

## OMEGA 3000 – BLC80 MULTIPLE ADDITIVES ON A SINGLE ARM

To provide multiple drawer products with different additives from a single loading arm for a single drawer company on a BLC80/88, there are a number of solutions. Firstly multiple additive groups can be used, secondly a single additive group with some selection logic may be used.

If multiple additive groups are used there is an operational restriction in that only one of the drawer products may be loaded in a single transaction. There is also a restriction in Open Order Loads, in that only one of the drawer products can be nominated in an Open Order.

The second method removes these restrictions. This application note shows this configuration, and allows loads to be performed in a single transaction.

### STANDARD SYSTEM

#### BLC80/88

The BLC80/88 loading controller has a single pulsed inject output for each arm and a set of four outputs called Additive Group, which are bay wide. The four additive group outputs are set at the beginning of a transaction and do not change for the duration of a transaction. The injector output is pulsed when additive is required for an arm. As the additive group outputs are fixed for a transaction the drawer products that can be loaded in a single transaction must have the same additive group (injector number).

#### Omega 3000

When any load is created and contains 2 separate drawer products that can be loaded from the same arm, each requiring a different additive group configuration, only one of the products will be authorized in a single transaction (only one additive group per transaction).

For Pre-scheduled loads, the additive group of the drawer product for the lowest compartment number which can be loaded at the bay, will be activated. Subsequent transactions follow the same rule.

For non Pre-scheduled loads, when that entire product has been consumed from the load then in subsequent transactions the other product can be authorized. This leads to a restriction in Open Orders with large quantities, Omega will only authorize one additive group for a transaction and if that entire product is not consumed then the next transaction will authorize the same product.

### SOLUTION

Instead of configuring the two additives injectors as different injector numbers on the BLC, i.e.: both injectors directly controlled, one injector only is directly controlled by the BLC and the other is configured to inject as a ratio from the main meter but disabled when the controller is injecting.

The result is that the arm can provide 2 drawer products. The base product plus the directly controlled additive, when the controller is injecting, or the base product plus the non directly controlled additive, when the controller is not injecting. In this configuration the bay cannot deliver the base product with no additive.

The Omega system is configured so that drawer product that the arm can dispense without additive is the product with the non directly controlled injector.

The directly controlled injector must be configured to inject a set volume and set to inject on every inject pulse from the controller. The non-directly controlled injector must be configured to inject a set volume after counting sufficient main meter pulses to obtain the required ratio.

In load types where there is uncertainty relating to the product to be dispensed, i.e. Open Order, the controller will ask the following question

*“Additive required (YES) = Enter, (NO) = Clear”*

On answering YES the directly controlled additive will be injected, on answering NO the non directly controlled additive will be injected.

### Technical

Please refer to the enclosed drawing indicating the electrical interface required enabling this configuration.

The configuration requires a flameproof enclosure to house a zener barrier, 2 by double pole relays and 1 by triple pole relay. Cabling from this enclosure would be to the controller gantry termination box, controller I/S terminations, intelligent injector, such as the MiniPak, and an I/S earth point.

The zener barrier provides isolation for the meter pulses to the intelligent injector these pulses are applied to the intelligent injector via an interposing relay, the injector will count volume from the main meter and inject when sufficient main volume has passed. When the directly connected injector is pulsed during a transfer the relay logic will disconnect the meter pulses from the non directly connected injector so it will no longer inject. This condition is reset when the arm request line becomes inactive which occurs at the end of every transfer.

### Issues

1. The non directly controlled injector must be an intelligent injector.
2. The meter factor for the main meter must be maintained in the intelligent injector.
3. The Omega system does not account for the non directly controlled additive.
4. Potentially there may be a single inject pulse of the non directly controlled additive injected into the drawer product with a directly controlled injector. This occurs as the relay logic cannot determine that the directly controlled injector is being used until the first direct inject pulse, usually some 80 litres into a load. The additive to be injected by the non directly connected injector should be chosen accordingly.
5. The Driver/Operator must understand how to answer the “Additive required” question on loads where he can select product.

**CONCLUSION**

This solution provides a working system which will work for all load types, Pre-scheduled, Pre-ordered, Open Order and Order(Specials) and allow a single transaction to load any combination of a drawer company's drawer products, up to 8 transfers (standard restriction).

