

VACUUM DEHYDRATION OIL PURIFICATION UNITS

EQUIPMENT DATA SHEET

Reliable Industrial Group has a range of Vacuum Dehydration Units (VDU) available to assist with reducing the moisture content of your oil. VDU's can quickly reduce the moisture content in a variety of oils, reducing corrosion on system components and extending oil life.

All of RIG's VDUs are fitted with high efficiency particulate filters which remove harmful particulate during the dehydration process. RIG's fleet includes both NEMA 4 and NEMA 7 (HAZOP) rated VDU's. All RIG's units are equipped with overheat protection on the heater to prevent excessive temperatures and oxidation.



Figure 1. RIG Vacuum Dehydration Oil Purification Unit

VDU TECHNOLOGY OVERVIEW

With RIG's Vacuum Dehydration Units, wet lubricant is sent through the vacuum chamber where water under vacuum flashes off as vapor. Vaporized water droplets carry through the condenser and are cooled back to liquid form to be captured in the dehydrator's condensate tank. Final parts per million (ppm) counts of water content are dependent on the length of run time.

KEY EQUIPMENT COMPONENTS

PUMP

There are two different types of pumps on the VDU. A vacuum pump reduces the pressure in the vacuum tower to allow moisture to be more easily extracted. A gear pump on the outlet of the vacuum tower pumps the dried oil through the particulate filter and back to the system.

FILTERS

A high efficiency micro-glass media filter element is utilized to remove particulate. Typical removal rates of the filter are > 99.9% particulate removal for the rated particulate size.

HEATER

In order to remove the moisture from the oil it must be heated to approximately 150°F (65°C). This is accomplished by sending the oil through an electric immersion heater before it enters the vacuum tower.

VACUUM TOWER

The vacuum tower vessel is where the hot oil has the moisture extracted. Dispersion media aids in releasing the moisture and gases from the oil. A sight window allows the operator to monitor the progress of the job.

CONDENSATE SUMP

The condensate sump receives the extracted moisture after it has been run through a condenser. The condensate sump also has a sight window to allow monitoring of the removed liquid and its level.

APPLICATIONS

Vacuum Dehydration is effectively used on:

- Turbine Oils
- Compressor Oils
- Hydraulic Oils
- Paper Machine Oils
- Gear Oils (ISO VG 150 – ISO VG 680)

VDUs remove the following contaminants from hydraulic and lubrication oil:

- **Water:** Through the application of heat and vacuum moisture is drawn out of the oil.
- **Gases:** Entrained gases are removed from the oil by the same method as water.
- **Particulates:** A high efficiency particle filter on the skid provides the added benefit of removing particulates from the oil stream during the process.

WHY USE A VDU?

The use of a VDU will provide the following benefits:

- Maintain the quality of your oil and prevent unexpected equipment outages.
- Reduce wear and corrosion on system components.
- Extend oil life.
- Extend maintenance intervals.



Figure 2. Example of oil with emulsified water content and oil after moisture removal is complete.

VACUUM DEHYDRATION UNIT TECHNICAL SPECIFICATIONS

Equipment Name	Flow Rate	NEMA Rating	Heater	Weight	Height	Depth	Width	Power Requirements
VDU-8-N7	8 gpm	7	12 kW	1580 lbs	70"	44"	60"	480 Volts 20 Amps 3 Phase
VDU-10-N4	10 gpm	4	64 kW	3300 lbs	68"	70"	90"	480 Volts 100 Amps 3 Phase
VDU-10-N7	10 gpm	7	32 kW	2200 lbs	80"	48"	72"	480 Volts 60 Amps 3 Phase
VDU-15-N4	15 gpm	4	24 kW	2300 lbs	80"	48"	72"	480 Volts 90 Amps 3 Phase
VDU-20-N4	20 gpm	4	64 kW	2800 lbs	84"	48"	60"	480 Volts 90 Amps 3 Phase
VDU-20-N7	20 gpm	7	36 kW	2400 lbs	84"	48"	60"	480 Volts 60 Amps 3 Phase
VDU-30-N4	30 gpm	4	64 kW	8500 lbs	96"	239"	96"	480 Volts 100 Amps 3 Phase

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