



Installation Manual

Thruster systems

Stern tunnel

Installation Manual

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To prevent personal injury, death, or damage to this product, the vessel, or other equipment, it is essential that you carefully follow all instructions in this manual during installation and operation. Failure to follow these instructions will immediately void all warranties provided by Sleipner Motor.

Warnings and notices throughout this document highlight situations that require special caution. Always pay close attention when these appear.



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or damage to the product.

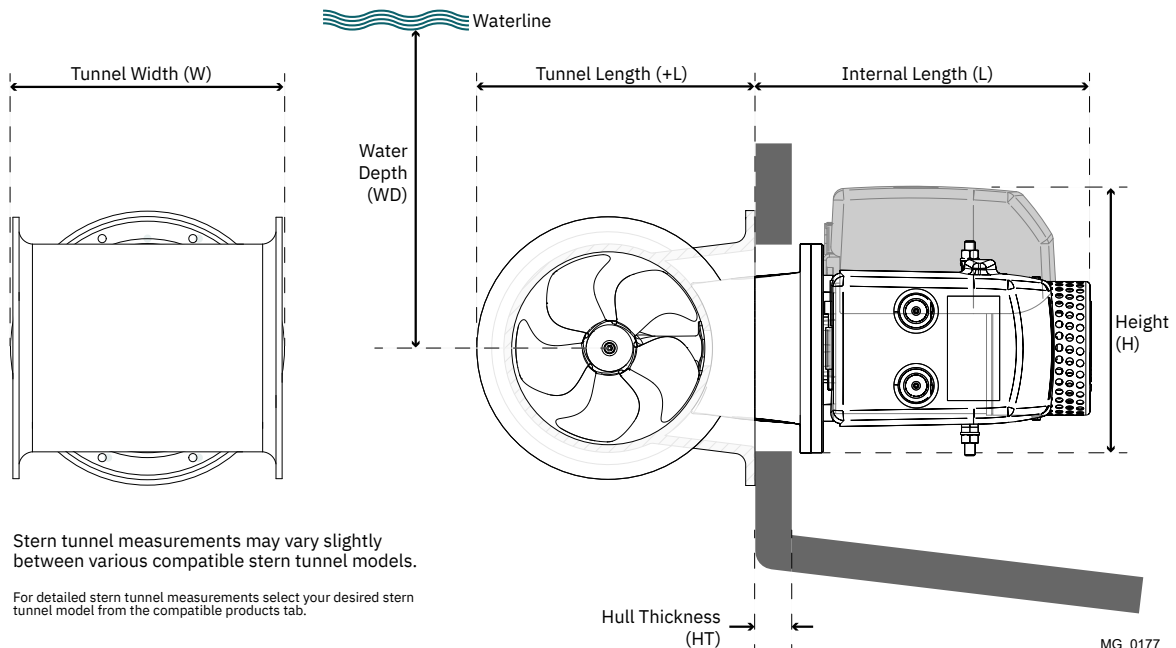
Measurement code	Measurement description	SE(P) 30 12V		SE(P) 40 12V		SE(P) 60 12V		SE(P) 60 24V		SE(P) 80 12V		SE(P) 80 24V		SE(P) 100 12V	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
L	Internal Length	218	8.6	228	9	231	9.1	214	8.4	294	11.6	303	11.9	351	13.8
+L	Tunnel Length	188	7.4	188	7.4	265	10.4	265	10.4	265	10.4	265	10.4	265	10.4
WD	Water Depth*	125	4.9	125	4.9	185	7.3	185	7.3	185	7.3	185	7.3	185	7.3
HT(max)	Hull Thickness	19	0.8	17	0.7	43	1.7	56	2.2	56	2.2	56	2.2	60	2.4
H	Motor Height	198	7.9	205	8.1	200	7.9	202	8	253	10	261	10.3	292	11.5
W	Tunnel Width	197	7.8	197	7.8	335	13.2	335	13.2	335	13.2	335	13.2	335	13.2
Stern Tunnel		90124I		90124I		90052I		90052I		90086I		90086I		90086I	

Measurement code	Measurement description	SE(P) 100 24V		SE(P) 120 24V		SE(P) 130 12V		SE(P) 130 24V		SE(P) 150 24V		SE(P) 170 24V		SE(P) 210 24V	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
L	Internal Length	351	13.8	361	14.2	352	13.9	348	13.7	380	15	362	14.3	422	16.6
+L	Tunnel Length	265	10.4	300	11.8	345	13.6	345	13.6	300	11.8	345	13.6	360	14.2
WD	Water Depth*	185	7.3	215	8.5	250	9.9	250	9.9	215	8.5	250	9.9	250	9.8
HT(max)	Hull Thickness	64	2.5	61	2.4	56	2.2	55	2.2	73	2.9	56	2.2	50	2
H	Motor Height	272	10.7	266	10.5	297	11.7	277	10.9	292	11.5	292	11.5	274	10.8
W	Tunnel Width	335	13.2	330	13	350	13.8	350	13.8	330	13	350	13.8	350	13.8
Stern Tunnel		90086I		90135I		90140I 90150I		90140I 90150I		90135I		90150I 90140I		90150I 90180I	

Measurement code	Measurement description	SE(P) 250 24V		SE(P) 300 48V	
		mm	inch	mm	inch
L	Internal Length	440	17.3	407.2	16
+L	Tunnel Length	417	16.4	422	16.6
WD	Water Depth*	300	11.8	300	11.8
HT(max)	Hull Thickness	68	2.7	67	2.6
H	Motor Height	337	13.3	350	13.8
W	Tunnel Width	456	18	456	18
Stern Tunnel		90200I		90200I	

* See also recommendations on page 13

MC_0141



Stern tunnel measurements may vary slightly between various compatible stern tunnel models.

For detailed stern tunnel measurements select your desired stern tunnel model from the compatible products tab.

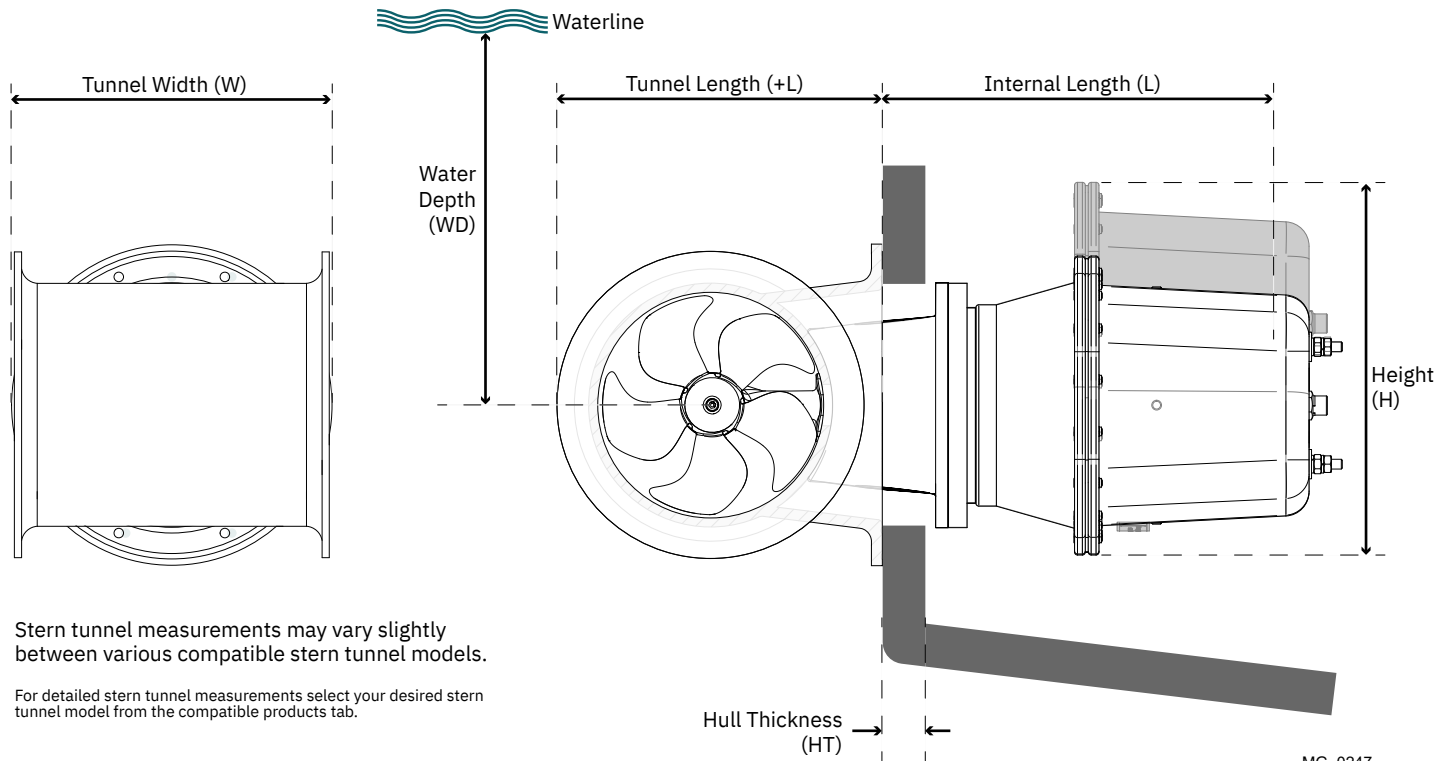
MG_0177

Measurement code	Measurement description	SE(P) 30 IP 12V		SE(P) 40 IP 12V		SE(P) 60 IP 12V		SE(P) 60 IP 24V		SE(P) 80 IP 12V		SE(P) 80 IP 24V		SE(P) 100 IP 12V	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
L	Internal Length	256	10.1	268	10.6	278	10.9	278	10.9	364	14.3	364	14.3	458	14.3
+L	Tunnel Length	188	7.4	188	7.4	265	10.4	265	10.4	265	10.4	265	10.4	265	10.4
WD	Water Depth*	125	4.9	125	4.9	185	7.3	185	7.3	185	7.3	185	7.3	185	7.3
HT(max)	Hull Thickness	70	2.8	65	2.6	88	3.5	88	3.5	64	2.5	64	2.5	72	2.8
H	Motor Height	238	9.4	238	9.4	272	10.7	272	10.7	327	12.9	327	12.9	381	12.9
W	Tunnel Width	198	7.8	197	7.8	335	13.2	335	13.2	335	13.2	335	13.2	335	13.2
Stern Tunnel		90124I		90124I		90052I		90052I		90086I		90086I		90086I	

Measurement code	Measurement description	SE(P) 100 IP 24V		SE(P) 120 IP 24V		SE(P) 130 IP 12V		SE(P) 130 IP 24V		SE(P) 170 IP 24V	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
L	Internal Length	468	18.4	463	18.2	463	18.2	463	18.2	362	18.2
+L	Tunnel Length	265	10.4	300	11.8	345	13.6	345	13.6	345	13.6
WD	Water Depth*	185	7.3	215	8.5	250	9.8	250	9.8	250	9.8
HT(max)	Hull Thickness	81	3.2	97	3.8	83	3.3	83	3.3	56	2.2
H	Motor Height	381	15	381	15	381	15	381	15	292	11.5
W	Tunnel Width	335	13.2	330	13	350	13.8	350	13.8	350	13.8
Stern Tunnel		90086I		90135I		90140I 90150I		90140I 90150I		90140I 90150I	

MC_0220

* See also recommendations on page 13



MG_0247

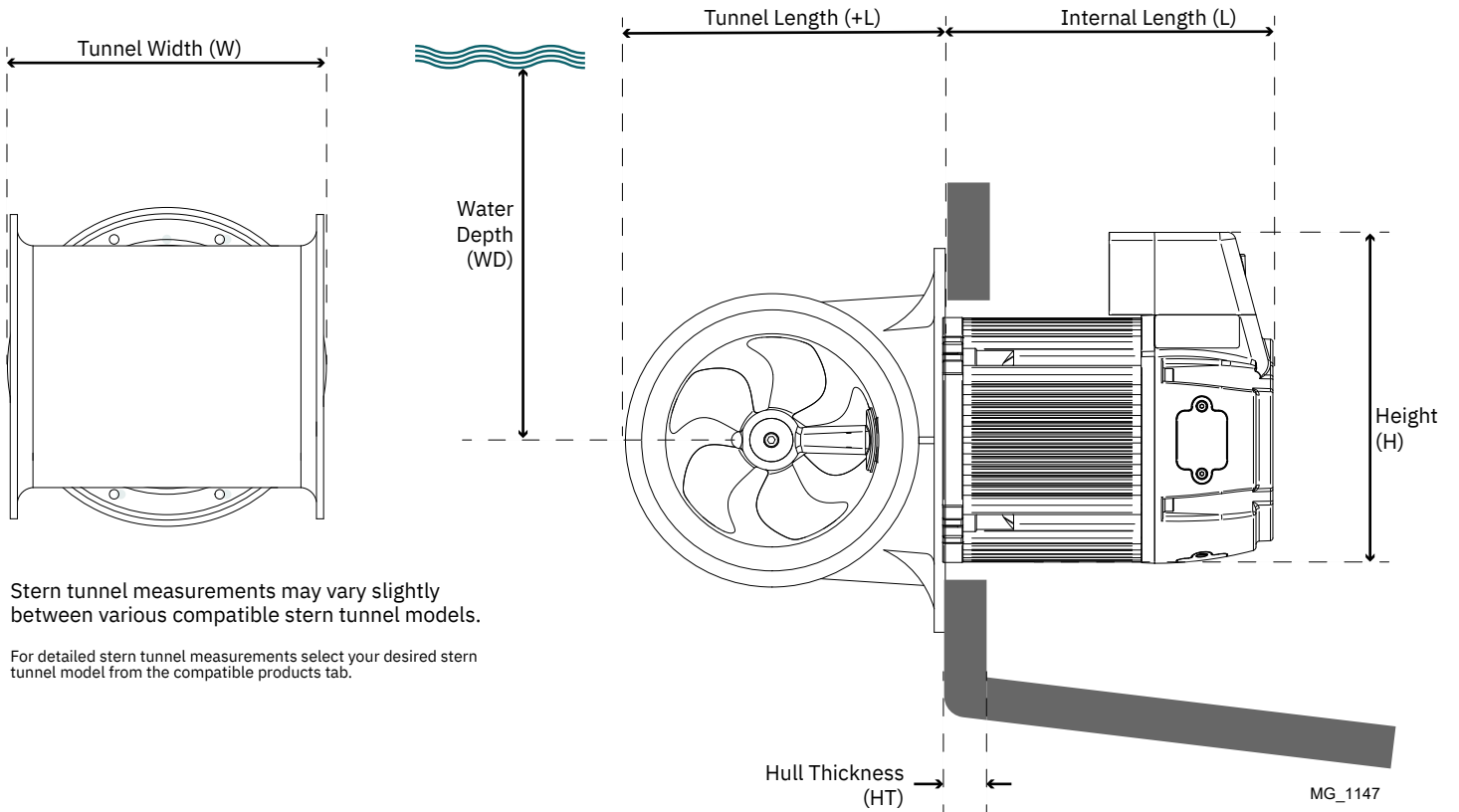
Stern tunnel measurements may vary slightly between various compatible stern tunnel models.

For detailed stern tunnel measurements select your desired stern tunnel model from the compatible products tab.

Measurement code	Measurement description	E30 12V		E40 12V		E60 12V & 24V		E80 12V & 24V		E95 24V	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
L	Internal Length										
+L	Tunnel Length	190	7.48	190	7.48	265	10.43	265	10.43	265	10.43
WD	Water Depth*	125	4.92	125	4.92	185	7.28	185	7.28	185	7.28
HT(max)	Hull Thickness	19	0.75	17	0.67	43	1.69	56	2.20	56	2.20
H	Motor Height	196	7.72	196	7.72	196	7.72	196	7.72	196	7.72
W	Tunnel Width	197	7.76	197	7.76	335	13.19	335	13.19	335	13.19
Stern Tunnel		90124I		90124I		90052I 90086I		90052I 90086I		90052I 90086I	

* See also recommendations on page 13

MC_1162

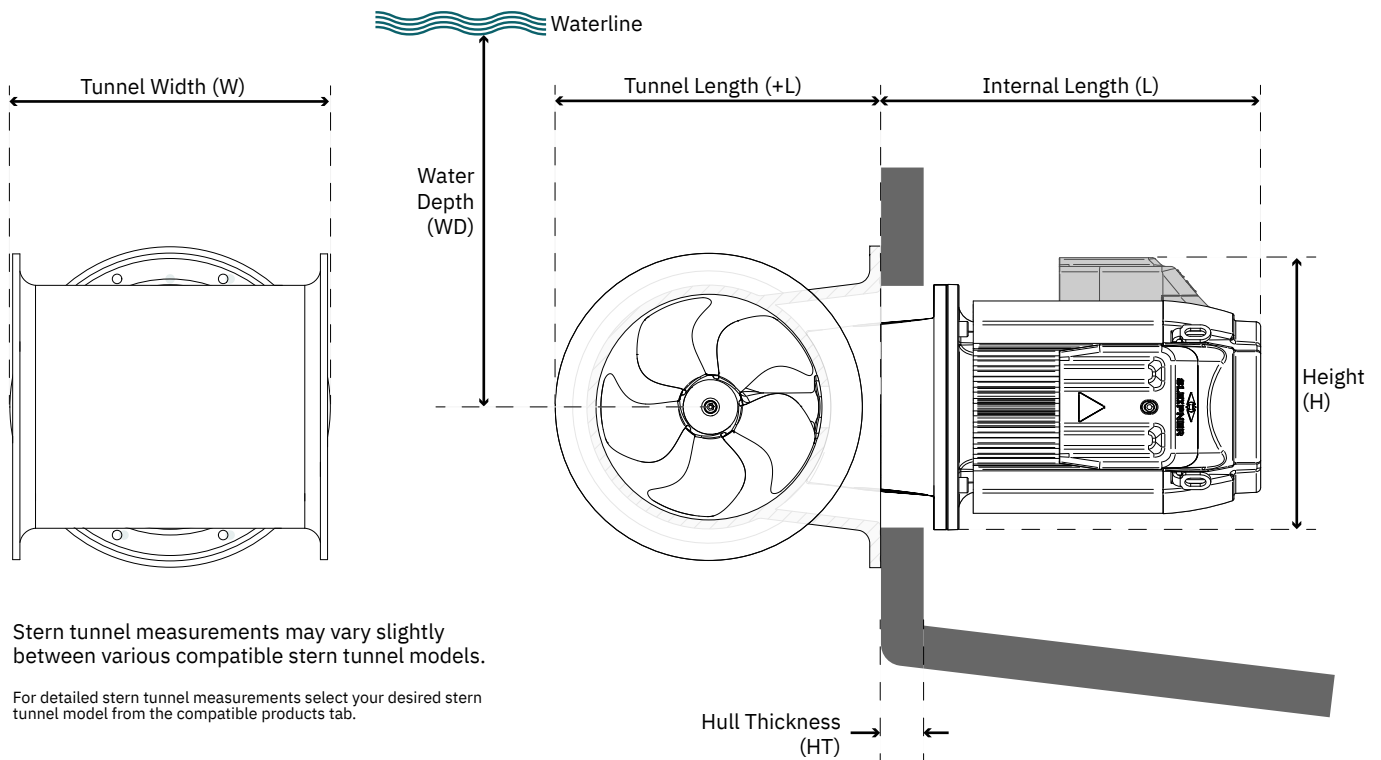


Measurement code	Measurement description	E100 24V & 48V		E120 24V & 48V		E130 24V & 48V		E150 24V & 48V		E170 24V & 48V		E210 24V & 48V		E240 48V	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
L	Internal Length	359	14.1	354.5	14.0	339	13.3	354.5	14.0	339	13.3	370	14.6	370	14.6
+L	Tunnel Length	265	10.4	300	11.8	345	13.6	300	11.8	344.5	13.6	353	13.9	353	13.9
WD	Water Depth*	185	7.3	215	8.5	250	9.8	215	8.5	250	9.8	250	9.8	250	9.8
HT(max)	Hull Thickness	42	1.7	57	2.2	42	1.7	57	2.2	42	1.7	33	1.3	33	1.3
H	Motor Height	285	11.2	285	11.2	285	11.2	285	11.2	285	11.2	285	11.2	285	11.2
W	Tunnel Width	335	13.2	330	13.0	350	13.8	330	13.0	350	13.8	350	13.8	350	13.8
Stern Tunnel		90086I		90135I		90140I 90150I		90135I		90140I 90150I		90150I		90150I	

Measurement code	Measurement description	E250 24V & 48V		E300 48V	
		mm	inch	mm	inch
L	Internal Length	387	15.24	387	15.24
+L	Tunnel Length	419	16.50	419	16.50
WD	Water Depth*	300	11.81	300	11.81
HT(max)	Hull Thickness	50	1.97	50	1.97
H	Motor Height	285	11.22	285	11.22
W	Tunnel Width	456	17.95	456	17.95
Stern Tunnel		90200I		90200I	

MC_0613

* See also recommendations on page 13



Stern tunnel measurements may vary slightly between various compatible stern tunnel models.

For detailed stern tunnel measurements select your desired stern tunnel model from the compatible products tab.

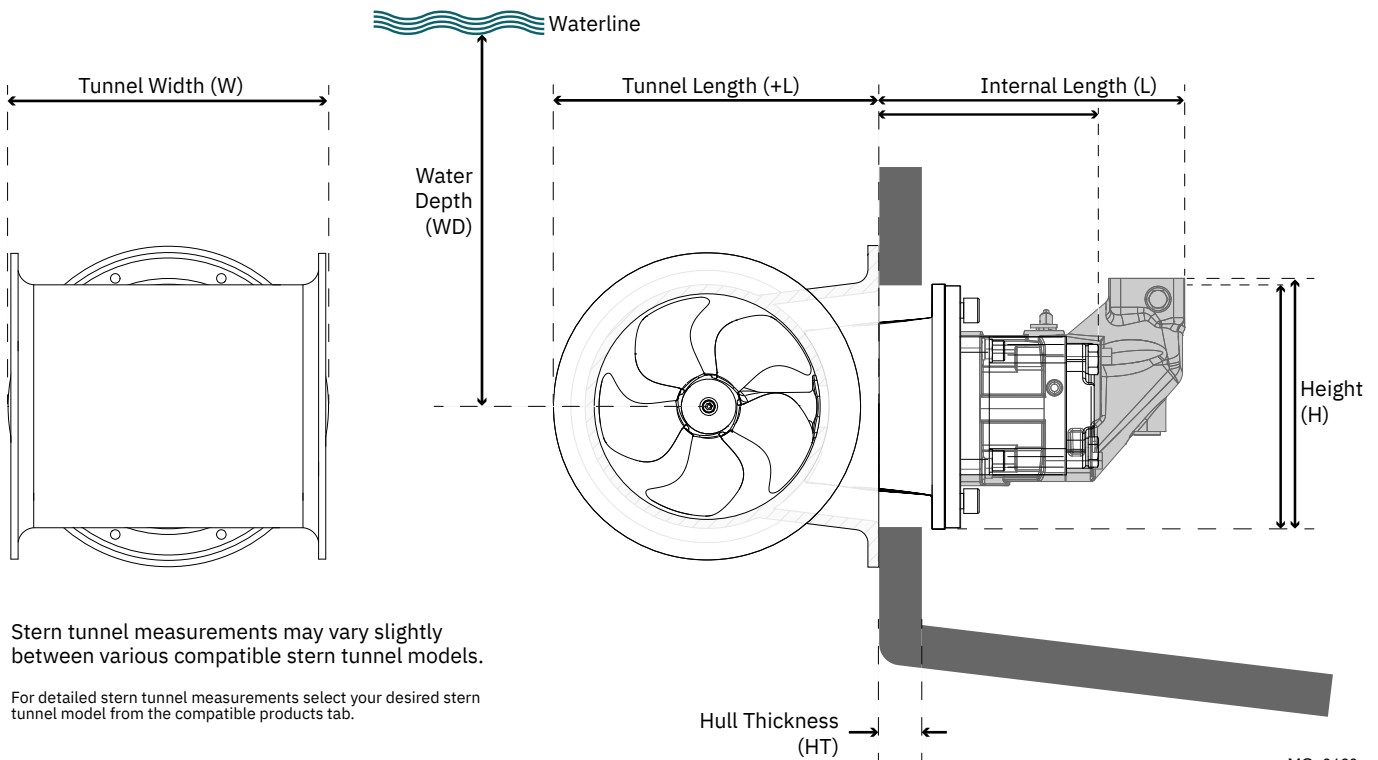
MG_0611

Measurement code	Measurement description	SH100		SH160		SH240		SH320		SH400		SH420		SH550	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
L	Internal Length	172	7	172	7	91	3.6	195	7.7	305	12	257	10.1	257	10.1
+L	Tunnel Length	256	10	300	11.8	340	13.4	420	16.5	422	16.6	540	21.3	540	21.3
WD	Water Depth*	150	6	215	8.5	250	9.8	300	11.8	300	11.8	380	15	380	15
HT(max)	Hull Thickness	35	1.4	54	2.1	60	2.4	60	2.4	60	2.4	54	2.1	54	2.1
H	Motor Height	200	8	200	8	200	7.9	258	10.2	258	10.2	200	7.9	220	8.7
W	Tunnel Width	337	13.3	330	13	350	13.8	456	18	456	18	550	21.7	550	21.7
Stern Tunnel		90086I		90135I		90140I		90200I		90350		90550		90550	

Measurement code	Measurement description	SH1000		SH1400	
		mm	inch	mm	inch
L	Internal Length	405	7.3	470	18.5
+L	Tunnel Length	705	0.3	820	32.3
WD	Water Depth*	770	30.3	915	36
HT(max)	Hull Thickness	120	4.7	145	5.7
H	Motor Height	200	7.9	250	9.8
W	Tunnel Width	850	33.5	860	33.9
Stern Tunnel		91000		91400	

MC_0142

* See also recommendations on page 13



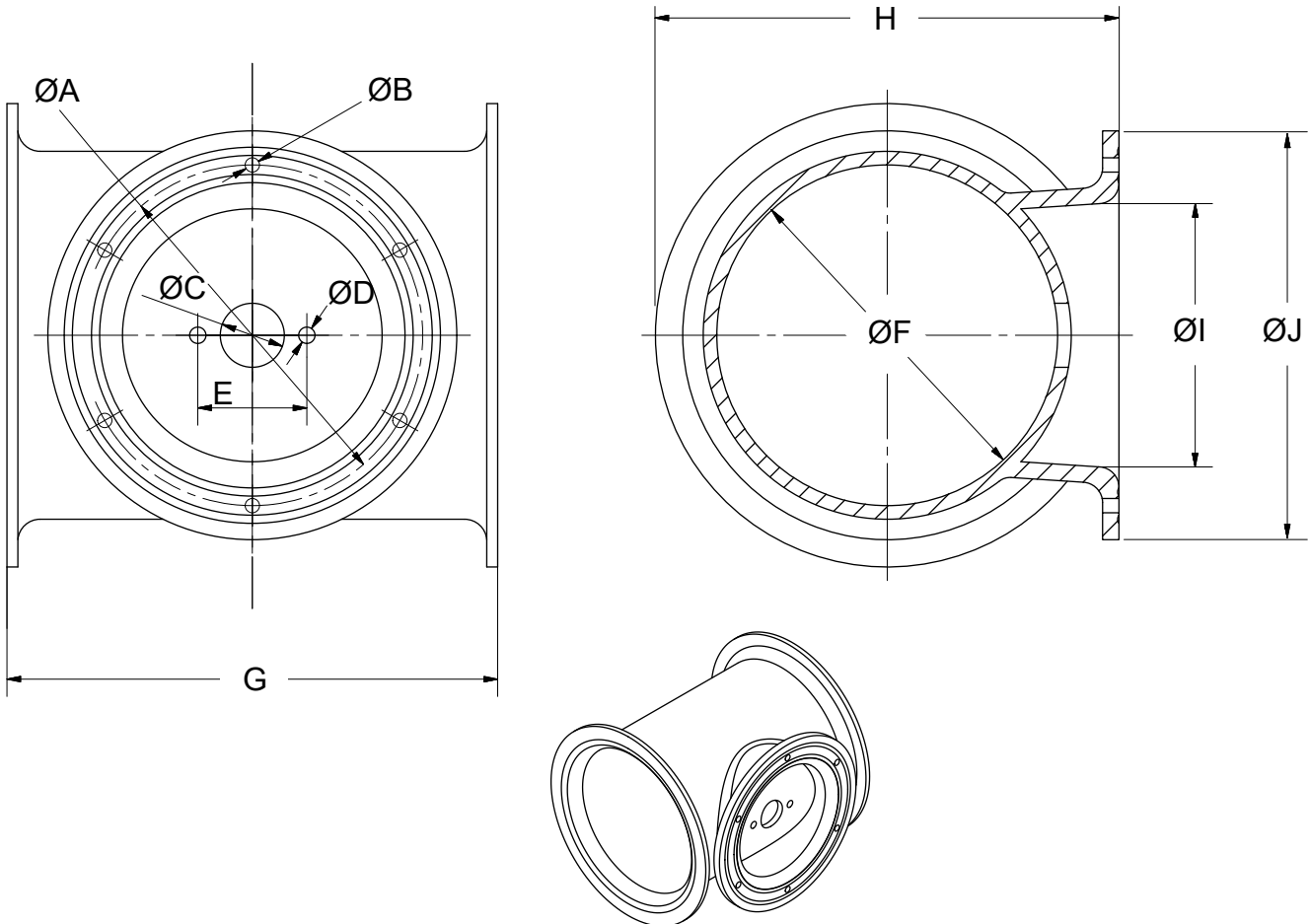
MG_0160

Stern tunnel measurements may vary slightly between various compatible stern tunnel models.

For detailed stern tunnel measurements select your desired stern tunnel model from the compatible products tab.

Measurement code	Measurement description	90124i		90052i		90086i		90135i		90140i	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	Tunnel bolt circle	201	7.91	260	10.24	260	10.24	266	10.47	250	9.84
B	Bolt hole diameter	6.7	0.26	10.5	0.41	10.5	0.41	10.5	0.41	10.5	0.41
C	Gear leg hole diameter	28	1.1	28.5	1.12	33	1.3	46	1.81	47	1.85
D	Gear leg bolt hole diameter	8.5	0.33	8.7	0.34	8.7	0.34	11	0.43	12	0.47
E	Gear leg bolt hole center	41	1.61	46	1.81	56	2.2	80	3.15	80	3.15
F	Tunnel diameter	125	4.92	185	7.28	185	7.28	215	8.46	250	9.84
G	Tunnel length	197	7.76	335	13.19	335	13.19	330	12.99	360	14.17
H	Tunnel distance from hull	190	7.48	265	10.43	265	10.43	300	11.81	340	13.39
I	Cut out hull	160	6.29	204	8.03	216	8.5	203	7.99	185	7.28
J	Tunnel to hull diameter	225	8.9	290	11.4	294	11.57	305	12	300	11.8

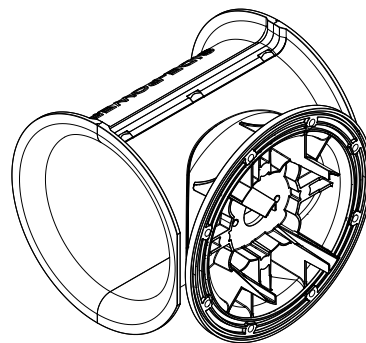
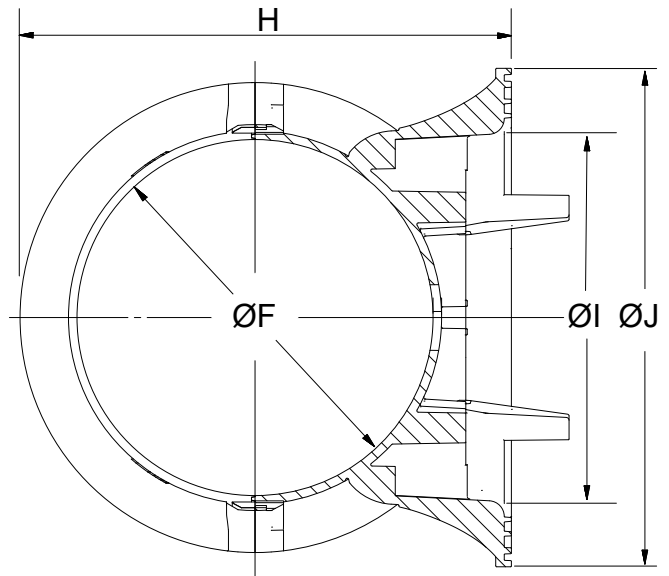
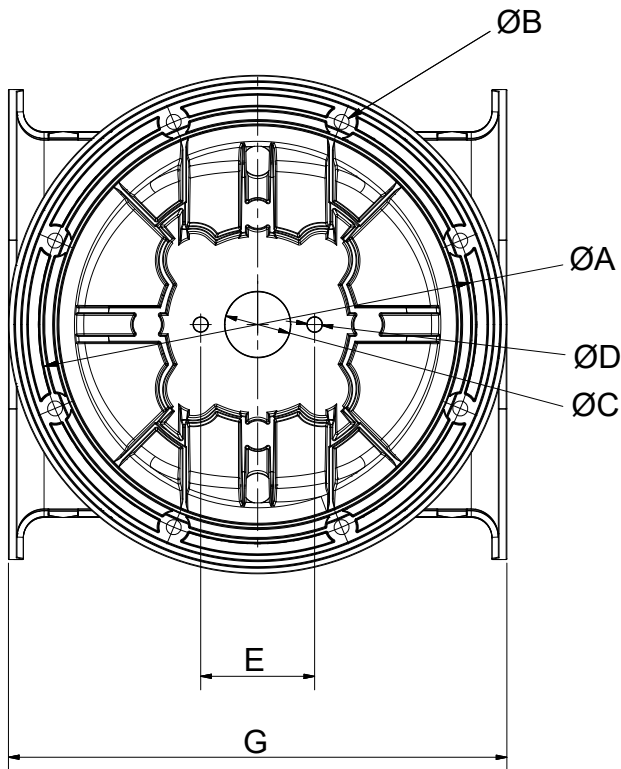
MC_0162



MG_0178

Measurement code	Measurement description	90150i	
		mm	inch
A	Tunnel bolt circle	308	12.13
B	Bolt hole diameter	10.5	0.41
C	Gear leg hole diameter	46	1.81
D	Gear leg bolt hole diameter	10.4	0.41
E	Gear leg bolt hole center	80	3.15
F	Tunnel diameter	250	9.84
G	Tunnel length	350	13.78
H	Tunnel distance from hull	345	13.58
I	Cut out hull	257	10.12
J	Tunnel to hull diameter	350	13.8

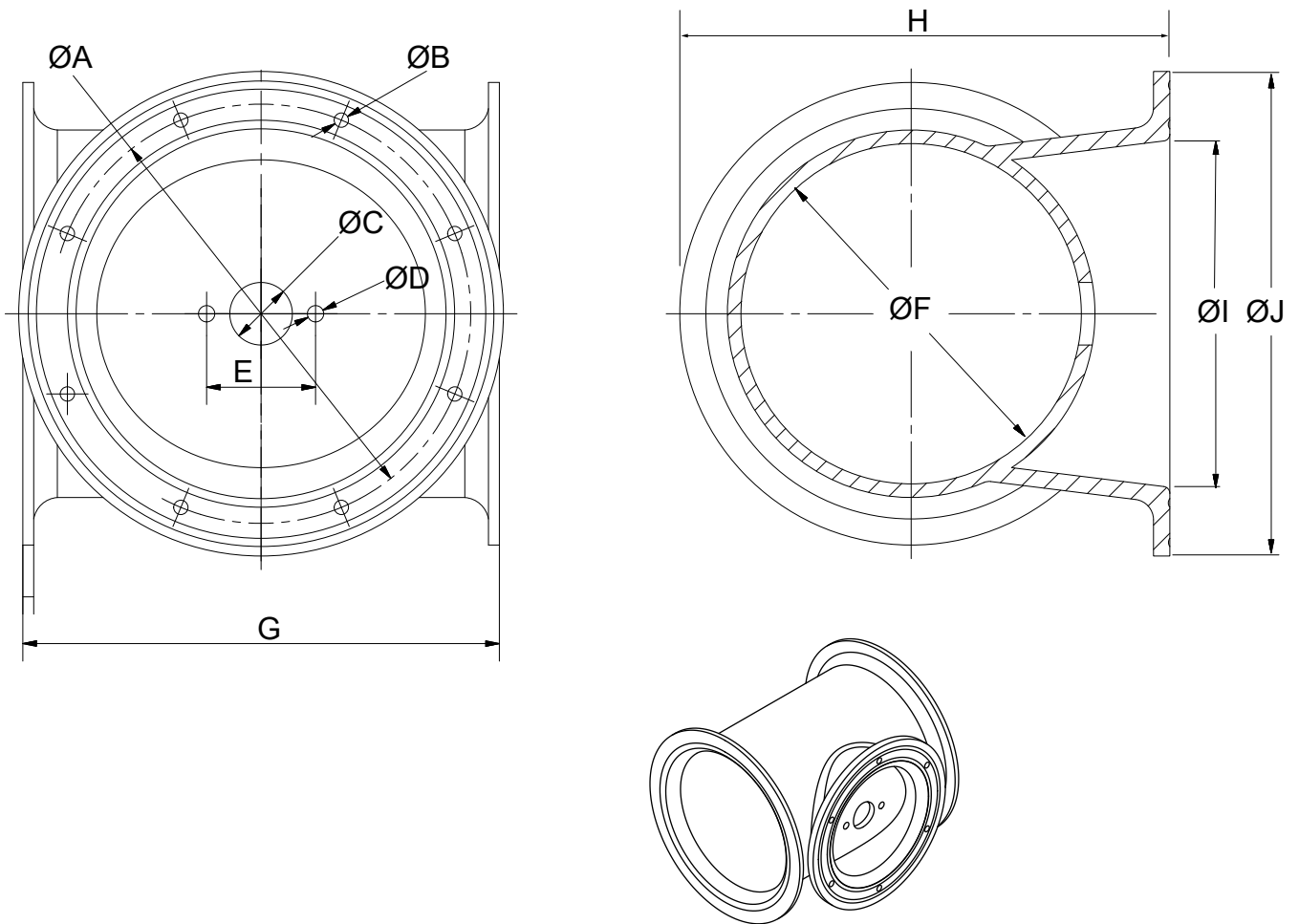
MC_0240



MG_0258

Measurement code	Measurement description	90180i		90200i		90350		90550		90700	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
A	Tunnel bolt circle	308	12.13	346	13.62	346	13.62	535	21.06	540	17.72
B	Bolt hole diameter	12	0.47	12.5	0.49	12.5	0.49	12.5	0.49	19	0.75
C	Gear leg hole diameter	46	1.81	52	2.05	66.5	2.62	85	3.35	80	3.15
D	Gear leg bolt hole diameter	12	0.47	12.5	0.49	12.5	0.49	18	0.71	18	0.71
E	Gear leg bolt hole center	80	3.15	96	3.78	96	3.78	140	5.51	140	5.51
F	Tunnel diameter	250	9.84	300	11.81	300	11.81	386	15.20	411.5	16.20
G	Tunnel length	350	13.78	456	17.95	456	17.95	550	21.65	700	27.56
H	Tunnel distance from hull	353	13.89	419	16.49	419	16.5	581	22.87	535	21.06
I	Cut out hull	254	10	265	10.43	269	10.59	403	15.87	450	17.72
J	Tunnel to hull diameter	356	14	396	15.6	396	15.59	600	23.6	595	23.4

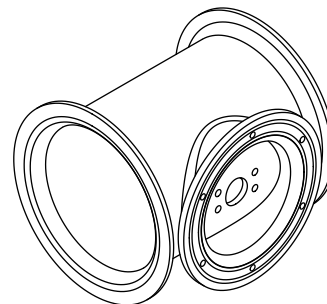
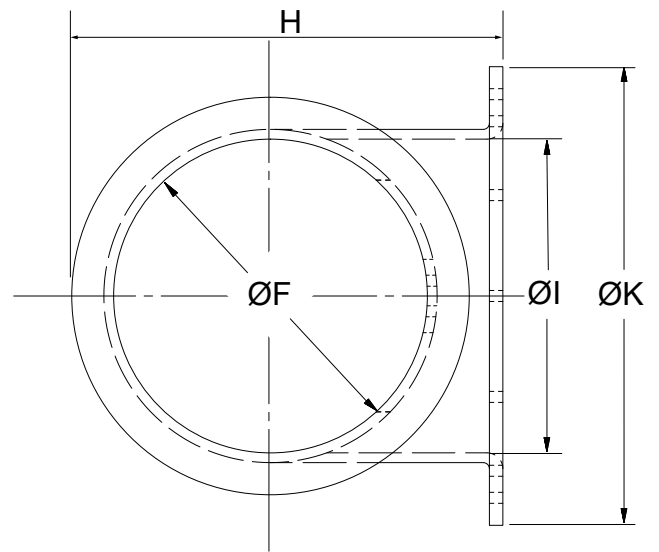
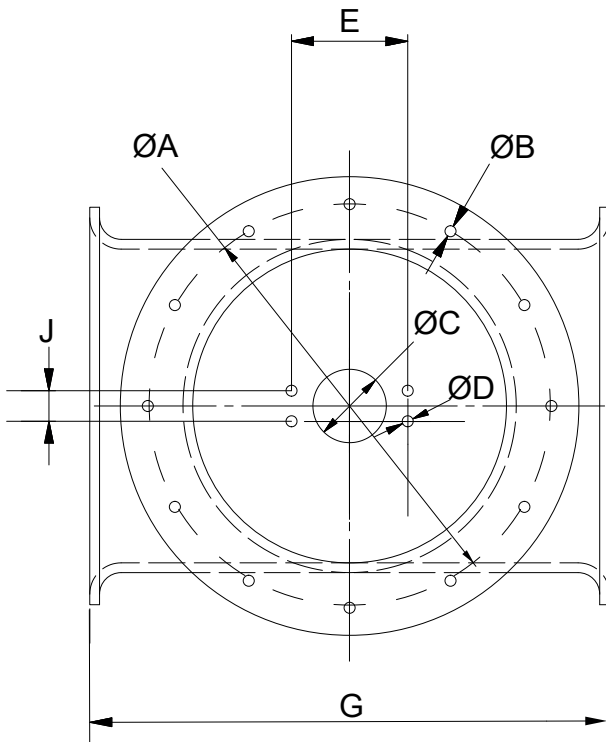
MC_0241



MG_0259

Measurement code	Measurement description	91000		91400	
		mm	inch	mm	inch
A	Tunnel bolt circle	680	26.77	750	29.53
B	Bolt hole diameter	18	0.71	20	0.79
C	Gear leg hole diameter	120	4.72	120	4.72
D	Gear leg bolt hole diameter	18	0.71	18	0.71
E	Gear leg bolt hole center to center	190	7.48	190	7.48
F	Tunnel diameter	513	20.20	610	24.02
G	Tunnel Length	850	33.46	860	33.86
H	Tunnel distance from hull	705	27.76	822	32.36
I	Cut out hull	551	21.69	621	24.45
J	Gear leg bolt hole center to center	50	1.97	50	1.97
K	Tunnel to hull diameter	755	29.72	810	31.89

MC_0242



MG_0260

Install the thruster as deep as possible on the vessel's transom (Fig. 1).

The tunnel should be installed as deep under the waterline as possible for two reasons:

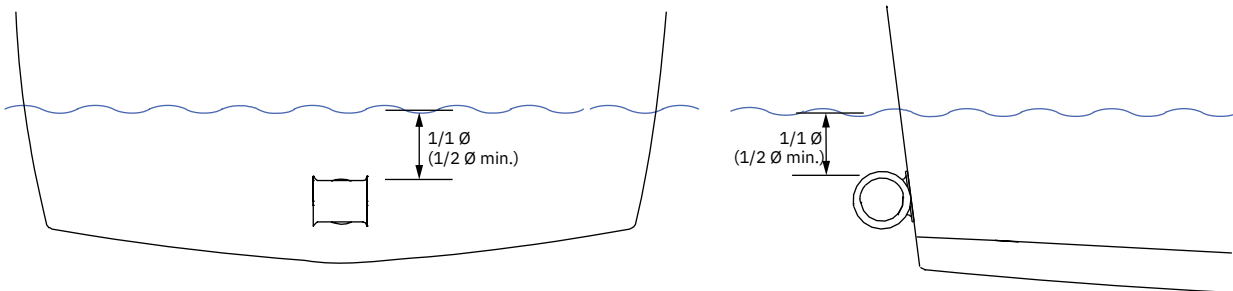
1. So that it does not suck air down from the surface which will reduce performance and increase noise levels.
2. To get as much water pressure as possible to receive maximum efficiency from the thruster.

For best performance, the distance between the waterline and the top of the tunnel must be at least 1x the tunnel diameter. Absolute minimum distance is 1/2 x the tunnel diameter. See also the WD in the tunnel tables.

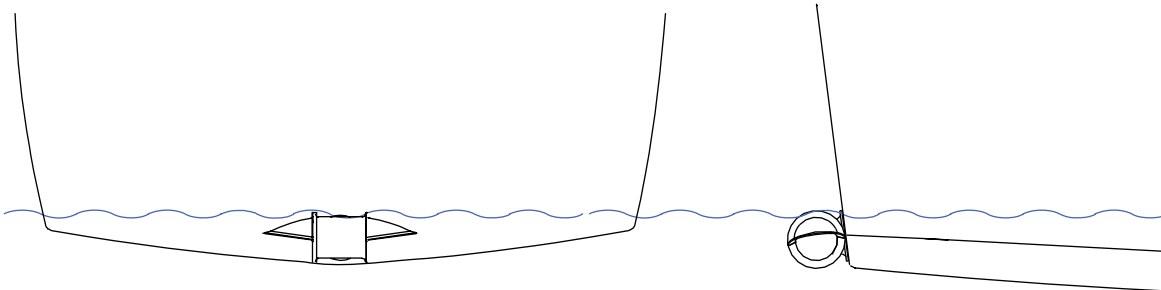
Stern thruster installation for shallow vessels (Fig. 2).

When installing in shallow hull vessels, add stern cowls to the installation process. See next page

MC_0768



Standard stern thruster tunnel installation



Stern thruster and cowl installation for shallow vessels

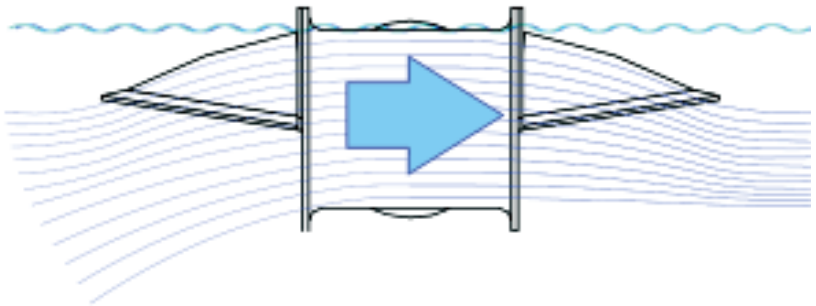
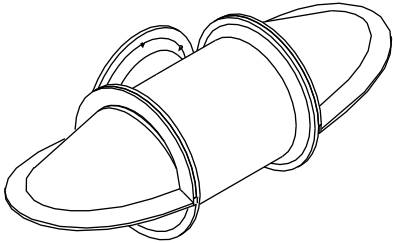
MG_0018

For vessels with shallow drafts or obstructions on the stern that prevents a recommended tunnel to surface distance, a set of stern thruster cowl will limit the cavitation issue. These obstructions can include obstacles such as trim tabs, jets or surface drive propeller systems where shallow installation of a stern thruster is the only option.

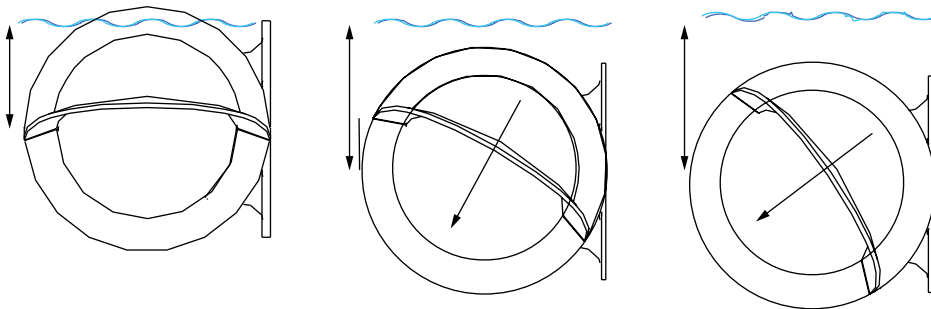
Note that installing a thruster cowl will reduce the efficiency of the thruster compared with the “deep” installation, but will improve the efficiency compared with the shallow installation.

For available thruster cowl models that fits your tunnel, see Sleipner.no

MC_0768



A standard sleipner stern thruster tunnel with add-on cowls for shallow installation



Cowls installed to change the water flow direction to avoid obstructions on the stern

Installing cowls will help preventing air from the water surface entering the tunnel in shallow installations

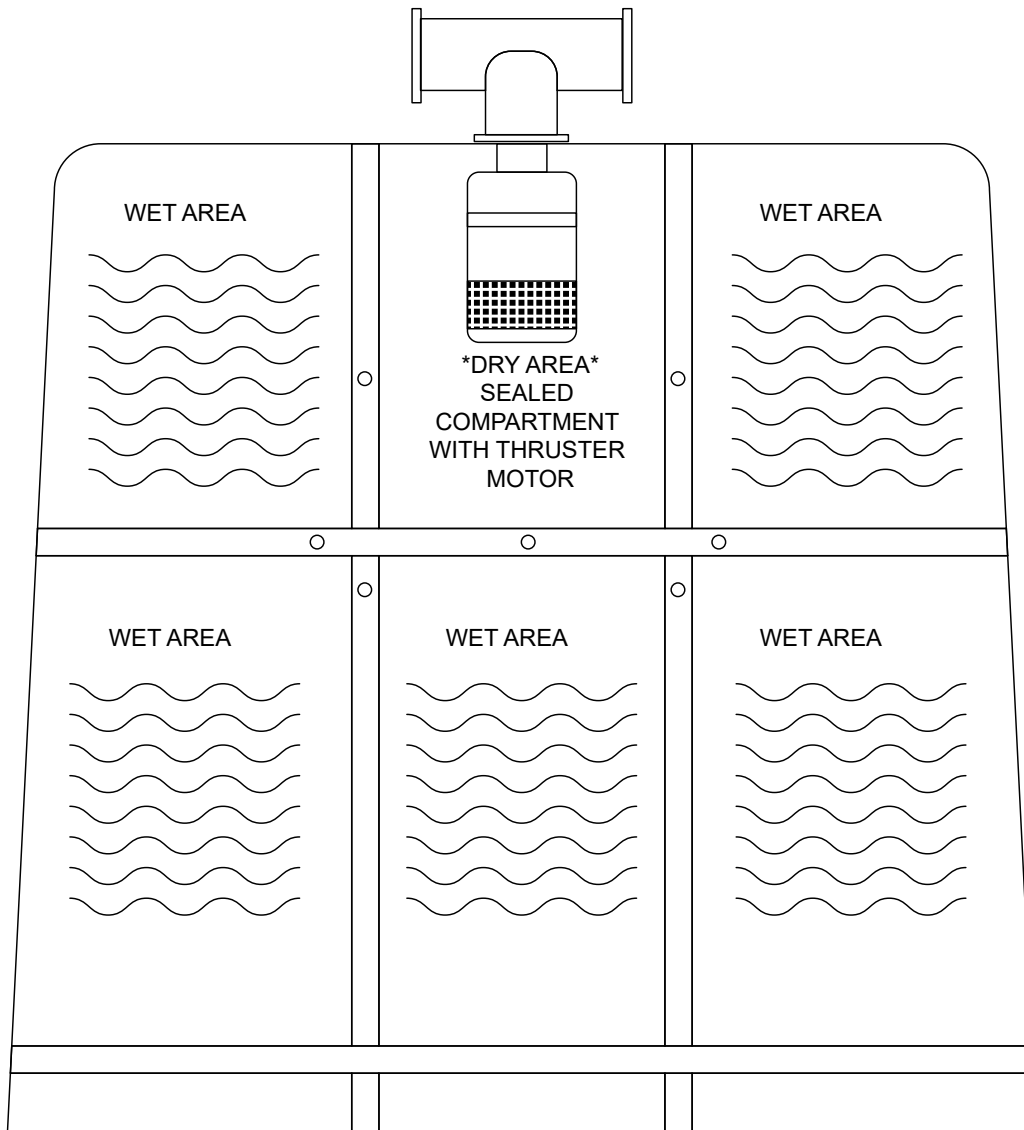
IMPORTANT
 Angled cowls out of horizontal, must be installed deeper to avoid air entry in the thruster tunnel

The thruster motor and solenoid system is not to be considered as waterproof and will become damaged if exposed to constant moisture. This will cause rust and corrosion on the system. The bilge area at the stern of the vessel is generally a 'wet' area and may require to be modified to create a dry compartment for the thruster motor solenoids.

To create a dry compartment, the installer must ensure:

- Sealing all drain holes running into the thruster compartment.
- To modify any surrounding compartments and plates to allow water to drain away from the thrusters compartment.
- Isolate the thrusters compartment from other elements of the vessel such as propeller shafts or rudder shafts that can cause water infiltration.
- If a self-draining system/ bilge pump fails, ensure that water can not overflow into the thruster compartment. **(NB: We recommend installing a self activating bilge pump with an alarm system in the thruster compartment.)**
- If installing an electric motor remove and Install the control-cable system for the thruster higher up to ensure they are kept dry at all times. **(NB: the Sleipner stern thruster kit will include a cable for the electronic control box that is pre-installed on the electro motor. These cables are purchasable separately if you have not purchased our stern thruster kit.)**

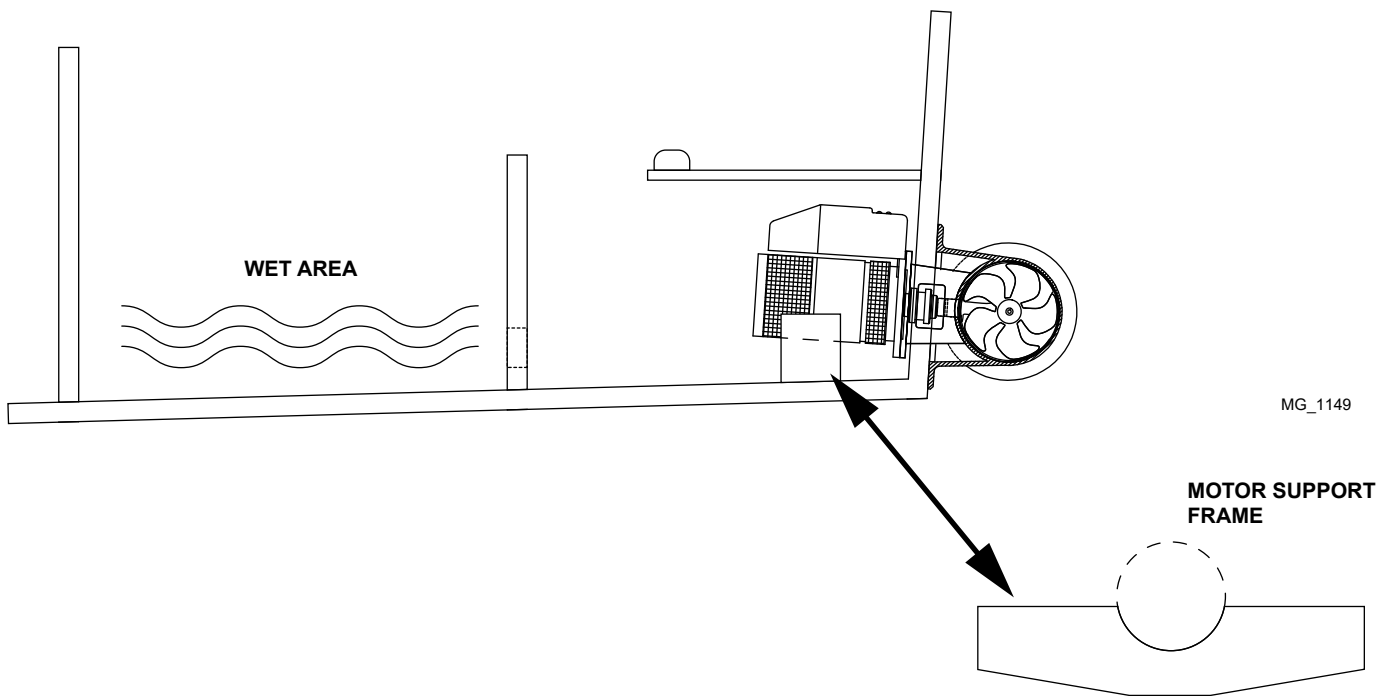
MC_0768



MG_0012

When installing a stern thruster, it is necessary to support the motor to prevent excessive stress on the connection between the motor bracket and the tunnel. Over time, the tunnel may crack, potentially leading to water ingress

MC_0323

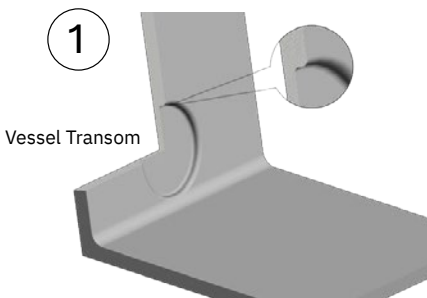


1. Ensure the tunnel flange is flush on the transom. If necessary level the transom area. *(NB: Ensure to maintain the minimum transom thickness for your model)*
2. Hold the tunnel horizontal in place and mark the tunnel mould bolt holes. Remove the tunnel to calculate and mark the internal centre diameter of the tunnel mould.
3. Cut the internal centre diameter of the tunnel mould and then the surrounding bolt holes.
 - To ensure no water ingress, prepare the tunnel with a gel-coat or similar both externally and internally around the bolt areas and transom.
4. Install the gear leg to the stern tunnel mould defined in your thruster install guide. *(NB: Install the oil lead if used as space will be limited in the future.)*
5. Apply a sealant on the tunnel flange, and around the bolt holes.
6. Ensure support for the thruster motor is installed to ensure the weight of the motor can not cause a twisting action on the tunnel

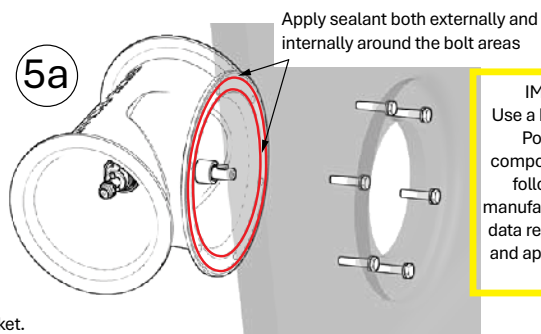
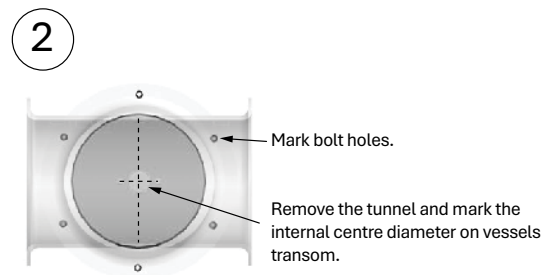
(NB: Not included in the Sleipner stern thruster kit are bolts, washers and nuts. These size requirements will vary depending on your vessel's transom thickness. We recommend A4 stainless with A4 lock nuts and large diameter A4 washers on both internally and externally on the tunnel installation.)

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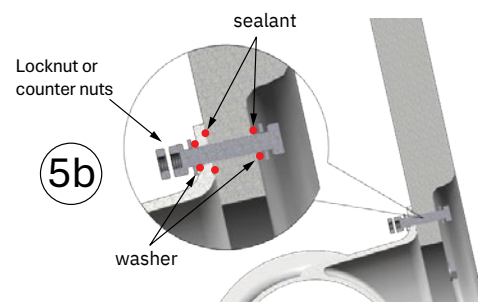
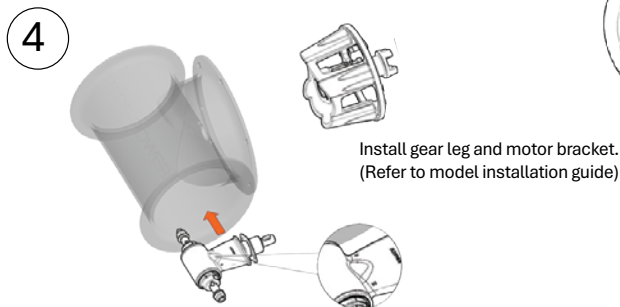
Bolts diameter:



IMPORTANT
Boatbuilder/Naval architect must be consulted and approve if transom must be customized in order to get the stern thruster to be installed.



IMPORTANT
Use a MS-Polymer or Polyurethane compound. Ensure to follow products manufacturer technical data regarding priming and application of the sealant.



MG_0013

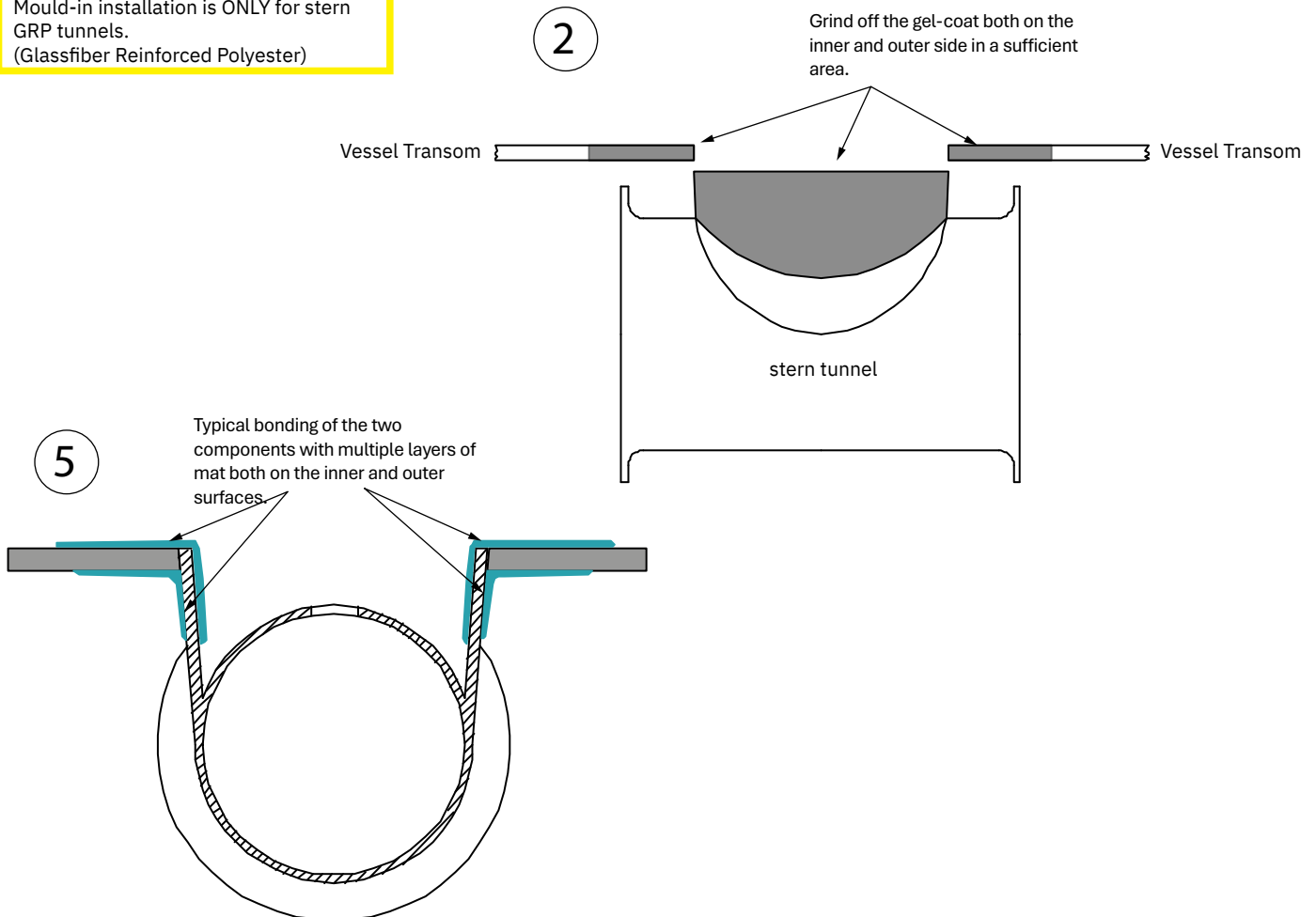
Note: The mould in installation is for GRP (Glassfiber Reinforced Polyester) tunnels only.

Ensure the material compatibility .

The following are only general instructions and do not explain in any way the details of fibreglass work. Problems caused by faulty installation of the tunnel, are the installers full responsibility. It is recommended to consult a naval architect before modifying the hull.

1. Cut and remove the bolting section of the tunnel mould.
2. Grind off the gel-coat both on the inner and outer side in a sufficient area of the tunnel mould.
3. Place the tunnel mould in the desired location on the transom and mark the diameter of the tunnel on the vessel.
4. Cut and remove the marked area from the transom of the vessel. Grind off the gel-coat both on the inner and outer side by at least 10cm of the vessel transom.
5. Insert the tunnel horizontally in place and bond the two components with multiple layers of matt both on the inner and outer surfaces. Ensure the material compatibility between the tunnel, the hull and the bonding. Ensure not to reduce the internal diameter of the tunnel mould. Reducing the internal diameter will make installation of the thruster motor more difficult. MC_0768
6. Apply gel-coat or similar to the bonded areas.
7. Install the gear leg to the stern tunnel mould defined in your thruster install guide.
8. Ensure support for the thruster motor is installed to ensure the weight of the motor can not cause a twisting action on the tunnel.

IMPORTANT
Mould-in installation is **ONLY** for stern GRP tunnels.
(Glassfiber Reinforced Polyester)

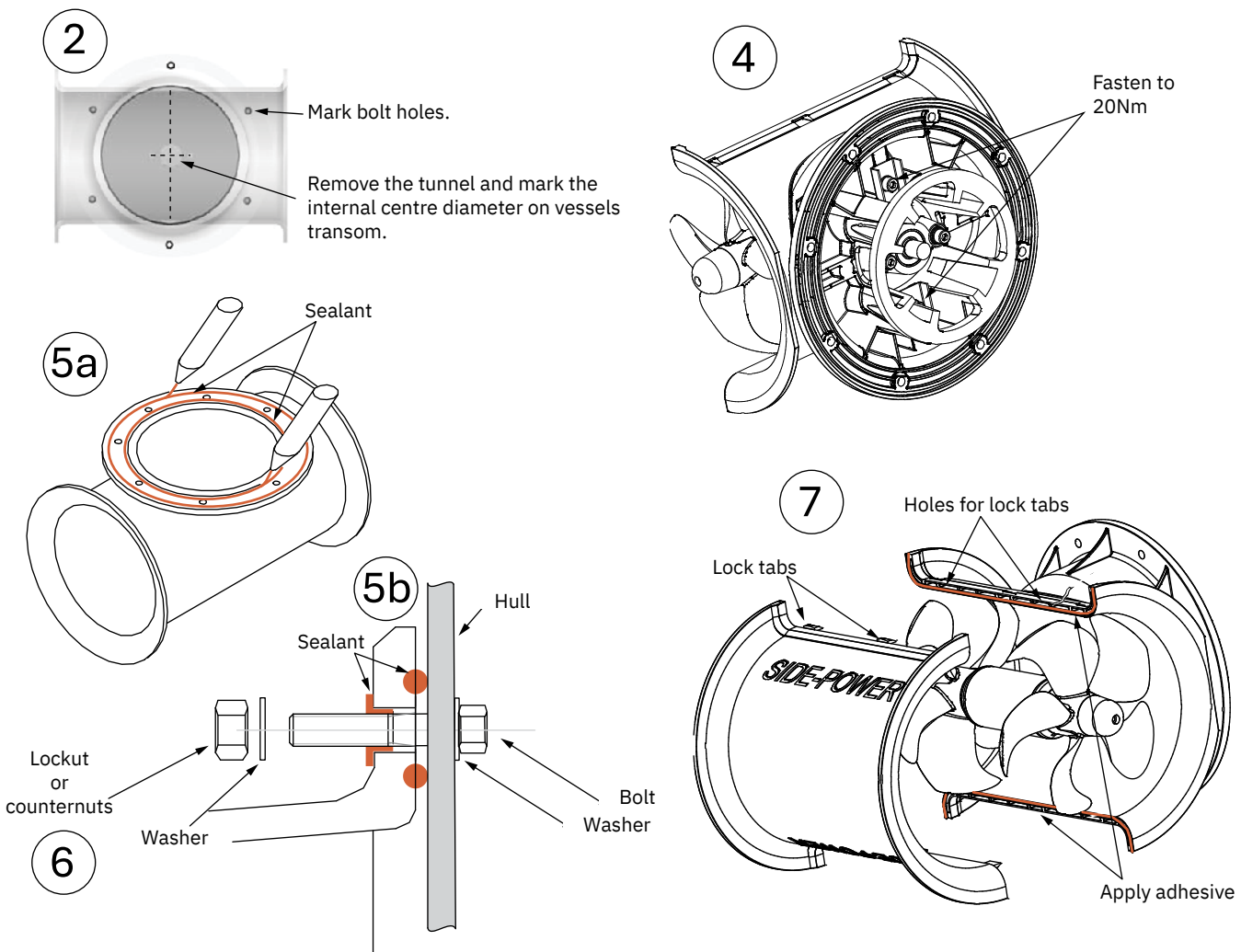


1. Ensure the tunnel flange is flush on the transom. If necessary level the transom area. **(NB: Ensure to maintain the minimum transom thickness for your model).**
2. Hold the tunnel horizontal in place and mark the tunnel mould bolt holes. Remove the tunnel to calculate and mark the internal centre diameter of the tunnel mould.
3. Cut the internal centre diameter of the tunnel mould and then the surrounding bolt holes.
 - To ensure no water ingress, prepare the tunnel with a gel-coat or similar both externally and internally around the bolt areas and transom.
4. Install the gear leg to the stern tunnel mould defined in your thruster install guide. Insert the motor bracket with the included metal supports. Metal supports will remove the requirement for additional support frames for the thruster motor.
5. Apply a sealant on the tunnel flange, and around the bolt holes.
6. Enter the washer and the locknut (or a counternut) to the bolts and tighten.
7. Install the outer half of the tunnel mould. Use a sealant to ensure a secure bond. Ensure the locking tabs on the outer half tunnel engage/ into the other half of the tunnel mould.

Note: Not included in the Slepner stern thruster kit are Bolts, washers and nuts. These size requirements will vary depending on your vessel's transom thickness. We recommend A4 stainless with A4 lock nuts and large diameter A4 washers on both internally and externally on the tunnel installation.

Bolts diameter:
Refer to the measurement "B" in the table covering the relevant tunnel type.

MC_0768





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