

Ruderlagen Sensor, Rudder position sensor, capteur de position du gouvernail, transmisor de la posición del timón, Sensore posizione timone	TU00-0752-6707150	01/08	1-8	2

GB Safety information



- The product was developed, manufactured and inspected according to the basic safety requirements of EC Guidelines and state-of-the-art technology.
- The instrument is designed for use in grounded vehicles and machines as well as in pleasure boats, including non-classified commercial shipping.
- Use our product only as intended. Use of the product for reasons other than its intended use may lead to personal injury, property damage or environmental damage. Before installation, check the vehicle documentation for vehicle type and any possible special features!
- Use the assembly plan to learn the location of the fuel/hydraulic/compressed air and electrical lines!
- Note possible modifications to the vehicle, which must be considered during installation!
- To prevent personal injury, property damage or environmental damage, basic knowledge of motor vehicle/shipbuilding electronics and mechanics is required.
- Make sure that the engine cannot start unintentionally during installation!
- Modifications or manipulations to VDO products can affect safety. Consequently, you may not modify or manipulate the product!
- When removing/installing seats, covers, etc., ensure that lines are not damaged and plug-in connections are not loosened!
- Note all data from other installed instruments with volatile electronic memories.

Safety during installation:

- During installation, ensure that the product's components do not affect or limit vehicle functions. Avoid damaging these components!
- Only install undamaged parts in a vehicle!
- During installation, ensure that the product does not impair the field of vision and that it cannot impact the driver's or passenger's head!
- A specialized technician should install the product. If you install the product yourself, wear appropriate work clothing. Do not wear loose clothing, as it may get caught in moving parts. Protect long hair with a hair net.
- When working on the on-board electronics, do not wear metallic or conductive jewelry such as necklaces, bracelets, rings, etc.
- If work on a running engine is required, exercise extreme caution. Wear only appropriate work clothing as you are at risk of personal injury, resulting from being crushed or burned.
- Before beginning, disconnect the negative terminal on the battery, otherwise you risk a short circuit. If the vehicle is supplied by auxiliary batteries, you must also disconnect the negative terminals on these batteries! Short circuits can cause fires, battery explosions and damages to other electronic systems. Please note that when you disconnect the battery, all volatile electronic memories lose their input values and must be reprogrammed.
- If working on gasoline boat motors, let the motor compartment fan run before beginning work.
- Pay attention to how lines and cable harnesses are laid so that you do not drill or saw through them!
- Do not install the product in the mechanical and electrical airbag area!
- Do not drill holes or ports in load-bearing or stabilizing stays or tie bars!
- When working underneath the vehicle, secure it according to the specifications from the vehicle manufacturer.
- Note the necessary clearance behind the drill hole or port at the installation location. Required mounting depth: 65 mm.
- Drill small ports; enlarge and complete them, if necessary, using taper milling tools, saber saws, keyhole saws or files. Debur edges. Follow the safety instructions of the tool manufacturer.
- Use only insulated tools, if work is necessary on live parts.
- Use only the multimeter or diode test lamps provided, to measure voltages and currents in the vehicle/machine or boat. Use of conventional test lamps can cause damage to control units or other electronic systems.

No smoking! No open fire or lights!

- The electrical indicator outputs and cables connected to them must be protected from direct contact and damage. The cables in use must have sufficient insulation and electric strength and the contact points must be safe from touch.
- Use appropriate measures to also protect the electrically conductive parts on the connected consumer from direct contact. Laying metallic, uninsulated cables and contacts is prohibited.

Safety after installation:

- Connect the ground cable tightly to the negative terminal of the battery.
- Reenter/reprogram the volatile electronic memory values.
- Check all functions.
- Use only clean water to clean the components. Note the Ingress Protection (IP) ratings (IEC 60529).

Electrical connection:

- Note cable cross-sectional area!
- Reducing the cable cross-sectional area leads to higher current density, which can cause the cable cross-sectional area in question to heat up!
- When installing electrical cables, use the provided cable ducts and harnesses; however, do not run cables parallel to ignition cables or to cables that lead to large electricity consumers.
- Fasten cables with cable ties or adhesive tape. Do not run cables over moving parts. Do not attach cables to the steering column!
- Ensure that cables are not subject to tensile, compressive or shearing forces.
- If cables are run through drill holes, protect them using rubber sleeves or the like.
- Use only one cable stripper to strip the cable. Adjust the stripper so that stranded wires are not damaged or separated.
- Use only a soft soldering process or commercially available crimp connector to solder new cable connections!
- Make crimp connections with cable crimping pliers only. Follow the safety instructions of the tool manufacturer.
- Insulate exposed stranded wires to prevent short circuits.
- Caution: Risk of short circuit if junctions are faulty or cables are damaged.
- Short circuits in the vehicle network can cause fires, battery explosions and damages to other electronic systems. Consequently, all power supply cable connections must be provided with weldable connectors and be sufficiently insulated.
- Ensure ground connections are sound.
- Faulty connections can cause short circuits. Only connect cables according to the electrical wiring diagram.
- If operating the instrument on power supply units, note that the power supply unit must be stabilized and it must comply with the following standard: DIN EN 61000, Parts 6-1 to 6-4.

TU00-0752-6707150

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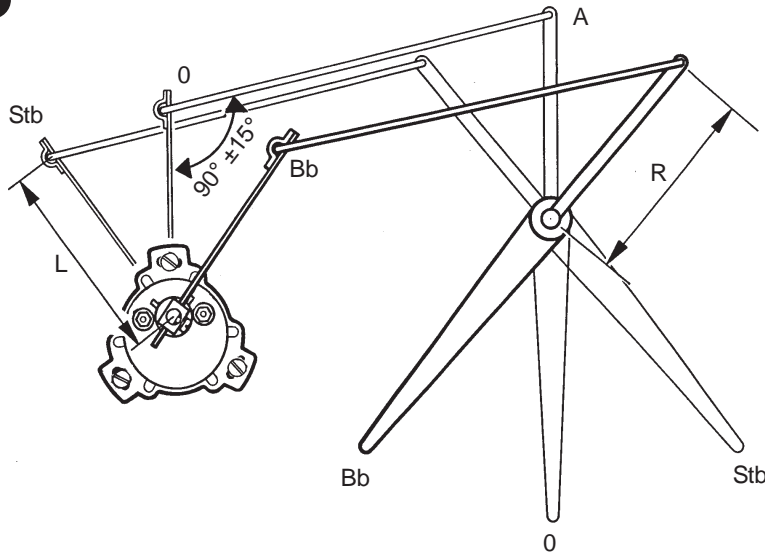
TU00-0752-6707150

01/08

1-8

6

1



- D** Geber ist mit Öl gefüllt. Nicht öffnen!
- GB** Sensor is filled with oil. Do not open!
- F** Le capteur contient de l'huile. Ne pas ouvrir!
- E** Transmisor esta llenado con aceite. ¡ No abrir!
- I** Il sensore contiene olio. Non aprire!

D Der Einbauort des Ruderlagegebers befindet sich an einer günstigen Stelle am Rudersegment oder an der Seilsteuerung. Bei der Montage des Ruderlagegebers am Rudersegment der hydraulischen Ruderanlage eine Position wählen, in der der Ausgleichshebel A in Nullstellung (Ruder auf Mitte) $90^\circ \pm 15^\circ$ zum Geberhebel steht. Auf den Freiraum des Schwenkbereichs von Geberhebel und Ausgleichshebel achten. Die Länge L des Geberhebels ist verstellbar. Soll das Anzeigeinstrument die Winkelstellung des Ruders analog anzeigen, so muss die Geberhebellänge L dem Drehradius R des Rudersegmentes entsprechen. Ausgleichshebel A gehört nicht zum Lieferumfang.
Bb= Ruder Backbord 0= Ruder auf Mitte Stb= Ruder Steuerbord

GB The rudder position sensor should be installed in a favourable position on the rudder segment or on the rope control. When fitting the rudder position sensor to the rudder segment of the hydraulic rudder system, choose a position in which the balance lever - A - (not supplied) is in its zero position (rudder in its centre position), at $90^\circ \pm 15^\circ$ from the sensor lever. Make sure that the sensor lever and balance lever have room to swivel freely. The length - L - of the sensor lever is adjustable. If the indicator unit is to give an analogue reading of the rudder's angle position, the sensor lever length - L - has to be equal to the turning radius - R - of the rudder segment. The balance lever A is not supplied.
Bb = Rudder to Port 0 = Rudder in Centre Stb = Rudder to Starboard

F Lors du montage du capteur de position du gouvernail sur le segment du gouvernail faisant partie du système de gouvernail hydraulique, choisir une position dans laquelle le levier de compensation A (ne fait pas partie de l'étendue de la fourniture) est positionné sur zéro (gouvernail au milieu) à $90^\circ \pm 15^\circ$ par rapport au levier du capteur. Veiller à l'espace libre de la plage d'orientation du levier du capteur et du levier de compensation. La longueur L du levier du capteur est réglable. Au cas où l'afficheur doit afficher analogiquement la position angulaire du gouvernail, la longueur du levier du capteur L devra correspondre au rayon R du segment du gouvernail. Le levier de compensation A ne font pas partie de l'étendue de la fourniture. Bb = gouvernail à bâbord 0 = gouvernail au milieu Stb = gouvernail à tribord

E El lugar de instalación del transmisor de la posición del timón es un punto adecuado en el segmento de timón o en el mando por cable. En caso de montaje del transmisor de la posición del timón en el segmento de timón del aparato del timón hidráulico, se ha de elegir una posición en la cual la palanca de compensación -A- (no forma parte del volumen de suministro) se encuentre en posición cero (timón en posición central) $90^\circ \pm 15^\circ$ frente a la palanca del transmisor. Prestar atención al espacio libre en la zona de giro de la palanca del transmisor y de la palanca de compensación. La longitud -L- de la palanca del transmisor es ajustable. Cuando el aparato indicador indique en forma analógica la posición angular del timón, la longitud de la palanca del transmisor -L- debe corresponder al radio de giro -R- del segmento de timón. La palanca de compensación -A- no forman parte del volumen de suministro.
Bd = timón a babor 0 = timón en posición central Stb = estribor

I Il punto d'installazione del sensore della posizione del timone si trova in un punto favorevole del settore del timone oppure sul comando a fune. Per il montaggio del sensore di posizione sul settore del timone dell'impianto idraulico si deve scegliere una posizione in cui la leva di bilanciamento A si trovi nel punto zero (timone al centro), a $90^\circ \pm 15^\circ$ dalla leva del sensore. Accertarsi che sia libera la distanza tra la leva del sensore e leva di bilanciamento nella zona di rotazione del sensore. La lunghezza L della leva del sensore è regolabile. Se l'indicatore deve indicare l'angolatura del timone in modo analogico, allora la lunghezza della leva L del sensore deve coincidere con il raggio di rotazione R del settore del timone. La leva di bilanciamento A non è contenuta nella fornitura. Bb= timone a sinistra 0= timone al centro Stb= timone a dritta

TU00-0752-6707150

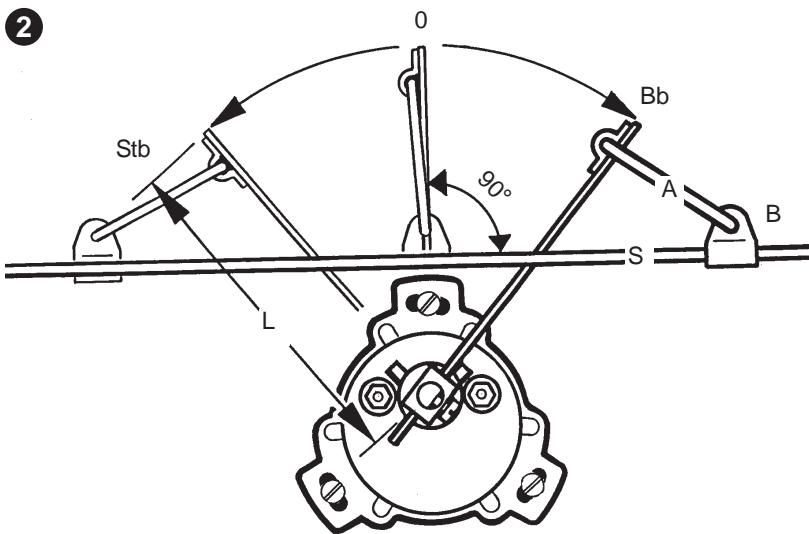
Ruderlagen Sensor, Rudder position sensor, capteur de position du gouvernail, transmisor de la posición del timón, Sensore posizione timone

TU00-0752-6707150

01/08

1-8

7



D Bei der Montage des Ruderlagegebers am Steuerseil eine Position wählen, in der das Steuerseil nahe der Geberachse innerhalb des Hebeldrehkreises vorbeiläuft. Auf den Freiraum des Schwenkbereichs des Geberhebels und des Ausgleichshebels A achten. Sie hängt von der Bewegungslänge des Steuerseils S ab und muss ermittelt werden. Die Nullstellung (Ruder auf Mitte) im rechten Winkel zum Steuerseil einstellen.

Ausgleichshebel A und Verbindungsstück B gehören nicht zum Lieferumfang.

Bb= Ruder backbord 0= Ruder auf Mitte
Stb= Ruder Steuerbord

GB When installing the rudder position sensor on the control rope, choose a position where the control rope passes close to the sensor axis within the lever's turning circle.

Make sure that the sensor lever and balance lever - A - have room to swivel freely. The length L of the sensor lever is adjustable. It depends on the control rope's length of motion and has to be determined. Set the zero position (rudder in its centre position) at right angles to the control rope S. The balance lever A and the connecting piece - B - are not supplied.

Bb = Rudder to Port 0 = Rudder in Centre
Stb = Rudder to Starboard

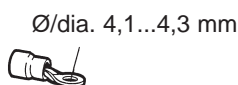
F Lors du montage du capteur de position du gouvernail sur le câble métallique de commande, choisir une position dans laquelle le câble métallique de commande passe à proximité de l'axe du capteur, dans le cercle de rotation du levier. Veiller à l'espace libre de la plage d'orientation du levier du capteur et du levier de compensation A. La longueur L du levier du capteur est réglable. Elle est tributaire de la longueur du mouvement du câble métallique de commande et devra être calculée. Régler la position zéro (gouvernail au milieu) de manière qu'elle soit perpendiculaire au câble métallique de commande S. Le levier de compensation A et la pièce de raccordement B ne font pas partie de l'étendue de la fourniture.

Bb = gouvernail à bâbord 0 = gouvernail au milieu
Stb = gouvernail au tribord

E En caso de montaje del transmisor de la posición del timón en el cable de mando, elegir una posición en la cual el cable de mando pase cerca del eje del transmisor dentro del radio de giro de la palanca. Prestar atención al espacio libre en la zona de giro de la palanca del transmisor y de la palanca de compensación -A-. La longitud -L- de la palanca del transmisor es ajustable. Depende de la longitud de movimiento del cable de mando y tiene que determinarse. Ajustar la posición cero (timón en posición central) en ángulo recto al cable de mando -S-. La palanca de compensación -A- y el elemento de conexión -B- no forman parte del volumen de suministro.

Bb = Timón babor 0 = Timón en posición central
Stb = Timón estribor

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corriente en el comercio
disponibile in commercio



I Per il montaggio alla fune di comando del sensore di posizione si deve scegliere un punto tale in modo da far passare la fune vicino all'asse del sensore entro il raggio d'azione della leva. Accertarsi che sia libera la distanza tra la leva del sensore e leva di bilanciamento A nella zona di rotazione del sensore. La distanza dipende dalla corsa di movimento della fune di comando S e deve essere rilevata. Impostare la posizione zero (timone al centro) ad angolo retto rispetto alla fune.

La leva di bilanciamento A e il raccordo B non sono contenuti nella fornitura.

Bb = timone a sinistra 0 = timone al centro Stb = timone a dritta

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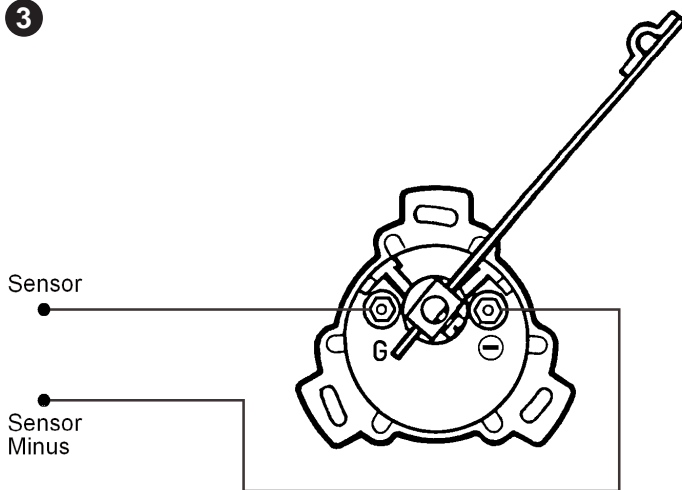
TU00-0752-6707150

01/08

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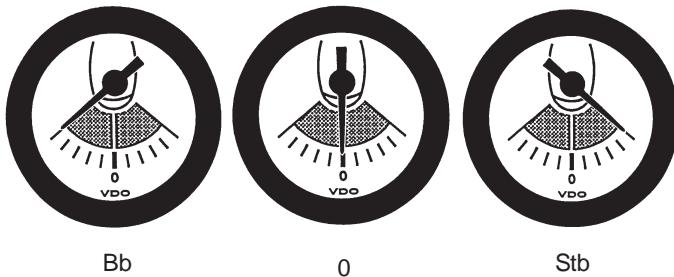
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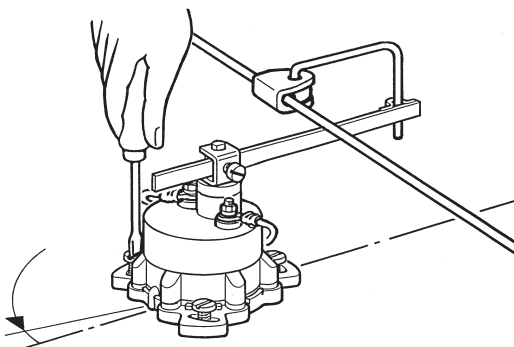


- D** Geberkabel nicht kürzen.
- GB** Do not shorten measuring lead.
- F** Ne pas raccourcir les câbles de mesure.
- E** ¡No recortar la línea de medición!
- I** Non accorciare il cavo del sensore.

4



- D** Bb = Ruder backbord
0 = Ruder auf Mitte
Stb = Ruder Steuerbord
- GB** Bb = Rudder to Port
0 = Rudder in Centre
Stb = Rudder to Starboard
- F** Bb = gouvernail à bâbord
0 = gouvernail au milieu
Stb = gouvernail au tribord
- E** Bb = Timón babor
0 = Timón en posición central
Stb = Timón estribor
- I** Bb = timone a sinistra
0 = timone al centro
Stb = timone a dritta



TU00-0752-6707150