

Nexus Linear drive HP-40

Installation Manual

Thank you for choosing a Nexus Linear drive. Through this manual we will help you install your new Nexus product. Please read through this manual carefully before starting your installation.

1 Introduction

The Linear drive should be connected to the boat's steering system. The Linear drive only operates when carrying out a rudder command. A variable speed motor drive adjusts optimal rudder speed and provides for minimum power consumption and maximum rudder positioning accuracy. When the autopilot is turned off, a solenoid operated bypass valve mounted on the Linear drive opens, permitting hydraulic oil to flow from one side of the hydraulic cylinder to the other, allowing manual steering and the mechanical system to regain control.

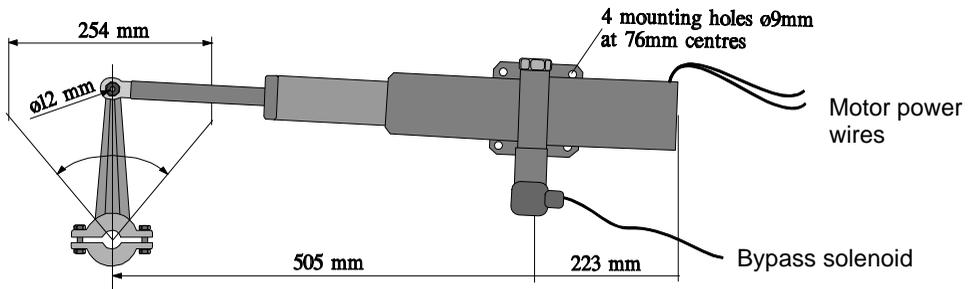
Warning! Manual steering with the Linear Drive is not possible when the autopilot is activated.

The Linear Drive provides a cleaner installation, being entirely below deck, and delivers more torque to the rudder than wheel driven units. In case the mechanical steering should fail, the Linear Drive will provide a back-up steering.

2 Installation

Note! Because most installations differ, the following items are not supplied and need to be sourced or made locally: Support bracket for Linear drive, 4 mounting screws and washers, tillerarm, mounting bolt for tiller arm.

2.1 Installing the Linear drive



Warning! A strong mounting bracket must be made for the Linear Drive trunnion mount since forces up to 600 kg (1400 lb) can be developed.

The Linear Drive should be connected to the tiller arm or the quadrant with the 12mm bolt and spring clip supplied through the tiller arm or quadrant and according to the geometry shown in figure.

Note! Use the spring clip to secure the 12 bolt so the Linear Drive can be disconnected fast if needed in an emergency situation.

A bridging bracket may have to be made across the quadrant arm if a suitable connection point is not available. Alternatively a separate tiller arm may be connected to the rudder-stock above or below the quadrant and the Linear Drive rod end bolted to it. The Linear Drive has self aligning and self lubricating bearings making alignment less critical and reducing maintenance.

The recommended tiller arm length is 160 mm to provide 47° of rudder angle movement (on both sides). The maximum cylinder stroke is 254 mm (10").

Tiller length mm (inch)	Max rudder angle at tiller length	Max torque at 0°		
		Nm	(lb inch)	(lb ft)
150 (5 7/8)	50	1085	(9,600)	(800)
160 (6 3/8)	47	1164	(10,300)	(860)
175 (6 7/8)	42.5	1290	(11,390)	(950)
200 (7 7/8)	37	1447	(12,800)	(1067)

Note! Do not use a tiller shorter than 150 mm or longer than 200 mm.

If your boat has less rudder angle, or if the tiller has another length, you may use a tiller length that will correspond as close as possible to your boats maximum rudder angle.

2.2 Connection

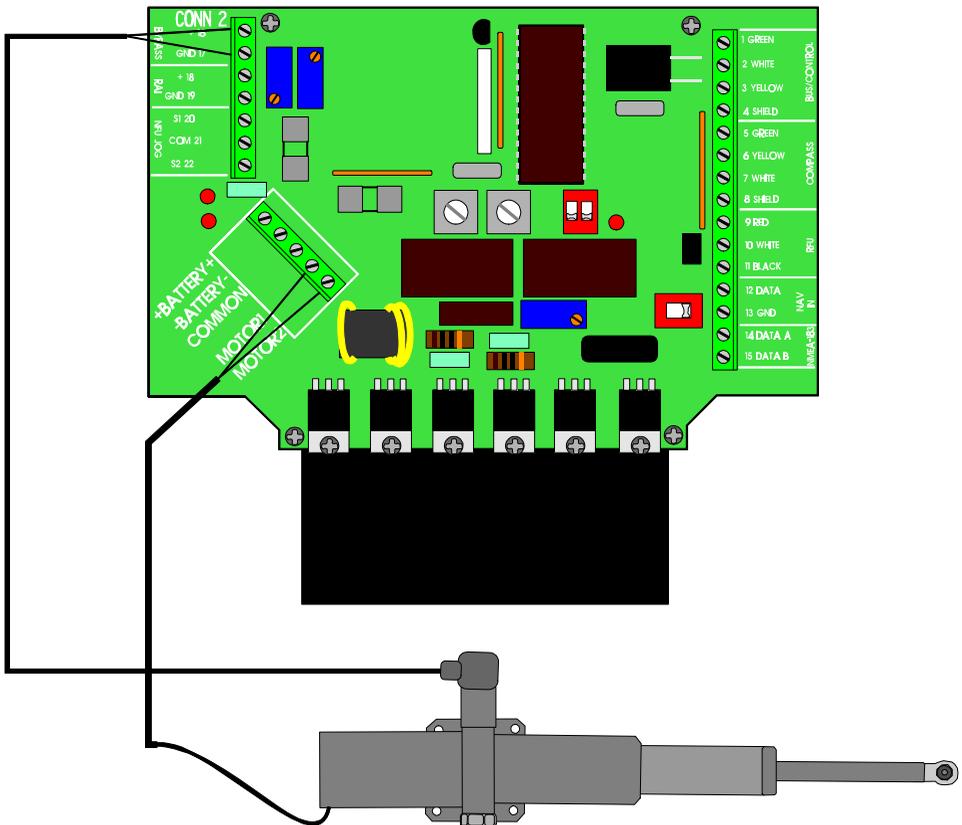
Note! For correct wire dimensions see Nexus Autopilot manual "Wire Thickness".

Connect the motor power wires to the Nexus Servo Unit as follows:

- Red wire to Servo Unit terminal marked "MOTOR 1".
- Black wire to Servo Unit terminal marked "MOTOR 2".

Connection of the bypass solenoid.

The connector for the built in solenoid is mounted at the side of the Linear drive, remove the connector by loosening the screw on top of the connector. Open up the connector by use of a small flat screwdriver. Connect two leads, to the two screws marked 1 and 2 (do not connect the screw marked ground). Use a two lead cable with a thickness of minimum 1,5 mm². Route and connect that cable to the Servo unit at terminal 16 and 17 marked BYPASS.



3 Dockside testing

When the complete electrical installation is checked and the power is turned on, there are further procedures to be carried out in order to complete the installation.

Maintenance and inspection schedule

If the boat does not accumulate the hours indicated below within 3 months, the frequency is every 3:rd month.

Warning !

Failure to rectify any faulty conditions discovered as a result of the inspection could cause sudden loss of Autopilot control, with consequential danger. It is recommended that all items referenced in the following table be inspected before commencing any cruise.

Type	Equipment:	Check for:	Remedy:	Inspection Frequency:
Mechanical	Linear drive	Corrosion	Replace or Repair	2000 hrs
	Tiller arm	Corrosion	Replace	2000 hrs
	Tiller bolts	Corrosion	Replace	2000 hrs
		Loosening	Tighten	500 hrs
	Rod end bolt on linear drive	Corrosion	Replace	2000 hrs
Loosening		Tighten	500 hrs	
Trunnion bolts on linear drive	Corrosion	Replace	2000 hrs	
	Loosening	Tighten	500 hrs	

4 Specifications

Type of Pump:	Reversible gear pump.
Total length at mid stroke:	728 mm
Height:	125.6mm
Width:	142.7mm
Maximum stroke:	254 mm
Distance from centre of mounting plate to tiller bolt at mid stroke:	505mm
Tiller bolt diameter	12mm
Mounting plate size	100x100 mm
Mounting screws	4x9mm Ø at 76mm centres
Lead length	1000mm
Temperature range	-20°C to +55 C
Supply voltage	12V (10-16V)
Enclosure	IP44 (splash proof for under deck installation)
Peak thrust:	500kg
Average power consumption:	3 - 5 A ca 36 Watts (at 12V)
Warranty period:	2 years, see separate conditions

CE approval: The product conforms to the EMC requirements for immunity and emission according to EN 5008-1 and EN 55022

5 Warranty

GENERAL

All our products are designed and built to comply to the highest class industry standards. If the products are correctly installed, maintained and operated, as described in the installation and operation manual, they will provide long and reliable service. Our international Network of distributors can provide you with the information and assistance you may require virtually anywhere in the world.

Please read through and fill in this warranty card and send it to your national distributor for product registration.

LIMITED WARRANTY

The warranty covers repair of defective parts due to faulty Manufacturing and includes labour when repaired in the country of purchase. The warranty period is stated in the product manual, and commences from the date of purchase. The above warranty is the Manufacturer's only warranty and no other terms, expressed or implied, will apply. The Manufacturer specifically excludes the implied warranty of merchantability and fitness for a particular purpose.

CONDITIONS

- The supplied warranty card and receipt with proof of purchase date, must be shown to validate any warranty claim. Claims are to be made in accordance with the claims procedure outlined below.
- The warranty is non-transferrable and extends only to the original purchaser.
- The warranty does not apply to Products from which serial numbers have been removed, faulty installation or incorrect fusing, to conditions resulting from improper use, external causes, including service or modifications not performed by the Manufacturer or by its national distributors, or operation outside the environmental parameters specified for the Product.
- The Manufacturer will not compensate for consequential damage caused directly or indirectly by the malfunction of its equipment. The Manufacturer is not liable for any personal damage caused as a consequence of using its equipment.
- The Manufacturer, its national distributors or dealers are not liable for charges arising from sea trials, installation surveys or visits to the boat to attend to the equipment, whether under warranty or not. The right is reserved to charge for such services at an appropriate rate.
- The Manufacturer reserves the right to replace any products returned for repair, within the warranty period, with the nearest equivalent, if repair within a reasonable time period should not be possible.
- The terms and conditions of the warranty as described do not affect your statutory rights.

CLAIMS PROCEDURE

Equipment should be returned to the national distributor, or one of its appointed dealers, in the country where it was originally purchased. Valid claims will then be serviced and returned to the sender free of charge.

Alternatively, if the equipment is being used away from the country of purchase, it may be returned to the national distributor, or one of its appointed dealers, in the country where it is being used. In this case valid claims will cover parts only. Labour and return postage will be invoiced to the sender at an appropriate rate.

DISCLAIMER

Common sense must be used at all times when navigating and the Manufacturer's navigation equipment should only be considered as aids to navigation.

The Manufacturers policy of continuous improvement may result in changes to product specification without prior notice.

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This manual is written for Nexus Pumpset (Art. No.):
 12V PF-0,3 (21134), 24V PF-0,3 (21134-24)
 12V PF-0,3S (21341), 24V PF-0,3S (21341-24)

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