Product & Installation sheet

UWE Valve system Viking X3M

Valid from version 61

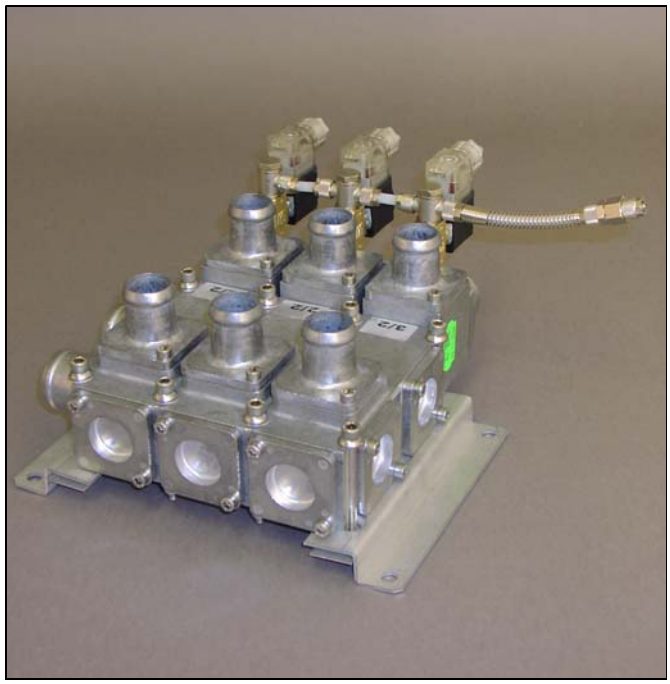
PRD0302E01en

Description

Area of application

The valve system Viking X3M is designed to distribute water in heating systems for buses. The system is built up of different modules that can be combined in many different customized alternatives.

The most significant benifits for the system are the low flow resistance, low weight and its unique modularity.



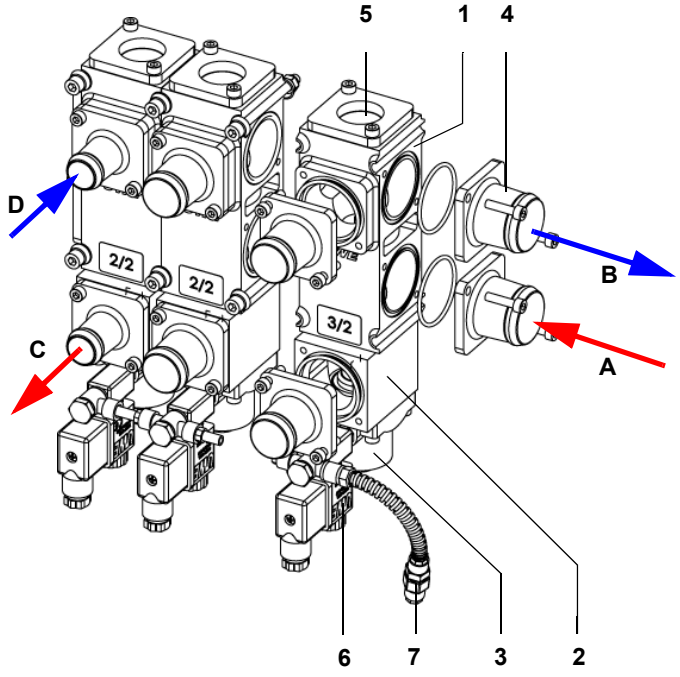
Design and function

The valve system is built of different modules as shown in figure below. However, the principle of the valve system is the same independently of the modules choosen. Hot water from the engine is led to the main supply connection, and further distributed to the different heating circuits via an optional number of modules. In each module a valve is installed, which is designed to manage pulse regulation. The heating circuit water then flows back to the the circuit return connection, and then back to engine via main return connection. The modules can be combined as described below.

Valve body

The valve body consists of a main supply and a main return channel and a return channel from the heating circuit. The flow to the circuit is controlled by a compressed air operated piston.

The valve body can be equipped with or without a by-pass valve between the main supply and return. The purpose of the by-pass is to secure a main circuit flow even when the heating circuit valve is closed (used together with an auxilliary heater). Connections can be mounted in different ways and in different dimensions, see technical data for further information.



Modules
1. Valve body
2. Valve middle part
3. Valve top
4. Hose connection
5. Plug
6. Solenoid valve
7. Compressed air filter

Flow directions
A. Main supply
B. Main return
C. Circuit supply
D. Circuit return

Valve middle part
This part is equipped with a feed line to the heating circuit. The middle part can be rotated in steps of 180º, the end parts in steps of 90º. Connections are available in different dimensions and can be mounted in different ways.

Valve top
The valve top is equipped with a compressed air supply, controlled by a solenoid valve, available either as a normal closed (NC)or normal open (NO). The compressed air line is equipped with a small air filter to prevent small particles from reaching the orifices. The valve top can be rotated in steps of 180º, the end parts in steps of 90º.

Technical data

Connections

Main supply	22, 28, 35 mm (or blind plate)	hose connection
Heating supply	22, 28, 35 mm (or blind plate)	hose connection
Air supply	6 mm	air pipe

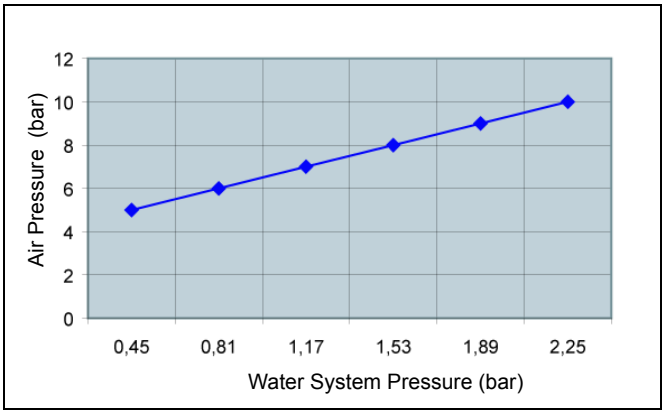
Electric characteristics

Voltage	24 VDC	*See Prd0059*
Power consumption	3 W / module 3,2 W / module	*For NC solenoid* *For NO solenoid*

Regulation capacity

With a maximum water flow of 6000 litre/h and water intake temp of +95°C following flow/heating capacity is possible to reach. All values valid with a water and glycol mixture giving –30°C freezing point. No mixing with extra inhibitor additives is allowed.

In the diagram below you can see the calculated required air pressure needed to manouvre the valve at a certain water pressure.



Media

Glycol/Water mixture	50% ethylene/ propylene

Performance and limitations

Working pressure range, water	0-2 bar (occasional underpressure during regulation min. -0,5 bar)
Pulse regulation cycle interval	Minimum 8 seconds
Kv-value	10,7 bar open valve 4,2 bar closed valve (by-pass)
Required air pressure	5-10 bar
Media temperature range	-40°C to +90°C
Ambient temperature range	-40°C to +95°C

Material

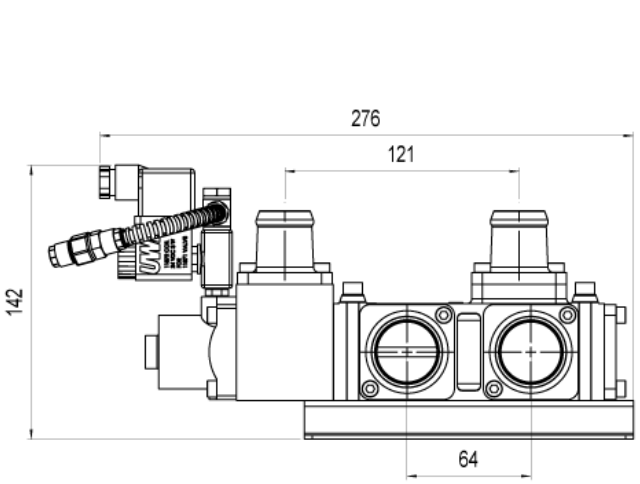
Valve body, middle	Aluminium
Valve top	zinc-base alloy
Seat sealing, water main	EPDM
Seat sealing, water by-pass	Reinforced teflon

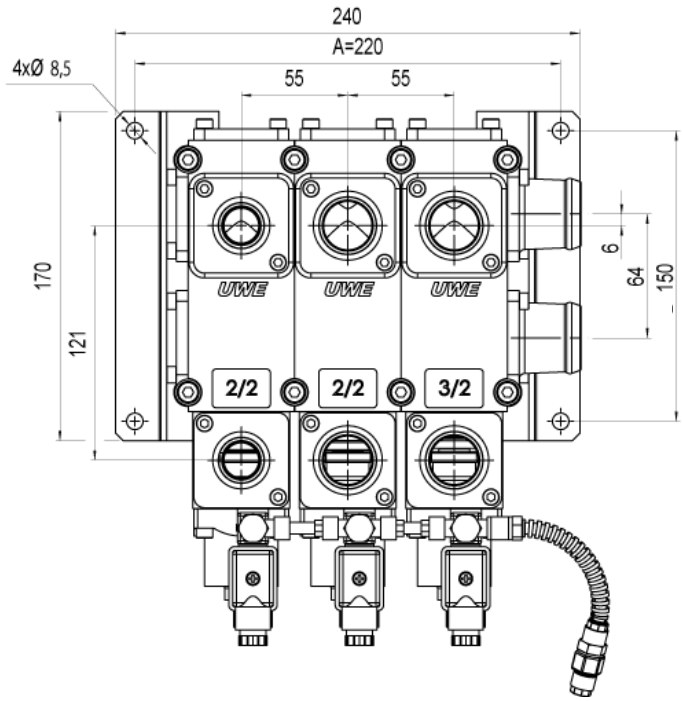
Acceptable medium and air quality

Medium	Water/glycol mixture Recommended Anti freeze: Texaco ETX6280 (no castsand from motor internal cavities allowed, water only as media not allowed)
Compressed Air	Dried air (no alcohol/ reduced amount of oil)
Exterior (for cleaning)	Dry cleaner/mild soap (be aware of environmental effect when different media is mixed)

Note: Inhibitor in water system not allowed! Stationary heating systems connected to the bus (where appropriate) must use the same air- and water quality as indicated above. During service and maintenance the air- and water quality as indicated above must strictly be followed.

Dimensions of a typical valve block (mm)



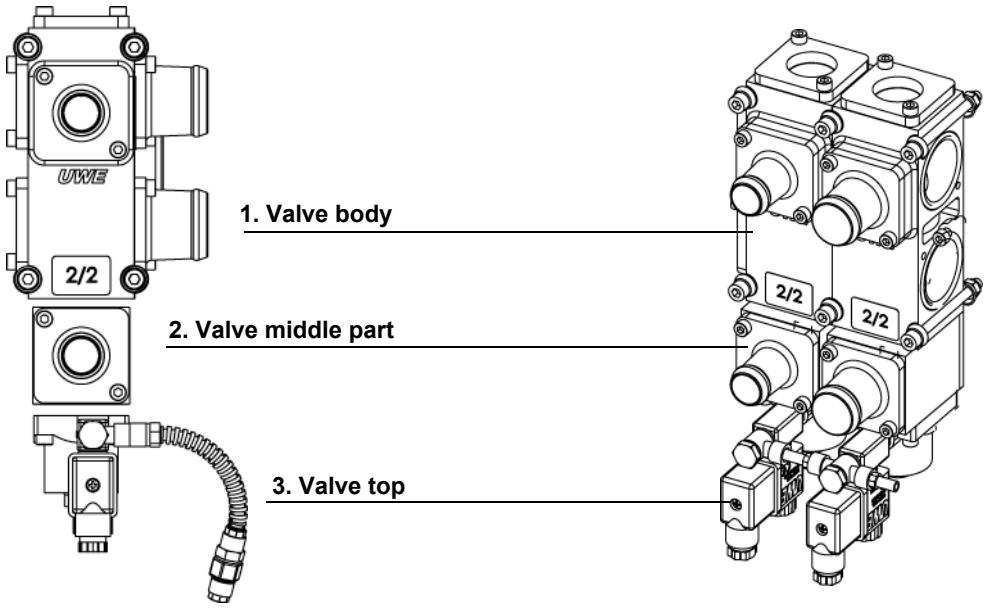


Dimensions (A) other variants:
1-valve module A=110 mm
2-valve modules A=165 mm
4-valve module A=275 mm

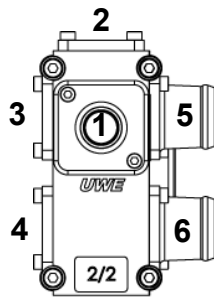
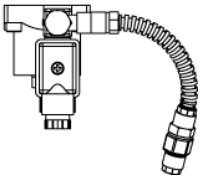
Product range, complete valve blocks

Because of the almost endless number of possible variants of the valve block, there are no defined blocks to order. Instead you choose yourself from the following modules a customized valve block corresponding to your needs. It is possible to order a valve plate including one up to four valve modules.

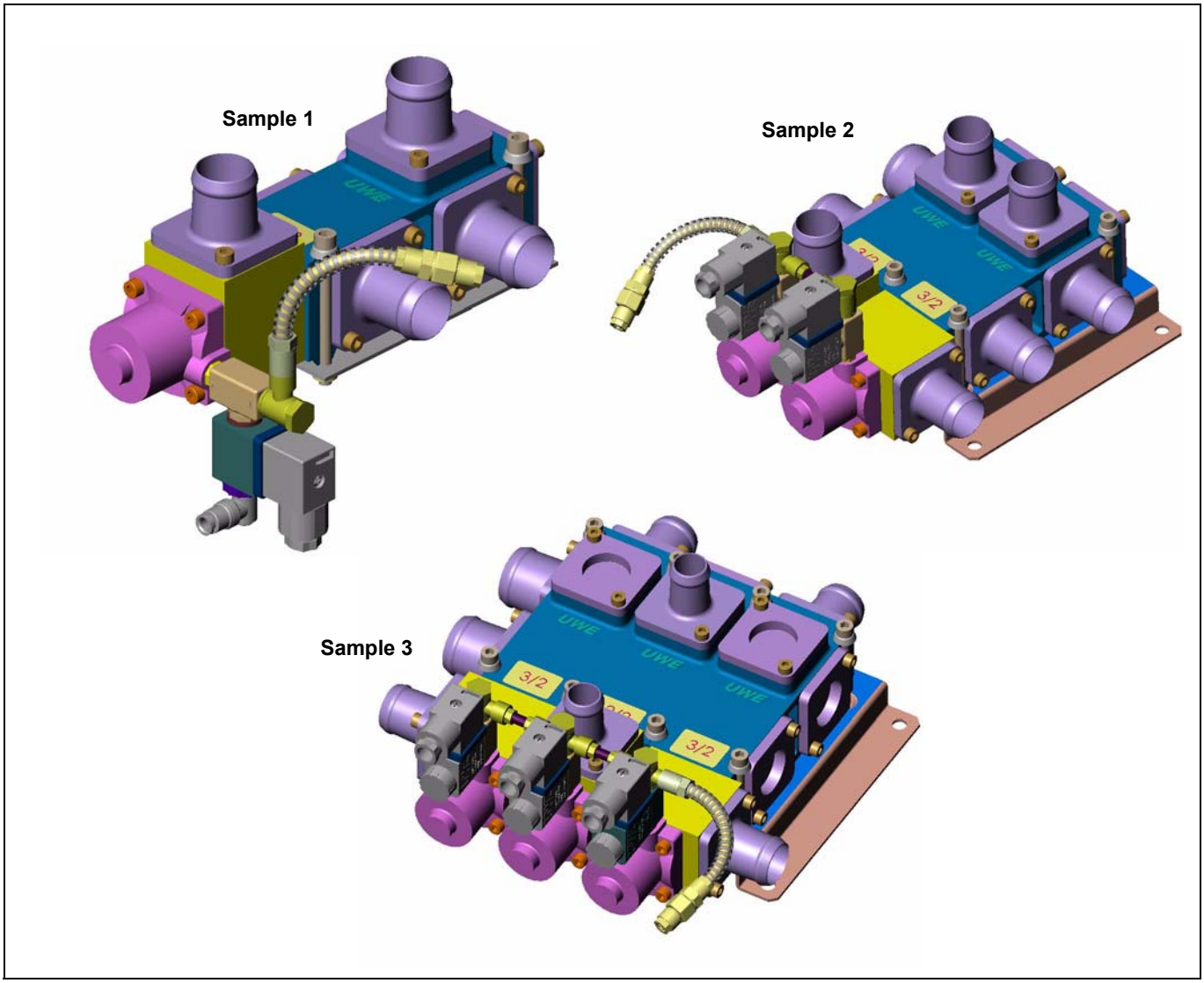
Overview of the modules



Possible variants of the modules

1. Valve body	2. Valve middle part	3. Valve top
		
Options: A. Function 1. With by-pass 2. Without by-pass B. Connections according to figure above: 1. Ø22, Ø28, Ø35 or dummy plate (all). 2. Ø22, Ø28, Ø35 or dummy plate (all). 3. Ø22, Ø28, Ø35 or dummy plate (left end only). 4. Ø22, Ø28, Ø35 or dummy plate (left end only). 5. Ø22, Ø28, Ø35 or dummy plate (right end only). 6. Ø22, Ø28, Ø35 or dummy plate (right end only).	Options: A. Possible to rotate connection: 1. Top connection 2. Left connection (left end only) 3. Right connection (right end only) 4. Bottom connection B. Dimension of connection 1. Ø22, Ø28 or Ø35.	Options: A. Select solenoid valve: 1. Normal open (gives normal closed water valve function) 2. Normal closed (gives normal open water valve function)

Figures showing possible configuration samples



Installation

- These instructions refer to the UWE product Viking X3M.
- On receipt of the goods, remove all packaging material and check all items for transport damage.
- Check that the delivered goods correspond to the specifications of the delivery note.

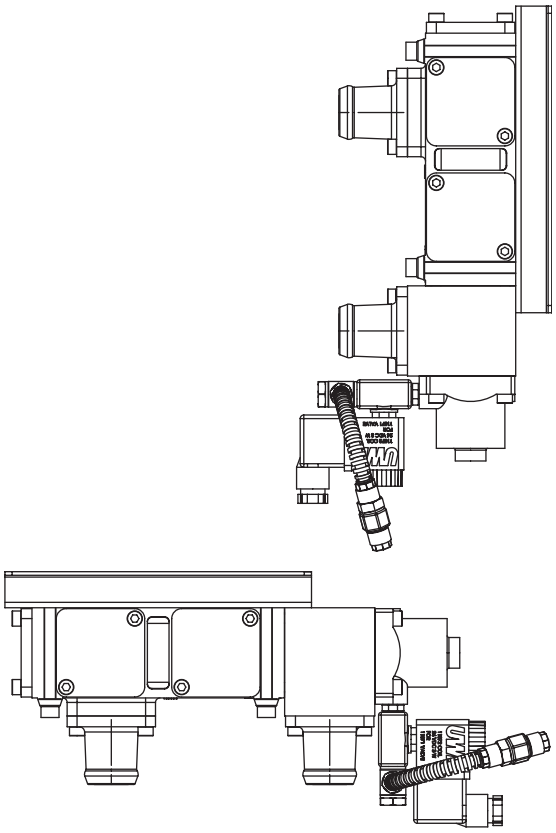
Read all instructions before starting installation work.

The correct function and performance of the product are only guaranteed on condition that the instructions given in this document are strictly followed.

Installtion instructions:

1. There are two possibilities to mount the X3M, as shown in figure right.

If you <u>not</u> mount accoring to figure right, there is risk of circulation problems, caused by self-circulation and air bubbles!

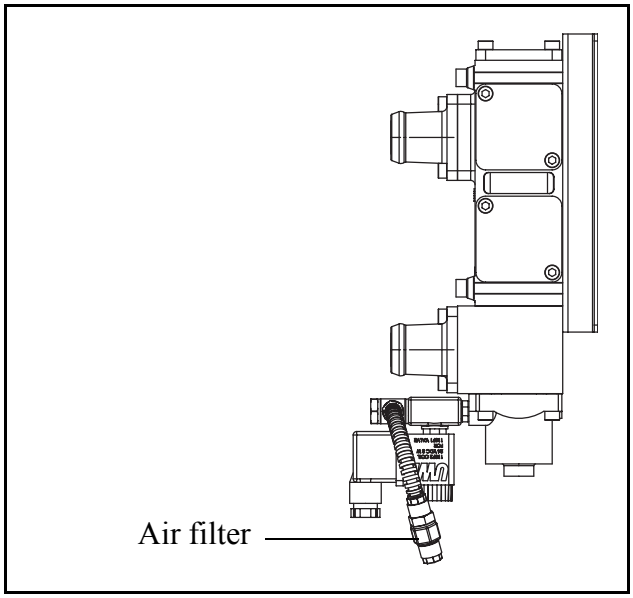


2. Install the Viking X3M at a safe location where it is protected from road spatter and dirt. Also try to avoid to install so (rain-)water may trickle on hoses down to the valve plate. Make sure that the Viking X3M is fitted in such a way as to enable service and maintenence.

Make sure that medium and place of installation is in accordance with “Acceptable medium and air quality“ on page 2!

3. Mount the air hose to the connection at the air filter (see figure).

Please note that the filter is needed to ensure reliable air operation. If the air filter is removed the air operation of the valve plate can not be guaranteed.



4. Mount all hose connections with hose clamps (see figure).

Great importance has to be taken mounting rubber pipes on the hose connections. According to DIN 71550-10 we recommend that the hose clamps to be tightened to their maximum limits.

On standard (Jubilee type) clamps 5 to 6 Nm is normally recommended. With this style of clamp we recommend re-tightening after 2-3 weeks as this allows the hose to set under the clamp and re-tightening helps ensure a good seal be maintained.

When the hoses are used in applications where elevated temperatures are experienced we would recommend a constant torque clamp being used, again set to the upper limits of the manufacturers specification. These clamps are a more expensive solution but do offer better performance compared to a normal worm drive clamp. The use of constant torque is essential in applications with large bore and high dynamic pressures.

5. FInally connect all cable contacts to the coils.

After mounting check both air side and water side for leakages, according to coachbuilder instructions.

Introduction

This document descibes how to identify a certain spare part and how to order the relevant spare part kits. Please note that the list does not include all the parts of the valve plate, but the parts that can be defined as frequent spare parts and consumable supplies. If there are other parts you need, please consult UWE Verken for further information. NB! The spare parts can replace all earlier models, indepently of generation number.

Spare parts overview

Figure: The numbers relate to the spare parts table (page 2-5):

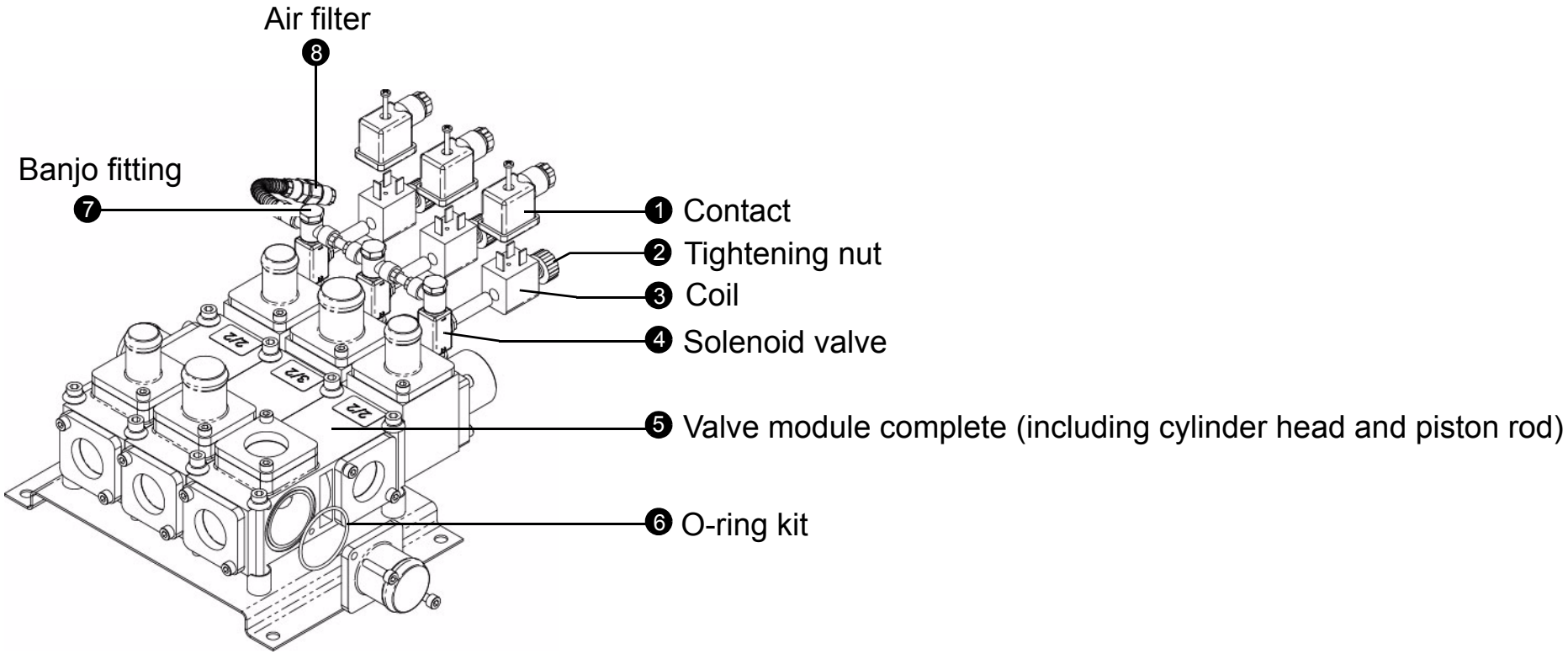
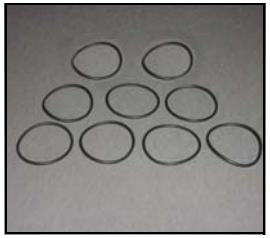


Table of Viking X3M Spare parts

Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
❶	Contact **(available in two variants)**	**With light-emitting diode** Identification: Grey/transparent performance with red LED.	**14581**		• Contact LED/VDR 24V (with screw but without cable)	For installation instructions see document PRD0268
		Without light-emitting diode Identification: Black performance marked with ”mPm”	**6963 1160 909**		• Contact PG9 (with screw but without cable)	For installation instructions see document PRD0268
❷	Tightening nut **(available in one variant)**	Identification: Black nut in plastic performance	**11898**		• Tightening nut	For installation instructions see document PRD0268
❸	Coil **(available in two variants)**	Identification: Marked with ”UWE 24 VDC 3W in white”	**11872**		• Coil UWE 24V DC 3W (to be used with solenoid valve NC 11871 only)	For installation instructions see document PRD0268
		Identification: Marked with ”UWE 16287 COIL 24V DC 3,2W in yellow”	**16287**		• Coil UWE 24V DC 3,2W (to be used with solenoid valve NO 16286 only)	For installation instructions see document PRD0268

Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
❹	Solenoid valve **(available in two variants)**	**Normal open** Identification: Green coloured (earlier models black or silver coloured)	**16286**		• Solenoid valve 3/2 NO UWE 1/8” incl air evacuation restriction	For installation instructions see document PRD0268 **Important: The green NO solenoid valve 16286 only works with coil 3,2W!**
		Normal closed Identification: Gold-coloured	**11871**		• Solenoid valve 3/2 NC UWE 1/8” incl air evacuation restriction	
❺	Valve module, complete with piston rod and cylinder head **(available in two variants)**	**3/2 By-pass** Identification: Marked with 3/2 (equipped with by-pass valve).	**17551**		• Valve module 3/2, complete including head and piston rod • Taper washers (8 pcs) • Nuts (4 pcs) • O-ring kit 17552	Replacing part. no 16593. For installation instructions see document PRD0268
		2/2 Not by-pass Identification: Marked with 2/2 (not equipped with by-pass valve).	**17550**		• Valve module 2/2, complete including head and piston rod • Taper washers (8 pcs) • Nuts (4 pcs) • O-ring kit 17552	Replacing part. no 16592. For installation instructions see document PRD0268

Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
❻	O-ring kit **(available in one variant)** Suitable for hose connections and internal mount.	Identification: Black colour	**17552**		• O-rings for 1 valve module (7+2 pcs). O-rings 7 pcs: For use with valve modules version 61- O-rings 2 pcs: For use between valve modules if one or both are of version 1-60.	For installation instructions see document PRD0268
❼	Banjo fitting kits **(available in two variants)**	**Single connection (delivered with one air filter)** Identification: Banjo house with one air connection	**16589**		• Banjo house with single connection • Banjo screw including inlet air restriction • Washers (2pcs) • Air filter	For installation instructions see document PRD0268
		Double connection (delivered with one air filter) Identification: Banjo house with two air connections	**16590**		• Banjo house with double connection • Banjo screw including inlet air restriction • Washers (2pcs) • Air filter	For installation instructions see document PRD0268
❽	Air filter **(available in one variant)**	Identification: Two air hose connections	**14463**		• Air filter with connections 6/4x6/4	For installation instructions see document PRD0268