



Waterlock NLP-NLPHD

1 Introduction

The Vetus exhaust system components are especially suitable for use in water-injected exhaust systems.

The maximum temperature when in continuous use depends on the material used to construct the waterlock.

The material used can be recognised by its colour.

Type	Colour	Maximum continuous operating temperature
NLPxx(S)	Gray	70°C (158°F)
NLPxx(S)HD	Black	250°C (482°F)
NLPxx(S)WHD	White	

- Fit a temperature alarm to warn of excessively hot exhaust system temperature.
- If the quantity of injected coolant water is reduced in order to lower back-pressure in the exhaust system, check that there is still sufficient water injected when the engine is ticking-over. This will prevent excess temperatures in the exhaust system.
- Excess temperature can also be the consequence of insufficient mixing of coolant water with the exhaust gasses.
- In general, good mixing is obtained by a virtually vertically installed exhaust injection bend.
Poor mixing can also occur with an engine on tick-over; especially when the coolant water injection bend is installed virtually horizontally.
If necessary, take action. For example; by fitting a water vortex or a water splitter in the exhaust pipe, to improve the mixing of coolant water with the exhaust gasses.

With water-injected exhaust systems, fit a hose of suitable quality. This hose must be reinforced, resistant to exhaust gasses, high temperatures (100 degrees C, 212 degrees F) and oil. Easy flexibility is essential for installation, while the hose must not collapse when heated.

Vetus exhaust hose fulfils all the above requirements.

	Hose dia.	Engine power to
NLP40	ø 40 mm (1 9/16")	18 kW (24.5 hp)
NLP45	ø 45 mm (1 3/4")	22 kW (30 hp)
NLP50	ø 50 mm (2")	28 kW (38 hp)
NLP60	ø 60 mm (2 3/8")	39 kW (53 hp)
NLP75	ø 75 mm (3")	63 kW (86 hp)
NLP90	ø 90 mm (3 1/2")	89 kW (121 hp)

Warning

If water enters the engine from the waterlock into the exhaust system (for example: under sail when the ship rolls or pitches heavily) this will lead to irreparable damage to the engine.

Too much water in the waterlock can effect engine starting; drain off this water first. Too much water in the waterlock can be also caused by repeated starting attempts while the engine refuses to start.

2 Installation

2.1 Installing waterlock NLP

Install the waterlock as vertical as possible.

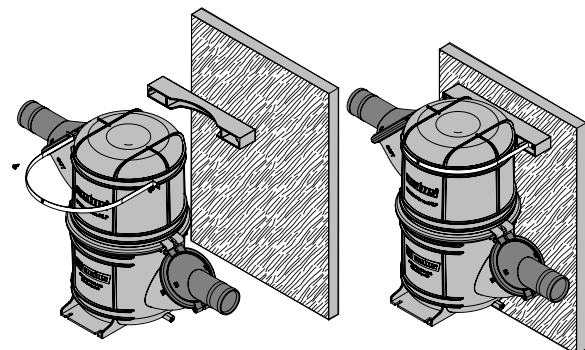
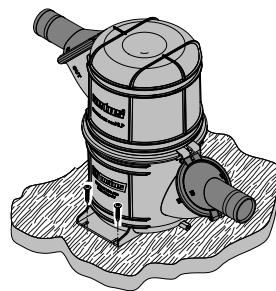
Position the waterlock 'back-to-front' alongside the engine when there is insufficient space behind the engine.

Because the waterlock contains water during use, the weight increases significantly. The waterlock must therefore be mounted on the deck or a wall, as is indicated in the drawings.

Note

Make sure the following conditions are met under all sailing conditions (e.g. heeling):

- The waterlock 'IN'-connection is located below the level of the exhaust injection bend.
- The distance between the bottom of the engine's cooling water outlet and the highest point of the waterlock is at least 5 cm (2").





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2.2 Installing the transom exhaust connection

Fit the transom exhaust connection at such a position that with the ship fully laden, the outlet is still at least 5 cm (2") above the waterline.

2.3 Exhaust pipe

In order to ensure the proper drainage of the coolant water injected into the exhaust pipe, the pipe must be installed with a slope downward over its whole length from the water injection point to the waterlock.

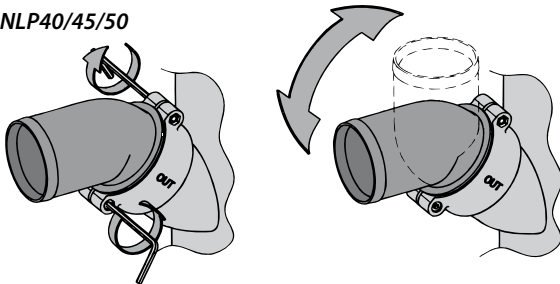
During operation, the exhaust pipe will contain water. This will increase its weight considerably, so support the exhaust pipe properly.

The exhaust pipe from waterlock to transom connection must be installed in such a way that:

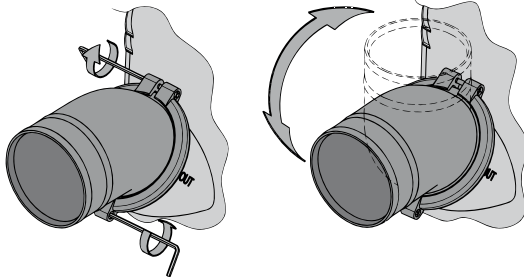
- The highest point in the exhaust pipe should not be more than 150 cm (60") above the underside of the waterlock.
- The length of the section between the waterlock and the highest point, should not exceed 300 cm (120").

2.4 Hose connections

NLP40/45/50



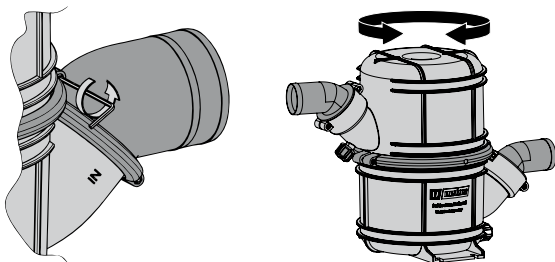
NLP50S/60/75/90



In order to achieve the ideal connection between the hoses and the waterlock, both hose connections turn through 360 degrees.

Loosen the bolts before turning the hose connections!

Tighten the hose connections to a torque of 1 Nm (0.75 ft.lb).



The top portion of the waterlock can be turned in a 360° radius.

The top portion should be turned as follows:

- 1 Unscrew the clamping strip
- 2 Turn the top portion to the desired position
- 3 Tighten the clamping strip sufficiently, to a torque of 0.3 Nm (0.22 ft.lb).

2.5 Fitting the hose

- To ease the fitting of the hose to the hose connector, use only water and/or soap, NOT grease or products containing oil.
- Fit each hose connection with 2 stainless steel 12 mm (0.5") wide hose clamps.

2.6 Sensor for temperature alarm

A sensor for a temperature alarm can be fitted in the exhaust pipe.

3 Installation Examples

Exhaust systems with a waterlock type NLP, silencer type MP, goose neck type NLPG and a transom connection are shown in section 6.

Entry of water from the aft is almost completely prevented by the extra height difference in the goose neck.

When the engine is stopped, any water which is still in the exhaust pipe (between the highest point in the exhaust system and the exhaust silencer) will run back to the exhaust silencer.

To reduce the amount of this water as much as possible, the goose neck should be fitted directly above the exhaust silencer, if possible (see drawings 1 and 3).

When the goose neck is fitted directly to the transom (drawings 2 and 4), the maximum length of the exhaust pipe, between exhaust silencer and the highest point, should be taken into account.

3.1 Prevention of syphoning (drawings 3 & 4)

If the water injection point 'C' is below, or less than 15 cm (0.6") above the waterline (also when the ship heels under sail), there is a risk that when the engine is stopped, the coolant water will enter the engine due to syphoning. This syphoning can be prevented in two ways:

1. By creating an air vent system in the coolant water hose between engine block and water injection point 'C', by fitting an air vent with air vent pipe, for example.

The air vent pipe can be connected to its own hull outlet (H) or to the connection on the gooseneck intended for this, type NLPG (G). See the manual for the NLPG, no. 030428.0x.

2. By fitting an air vent (with valve) in the coolant water hose between the engine block and water injection point 'C'.

4 Maintenance

- Check all hose connections for gas and water leaks regularly.
- Before the winter lay-up, drain the waterlock. The waterlock has two drain plugs for this purpose.



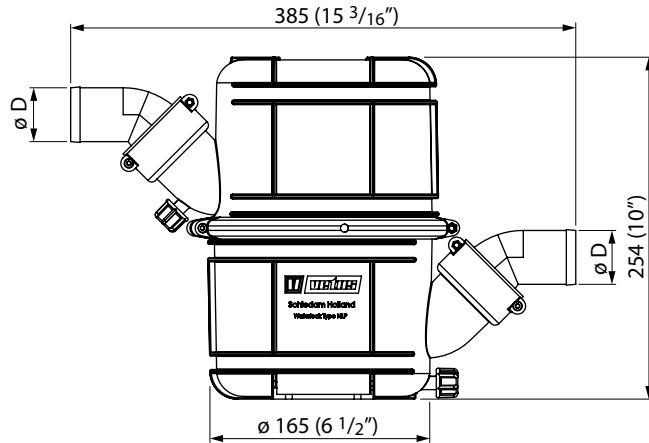
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5 Principal dimensions

NLP40
NLP45
NLP50

Volume: 4,5 l (1.00 Imp. Gal., 1.19 U.S. Gal.)

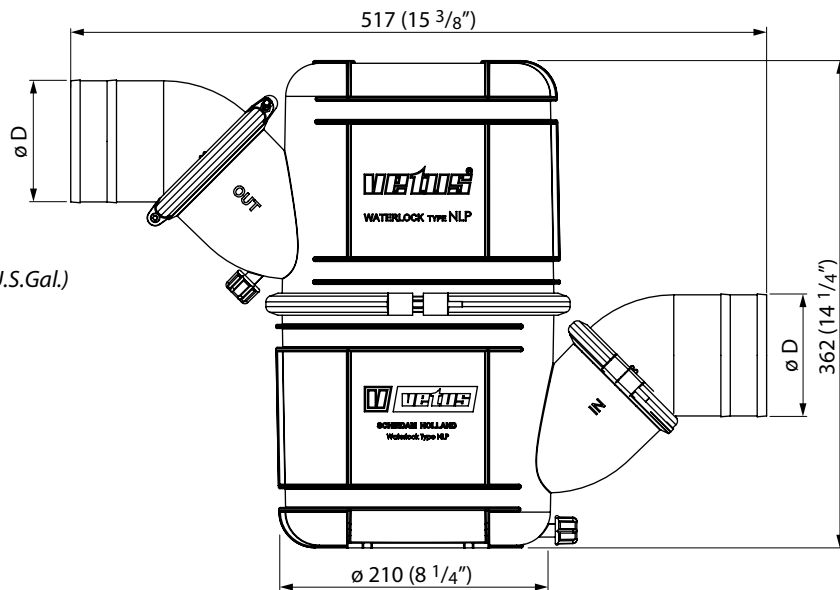
D	
ø 40 mm	(1 9/16")
ø 45 mm	(1 3/4")
ø 50 mm	(1 15/16")



NLP50S
NLP60
NLP75
NLP90

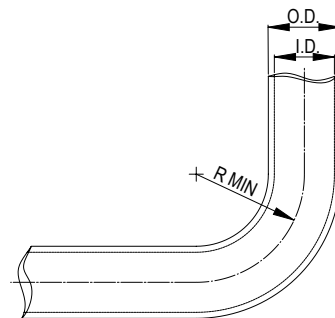
Volume: 10 l (2.20 Imp. Gal., 2.64 U.S. Gal.)

D	
ø 50 mm	(1 15/16")
ø 60 mm	(2 3/8")
ø 75 mm	(2 15/16")
ø 90 mm	(3 9/16")



Rubber exhaust hose

I.D.	O.D.	R min.
ø 40 mm (1 9/16")	ø 48 mm (1 7/8")	60 mm (2 3/8")
ø 45 mm (1 3/4")	ø 53 mm (2 3/32")	68 mm (2 11/16")
ø 51 mm (2")	ø 59 mm (2 5/16")	77 mm (3 1/32")
ø 60 mm (2 3/8")	ø 68 mm (2 11/16")	90 mm (3 9/16")
ø 76 mm (3")	ø 84 mm (3 5/16")	114 mm (4 1/2")
ø 90 mm (3 1/2")	ø 98 mm (3 7/8")	135 mm (5 5/16")



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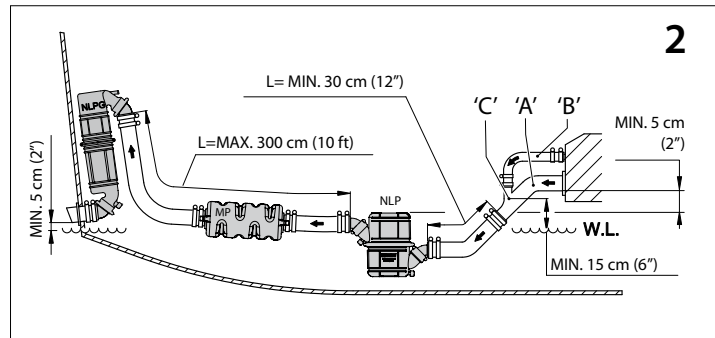
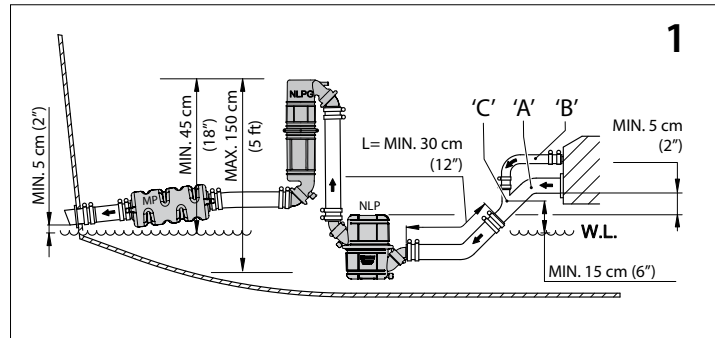
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6 Installation example

- A Exhaust manifold
- B Cooling water
- C Water-injection point

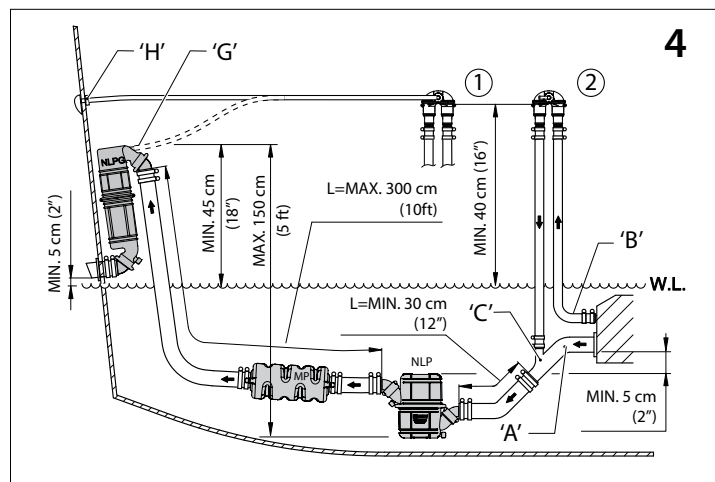
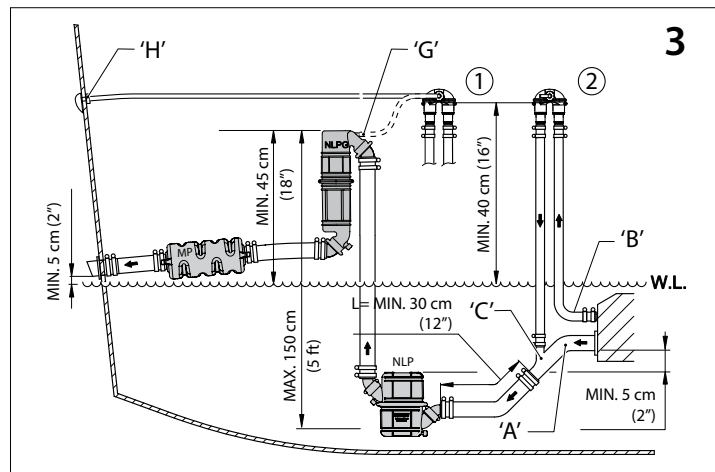
1 & 2:

Exhaust systems with water-injection point 'C'
15 cm or more above the waterline



3 & 4:

Exhaust systems with water-injection point 'C'
below or less than 15 cm above the waterline





Waterlock NLP-NLPHD

Warning

