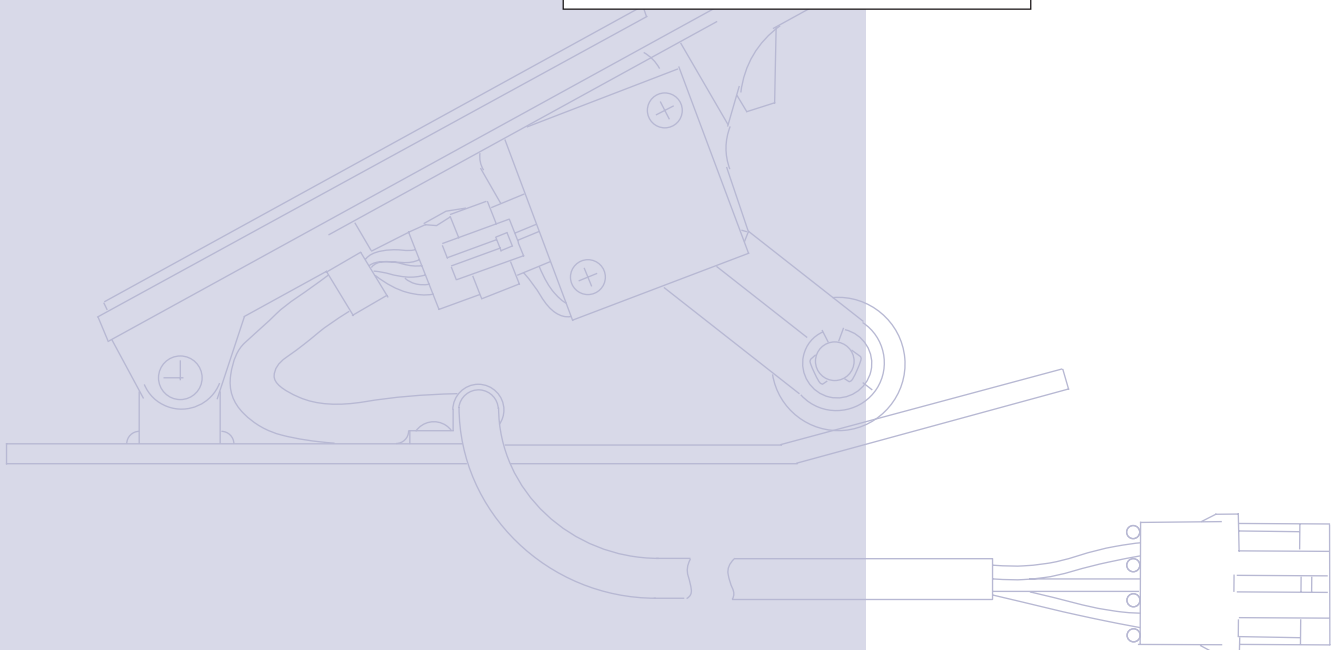
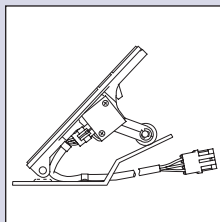
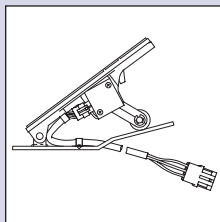
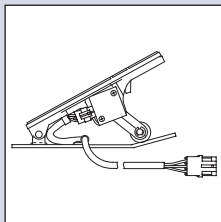




KEP Electronic Foot Pedal

Technical Information



Version

Revisions

Date	Page	Changed	Rev.
14 Jan, 2009	Various	Ordering information-product configuration code tables; updated BLN-95-9043 to Technical Information (TI) format; typo in this revision table	AB

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Front cover illustrations: 2286, 2287, 2288, F101716, 2218



Technical Information
KEP Electronic Foot Pedal
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Description

The KEP Electronic Foot Pedal is used to drive vehicles equipped with hydrostatic transmissions and/or electronically-controlled engines. It provides an electrical signal to the engine's electronics proportional to the degree of pedal actuation. The KEP features a sensor specifically designed for heavy vehicle applications.

Features

- Meets or exceeds FMVSS-124 requirements
- Low pivot point eliminates need for external heel rest
- Controls acceleration and deceleration smoothly
- Potentiometer mounting location minimizes mounting space requirements and reduces vulnerability to dirt, water, and foreign contaminants

Ordering Information

Use the *Product Configuration Code* table below to order the KEP Electronic Foot Pedal. Three models are presently available. They vary in the pedal angle, as described in the *Technical Data*, page 5. Consult Customer Service for variations in mounting styles, switches, connectors, electrical characteristics, etc.

Product Configuration Code

A	B	C	D	E	F
KEPA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A Product Series

Code	Description
KEPA	Series KEPA Electronic Foot Pedal

B Type

Code	Description
1	Unidirectional, no switch (Standard)

C Foot Pedal

Code	Description
4	Rubber foot pad (Standard)
5	Custom rubber pedal (contact factory)

D Termination

Code	Description
1	One 3 pin Packard Weather Pack® shroud connector (Standard)
2	One 3 pin Deutsch round connector for Caterpillar engine interface and one 4-pin Cannon Sure Seal shroud

E Vehicle Toeboard and Pedal Angles

Code	Vehicle Toeboard	Pedal Angle
6	6 to 15°	35° (Standard)
7	0 to 5°	45°
8	16 to 25°	28°

F Electrical Characteristics

Code	Description
1	2.5 kΩ potentiometer (Standard)
2	1.4 kΩ potentiometer and Caterpillar position sensor

Accessories	Description
	Amplifier board

Technical Data

Operating temperature	-40 to +70° C (-40 to +158° F)
Pedal actuation force (measured 8 inches from pivot point)	5 lbs (to begin movement) 12 lbs (for full travel)
Pedal angles available for vehicles with these toeboard angles	0 to 5°, the 45° angle pedal is recommended 6 to 15° toeboards, use a 45° pedal 16 to 25° toeboards, use a 28° pedal
Materials	
Castings	Irridited aluminum
Potentiometer shaft	Stainless steel
Roller and spring sleeve	Glass filled nylon
Base plate	Zinc plated steel
Springs	Stainless steel
Supply voltage	5.0 Vdc
Maximum rated output current	20 mA
Pedal resistance	2500 ± 500 Ω **
Output voltage*	
Idle position	8% to 12% of input voltage
Full pedal stroke	83% to 92% of input voltage
Maximum voltage	The pedal will continue to function per specification after applying 16 volts across any two connector pins for five minutes.
Weight	3.5 lb

* Reference *Output Characteristics*, page 7.

** Reference the *Pin Connections*, page 8.

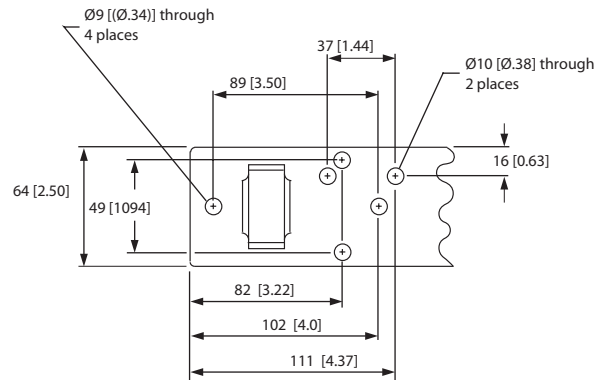
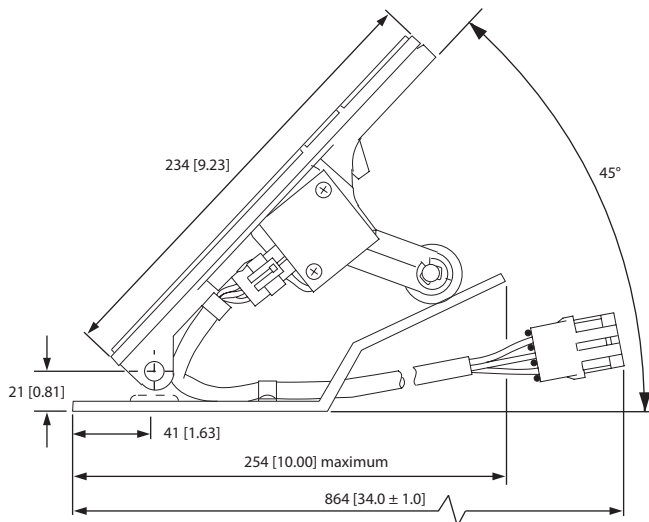
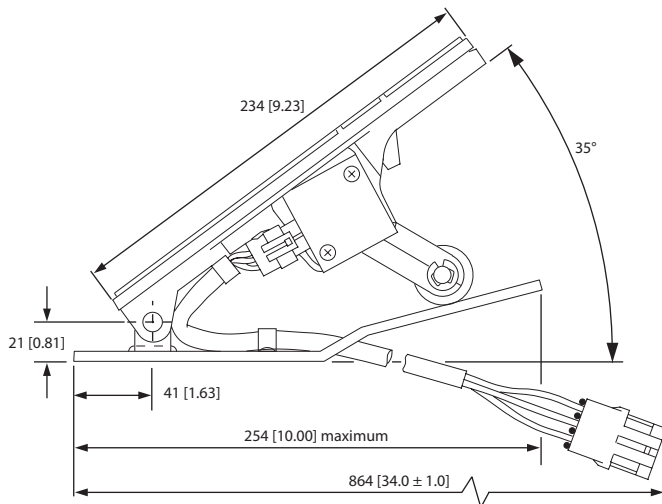
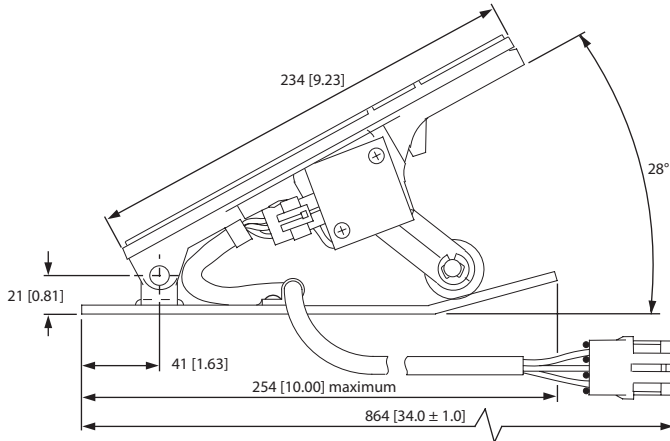
Theory of Operation

The KEP Electronic Foot Pedal accepts a typical supply voltage of 5 volts and varies the output from 10% to 88% of supply through the pedal's rated angle. Three standard accelerator position sensor models are available for vehicle toeboard angles ranging from 0 to 25°. Custom mounting, termination and electrical characteristics are available upon factory request.

Two applications are demonstrated in *Application Diagrams*, pages 9 and 10. The first uses the Sauer-Danfoss Amplifier Board (refer to illustration of *1090052 Amplifier*, page 11) to generically control a hydrostatic transmission. The amplifier will provide the output current necessary for controlling an EDC proportional to foot pedal position. Both the foot pedal and the amplifier board operate unidirectionally; therefore, an F-N-R (double pole, double throw switch or relay) must be provided to operate the pump on both sides of center. The second application diagram uses three KEP Foot Pedals to drive a Sauer-Danfoss S1X microcontroller, which in turn controls the track speed of a trencher.

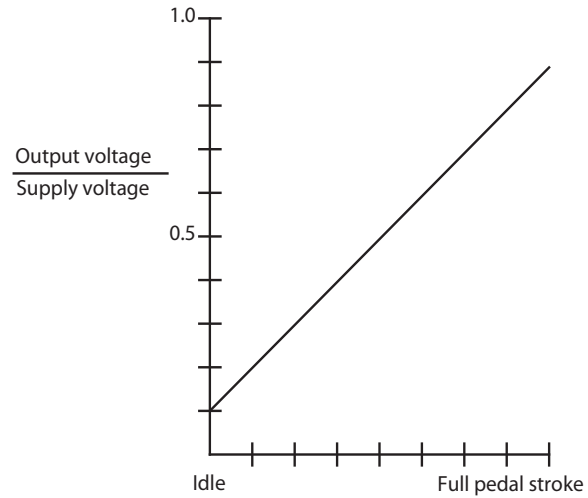
Dimensions

KEP Mounting Dimensions in Millimeters [Inches]



Output Characteristics

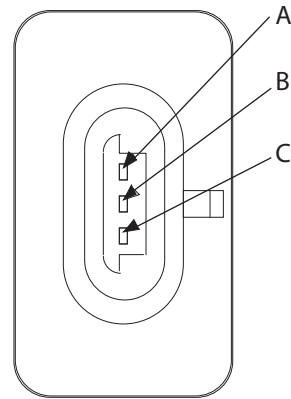
Output Characteristics for the KEP Foot Pedal



1665A

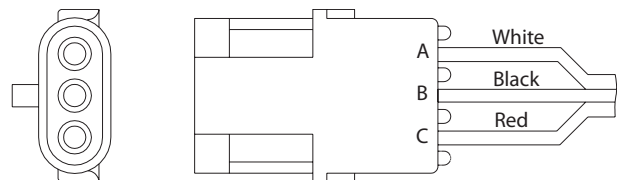
Connections

Potentiometer Sensor Connection (2500 Ω)



1704

Weather Pack® Device Connection

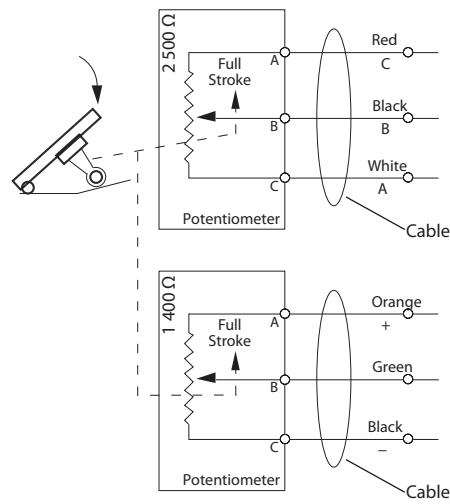


1705

Connections are made to the Weather-Pack connector mate with Sauer-Danfoss kit part number K08620.

Pin Connections

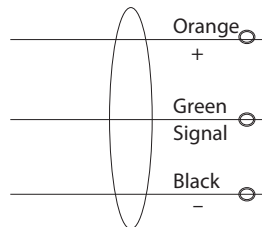
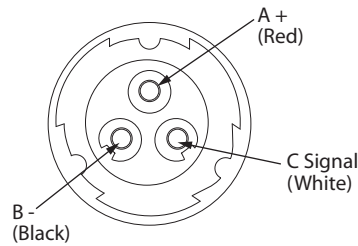
Standard Pin Connections to the Foot Pedal Potentiometer



1664

The 1.4 kΩ potentiometer is used only with a two-connector pedal.

Pin connections of Connector and Pigtail Provided

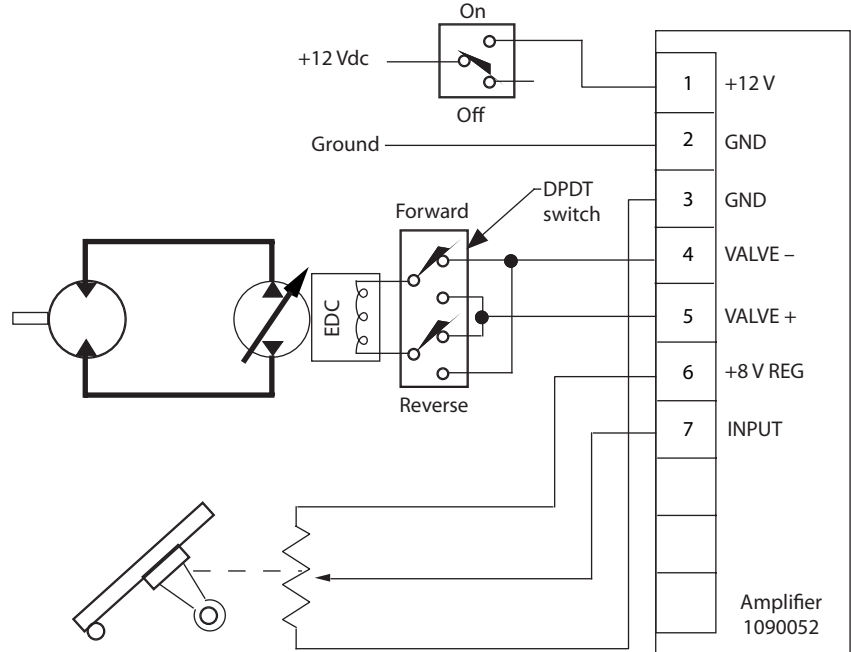


1738

Deutsch and Cannon mating connectors are not provided by Sauer-Danfoss.

Application Diagrams

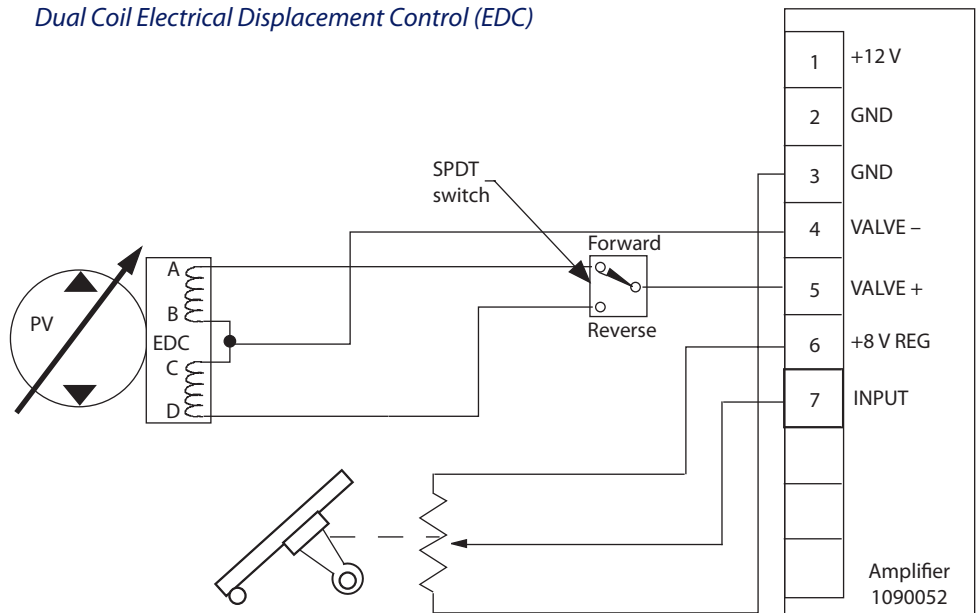
Single Coil Electrical Displacement Control (EDC)



1706

Controlling a single coil EDC requires a Double Pole, Double Throw (DPDT) Switch for changing direction.

Dual Coil Electrical Displacement Control (EDC)

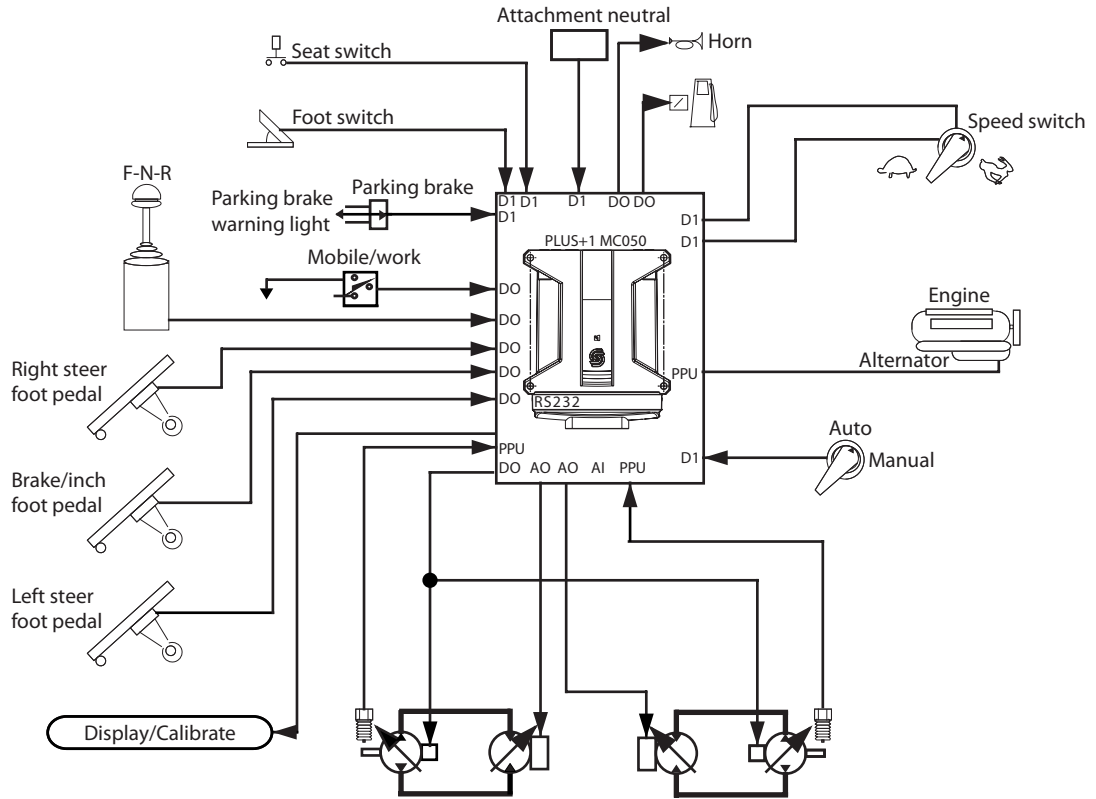


1993

Controlling a dual coil EDC requires a Single Pole, Double Throw (SPDT) Switch for changing direction. Also, just one coil of a dual coil can be wired and switched as in the *Hydrostatic Trenching Application*, page 10.

**Application Diagrams
 (continued)**

Hydrostatic Trenching Application



2386

Amplifier

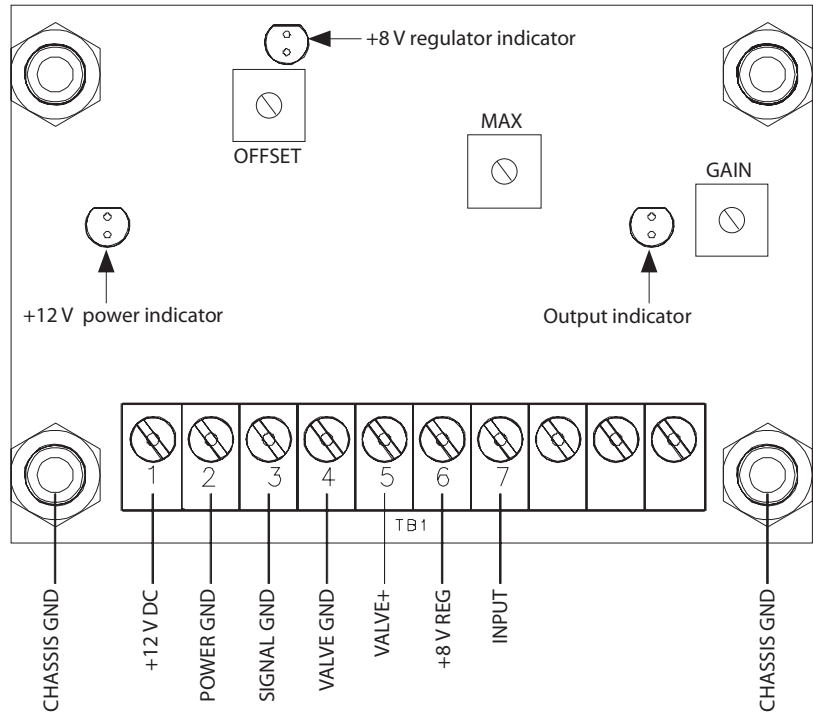
The 1090052 amplifier is designed to work with the Sauer-Danfoss foot pedal (KEP). A typical application would be controlling a variable volume piston pump that is fitted with an electrical displacement control (EDC). Trim pots on the amplifier allow the output levels to be tailored with respect to foot pedal position. An enclosure protects the internal circuit board and provides a means of mounting. The control has three LEDs to indicate +12 V power, +8 V regulator and output current.

Electrical Characteristics

Supply voltage	12 Vdc (11 to 15 volts)
Output current (uni-polar)	Maximum 160 mA with a 22 Ω load
Input impedance	200 kΩ
EMI/RFI protection	
Adjustments *	<ol style="list-style-type: none"> 1. OFFSET sets start current (threshold) 2. MAX sets maximum current output 3. GAIN sets current output with respect to foot pedal position

* Reference 1090052 Amplifier illustration below.

1090052 Amplifier



1995

All adjustments are clockwise (< 1 turn) for increasing. To access the adjustments, remove the 4 cover screws.



Technical Information
KEP Electronic Foot Pedal
Customer Service

Device repair

For devices in need of repair or evaluation, include a description of the problem and what work you believe needs to be done, along with your name, address and telephone number.

Return to:
Sauer-Danfoss (US) Company
Return Goods Department
3500 Annapolis Lane North
Minneapolis, Minnesota 55447



Technical Information
KEP Electronic Foot Pedal
Notes



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Technical Information
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