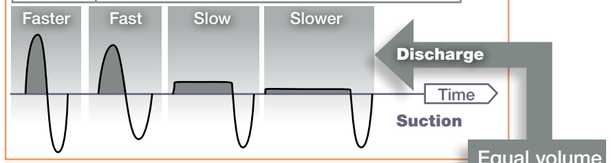
delta® with optoDrive® QUICKSTART GUIDE

Programming Guide and Description Of Functions

MAIN > SET > DOSING

This "Dosing" menu allows you to set the speed of suction/discharge dosing and pump monitoring functions. The following is a explanation of each function.

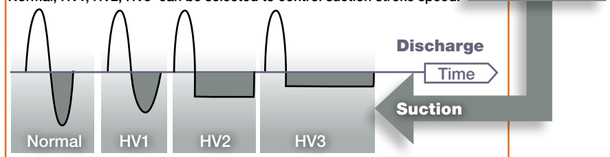
SETTINGS	
FAST	Fast has the pump operating in pulsed discharge dosing
SLOW	Increases the discharge stroke duration as speed is decreased (syringed dosing). Below 60 SPM, a visual indication of stroke progress is show on "lower left" display.



Equal volume suction and discharge, variable durations suction and discharge

SETTINGS	
NORMAL	Normal suction stroke - 200 SPM max.
HV1	Slow suction stroke duration - 160 SPM max.
HV2	Slower suction stroke duration - 120 SPM max.
HV3	Slowest suction stroke duration - 80 SPM max.

Normal, HV1, HV2, HV3 can be selected to control suction stroke speed.



For prevention of cavitation, aggravation of off-gassing and pumping higher viscosity chemicals.

SETTINGS	
INTELLIGENT	This function allows the pump to monitor for airlocking, low discharge pressure, high discharge pressure and compensate dosing volume for varying back pressure.
STRAIGHT	This function disables the airlock, low pressure and compensation features, limits maximum speed to 160 SPM.
PRESSURE	The max pressure rating of the pump can be reduced, default setting is per published data for more details on specific pump head size and adjustments, see the full operating instructions.
COMPENSATION	For varying back pressure, the pump will compensate dosing volume for variations and give a consistent high metering accuracy over a wide range of back pressures.

MAIN > SET > DOSING

AIRLOCK	Here a detection of air in the dosing head can have the pump respond accordingly.	
	NONE	No response or indication
	WARNING	symbol on lower left display, Pump continues to run, AMBER LED illuminated
	ERROR	symbol on main display, Pump stops, RED LED illuminated
LOW PRESSURE	Here a recognition that the pump is operating at a low discharge pressure. This could be an indication of a broken discharge line, etc. The pump will respond accordingly.	
	NONE	No response or indication
	WARNING	symbol on lower left display, Pump continues to run, AMBER LED illuminated
	ERROR	symbol on main display, Pump stops, RED LED illuminated
HIGH PRESSURE	Here a recognition that the pump is operating at a higher than expected discharge pressure. This could be an indication of a blocked discharge line or closed valve, etc. The pump will respond accordingly.	
	WARNING	symbol on lower left display, Pump continues to run, AMBER LED illuminated
	ERROR	symbol on main display, Pump stops, RED LED illuminated

RELAY OPTION

If the fault relay option is installed it can be set for function and operation.

- Press and hold P until the "Main" menu appears.
- Use ↑ to move ➔ to "Set". Press P. Use ↓ to move ➔ to "Relay".
- Press P to enter, Relay 1 will be shown if single relay was used.
- **Use ↑ or ↓ to select.** Press P to enter.

ERROR	Change state only on error
WARNING	Change state with a warning
WARNING + ERROR	Change state with warning or error
PULSE	Relay open/closes each time pump strokes
WARN + ERROR + STOP	Change state with warning, error or STOP pressed

Once you select the above function of the relay, it's operation can be set to "energized" (normally de-energized) or "releasing" (normally energized).

- **Use ↑ or ↓ to select.** Press P to complete relay programming.

CANADA

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Part Number (7750407)

delta® with optoDrive® QUICKSTART GUIDE

ProMinent®

Experts in Chemical Feed and Water Treatment

Pump Control Panel: Push Button Functions

- **P** — Press and Hold for 2 (two) seconds to enter into programming *or* Press once to confirm a setting or value when in programming menu
- **i** — Steps through operating information each time when pressed, press i and hold until ➔ reaches bottom then let go, now lower display can be stepped through each time i is pressed
- **↑** — Increases numeric value / Up / step back in programming
- **↓** — Decreases numeric value / Down
- **STOP START** — Stop/Start pump operation

MANUAL MODE

Pump is shipped in Manual mode, set at maximum stroke frequency (200 SPM).

- **Use ↑ or ↓ to change pump's stroke frequency.**
- **Use i to step through operating information: the strokes/min or strokes/hour on "Main" display. The "Lower Right" display will show either SPM, SPH, # of strokes, % Stroke Length, Suction and Discharge Speed settings.**
- **Use STOP to start and stop pump.**

ANALOG MODE (Option for pump)

TO PUT INTO ANALOG MODE (pump impedance 120 Ω)

- **Press and hold P until the "Main" menu appears, the ➔ should be pointing to Mode. Press P to enter, use ↓ to bring ➔ to analog.**
- **Press P to put the pump into "Analog" mode.**
- **The pump is now in Analog mode.**
- **If the red LED comes on and i<4mA flashes on the display, the pump is not receiving an analog signal or the signal is below 3.7mA. (4..20mA operation)**

TO SET FOR 4..20mA (OR 0..20mA) OPERATION

- **Press and hold P until the "Main" menu appears.**
- **Use ↓ to move the ➔ to "Set". Press P**
- **Use ↑ or ↓ to move the ➔ to "Analog". Press P**
- **Use ↑ or ↓ to move the ➔ to "4..20mA" or "0..20mA". Press P. The "Lower Right" display can be programmed to show actual mA signal to pump.**
  The curve* selection is used for a custom response to a mA input signal.
  ***Refer to the full operating instructions for details on this function.**

CONTACT MODE

Pulse inputs via the universal control cable. The delta pump has a multiplier/divider function as a standard.

TO PUT INTO CONTACT MODE.

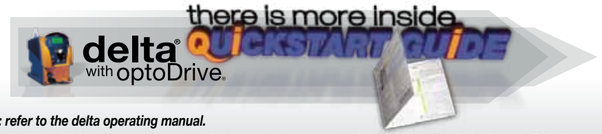
- **Press and hold P until the "Main" menu appears. The ➔ should be pointing at "Mode". Press P to enter.**
- **Use ↑ or ↓ to bring ➔ to "Contact". Press P to put the pump in contact mode. You should see a symbol on the lower left display and "Contact" in the upper right display.**

TO SET A MULTIPLIER/DIVIDER VALUE (can be set in a range of 0.01 to 100.00)

- **Press and hold P until the "Main" menu appears. The ➔ should be pointing to "Mode".**
- **Use ↓ to move the ➔ to "Set". Press P.**
- **Use ↓ to move the ➔ to "Contact". Press P.**
- **The ➔ will point to "memory", press P to enter then ↑ or ↓ to turn memory on** or off. Press P.**
- **Use the ↑ or ↓ to set the factor.**
- **Press P to return to pump operation.**
  (i.e. For multiply by 2.5 = 2.50 For divide by 2 = 0.50)

**** Memory "on" will accumulate pump strokes if pulse inputs are coming in faster than the pump speed.***

there is more inside



For a complete listing of all delta display symbols, airlock feature, and auto-degassing option feature: refer to the delta operating manual.
ProMinent recommends operators familiarize themselves with the pump's operating manual, as the QuickStart Guide is a supplement to this important documentation about your delta® with optoDrive® pump.

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CALIBRATION

To calibrate the pump, have the pump ready to draw from or into a calibration column.

TO SELECT UNITS (LITRES OR US GALLONS)
- Press and hold P until the "Main" menu appears.
- Use ↓ to move → to “Set”. Press P.
- Use ↓ to move → to “System”. Press P.
- With → at “Unit”. Press P.
- Use ↑ or ↓ to select between "Litres" or "gallon (us)". Press P to select.

TO CALIBRATE
- Press and hold P until the "Main" menu appears.
- Use ↓ to move → to “Set”. Press P.
- Use ↓ to move → to “Calibration”. Press P.
- Use ↓ to move → to “start calibration”.
- Press P to start the calibration. The pump will run and count the # of strokes. Recommend to run for approx. 1 minute or about 200 strokes.
- Press P to stop the calibration. Determine the volume pumped (i.e. 50mL = 0.050 Litres)
- Use ↑ or ↓ to change the displayed volume to the pumped volume.
- Press P to enter this value into the pump. Calibration is complete.

By using the i on the main display can show the pump rate in L/hr. By going to the lower display you can change it to show to totalized capacity.

By doing a calibration you are able to set up the concentration feature of the pump. This allows the entry of a water flow rate, chemical %, and chemical density. Once entered the pump can then show "ppm" addition or "% C" (% Concentration).

CONCENTRATION

The pump needs to be calibrated to use this feature. It can then be used in Manual, Batch, Contact, or Analog modes.

To enable this feature and set up:
- Press and hold P until the "Main" menu appears.
- Use ↓ to move → to “Set”. Press P.
- Use ↓ to move → to “Concentration”. Press P.
- Use ↓ to move → to “on”. Press P.

From here you enter the specifics dependant on operating mode

For Manual mode
- Press P and then use ↑ or ↓ to adjust the water flow rate (needs to be constant flow).
- Press P then use ↑ or ↓ to adjust chemical %.
- Press P then use ↑ or ↓ to adjust chemical density.
- Press P **to return to operation.**

An interlock should be used to stop the pump when there is no water flow. (i.e. Pause Input)

For Batch mode, a volume in Litres (l) needs to be entered, then chemical % and chemical density.

For Contact mode, a volume/contact from water meter needs to be entered, then chemical % and chemical density.

For Analog mode, a flow (m^3) at 20mA needs to be entered, then chemical % and chemical density.

In each of these modes, the flows, volumes first entered are assumed to be water. By using the i you can adjust the Main or lower right display to show ppm or %C.

AUXILIARY FREQUENCY

The universal control cable must be connected to the pump. When the gray wire is connected to the black, the pump strokes at the preset auxiliary frequency.

TO SET THE AUXILIARY FREQUENCY
- Press and hold P until the "Main" menu appears.
- Use ↓ to move → to "Set". Press P.
- Use ↓ to move → to “Auxiliary”. Press P.
- Use ↑ or ↓ to adjust auxiliary frequency.
- Press P to return to pump operation.

A value can be set from 0 to 200, however it may be limited to a lower value if the “straight” or “HV” settings are used.

FLOW MONITORING

A flow monitor (optional accessory) must be connected to the pump for this function. With this configuration you are able to set the number of pump strokes with low volume before a fault occurs.
- Press and hold P until the "Main" menu appears
- Use ↓ to move → to “Set”. Press P.
- Use ↓ to move → to “Flow”. Press P.
- Use ↓ to move → to “On”. Press P.
- Press P and then use ↑ or ↓ to adjust the "tolerance" (number of pump strokes with low volume before a fault occurs).
- Press P to set auxiliary, use ↑ or ↓ to select “on” or “ off”.
  Off = while aux is active pump ignores flow monitor
  On = while aux is active pump monitors flow
- Press P to select pump response to low/no flow. Use ↑ or ↓ to move → to "Warning" or "Error". Press P to return to pump operation.

WARNING	on left display, Pump continues to run, AMBER LED illuminated
ERROR	on main display, Pump stops, RED LED illuminated

QUICK PRIMING

- Press ↑↓ simultaneously.
- will appear on upper left display and on upper right display.
- Pump will operate at maximum available stroke frequency while ↑↓ pressed.

UNIVERSAL CONTROL CABLES - purchased separately

Precision Genuine ProMinent Parts Quality

LENGTH		PART NUMBER
2 metre	(6 ft.)	1001300
5 metre	(15 ft.)	1001301
10 metre	(30 ft.)	1001302
50 metre	(150 ft.)	1032811
Diaphragm Rupture Monitor		1027416

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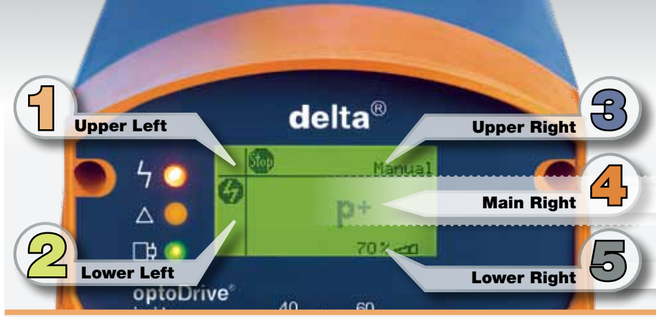

QUICKSTART GUIDE delta® with optoDrive® DISPLAY

Main Display Main Right	using i you can step through operating information each time it is pressed.
Lower Display Lower Right	press and hold the i until → reaches the bottom, then let go. Now each time i is pressed additional information specific to the operating mode is displayed.

COMMON DISPLAY SYMBOLS*

The delta has a number of symbols that can be displayed. They can also change depending on what operating mode the pump is in; what is connected to the pump; and how it is programmed.

1 Upper Left

P	pump in programming mode
i	info on the "Main" or lower right display can be stepped through by pressing i
00	value in the "Main" display is changed

2 Lower Left

	warning, level switch indicates tank level low pre-warning
	warning, flow monitor input, allowable error strokes exceeded
	warning, diaphragm rupture monitor indicates rupture
	warning, pump detects air in dosing head
p-	warning, pump detects low discharge pressure
p+	warning, pump detects high discharge pressure
	indication of incoming pulses when in "Contact" mode
M	indicates memory function is enabled in "Contact" or "Batch" modes
4..20	indicates pump in "Analog" mode with 4..20mA input selected
0..20	indicates pump in "Analog" mode with 0..20mA input selected
Φ	indicates flow monitor is installed and monitoring enabled
	indicates progressive position of diaphragm in slow dosing mode when speed is below 60SPM
	fault has occurred, info on "Main" right display

3 Upper Right UPPER DISPLAY

Stop	pump stopped manually via Stop
	pause input, pump is stopped via an open contact between brown -black wires of universal control cable, closed contact will allow pump to run
AUX	Auxiliary input enabled, closed contact between gray -black of universal control cable enables this feature
MANUAL	pump operating in manual mode
CONTACT	pump operating in contact mode
BATCH	pump operating in batch mode
ANALOG	pump operating in analog mode

4 Main Right MAIN DISPLAY

	fault, level switch input indicates tank level low, pump stops.
	fault, flow monitor input, allowable error strokes exceeded, pump stops.
	fault, diaphragm rupture monitor indicates rupture, pump stops.
	fault, pump detected air in dosing head, pump stops.
p-	fault, pump detects low discharge pressure. pump stops.
p+	fault, pump detects high discharge pressure (blocked/closed valve), pump stops.
i <4mA	fault, 4..20mA input missing or less than 3.7mA , pump stops.
/min	pump speed shown in strokes/minute
/h	pump speed shown in strokes/hour
	pump in "Contact" mode

5 Lower Right LOWER DISPLAY

	additional info on operation can be shown here