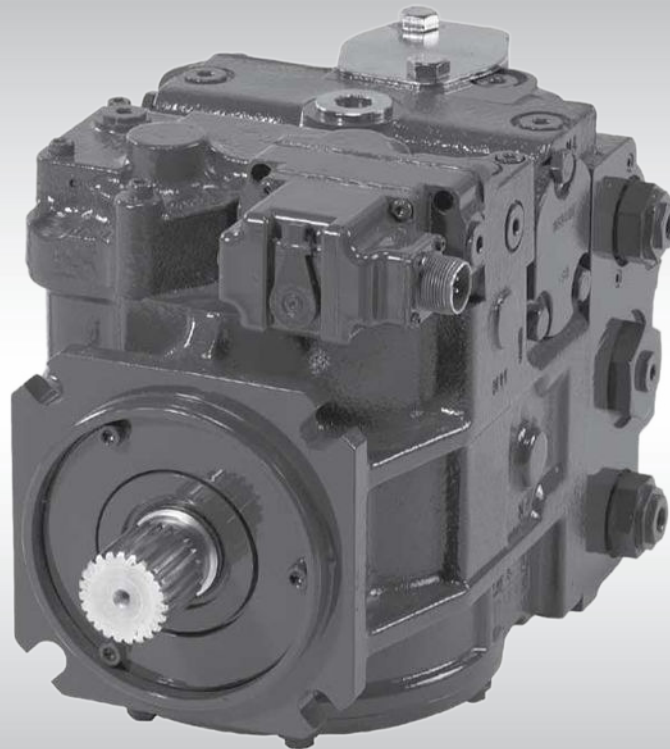




Electrical Installation

Series 90 Pump

Electrical Displacement Control (EDC)



Revision history*Table of revisions*

Date	Changed	Rev
September 2015	Minor correction to layout	BB
August 2015	Converted to Danfoss layout	BA
September 2010	PWM frequency recommendation	BA
September 2007	Maximum current specification corrected in table	AB
April 2007	First edition	AA

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Literature references**S90 Pump EDC literature references**

Literature title	Description	Literature number
<i>S90 Axial Pumps Technical Information</i>	Complete product electrical and mechanical specifications	520L0603
<i>S90 EDC Control Compliant Function Block User Manual</i>	Compliant function block set-up information	11022912

Latest version of technical literature

Danfoss product literature is online at: <http://powersolutions.danfoss.com/literature/>

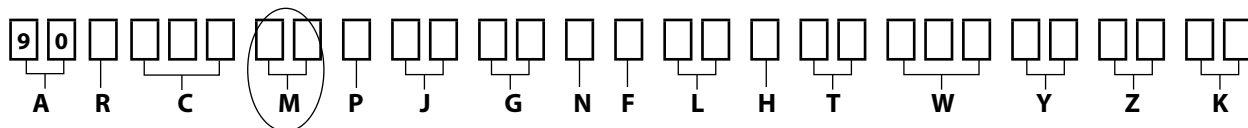
Product overview

Product image

S90 Pump EDC



Nomenclature



M module - EDC control options

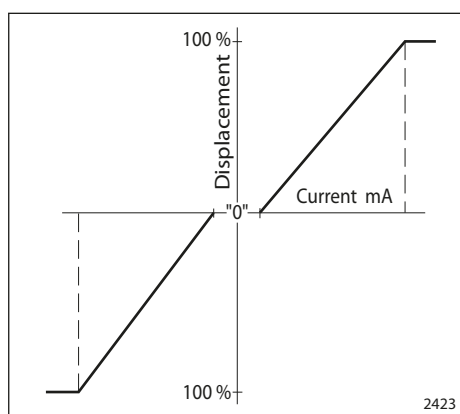
Option	Description
KA	Electrical Displacement Control
KP	Electrical Displacement Control

Only certain control options for the Series 90 pump utilize the Electrical Displacement Control (EDC). Please refer to the pump's nomenclature to determine if the pump is equipped with the proper option. The nomenclature can be found on the pump's name tag.

Product overview
Theory of operation

The electric displacement control uses an electrohydraulic Pressure Control Pilot (PCP) valve to control the pilot pressure. The PCP converts an electrical input signal to a hydraulic input signal to operate a 4-way servo valve, which ports hydraulic pressure to either side of a double acting servo piston. The servo piston tilts the cradle swashplate, thus varying the pump's displacement from full displacement in one direction to full displacement in the opposite direction.

The control has a mechanical feedback mechanism which moves the servo valve in relation to the input signal and the angular position of the swashplate. The electrical displacement control is designed so the angular rotation of the swashplate (pump displacement) is proportional to the electrical input signal. Due to normal operating force changes, the swashplate tends to drift from the position preset by the machine operator. Drift, sensed by feedback linkage system connecting the swashplate to the control valve, will activate the valve and supply pressure to the servo piston, maintaining the swashplate in its preset position.

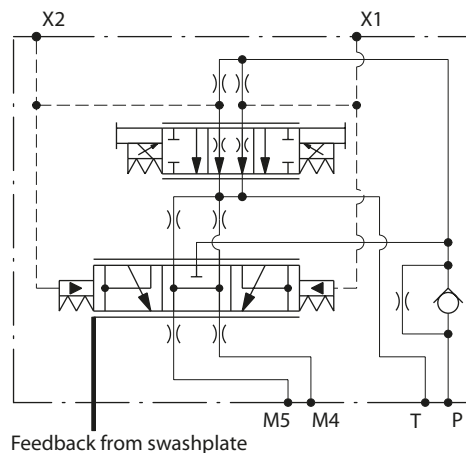
Pump displacement versus control current

Hydrostatic drive line power
 Warning

Unintended vehicle or machine movement hazard. The loss of hydrostatic drive line power, in any mode of operation (forward, neutral, or reverse) may cause the system to lose hydrostatic braking capacity. You must provide a braking system, redundant to the hydrostatic transmission, sufficient to stop and hold the vehicle or machine in the event of hydrostatic drive power loss.

Product overview

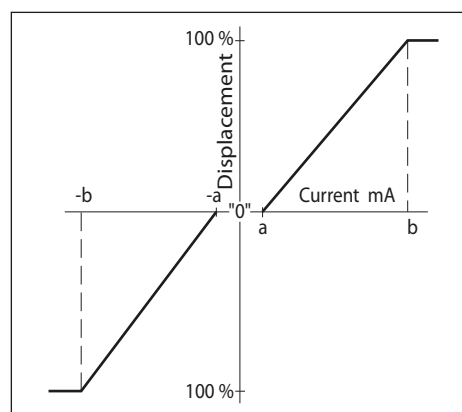
Hydraulic schematics

Electric Displacement Control schematic



Electrical specifications

Pump displacement versus threshold and end current



Specifications

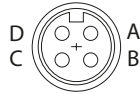
Threshold current (-a, a)	14 mA
End current (-b, b)	85 mA
Maximum current	100 mA
Rated power	18 W
A - B Coil resistance at 24°C (75°F)	20Ω
C - D Coil resistance at 24°C (75°F)	16Ω
Recommended PWM frequency*	200 Hz

* Verify the PWM frequency is set correctly in the PLUS+1® controller. A PWM frequency of 200 Hz or higher is recommended, including the default frequency of 4000 Hz.

Electrical installation

Pinout

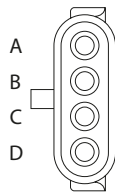
Pin location



MS connector pinout

	Function
A	PWM signal
B	Ground
C	Ground
D	PWM signal

Pin location



Delphi Weather-Pack connector pinout

Pin	Function
A	PWM signal
B	Ground
C	Ground
D	PWM signal

Pin compatibility

PLUS+1® module pin type

Pin	Function
A, D	PWMOUT/DOUT/PVG Power supply*
A, D	PWMOUT/DOUT/PVGOUT
B, C	Power ground-

* Use output pins with configurable PWM frequency.

Warning

Unintended vehicle or machine movement hazard. Verify the wiring harness to ensure the correct PLUS +1® pin is properly connected to each control pin.

Electrical Installation S90 EDC

Electrical installation
S90 EDC input/output matrix

Input shaft rotation	Clockwise		Counterclockwise	
	A	D	A	D
Positive current to term	A	D	A	D
Port A flow	Out	In	In	Out
Port B flow	In	Out	Out	In
Service cylinder	M5	M4	M5	M4

Mating connector
MS connector parts list

Description	Quantity	Ordering number
MS connector	1	SG3108E-14S-2S-SR
Mating connector kit	1	Danfoss K08106

Delphi Weather Pack connector parts list

Description	Quantity	Ordering number
4 way black Weather Pack tower sealed female connector assembly	1	12015797
Female terminals (18 to 20 AWG)*	4	15408312
Cable seals (2.03 to 2.85 mm cable diameter)*	4	12015323
Mating connector kit	1	Danfoss K03384

* Contact Delphi for proper components if using different wire size than listed.



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Local address:

Danfoss Power Solutions (US) Company
2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515 239 6000

Danfoss Power Solutions GmbH & Co. OHG
Krokamp 35
D-24539 Neumünster, Germany
Phone: +49 4321 871 0

Danfoss Power Solutions ApS
Nordborgvej 81
DK-6430 Nordborg, Denmark
Phone: +45 7488 2222

Danfoss Power Solutions Trading (Shanghai) Co., Ltd.
Building #22, No. 1000 Jin Hai Rd
Jin Qiao, Pudong New District
Shanghai, China 201206
Phone: +86 21 3418 5200

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