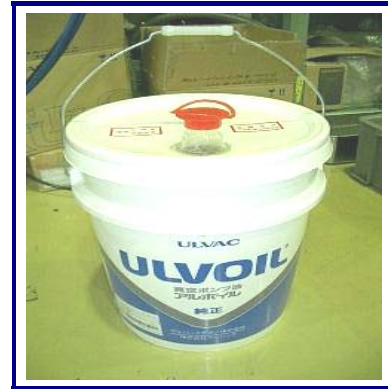


■How to change Oil■

1. Type of Oil

For the ULVAC VS series pumps (VS1501, VS2401), use the oil shown in the figure at right.

Type of oil : ULVOIL R-7 (genuine type)
Oil volume : 20L in pail can



2. Volume of Oil for VS1501 and VS2401

Item	Oil volume
Oil requirement Minimum volume	8 L
Oil requirement Maximum volume	10.5 L

3. Required Tools and Parts and Rear View of Pump

Parts	Specifications	Quantity	Rear view of VS1501 & VS2401
Oil pan	Container for receiving drain oil	1	
Oil	ULVOIL R-7 (standard) R-4 (for use in cold season)	9 to 10.5 L	
Oil pot	To fit the oil filling port	(1)	
Funnel	Size to fit the oil filling port (G1)	(1)	

4. Changing Oil

Step ① Prepare a container (oil pan) to receive drain oil under the oil drain plug (oil pan with a capacity of about 15 L)

Open the drain plug (drain valve) and drain oil from the pump.

Step ② Fill the pump with oil according to Step ④ of the “Easy Method of Overhaul” at right.



☞ If it is not easy to drain oil through the oil drain port, use the syringe for kerosene shown in the figure at right.
☞ If the drained oil contains foreign matter (deposit), proceed to “Easy Overhaul Method” at the right.



■Oil Level Gauge Injection Oil■

Oil shall be injected inside the Oil level gauge during operation. If the injection volume decreased, possibly sucked foreign agent might be clogged. Execute cleaning and washing including the lubrication route inside components and parts such as to repeat start/stop operation, clear any clog out of the injection hole using a wire like bar (smaller than $\Phi 0.8$) during the simple overhaul or conduct overhaul.

■Easy Method of Overhaul■

1. Safety Precautions

- ① For safety, turn off the main power before disassembling the pump.
- ② The pump body is very hot immediately after it is shut down. Before starting overhaul, feed water for more than 10 minutes with the pump shut down and make sure that the pump surface temperature has lowered to a sufficiently low level.
- ③ Tighten all bolts with the specified torque. (☞ Check with Page 4 of the reference material on the torque control mark.)
- ④ Do not drop a bolt or other object into the cylinder.

2. Required Tools and Parts

Tool/part	Specifications	
	VS1501	VS2401
Allen wrench	M10	
Torque wrench	M10 (25 to 30 Nm)	

3. Cleaning the Oil Tank

Step ① Remove the 8 bolts that fix the pump rear cover.

☞ The rear cover can be easily removed by setting the removed two bolts in the position shown in the right figure.



The mounting osition

Step ② Remove the pump rear cover and clean the oil tank interior.

☞ The rear cover weighs 20 kg. Be careful in removing it.

☞ The pump interior is contaminated with waste oil. Wipe it off with a rug.



Step ③ Install the pump rear cover and tighten the 8 bolts.☞

☞ The rear cover weighs 20 kg. Be careful in installing it.



Step ④ Open the lubrication plug and fill fresh oil through it.
(If a funnel is available at hand, oil can be filled without spilling it outside the pump.)

☞ Make sure that the oil drain plug (drain valve) is closed.

This completes the easy method of overhaul.

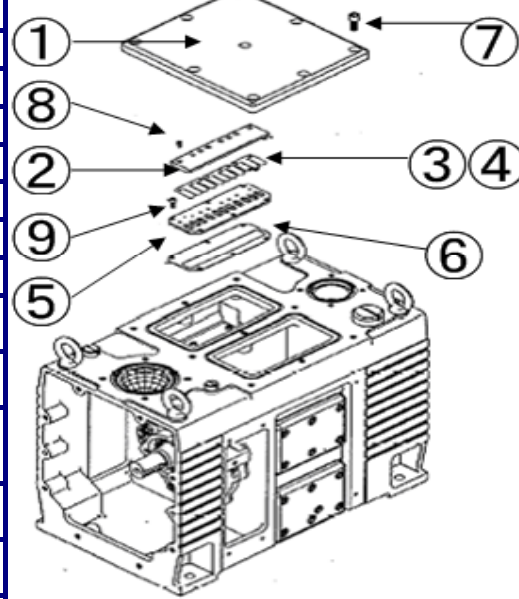
■ Replacement of Exhaust Valve Plate ■

1. Required Tools and Parts

Component	Specifications		Quantity	
	VS1501	VS2401	VS1501	VS2401
Allen wrench	M10 M6 M4		—	
Torque wrench	M10 M6 M4 (2 to 30 Nm)		—	
Exhaust valve plate	Exhaust valve plate (A)		2	1
	Exhaust valve plate (B)		—	2
Exhaust valve gasket	t = 1, for 1501	t = 1, for 2401	1	1

2. Replacement Procedure

Work Procedure		Part	
No.	Work procedure	Symbol	Part name
1	Remove the top cover.	①	Top cover
		⑦	Allen screw M10 × 25
2	Remove the exhaust valve seat.	⑤	Exhaust valve seat
		⑨	Allen screw M6 × 14
3	Remove the exhaust valve guide.	②	Exhaust valve guide
		⑧	Allen screw M4 × 8
4	Replace the exhaust valve plate.	③	Exhaust valve plate (A)
		④	Exhaust valve plate (B)
5	Install the exhaust valve guide to the exhaust valve seat.	②	Exhaust valve guide
		⑧	Allen screw M4 × 8
6	Replace the exhaust valve gasket.	⑥	Exhaust valve gasket
7	Install the exhaust valve seat to the cylinder.	⑤	Exhaust valve seat
		⑨	Allen screw M6 × 14
8	Install the top cover.	①	Top cover
		⑦	Allen screw M10 × 25



Reference : Relationship between Bolt Sizes and Torque Values

Bolt size	Specified torque (Nm)
M4	2 to 3
M6	8 to 10
M10	25 to 30

Engineering Department / Vacuum Pump and Components

Components Division

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Oil is blood for rotary pumps!

Is the oil for VS1501 and VS2401 OK?

Check oil against the oil color samples below.



Oil color samples



..... Change oil regularly