

Adjustment of the Push-Pull Cables on the Dual Engine Control System

On yachts with two engine control stations, it may occur that the gear cannot be changed from one of the stations. One possible cause is that the control lever at the other station is not precisely in the neutral position - even if only slightly - for example because it has been accidentally touched or moved.

Rapidly shifting through the gears without a brief pause in the neutral position may cause a temporary binding condition in the transmission. This can result in increased forces within the system, which may cause movement at the control station that is not currently in use.

Likewise, a non-optimal adjustment of the push-pull cables at the differential control unit can cause restricted or inconsistent shifting. In the worst case, the control system may jam or only one gear may remain selectable - for example, forward can be engaged while reverse cannot, or vice versa.

The following instructions explain how to adjust and subsequently check the push-pull cables at the gearbox.

Important Note:

Even with optimal installation, this effect cannot be ruled out with absolute certainty.

Work Instruction

This work instruction applies to yachts with internal and external helm stations and a mechanical differential control unit for gear and throttle control. It describes how to optimise the installation and adjust the push-pull cables for gearbox actuation.

Required Tools

- 8 mm open-end wrench
- 10 mm open-end wrench
- PH2 Phillips screwdriver
- Heat gun for releasing the threadlocker
- Needle-nose pliers for the cotter pins
- Combination pliers to hold the push-pull cable while loosening the nuts
- Methylated spirits, isopropanol or brake cleaner for degreasing
- Medium-strength threadlocker (e.g. Loctite 243)

Safety Before Starting

1. Switch off the engine and secure it against accidental starting.
2. Both helm stations must be in the neutral position.
3. Ensure that neither the gear nor throttle push-pull cable is under tension or preloaded by an engaged gear.
4. Before removing the push-pull cables, photograph the existing installation arrangement.

Preparatory Steps

Disconnect and label the push-pull cables at the gearbox (inside helm / outside helm). Then remove the brass end fitting and locknut, clean the threads and degrease them with a suitable solvent (e.g. methylated spirits). Refit the locknuts and screw them fully home.

If the screws cannot be loosened easily, carefully warm them with the heat gun so that the threadlocker releases.

Installation Sequence for the Push-Pull Cables

The manufacturer of the differential control unit does not specify which helm station must be connected to the upper position. Both configurations provide the same functionality. At Sirius Yachts, we have decided that the push-pull cable from the more frequently used external helm station should be connected to the upper position of the differential control unit.

1. Push-Pull Cable from the Internal Helm Station

The push-pull cable from the internal helm station is fitted underneath the sliding carriage of the differential control unit.

Apply medium-strength threadlocker to the push-pull cable thread, insert the cable into the mechanism, and then fit the second nut. At least one thread must protrude.

2. Push-Pull Cable from the External Helm Station

The push-pull cable from the external helm station is fitted on top of the sliding carriage and connected to the gearbox.

Apply medium-strength threadlocker to the push-pull cable thread, fit the end fitting so that approximately four threads protrude, and insert the cable into the mechanism.

Adjustment of the Gear Cables

1. Both shift levers must remain in the neutral position.
2. The push-pull cables must not be installed preloaded in either compression or tension.
3. Adjust the cables so that they have the same actuation travel in both directions.
4. One helm station must not reach an end stop before the other, thereby moving or displacing the second helm station.
5. At all ends of the push-pull cables, at least one thread must protrude from the end fitting. Please also check this at the helm stations.
6. Adjust the lower push-pull cable so that the mark on the sliding carriage aligns with the end of the aluminium profile when in the neutral position.
7. Adjust the upper push-pull cable so that the gear lever on the gearbox is correctly in the neutral position.
8. Refit the end fitting into the gear lever on the gearbox, insert the cotter pin and spread both ends so that it cannot work loose.
9. Tighten all locknuts with the open-end wrench and check the clamps and retaining devices.

Functional Test

The test must be carried out separately at both helm stations. First carry out the tests with the engine switched off; if the results are satisfactory, repeat them with the engine running.

Gear Operation

- Move the internal helm station from neutral to forward and then to reverse.
- Move the external helm station from neutral to forward and then to reverse.
- At the gearbox and gear lever, both helm stations must produce the same shifting movement and the same travel.
- Neutral must be reliably accessible from both helm stations.

Throttle Operation

- Move the internal helm station from idle to full throttle.
 - With the gears engaged.
 - With the neutral button pressed or the shift lever depressed.
- Move the external helm station from idle to full throttle.
 - With the gears engaged.
 - With the neutral button pressed or the shift lever depressed.
- At the throttle lever, both helm stations must produce the same movement and the same actuation travel.
- There must be no stiffness, no resistance or contact before reaching the end stop, and no unintended movement of a lever that is incorrectly adjusted.

Final Inspection

The work is only complete when:

- the internal and external helm stations shift cleanly from neutral to forward and reverse
- both helm stations produce the same movement at the gear lever
- both helm stations achieve the same travel at the throttle lever
- no push-pull cable is under tension
- all fasteners are secured and firmly tightened
- the neutral position works reliably at both helm stations
- the neutral button or the shift lever reliably springs back to its normal position

Note:

In the event of deviations, stiffness or unequal travel, the yacht must not be put into service without further inspection.