



# VARIOSPEED<sup>®</sup>

CONSTANT PRESSURE CONTROL SOLUTIONS

Easy to Program  
Simple to Operate  
Energy Efficient



**SJE**  
**Rhombus**<sup>®</sup>

[www.sjerhombus.com](http://www.sjerhombus.com)

# VARIOSPEED®

The new VARIOspeed® series of constant pressure controls offered by SJE-Rhombus are an **economical, pre-engineered solution** for variable speed pumping applications, including:

- Submersible Deep Well Pumps
- Booster Pumps
- Irrigation Pumps

The controls are designed using a single **factory-programmed** variable frequency drive in a **NEMA 1** or **NEMA 3R** enclosure with a user friendly keypad and back-lit display for easy installation and setup. As flow and head conditions change in the pumping system, the variable frequency drive is able to automatically control the pump speed and maintain a constant discharge pressure. The desired operating pressure is set using the VARIOspeed® display. The pressure transducer measures the pump discharge pressure.

## Easy Setup and Operation

The 4-line LCD display and keypad of the interface are designed with the pump end user in mind. The visualization and configuration of the system has been simplified using pump terminology to allow non-VFD experts a greater comfort level with the drive.

## Energy Savings

When properly applied, savings of 20-50% can be achieved by automatically adjusting the pump speed to match lower demand conditions. The drive will reduce the demand for energy, which will result in a reduction of the pump system Life Cycle Cost (LCC).

## Phase Conversion

The VARIOspeed® VFD can be used in applications where three phase power is not available. The drive will convert 240V, single phase power into 240V, three phase power. A three phase motor must be used in all cases. It is possible to supply single phase 240V input power to VS23 models. The VFD output amperage must be derated by 50% when doing this.

## Thrust Bearing Control

The initial acceleration of submersible deep well pumps must be set to meet the manufacturer's specifications in order to protect the motor bearings. This function enables a quick "ramp up" on pump start and then switches to the normal pressure control acceleration.

## Motor Protection

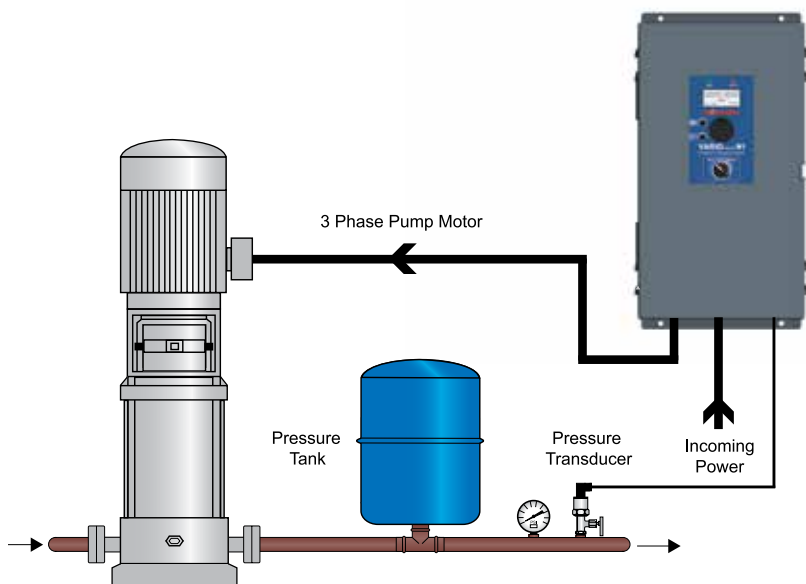
Output Phase Loss, Ground Fault, Motor Overload, Motor Over Temperature

## Drive Protection

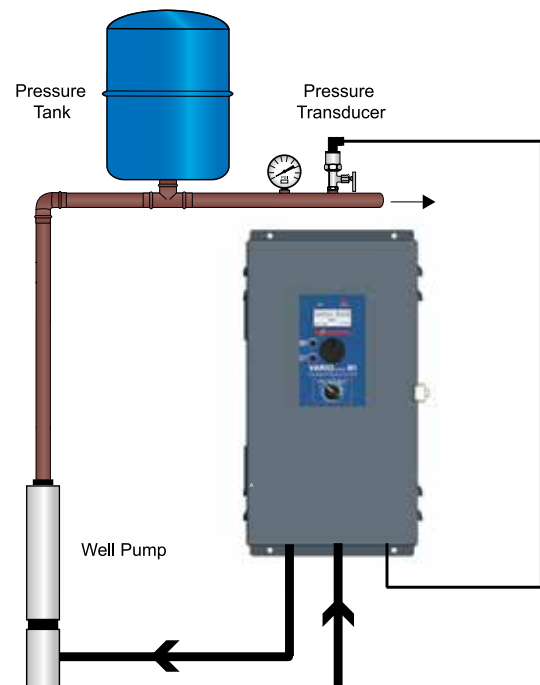
Over Voltage, Input Phase Imbalance, Under Voltage, Short Circuit

## Automatic System Restart

The VARIOspeed® VFD can be configured to automatically restart in Auto Mode after power loss, power spikes, brown outs and dry well conditions.



**Pressure Booster Pump Application**



**Deep Well Submersible Pump Application**

### Available HP Range

- (208V-240V) 1.5 HP - 20HP
- (480V) 7.5HP - 20HP
- Models available for single phase or three phase supply voltage
- Energy optimization control

### Enclosure Style

- VARIOspeed® N1 - NEMA 1 indoor enclosure
- VARIOspeed® 3R - NEMA 3R indoor/outdoor enclosure
  - Includes pump circuit breaker
  - Includes fan and thermostat on 7.5 - 20HP models

### Control

- PID control
- Adjustable electronic overload
- Auto Start on pressure drop (adjustable)
- Auto Stop on low Hz (No-Flow - sleep mode) saves energy and protects the pump

### Display

- 4 Line / 20 character back-lit LCD display is easy to read
- Rotary/push button for quick menu navigation and programming
- Green LED Run indicator
- Red LED Fault indicator
- Off/Auto selector switch

### Pressure Transducer

- 0-200 PSI, NEMA 4X rated, stainless steel, 1/4" NPT connection, 20 ft. shielded cable

### Experience the VARIOspeed® Advantage!

- Parameters are pre-programmed at the factory
- Quick installation, simple startup
- 100% factory-tested
- Low Pressure alarm (pipe burst or run dry protection)
- High Pressure protection
- System fault log
- Includes pressure transducer
- UL/cUL Listed
- Five-Year Limited Warranty
- One-Year Limited Warranty on Transducer



Display Interface (N1 shown)



VARIOspeed® N1



VARIOspeed® 3R



Part Number	Model	Voltage	Output Amp	HP	Input Phase	Output Phase	Dimensions HxWxD (inches)	Ship Weight
<b>VARIOspeed® N1 (NEMA 1 enclosure)</b>								
1041350	VS21-7.0-N1	240V	7.0	1.5	1	3	14 x 8 x 8	21 lbs.
1041351	VS21-10.0-N1	240V	10.0	3	1	3	14 x 8 x 8	22 lbs.
1041352	VS23-16.5-N1	240V	16.5	5	3	3	14 x 8 x 8	21 lbs.
1041353	VS23-31.8-N1	240V	31.8	7.5 - 10	3	3	18 x 10 x 10	31 lbs.
1041354	VS23-45.0-N1	240V	45.0	15	3	3	18 x 10 x 10	38 lbs.
1041355	VS23-58.0-N1	240V	58.0	20	3	3	18 x 10 x 10	38 lbs.
1041356	VS43-16.0-N1	480V	16.0	7.5 - 10	3	3	18 x 10 x 10	31 lbs.
1041357	VS43-29.5-N1	480V	29.5	15 - 20	3	3	18 x 10 x 10	38 lbs.

Part Number	Model	Voltage	Output Amp	HP	Input Phase	Output Phase	Dimensions HxWxD (inches)	Ship Weight
<b>VARIOspeed® 3R (NEMA 3R enclosure)</b>								
1030983	VS21-7.0-N3R	240V	7.0	1.5	1	3	18 x 16 x 10	31 lbs.
1030984	VS21-10.0-N3R	240V	10.0	3	1	3	18 x 16 x 10	32 lbs.
1039107	VS23-16.5-N3R	240V	16.5	5	3	3	18 x 16 x 10	31 lbs.
1030985	VS23-31.8-N3R	240V	31.8	7.5 - 10	3	3	18 x 16 x 10	35 lbs.
1039108	VS23-45.0-N3R	240V	45.0	15	3	3	18 x 16 x 10	42 lbs.
1039109	VS23-58.0-N3R	240V	58.0	20	3	3	18 x 16 x 10	42 lbs.
1039110	VS43-16.0-N3R	480V	16.0	7.5 - 10	3	3	18 x 16 x 10	47 lbs.
1039111	VS43-29.5-N3R	480V	29.5	15 - 20	3	3	18 x 16 x 10	47 lbs.

Part Number	Model	Use With VFD Output Amperages	Dimensions HxWxD (inches)	Ship Weight
<b>NEMA 3R Line/Load Reactors for N1 or 3R Models</b>				
1041535	LR23-16.5-N3R	7.0, 10.0, 16.5	12 x 12 x 10	37 lbs.
1041536	LR23-45.0-N3R	31.8, 45.0	12 x 12 x 10	46 lbs.
1041537	LR23-58.0-N3R	58.0	12 x 12 x 10	47 lbs.
1041538	LR23-16.0-N3R	16.0	12 x 12 x 10	38 lbs.
1041539	LR23-29.5-N3R	29.5	12 x 12 x 10	41 lbs.



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