



Service Bulletin No.1033

MODEL	: T2100 series
TYPE	: Service information
MANUAL & SECTION	: Maintenance Manual: Chapter 10 - HVAC System Spare Parts Manual: Section 7710-7713-Heating
DATE	: January 31st, 2000
SUBJECT	: To replace seals of Sonna 3-way water valve. To check operation of valve control motor.
CONDITIONS	: Service information only. Parts may be obtained from your nearest International Coach Parts Inc. dealer.

DESCRIPTION:

1. Sonna, manufacturers and suppliers of the T2100 Series' 3-way water valves have released a set of heavy-duty O-ring seals to replace the standard service kit. The new seals are made of HNBR synthetic rubber, which allows them to operate at much higher temperatures (130°C/266 °F) compared to the OE seals, the maximum operating temperature of which is 90 °C/194 °F. The new seals are also more resistant to mineral and synthetic oils, antifreeze, grease and transmission oil.

Description continued on next page.

PARTS

Always use genuine maintenance products and parts. Do not accept imitations!

Part No.	Description	Qty.
VH 10613590	3-way water valve with electric control motor, complete	1
VH 10537440	3-way water valve without motor	1
VH 10537442	Electric control motor with wire harness, base and housing	1
VH 10600113	Electric control motor with wire harness	1
VH 10695679	Seals, set	1
VH 757741302	Metering cylinder	NLA
VH 10534869	Motor housing	1
VH 10546528	Valve mounting bracket	1

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.

Continued from page 1.

2. Three-way water valves which are already equipped with the new seals have a number "5" stamped on the mounting flange.
3. The heavy-duty set has a part number, different from that of the previous service kit. The heavy-duty set can be further identified by the absence of a quad ring which has been replaced by an O-ring.
4. Sonna have also released a service procedure allowing repair and check of operation on the vehicle. Downtime and cost are thus reduced. A copy of this procedure is provided in attachment. It is supplemented by a Van Hool procedure to cut off the coolant supply to the valve, so that a minimum of coolant is lost during servicing.

SERVICE PROCEDURE:

!!! CAUTION!!!

**USE SAFE SHOP PRACTICES AT ALL TIMES.
READ ENTIRE PROCEDURE BEFORE BEGINNING WORK.**

1. Preparations:

1. Park the coach safely on a level surface, preferably on a service pit. Apply the parking brake, install wheel chocks, shut-down the engine and leave the battery master switch on. Put a "DO NOT OPERATE" tag on the instrument panel to prevent inadvertent starting.
2. Turn the driver's temperature selector knob counterclockwise to the zero position.
3. Switch-off and disconnect the combustion heater.
4. Allow coolant to cool down to approximately 35°C/95°F.
5. Close the gate valves (heating system shut-off valves).
 - T2140: the gate valve in the heating supply line is located behind the right hand engine compartment door; the one in the heating return line is accessible via the interior access trap above the transmission.

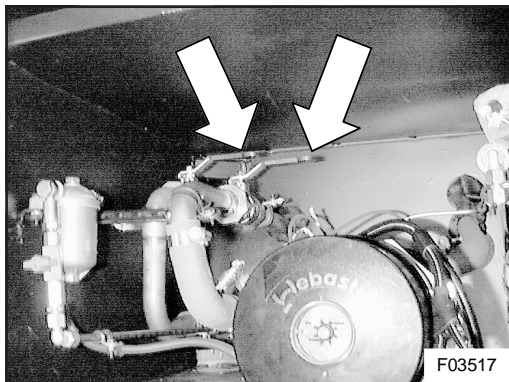


Figure 1: Location of gate valves in T2145 combustion heater compartment (valves in the "closed" position)

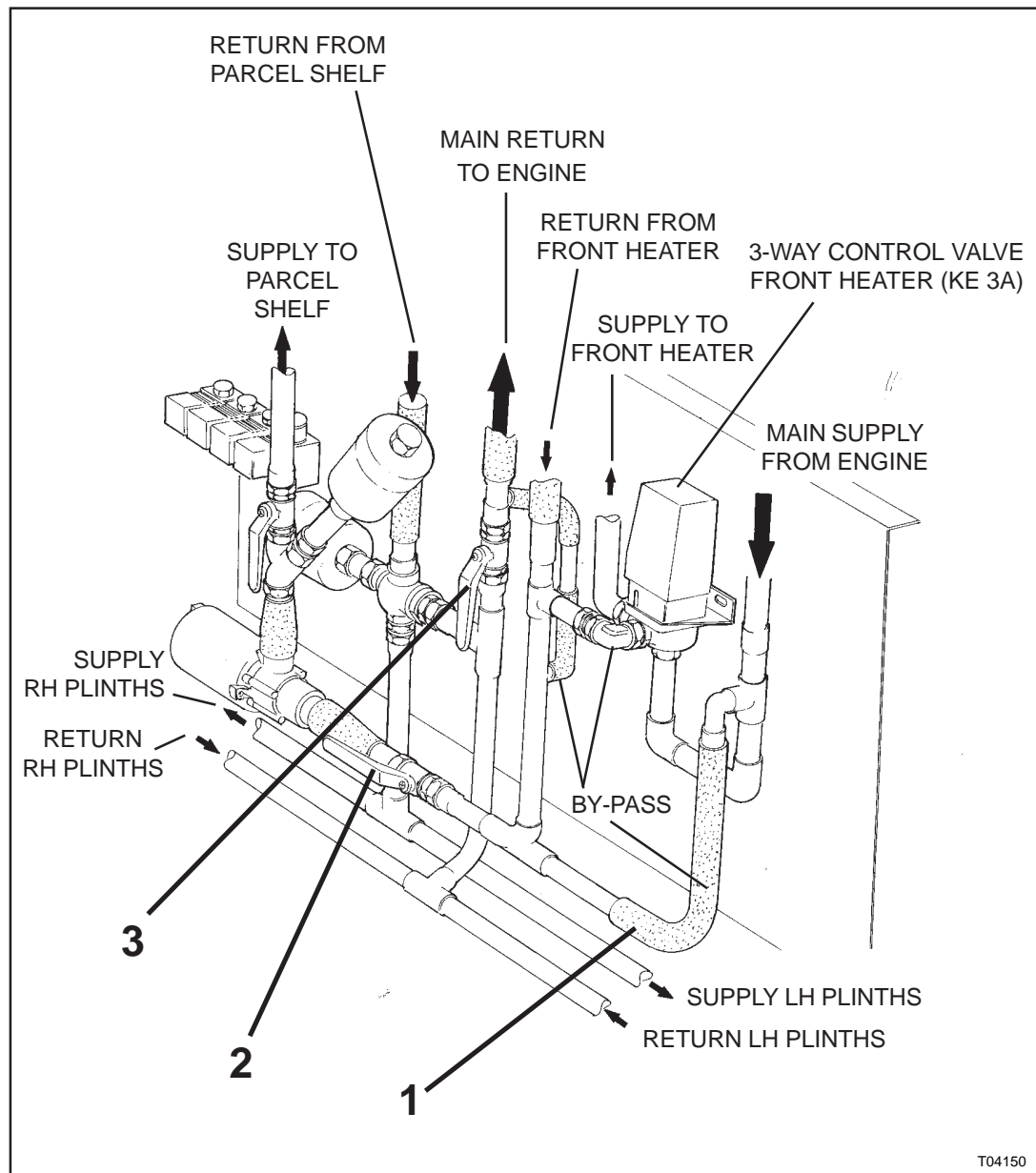


Figure 2: Heating system valve and pump panel. Engine main supply and return valves in the "open" position.

- T2145: both gate valves are located in the combustion heater compartment on the left hand side of the coach (see figure 1).
6. At the back of the luggage compartment, open the access door to the heating system valve and pump panel. Close the ball valves in the engine main supply (2, Figure 2) and return lines (3, Figure 2).
 7. Working underneath the coach, in front of the drive axle, attach a suitable hose to the drain pipe of the drip pan below the heating system valve and pump panel. Install a suitable clean container to catch approximately 3 gallons of coolant.

8. Undo the lower hose clamp of the engine main supply hose beneath the water valve (1, Figure 2). Remove the hose from its fitting carefully and allow coolant to drain.

2. To replace valve seals:

Refer to Sonna job instruction in attachment.

NOTE

To facilitate the timing of the valve motor to the valve, following pointers may be useful:

1. *When removing the valve motor and before disassembling the valve, always mark the position of the valve cylinder relative to the valve body, so the valve can be reassembled with the cylinder in its original position.*
2. *When the valve is closed, the port in the valve cylinder should face the by-pass port (see Figure 2).*
3. *New valve motors are always supplied in the "valve closed" position.*

3. To check the operation of the valve control motor:

Refer to Sonna "Inspection and aligning instructions - Electrical water valve" in attachment.

NOTE

To check that the valve is functioning properly, use a multimeter and measure the voltage between the following pins of the control box 8-pin connector

- *between pins #2 and #5 the voltage should read 4,5 V with the valve closed;*
- *between pins #2 and #5 the voltage should read 2,8 V with the valve open;*

4. To add coolant to the engine cooling and heating system:

1. With the lower hose of the engine main supply line refitted, and the hose clamp properly torqued, open the ball valves in the engine main supply (2, Figure 2) and return lines (3, Figure 2). Open the gate valves.
2. Refill the cooling system, referring to chapter 2 of the Maintenance Manual. Drained coolant may be recovered if it is not contaminated and meets the specifications in the Maintenance Manual.

3. While running the engine for about 20 minutes, check cooling system plumbing for leaks. Rectify if necessary.
4. Reconnect the combustion heater.
5. Check "all systems go" on the multifunction display (indicated by an asterisk on the bottom middle of the display).
6. Remove the wheel chocks and warning label on the instrument panel.
7. Remove drain pan and hose underneath the coach.
8. Shut down the engine.

Service procedure complete.

SERVICE INFORMATION:

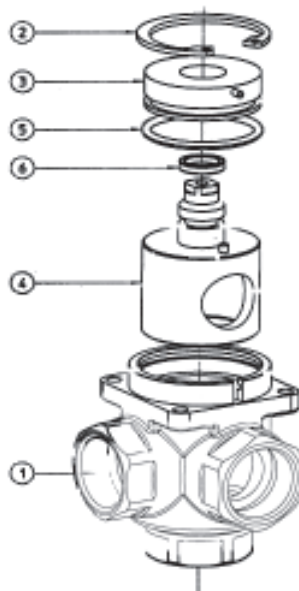
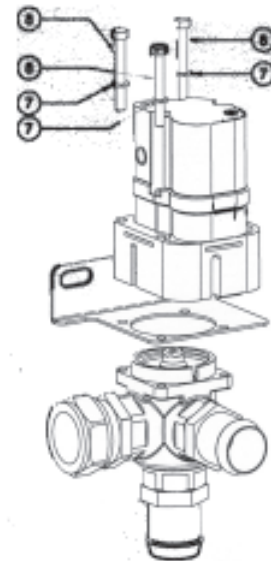
1. The new seals are directly interchangeable with the old, but only new seals should be used for service replacement.
2. Only new parts will be offered as service parts.
3. Part no. VH 757741302 (metering cylinder) will be no longer available (NLA) as a service part.

THIS PAGE HAS BEEN LEFT BLANK INTENTIONALLY

JOB INSTRUCTION

To replace seals at Sonna 3-way water valve

1. Drain the water system or pinch off the hoses at the watervalue, so that there's no loss of coolant.
2. Take precautions to prevent the valve the control motor from getting wet.
3. Turn the watervalue off by means of the water valve control knob in the vehicle.
4. Remove the 3x M5x40 bolts (see pos.8) and separate the control motor, together with the adaptor, from the water valve
5. Remove the snap ring (pos. 2).
6. Insert a M4x50 screw in the square head of the valve cylinder (pos.4)and carefully pull it along with the cylinder disc, (pos.3) out of the valve body (pos.1).
7. Separate the cylinder disc from the valve cylinder. The quardring (pos. 6) should be now visible.
8. Remove the quardring and clean the cylinder.
9. Carefully fit the replacement (HNBR) O-ring on the cylinder and check whether it's positioned correctly.
10. Remove the O-ring (pos.5) from the cylinder disc and clean the disc.
11. Carefully fit a new O-ring to the disc (pos.3) and check whether it's positioned correctly.
12. Grease the hole in the cylinder disc with a little grease and also lightly grease the outside of the cylinder disc, which contains the O-ring. **USE ONLY WATER SOLUBLE GREASE .**
13. Carefully place the cylinder disc (pos.3), with a rotary motion, on to the valve cylinder (pos.4) so that



the location pin falls into the curved slot of the disc. **Make sure that the**

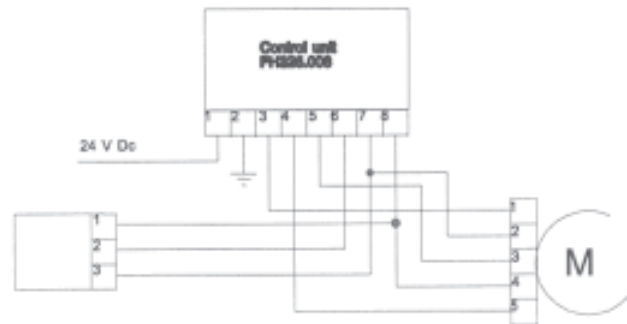
14. **O-ring isn't damaged and/or twisted.**
14. Put the valve cylinder (pos.4), including the disc (pos.3) in the valve body (pos.1) and take care that the roll pin in the disc edge falls into the slot of the body.
15. Refit the snap ring (pos.2) to the body and turn the water valve by hand to the closed position.
16. Remove the hose pinchers or, alternatively, fill the system with the correct coolant.
17. Using the control knob in the vehicle, turn open the water valve and check whether it's working properly

Part number of gasket set: FH214.022

Before you disassemble the watervalue you can inspect the electrical control system easily using a multimeter.

Locate the black control box with part number FH328.008 . At the 8-pin connector of this unit you can check as follows.

Between pins	1 and 2	Basic current of 18-28 volt Dc
	2 and 3	9-15 volt Dc (with watervalue open)
	2 and 4	9-15 volt Dc (with watervalue open)
	2 and 5	> 4.5 volt Dc (with watervalue closed)
	2 and 5	< 2.8 volt Dc (with watervalue open)
	2 and 7	10.5-12.5 volt Dc
	2 and 8	0.8-2.6 volt Dc



When you find different values, check the motor.

Remove the protection cap 5.

Attention:
DO NOT REMOVE THE WIRING HARNESS FROM THE MOTOR.
Motor and cable are one part!

When the motor is out of alignment it is possible to tune it correctly with a small screwdriver. Push the small screwdriver in hole **A** and turn the screwdriver one click left or one click right.

When the motor does not react to this, replace the motor with cable.

The part number of the motor with cable is FH330.004. (VH 10600113)

