

# VARIOSPEED® GRINDER DUPLEX CONTROL PANEL

Variable Frequency Drives for Grinder Pumps



The Duplex VARIOspeed® Grinder Control Panels are available for single-phase or for three-phase incoming power. Both versions are designed to control two three-phase sewage grinder pumps in level control applications. The TPC-X level controller is used with a transmitter to monitor the tank level and activate the Variable Frequency Drives (VFDs). The TPC-X controller provides automatic pump alternation, lead/lag operation, high and low level alarms, seal fail and thermal cutoff protection. If a high level alarm condition occurs, it activates the audible/visual alarm system. Each pump is controlled by a VARIOspeed® Grinder VFD and is able to reverse on a pump start and/or pump stop to clear any debris in the impeller. In addition, the panel can detect high-amp conditions during pump run, indicative of clogging, and automatically reverse the impeller. The process is momentarily and repeatedly until the binding material has been shredded to a size that can easily pass through the pump. This control method reduces clogging and potential failure resulting from a locked rotor.

## FEATURES

- TPC-X level controller
  - Level transmitter operation with backup high level float switch
  - Thermal cutoff protection
  - Seal Fail protection
  - Automatic pump alternation
  - Lead / Lag operation
- VFD Graphic color display (LCD):
  - High Brightness / Direct sunlight readable
  - Removable/handheld for easy programming
  - Pump run indication (FWD or REV)
  - Pump speed (Hz)
  - Pump current (A)
  - Float switch status
  - Elapse time meter/cycle counter
  - Message bar (Status & Alarm)
  - Alarm history
  - Password protection
  - Rotary button for easy menu navigation
- Quick start wizard for easy setup:
  1. Enter motor amps (FLA)
  2. Enter motor horsepower (HP)
  3. Enter motor voltage (V)
  4. Perform motor auto-tuning
- Quick connect terminals for ease of troubleshooting and service
- Pump dry run alarm (low amps)
- Pump motor overload protection
- Pump run high level alarm
- Max pump cycle time limiter
- 3 auto-reverse modes available (multiple modes can be selected)
  - Auto-reverse on start (clears the pump before starting the pump cycle)
  - Auto-reverse on stop (clears the pump after the pump cycle)
  - Auto-reverse on High Amps Detection (during a run cycle)
- Web-based cellular remote monitoring using SJE Panel Link (optional)



## COMPONENTS

1. Enclosure: NEMA 3R ultraviolet stabilized thermoplastic rated for outdoor use with mounting flanges, padlockable cover
2. Variable Frequency Drive
3. LCD VFD display
4. Circuit breaker
5. LED beacon
6. TPC-X level controller
7. Vents for VFD cooling (not shown)
8. Horn with Test/Silence button (not shown)

Note: See specifications on back side for sizing.



**VARIOSPEED® GRINDER DUPLEX CONTROL PANEL - Variable Frequency Drives for grinder pumps.**

Part #	Model	Input Voltage	Pump Rating	HP	Max Out Amps	Enclosure Size	Shipping Weight
1107909	VSGD-240-1-11	208-240V, 1 Phase	208/230V, 3 Phase	2	11A	24 x 24 x 10	45 lbs.
1107910	VSGD-240-1-17.8 <sup>1</sup>	208-240V, 1 Phase	208/230V, 3 Phase	3-5	17.8A	24 x 24 x 10	62 lbs.
1107911	VSGD-240-3-11	208-240V, 3 Phase	208/230V, 3 Phase	2	11A	24 x 24 x 10	45 lbs.
1107912	VSGD-240-3-16.5	208-240V, 3 Phase	208/230V, 3 Phase	5	16.5A	24 x 24 x 10	51 lbs.
1107913	VSGD-240-3-31.8	208-240V, 3 Phase	208/230V, 3 Phase	7.5-10	31.8A	24 x 24 x 10	62 lbs.

<sup>1</sup>Model not UL Listed

**SELECTING THE CORRECT VFD**

1. Determine the number of phase and voltage available on site. If three phase is available, use models rated for three phase incoming power.
2. Select a pump with the same voltage rating as the incoming power (motor must be three phase).
3. Check pump motor nameplate Full Load Amps (FLA) for proper VFD sizing.
4. Select a VFD with an output amp rating higher than motor FLA.

**SPECIFICATIONS**

**CONTROL:** VFD motor control (Sensorless Vector Control)  
 TPC-X Controller  
 1 x Transmitter Input  
 1 x Float Switch Input (High Level)  
 2 x Thermal Cutout Inputs  
 2 x Seal Fail Inputs  
 1 x Aux Alarm Relay Output  
 VFD LCD Display  
 Pump run/direction indication (FWD or REV)  
 Pump speed (Hz) and Amps (A) indication  
 Pump motor overload protection  
 Pump dry run alarm

**ENVIRONMENTAL:** Surrounding air temperature: 14°F to 104°F (-10°C to 40°C)  
 Panel internal temperature: 14°F to 122°F (-10°C to 50°C)  
 Storage temperature: -4°F to 131°F (-20°C to 55°C)  
 Altitude: Maximum of 3,280 ft (1,000 m) above sea level  
 All conduits must be properly sealed to prevent sewer gas from entering the enclosure. Not rated for installation in hazardous locations.

**ELECTRICAL:** Input voltage: 240V nominal  
 208-240V 50Hz/60Hz, single phase for VSGD-240-1 models  
 208-240V 50Hz/60Hz, three phase for VSGD-240-3 models

**Note: The output voltage cannot exceed the input voltage.**

**ENCLOSURE:** NEMA 3R ultraviolet stabilized thermoplastic rated for outdoor use with mounting flanges, padlockable cover

SJE Rhombus® recommends using the Sub-X™ Transmitter for level control. SJE Rhombus recommends using the SJE MilliAmpMAster™ Control Switch, SJE MegaMaster® Control Switch or the EZconnex® Float Switch Connection System for a high level backup float switch. For ordering information, please see our catalog pages at [www.sjerrhombus.com](http://www.sjerrhombus.com)