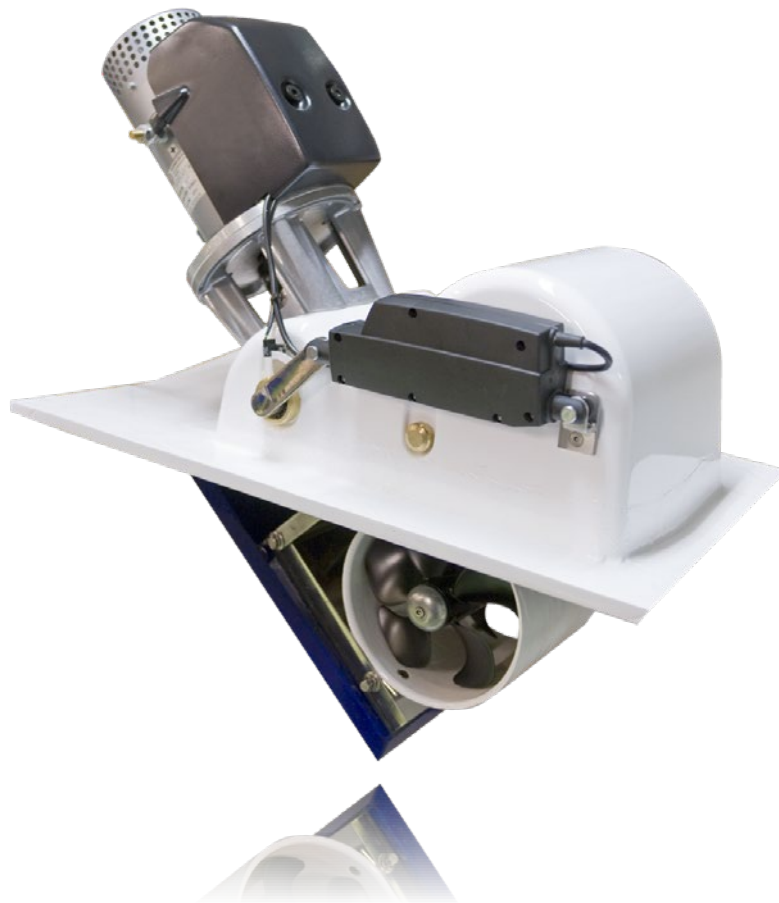


SIDE-POWER
Thruster Systems

SR(P) 80/185 T
SR(P) 100/185 T

EN **Installation & User Guide**

NO **Installasjons- og brukerveiledning**



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Made in Norway

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DECLARATION OF CONFORMITY



We, Sleipner Motor AS
P.O. Box 519
N-1612 Fredrikstad, Norway

declare that this product with accompanying
standard remote control systems complies with
the essential health and safety requirements
according to the Directive 89/336/EEC of 23
May 1989 amended by 92/31/EEC and
93/68/EEC.

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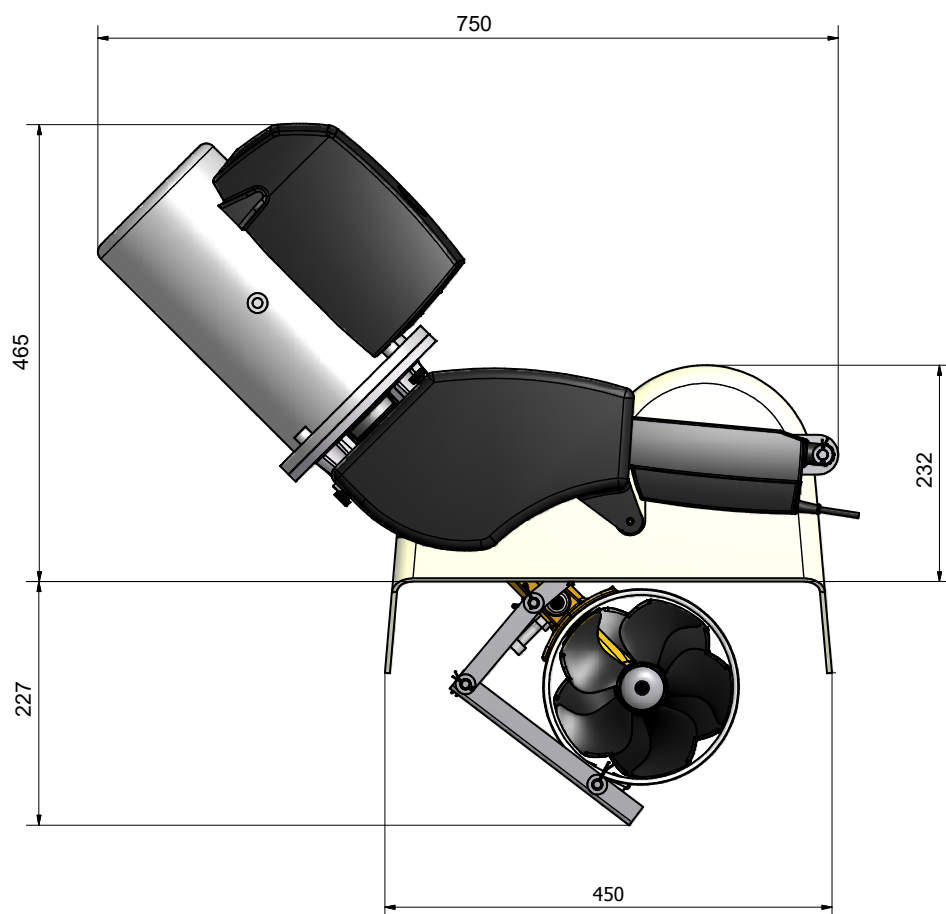
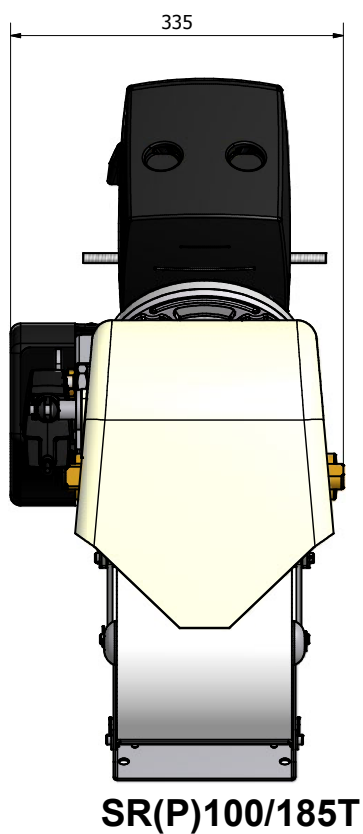
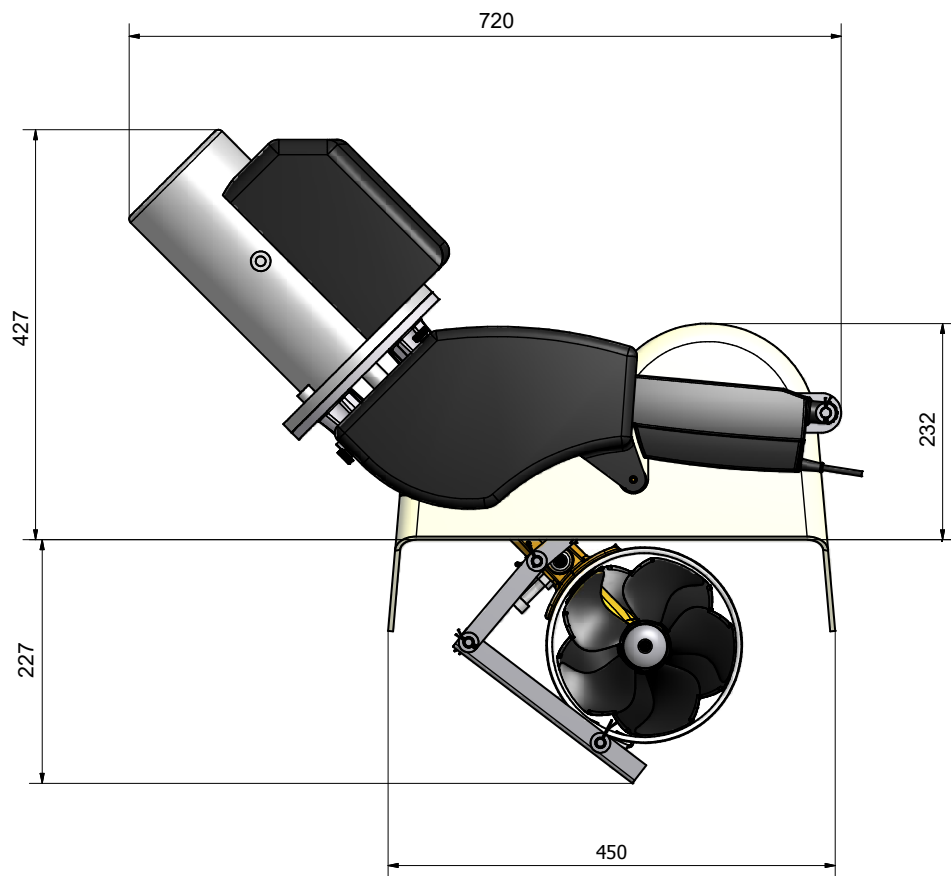
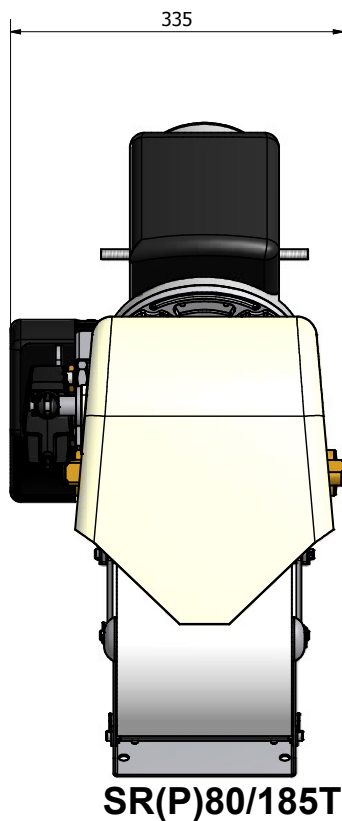
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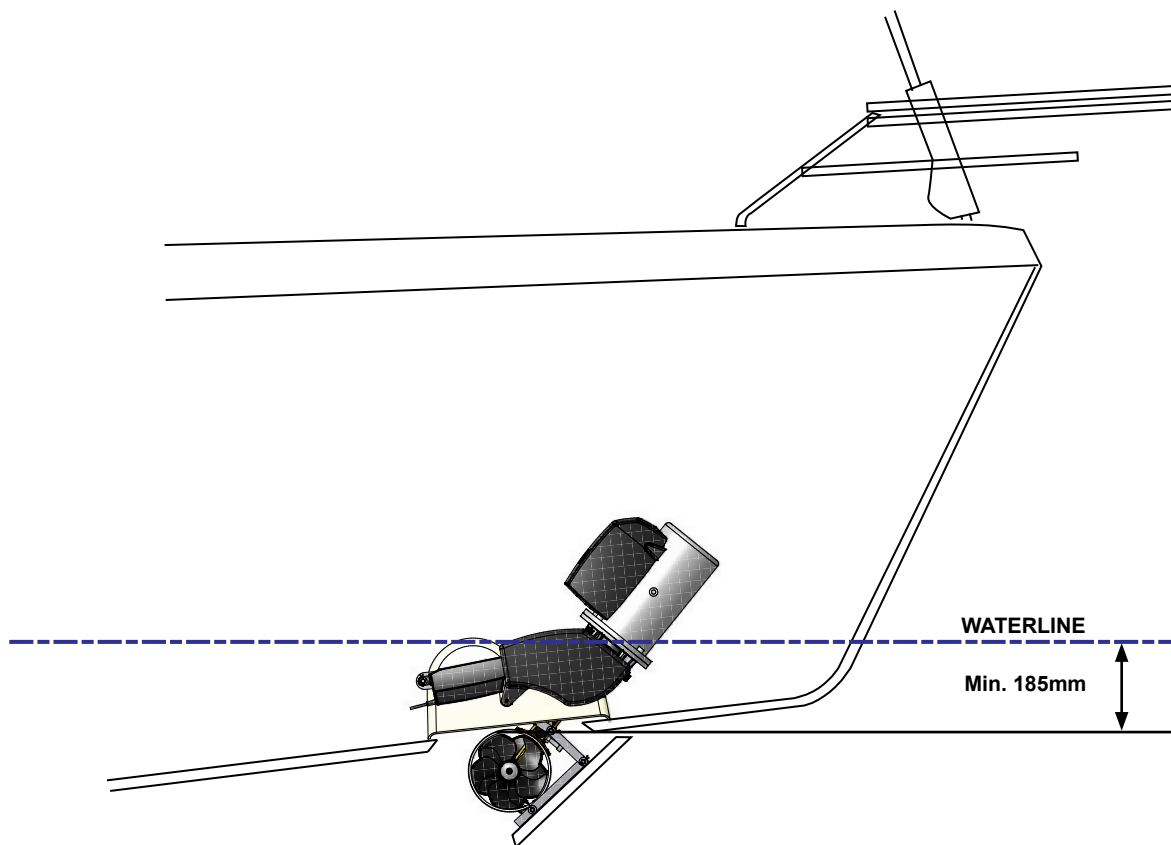
SAMSVARS ERKLÆRING



Sleipner Motor AS
Postboks 519
N-1612 Fredrikstad, Norge

Erklærer at dette produktet med tilhørende
standard kontrollsystemer er i samsvar med
helse, og sikkerhetskravene i henhold til Direk-
tiv 89/336/EEC FRA 23 Mai 89, korrigert av
92/31/EEC og 93/68/EEC.



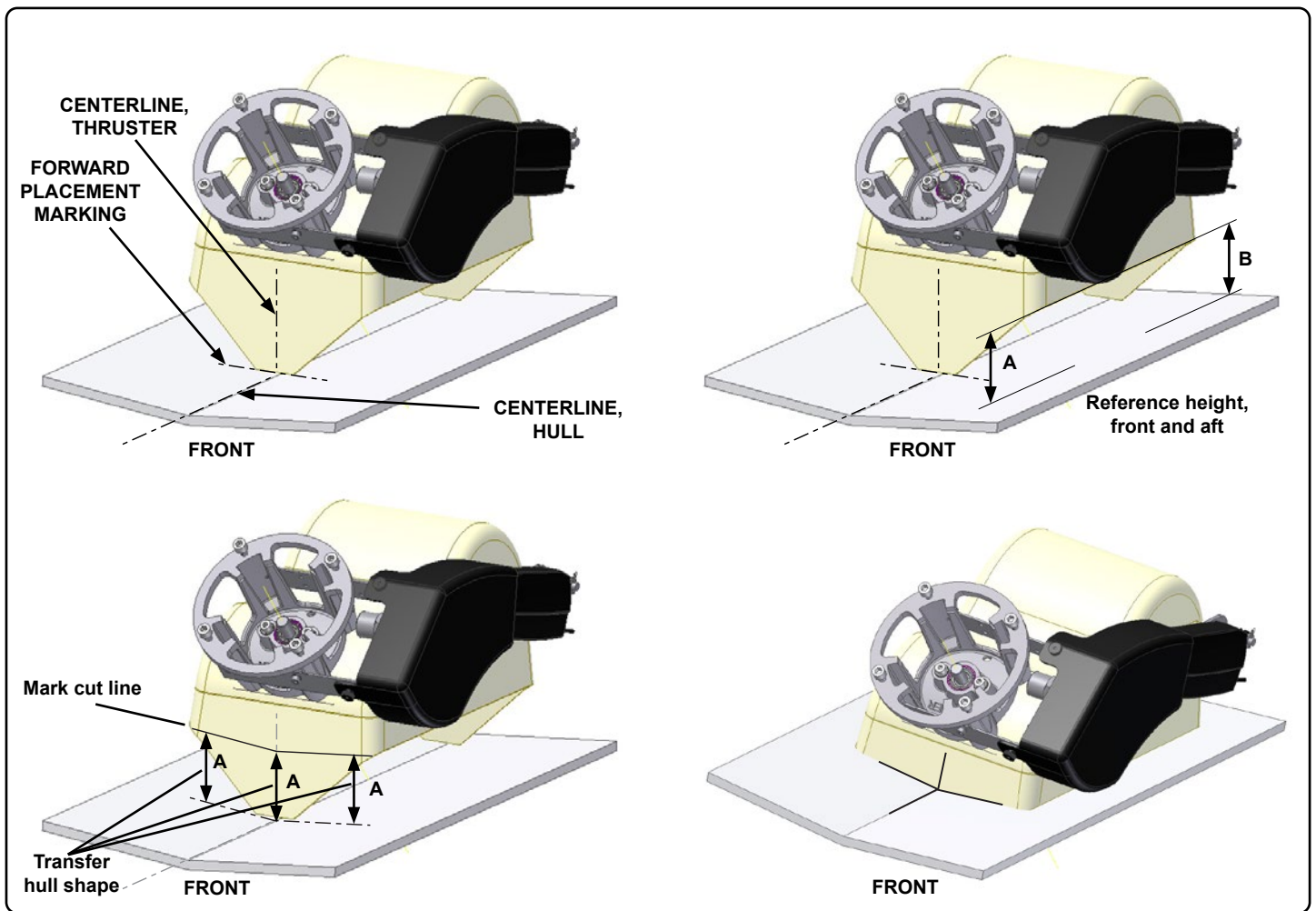


EN Technical specifications

Motor:	Custom made reversible DC-motor.
Gearhouse:	Seawater resistant bronze. Ballbearing at propellershaft and combination of ballbearing and slide bearing at driveshaft.
Motor bracket:	Seawater resistant aluminium, galvanically insulated from motor
Tunnel:	Cross spun with rowing G.R.P tunnel
Propeller:	5 blade skew "Q"-propeller, fibreglass reinforced composite.
Batteries:	Minimum recommended battery capacity (cold crank capacity by DIN/SAE standard) SR 80/185T 12V : 550 CCA DIN/1045 CCA SAE SR 80/185T 24V : 300 CCA DIN/570 CCA SAE SR 100/185T 12V : 750 CCA DIN/1425 CCA SAE SR 100/185T 24V : 400 CCA DIN/760 CCA SAE
Max. use:	SR: S2 = 3 min. or appr. 7-10% within a limited time frame. SRP: Up to continuous run time depending on load. Remaining run time shown on control panel.
Safety:	Electronic time-delay device protects against sudden change of drive direction. Electric thermal cut-off switch in electromotor protects against over heating (auto reset when electro motor cools down). Flexible coupling between electro-motor and driveshaft protects electromotor and gearsystem if propeller gets jammed. S-link panel shuts off automatically and retracts thruster 6 minutes after last use. Integrated microprocessor monitors solenoids, reducing wear and risk of solenoid lock-in. Auto-stop of thruster in case of accidental solenoid lock-in or if run signal is continuous for more than 3 minutes

NO Tekniske spesifikasjoner

Motor:	Spesialutviklet reversibel DC-motor.
Girhus:	Sjøvannsbestandig bronse. Kulelagre på propellaksel. Kule og glidelager komb. på drivaksel.
Motorbraket:	Sjøvannsbestandig aluminium. Galvanisk isolert fra motor
Tunnel:	Kryssvevet glassfiber.
Propell:	5-blads skew "Q"-propell i komposittmateriale.
Batterier:	Minimum anbefalt batteri størrelse. (Kaldstart kapasitet etter DIN/SAE std.) SR 80/185T 12V : 550 CCA DIN/1045 CCA SAE SR 80/185T 24V : 300 CCA DIN/570 CCA SAE SR 100/185T 12V : 750 CCA DIN/1425 CCA SAE SR 100/185T 24V : 400 CCA DIN/760 CCA SAE
Drift tid:	SR: S2 = 3 min. eller gjennomsnittlig 7-10% innen en begrenset tidsperiode. SRP: Opp til kontinuerlig driftstid alt etter belastning. Status for kjøretid vises i display
Sikkerhet:	Elektronisk tidsforsinkelse forhindrer motorskade ved rask retningsendring. Motoren stanser automatisk ved overopphetning (slår seg automatisk på etter nedkjøling). Fleksibel kobling mellom drivaksel og motor beskytter gir hvis propell blir blokkert. S-Link panelet slår av trusteren og feller den inn 6 minutter etter siste gangs bruk Integrert mikroprosessor føler hele tiden på releet, reduserer slitasje og risiko for "heng" på relé. Trusteren vil stoppe automatisk etter 3 minutter om det oppstår "heng" på relé, eller om trusteren går kontinuerlig i 3 minutter.



EN Positioning the thruster

NO Plassering av enheten

1. Find the most forward position where thruster unit will fit, and the top of the deployed thruster tunnel is at min. 185mm. Remove countermould on inside of hull, with min. 20 cm clearance to all sides of the thruster unit to give room for moulding.

Place unit where intended, take necessary measurements to check that a complete unit with motor, relay cover and actuator cover fits in the designated space.

2. Find centerline of boat and centerline of thruster unit and mark accordingly.

Mark guideline/points for longitudinal orientation of thruster unit.

3. Measure distance from hull to lower part of the straight longitudinal of thruster unit, please observe that distance can vary between the front and aft end wall.

Use measurement from back part to draw rear cut line, and front measurement to draw front cut line. The straight longitudinal edges of unit must not be cut (reference point for hull mounting)

4. Position unit to center marks and longitudinal guidelines/marks.

1. Finn den fremste posisjonen hvor enheten får plass, og slik at toppen på den utfelte thrustertunnellen havner minst 185mm under vannlinjen. Fjern så evt. innerskrog med minst 10 cm klaring rundt hele enheten for å få plass til innstøping.

Plasser enheten der du mener den skal stå, mål og se til at det er plass til en komplett enhet der med motor, relé deksel og deksel over aktuator.

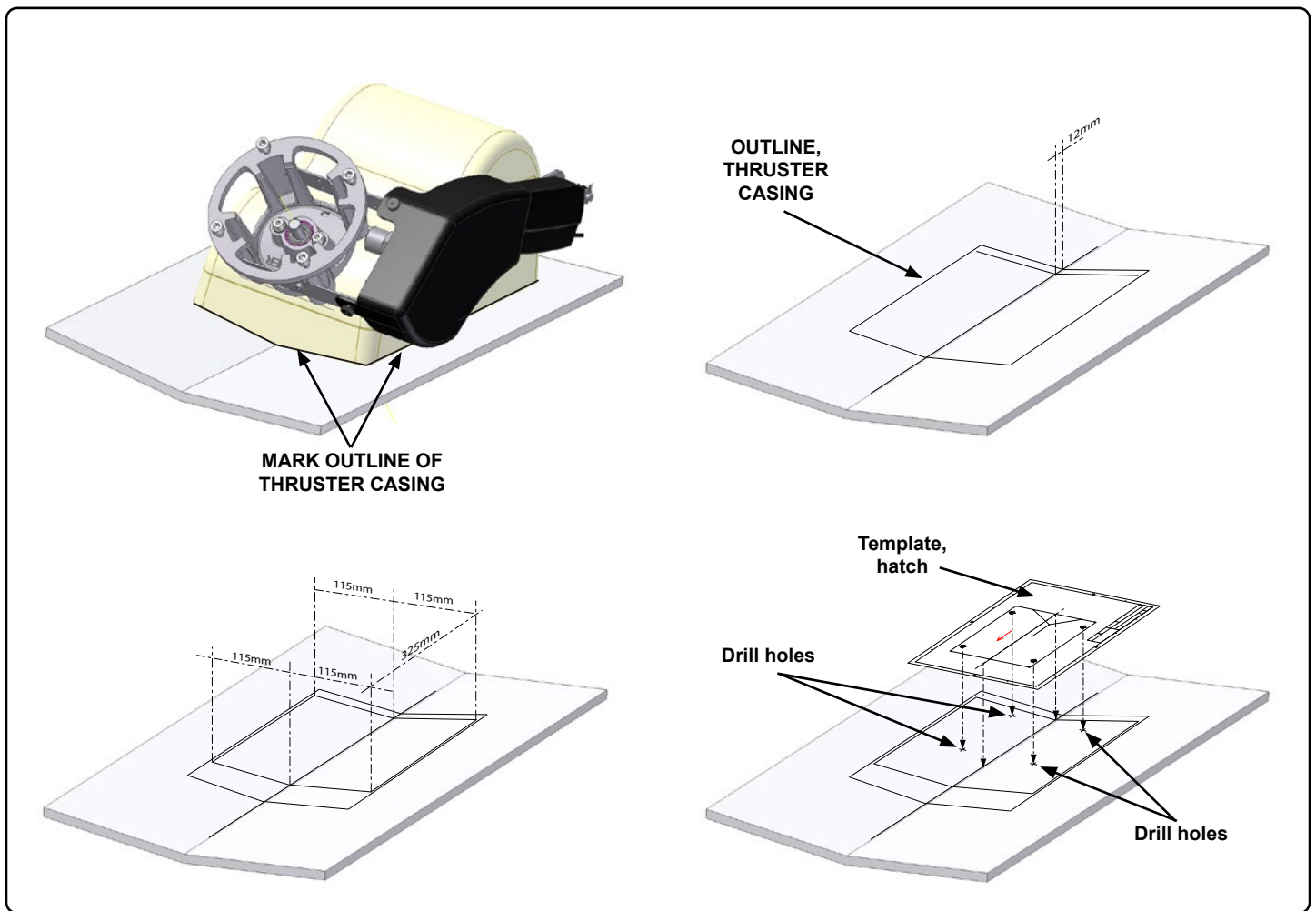
2. Finn senter i båten og merk dette samt senter på enheten og merk også dette i begge ender av enheten.

Merk også på en hjelpelinje/punkt for senere orientering av enheten i lengderetning.

3. Mål fra skroget og opp til nedre del av den rette langsgående kanten på enheten, merk at det kan være forskjellig mål foran og bak.

Bruk målet bak for merking av kutt linje bak, respektivt målet foran for kutt linje foran. Bruk målet og trekk en linje langs bakre respektive foran på enheten. Det skal ikke kuttes noe på de langsgående kantene på enhetens kasse, de er på riktig avstand og skal være referanse for montering på skroget.

4. Plasser enhet tilbake på sentermerker, og mot hjelpelinjen/punktet i lengderetningen.



EN

Cutting out the hatch

Draw outline of complete unit circumference with marker before removing unit

5. Draw a line 12 mm in front of the rear end of unit outline, this marks the aft cut line for the hull.

Draw outline of hatch according to measurement drawing on page 12 (hatch sides 115mm each side of centerline, front cut line 325mm from aft cut line).

Align hatch drilling template (page 13) with centerline and aft outline and mark and drill the four holes used to secure hatch to mechanism.

6. Use appropriate tool and cut out the hatch with a 45 degree chamfer outwards from centre of hatch.

NOTE: Secure hatch with duct tape or similar before completing all cuts, to prevent that the hatch drops and get damaged

When done cutting, you have the hatch to be fitted to the retract mechanism. Fill edges of hatch and hull with epoxy/cutting to compensate for thickness of cut.

NO

Utskjæring av luke

Marker omrisset av enheten før du tar den ut igjen.

5. Trekk en linje 12mm foran den bakre kanten av omrisset og du har den bakre kuttlinjen for luken.

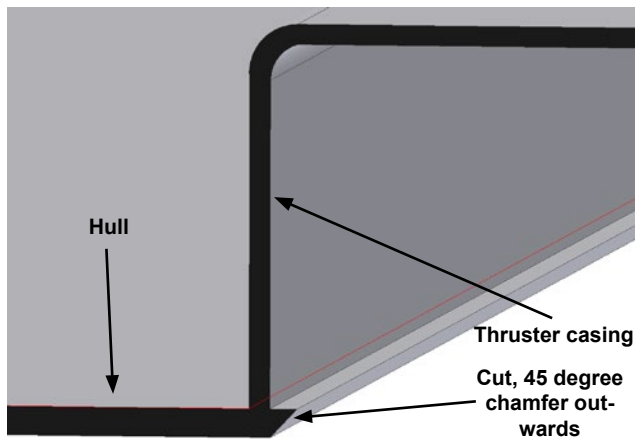
Tegn opp omrisset av luken i henhold til måltegnning, luke på side 12 (sidekanter 115mm til hver side av senterlinjen, fremre kutt linje 325mm fremover fra bakre kuttlinje).

Bruk bakre kuttlinje og senterlinje i båten som utgangspunkt for lukemalen (side 13) og projiser og bor de fire hullene for å feste skrogdelen til thrusteren

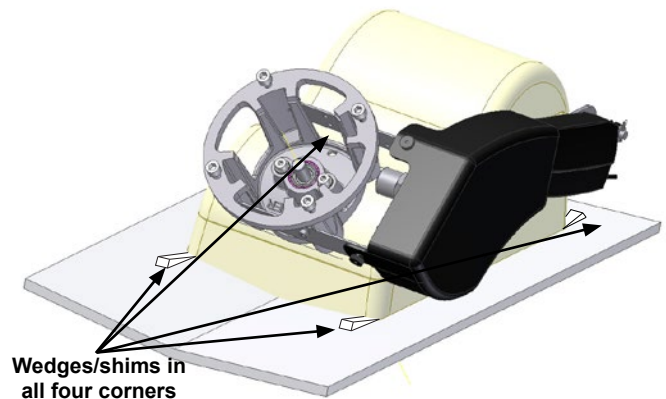
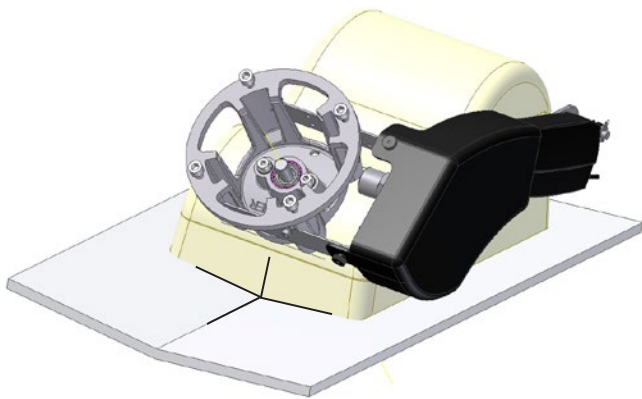
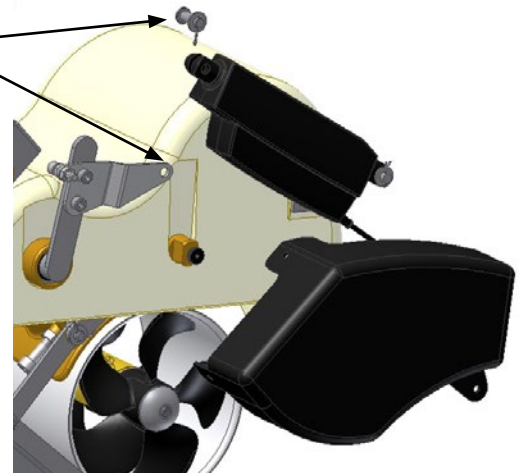
6. Luken kuttet ut med 45 graders vinkel utover, slik at åpningen blir størst på utsiden av skroget. Luken må kuttet ut nøyte, med dertil egnet verktøy

OBS. Før alle kutt er utført anbefales det å tape fast luken slik at den ikke faller ut når kuttene er utført.

Når du har kuttet ferdig skal du ha en pen luke med et tilhørende pent hull. Forsegl kantene på luke og skrog med epoxy og glassfibercutting for å fylle igjen tykkelsen etter kuttet.



Loosen actuator from front mounting point



EN

Fitting the hatch

7. Place unit according to marks and check that hull opening is correctly placed and is of correct size.

Loosen actuator from front mounting point and carefully swing the retracting unit out of hull (people outside hull recommended to control moving part of thruster)

Mount the hatch to the retract mechanism, fold mechanism back into hull, and remount actuator.

With hatch and actuator mounted, use wedges/shims in each corner of thruster grp casing to make the hatch fit tight in the opening. The hatch should be parallel with the hull on all edges, and the gap between hatch and hull should be equal on all four sides.

When the casing is secured with the hatch in the correct place with wedges/shims, mould in the casing.

Sleipner Motor AS recommends to use resin and fiberglass cutting mixed to a paste to be used between casing and hull before moulding/laminating the casing to the hull - to avoid resin to flow into the casing, and to avoid the risk of getting the hatch stuck to the opening.

NO

Tilpassing av luke

7. Sett deretter enheten på plass over hullet, og kontroller at hullet er korrekt og i riktig størrelse.

Ta av aktuator i fremre innfesting og sving retracten forsiktig ut av skroget. Til denne jobben anbefales det at du har en helper på utsiden av skroget for å ta imot den utsvingbare delen på trusteren.

Deretter skrues luken på plass på bunnrammen, og foldes inn og aktuator monteres på igjen.

Det er en fordel å se til at luken har en jevn tykkelse over det hele før den skrues fast, dette for en penest og best mulig installasjon.

Når luke og aktuator er montert, shimses / kiles kassen i hvert hjørne innvendig opp slik at luken passer perfekt i hullet. Luken skal ligge parallelt med skroget rundt og glippen mellom luke og skrog skal være lik hele veien rundt.

Når det er gjort, lamineres enheten fast.

Sleipner Motor AS anbefaler å bruke f. eks. epoxy og glassfiberkutting blandet til en fast masse som legges mellom enheten og skrog før laminering. Dette for å unngå at det renner epoxy inn i enheten og limer igjen luke til skrog.

Profile, moulding 1



Profile, moulding 2



Profile, moulding 3



EN

Moulding

8. The unit is now almost ready to be moulded to the hull (Epoxy and WR - woven rowing - recommended) Before starting to grind the hull and thuster casing, please cover thuster unit and inside of boat carefully. (Note, if the hull has a sandwich construction, all core material must be removed, and be rebuilt with WR **by qualified personel**)

Begin grinding from inside of line drawn around thuster unit inside hull, starting with a depth of 2/3 hull thickness moving outwards with decreasing depth.

Grind thuster casing in similar manner, deepest on lower edge, decreasing upwards.

Grind with power tool or by hand on inside of casing and inside of marking line on hull to accommodate 2-3 layers of WR

9. After grinding and cleaning, place unit in final location and prepare for moulding. Mould the unit thoroughly to the inside of hull and from outside into casing

Ref illustration "Profile, molding 1-3".

NO

Laminering

8. Nå er enheten klar for laminering (Sleipner Motor AS anbefaler epoxy og WR(vevd matte) glassfiber matte). Før du starter med å slippe i skrog og glassfiberkassen på enheten må du være nøye med og maskere alt i båten og på enheten. (NB; Er skroget av sandwich type, må alt av kjernemateriale fjernes helt ut til det ytre skinnnet av skrog, for så å bygges opp igjen med WR glassfiber matte)

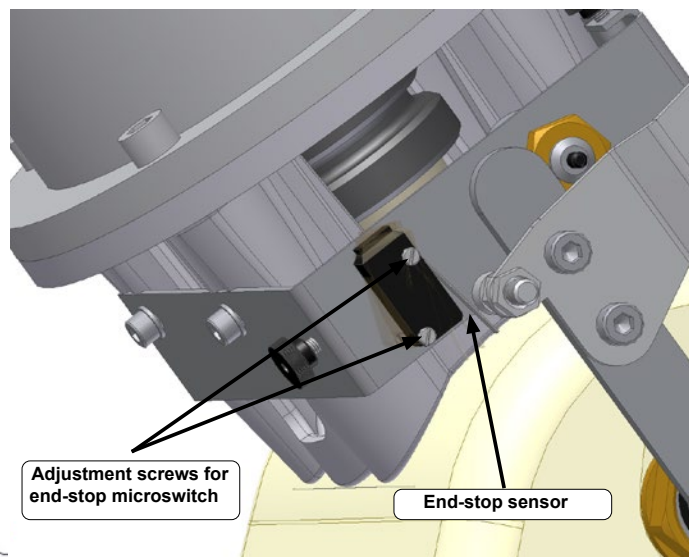
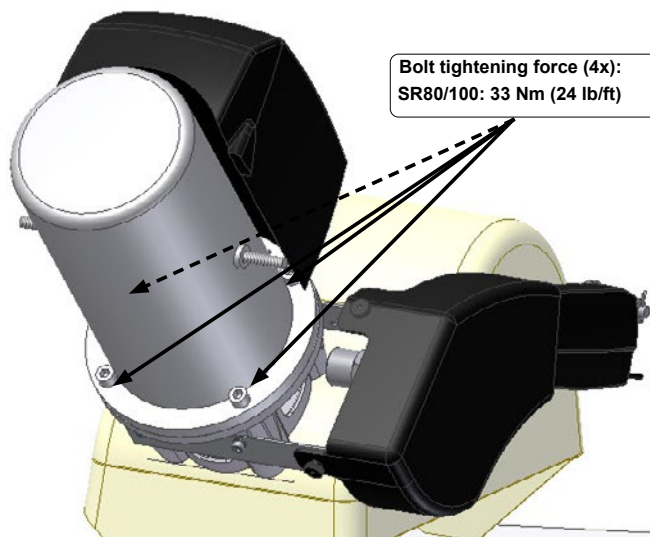
Slipingen starter på innsiden av streken som ble trukket rundt enheten på innsiden av skroget, og igjennom 2/3 av skroget og mindre og mindre lengre ut til du er i null.

Det samme gjøres på glassfiber kassen på enheten, slip mest på nedre kant og mindre oppover kasse.

Slip også med verktøy eller for hånd på innsiden av glassfiber kassen på enheten og på innsiden av streken på skrog, dette for og få heft til to-tre lag med glassfiber matte her også.

9. Etter sliping og grundig rengjøring plasseres enheten på plass, og du er nå klar for laminering. Enheten lamineres fast grundig på innsiden av skroget, og på utsiden av skroget og inn i kassen.

Se illustrasjon "Profil laminering 1-3".



EN Fitting the electromotor

1. Remove the 4 bolts in the motor bracket.
2. Place the motor gently on the motor bracket. Be careful, the motor is heavy! Ensure that key on axle and keyway in one-piece coupling are aligned. Ensure that you are placing the motor so that the cable terminals on it are available for electric installation later.
3. Fasten the motor to the bracket with the 4 bolts and tighten them.
4. Check if the springs for the brushes sit correctly on the brushes (see through the metal web around the top of the electromotor).
5. Check the drive system by turning the propeller, it will be a little hard to turn (because of the gear reduction and the motor), but you should easily be able to turn it by hand.
6. Remove solenoid cover and plug the cable from the actuators and sensors to the unoccupied plug in the controlbox located underneath the solenoids. Put cover back in place.

End-stop Micro-Switch adjustment

1. Remove actuator mechanism cover
2. Close retract mechanism manually, and hold it in the closed position
3. Loosen the screws on the end stop microswitch
4. Adjust microswitch so that it engages and fasten screws, to ensure that the correct retract end position is defined

NB! Paint the gearhouse and propeller with antifouling for propellers to prevent growth of barnacles or similar which would reduce the performance dramatically. Do not paint the propeller shaft, the zincanodes or the end face of the gearhouse.

NB! Do not run the thruster for more than very short bursts without being in the water.

NB! If the boat is still being built when the electromotor is installed, it must be covered up to avoid dust from the building going into the motor and the solenoids. This cover must be removed before the thruster is being used.

NO Montering av elektromotor

1. Fjern de 4 boltene i motorbraketten.
2. Plasser motoren på braketten. Plasser motoren slik at releene er tilgjengelige for tilkobling senere. Ta hensyn til at motoren er tung når den bæres og håndteres.
Sjekk at kilespor i gummikobling og kile på aksel er på linje.
3. Fest motoren til braketten med de fire boltene.
4. Sjekk at børstefjærene sitter korrekt på børstene (gjøres ved å se gjennom gitteret på siden av motoren).
5. Test installasjonen ved å dreie på propellen. Det vil være motstand pga. girutveksling og motor, men det skal enkelt la seg gjøre å dreie propellen for hånd.
6. Ta av reledekslet og plugg in ledningen fra aktuator og sensorer til den ledige kontakten på kontrollboksen under hovedreleene. Sett dekslet tilbake på plass.

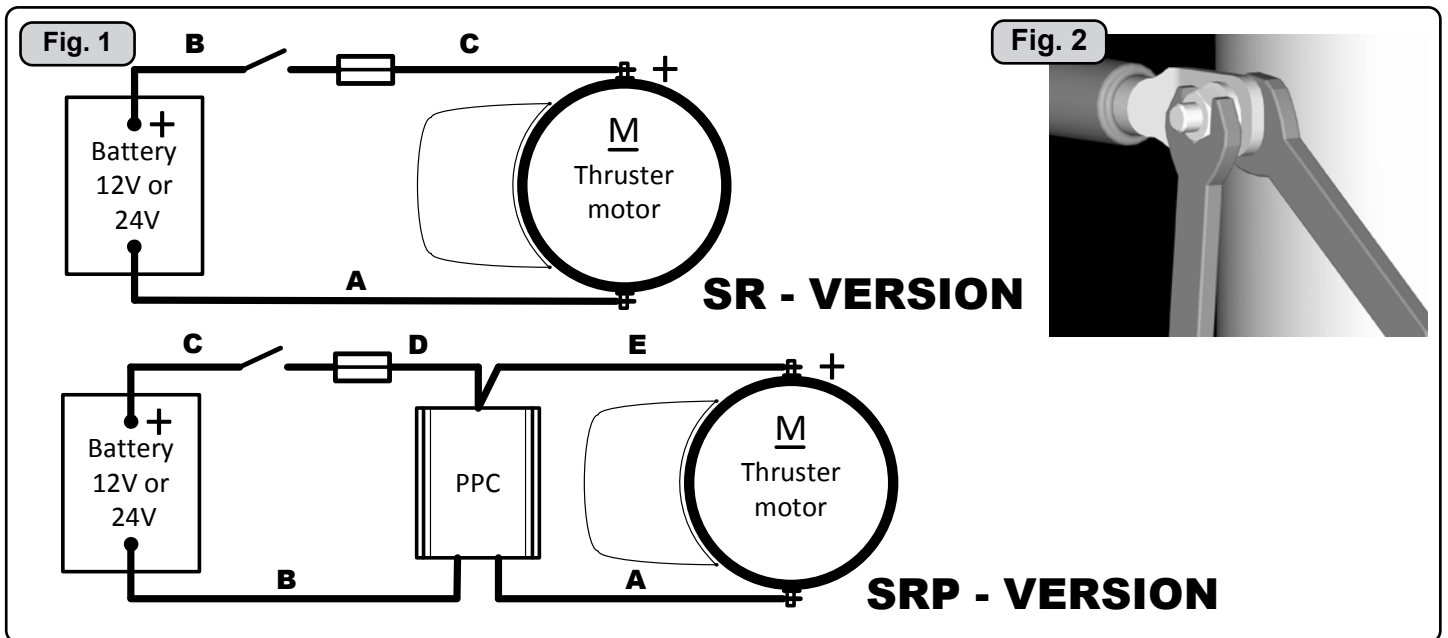
Justering av mikrobryter for endestopp

1. Ta av dekslet over aktuatormekanismen
2. Steng retract-mekanismen manuelt og hold den i lukket posisjon
3. Løsne skruene på mikrobryteren for endestopp
4. Juster mikrobryteren slik at den akkurat utløses og fest skruene for å definere den korrekte stillingen for en innfelt thruster

NB ! Påfør bunnstoff på girhus og propell for å unngå vekst som kan virke sterkt hemmende på thrusterens effekt. Sinkanoder propellaksling og tetninger skal ikke stoffes.

NB ! Thrusteren må kun kjøres i meget korte perioder når den ligger på land.

NB ! Hvis båten fortsatt er under bygging når thrusteren blir montert må motoren dekkes til for å unngå at støv og lignende trenger inn i girhus og elektromotor. Dekket må fjernes før motoren tas i bruk.



Battery & cable recommendations:

Model	Voltage	Nominal current draw	Min. battery CCA		>7m total + & -		7-14m total + & -		15-21m total + & -		22-28m total + & -		28-35m total + & -		36-45m total + & -	
					Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.	Min.	Rec.
SR80/185T	12 V	530 A	DIN: 550 SAE:1045	mm ² AWG	60 2/0	70 2/0	95 3/0	2x 70 2x 2/0	2x 70 2x 2/0	2x 95 2x 2/0	2x 95 2x 3/0	270*	2x 120 2x 4/0	340*	NA	NA
	24 V	260 A	DIN: 300 SAE: 570	mm ² AWG	25 1	35 1	35 1	50 1/0	60 2/0	70 2/0	70 2/0	95 3/0	95 3/0	120 4/0	120 4/0	2x 95 2x 3/0
SR100/185T	12 V	740 A	DIN: 750 SAE: 1425	mm ² AWG	95 3/0	95 3/0	2x 70 2x 2/0	2x 95 2x 3/0	2x 95 2x 3/0	280*	250*	375*	NA	NA	NA	NA
	24 V	340 A	DIN: 400 SAE: 760	mm ² AWG	35 1	50 1/0	50 1/0	70 2/0	60 2/0	95 3/0	95 3/0	120 4/0	120 4/0	2x 95 2x 3/0	2x95 2x 3/0	2x 120 2x 4/0

Minimum and recommended cable dimensions can be identical due to safety margins and cable heat considerations for short cable lengths.

* Minimum or recommended cable cross section in mm²

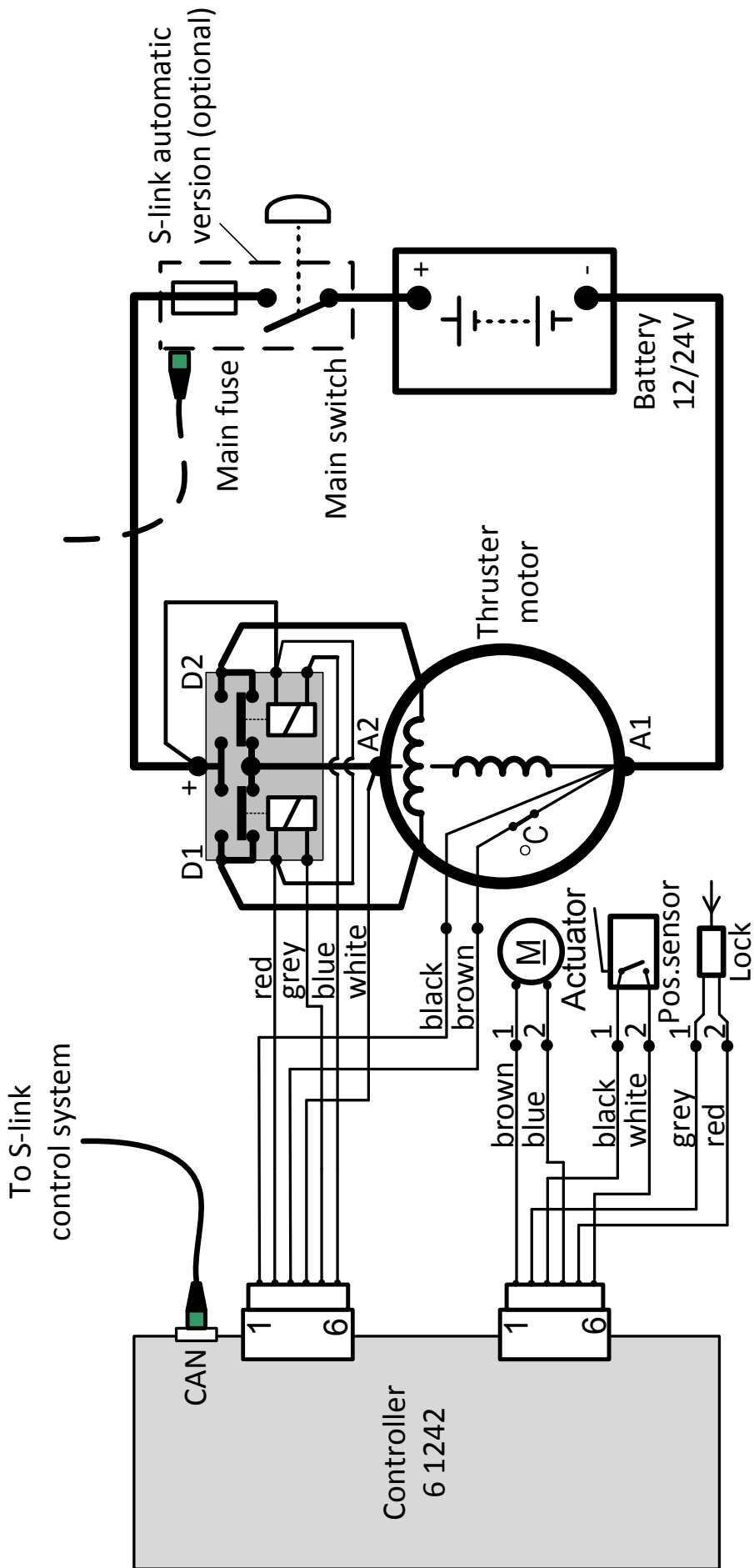
EN Electrical installation

- Explanation of electrical table
 - All cable lengths are the total of A+B+C(+D+E) in Fig. 1.
 - Battery size is stated as minimum cold crank capacity, not Ah.
 - Use slow fuse rated to hold stated Amp-Draw for min. 5 minutes.
- It is important that you use a good cable size and batteries with a high cranking capacity to feed the thruster, because it is the actual voltage at the motor while running the thruster that decides the output rpm of the motor and thereby the actual thrust. Please see the list below for advised min. sizes of cables and batteries. You can of course use larger cables for even better results.
- A main switch that can take the load without noticeable voltage drop must be installed in the main positive lead so the power for the thruster can be turned off independent of the rest when not on board or in emergencies. This should be placed in an easy accessible place and the boats instructions should inform that this should be turned off like the boat's other main switches.
- We also advice to install a fuse in the positive lead for protection against short circuiting of the main cables. This fuse should be of a adequate quality which normally means that it is physically large as these have less voltage drop than the simple / small ones. It should be of the slow type and sized to take the amperage draw for at least 5 minutes.
- It is highly recommended to install a **Sidepower Automatic Main Switch 897712 (12V) eller 897724 (24V)**. The AMS will be activated when the panel is turned on, contains an automatic short circuit fuse and a manual emergency stop. The AMS will also provide feedback to the panel regarding evt. faults.
- The cable ends must be fitted with terminals and these must be well isolated against contact with anything but the proper connection point.
- Terminals must be properly tightened. Secure/hold inner nut when tightening (Fig. 2). Tighten $\varnothing 10\text{mm} / 3/8"$ bolt with 15 Nm/11lb/ft.

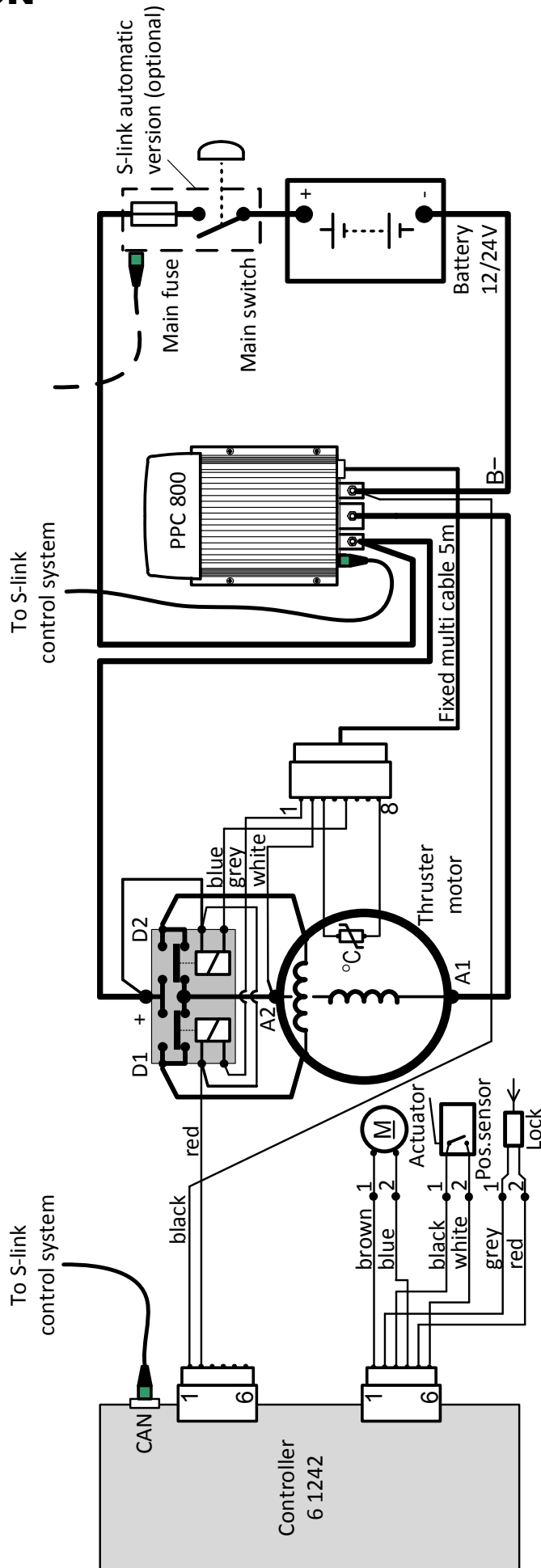
NO Elektrisk installasjon

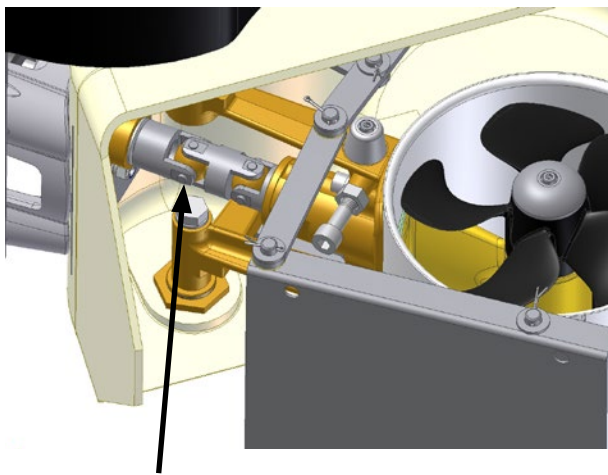
- Forklaring til elektrisk tabell
 - Kabellengder tilsvarer total lengden A+B+C(+D+E), Fig. 1.
 - Min. batterikap. som kaldstartkapasitet (CCA) i Ampere, ikke Ampere-timer (Ah).
 - Bruk trege sikringer for å forebygge spenningsfall.
- Det er viktig å bruke kabler som er store nok, og et batteri med god kaldstartkapasitet for å drive thrusteren. Det er spenningen (i volt) som kommer frem til motoren under kjøring som bestemmer turtallet til motoren og dermed også skyvekraften. Vær vennlig og jamfør listen over for minimum anbefalte kabel, og batteristørrelse.
- En hovedstrømbryter som ikke medfører stor spenningsfall må installeres på thrusterens plusskabel. Det bør være mulig å skru av strømmen til thruster uavhengig av resten av det elektriske systemet, når man ikke er om bord, eller i et nødtilfelle. Bryteren bør plasseres på et tilgjengelig sted, og båtens instruksmanual må ta for seg at denne skal skrues av slik som de andre hovedbrytere.
- Det må installeres sikring på pluss strømkabelen for å beskytte mot kortslutning av hovedstrømkablene. Sikringen bør være av høy kvalitet, noe som vanligvis betyr at de er fysisk store, for å unngå spenningsfall som ofte er resultatet av å bruke mindre, enklere sikringer. Sikringen skal være en treg type som tåler amper trekking til elektromotoren i minimum 5 min.
- Det anbefales å bruke Sidepower automatisk hovedstrømbryter 897712 (12V) eller 897724 (24V).** Denne aktiveres når panel slås på, og har også innebygget kortslutningsikring, samt en manuell nød-stopp. Den gir også melding til panel ved evt. feil.
- Kabelendene kan må påmonteres terminaler og disse må isoleres mot alt som ikke er riktig kontaktpunkt.
- Det er viktig at kabelsko trekkes korrekt fast på koblingsbolt. Kontra mutter på koblingsbolt må holdes fast ved tiltrekking (Fig. 2). $\varnothing 10\text{mm} / 3/8"$ på motoren dras til med 15 Nm.

SR - VERSION

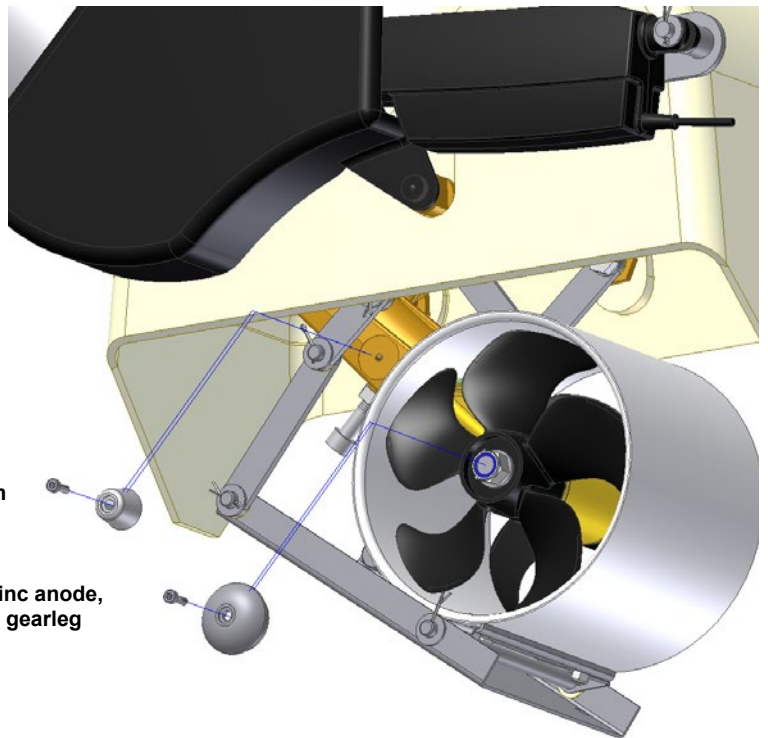


SRP - VERSION





Check and relubricate with waterproof grease if necessary



Zinc anode, retract mechanism

Zinc anode, gear leg

EN

Maintenance

- » Retighten the bolts holding the gearhouse to the motor bracket during the first on-land service with the specified bolt tightening force (see page 9).
- » Keep the propeller and gearhouse clean from growth by painting with antifouling before every season.

PS! The zinc anode, sealing and propeller shafts must absolutely not be painted. Be careful that you don't fill paint in the "tracks" in the gearhouse that the propeller hub moves in.

- » Change the zinc anode before every season, or when about half the anode is gone. Always use a sealant on the screw holding the zincanode to ensure that it does not fall off. Please observe that in some waterconditions it can be necessary to install an extra zincanode to ensure that it lasts for the whole period between regular service lifts of the boat. Consult your dealer for information on how to do this.
- » As a part of the seasonal service of your boat, and before every season, always check that:
 - The propeller is securely fastened
 - The bolts holding the electric motor to the motor bracket are fastened correctly.
 - The universal joint in the retract mechanism is lubricated
 - The area where the thruster is installed is clean and dry. If there are signs of water you must try to find the source and eliminate it.
 - All electrical connections are clean and fastened firmly.
 - Make sure that your batteries are in a good condition so that the thruster gets a good voltage. Old or bad batteries will give a reduced performance from the thruster.

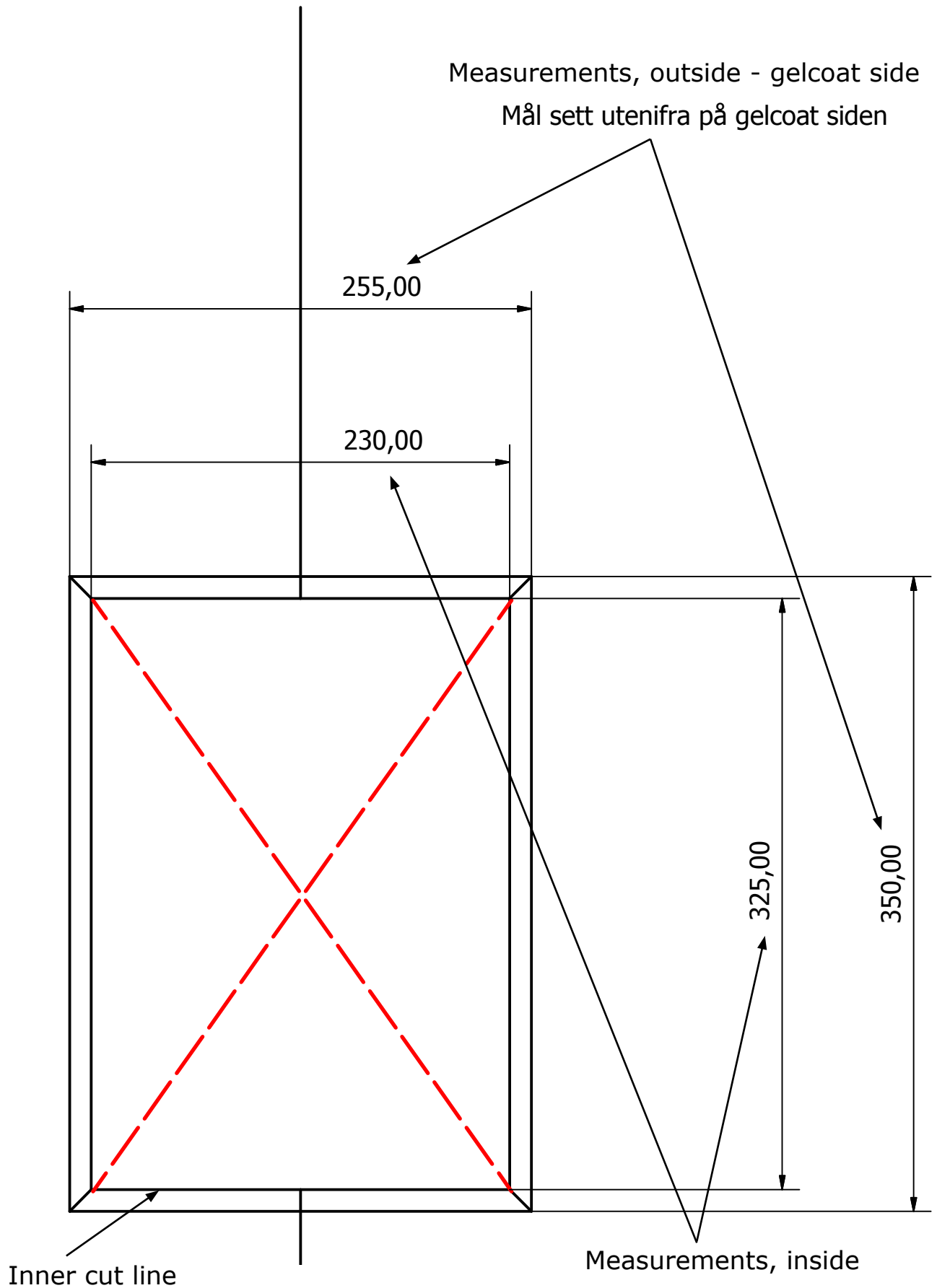
NO

Vedlikehold

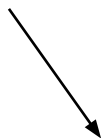
- » Etterstram boltene som holder girhuset sammen med braketten ved første på-land servicen med oppgitt moment (s. 9).
- » Hold propellen og girhuset fritt for algevekst ved å påføre bunnstoff før hver sesong.

PS ! Sinkanoder, tetninger og propellaksel skal ikke påføres bunnstoff, pass på så det ikke kommer bunnstoff i gjenge-sporene til propellmutteren.

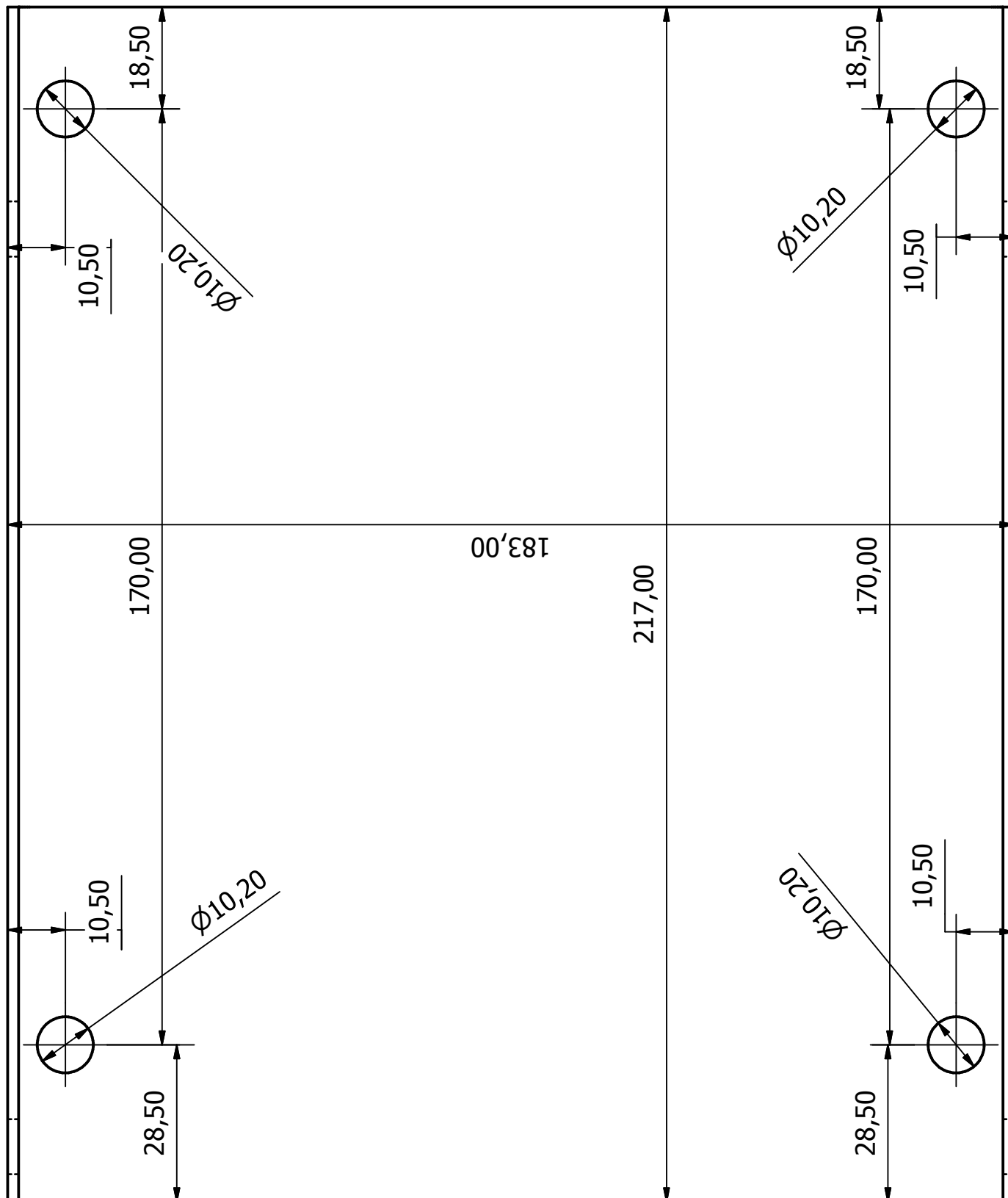
- » Skift sinkanode før hver sesong, eller når ca. halvparten av sink-anoden har tæret bort. Bruk Locktite eller lignende på skruen til sinkanoden for at den ikke skal falle av. Ta i betraktning at under noen vannforhold er det nødvendig å montere en ekstra sink-anode for å være sikker på at de skal vare i hele perioden mellom vedlikehold. Ta kontakt med din forhandler for informasjon om hvordan å gjøre dette.
- » Som en del av det periodiske vedlikeholdet av din båt, og før hver sesong må følgende ting sjekkes:
 - Propellen sitter godt festet.
 - Boltene som holder elektromotoren til braketten sitter.
 - At universalledet i retract-mekansimen er smurt
 - Skottet der baugpropellen er montert skal være rent, og tørt. Hvis det er vann i skottet må lekkasjen finnes og tettes.
 - Alle elektriske tilkoblingspunkter er rene, og godt festet.
 - Pass på at batteriene er i god stand slik at de kan gi høy spenning til trusteren. Redusert spenning vil gi redusert effekt på trusteren.

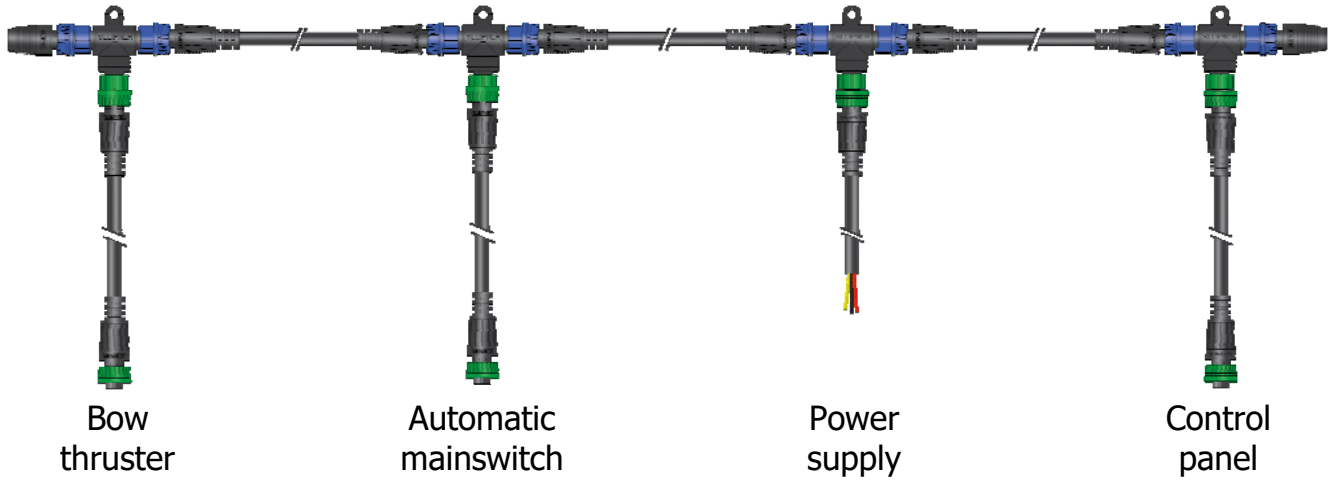


Align with inner rear cut-out line,
hatch



Rett inn etter indre bakre
kuttmarkering for luke





EN S-link system overview

S-link is a "CAN" based control system with full intelligent communication between all units in the system, much like a computer network.

- Main advantages include:
- Round, compact and waterproof plugs with unique keying and color coding to avoid faulty hookup
 - Unlimited number of commands or information transfer on a single cable
 - Proprietary Slepner commands, but built 100% on NMEA 2000 standard

NO S-link systemoversikt

S-link er et "CAN"-basert kontrollsystem med full intelligent kommunikasjon mellom alle enheter i systemet, på samme måte som et datanettverk.

- Blant hovedfordelene:
- Runde, kompakte og vanntette plugger med unik "keying" og fargekoding for å unngå feilkoblinger
 - Ubegrenset antall kommandoer eller informasjonsflyt i en enkel kabel
 - Proprietære Slepner kommandoer, men 100% basert på NMEA 2000 standarden

BACKBONE cables
Forms the main "loop" around the boat.
Part #: 6 1320-xxM (xx=length)
6 1320-0,2M (0,2m)
6 1320-2M (2,0m)
6 1320-4M (4,0m)
6 1320-7M (7,0m)
6 1320-15M (15,0m)
6 1320-20M (20,0m)



BACKBONE kabler
Danner "hovedsløyfen" rundt i båten.
Art. nr: 6 1320-xxM (xx=lengde)
6 1320-0,2M (0,2m)
6 1320-2M (2,0m)
6 1320-4M (4,0m)
6 1320-7M (7,0m)
6 1320-15M (15,0m)
6 1320-20M (20,0m)

SPUR cables
Must be used to connect all parts to the backbone cable (one for each component, no exceptions), recommended to be as short as practically possible.
Part #: 6 1321-xxM (xx=length)
6 1321-0,4M (0,4m)
6 1321-1M (1,0m)
6 1321-3M (3,0m)
6 1321-5M (5,0m)



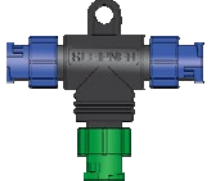
SPUR kabler
Må benyttes for å koble alle komponentene til backbone-kabelen (en for hver komponent, uten unntak), anbefalt å ha så korte lengder som mulig.
Art. nr: 6 1321-xxM (xx=length)
6 1321-0,4M (0,4m)
6 1321-1M (1,0m)
6 1321-3M (3,0m)
6 1321-5M (5,0m)

POWER cable
Must be one in each system, length 2.5m
Part #: 6 1328



POWER kabel
Må være en i hvert system, lengde 2.5m
Art. nr: 6 1328

T-CONNECTOR
Must be one for each spur, including power cable
Part #: 6 1326



T-CONNECTOR
Må benyttes for hver spur-kabel, inkludert Power-kabel
Art. nr: 6 1326

BACKBONE EXTENDER
Connects two backbone cables to extend length
Part #: 6 1322



BACKBONE EXTENDER
Kobler sammen to backbone-kabler for å øke lengden
Art. nr: 6 1322

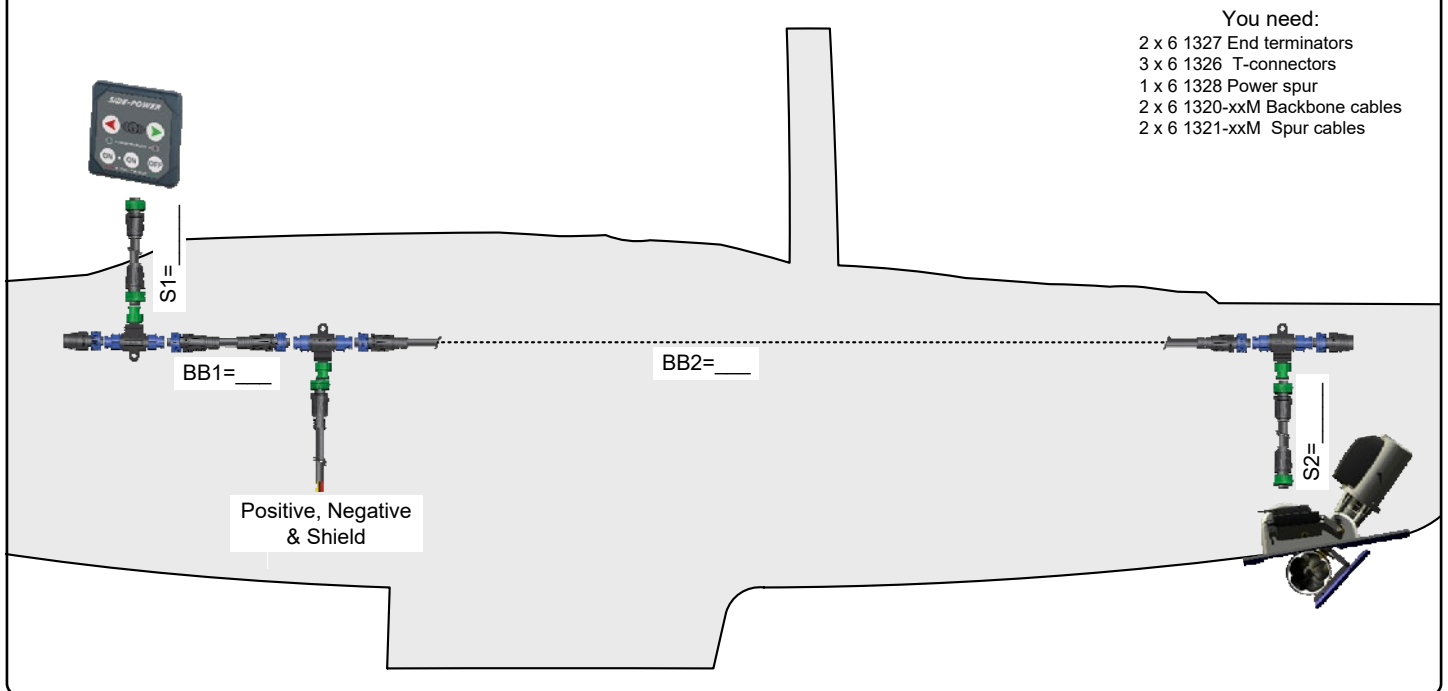
END TERMINATOR
Must be one in each end of the backbone "loop"
Part #: 6 1327



END TERMINATOR
Må benyttes i hver ende av backbone-"hovedsløyfen"
Art. nr: 6 1327



Example of the control wiring with S-link system for boats with one control position and one retractable thruster.



You need:
2 x 6 1327 End terminators
3 x 6 1326 T-connectors
1 x 6 1328 Power spur
2 x 6 1320-xxM Backbone cables
2 x 6 1321-xxM Spur cables

EN S-link planning & precautions

Routing the Backbone:

Plan routing of the backbone so that length of spur cables will be kept at a minimum.

Avoid routing the S-link cables close to equipment that might cause interference to the S-link signals, such as radio transmitter equipment, antennas, high voltage cables etc.

The backbone MUST be terminated in each end with the 6 1327 End Terminator.

Spur cables:

Spur cables can be left unterminated (i.e. routing can be prepared for future additional equipment), make sure to protect open connectors from water and moisture to avoid corrosion in connector .

NO S-link planlegging og forbehold

Ruting av Backbone:

Planlegg leggingen av "backbone"-kabelen slik at lengdene på "spur"-kablene blir kortest mulig.

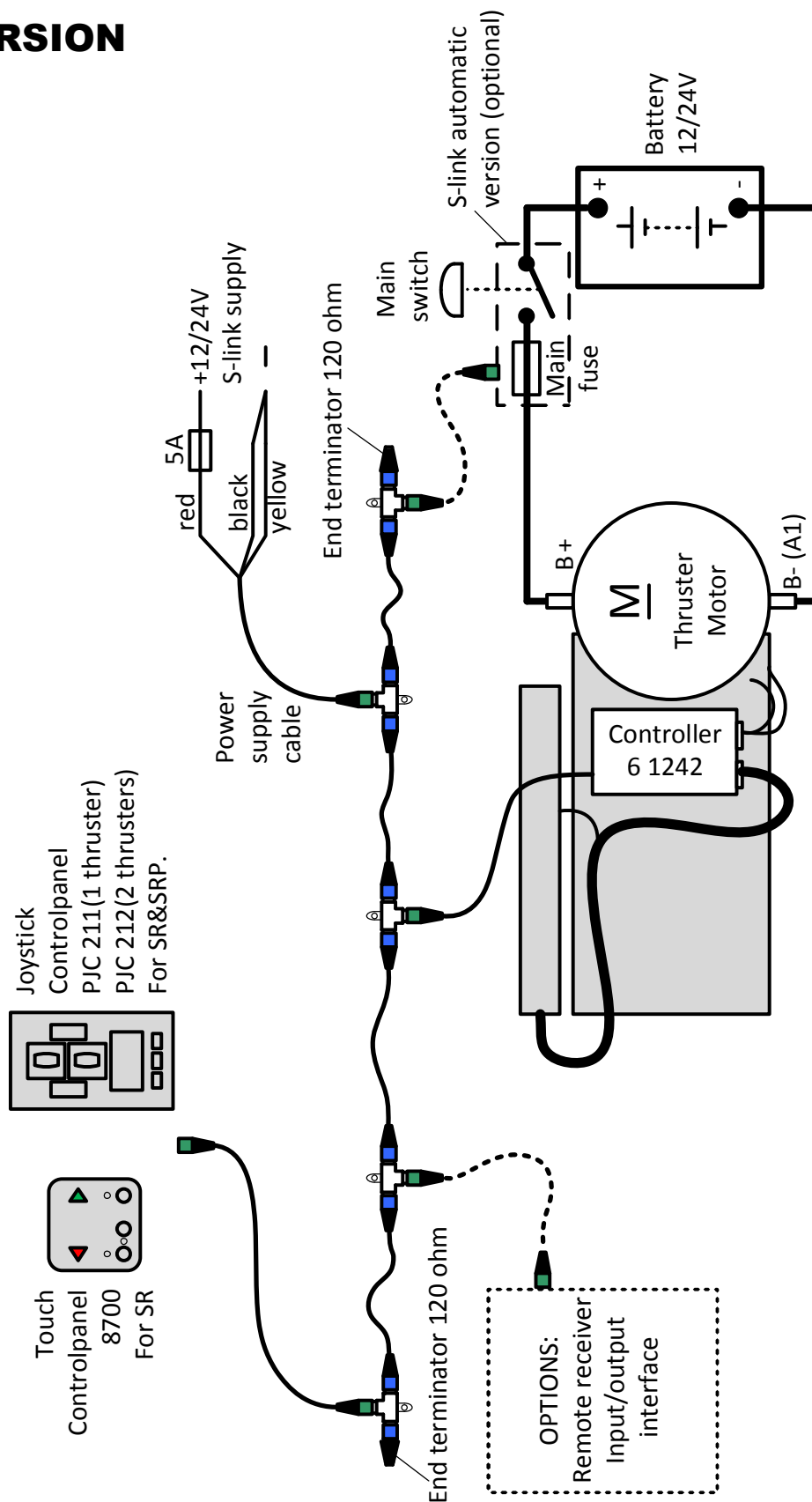
Unngå å legge S-link kabelene i nærheten av ledninger eller utstyr som kan skape forstyrrelser for S-link signalene, slik som radiosendere, antenner, høyspentkabler etc.

"Backbone"-kabelen MÅ termineres i begge ender med 6 1327 "Terminatorplugg"

Spur kabler:

"Spur"-kabler kan kobles til "backbone"-kabelen uten å termineres (f.eks for klargjøring av fremtidig tilleggsutstyr), sørg for for å beskytte de åpne kontaktene fra fukt for å forhindre korrosjon i kontakten.

SR - VERSION



EN

S-link system schematics

The S-link control system is powered by a dedicated power cable connected to the system backbone as a normal spur cable.

The cable ends connect to battery pos. and battery neg. and the cable shield connects to battery neg.

The battery pos. must be connected through a 5A fuse.

NO

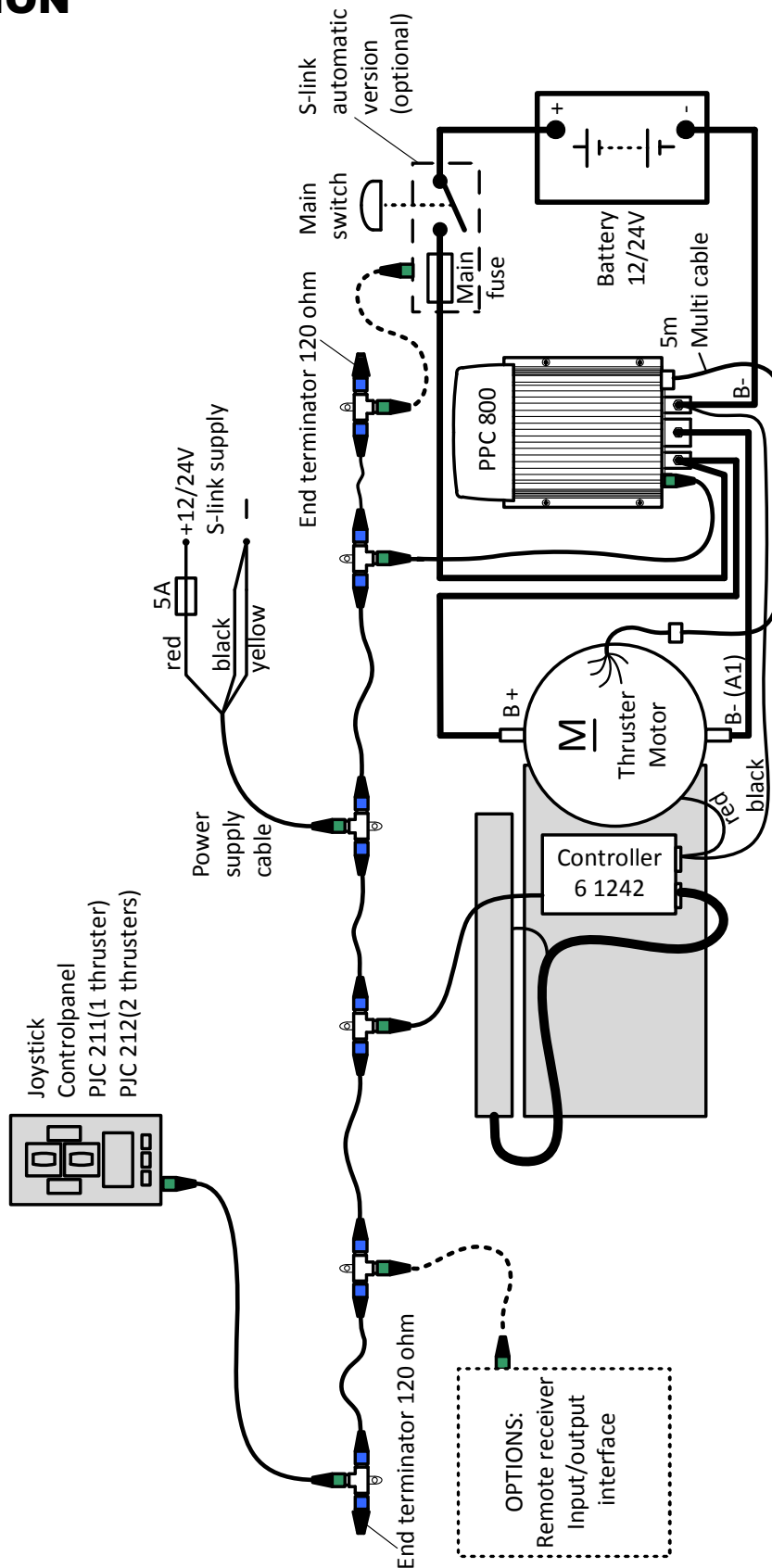
S-link koblingssskjema

S-link systemeter strømforsynt via en dediker strømkabel som kobles til systemets "backbone" som en normal "spur"-kabel.

Kabelendene kobles til batteriets pluss- og minuspol og skjermkabelen kobles til batteriets minuspol.

Ledningen som kobles til batteriets plusspol må sikres med en 5A sikring

SRP - VERSION



EN

S-link system schematics

The S-link control system is powered by a dedicated power cable connected to the system backbone as a normal spur cable.

The cable ends connect to battery pos. and battery neg. and the cable shield connects to battery neg.

The battery pos. must be connected through a 5A fuse.

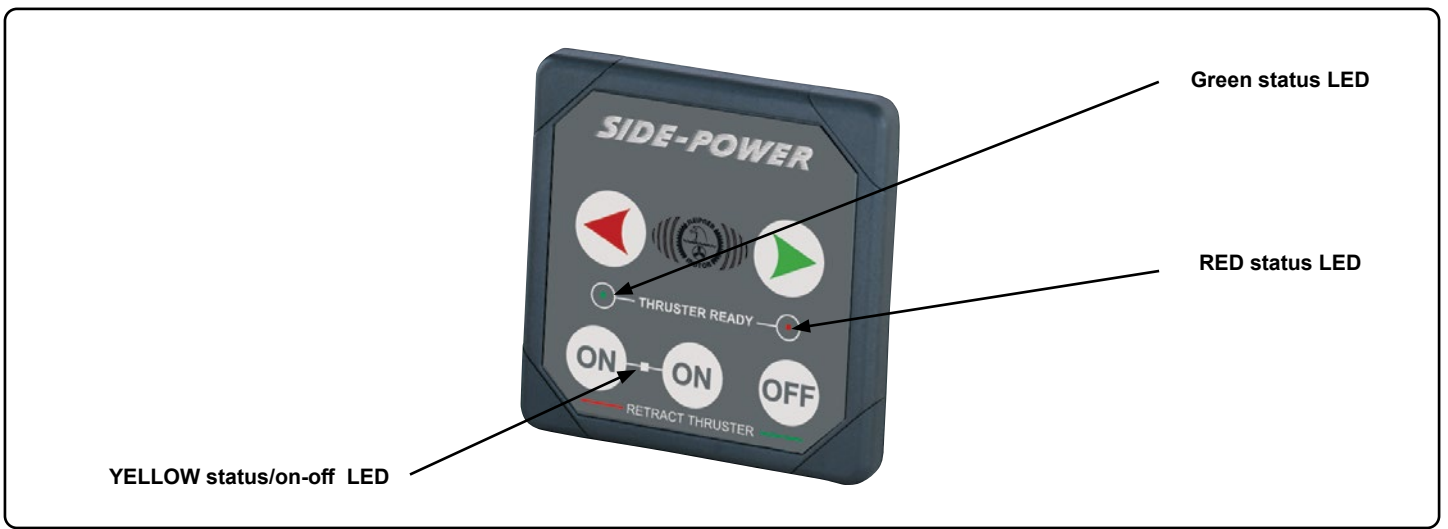
NO

S-link koblings-skjema

S-link systemet er strømforsyrt via en dedikert strømkabel som kobles til systemets "backbone" som en normal "spur"-kabel.

Kabelendene kobles til batteriets pluss- og minuspol og skjermkabelen kobles til batteriets minuspol.

Ledningen som kobles til batteriets plusspol må sikres med en 5A sikring



EN General use & alarm indication - SR

PANEL ON: push both "ON" buttons simultaneously, thruster deploys.
PANEL OFF: push "OFF" button, thruster retracts.

Operate thruster by pushing red and green arrows.

STATUS/ALARM LEDES:

GREEN LED flashes during deploy phase, Solid GREEN LED indicates thruster deployed and ready to operate.

RED LED flashes during retract phase, all LEDs out when panel/thruster is shut down.

If something unexpected happens while deploying/retracting thruster, the LEDs will show alarm codes according to form below:

If something unexpected happens while deploying/retracting thruster, the LEDs will show alarm codes according to form below:

NO Betjening og alarmindikering - SR

PANEL PÅ: Trykk begge "ON"-knappene samtidig og trusteren felles ut
PANEL AV: Trykk på "OFF"-knappen og trusteren felles inn.

Betjen trusteren ved hjelp av den røde og grønne pilknappen.

STATUS OG ALARM LED:

GRØNN LED blinker mens trusteren felles ut, fast lysende GRØNN LED forteller at trusteren er ute og klar til bruk.

RØD LED blinker under innfelling av trusteren, alle LED-er slukkes når trusteren er inne og systemet er slått av.

Hvis noe uforutsett inntreffer mens trusteren felles ut eller inn, vil LED-ene vise alarmkoder i henhold til tabellen under:

nvis noe uforutsett inntreffer mens trusteren felles ut eller inn, vil LED-ene vise alarmkoder i henhold til tabellen under:

LED	Panel alarm indication	Failure	Thruster reaction	User action
1 ●●	1 flash YELLOW & GREEN - Pause	Thruster, overtemp	Retracts	Turn off panel, wait for 20 mins.
2 ●●	2 flashes YELLOW & GREEN - Pause	Thruster, low power	Retracts	Turn off panel, charge batteries.
2 ●●	2 flashes YELLOW & RED - Pause	Thruster IPC error	Retracts	Turn off panel - thruster must be serviced by authorized personnel.
3 ●●	3 flashes YELLOW & GREEN - Pause	Deploy operation obstructed	Retracts	Turn off panel. Go for lower speed/deeper water. Retry.
3 ●●	3 flashes YELLOW & RED - Pause	Retract operation obstructed	Aborts retract, deploys and retries to retract 3 times. If operation still is obstructed, retract stops on obstruction	Press both ON-buttons to deploy thruster. Turn Main-Switch off. Remove obstruction.
1 ●●	1 flash YELLOW & RED - Pause	Power failure, Actuator	System shuts down	Turn off panel. Check actuator connections - Retry.
1 ●●●	1 flashes YELLOW, GREEN & RED - Pause	Automatic Main Switch Power failure	None	Check power to Automatic Main Switch
2 ●●●	2 flashes YELLOW, GREEN & RED - Pause	Automatic Main Switch fuse blown	None	Replace fuse on Automatic Main Switch
3 ●●●	3 flashes YELLOW, GREEN & RED - Pause	Automatic Main Switch manual override	None	Pull up Automatic Main Switch
4 ●●●	4 flashes YELLOW, GREEN & RED - Pause	Panel has no contact with thruster.	None	Turn off panel. Check main switch, fuse, cable connections, cables. Retry.

LED	Panel alarmindikasjon	Feil	Thrusterreaksjon	Brakerhandling
1 ●●	1 blink GUL & GRØNN - Pause	Thruster, overtemperatur	Felles inn	Slå av panel, vent 20 minutter.
2 ●●	2 blink GUL & GRØNN - Pause	Thruster, lite strøm	Felles inn	Slå av panel, lad opp batteriene.
2 ●●	2 blink GUL & RØD - Pause	Thruster IPC feil	Felles inn	Slå av panel, trusteren må repareres av kvalifisert personell.
3 ●●	3 blink GUL & GRØNN - Pause	Utfelling av truster hindres	Felles inn	Slå av panel, kjør saktere eller på større dybde. Prøv igjen.
3 ●●	3 blink GUL & RØD - Pause	Innfelling av truster hindres	Avbryter innfelling, felles ut og prøver å felle inn 3 ganger. Hvis infelling fremdeles er hindret, stopper bevegelsen ved hindringen	Trykk begge ON-knappene for å felle ut thruster. Skru av hovedstrømsbryter. Fjern det som hindrer trusterens bevegelse.
1 ●●	1 blink GUL & RØD - Pause	Strømfel, aktuator	System shuts down	Slå av panel. Sjekk elektriske koblinger til aktuator. Prøv igjen.
1 ●●●	1 blink GUL, GRØNN & RØD - Pause	Feil på automatisk hovedstrømsbryter	Ingen	Sjekk elektriske koblinger til hovedstrømsbryter.
2 ●●●	2 blink GUL, GRØNN & RØD - Pause	Sikring røket, automatisk hovedstrømsbryter	Ingen	Bytt sikring i hovedstrømsbryter.
3 ●●●	3 blink GUL, GRØNN & RØD - Pause	Automatisk hovedstrømsbryter slått av manuelt	Ingen	Trekk opp rød knapp på hovedstrømsbryter.

NB: THE MAIN SWITCH MUST BE TURNED OFF IMMEDIATELY WHEN AN IPC-ERROR OCCURS, TO PREVENT OVERHEATING OF THE THRUSTER MAIN RELAYS!

THRUSTER WILL NOT RETRACT WHILE REVERSING AT "HIGH" SPEED. THIS WILL TRIGGER THE "Retract operation obstructed" ALARM.

IF ALARM IS TRIGGERED, REDUCE SPEED AND PRESS BOTH "ON" BUTTONS BEFORE RETRYING "OFF" BUTTON

NB: VED IPC-FEIL MÅ HOVEDSTRØMSBRYTER SLÅS AV UMIDDELbart FOR Å FORHINDRE VARMEUTVIKLING I TRUSTERENS HOVEDRELER !

THRUSTER FELLES IKKE INN VED BAKKING I "HØY" FART. DETTE VIL UTLØSE ALARM "Innfelling av thruster hindres".

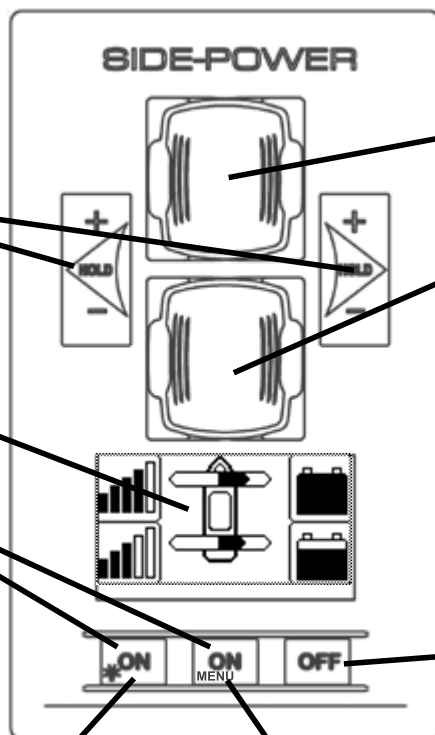
HVIS ALARM UTLØSES, REDUSER FARTEN OG TRYKK BEGGE "ON" KNAPPENE FØRST FØR "OFF" TRYKES PÅ NYTT.

SIDE-POWER

Holding function for auto-running of bow and stern thrusters together in the direction of the arrows at selected power
Press "+" for more and "-" for less power.

Information display

Press both "ON" buttons simultaneously to activate control panel.



Speed control joystick for bow thruster

Speed control joystick for stern thruster

Press to de-activate control panel or cancel or go back in menu system

Press to change between day and night light

Press to access menu system and choose items in menu

EN General use & alarm indication - SRP

1. Turn main power switch for the bowthruster on. (Always turn off the main power switch when not onboard.) A Side-Power Automatic Main Switch wil turn on/off when the panel is turned on/off
2. Please take some time to exercise thruster usage in open water to avoid damages to your boat.
3. Turn the control panel on by pushing both "ON" buttons on the original Sidepower panel simultaneously.
4. Movethe joystick in the direction you wish the bow to move. Other controls like footswitches or toggle-switches on the throttle can be used. These connected to the S-link control system by a S-link interface (Refer to schematics in interface manual for installation
5. Depending on the sideways speed of the bow, you must disengage the control device shortly before the bow is in the desired direction, as the boat will continue to move after stopping the bowthruster.

How to use a single stern thruster

Some boats might however have installed a single stern thruster because of space limitation in the bow. In this case the stern thruster is used in the same way as a single bow thruster or moving the boat's stern.

How to use a bow and stern thruster combined

The combination of a bow and stern thruster offers total manoeuvrability to the boat and the opportunity to move the bow and the stern separately from each other. This enables you to move the boat sideways in both directions and to turn the boat around its own axis staying at the same place. Refer to the PCJ control panel manual for detailed instructions.

- Again, if in doubt, try in open water first!

NO Betjening og alarmindikering - SRP

1. Skru på hovedstrømmen (skru alltid av hovedstrømmen når du ikke er om bord i båten). En Sidepower Automatic Main Switch slås på / av når panelet slås på / av.
2. Det er fordel om baugtrusteren prøves på åpent vann den første gangen.
3. Skru på kontrollpanelet ved å trykke inn begge "on" knappene på Sidepower panelet.
4. Kjør baugen i samme ønsket retning som du beveger joysticken. Andre kontrollenheter som fotbrytere, eller brytere på gass hendel kan også brukes. Disse tilkobles S-link kontrollsystem via en spesiell interface-boks. (Se skjema i manual for interfaceboks).
5. Avhengig av hvor stor fart baugen får sideveis må thrusteren stoppes før baugen er i riktig posisjon, dette fordi baugen vil fortsette sideveis litt etter thrusteren skrues av.

Hvordan bruke en enkel hekkthruster

Enkelte båter vil av plassmessige, eller andre hensyn bare installere en hekkthruster. I disse tilfeller brukes hekkthrusteren på samme måte som baugthrusteren.

Hvordan bruke hekk og baugthruster kombinert

Kombinasjonen av baug og hekkthruster gir en total kontroll over båtens bevegelser p.g.a. muligheten til å bevege hakken og baugen uavhengig av hverandre. Båten kan skyves sidelengs og dreies rundt sin egen akse. Se egen brukermanual for PJC betjeningspanel.

- Det er også her en fordel å prøve ut systemet på åpent vann.

- Propeller is fastened correctly to the shaft.
- Propeller turns freely in tunnel.
- The zinc-anode holding screw is tightened well with thread glue.
- Anti-fouling have been applied to the gearhouse and propeller but NOT on the zincanode or the gearhouse lid where the propeller is fastened.
- The brush springs are fitted correctly on the brushes in the electro-motor (check through the grid around the top end of the motor).
- Correct drive direction as per controlpanel.
- All electrical connections are clean, dry and tight, and the correct cable, fuse and main switch sizes have been used.
- With a ohm meter check that there is no electrical connection between electromotor body and positive terminal on the motor and between the electromotor body and the negative (A1) terminal on the motor.
- The bolts holding the gearhouse and motorbracket together are tightened correctly.
- The bolts holding the electromotor to its bracket are tightened correctly.

The thruster has been installed as per the instructions in this manual and all points in checklist above have been controlled.

Signed: Date:.....

Extra pre-delivery tests by installer/yard who does not use other quality control systems !

Thruster type: Voltage:

Serial number: Date of delivery:

Correct drive direction as per control panel:

Voltage at thruster when running:

Battery cable size used:

The compartment where the thruster is fitted is isolated from general bilge water and has no obvious or suspected risks for flooding.

Other comments by installer:

- Propellen er festet til akselen på korrekt vis.
- Propellen roterer fritt i tunnel.
- Festeskruen til sinkanoden er festet med gjengelim.
- Bunnstoff er påført girhus og propell, men ikke på sinkanode, tetninger eller propellaksel.
- Børstefjærene er riktig plassert mot børstene. Dette sjekkes ved å se gjennom gitteret på siden av motoren.
- Kontrollpanel gir korrekt kjøreretning på thrusteren.
- Alle elektriske koblinger er rene, tørre og tette. Korrekte kabler, sikringer og hovedstrømsbryter er brukt.
- Boltene som festet brakket til girhus er festet korrekt.
- Boltene som festet motor til brakket er festet korrekt.

Thrusteren er installert i henhold til instruksene gitt i denne manualen, og alle punkter i sjekklisten er kontrollert.

Signatur: Dato:

Anbefalt før leverings test for installør / verft som ikke bruker andre kvalitetskontroll systemer!

Thrusterstype: Volt:

Serienummer:

Leveringsdato:

Korrekt kjøreretning per kontrollpanel:

Spenning målt på thruster under kjøring:

Strømkabler:
Skottet hvor thrusteren er montert er isolert fra kjølvann og har ingen åpenbar risiko for lekkasje.

Kommentar fra installør:

- Ensure that you know the location of the main battery switch that disconnects the thruster from all power sources (batteries) so that the thruster can be turned off in case of a malfunction.
- Always turn the main power switch off before touching any part of the thruster, as an incidental start while touching moving parts can cause serious injuries.
- Always turn the control device off when the thruster is not in use.
- The maximum continuous usage time of the electrical thruster is approximately 3 minutes. The electromotor has a built in thermal cut-off switch that will shut off the electromotor if it is overheating and re-engage it when it has cooled down some. This should be considered when planning your maneuvering.
- This also means that the thruster will limit its total running time per time period so that you can not count on the thruster to hold you in a current and side wind for extensive time periods. Depending on the surrounding temperatures etc. the thruster will be able to run approximately 10 % of the time.
- Never use a thruster close to somebody in the water, as the thruster will draw objects close by into the tunnel and contact with the rotating propellers will cause serious injuries.
- With the boat on land, only run the thruster for a fraction of a second, as without resistance it will accelerate very fast to a damaging rpm. Also, while the thruster is in air, make sure that the propellers have come to a complete stop before performing a directions change of the thruster, as it might cause damage to the thruster.
- If the thruster stops giving thrust while the electromotor is running, chances are that there is a problem in the drive-system. You must then immediately stop trying to run it, and turn it off, as running the electromotor for more than a few seconds without resistance from the propeller, can cause serious damage to the electromotor.
- When leaving the boat always turn off the main power switch for the thruster.
- We advice to always keep the main engine(s) running while using a thruster. This will keep the batteries in a good charge condition. This will also give better performance to the thruster, as a higher voltage at the thruster results in a higher torque (power) in the electromotor.
- Please note that the performance of a thruster strongly depends on the voltage available at the electromotor. This voltage will decrease by time because aging batteries have a reduction of capacity. By installing new batteries the effect of the thruster should be back at the original level.
- Make sure that only one control is used at the same time, if two panels are operated in opposite directions at the same time the thruster will not run at all. If they are operated in the same direction the thruster will run in this direction.
- If the thruster is not performing or functioning as usual, the cause for this must be found and corrected as soon as possible so to avoid causing any other or further damage to the equipment. You must also turn off the main battery switch immediately in case the problem is of electric origin.
- Never store anything (e.g. equipment, sails, ropes etc.) in the same compartment as the thruster. When the thruster runs for a longer period it will get hot and will cause damage.
- It is the owner/captain/other responsible party full responsibility to assess the risk of any unexpected incidents on the vessel. If the thruster stops giving thrust for some reason while maneuvering you must have considered a plan on how to avoid damage to persons or other objects.

- Forviss deg om at du kjenner plasseringen av hovedstrømsbryteren til baugthrusteren, som kutter all strøm til thrusteren, så thrusteren kan skrus av i nødstilfelle.
- Før berøring av noen del av thrusteren må alltid strømmen skrus av. En tilfeldig start kan volde stor fysisk skade.
- Skru alltid av kontrollpanelet etter bruk.
- Den maksimale sammenhengende kjøretiden for en elektrisk thruster er ca. 3 min. da vil en føler automatisk skru av motoren når den når en viss varme. Dette må tas i betraktning når en manøver planlegges.
- Dette betyr at ved manøvere som tar lang tid vil ikke thrusteren kunne brukes hele kontinuerlig. Ved manøvere som tar lang tid kan man bruke thrusteren i ca 10 % av tiden, avhengig av temperaturen i vannet.
- Bruk aldri thrusteren når noen er i vannet, thrusteren vil trekke gjenstander til seg og kontakt med propellen vil volde alvorlig skade.
- Kjør aldri thrusteren i mer enn 1 sek. når båten er på land. Uten motstand fra vannet vil thrusteren nå ødelegende turtall svært fort.
- Hvis thrusterne stopper å gi skyvekraft mens motoren er i gang, er det trolig oppstått problemer i girsystemet. Stopp umiddelbart å kjøre motoren, og skru den av. Uten motstand fra vannet vil thrusteren nå ødelegende turtall svært fort.
- Når man forlater båten skal alltid hovedstrømsbryteren slås av.
- Vi anbefaler å ha motoren i gang når thrusteren kjøres. Da vil batterien vedlikeholdes, og det vil være høyere spenning til elektromotoren. Høyere spenning gir høyere turtall og bedre ytelse.
- Ytelsen til en baugthruster avhenger av hvilken spenning motoren mottar under kjøring. Kapasiteten til batterier avtar etter hvert som de blir eldre, og dermed også ytelsen til thrusteren. Ved å installere nye batterier vil thrusteren yte maksimalt igjen.
- Kun en kontroll skal brukes av gangen, hvis to kontroller brukes motsatt vei vil thrusteren stoppe automatisk. Hvis to paneler opereres samme vei vil ikke dette skje.
- Hvis thrusteren ikke fungerer tilfredsstillende må feilen lokaliseres og rettes så snart som mulig, for at ikke thrusteren skal ta ytterligere skade, skru av hovedstrømsbryteren hvis feilen er av elektrisk art.
- Det er eiers / skippers/ andre ansvarlige fulle ansvar å vurdere risikoen for eventuelle uforutsette hendelser på fartøyet. Hvis thrusteren av en eller annen grunn stopper å gi skyvekraft under manøvrering må du ha vurdert en plan for hvordan å unngå skader på personer eller andre objekter.

Before seeking assistance at the help desk of your Side-Power dealer/distributor please perform these tests and make notes of all measurements to ensure that they have as much information as possible to work on. Some error messages and alarms will be shown in the panel display. Please refer to the control panel manual.

NB! All check points and solutions must be carried out after consulting the relevant information elsewhere in this manual to understand how the system is intended to work. If you are unable to understand what to check, you must consult a professional.

Check	Solution
Not able to turn panel on with the ON-buttons	Check S-link power supply
No reaction when operating the panel	A system scan must be executed. Refer to control panel manual
» The thruster does not start at all or works only in one direction.	
The flexible coupling between motor and driveshaft or the propeller drive pin might have been damaged.	The SR(P)80 og SR(P)100 models have a flexible coupling that can fail. The coupling is visible on the underside of the motor from inside the boat. Run motor and observe the coupling. Replace coupling if necessary. If it is required to turn the drive shaft by hand, deploy the thruster as normal by turning the control panel on, wait until the thruster stops in deployed position and turn the battery switch off. Remove the fan cover on the motor to be able to turn it.
Is the propeller properly attached to the propeller shaft and is the drive pin in place.	Attach or replace propeller and/or drive pin
Can the drive shaft be turned by hand with the electro motor removed.	If the gear leg is damaged, it is recommended to replace the complete unit - not attempt to repair internal gears and bearings.
» The thruster does not start at all or works only in one direction.	
Refer to the control panel manual for detailed explanations of warning and error codes shown on panel display/LEDs.	
» The thruster has an unexpected low performance.	
Check voltage at thruster battery when running.	If less than 10,5 V / 21V the thruster will not perform at specified effect.
Check that all the brush-springs sits correctly on the brushes in the electromotor.	If one or more brushes are loose/has no tension from the brush-spring, the performance will be low.
Check that the propeller, gearhouse and tunnel is free from growth/barnacles etc.	If there is growth in the tunnel, this will disturb/block the waterflow and especially barnacles on the propeller will greatly reduce performance.

Før du søker hjelp hos din forhandler kan du foreta noen tester, og notere ned resultatet for at forhandleren skal ha mest mulig informasjon til rådighet. Noen feilmeldinger og alarmer vil kunne vises i betjeningspanelet. Vennligst se manualen for panelet.

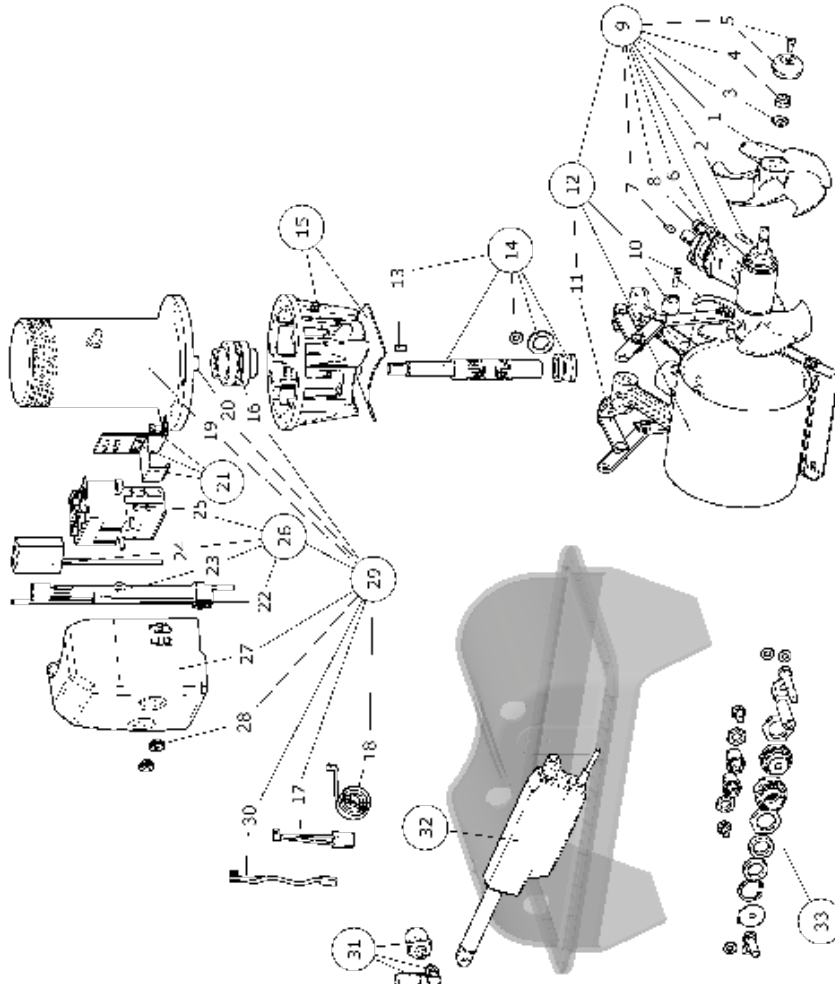
NB ! Alle sjekkpunktene på listen må sammenlignes med informasjon gitt tidligere i manualen for å forstå hvordan systemet skal fungere. Hvis du ikke forstår sjekklisten eller de relevante opplysningene gitt i manualen så må du ta kontakt med profesjonell hjelp.

Kontroller	Løsning
Får ikke slått på panelet med ON-knappene	Sjekk strømforsyningen for S-link
Ingen reaksjon ved betjening av panel	Det må kjøres en system scanning. Se manual for panelet.
» Elektromotoren går, men det er ingen skyvekraft.	
Fleksibel kobling mellom motor og drivaksel, girhus eller drivpinne til propell kan ha blitt skadet	Type SR(P)130 og SR(P)170 har fleksibel kobling som vil kunne slure når den er defekt. Koblingen er synlig på undersiden av motoren innvendig. Kjør motor og observer. Skift kobling om nødvendig. Dersom det er behov for å dreie på drivaksel for hånd kjøres denne ned på vanlig måte ved å slå på panelet, vente til den stopper i utfelt posisjon og deretter slå av batteribryteren. Skru av viftedekelet på motoren for å kunne dreie
Er propellen festet til propellakselen, og er drivpinne på plass.	Fest eller erstatt propellen og drivpinnen.
Med elektromotoren avmontert, kan drivakselen vises for hånd for å sjekke om gir, og lager er i orden.	I tilfelle girhuset er skadet anbefaler vi skifte girhus, fremfor å prøve å reparere innvendige gir og lagre.
» Trusteren går bare i en retning, eller ikke i det hele tatt.	
Sjekk manualen for ditt panel for beskrivelser av feilmeldinger vist i panelets display/LED	
» Trusteren yter mindre enn ventet.	
Mål spenningen på thrusterbatteriet under kjøring.	Er spenningen lavere enn 10,5V / 21V vil trusteren sunke i turtall og skyvekraften senkes.
Sjekk at alle børstefjærene ligger riktig an mot børstene.	Trusteren vil ha lav skyvekraft hvis en eller flere børster ikke får trykk fra fjærene.
Kontroller propell, girhus og tunnel, og fjern eventuell algevekst og lignende.	Algevekst i tunnelen vil redusere vannstrømmen, algevekst på propellen kan redusere ytelsen betydelig.

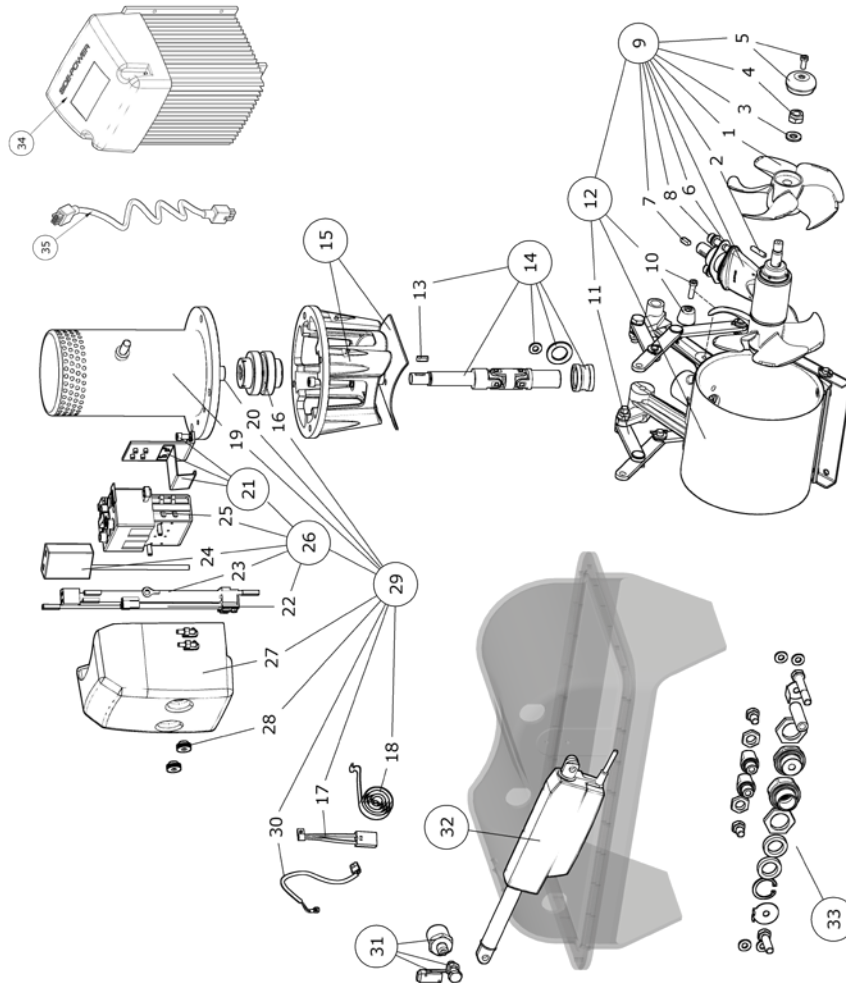
1. The equipment manufactured by Sleipner Motor AS (The "Warrantor") is warranted to be free from defects in workmanship and materials under normal use and service.
2. This Warranty is in effect for of two years (Leisure Use) or one year (Commercial use) from the date of purchase by the user. Proof of purchase must be included, to establish that it is inside the warranty period.
3. This Warranty is transferable and covers the product for the specified time period.
4. In case any part of the equipment proves to be defective, other than those parts excluded in paragraph 5 below, the owner should do the following:
 - (a) Prepare a detailed written statement of the nature and circumstances of the defect, to the best of the Owner's knowledge, including the date of purchase, the place of purchase, the name and address of the installer, and the Purchaser's name, address and telephone number;
 - (b) The Owner should return the defective part or unit along with the statement referenced in the preceding paragraph to the warrantor, Sleipner Motor AS or an authorized Service Centre, postage/shipping prepaid and at the expense of the Purchaser;
 - (c) If upon the Warrantor's or Authorized Service Centre's examination, the defect is determined to result from defective material or workmanship, the equipment will be repaired or replaced at the Warrantor's option without charge, and returned to the Purchaser at the Warrantor's expense;
 - (d) no refund of the purchase price will be granted to the Purchaser, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so. Prior to refund of the purchase price, Purchaser must submit a statement in writing from a professional boating equipment supplier that the installation instructions of the Installation and Operation Manual have been complied with and that the defect remains;
 - (e) warranty service shall be performed only by the Warrantor, or an authorized Service Centre, and any attempt to remedy the defect by anyone else shall render this warranty void.
5. There shall be no warranty for defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion except for equipment specifically designed as waterproof.
6. No other express warranty is hereby given and there are no warranties which extend beyond those described in section 4 above. This Warranty is expressly in lieu of any other expressed or implied warranties, including any implied warranty of merchantability, fitness for the ordinary purposes for which such goods are used, or fitness for a particular purpose, and any other obligations on the part of the Warrantor or its employees and representatives.
7. There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives for injury to any person or persons, or damage to property, loss of income or profit, or any other consequential or resulting damage or cost which may be claimed to have been incurred through the use or sale of the equipment, including any possible failure or malfunction of the equipment, or part thereof.
8. The Warrantor assumes no liability for incidental or consequential damages of any kind including damages arising from collision with other vessels or objects.
9. This warranty gives you specific legal rights, and you may also have other rights which vary from country to country.

Partslist, SR80/185T & SR100/185T

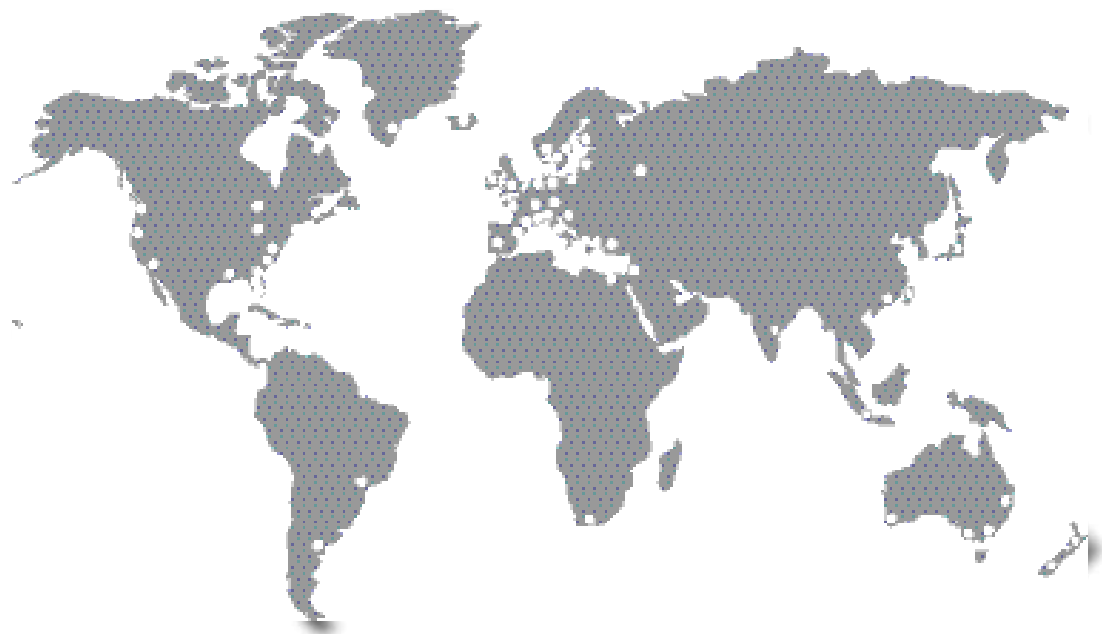
	SR80/185T-12V	SR80/185T-24V	SR100/185T-12V	SR100/185T-24V
33 Complete sealing SR kit	125224	125224	125224	125224
32 Actuator kit	6 2300	6 2301	6 2300	6 2301
31 Sensor kit	6 2103	6 2104	6 2103	6 2104
30 Temp switch	*	*	*	*
29 Complete electric motor assembly	6 0104 12	6 0104 24	8 0105 12	8 0105 24
28 Nut for solenoid cover	6 8810	6 8810	6 8810	6 8810
27 Solenoid Cover	6 2025	6 2025	6 2025	6 2025
26 Complete solenoid kit	6 0132 12	6 0132 24	6 0132 12	6 0132 24
25 Solenoid	41371123	41371243	10137113	41371243
24 Electronic control unit	6 1242	6 1242	6 1242	6 1242
23 Internal wiring loom	6 1223	6 1223	6 1223	6 1223
22 Internal wiring loom	6 1227	6 1227	6 1227	6 1227
21 Solenoid bracket kit	6 0136	6 0136	8 0136	8 0136
20 Key for electric motor shaft	10 1440	10 1440	10 1440	10 1440
19 Electric motor	N/A	N/A	N/A	N/A
18 Brush springs for motor (kit)**	**	**	**	**
17 Brushes for motor (kit)**	**	**	**	**
16 Complete flexible coupling	7 1462	7 1462	7 1462	7 1462
15 Motor bracket complete	125230	125230	125230	125230
14 Complete shaft kit	SM-125229	SM-125229	SM-125229	SM-125229
13 Key for shaft	10 1440	10 1440	10 1440	10 1440
12 Complete SR retract mechanism	6 2199	6 2199	6 2199	6 2199
11 Support stay kit	6 2200	6 2200	6 2200	6 2200
10 Anode retract mechanism	6 1180	6 1180	6 1180	6 1180
9 Complete gearleg	8 0601	8 0601	8 0601	8 0601
8 Gearleg bolt	7 1080	7 1080	7 1080	7 1080
7 Driveshaft key	6 1440	6 1440	6 1440	6 1440
6 Gasket	7 1314	7 1314	7 1314	7 1314
5 Anode	7 1190 A	7 1190 A	7 1190 A	7 1190 A
4 Locknut	4 1260	4 1260	4 1260	4 1260
3 Propeller washer	7 1181	7 1181	7 1181	7 1181
2 Propeller drivepin	6 1241	6 1241	6 1241	6 1241
1 Propeller	7 1261	7 1261	7 1261	7 1261



	SRP80/185T-12V	SRP80/185T-24V	SRP100/185T-12V	SRP100/185T-24V
35 PPC control cable	6 1280-05M	6 1280-05M	6 1280-05M	6 1280-05M
34 PPC	PPC820	PPC520	PPC820	PPC520
33 Complete sealing SR kit	125224	125224	125224	125224
32 Actuator kit	6 2300	6 2301	6 2300	6 2301
31 Sensor kit	6 2103	6 2104	6 2103	6 2104
30 Temp sensor	31019	31019	31020	31020
29 Complete electric motor assembly	tba	tba	tba	tba
28 Nut for solenoid cover	6 8810	6 8810	6 8810	6 8810
27 Solenoid Cover	6 2025	6 2025	6 2025	6 2025
26 Complete solenoid kit	6 0132 12	6 0132 24	6 0132 12	6 0132 24
25 Solenoid	41371123	41371243	1013713	41371243
24 Electronic control unit	6 1242	6 1242	6 1242	6 1242
23 Internal wiring loom	6 1223	6 1223	6 1223	6 1223
22 Internal wiring loom	6 1227	6 1227	6 1227	6 1227
21 Solenoid bracket kit	6 0136	6 0136	8 0136	8 0136
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3 Propeller washer	7 1181	7 1181	7 1181	7 1181
2 Propeller drivepin	6 1241	6 1241	6 1241	6 1241
1 Propeller	7 1261	7 1261	7 1261	7 1261



Worldwide sales and service



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Keep this
manual onboard!



User Manual

For Retract Thruster Models
SR & SR-IP Electric



SLEIPNER AS

P.O. Box 519

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Norway

www.sleipnergroup.com

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Important User Considerations and Precautions 3**User Manual**

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Products

SRL130/250T-12V - SRL130 Retract thruster 12V
 SR100/185T-12V - SR100 Retract thruster 12V
 SRP80/185T-24V - SRP80 Retract thruster 24V
 SRP80/185T-12V - SRP80 Retract thruster 12V
 SRP100/185T-24V - SRP100 Retract thruster 24V
 SRP100/185T-12V - SRP100 Retract thruster 12V
 SR80/185T-24V - SR80 Retract thruster 24 V
 SR80/185T-12V - SR80 Retract thruster 12 V
 SR100/185T-24V - SR100 Retract thruster 24V
 SRL80/185T-24V - SRL80 Retract thruster 24V
 SRL100/185T-12V - SRL100 Retract thruster 12V
 SRV100/185T-12V - SRV100 Vertical Retract 12V
 SRV100/185T-24V - SRV100 Vertical Retract 24V
 SRV80/185T-12V - SRV80 Vertical Retract 12V
 SRV80/185T-24V - SRV80 Vertical Retract 24V
 SRL100/185T-24V - SRL100 Retract thruster 24V
 SRL80/185T-12V - SRL80 Retract thruster 12V
 SRV130/250T-24V - SRV130 Vertical Retract 24V
 SRV130/250T-12V - SRV130 Vertical Retract 12V
 SRV170/250TC - SRV170 Vertical Retract 24V
 SRVP170/250TC - SRVP170 Vertical Retract 24V
 SRV210/250TC - SRV210 Vertical Retract 24V
 SRL130/250T-24V - SRL130 Retract thruster 24V
 SRL170/250TC-IP - SRL170 Retract thruster 24V

DECLARATION OF CONFORMITY

MC_0020



Sleipner Motor AS
 P.O. Box 519, Arne Svendsensgt. 6-8
 N-1612 Fredrikstad, Norway

Declare that this product with accompanying standard control systems complies with the essential health and safety requirements according to:

DIRECTIVE 2013/53/EU
 DIRECTIVE 2014/30/EU
 DIRECTIVE 2014/35/EU

IMPORTANT

Failure to follow the Considerations and precautions can cause serious injury / damage and will render all warranty given by Sleipner Motor AS VOID.

Never use thrusters when close to objects/ persons or pets in the water. The thruster will draw objects into the tunnel and the rotating propellers. This will cause serious injuries and damage the thruster.

Always turn the main power switch off before touching any part of the thruster, An incidental start while touching moving parts can cause serious injuries.

Never store items (e.g. equipment, sails, ropes etc.) in the same compartment as the thruster. When the thruster runs for an extended period, it can reach 150°C and will cause damage to nearby items or cause a fire. The electromotor will generate some carbon dust so any storage compartment must be separated from the thruster to prevent nearby items from becoming dusty/ dirty.

Any loose items near the thruster motor can cause problems with electrical wiring coming loose and short-circuiting.

- Ensure you know the location of the main battery switch that disconnects the thruster from all power sources (batteries) so the thruster can be turned off in case of serious malfunction.
- Always turn the control device off when the thruster is not in use or when leaving the boat.
- When leaving the boat always turn off the main power switch for the thruster.
- The maximum continuous run time of the electrical thruster is approximately 3 minutes. The motor is equipped with a built-in thermal cut-off switch that will shut the motor off when overheating. Consider this when planning your manoeuvring.
- Never use thrusters out of water.
- If the thruster stops giving thrust while running, there is possibly a problem in the drive system. You must immediately stop running the thruster and turn it off. Running the thruster for more than a few seconds without resistance from the propeller can cause serious damage to the thruster.
- We advise keeping the main engine(s) running while using the thruster. This will keep the batteries in a good charge condition. It will also give better performance to the thruster.
- If the performance of the thruster is reduced check the battery system or check the tunnel for marine growth.
- If two panels are operated with conflicting directions at the same time the thruster will not run. If both are operated in the same direction, the thruster will run in this direction.
- If you notice any faults with the thruster switch it off to avoid further damage.
- The electro motor, its components, contacts/ plugs or other joints in the control cables must be mounted so they will remain dry at all times.
- It is the owner/ captain/ other responsible parties full responsibility to assess the risk of any unexpected incidents on the vessel. If the thruster stops giving thrust for some reason while manoeuvring you must have considered a plan on how to avoid damage to persons or other objects.
- The primary purpose of the thruster is to manoeuvre/ dock the vessel. Forward/ reverse speed must not exceed 4 knots when operated.

IMPORTANT

NEVER Disassemble any part of the Ignition Protected assembly. Tampering with the Ignition Protected assembly will cause it to lose this safety feature.

If there is a problem with your Ignition Protected stern thruster, please contact your dealer.

! Please refer to the graphic for special considerations relating to your model !

Take time to practice operation in open water to become familiar with the thruster and to avoid damages to your boat or people.

How to use a Bow Thruster

1. Turn on the main power switch for the bow thruster. (NB: Always turn off the main power switch when not on-board.)
2. Turn on the control panel by pushing both "ON" buttons on the original Side-Power panel simultaneously. **(NB: If another type of control is installed, push the On/Off switch for the bow thruster.)**
*Turn off the control panel by pushing both "OFF" button
4. To Turn the bow in the desired direction push the red button for port movement or the green button for starboard.
- For joystick control, move the joystick in the direction you wish the bow to move.
-Other controls like foot switches or toggle-switches on the throttle can be used. Engage the port control, the bow will turn to port etc.
5. Depending on the sideways speed of the bow, you must disengage the control device shortly before the bow is in the desired position. **(NB: The boat will continue to move after disengaging the thruster control.)**

How to use a single stern thruster

Due to space limitations, a vessel may only have a stern thruster. In this case, the stern thruster is used in the same way as a single bow thruster for moving the boat's stern. Follow the above instruction for operation use.

How to use a combined bow and stern thruster

The combination of a bow and stern thruster offers total manoeuvrability to the boat and the ability to move the bow and the stern separately from each other. This enables you to move the boat sideways in both directions and turn the boat around its axis 360° staying stationary.

NB: At any significant cruising speed (+1-2 kn) the side thruster will have little effect to steer the vessel.

ON/ OFF CONTROL PANEL



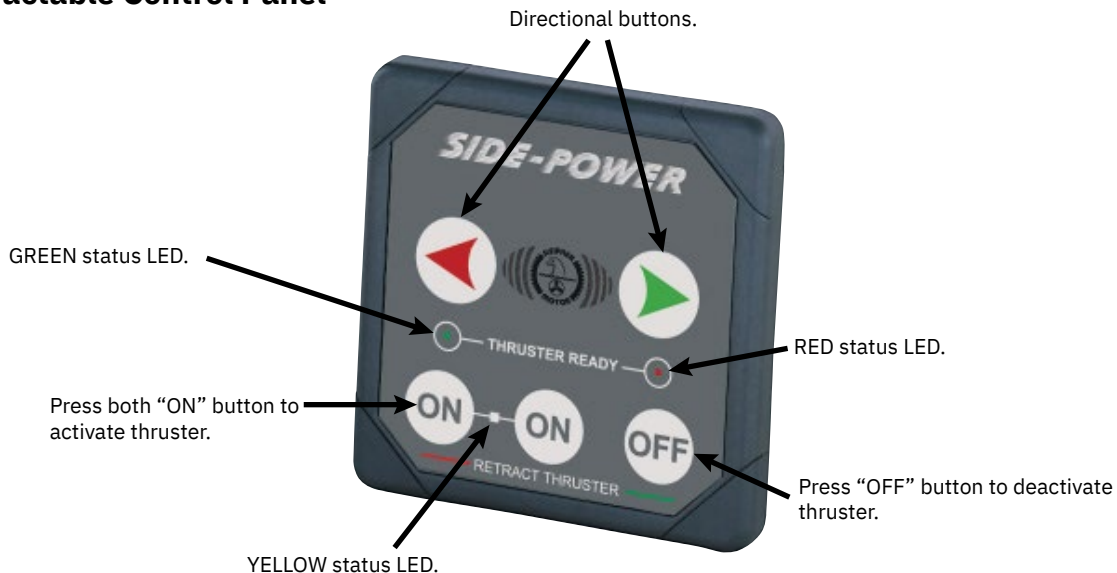
8700

STATUS/ALARM LEDS:

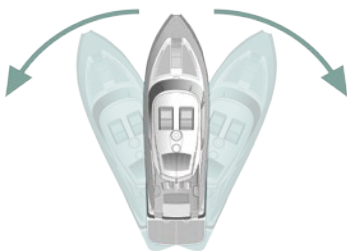
- Solid YELLOW LED light = the panel is on.
- ⚡ Flashing GREEN LED light = thruster is deploying.
- Solid GREEN LED light = thruster is deployed and ready to operate.
- ⚡ Flashing RED LED light flashes = thruster retract phase,
- All LEDs out when panel/thruster is shut down.

(NB: If something unexpected happens while deploying/retracting thruster, the LEDs will flash alarm codes according to fault codes in this manual.)

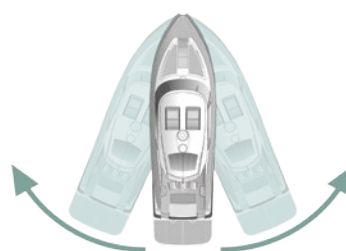
Retractable Control Panel



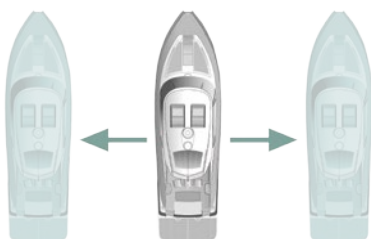
Activating the bow thruster



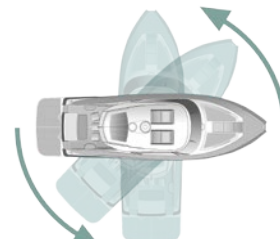
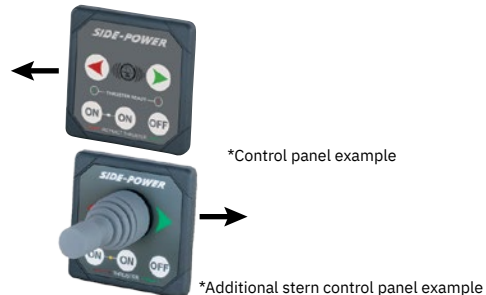
Activating the stern thruster



Activating both bow and stern thruster to push the boat sideways



Activating both bow and stern thruster to rotate the boat on axis



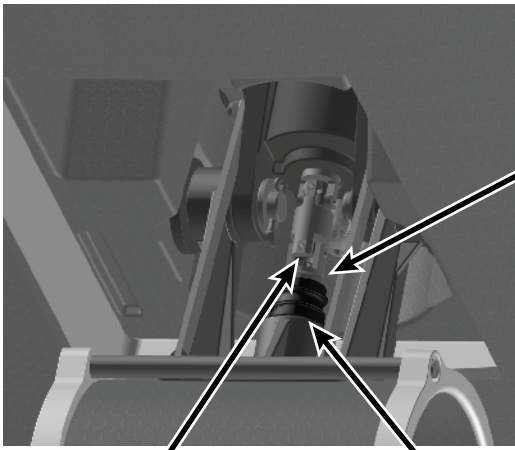
! Please refer to the graphic for special considerations relating to your model !

As a part of the seasonal service of your Thruster before every season, always check that:

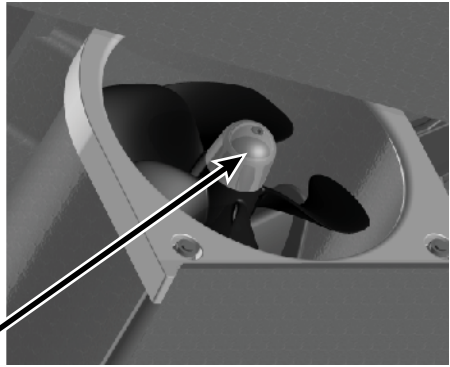
- There must always be oil in the oil reservoir. Refill if necessary with gear oil EP90. Change the gear oil a minimum of every second year. Check the gear oil quality in the gear house every time the boat is out of the water. **(NB: When changing gear oil in older SRV300 models, refill and drain gear leg simultaneously to secure that the system will not be emptied.)**
- The propeller is fastened securely to the gear leg.
- Bolts holding the thruster components together are fastened securely.
- The area around the thruster is clean and dry. Ensure there are no signs of water. **(NB: Pay special attention to the horizontal and vertical shafts.)**
- Paint the propeller and gear leg with anti-fouling before every season to keep it clean from sea growth. **(NB: Never paint the anode, sealing or propeller shaft. Ensure paint does not enter the space between the propeller and the gear leg.)**
- All electrical connections are clean and fastened firmly.
- Ensure that your batteries are in a good condition.
*While running the thruster measure volt output is greater than
(10.5v) for 12v motors
(21v) for 24v motors
- Change the anode before every season, or when half the anode has eroded. Always use a sealant or thread glue on the holding screw to ensure that it does not fall off. **(NB: In some water conditions, it may be necessary to install an extra anode to ensure that it lasts for the whole period between regular service lifts of the boat. Consult your dealer for information on how to do this.)**
- Check the drive shaft in the retract mechanism is lubricated and any for any excess movement.
- Check for excess movement in the break-away rings securing the actuator. If the actuator can be moved more than 3 mm via manual force, replace the break-away rings. **(NB: Spare rings are included from the factory.)**
- Check Rubber element for leakages or cracks every year and change every 2nd year.
- If there is a problem with your Ignition Protected stern thruster, please contact your dealer.

IMPORTANT

NEVER Disassemble any part of the Ignition Protected stern thruster assembly. Tampering with the Ignition Protected stern thruster assembly or any attempt to disassemble anything on this thruster assembly inside the boat can cause an explosion with severe consequences.



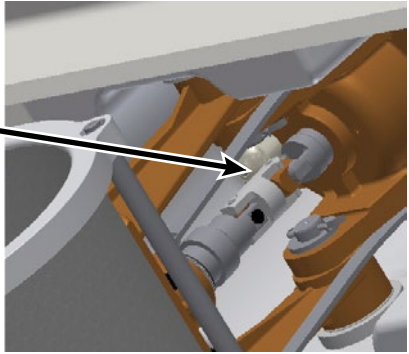
**DO NOT apply anti-fouling
DO NOT clean with chemicals,
hot water or high-pressure
water jet in this area.**



Anode Gear leg

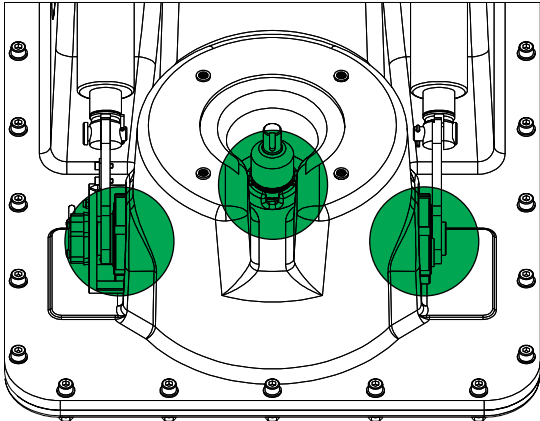
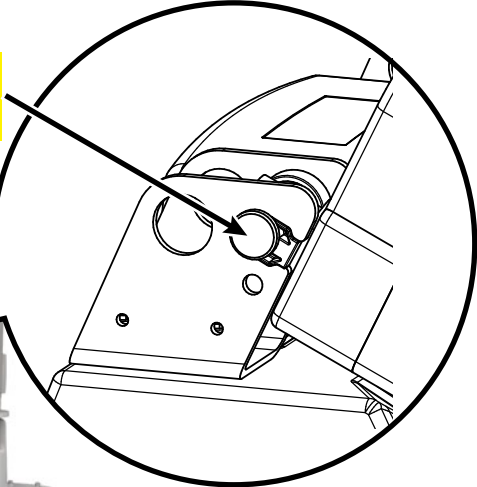
Check and re-lubricate with waterproof grease if necessary

Check annually rubber element.



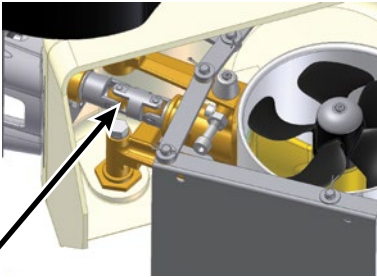
Anode Retract

**IF over 3 mm movement,
Break-away rings must be
replaced**

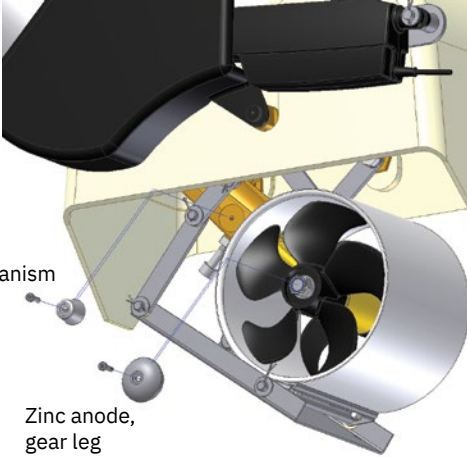


**IMPORTANT
Check these areas for leaks**

* For SR80 & SR100



Check and re-lubricate with waterproof grease if necessary



Zinc anode,
retract mechanism

Zinc anode,
gear leg

Before seeking assistance from the website help desk from your Side-Power dealer/ distributor, please perform these tests.

(NB: If you are unable to understand what to check, you must consult a Side Power distributor.)

CHECK	SOLUTION
The motor runs, but there is no thrust	
Check propellers are fitted, fastened correctly and not damaged on the prop shaft.	Re-fasten or replace if necessary
* Check the flexible coupling between the motor and drive shaft is fitted correctly and not damaged.	Replace if necessary
* Check the gear box is not damaged.	Replace if necessary
The thrusters performance is reduced	
Check the propeller, gear house and tunnel are free from growth/ barnacles or debris and damage.	If there is growth in the tunnel, this will disturb/ block the water flow and significantly reduce performance
Check the battery is in a good working condition.	<p>(NB: Keep the main engine(s) running in use to have a continuous charge to the batteries)</p> <ul style="list-style-type: none"> • Check batteries are not worn out or in a bad charged condition • Check electrical connections/ wiring for damage or wear (corrosion) • Check cables are the correct size per the product manual • Tighten/ re-adjust connections
The thruster does not start/ works in only one direction or does not turn off	
Check the main switch is active/ on.	Switch the main switch open if it is closed.
Check all battery fuses are in good condition.	<ul style="list-style-type: none"> • Check batteries • Check electrical connections/ wiring for damage or wear (corrosion) • Tighten/ re-adjust and clean connections
The thruster is not shutting off after the Joy Stick/ panel is disengaged.	Hit the main switch to disengage the thruster. Contact and consult a Side Power distributor as the control system has been damaged.
The thruster works in only one direction	
Damaged relay.	Hit the main switch to disengage the thruster. Contact and consult a Side Power distributor as the control system has been damaged.
The thruster runs in a pulsing action	
This is a build-in error response. -Solenoids failure	Hit the main switch to disengage the thruster. Contact and consult a Side Power distributor.
The solenoid might be in a lock-in/ auto stop position.	Hit the main switch to disengage the thruster. Contact and consult a Side Power distributor.

* Not applicable to SX thrusters.

LED	Panel alarm indication	Failure	Thruster reaction	User action
1	1 flash YELLOW & GREEN - Pause	Thruster, overtemp	Retracts	Turn off panel, wait for 20 mins.
2	2 flashes YELLOW & GREEN - Pause	Thruster, low power	Retracts	Turn off panel, charge batteries.
3	3 flashes YELLOW & GREEN - Pause	Deploy operation obstructed	Retracts	Turn off panel. Go for lower speed/deeper water. Retry.
4	4 flashes YELLOW & GREEN - Pause	SR150000 position sensor fail	Retracts	Position sensor short or open circuit. Check wiring and connection.
5	5 flashes YELLOW & GREEN - Pause	SR150000 solenoid output short circuit, port or starboard.	Retracts	Check solenoid wiring and connection, and check if solenoid is shorted.
6	6 flashes YELLOW & GREEN - Pause	SR150000 motor temp sensor fail	Retracts	Check motor temp sensor, wiring and connection.
1	1 flash YELLOW & RED - Pause	Power failure, Actuator	System shuts down	Turn off panel. Check actuator connections . Retry.
2	2 flashes YELLOW & RED - Pause	Thruster IPC error	Retracts	Turn off panel - thruster must be serviced by authorized personel.
3	3 flashes YELLOW & RED - Pause	Retract operation obstructed	Aborts retract, deploys and retries to retract 3 times. If operation still is obstructed, retract stops on obstruction	Press both ON-buttons to deploy thruster. Turn Main-Switch off. Remove obstruction.
1	1 flashes YELLOW, GREEN & RED - Pause	Automatic Main Switch Power failure	None	Check power to Automatic Main Switch
2	2 flashes YELLOW, GREEN & RED - Pause	Automatic Main Switch fuse blown	None	Replace fuse on Automatic Main Switch. If new installation, check if input and output is correct connected.
3	3 flashes YELLOW, GREEN & RED - Pause	Automatic Main Switch manual override	None	Pull up Automatic Main Switch
4	4 flashes YELLOW, GREEN & RED - Pause	Panel has no contact with thruster.	None	Turn off panel. Check main switch, fuse, cable connections, cables. Retry.

(NB: THE MAIN SWITCH MUST BE TURNED OFF IMMEDIATELY WHEN AN IPC-ERROR OCCURS, TO PREVENT OVERHEATING OF THE THRUSTER MAIN RELAYS.)

THRUSTER WILL NOT RETRACT WHILE REVERSING AT "HIGH" SPEED. THIS WILL TRIGGER THE "Retract operation obstructed" ALARM.

IF ALARM IS TRIGGERED, REDUCE SPEED AND PRESS BOTH "ON" BUTTONS BEFORE RETRYING "OFF" BUTTON

CHECK TO PERFORM	DATE											
The propeller is fastened securely to the gear leg.												
Bolts holding the thruster components together are fastened securely.												
The area around the thruster is clean and dry. If there are signs of water, try to find the source and eliminate it.												
Paint the propeller and gear leg with anti-fouling.												
Batteries are in good condition.												
All electrical connections are clean and fastened firmly.												
Check the drive shaft in the retract mechanism is lubricated.												
Check for excess movement in the break-away rings securing the actuator.(Keep spares on-board)												
Change the zinc anode.												
Check Rubber element for leakages. *REPLACE EVERY 2 YEARS												
Check oil in the oil reservoir on older SRV300 models. *REPLACE EVERY 2 YEARS												
Check the twist rings, hatch and excess movement in the drive shaft.												

Find your local professional dealer from our certified worldwide network for expert service and support.

visit our website www.sleipnergrouper.com/support

For additional supporting documentation, we advise you to visit our website www.sleipnergrouper.com and find your Sleipner product.

1. Sleipner Motor AS (The "Warrantor") warrants that the equipment (parts, materials and embedded software of products) manufactured by the Warrantor is free from defects in workmanship and materials for the purpose for which the equipment is intended and under normal use and service (the "Warranty").
2. This Warranty is in effect for two years (Leisure Use) or one year (Commercial and other Non-leisure Use) from the date of purchase by the end user (for demonstration vessels, the dealer is deemed as end user).
3. This Warranty is transferable and covers the equipment for the specified warranty period.
4. The warranty does not apply to defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion except for equipment specifically designed as waterproof.
5. In case the equipment seems to be defective, the warranty holder (the "Claimant") must do the following to make a claim:
 - (a) Contact the dealer or service centre where the equipment was purchased and make the claim. Alternatively, the Claimant can make the claim to a dealer or service centre found at www.sleipnergrouper.com. The Claimant must present a detailed written statement of the nature and circumstances of the defect, to the best of the Claimant's knowledge, including product identification and serial nbr., the date and place of purchase and the name and address of the installer. Proof of purchase date should be included with the claim, to verify that the warranty period has not expired;
 - (b) Make the equipment available for troubleshooting and repair, with direct and workable access, including dismantling of furnishings or similar, if any, either at the premises of the Warrantor or an authorised service representative approved by the Warrantor. Equipment can only be returned to the Warrantor or an authorised service representative for repair following a pre-approval by the Warrantor's Help Desk and if so, with the Return Authorisation Number visible postage/shipping prepaid and at the expense of the Claimant.
6. Examination and handling of the warranty claim:
 - (a) If upon the Warrantor's or authorised service Representative's examination, the defect is determined to result from defective material or workmanship in the warranty period, the equipment will be repaired or replaced at the Warrantor's option without charge, and returned to the Purchaser at the Warrantor's expense. If, on the other hand, the claim is determined to result from circumstances such as described in section 4 above or a result of wear and tear exceeding that for which the equipment is intended (e.g. commercial use of equipment intended for leisure use), the costs for the troubleshooting and repair shall be borne by the Claimant;
 - (b) No refund of the purchase price will be granted to the Claimant, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so. In the event that attempts to remedy the defect have failed, the Claimant may claim a refund of the purchase price, provided that the Claimant submits a statement in writing from a professional boating equipment supplier that the installation instructions of the Installation and Operation Manual have been complied with and that the defect remains.
7. Warranty service shall be performed only by the Warrantor, or an authorised service representative, and any attempt to remedy the defect by anyone else shall render this warranty void.
8. No other warranty is given beyond those described above, implied or otherwise, including any implied warranty of merchantability, fitness for a particular purpose other than the purpose for which the equipment is intended, and any other obligations on the part of the Warrantor or its employees and representatives.
9. There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives based on this Warranty for injury to any person or persons, or damage to property, loss of income or profit, or any other incidental, consequential or resulting damage or cost claimed to have been incurred through the use or sale of the equipment, including any possible failure or malfunction of the equipment or damages arising from collision with other vessels or objects.
10. This warranty gives you specific legal rights, and you may also have other rights which vary from country to country.

At Sleipner we continually invest to develop and offer the latest technology in marine advancements. To see the many unique designs we have patented visit our website www.sleipnergrouper.com/patents

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Register your product and learn more at www.sleipnergroun.com



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