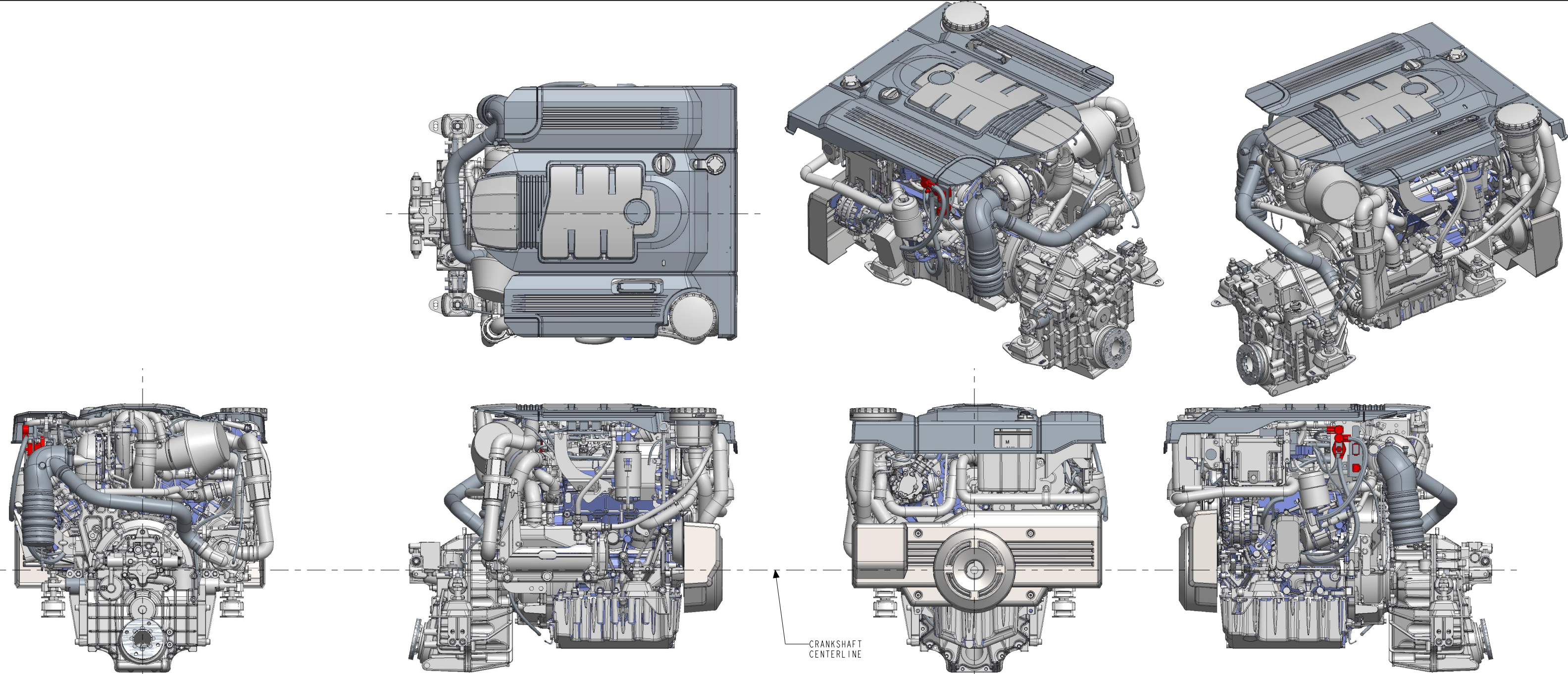
SCALE  
25.4 mm = 305 mm  
1" = 1'

SHEETS  
2 OF 3

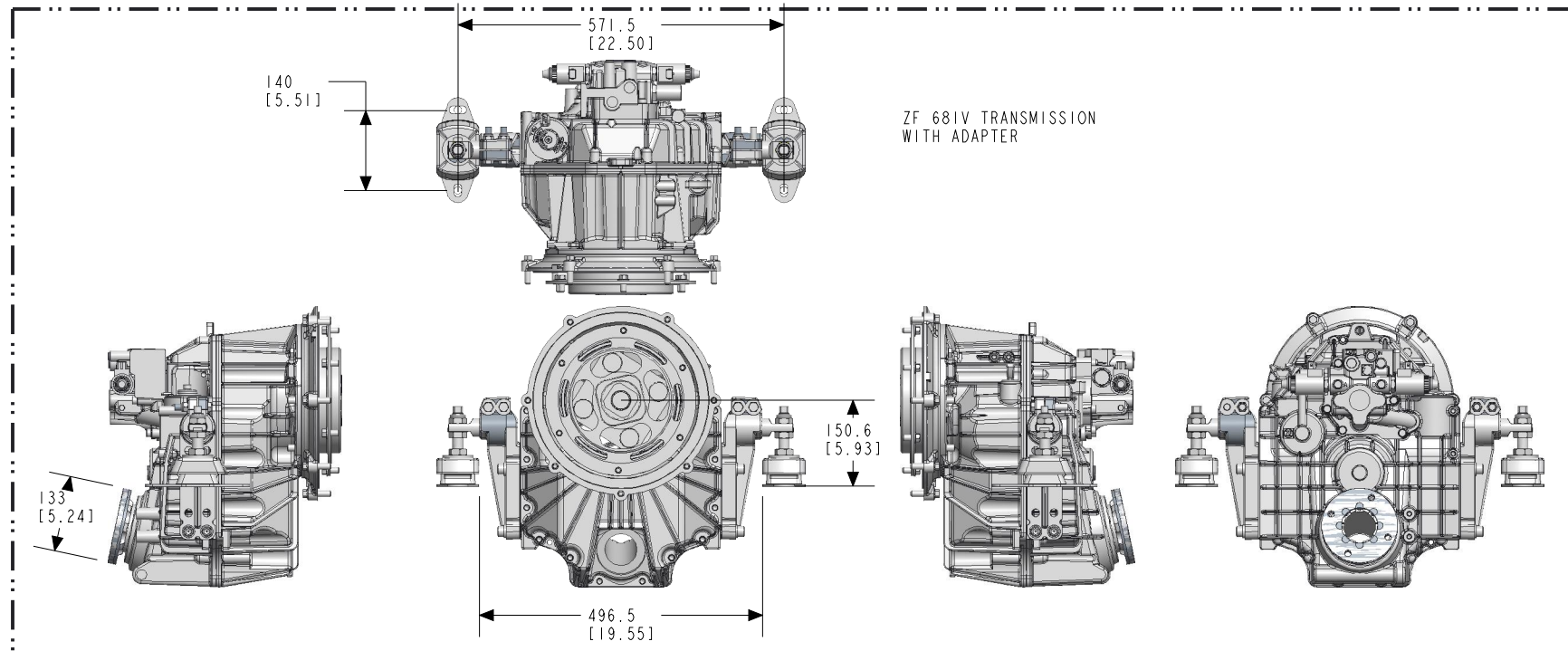
**MERCURY**  
MerCruiser

FORMAT B SIZE





CRANKSHAFT  
CENTERLINE



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V3-DIESEL_V6_68IV	REVISION A	UNITS mm (in)	SCALE 25.4 mm = 305 mm 1" = 1'	SHEETS 3 of 3	
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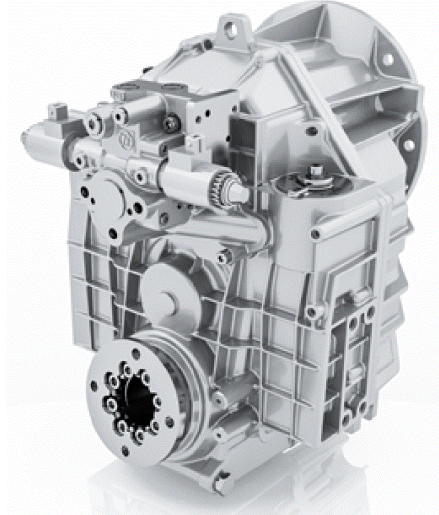


# ZF 68 IV

## TECHNICAL DATA SHEET

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### ZF 63 SERIES PRODUCT DETAILS



#### 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



# ZF 68 IV

## RATINGS

Ratios		Power Factor		Input Power Capacity						Max.	Max.	Max.
'A' Pos	'B' Pos	kW/RPM	hp/RPM	kW	hp	kW	hp	kW	hp	kW	hp	RPM
Pleasure Duty - Diesel				2800 RPM		3300 RPM		3800 RPM				
1.294	1.288	0.0712	0.0955	199	267	235	315	271	363	427	573	6000
1.560	1.567	0.0712	0.0955	199	267	235	315	271	363	427	573	6000
1.746	1.749	0.0712	0.0955	199	267	235	315	271	363	427	573	6000
1.992	2.033	0.0712	0.0955	199	267	235	315	271	363	427	573	6000
2.477	2.528	0.0659	0.0884	185	248	217	292	250	336	395	530	6000
Pleasure Duty - Gasoline				2800 RPM		3300 RPM		3800 RPM				
1.294	1.288	0.0712	0.0955	199	267	235	315	271	363	427	573	6000
1.560	1.567	0.0712	0.0955	199	267	235	315	271	363	427	573	6000
1.746	1.749	0.0712	0.0955	199	267	235	315	271	363	427	573	6000
1.992	2.033	0.0712	0.0955	199	267	235	315	271	363	427	573	6000
2.477	2.528	0.0659	0.0884	185	248	217	292	250	336	395	530	6000
Light Duty - Diesel				2100 RPM		2500 RPM		2800 RPM				
1.294	1.288	0.0678	0.0909	142	191	170	227	190	255	407	545	6000
1.560	1.567	0.0678	0.0909	142	191	170	227	190	255	407	545	6000
1.746	1.749	0.0678	0.0909	142	191	170	227	190	255	407	545	6000
1.992	2.033	0.0678	0.0909	142	191	170	227	190	255	407	545	6000
2.477	2.528	0.0628	0.0842	132	177	157	211	176	236	377	505	6000
Medium Duty - Diesel				2100 RPM		2500 RPM		2800 RPM				
1.294	1.288	0.0578	0.0775	121	163	145	194	162	217	347	465	6000
1.560	1.567	0.0539	0.0723	113	152	135	181	151	202	323	434	6000
1.746	1.749	0.0539	0.0723	113	152	135	181	151	202	323	434	6000
1.992	2.033	0.0539	0.0723	113	152	135	181	151	202	323	434	6000
2.477	2.528	0.0518	0.0695	109	146	130	174	145	195	311	417	6000
Continuous Duty - Diesel				1800 RPM		2100 RPM		2400 RPM				
1.294	1.288	0.0471	0.0632	85	114	99	133	113	152	283	379	6000
1.560	1.567	0.0442	0.0593	80	107	93	125	106	142	265	356	6000
1.746	1.749	0.0442	0.0593	80	107	93	125	106	142	265	356	6000
1.992	2.033	0.0442	0.0593	80	107	93	125	106	142	265	356	6000
2.477	2.528	0.0433	0.0581	78	105	91	122	104	139	260	349	6000

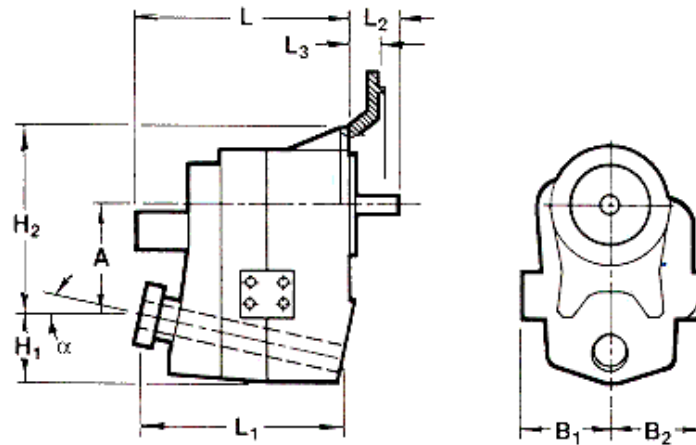
\* Special Order Ratio

'A' Pos: Continuous running position

'B' Pos: Reverse position

# ZF 68 IV

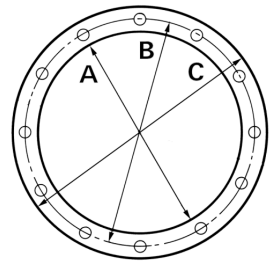
## DIMENSIONS



A	B1	B2	H1	H2	L0	L1	L2
Millimeter (mm)							
218.7	178.0	178.0	107.3	354.7	328.7	326.0	65.0
Inch (in)							
8.61	7.01	7.01	4.22	13.96	12.94	12.83	2.56
Angle (°)	Weight (kg)		Weight (lb)		Amount of Oil (l)		Amount of Oil (qt)
12	62		137		4.0		4.2

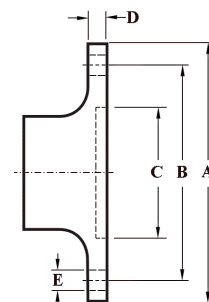
## BELL HOUSING DIMENSIONS

Name	A		B		C		L3		Bolt Holes		
									No.	Diameter	
	mm	in	mm	in	mm	in	mm	in		mm	in
SAE 3	409.58	16.13	428.63	16.88	450.85	17.75	11.0	0.43	12	10.32	0.41
SAE 4	361.95	14.25	381.0	15.0	403.23	15.88			12	10.32	0.41
SAE 5	314.33	12.38	333.38	13.13	355.6	14.0			8	10.32	0.41
B/W											
Volvo D4-D6											
Volvo 30-40											
Yanmar 4LH											



## OUTPUT FLANGE DIMENSIONS

A		B		C		D		Bolt Holes		
								No.	Diameter (E)	
mm	in	mm	in	mm	in	mm	in		mm	in
133.0	5.24	108.0	4.25	63.5	2.5	9.5	0.37	8	11.5	0.45



# GENERAL INFORMATION

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## Duty Definitions

### Pleasure Duty

Highly intermittent operation with very large variations in engine speed and power.

Average engine operating hours limit:	500 hours/year
Typical hull forms:	300 hours/year for mechanical gearboxes Planing
Applications:	Private, non-commercial, non-charter leisure activities, no racing

### Light Duty

Intermittent operation with large variations in engine speed and power.

Average engine operating hours limit:	2500 hours/year (for hydraulic transmissions smaller than ZF 2000 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

Intermittent operation with some variations in engine speed and power.

Average engine operating hours limit:	4000 hours/year (for hydraulic transmissions smaller than ZF 2000 series and workboat ZF W2700 series, 3500 hours/year)
Typical hull forms:	Semi-displacement and displacement
Typical applications:	Charter and commercial craft (example: crew boats), and naval and police activities

### Continuous Duty

Continuous operation with little or no variations in engine speed and power.

Average engine operating hours limit:	Unlimited
Typical hull forms:	Displacement
Typical applications:	Heavy duty commercial vessels

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## Technical Notes

### 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.
- 1 Kg = 0.454 lb

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, 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.

### Survey Society Classification

In most cases, the maximum medium and continuous duty ratings permitted 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 service).

### Dimensions and Weights

Dimensions and weights refer to transmissions with bell housing (where appropriate) but excluding options such as: trolling valves, power take-offs, propeller shaft companion flanges, torsional couplings etc.

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## Torsional Vibration and Torsional Couplings

The responsibility for ensuring torsional vibration compatibility rests with the overall propulsion system integration responsible party.

Compatibility check of torsional vibration must include excitations induced by engine governor. ZF cannot accept any liability for gearbox noise or for damage to the gearbox, the flexible coupling or to other parts of the drive unit caused by torsional vibrations. Contact ZF for further information and assistance.

For single engine powered boats, where loss of propulsion can result in loss of control, ZF recommends the use of a torsional limit stop. It is the buyer's responsibility to specify this option. ZF cannot accept any 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 at commonly rated engine speeds. Consult ZF for details concerning speed limits of standard offered torsional couplings, which can be below transmission limits. Special torsional couplings may be required for Survey Society requirements.