



4" Discharge – Vortex Impeller

3" Solids Handling

3450 & 1750 & 1150 RPM

This section contains the following material:

1. Pump Family Curves & Technical Data

- K4RH
- K4RN
- K4RP
- K4RB

2. Individual Performance Curves

- K4RH
- K4RN
- K4RP
- K4RB

3. Dimensional Drawings
Pump
Lift-Out & Base Elbow
Wet Well Installations

- K4RH
- K4RN
- K4RP
- K4RB





4" Vortex Pumps

Model Number Identification Chart

| | <u>K</u> | <u>4</u> | <u>RN</u> | <u>50</u> | - | <u>21</u> | <u>M</u> | <u>2</u> | <u>Y</u> |
|---|----------|----------|-----------|-----------|---|-----------|----------|----------|----------|
| Keen Pump | | | | | | | | | |
| Discharge Size: 3 = 3" 4 = 4" | | | | | | | | | |
| Pump Model | | | | | | | | | |
| Horsepower (HP x 10) 30 = 3 HP 50 = 5 HP 75 = 7-1/2 HP 100 = 10 HP 150 = 15 HP 200 = 20 HP 250 = 25 HP 300 = 30 HP 400 = 40 HP 500 = 50 HP | | | | | | | | | |
| Voltage/Phase 01 = 208/1 21 = 230/1 03 = 208/3 23 = 230/3 43 = 460/3 53 = 575/3 | | | | | | | | | |
| Manual Pump Operation | | | | | | | | | |
| Speed 2 = 3450 RPM 4 = 1750 RPM 6 = 1150 RPM | | | | | | | | | |
| Frequency Blank = 60 Hz Y = 50 Hz | | | | | | | | | |



Pump Model: **K4RN**

Physical Data:

| | |
|-----------------------------------|--|
| Discharge Size | ANSI 4" Horizontal |
| Solids Size | 3" |
| Impeller Type | Balanced, Vortex, 8 Vane |
| Power/Control Cable Length | 40' Standard |
| Paint | Blue, Water Reducible Enamel, One Coat, Air Dried – Standard |

Motor Construction:

| | |
|-----------------------------------|---|
| Motor Type | Enclosed Submersible Oil Filled |
| NEMA Insulation Code | Class F |
| Service Factor | 1.2 |
| NEMA Design Type | B (3Ø) L (1Ø) |
| Single Phase Configuration | External Start and Run Components |
| Motor Protection | Thermal Sensors Embedded in the Windings |
| Maximum Stator Temperature | 311°F (155°C) |
| Power Cord Type | SOOW - 600V, 90° C; Type W - 2000V, 90° C |
| Control Cord Type | 16-4 or 18-5 - SOOW - 600V, 90° C |

Materials of Construction:

| | |
|---------------------------------|--|
| Cord Entry | Cast Iron, ASTM A48, Class 35 |
| Motor Housing | Cast Iron, ASTM A48, Class 35 |
| Bearing Housing | Cast Iron, ASTM A48, Class 35 |
| Volute | Cast Iron, ASTM A48, Class 35 |
| Impeller | Ductile Iron, ASTM A536, 60-40-18 |
| Shaft | ANSI 400 Stainless Steel |
| Inboard Mechanical Seal | Silicone Carbide / Silicone Carbide |
| Outboard Mechanical Seal | Silicone Carbide / Silicone Carbide |
| Fasteners | ANSI 18-8 Stainless Steel |
| O-Rings | Nitrile Rubber |
| Upper Bearing | Conrad Style Single Row Deep Groove Ball Bearing |
| Lower Bearing | Conrad Style Single Row Deep Groove Ball Bearing |
| Line Bearing | Bronze, CDA 836 |



Pump Model: **K4RN – 1150 RPM**

Thermal Data:

| | |
|------------------------|--|
| Maximum Liquid | 140° F (60° C) |
| Maximum Stator | 311° F (155° C) |
| Heat Sensor | Open: 257° F (125° C) Max. / 239° F (115° C) Min. |
| | Closed: 194° F (90° C) Max. / 119° F (48° C) Min. |
| Oil Flash Point | 390° F (199° C) |

Electrical Data:

| RPM | | | | | 1150 | | | | | | |
|---------------------------|---------|-------|----------|----------------|----------------|----------------|-------------------|-----------------|-----------|---------|--|
| Electrical Ratings | | | | | Heat Sensor | 24VDC 5AMPS | 115VAC 5AMPS | 230VAC 5AMPS | | | |
| | | | | | Seal Fail | 300VAC 5mAMPS | | | | | |
| Voltage Tolerance | | | | | ± 10% | | | | | | |
| HP | Voltage | Phase | NEC Code | Service Factor | Full Load AMPS | SF Amps | Locked Rotor AMPS | Run KW | Start KVA | Run KVA | |
| 1 | 208 | 1 | H | 1.2 | 9.6 | 11.5 | 33.6 | 2.0 | 7.0 | 2.6 | |
| | 230 | | | | 8.6 | 10.4 | 30.3 | | | | |
| 1 | 208 | 3 | J | 1.2 | 6.6 | 7.9 | 21.0 | 1.7 | 7.6 | 2.1 | |
| | 230 | | | | 6.2 | 7.4 | 18.9 | | | | |
| | 460 | | | | 3.1 | 3.7 | 9.5 | | | | |
| 2 | 208 | 1 | H | 1.2 | 18.9 | 22.7 | 66.2 | 13.8 | 5.1 | 5.1 | |
| | 230 | | | | 17.0 | 20.4 | 59.6 | | | | |
| 2 | 208 | 3 | G | 1.2 | 9.9 | 11.9 | 34.7 | 2.8 | 12.5 | 3.5 | |
| | 230 | | | | 8.9 | 10.7 | 31.2 | | | | |
| | 460 | | | | 4.5 | 5.4 | 15.6 | | | | |
| 3 | 208 | 1 | F | 1.0 | 22.7 | 22.7 | 79.5 | 4.7 | 16.5 | 6.1 | |
| | 230 | | | | 20.5 | 20.5 | 71.6 | | | | |
| 3 | 208 | 3 | G | 1.0 | 14.3 | 14.3 | 50.1 | 4.1 | 18.0 | 6.0 | |
| | 230 | | | | 12.9 | 12.9 | 45.1 | | | | |
| | 460 | | | | 6.4 | 6.4 | 22.5 | | | | |

Motor Efficiencies & Power Factor

| HP | Phase | Motor Efficiency % | | | | Power Factor % | | | |
|----|-------|---------------------|-----------|----------|----------|---------------------|-----------|----------|----------|
| | | Service Factor Load | 100% Load | 75% Load | 50% Load | Service Factor Load | 100% Load | 75% Load | 50% Load |
| 1 | 1 | 60 | 60 | 59 | 53 | 75 | 73 | 66 | 57 |
| 1 | 3 | 65 | 62 | 56 | 52 | 75 | 72 | 67 | 61 |
| 2 | 1 | 63 | 61 | 60 | 50 | 76 | 74 | 70 | 62 |
| 2 | 3 | 65 | 64 | 60 | 52 | 78 | 76 | 71 | 60 |
| 3 | 1 | 68 | 65 | 59 | 55 | 75 | 70 | 64 | 54 |
| 3 | 3 | 65 | 64 | 60 | 57 | 79 | 78 | 71 | 59 |



Pump Model: **K4RN – 1750 RPM**

Thermal Data:

| | |
|------------------------|--|
| Maximum Liquid | 140° F (60° C) |
| Maximum Stator | 311° F (155° C) |
| Heat Sensor | Open: 257° F (125° C) Max. / 239° F (115° C) Min. |
| | Closed: 194° F (90° C) Max. / 119° F (48° C) Min. |
| Oil Flash Point | 390° F (199° C) |

Electrical Data:

| RPM | | | | | 1750 | | | | | | |
|---------------------------|---------|-------|----------|----------------|----------------|----------------|-------------------|-----------------|-----------|---------|--|
| Electrical Ratings | | | | | Heat Sensor | 24VDC 5AMPS | 115VAC 5AMPS | 230VAC 5AMPS | | | |
| | | | | | Seal Fail | 300VAC 5mAMPS | | | | | |
| Voltage Tolerance | | | | | ± 10% | | | | | | |
| HP | Voltage | Phase | NEC Code | Service Factor | Full Load AMPS | SF Amps | Locked Rotor AMPS | Run KW | Start KVA | Run KVA | |
| 3 | 208 | 1 | E | 1.2 | 19.1 | 22.9 | 66.9 | 4.0 | 13.9 | 5.2 | |
| | 230 | | | | 17.2 | 20.6 | 60.2 | | | | |
| 3 | 208 | 3 | H | 1.2 | 16.3 | 19.6 | 57.1 | 4.6 | 20.6 | 5.8 | |
| | 230 | | | | 14.7 | 17.6 | 51.4 | | | | |
| | 460 | | | | 7.3 | 8.8 | 25.7 | | | | |
| 5 | 208 | 1 | F | 1.2 | 37.1 | 44.5 | 129.9 | 7.7 | 26.9 | 10.0 | |
| | 230 | | | | 33.4 | 40.1 | 116.9 | | | | |
| 5 | 208 | 3 | F | 1.2 | 21.1 | 25.3 | 73.9 | 6.0 | 26.5 | 7.5 | |
| | 230 | | | | 19.0 | 22.8 | 66.5 | | | | |
| | 460 | | | | 9.5 | 11.4 | 33.3 | | | | |
| 7.5 | 208 | 3 | F | 1.2 | 32.1 | 38.5 | 112.4 | 9.1 | 40.4 | 11.3 | |
| | 230 | | | | 28.9 | 34.7 | 101.2 | | | | |
| | 460 | | | | 14.5 | 17.4 | 50.6 | | | | |
| 10 | 208 | 3 | E | 1.0 | 38.5 | 38.5 | 134.8 | 11.0 | 48.5 | 13.6 | |
| | 230 | | | | 34.7 | 34.7 | 121.4 | | | | |
| | 460 | | | | 17.3 | 17.3 | 60.7 | | | | |

Motor Efficiencies & Power Factor

| HP | Phase | Motor Efficiency % | | | | Power Factor % | | | |
|-----|-------|---------------------|-----------|----------|----------|---------------------|-----------|----------|----------|
| | | Service Factor Load | 100% Load | 75% Load | 50% Load | Service Factor Load | 100% Load | 75% Load | 50% Load |
| 3 | 1 | 66 | 66 | 64 | 56 | 87 | 83 | 79 | 70 |
| 3 | 3 | 71 | 70 | 69 | 63 | 81 | 80 | 79 | 71 |
| 5 | 1 | 65 | 65 | 64 | 59 | 86 | 83 | 76 | 62 |
| 5 | 3 | 78 | 78 | 75 | 70 | 79 | 76 | 71 | 60 |
| 7.5 | 3 | 77 | 76 | 74 | 69 | 75 | 70 | 64 | 54 |
| 10 | 3 | 75 | 76 | 75 | 70 | 79 | 78 | 71 | 59 |