

NRV Series Information Sheet

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Working Principle

NRV pumps are a line of oil circulated rotary vane vacuum pumps, perfect for smaller applications. The pumps function by utilizing the sealing features of oil around the pump chamber to seal incoming gases between a series of vanes on its rotor. A key characteristic here are the vanes that are pushed against the pump chamber by springs or hydraulic pressure. The vanes move in and out of the rotor during operation of the pump. The oil is spread around the pump chamber by the vanes, and this completes the seal of the pump chamber.

The oil in a rotary vane pump is recycled during operation, allowing for a long service life with little maintenance requirements. The pump circulates its oil by first discharging it along with the pressurized process gas and then separating the oil from the process gas. This is done in a separator attached to the side of the rotary vane pump. This makes the closed circulation loop of the oil and allows the pump to operate without the need for additional process hardware, depending on process gas. The oil gets filtered after separation through an oil filter, meaning the pump can tolerate a given amount of fine particulates without damage or drop in performance. This makes the pumps robust and reliable.

Features

- Efficiency: The variable pitch screws lead to lower overall energy consumption by the pump system.
- Environmentally Friendly: No unnecessary emissions and little contamination of pumped materials.
- Low Maintenance: Only requires simple oil changes on regular, lengthy intervals.
- Access to Parts: NES Company stands alone in the industry by offering spare parts for DIY repair.
- Pressure ranges from atmospheric (760 torr) to .375 torr.
- Versatility: Usable in a very wide range of industries with very different pumping needs.
- Reliability under even the harshest pumping loads and conditions.

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Product Parameters

| Parameter | Units | NRV-20 | NRV134 | or inquiries | a NRVit64 ar s about valu | ^y NRV-10 ॰¥ | NRV-16 1 | NRV-20 1 | NRV-25 1 | NRV-30 1 |
|------------------------------|--------|---------|-----------|----------------------|-------------------------------------|---------------------------|-------------|-------------|-------------|-------------|
| Exhaust Vol. | CFM | 14.25 | 21 listed | n 28125 ed ir | ib <u>be</u> pagble. | 70.5 | 112 | 141.25 | 176.5 | 212 |
| Ultimate Vacuum | psi | 0.03 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
| | V | 220/380 | 220/380 | 220/380 | 220/380 | 220/380 | 220/380 | 220/380 | 220/380 | 220/380 |
| motor specs | HP | 1 | 1.5 | 2 | 3.5 | 4.5 | 7.5 | 7.5 | 10 | 11.5 |
| | RPM | 3600 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Operating temperatur e | °F | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 |
| Oil Volume | qt | 0.4 | 1 | 1 | 2.25 | 2.25 | 7.25 | 7.25 | 7.25 | 7.25 |
| Weight | lbs. | 44 | 75 | 84 | 140 | 165 | 385 | 408 | 445 | 480 |
| length (motor) | inches | 16 | 24 | 25.5 | 26 | 28.5 | 35 | 36.5 | 39.5 | 42 |
| Length (alone) | inches | 10.5 | 17.5 | 18 | 20.5 | 21.5 | 32 | 34 | 32 | 34 |
| width | inches | 9 | 9 | 9 | 16.5 | 16.5 | 23 | 24.5 | 23 | 24.5 |
| height | inches | 8.5 | 10 | 10 | 11.5 | 12 | 16.5 | 16.5 | 16.5 | 16.5 |

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| | | | | | | | | E | | | MPANY _® |
|----------------|----|----|----|----|----|----|----|----|----|----|--------------------|
| Sound Level | dB | 61 | 64 | 67 | 68 | 70 | 72 | 74 | 74 | 76 | |

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| Optional Extra | Function |
|-------------------|--------------|
| Gas Ballast Valve | Mixing |
| | process with |
| | air to |
| | counteract |
| | condensatio |
| | n of process |
| | matter. |
| Inlet Filter | Remove |
| | large solid |
| | particulates |
| | before |
| | entering |
| | pump. |

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| Heat Exchanger | Cooling of |
|-----------------|---------------|
| | pump in |
| | extreme |
| | ambient |
| | conditions. |
| Oil Temperature | Monitors oil |
| Switch | and stops |
| | the machine |
| | to prevent |
| | overheating. |
| Resistance | Feedback |
| Thermometer | on oil |
| | temperature. |
| Level Switch | Stops the |
| | pump is oil |
| | level is too |
| | low. |
| Pressure Switch | Monitors |
| | pressure in |
| | the oil |
| | separator, |
| | and stops |
| | the pump |
| | when limit is |
| | exceeded. |
| Pressure | Feedback |
| Transmitter | on pressure. |

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| | Variable | Ability to | | |
|---|-----------------|-------------|-----------|------------|
| Oil | Frequency Drive | vary | | |
| | | pumping | | |
| | | speed to | | |
| ean pump and replace grease and oil in | the | save energy | | |
| ent of liquid spillage in the pump. | | in low load | | |
| hen ordering oil, refer to the oil rating | | conditions. | | |
| lumn | Temperature | ISO VG | Oil Type | Oil Rating |
| | | Grade | | |
| mperature refers to ambient conditions | <32°F (0°C) | 32 | Mineral | DM-032 |
| d inlet temperature of the process mater | ial. 32°F-54°F | 68 | Mineral | DM-068 |
| | (0°C-12°C) | | | |
| | 54°F-86°F | 100 | Mineral | DM-100 |
| | (12°C-30°C) | | | |
| | >86°F (30°C) | 100 | Synthetic | DS-100 |
| Available Additions | >86°F (30°C) | 100 | Svnthetic | DE-101 |

Available Additions

The desired configuration of your pump can and should be specified when placing an order.

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13. Oil Sight Glass

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| Part Name Q1Y NO. | 064 064 064 | 1 319 Assist base foot 1 | 1 321 Fan (pump sided) 1 | 1 323 Fan cover (pump sided) 1 | 1 325 Bolt 2 | 1 326 Washer 1 | 1 370 Nozzle Body 1 | 1 371 Float valve ball 1 | 1 372 Float valve pin 1 | 1 373 Float valve rubber 1 | 1 374 Float valve o-ring 1 | 1 376 Float valve body 1 | 2 391 Bolt 1 | 1 400 Motor 1 | 1 430 key 1 | 1 460 Name plate 1 | | * | - | + | 1 | e | | | | | | | | | |
|---|-------------|--------------------------|--------------------------|--------------------------------|-------------------------|--------------------------|----------------------|--------------------------|-------------------------|----------------------------|----------------------------|--------------------------|--------------------|----------------------|----------------------|------------------------|------------------------|----------|-----------------|----------------------|------------------------|--------------------|-----------------|------------|----------------|----------------|-------------|---------------------|------------------------|------------------------|--------------------------|
| | Part Name | DATE OF A DECK | Gas ballast valve lip | Gas ballast spring | Gas ballast valve plate | Gas ballast valve filter | Gas ballst valve nut | Gas ballast valve ring | Check valve body | Check valve cock | Check valve guide | Check valve o-ring | Check valve spring | 0-ring | Check valve Ass'y | Inlet flange | Inlet screen | Bolt | Washer | Nonreturn (optional) | Washer | Floate valve Ass'y | BSLM Nipple | Bolt | Pipe | Coupling guard | Bolt | Coupling Hub(P)/M28 | Coupling sleeve/M28 | Coupling Hub(M)/M28 | Bolt |
| | Q | 2 | 234 | 235 | 236 | 237 | 238 | 239 | 250 | 251 | 252 | 253 | 254 | 255 | [257] | 260 | 261 | 265 | 266 | 275 | 278 | [279] | 280 | 281 | 293 | 300 | 302 | 311 | 312 | 313 | 314 |
| | Q'ty | 064 | - | - | - | - | - | - | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 4 | 9 | 2 | 2 | - | 3 | - | - | - | 2 | 2 | - | - | - | - |
| | Part Name | ALL ROAT AND A | Expanded metal | Exhaust cover (C) | Exhaust cover (O) | 0-ring | Exhaust screen-in | Exhaust screen-out | Exhaust valve Ass'y | Exhaust valve lip | Exhaust valve body | Exhaust valve bolt | Exhaust valve nut | Exhaust valve spring | Exhaust valve washer | Gasket | Bolt | Nut | Rubber foot | Bolt | Gas ballast valve Assy | Hydraulic fitting | Nipple | Ripe | Hpe | BSLM Nipple | BSLM Nipple | Rpe | Gas ballast valve cock | Gas ballast valve body | Gas ballast valve nipple |
| | Q | i. | 142 | 144 | 145 | 152 | 155 | 156 | [159] | 160 | 161 | 162 | 163 | 164 | 165 | 185 | 186 | 188 | 190 | 191 | [220] | 221 | 222 | 223 | 224 | 225 | 226 | 228 | 230 | 231 | 232 |
| | Q'ty | 064 | - | - | 2 | ÷ | - | - | 2 | 2 | 2 | 2 | 9 | 10 | 4 | - | - | - | - | 2 | - | ۰ | ۴ | - | - | - | 18 | 2 | 2 | - | - |
| | Part Name | 2410 1 10 1 | Cylinder | Rotor | Bearing | Vane | A-end plate | B-end plate | Bearing | Retainer | Cover | 0-ring | Bolt | Washer | Taper pin | key(A-end plate sided) | key(B-end plate sided) | Oil sump | Oil sight glass | 0-ring | Plug | Plug | Oil filter bolt | Oil filter | Oil sump cover | Gasket | Bolt | Echaust filter | Filter spring | Oil inlet plate | Gasket |
| | 9 | ŝ | | \$ | 18 | ส | 23 | 2 | 8 | 52 | 4 | 8 | 33 | 75 | 8 | 99 | 38 | 2 | 88 | 18 | 88 | 95 | 8 | 8 | 105 | 106 | 107 | 120 | 125 | 136 | 137 |

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