AN100 – Using Axiomatic Servo Controllers to Drive the Danfoss Series 90 Pump

Introduction

Axiomatic offers products AX024000 and AX024010 (Servo Valve Controllers) to obtain versatile control of two servo outputs to directly drive servos or other loads. The controller has two universal inputs that can be configured to measure analog voltage or current, frequency/PMW or digital signal and two analog inputs that can be configured to measure current and both positive and negative voltages. Measure input data can be sent to a SAE J1939 CAN Network or used to drive outputs, either directly or through the configurable control algorithms.
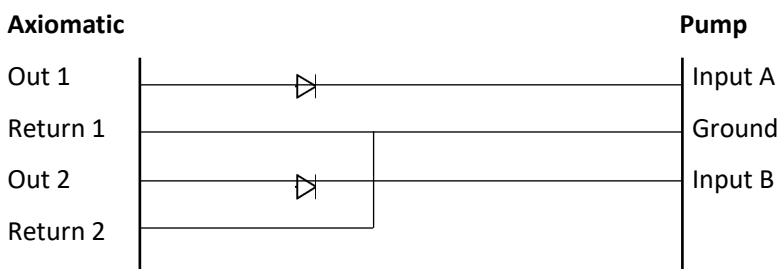
The Windows-based Axiomatic Electronic Assistant (EA is used to configure the controller via a USB-CAN device. The Axiomatic Electronic Assistant KIT, P/Ns: AX070502 or AX070506K, may be ordered from the Axiomatic website at: https://www.axiomatic.com.

Danfoss Series 90 Pump

When driving the MCV116 Pressure control pilot valve with an Axiomatic Servo driver (AX024010 or AX024000), a small modification is needed to obtain the desired measurements.

When controlling the Danfoss EDC with both outputs connected, only one coil is driven at a time. When using a high frequency PWM signal and due to the close physical proximity of the two coils in the control head, the coils act as a transformer and the driven coil induces a voltage in the other coil, which somehow affects the current sensing circuit and causes the output to oscillate. To avoid this issue, diodes need to be placed on the return lines of the outputs from the Axiomatic controller.

Diode Placement

Axiomatic		Pump
Out 1	▷	Input A
Return 1		Ground
Out 2	▷	Input B
Return 2		

▷ The Diode is placed here.

Version	Date	Authors	Comments
1.00	April 16, 2020	Sue Thomas / Greg Laronde	Initial Release
1.01	July 05, 2023	Kiril Mojsov	Legacy Updates & Marketing Review