



Liquid Control™ DL

Plural-Component Rotary Pump Meter,
Mix and Dispense Unit



Reduces Rework Costs Through Accurate, High-Volume Dispensing

- Variable ratios from 1:1 to 30:1 allow you to handle more materials
- Easy programming with intuitive touch pad
- Reliable brushless AC gear motors provide thousands of hours of service
- Optional EnGarde® ratio monitoring system provides independent ratio accuracy

Accurate, Continuous Flow and Shot Dispensing

Designed for high-volume output to increase your production capacity

The Liquid Control DL is a stand-alone rotary pump metering system. With fully-programmable flow rate and mix ratio, the DL reduces operator training time and waste from improper

machine calibration. The DL's rotary or progressive cavity pumps are designed to provide a smooth dispense for your continuous flow applications.

Display Screen

Easy to configure, set up and operate with customized PLC software



Reservoirs

A variety of sizes and features accommodates most processes and chemistries



Mixing Heads

The metered components are delivered to either motionless or dynamic disposable mixers, depending on the material



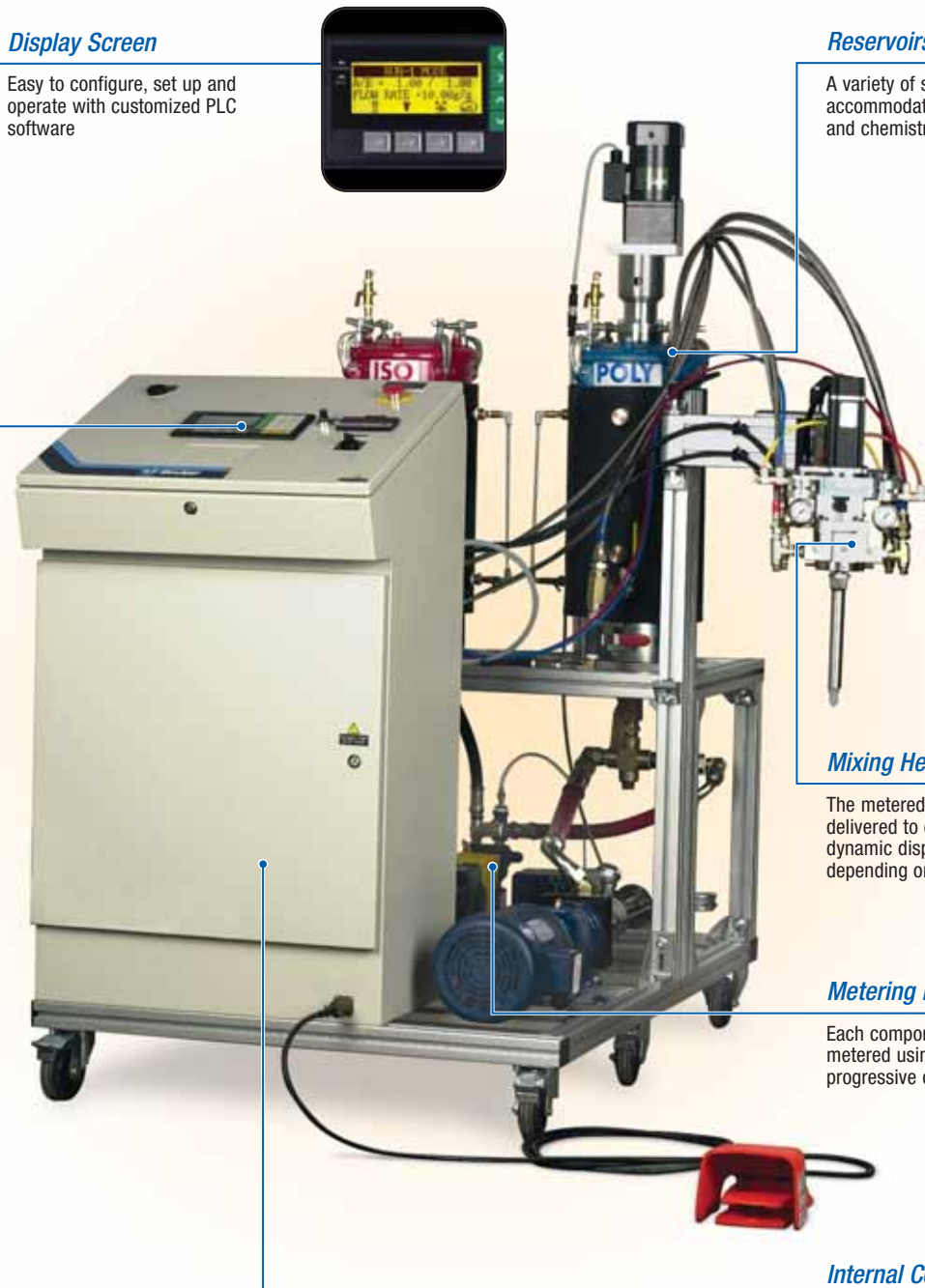
Metering Pumps

Each component is precisely metered using gear pumps or progressive cavity pumps



Internal Components

Easily accessible inside the custom enclosure. The wiring is color-coded, and labeled using the highest quality assembly techniques





Low-maintenance AC gear motors provide years of trouble-free service.

Improve production flexibility

- A wide selection of pump types and sizes are independently driven to dial in your ratio
- Flow rates from 2 cc/sec to 100 cc/sec (1.5 gal/min) depending on pump selection
- Touch pad interface displays ratios, flow rates and other process functions
- Continuous or shot dispensing for silicones, polyurethanes or epoxies; filled and unfilled
- Additional options include progressive cavity and magnetic drive pumps, Paradyne® dynamic mixing head and automation

Simple interface software is easy to learn and operate

- Configure the desired options
- Calibrate mix ratios in a few easy steps

Handles all your process control needs

- EnGarde ratio monitoring system uses independent meters to ensure ratio accuracy
- Two levels of access protect critical process settings

For a variety of applications



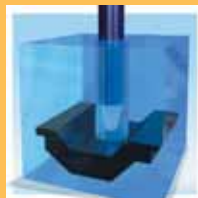
Flexible Packaging & Coating



Composite Processes



Gasketing



Molding & Encapsulation



Bonding



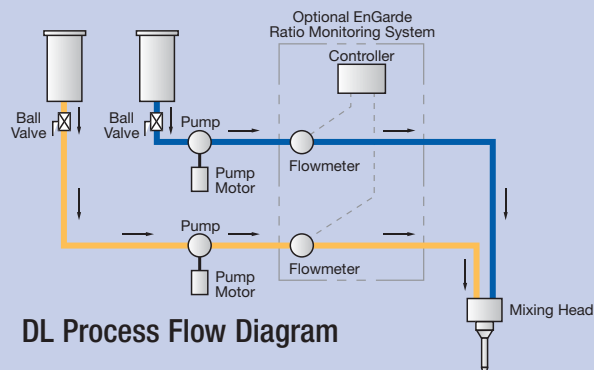
Open Pour

Customize the DL to Your Manufacturing Process

Direct Dispense

Use the process flow configuration when:

- Motionless mixers are used
- Processing materials that do not separate
- Feeding a mixed material stream to a continuous process (such as laminator, coating line or filament winder)
- Shot duration is from two seconds to infinite
- Material ratios are from 1:1 to 5:1
- Process requires only limited temperature control

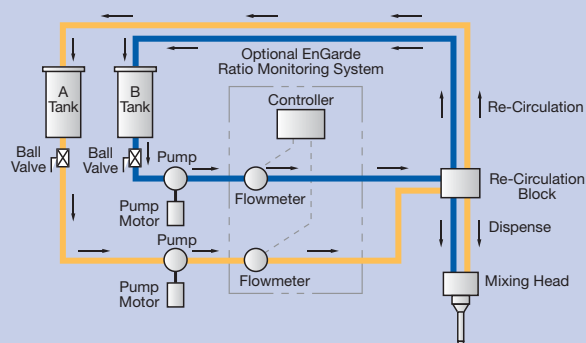


DL Process Flow Diagram

Re-circulation System

Use the Re-circulation System configuration when:

- Motionless mixers are used
- A light-weight mixing head is required
- Closed loop ratio control is desired
- Discontinuous shot or bonding applications are used
- Chemistries may separate or stratify
- Optional EnGarde closed loop ratio control available



DL Process Flow Diagram with Re-circulation

Feed/Reservoir Systems

After selecting the correct metering pump and mixing head, choose your feed system. All systems are available with:

- Stainless steel or mild steel construction
- Bottom outlets
- Stands

Chemistry dictates the construction materials and the process aids such as heat and agitation. The application and dispense volumes will lead to reservoir size and refilling options.

A range of reservoir sizes is available:

- 5 gal (20 l)
- 10 gal (40 l)
- 55-gal (200 l) drum feed systems

Sealed Reservoirs



- Pressure feed
- Sight tubes
- Low/high level fluid control
- Agitation

55-Gallon



Drum Feed

- 2-drum
- 4-drum
- Optional low-level sensors

Heat/Vacuum



Degas Reservoirs

- Vacuum to <5 torr
- Heat to 180°F/80°C
- 2 to 60 gallon
- Slinger plates for fast degassing
- Auto-refill

Digital Interface Provides Precise Control



Simple interface software is easy to learn and operate:

- Configure the options purchased
- Calibrate flow rates in a few steps
- Password protect your settings



The right mixing head for the right materials

The DL can be configured with motionless, dynamic, handheld or spray mixing heads. Select the one that is right for your process.



Twin Dispense

- Spring-loaded valves
- Motionless mixers
- Lightweight



MD2

- Pneumatically actuated
- Non-drip design
- Lightweight
- Motionless mixers



Paradyne®

- Patented non-drip
- Recirculation design
- Dynamic mixing with disposable mixers

Easy-to-Configure Systems

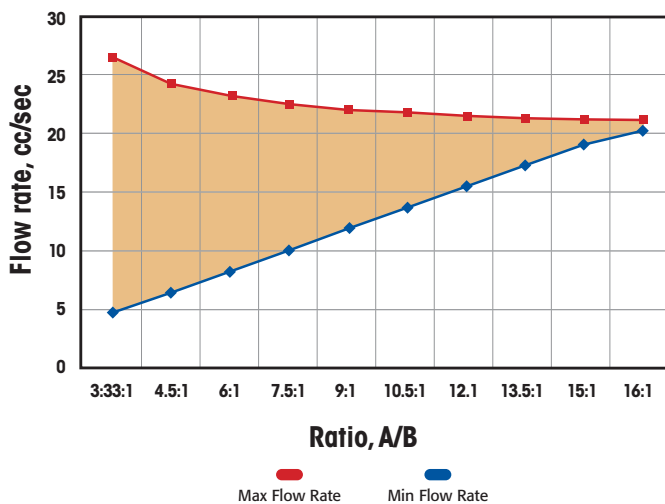
Wide Ratio Performance, from 1:1 to 33:1

Use this chart to determine proper pump sizes for your desired flow rate at the volume ratio.

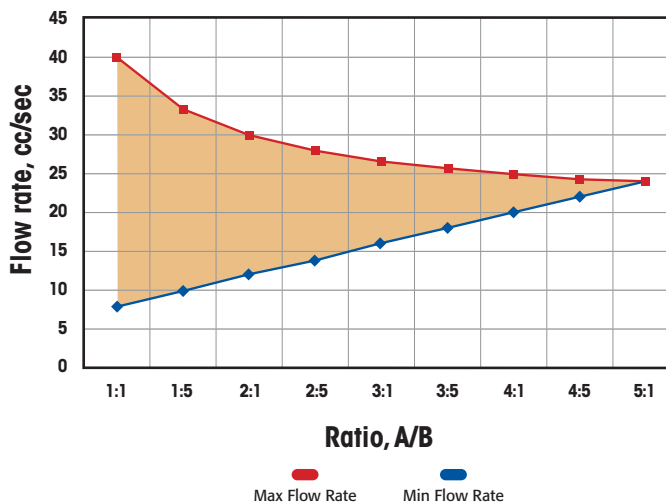
Pump Output		Ratio Range			Flow Rate at Min Ratio		Flow Rate at Mid Ratio		Flow Rate
A cc/rev	B cc/rev	Ratio Max	Ratio Mid	Ratio Min	Min cc/rev	Max cc/rev	Min cc/rev	Max cc/rev	Max cc/rev
20	20	5.00	3.00	1.00	8.0	40	16.0	26	24.0
20	12	8.33	5.00	1.67	6.4	32	14.4	24	22.4
20	6	16.67	10.00	3.33	5.2	26	13.2	22	21.2
20	3	33.33	20.00	6.67	4.6	23	12.6	21	20.6
12	12	5.00	3.00	1.00	4.8	24	9.6	16	14.4
12	6	10.00	6.00	2.00	3.6	18	8.4	14	13.2
12	3	20.00	12.00	4.00	3.0	15	7.8	13	12.6
6	6	5.00	3.00	1.00	2.4	12	4.8	8	7.2
6	3	10.00	6.00	2.00	1.8	9	4.2	7	6.6
3	3	5.00	3.00	1.00	1.2	6	2.4	4	3.6

Examples of flow rate envelopes for selected pumps

Flow Rate vs Ratio, 20/6 cc pumps



Flow Rate vs Ratio, 20/20 cc pumps



Technical Specifications and System Options



Options to create your own meter mix dispense system.



Agitators



Auto-Refill



Printer



Sight Gauge



Desiccant Air Dryer



Pressure Tanks



Audible Alarm



EnGarde™ Gear Flowmeter for Ratio Monitoring



EnGarde Mass Flowmeter for Ratio Monitoring



Vacuum Pump



Elevated Temperature Control



Third Component Injection

Technical Specifications

Refer to the DL Configurator for all specifications listed below.

Voltage	230/1/60Hz
Max Flow	100cc/sec @ 1:1
Min Flow	2 cc/sec @ 5:1
Ratio Range	1:1 to 33:1
Max viscosity	10,000 cps
Max fluid pressure	500 psi
Heating Voltage	230/1/60Hz for heated hoses and 5 gallon tanks. 10 gallon tanks require 230/3/50-60. Separate power service is required for all tanks.
Wetted parts	Pump: Mild Steel standard. Optional Stainless Steel.
Seals	EP or Viton



Modular designs are available to adapt the DL to specific plant requirements.