



SERVICE BULLETIN No.1075A

For ABC Customer Care & Parts Source-staff only

Do not circulate to listed addressees

COACH MODEL	: C2045 and S2145
BULLETIN TYPE	: Service Information
MANUAL & SECTION	: Maintenance Manual: Chapter 10 – HVAC System Spare Parts Manual: Section 771309 - Heating
PARTS BOOK REVISION	: Yes
DATE	: April 11th, 2003
SUBJECT	: UWE X3M water valve troubleshooting
TERMS & CONDITIONS	: No claims will be accepted with reference to this Bulletin.

THIS BULLETIN SUPPLEMENTS VAN HOOL SERVICE BULLETIN #1075

APPLICATION:

The service information subject of this Bulletin is applicable to following units:

Model	Engine	VIN
C2045	Cummins	45001 →
	Detroit Diesel	45502 →
S2145	N/A	42201 →

DESCRIPTION:

1. UWE, manufacturers of the X3M valve block currently installed in the heating circuit of the above-mentioned coaches, have recently issued product information booklets in an effort to assist service technicians with the maintenance of these water valve assemblies.
For your convenience, a copy of each of the booklets has been included with this Bulletin.
2. To supplement the UWE information, present Service Bulletin also contains a troubleshooting chart, a cross-reference list of Van Hool vs. UWE part numbers and a list of changes that have been made to the X3M valves.

Service personnel: please read, initial and circulate.

Service Manager	Parts Manager	Warranty Administrator	Workshop Foreman	Service Technician

PARTS AND PRODUCTS:

- For the description of parts and for part numbers, refer to the attached UWE parts catalogs:

→ Booklet #Prd0266E01en "Viking X3M Spare Parts"
→ Booklet #Prd0267E01en "Viking X3M Loose Spare Parts"

For explicit information on solenoid valves, refer also to:

→ Leaflet #Prd0197E02en "Product news – New solenoid valve and coil"

- To convert the UWE part numbers into Van Hool part numbers, refer to "SB1075A Attachment 3 - UWE / VAN HOOL part no. Cross-reference list".
- To find the key to the identification marks stamped on the valve body, refer to "SB1075A Attachment 2 – UWE X3M Water valve changes made and corresponding identification marks stamped on the valve body".
- Parts may be purchased through regular channels.
- Always use genuine maintenance products and parts. Do not accept imitations.
- Parts and products disposition: discard according to applicable environmental regulations.

PROCEDURE:

Product description and installation guidelines are provided by:

- UWE booklet # Prd0099E06en "Product & installation sheet – UWE valve system Viking X3M".

***NOTE:** The above-mentioned booklet discusses the installation of a typical UWE X3M water valve block. The valve block on your coach and its actual installation may differ from the one pictured in the booklet.*

For troubleshooting and maintenance procedures, reference can be made to:

- UWE document #Prd0214E02en-VHUSA: "Viking X3M Service Instructions – Van Hool USA", which is attached to Van Hool Service Bulletin #1078, published February 28th, 2001.
- Enclosed Booklet #Prd0268E03en: "Viking X3M Maintenance Instructions".
- Van Hool troubleshooting chart: "SB1075A Attachment 1 - Troubleshooting the UWE X3M water valve assembly".

Procedure complete.

SERVICE INFORMATION:

Service Bulletins are issued to supplement or supersede information in the Van Hool manuals. Note Service Bulletin number, date and subject on the register at the end of the relevant chapter(s). File Service Bulletin separately for future reference.

SB1075A ATTACHMENT 1 – Troubleshooting the UWE X3M water valve assembly:

NOTE: To ensure quality repairs, all work to X3M water valve units should be done with the valve assembly removed from the coach, except for the procedures regarding pneumatics. Valve block may require complete clean-up/overhaul.

Common water valve related problems and ways to solve them

Problem	Probable cause	Correction	Procedure
1. Water leaks	<ul style="list-style-type: none">• Valve contains faulty parts• Seals not tight/damaged• Allen bolts loose	<ul style="list-style-type: none">• Replace by improved parts• Replace seals of affected valve blocks• Tighten bolts	→ UWE Viking X3M Maintenance Instructions Prd0268E01en → Van Hool SB1075
2. Air leaks	<ul style="list-style-type: none">• Valve contains faulty parts• Loose fasteners• Leaking air lines/fittings	<ul style="list-style-type: none">• Replace by improved parts• Tighten• Replace/tighten	→ UWE Viking X3M Maintenance Instructions Prd0268E01en → Van Hool SB1075
3. Interior too hot	<ul style="list-style-type: none">• Valve contains faulty parts• Water valve stuck open • Air supply to actuator housing blocked • No Sytronic signal• Thermostat faulty	<ul style="list-style-type: none">• Replace by improved parts• Disassemble, clean, replace seals as necessary• Clean solenoid valve• Clean banjo bolt, replace old throttle insert by latest screw-in model• Check wiring• Replace	→ UWE Viking X3M Maintenance Instructions Prd0268E01en → Van Hool SB1075
4. Interior Too cold	<ul style="list-style-type: none">• Valve contains faulty parts• Water valve stuck/ closed • Heating system shut-off valves (partially) closed• Air in heating system• Air restrictor/solenoid valve blocked• Circulation pump O/S• Auxiliary heater O/S• No Sytronic signal• Thermostat faulty	<ul style="list-style-type: none">• Replace by improved parts• Disassemble, clean, replace seals as necessary• Open • Bleed• Clean • Check/repair• Check/repair• Check wiring• Replace	→ UWE Viking X3M Maintenance Instructions Prd0268E01en → Van Hool SB1075

NOTE: All water valves are of the normally open (NO) type
All solenoid valves are of the normally closed (NC) type

Faulty parts (obsolete)	Improved parts (install)
Valve actuator housing w/ two Allen bolts	Valve actuator housing w/ four Allen bolts
Copper banjo bolt washers/O ring	Bonded seals
Banjo bolt with throttle glued/ O ring type insert	Banjo bolt with screw-in type throttle insert

SB1075A ATTACHMENT 2 - UWE X3M Water valve changes made and corresponding identification marks stamped on the valve body
(status October 21st 2002)

Reason /Source	Measure/Modification	Mark*	As from
Water/Glycol leakage (A)	O-rings with thicker section fitted. Surface treatment changed. Valve body color changed from black to plain metal	Plain metal	-
Air leakage	New reinforced air cylinder introduced. Four Allen mounting screws instead of two.	2	11.09.00
Air throttle - Hammer	Air supply throttle introduced in solenoid valves	3	11.21.00
Water/Glycol leakage (B)	X-ring added to seal the piston rod	5	12.21.00
Product change	New supplier of piston rods. No changes made	10	03.08.01
Product change	Cast flange connections dia 28 mm	11	03.20.01
Product improvement	Coil spring reinforcement for air hose	No	04.01
Product change	Cast blind flanges	13	04.04.01
Product improvement	Seal and groove modified	14	05.03.01
Product change	Cast flange connections dia 35 mm	15	05.10.01
Product improvement	EPDM O-ring for air supply throttle changed to Viton	15	05.10.01
Product improvement	Silicone O-rings between the valve blocks changed to EPDM	15	05.10.01
Product improvement	Screw-in model air throttle introduced. Makes O-ring redundant	17	07.02.01
Product improvement	New EPDM main seal introduced. Old glass fiber reinforced PTFE seal obsolete.	19	08.01.01
Product improvement	Cast flange connections with dia 22 mm introduced	20	08.09.01
Product improvement	New piston shaft supports introduced.	23	10.26.01
Product improvement	O-ring, upper valve block connection: quality changed to EPDM	27	01.14.02
Product improvement	O-ring, lower valve block connection: quality changed to EPDM	31	03.08.02

(*) Marks other than the ones listed mean "New production month" without any modifications.

SB1075A - ATTACHMENT 3 - UWE / VAN HOOL Part number cross-reference list

UWE PART #	VH PART#
11871	VH 10704259
11872	VH 10702225
11898	VH 10761522
13301	VH 10761523
13767	VH 10795713
14102	VH 10702242
14107	VH 10694862
14108	VH 10694859
14463	VH 10706808
14480	VH 10713631
14487	VH 10733951
14489	VH 10733953
14490	VH 10733952
14552	VH 10795726
14581	VH 10704256
14817	VH 10783587
14818	VH 10704264
14819	VH 10761519
15347	VH 10795702
15348	VH 10795704
15496	VH 10795715
15794	VH 10761525
15854	VH 10751624
16286	VH 10850508
16287	VH 10850507
16589	VH 10795707
16590	VH 10795711
16591	VH 10794054
16592	VH 10795700
16593	VH 10795694
16667	VH 10795722
16668	VH 10795723
16669	VH 10795724
16670	VH 10795725
16671	VH 10794048
16672	VH 10794050
16673	VH 10794040
16674	VH 10794042
69215401116	VH 10761513
69513311103	VH 750596519
69631160909	VH 660505962

VH PART#	UWE PART #
VH 10694859	14108
VH 10694862	14107
VH 10702225	11872
VH 10702242	14102
VH 10704256	14581
VH 10704259	11871
VH 10704264	14818
VH 10706808	14463
VH 10713631	14480
VH 10733951	14487
VH 10733952	14490
VH 10733953	14489
VH 10751624	15854
VH 10761513	69215401116
VH 10761519	14819
VH 10761522	11898
VH 10761523	13301
VH 10761525	15794
VH 10783587	14817
VH 10794040	16673
VH 10794042	16674
VH 10794048	16671
VH 10794050	16672
VH 10794054	16591
VH 10795694	16593
VH 10795700	16592
VH 10795702	15347
VH 10795704	15348
VH 10795707	16589
VH 10795711	16590
VH 10795713	13767
VH 10795715	15496
VH 10795722	16667
VH 10795723	16668
VH 10795724	16669
VH 10795725	16670
VH 10795726	14552
VH 10850507	16287
VH 10850508	16286
VH 660505962	69631160909
VH 750596519	69513311103

SB1075A - ATTACHMENT 4 - UWE X3M watervalue – Included service literature

UWE Reference	Date	Subject	# P
Prd0099E06en	-	Product & installation sheet - UWE Valve system Viking X3M	5
Prd0268E03en	02-24-2003	Viking X3M Maintenance Instructions	14
Prd0266E01en	04-22-2002	Viking X3M Spare Parts	5
Prd0197E02en	12-19-2002	Product news – New solenoid Valve and Coil	1
Prd0267E01en	04-22-2002	Viking X3M Loose Spare Parts	8



Product & Installation sheet

UWE Valve system Viking X3M

PRD0099E06en

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 benefits for the system are the low flow resistance, low weight and its 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 chosen. 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. The heating circuit water then flows back to the circuit return connection, and then back to engine via main return connection. The modules can be combined as described below.

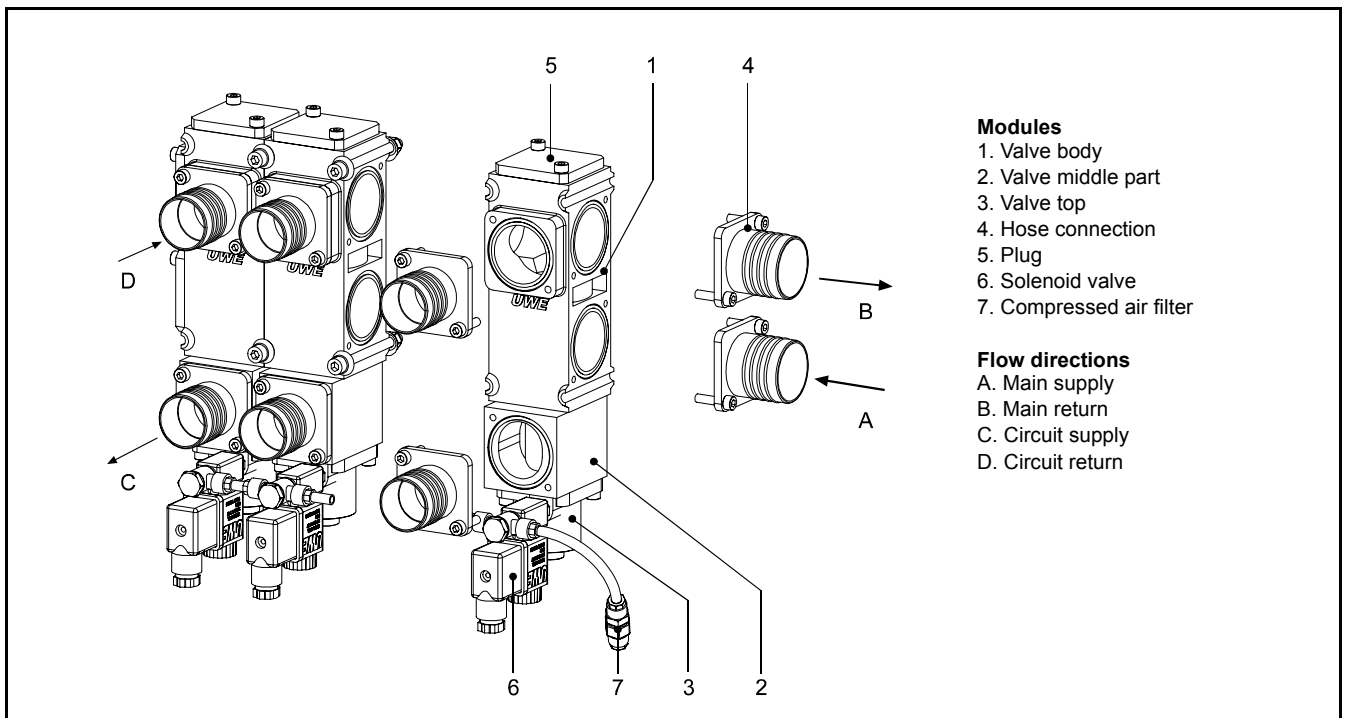
Valve body

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 auxiliary heater). Connections can be mounted in different ways and in different dimensions, see technical data for further information.



Valve middle part

This part is equipped with a feed line to the heating circuit. The middle part can be rotated in steps of 180°, the end parts in steps of 90°. 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 180°, the end parts in steps of 90°.

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

Electric characteristics

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

Material

Valve body, middle	Aluminium
Valve top	zinc-base alloy

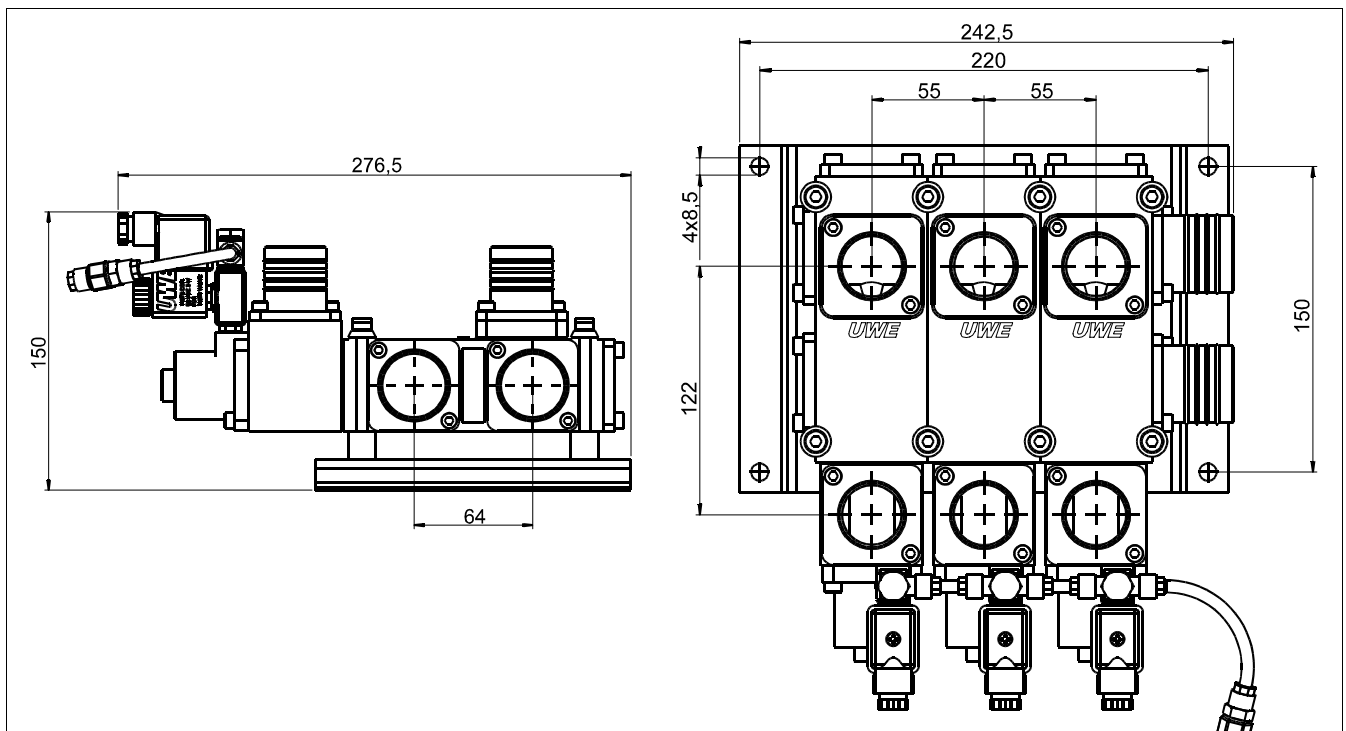
Seat sealing, water main	EPDM
Seat sealing, water by-pass	Reinforced teflon

Media

Glycol/Water mixture	50% ethylene/ propylene
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Performance and limitations

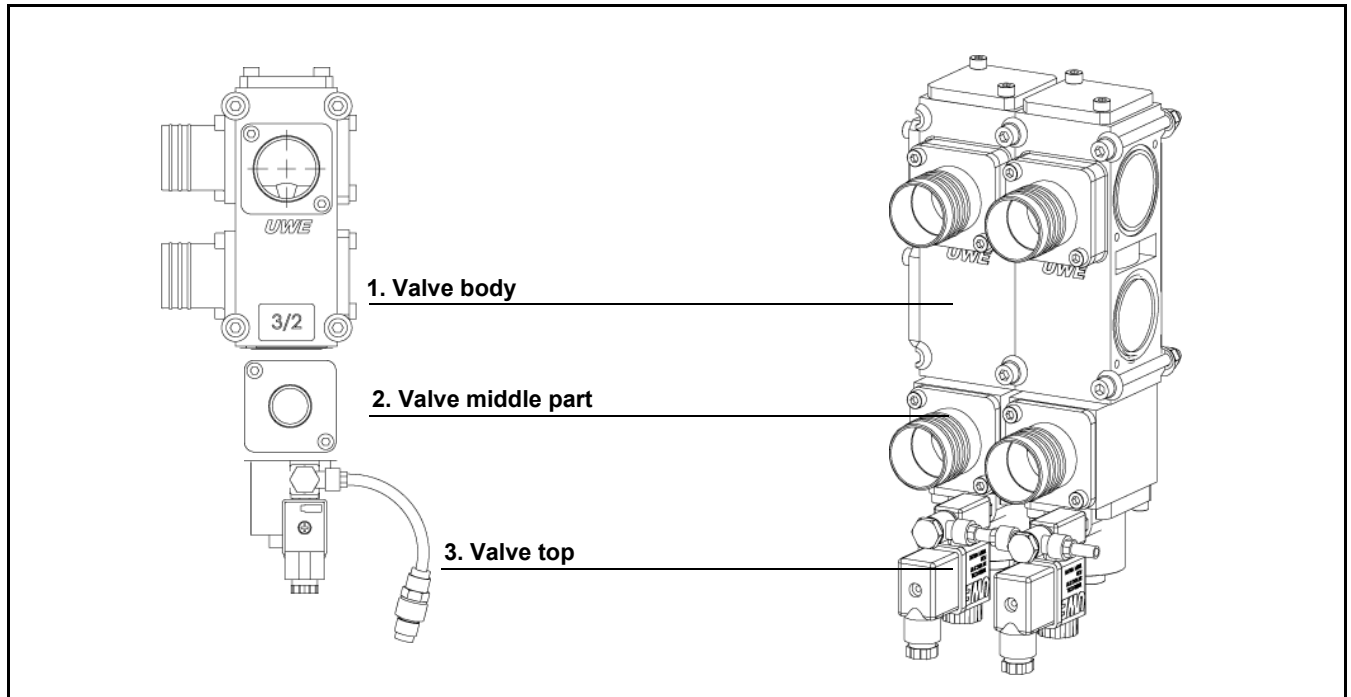
Working pressure range, water	0-2 bar
Max pressure drop, water	1 bar
Required air pressure	5-10 bar
Media temperature range	-40C to +90C
Ambient temperature range	-40C to +90C

Dimensions of a typical valve block

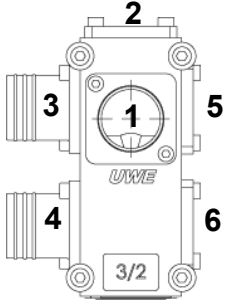

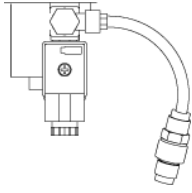
Product range, complete valve blocks

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.

Overview of the modules



Possible variants of the modules

1. Valve body	2. Valve middle part	3. Valve top
 <p>Options:</p> <p>A. Function</p> <ol style="list-style-type: none"> 1. With by-pass 2. Without by-pass <p>B. Connections according to figure above:</p> <ol style="list-style-type: none"> 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). 	 <p>Options:</p> <p>A. Possible to rotate connection:</p> <ol style="list-style-type: none"> 1. Top connection 2. Left connection (left end only) 3. Right connection (right end only) 4. Bottom connection <p>B. Dimension of connection</p> <ol style="list-style-type: none"> 1. Ø22, Ø28 or Ø35. 	 <p>Options:</p> <p>A. Select solenoid valve:</p> <ol style="list-style-type: none"> 1. Normal open 2. Normal closed

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 the documentation accompanying the product before starting installation work.

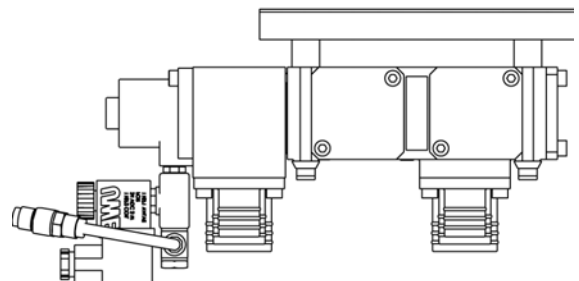
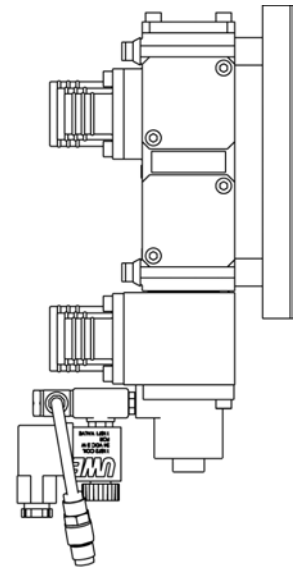
The correct function and performance of the product are only guaranteed on condition that the instructions given in this document are strictly followed.

Installation instructions:

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



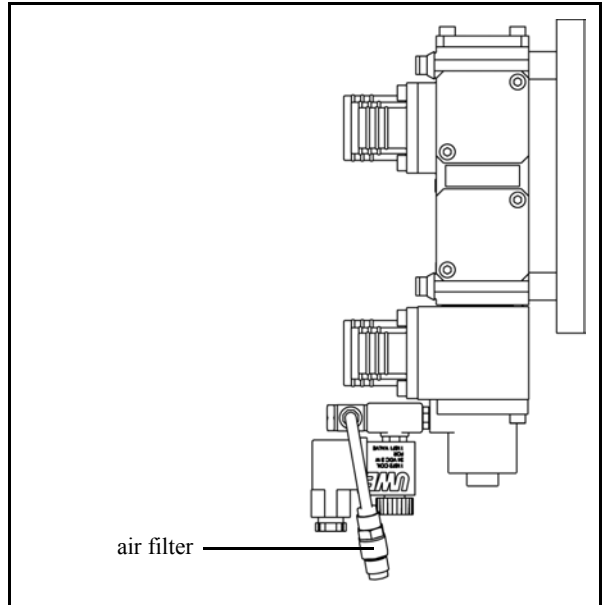
If you not mount according to figure right, there is risk of circulation problems!



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 water may trickle on hoses down to the valve plate.
3. Make sure that the Viking X3M is fitted in such a way as to enable service and maintenance.
4. 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.



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



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



6. Finally connect all cable contacts to the coils.
7. After mounting check both air side and water side for leakages, according to coachbuilder instructions.

Acceptable medium and air quality

Medium	Water/glycol mixture
Compressed Air	Dried air (no alcohol/oil)
Exterior (for cleaning)	Dry cleaner/mild soap

UWE X3M WATER VALVE

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Introduction

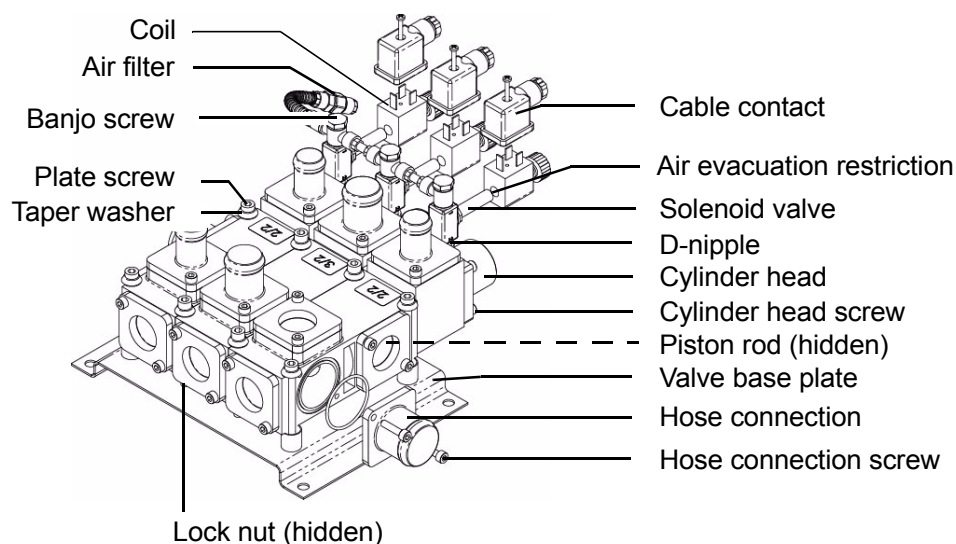
This document deals with fault finding and provides instructions to replace valve module as well as piston rod. It is important that the jobs are performed by trained personnel to avoid leakages etc.



The maintenance can be performed on condition that the test procedures on page 12 are performed after finished maintenance.

Definitions

The following designations are used in this document:



Fault finding procedures

Type of fault

The instructions below describe recommended procedures when the valve doesn't open or close, i.e. it is too cold or too hot in the bus.

Normally open or normally closed?

Before starting the fault finding check if the water valve is of the type normally open or normally closed. If you are unsure, check the colour of the solenoid valve:

- dark green, black or silver gives the function normally closed water valve
- gold gives the function normally open water valve

Instructions

1. If you have a normally open water valve set the climate control to OFF.
2. If you have a normally closed water valve set the climate control to ON and make sure that heat is required.
3. Check that you have compressed air to the valve plate, if not check the air filter (replace if required).
4. Check that there is voltage to the coil, if not troubleshoot the 24V system including cable contacts.
5. Slowly remove and put back the coil from the solenoid valve repeatedly and listen:

- if there is compressed air sound but with no valve function, there is a valve fault; replace the piston rod.

- if there is a click sound but no air sound the solenoid is OK, but with a Banjo and/or air evacuation restriction fault. Replace the Banjo fitting and/or air evacuation restriction (located on the top of the solenoid valve).

- if there is no sound, check the solenoid and the coil (replace if required).

General mounting instructions

Tightening torque

These torques shall be followed:

M4 bolt and nuts: 2,2 Nm

M5 bolt and nuts: 4,3 Nm

M6 bolt and nuts: 6,5 Nm

Precautions and general mounting instructions

These precautions must always be observed when working with the X3M Valve plate.



When replacing O-rings and Banjo screws always grease with silicone grease before mounting.



When replacing a solenoid valve always use suitable sealing compound on the D-nipple to avoid air leakage.



Handle the Banjo screw and solenoid valve with extreme care. These parts can easily be damaged.



Always perform a check after maintenance. Check for correct operation and that there are no leakages.

Valve module replacement instructions

The instructions below describe how to replace a valve module. It is extremely important that the instructions are followed carefully to avoid damage and faulty assembly, which can cause leakage and faults during operation.

Spare part kits

These spare part kits are necessary for this replacement

Replacement kit 2/2 (part no. 16592) contains:

- Valve module 2/2, complete including head and piston rod
- Taper washers (8 pcs)
- Nuts (4 pcs)

or

Replacement kit 3/2 (part no. 16593) contains:

- Valve module 3/2, complete including head and piston rod
- Taper washers (8 pcs)
- Nuts (4 pcs)

and

O-ring kit (part no. 16591) contains:

- O-rings for 1 valve module (7 pcs).

Instructions



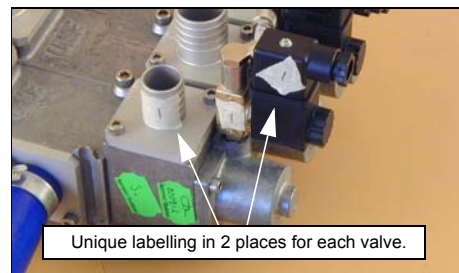
CAUTION: Do not start working on the valve plate before the water temperature has decreased below 38°C (100°F).

To replace the valve module, follow the instructions below:

1. Label the cable contacts and valve plate so that there is no confusion during assembly.



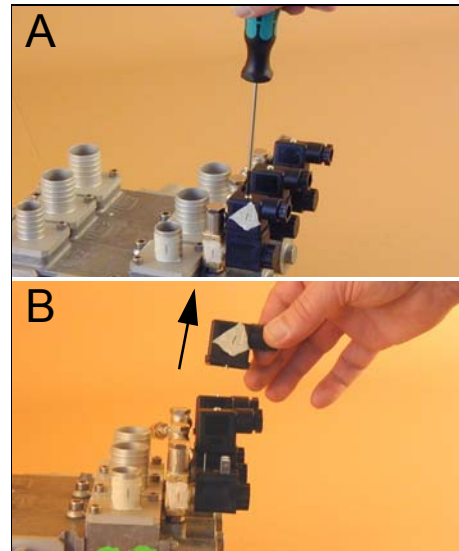
If these parts are switched during assembly the valves will not work properly!



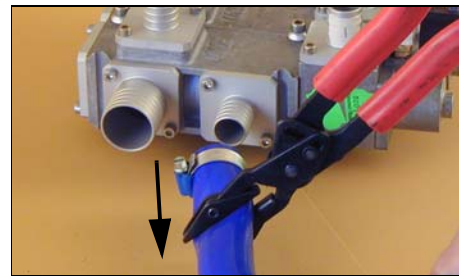
2. Release the cable contacts from the coils by unscrewing the centre screw (A) with a Phillips screwdriver and lift the cable contact upwards (B).



Let the coil remain on the solenoid valve to protect the fragile solenoid.



3. Turn off the water supply to the Viking X3M by closing the manual valves and/or using hose pinching pliers (see illustration). Withdraw the hoses.



4. Release the air connection by unscrewing the air filter.
5. Unscrew the four base plate screws and remove the X3M from the bus.
6. Unscrew the four outer screws.
Discard the taper washers and lock nuts.



- 7.** Unscrew the inner screws necessary to release the faulty valve module

Discard the taper washers and lock nuts.



- 8.** Withdraw the faulty valve module



- 9.** Faulty valve module: Remove the hose connection at the solenoid valve



- 10.** Faulty valve module: Unscrew the solenoid valve



- 11.** New valve module: Mount the solenoid valve and hose connection on the new valve module.

Note! When fitting the solenoid valve use sealing compound.

- 12.** Replace the O-rings between the valve modules and join the new module.

Note: Grease the O-rings with silicone grease before mounting!

Note! Use the taper washers and lock nuts included in the kit!



- 13.** Take the rest of the hose connections one by one from the faulty valve module and mount on the new one.

IMPORTANT: The O-rings must always be replaced. Grease the O-rings with silicone grease before mounting!

Note! When mounting the valve modules on the base plate use the taper washers (grease before mounting) and lock nuts included in the kit!



- 14.** Check for correct assembly and that the test procedure is completed, according to the test procedure instruction, page 12.

Piston rod replacement instructions

The instructions below describe how to replace a piston rod kit for the Viking X3M valve plate. It is extremely important that the instructions are followed carefully to avoid damage and faulty assembly, which can cause leakage and faults during operation. The

Spare part kits

These spare part kits are necessary for this replacement

Replacement kit 2/2 (part no. 15348) contains:

- Piston rod 2/2
- O-ring

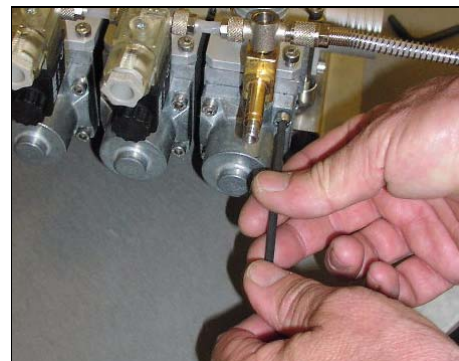
or

Replacement kit 3/2 (part no. 15347) contains:

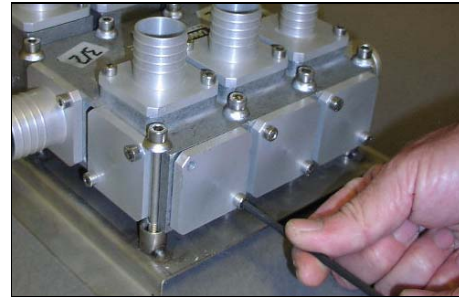
- Piston rod 3/2
- O-rings (2 pcs.)

Instructions

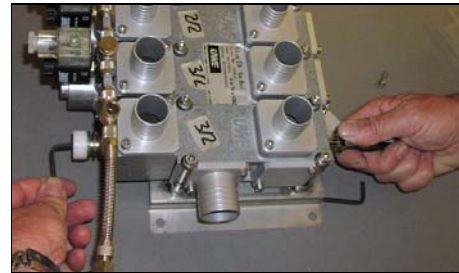
1. Follow step 1-5 of Valve module replacement instructions.
2. Unscrew the Banjo screw and remove coil/cable contact from the faulty valve module
3. Unscrew the four socket head cap screws and remove the cylinder head.



4. Only applies to the 3/2 valve: Unscrew the two socket head cap screws and remove the dummy plate (on the opposite end of the module).



5. Use a socket head cap key to hold the cylinder end and unscrew the lock nut at the valve end



6. Release the piston rod from the valve module head.



7. Remove the old O-ring and install a new one

Note: Grease the O-rings with silicone grease before mounting!

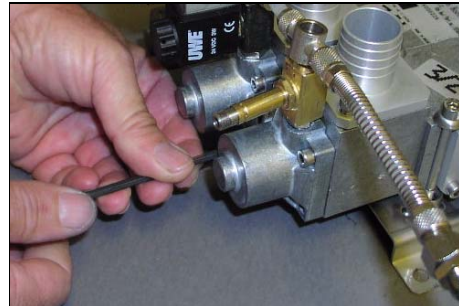


8. Install the new piston rod in the valve module head.

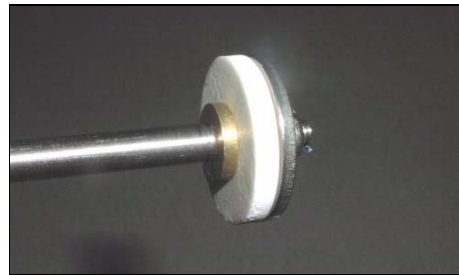


- 9.** Mount the cylinder head.

TIP! The 3/2 piston rod cylinder head only needs to be tightened with one screw (the cap needs to be opened later).



- 10.** Only applies to the 3/2 valve: Find the seal washers and install them on the piston rod as shown in figure)



- 11.** Only applies to the 3/2 valve: Install the seal washers and screw the lock nut a few turns by hand.



- 12.** Only applies to the 3/2 valve: Remove the cylinder head. Use a socket head cap key to hold the cylinder end and tighten the lock nut.



- 13.** Only applies to the 3/2 valve: Remount dummy plate, hose connection and cylinder head.

14. Remount the Banjo screw, see note below.



**Grease the Banjo screw O-ring
with silicone grease before
mounting.**

15. Check for correct assembly and that the test procedure is completed, according to the test procedure instruction, last page.

Test procedures after replaced piston rod/valve module

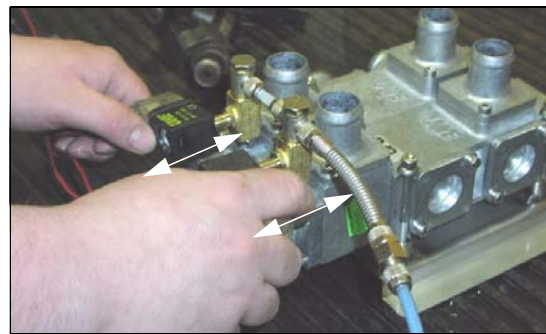
This test concerns test after replaced piston rod. If you only have replaced the valve module you can exclude point 4 and 8.

1. Check that all screws are tightened with correct torque, see page 3. Correct valves parts mounted, i.e. 3/2 or 2/2 valves, NC or NO solenoid valves, hose connections according to specification.
2. Check that the valve plate is free from dust and dirt.
3. Connect compressed air to the air-side and pressurize with 8 bar.

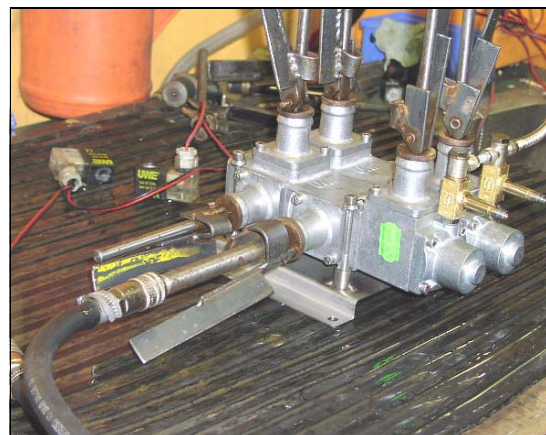


4. Put a live (24VDC) coil onto the solenoid valve and check the valve movement.

Release the coils when the test is finished.



5. Plug all water connections except one where you connect **compressed air**, 2 bar (see figure right).

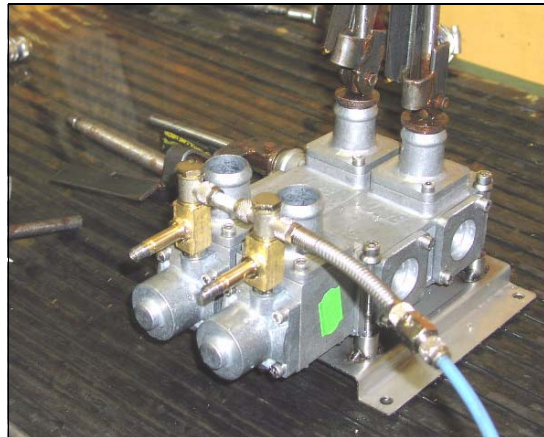


6. Lower the valve block into water and check for leakages. The valves has to be absolutely tight, the only leakage accepted is from the cylinder head drain hole (max 5 bubbles/second).

IMPORTANT! Also turn the valve plate and check for air leakages.



7. The next step is to check whether the valve seat is properly tight inside the valve module. Lift the valve plate up from the water and release the air pressure from the water connection. Also release the plugs close to the solenoid valves according to figure.



8. Now be ready with live 24VDC coils and connect 1 bar **water pressure** to the water connection.

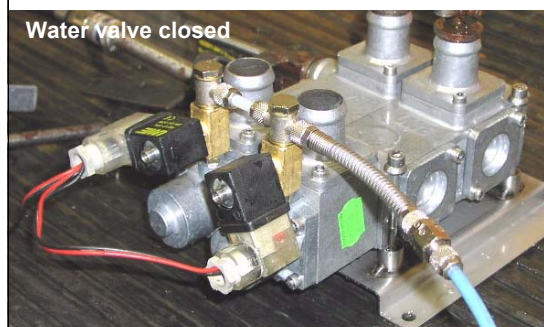
For NC water valves:

The valve must be tight when the coil **not is** connected to the solenoid.

For NO water valves:

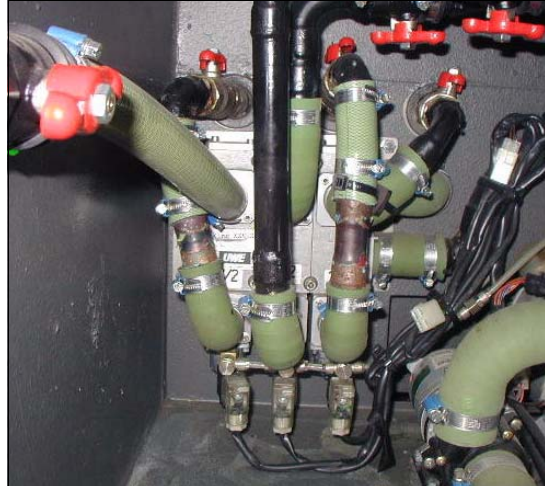
The valve must be tight when the coil **is** connected to the solenoid.

Wait for the water coming up through the water connections and the close the valve. The leakage shall be < 3 cl/min.



9. Release the plugs and air connection. Agitate the valve plate and let it dry in a warm place with open connections for at least 24 hours.
10. Now the valve plate is ready for mounting in the bus.

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



Date	Document number	Product	Customer
020422	Prd0266E01en	Viking X3M Spare Parts	Standard

Introduction

This document describes 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):

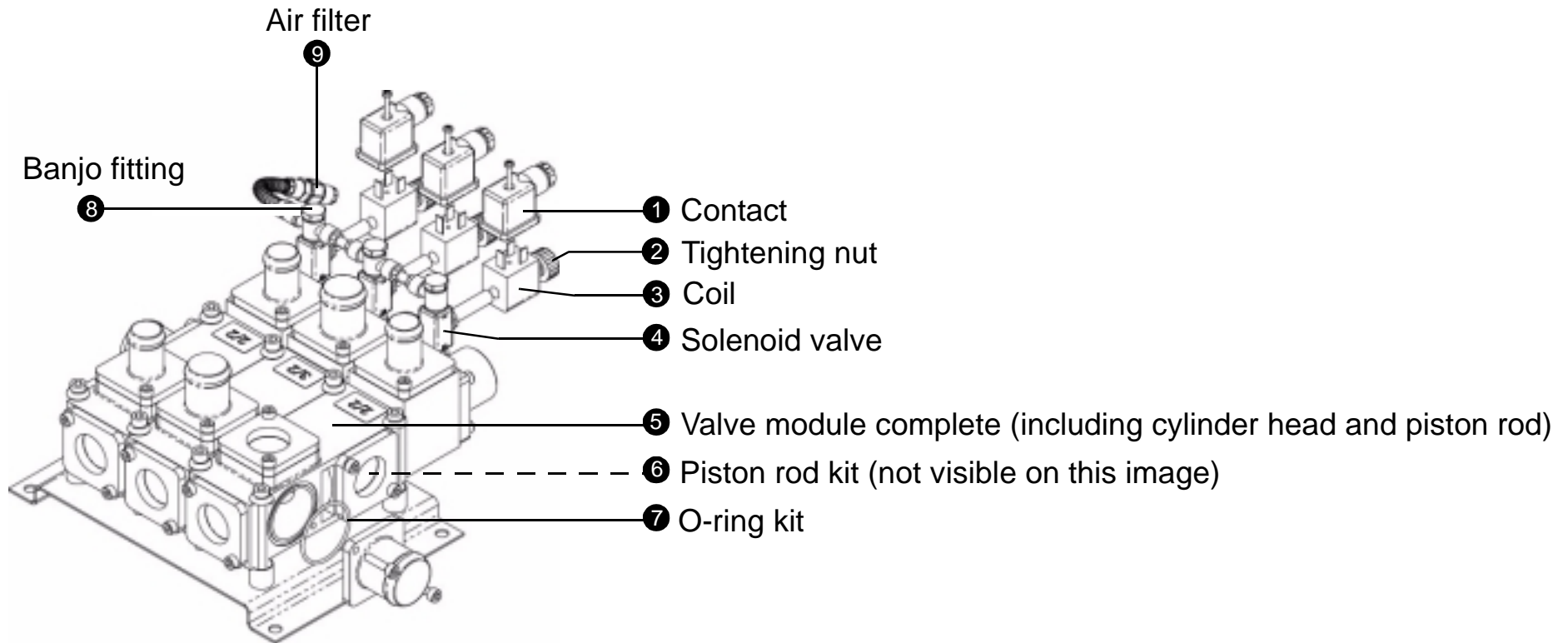










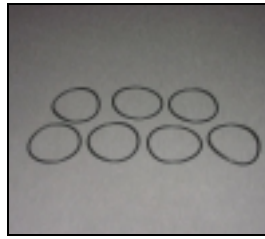





Table of Viking X3M Spare parts

Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
①	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
②	Tightening nut (available in one variant)	Identification: Black nut in plastic performance	11898		• Tightening nut	For installation instructions see document PRD0268
③	Coil (available in one variant)	Identification: Marked with "UWE 24 VDC 3W"	11872		• Coil UWE 24V DC 3W	For installation instructions see document PRD0268

Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
4	Solenoid valve (available in two variants)	Normal open Identification: Black coloured (earlier models silver coloured)	14480		• Solenoid valve 3/2 NO UWE 1/8" incl air evacuation restriction	For installation instructions see document PRD0268
		Normal closed Identification: Gold-coloured	11871		• Solenoid valve 3/2 NC UWE 1/8" incl air evacuation restriction	
5	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).	16593		<ul style="list-style-type: none"> • Valve module 3/2, complete including head and piston rod • Taper washers (8 pcs) • Nuts (4 pcs) 	For installation instructions see document PRD0268
		2/2 Not by-pass Identification: Marked with 2/2 (not equipped with by-pass valve).	16592		<ul style="list-style-type: none"> • Valve module 2/2, complete including head and piston rod • Taper washers (8 pcs) • Nuts (4 pcs) 	For installation instructions see document PRD0268

Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
6	Piston rod kit (available in two variants)	3/2 By-pass Identification: Equipped with two valve seals	15347		<ul style="list-style-type: none"> • Piston rod • O-ring (2pcs) 	For installation instructions see document PRD0268
		2/2 Not by-pass Identification: Equipped with one valve seal	15348		<ul style="list-style-type: none"> • Piston rod • O-ring 	For installation instructions see document PRD0268
7	O-ring kit (available in one variant) Suitable for hose connections and internal mount.	Identification: Black colour	16591		<ul style="list-style-type: none"> • O-rings for 1 valve module (7 pcs). 	For installation instructions see document PRD0268

Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
8	Banjo fitting kits (available in two variants)	Single connection (delivered with one air filter) Identification: Banjo house with one air connection	16589		<ul style="list-style-type: none"> • 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		<ul style="list-style-type: none"> • Banjo house with double connection • Banjo screw including inlet air restriction • Washers (2pcs) • Air filter 	For installation instructions see document PRD0268
9	Air filter (available in one variant)	Identification: Two air hose connections	14463		<ul style="list-style-type: none"> • Air filter with connections 6/4x6/4 	For installation instructions see document PRD0268

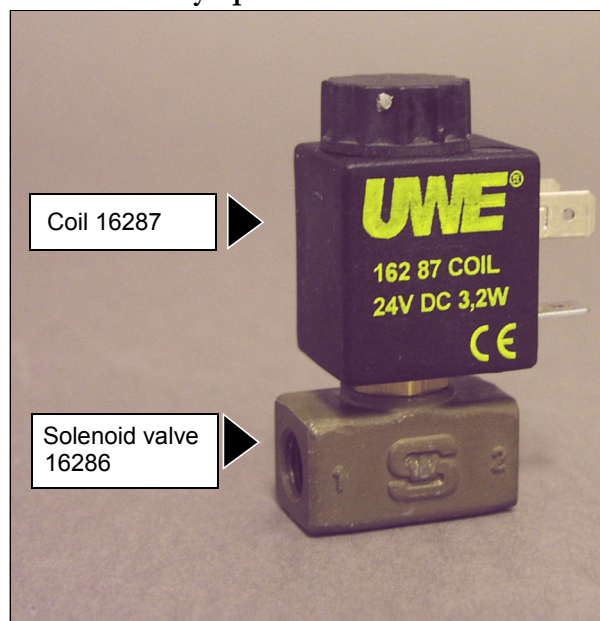
New solenoid valve and coil

The normally open solenoid valve is now replaced by a new one, 16286. For this new valve there is also a new coil, 16287 (3.2 W), introduced. This new coil should be used only with the new valve. The old 3W coil 11872 must not be used with the new solenoid valve 16286 (function can not be guaranteed). The reason for not using the 16287 with the NC valve 11871 is the higher price. The new valve/coil was introduced week 36, 2002.

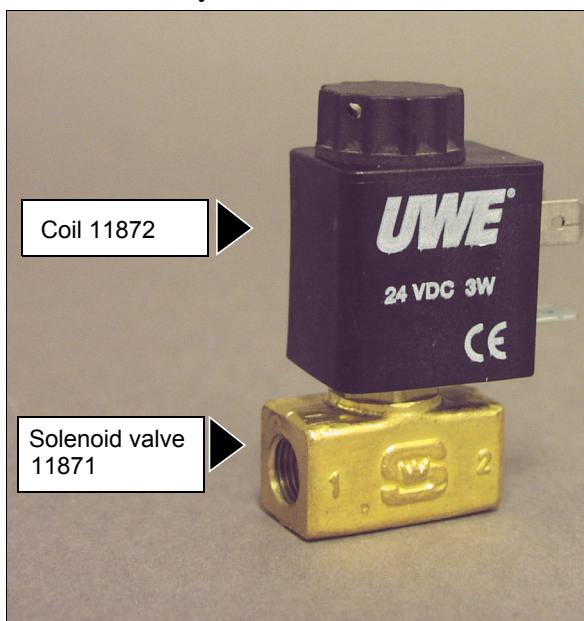
Possible combinations

Below you see the possible combinations:

Normally open solenoid valve

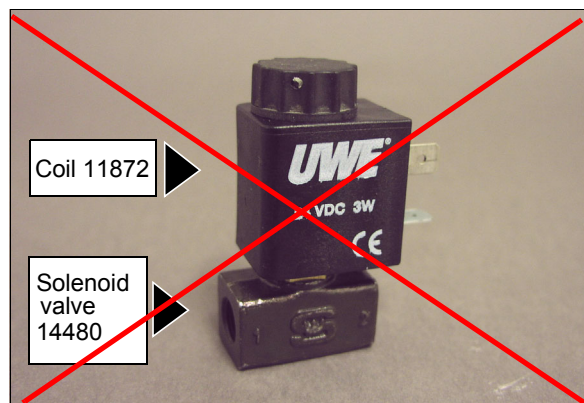


Normally closed solenoid valve



Replaced normally open solenoid valve

Normally open solenoid valve (old version)



Introduction

This document is a complement to the Viking X3M Spare Parts document (Prd0266) to make it possible to order loose spare parts. Note that the parts/kits included in Prd0266 not are included in this document.

Loose spare parts overview

Figure: The numbers relate to the loose spare parts table (page 2-8):

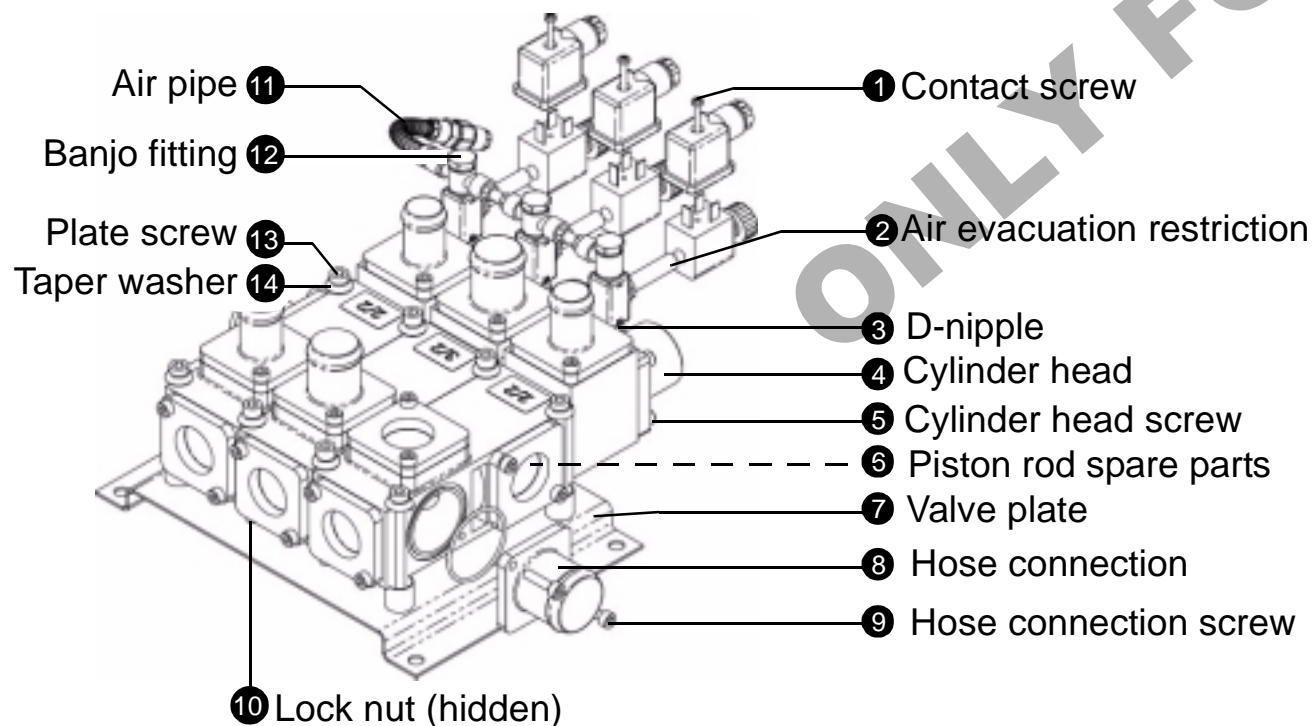





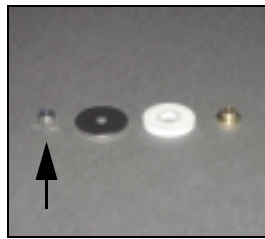
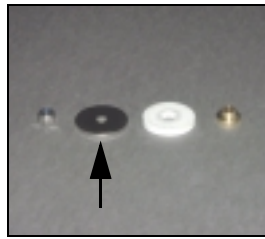
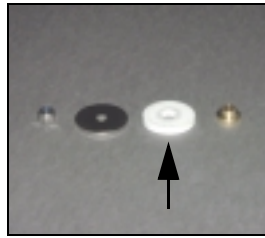
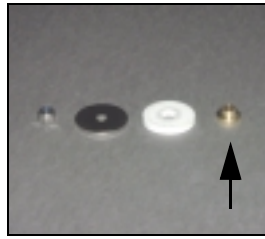
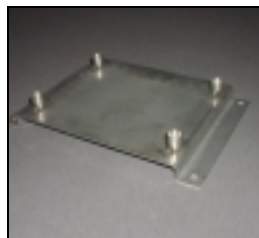







Table of Viking X3M Loose Spare parts

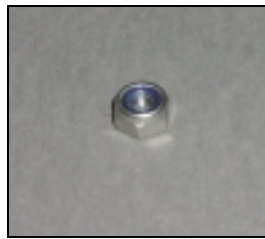

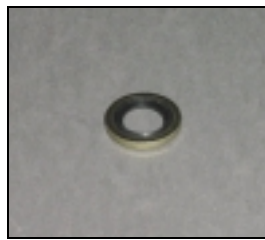
Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
①	Contact screw (available in one variant)	Identification: Screw 23 mm	13767		• Screw M3x23	Supplied in specific amount according to offer.
②	Air evacuation restriction (available in one variant)	Identification: Brass performance screw to be inserted into the solenoid valve.	15496		• Air evacuation restriction M5	Supplied in specific amount according to offer.
③	D-nipple (available in one variant)	Identification: Double nipple mounted between the cylinder head and the solenoid valve.	6951 3311 103		• D nipple 1/8" brass	Supplied in specific amount according to offer.



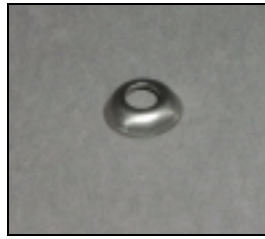
Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
4	Cylinder head (available in one variant)	Identification: Cylinder with four screw holes. Earlier performance with two holes.	16673		• Cylinder	Supplied in specific amount according to offer.
5	Cylinder head screw (available in one variant)	Identification: Socket head cap screw for cylinder head	16674		• Screw for cylinder, M5x70	Supplied in specific amount according to offer.

Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
6	Piston rod spare parts (four parts available)	Identification: Lock nut M4	16667		• Lock nut M4-A2 DIN 985	Supplied in specific amount according to offer.
		Identification: Washer	16668		• Seal holder 4	Supplied in specific amount according to offer.
		Identification: Seal, white performance	16669		• Valve seal, small	Supplied in specific amount according to offer.
		Identification: Seal holder	16670		• Seal holder 3	Supplied in specific amount according to offer.

Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
7	Valve plate (available in three sizes)	Identification: Valve plate for two valve modules	14108	-	• Plate Viking X3M x2	Supplied in specific amount according to offer.
		Identification: Valve plate for three valve modules	14107		• Plate Viking X3M x3	Supplied in specific amount according to offer.
		Identification: Valve plate for four valve modules	14552	-	• Plate Viking X3M x3	Supplied in specific amount according to offer.

Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
8	Hose connection (available in four dimensions)	Identification: Hose connection Ø22 mm with two screw holes	14817		• Hose connection Ø22	Supplied in specific amount according to offer.
		Identification: Hose connection Ø28 mm with two screw holes	14818		• Hose connection Ø28	Supplied in specific amount according to offer.
		Identification: Hose connection Ø35 mm with two screw holes	14819		• Hose connection Ø35	Supplied in specific amount according to offer.
		Identification: Dummy plate with two screw holes (no hose connection)	15854		• Dummy plate	Supplied in specific amount according to offer.
9	Hose connection screw (available in one variant)	Identification: Socket head cap screw	14487		• Socket head cap screw MC6S 5x16 A4	Supplied in specific amount according to offer.

Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
10	Lock nut (available in one variant)	Identification: Lock nut	6921 5401 116		• Lock nut M6 fzb	Supplied in specific amount according to offer.
11	Air hose with spring and overflow nut (two parts available)	Identification: Air hose 85 mm white	13301	-	• Air hose 6/4 L=85 mm	Supplied in specific amount according to offer.
		Identification: Overflow nut and spring	15794	-	• Overflow nut and spring	Supplied in specific amount according to offer.
12	Banjo fitting parts (two parts available)	Identification: Banjo screw with built-in air inlet restriction	16671		• Banjo screw with air inlet restriction	Supplied in specific amount according to offer.
		Identification: Banjo washer with rubber inner ring. Note earlier modules were without rubber.	16672		• Washer for Banjo	Supplied in specific amount according to offer.

Pos	Component	Variants/identification	Item no	Photo	Consists of	Remark
13	Valve plate screw (available in two variants)	Identification: 70 mm length socket head cap screw	14489		• Screw MC6S 6x70 A4	Supplied in specific amount according to offer.
		Identification: 80 mm length socket head cap screw	14490		• Screw MC6S 6x80 A4	Supplied in specific amount according to offer.
14	Taper washer (available in one variant)	Identification: Conic washer	14102		• Taper washer X3M	Supplied in specific amount according to offer.