

### VDR13 Design Series Variable Volume Vane Pump

20 to 45 ℓ /min  
6MPa

❖ The new design number 13 was created by modifying some of the components of old design numbers 11 and 12, and the new design installation compatible with the old design.

#### Features

- ① Energy efficient, economical operation
- ② Built-in high-precision temperature compensation mechanism
- ③ The ring is displaced by a spring, and a rise in pressure automatically moves it to the center to make the discharge rate zero.
- ④ Relief valve and unloading valve can be eliminated from the circuit.
- ⑤ It was possible to reduce the size of the unit because there was no increase of proportional input to pressure which prevented increases in the temperature of the fluid.
- ⑥ New design for lower noise and improved durability
- Handling
  - ① Rotation Direction The direction of rotation is always clockwise (rightward) when viewed from the shaft side.
  - ② Drain Drain piping must be direct piping up to a point that is below the tank fluid level, and back pressure due to pipe resistance

#### Specifications

##### Single Pump

Model No.	Capacity cm <sup>3</sup> /rev	No-load Discharge Rate (ℓ /min)				Pressure Adjustment Range MPa{kgf/cm <sup>2</sup> }	Allowable Peak Pressure MPa {kgf/cm <sup>2</sup> }	Revolution Speed min <sup>-1</sup>		Weight kg
		1000min <sup>-1</sup>	1200min <sup>-1</sup>	1500min <sup>-1</sup>	1800min <sup>-1</sup>			Min.	Max.	
VDR-1A(B)-1A1-13	13.9	14	16.5	21	25	1 to 2 {10.2 to 20.6}	14 {143}	800	1800	8
-1A2-	13.9	14	16.5	21	25	1.5 to 3.5 {15.3 to 35.7}				
-1A3-	11.1	11	13	17	20	3 to 6 {30.6 to 61.2}				
VDR-2A(B)-1A1-13	25	25	30	38	45	1 to 2 {10.2 to 20.4}	14 {143}	800	1800	21
-1A2-	25	25	30	38	45	1.5 to 3.5 {15.3 to 35.7}				
-1A3-	22.2	22	26.5	34	40	3 to 6 {30.6 to 61.2}				

##### Double Pump

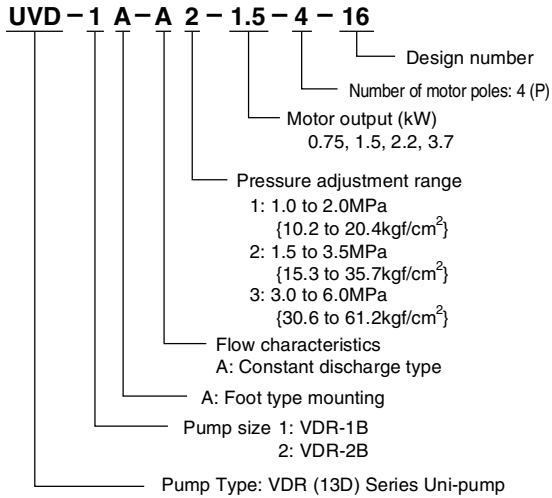
Model No.	Vent Side		Shaft Side		Vent Side	Shaft Side	Revolution Speed min <sup>-1</sup>		Weight kg
	Discharge Rate ℓ /min	Pressure Adjustment Range MPa{kgf/cm <sup>2</sup> }	Discharge Rate ℓ /min	Pressure Adjustment Range MPa{kgf/cm <sup>2</sup> }			Allowable Peak Pressure MPa{kgf/cm <sup>2</sup> }	Min.	
VDR-11A(B)-1A1-1A1-13 VDR-11A(B)-1A1-1A2-13 VDR-11A(B)-1A1-1A3-13	25	1 to 2 {10.2 to 20.4}	25	1 to 2 {10.2 to 20.4}	14 {143}	800	1800	A : 13.6 B : 13.9	
20			1.5 to 3.5 {15.3 to 35.7}						
25			3 to 5 {30.6 to 51}						
VDR-11A(B)-1A2-1A2-13	20	1.5 to 3.5 {15.3 to 35.7}	25	1.5 to 3.5 {15.3 to 35.7}	14 {143}	800	1800	A : 13.6 B : 13.9	
20			3 to 5 {30.6 to 51}						
VDR-11A(B)-1A3-1A3-13	20	3 to 5 {30.6 to 51}	20	3 to 5 {30.6 to 51}	14{143}				

- Note) 1. The discharge rate is the value at 1800min<sup>-1</sup> no-load.  
 2. In addition to this model, the VDC Series (maximum working pressure: 14MPa) high-pressure variable vane pump is also available. See page B-25 for more information.  
 3. The change from VDR-1 Series design number 11 to design number 12 represents a change in the shaft key width from 3.2mm to 4.76mm. This means that when using a 3.2mm key coupling, you need to use a stepped key (VD31J-302000) or add a new key groove at 4.76.  
 4. There is no change in the mounting method with the change from the VDR-1 size design number 12 and VDR-2 design number 11 to design number 13.

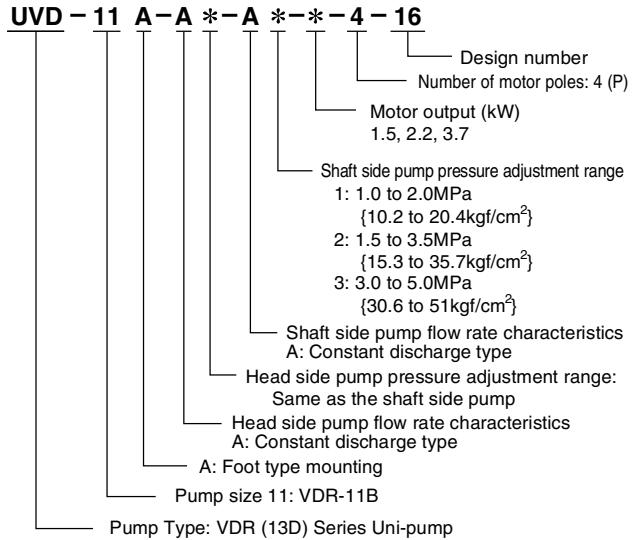
# Uni-pump Specifications

## Understanding Model Numbers

### Single Pump



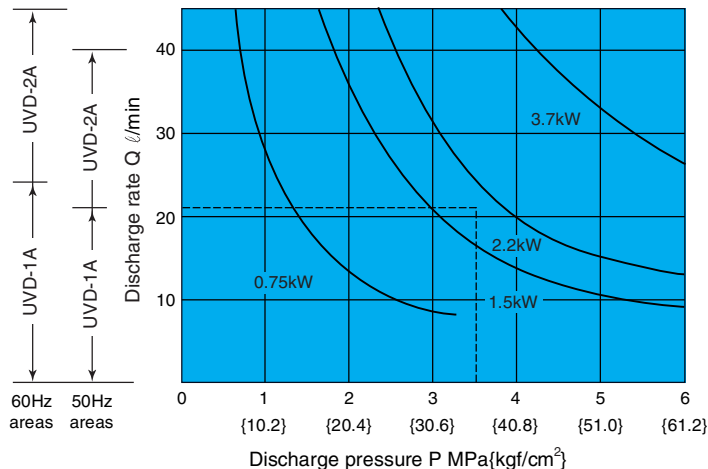
### Double Pump



## Specifications

Model No.	Maximum Working Pressure MPa{kgf/cm <sup>2</sup> }	Maximum Flow Rate ℓ/min	
		50Hz	60Hz
UVD- 1A	6{61.2}	21	25
UVD- 2A	5{51.0}	38	45
UVD-11A	5{51.0}	21-21	25-25

## Motor Selection Curves



### • Selecting a motor

The area under a motor output curve in the graph to the left is the operating range for that motor under the rated output for that motor.

#### Example:

To find the motor that can produce pressure of 3.5MPa and a discharge rate of 21 ℓ/min.

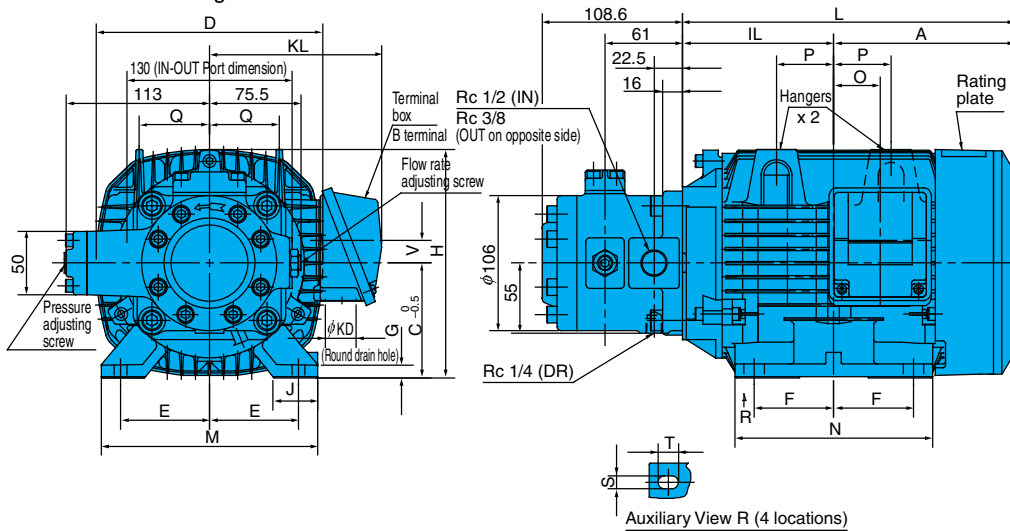
#### Selection Process

Since the intersection of the two broken lines from a pressure of 3.5MPa and discharge rate of 21 ℓ/min intersect in the area under the 2.2kW curve, it means that a 2.2kW motor should be used. In the case of a double pump configuration, select a motor that is larger than the total power required by both pumps.

\* Select a uni-pump that has a pressure and flow rate that is within the range of the drive so that the drive will not overload.

Installation Dimension Drawings

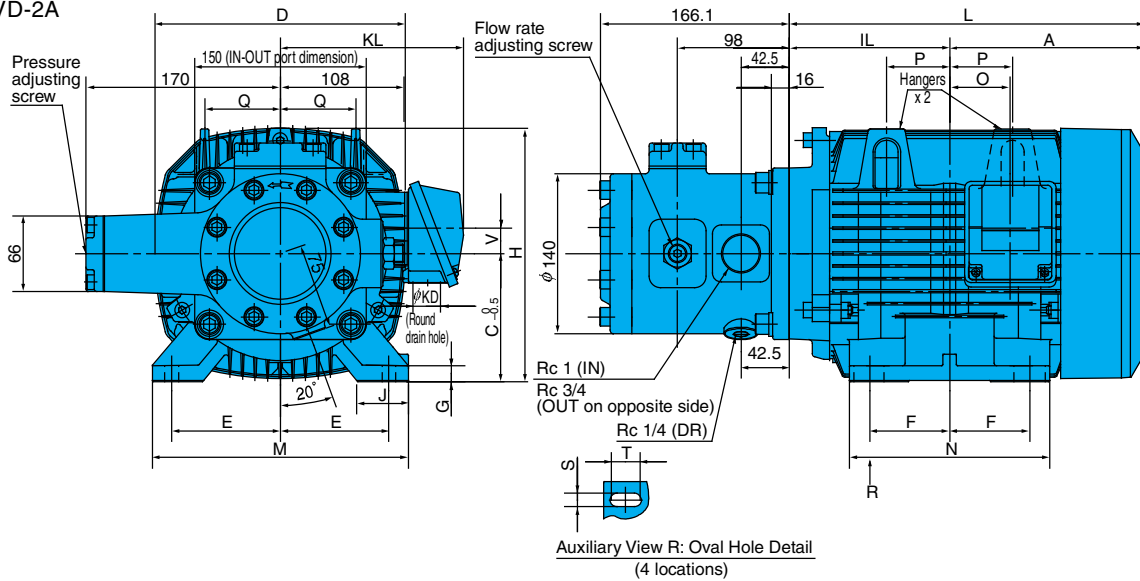
UVD-1A



Uni-pump	Motor Dimensions mm																	Frame No.	Output kW (4poles)	Weight kg			
	A	IL	C	D	E	F	G	H	J	L	M	N	S×T	KD	KL	O	P				Q	V	
UVD-1A-A1-0.75-4-16	124	105	80	160	62.5	50	10	160	34	229	155	135	10×25	ϕ22	126	21	-	-	16.5	80M	0.75	20	
UVD-1A-A2-0.75-4-16																							
UVD-1A-A2-1.5-4-16	142.5	118.5	90	178	70	62.5	10	179	35	261	170	155	10×16	ϕ22	136	36.5	45	55	18	90L	1.5	24	
UVD-1A-A3-1.5-4-16																							
UVD-1A-A3-2.2-4-16	160.5	133	100	195	80	70	13	197.5	45	293.5	195	175	12×25	ϕ22	150	45.5	50	55	22	100L	2.2	28	

1. Standard drive motor is the fully enclosed fan-cooled E type.
2. Standard voltage for drive motor is 200 VAC, 50/60 Hz or 220 VAC, 60 Hz.
3. Standard terminal box is B terminal (right side viewed from pump).
4. See page A-21 for the characteristics of the drive motor for the unipump (domestic standard 3 rating).

UVD-2A



Uni-pump	Motor Dimensions mm																	Frame No.	Output kW (4poles)	Weight kg			
	A	IL	C	D	E	F	G	H	J	L	M	N	S×T	KD	KL	O	P				Q	V	
UVD-2A-A1-1.5-4-16	142.5	118.5	90	178	70	62.5	10	179.0	35	261	170	155	10×16	ϕ22	136	36.5	45	55	18	90L	1.5	37	
UVD-2A-A2-1.5-4-16																							
UVD-2A-A2-2.2-4-16	160.5	133	100	195	80	70	13	197.5	45	293.5	195	175	12×25	ϕ22	150	45.5	50	55	22	100L	2.2	41	
UVD-2A-A3-2.2-4-16																							
UVD-2A-A2-3.7-4-16	171	140	112	219	95	70	14	221.5	45	311	224	175	12×25	ϕ22	161	53	55	66	22	112M	3.7	50	
UVD-2A-A3-3.7-4-16																							

1. Standard drive motor is the fully enclosed fan-cooled E type.
2. Standard voltage for drive motor is 200 VAC, 50/60 Hz or 220 VAC, 60 Hz.
3. Standard terminal box is B terminal (right side viewed from pump).
4. See page A-21 for the characteristics of the drive motor for the unipump (domestic standard 3 rating).