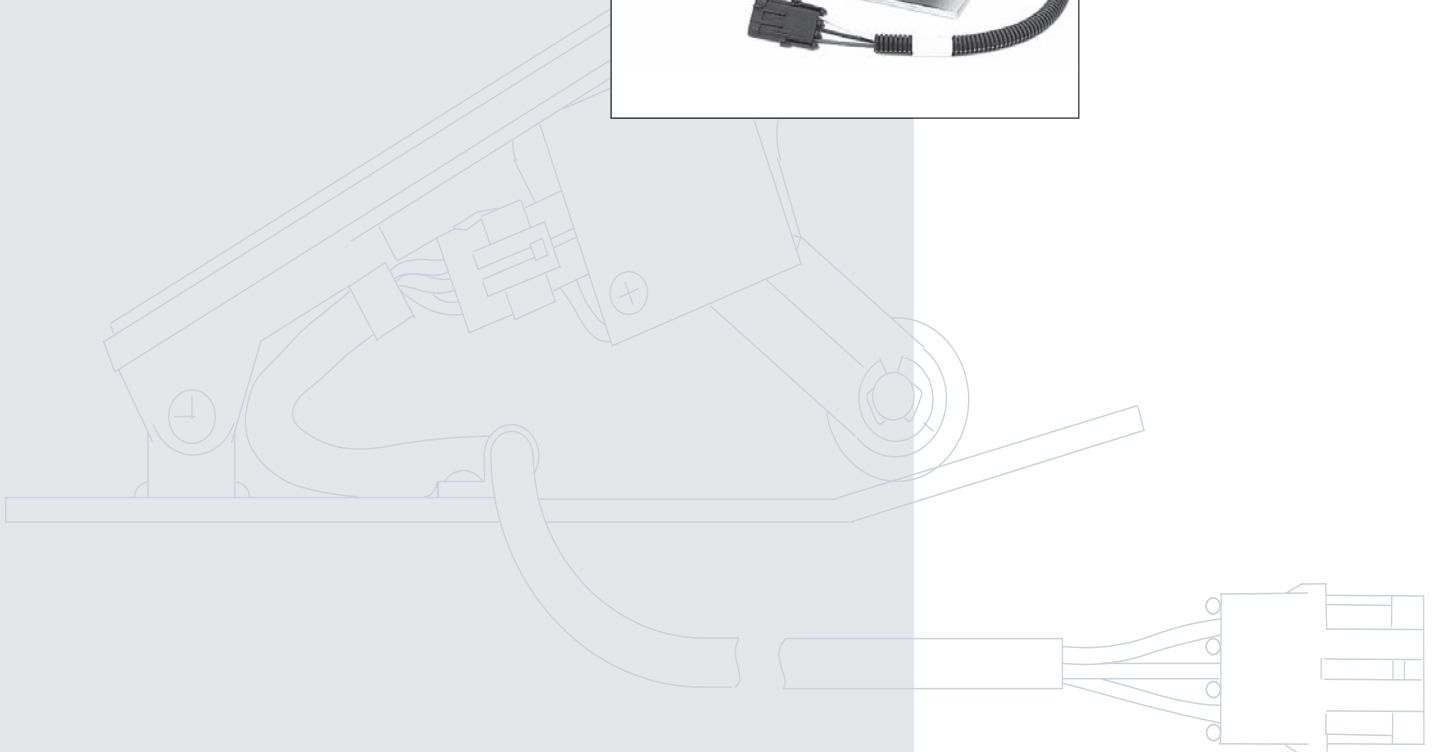
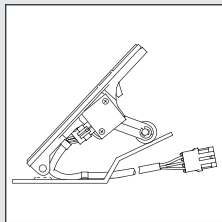
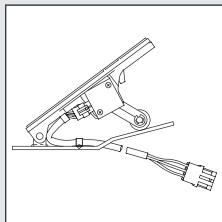
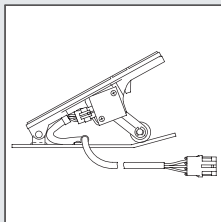




KEP  
Electronic  
Foot Pedal

Technical  
Information



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Front cover illustrations: 2286, 2287, 2288, 2289, 2218

### 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 *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 4. Consult Customer Service for variations in mounting styles, switches, connectors, electrical characteristics, etc. For contact information, see *Customer service*, page 11.

#### 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 shroud connector for Caterpillar engine interface and one 4-pin Cannon Sure Seal shroud connector

#### E Electrical Characteristics

Code	Description
1	2.5 k $\Omega$ potentiometer (Standard)
2	1.4 k $\Omega$ potentiometer and Caterpillar position sensor

#### F 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°

Accessories	
	Amplifier board

### TECHNICAL DATA

<b>Operating temperature</b>	-40 to +70° C (-40 to +158° F)
<b>Pedal actuation force</b> (Measured 8 inches from pivot point)	5 lbs (to begin movement) 12 lbs (for full travel)
<b>Pedal angles available for vehicles with these toeboard angles</b>	0 to 5°, the 45° angle pedal is recommended 6 to 15° toeboards, use a 35° pedal 16 to 25° toeboards, use a 28° pedal.
<b>Materials</b>	
<b>Castings</b>	Irridited aluminum
<b>Potentiometer shaft</b>	Stainless steel
<b>Roller and spring sleeve</b>	Glass filled nylon
<b>Base plate</b>	Zinc plated steel
<b>Springs</b>	Stainless steel
<b>Supply voltage</b>	5.0 V DC
<b>Maximum rated output current</b>	20 mA
<b>Pedal resistance</b>	2500 ± 500 ohms. Reference the <i>Pin Connections</i> , page 7
<b>Output voltage</b>	
<b>Idle position</b>	8% to 12% of input voltage
<b>Full pedal stroke</b>	83% to 92% of input voltage
Reference the <i>Output Characteristics</i> , page 6	
<b>Maximum voltage</b>	The pedal will continue to function per specification after applying 16 volts across any two connector pins for five minutes.
<b>Weight</b>	3.5 lb

### 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 diagram 1* and *Application diagram 2*, pages 8 and 9. The first uses the Sauer-Danfoss Amplifier Board (refer to *1090052 Amplifier*, page 10) 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.

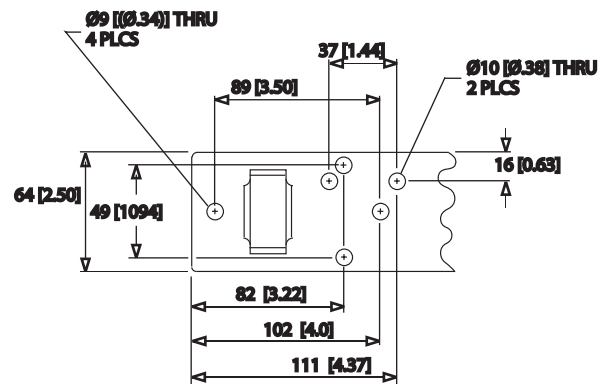
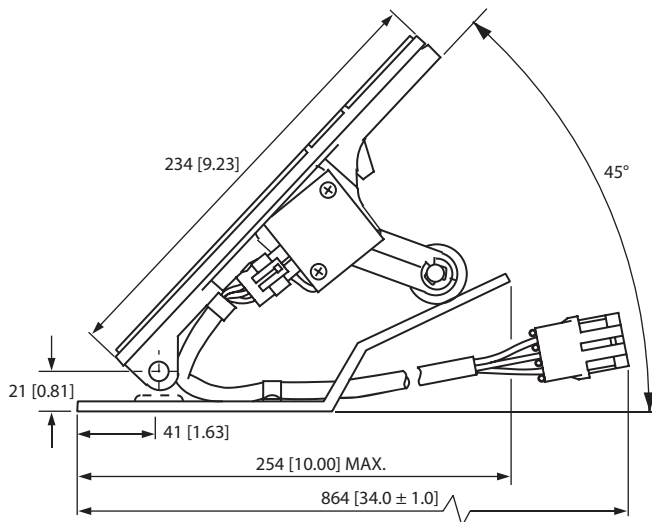
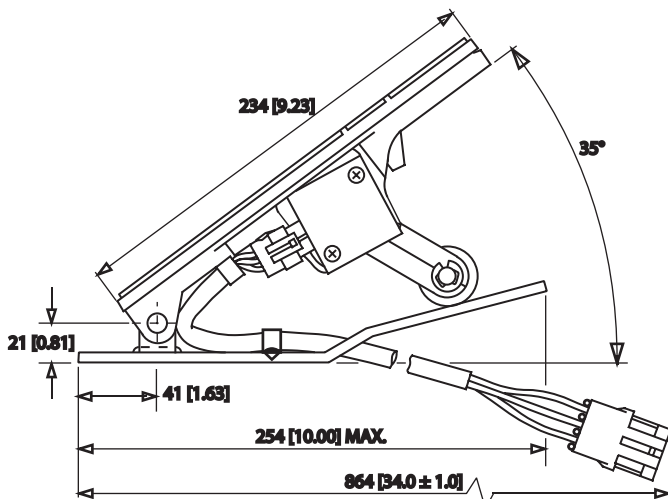
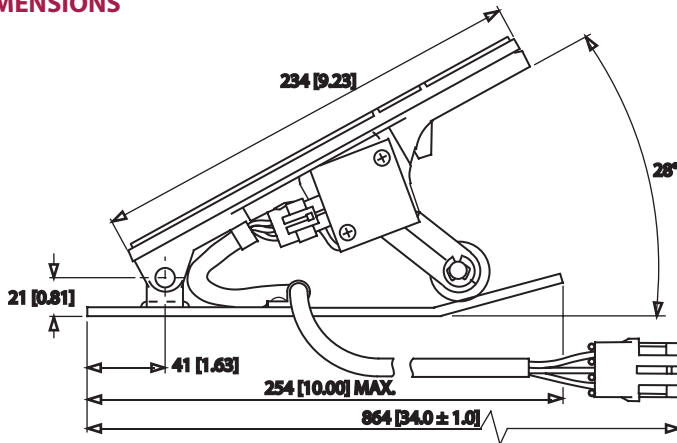
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Connections are made to the Weather-Pack connector mate with Sauer-Danfoss kit part number K08620.

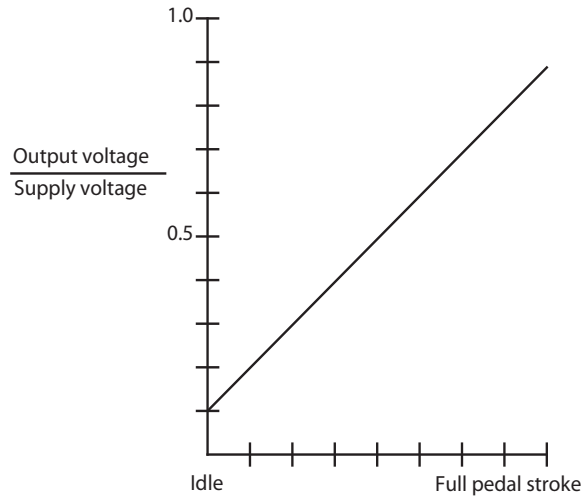
Deutsch and Cannon mating connectors are not provided by Sauer-Danfoss.

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**DIMENSIONS**

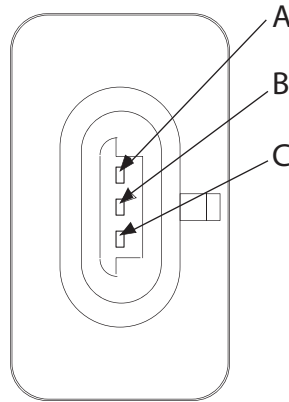


**OUTPUT CHARACTERISTICS**



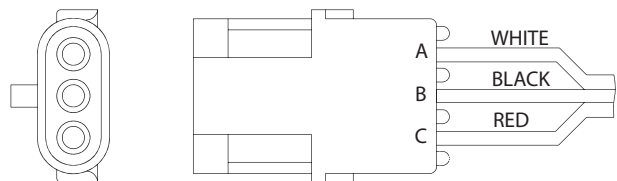
1665A

**CONNECTION DRAWINGS** *2 500Ω Potentiometer Sensor Connection*



1704

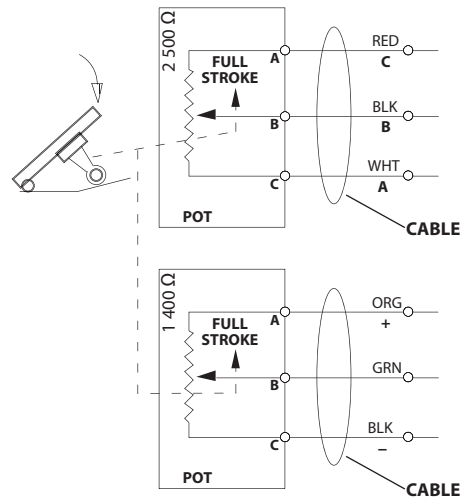
*Weather Pack Device Connector*



1705

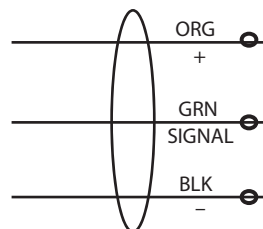
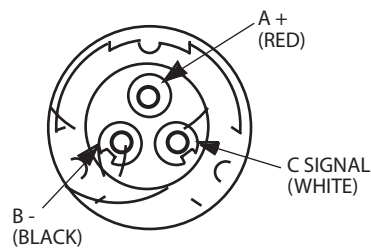
**PIN CONNECTIONS**

Standard pin connections to the Foot Pedal potentiometer. The 1.4 kΩ potentiometer is used only with a two-connector pedal.



1664

Deutsch pin connections. A connector and pigtail are provided.

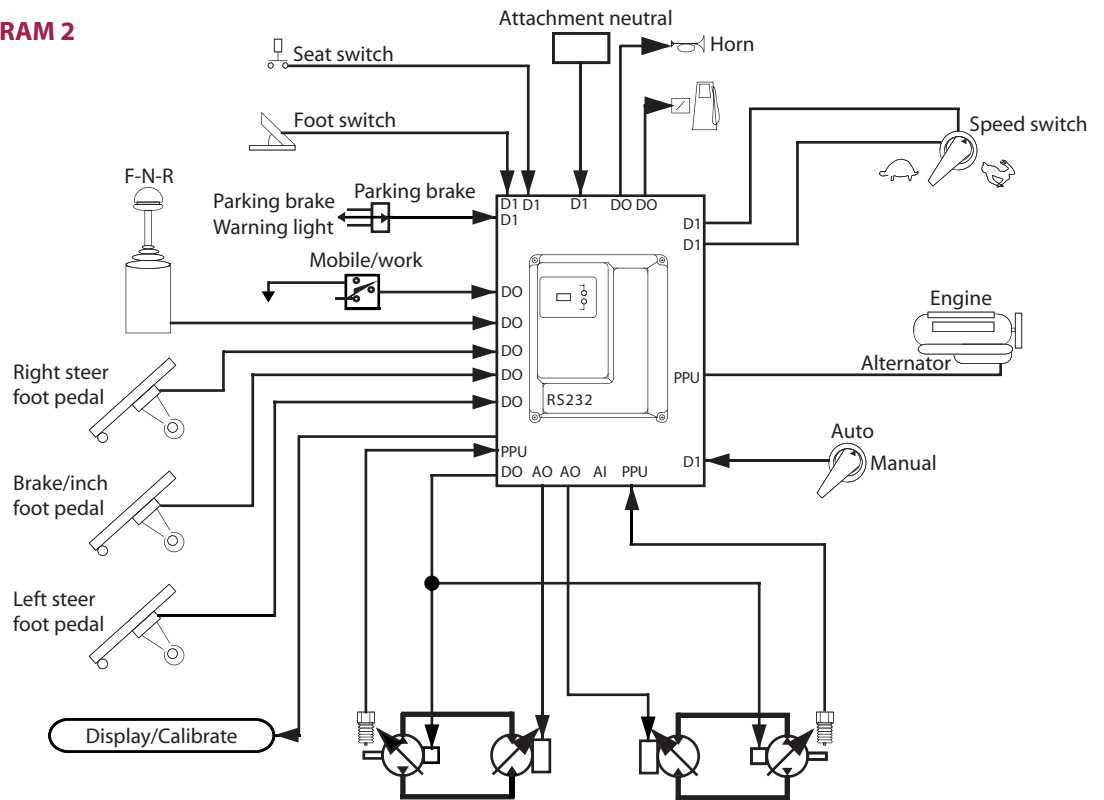


1738





**APPLICATION DIAGRAM 2**



1662A

KEP and S1X microcontroller used in hydrostatic trenching application.

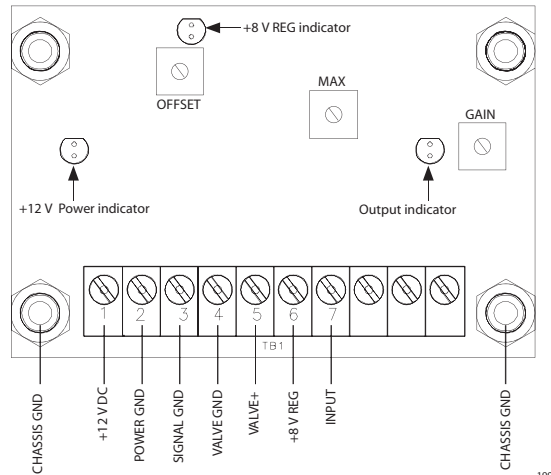
### 1090052 AMPLIFIER

This 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

<b>Supply voltage</b>	12 V DC (11 to 15 volts)
<b>Output current (uni-polar)</b>	Maximum 160 mA with a 22 ohm load
<b>Input impedance</b>	200 k $\Omega$
<b>EMI/RFI protection</b>	
<b>Adjustments (reference drawing below)</b>	<ol style="list-style-type: none"> <li>1. OFFSET sets start current (threshold)</li> <li>2. MAX sets maximum current output</li> <li>3. GAIN sets current output with respect to foot pedal position</li> </ol>

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



1995



## KEP Electronic Foot Pedal Technical Information

### CUSTOMER SERVICE

#### Order From

Sauer-Danfoss (US) Company  
Customer Service Department  
3500 Annapolis Lane North  
Minneapolis, Minnesota 55447  
Phone: (763) 509-2084  
Fax: (763) 559-0108

Sauer-Danfoss (Neumünster) GmbH & Co.  
Order Entry Department  
Postfach 2460, D-24531 Neumünster  
Krokamp 35, D-24539 Neumünster  
Phone: +49 4321 871 0  
Fax: +49 4321 871 284

#### Device repair

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

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.



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Directional spool valves  
Cartridge valves  
Hydraulic integrated circuits  
Hydrostatic transaxles  
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Sauer-Danfoss (US) Company  
2800 East 13th Street  
Ames, IA 50010, USA  
Phone: +1 515 239-6000, Fax: +1 515 239 6618

Sauer-Danfoss (Neumünster) GmbH & Co. OHG  
Postfach 2460, D-24531 Neumünster  
Krokamp 35, D-24539 Neumünster, Germany  
Phone: +49 4321 871-0, Fax: +49 4321 871 122

Sauer-Danfoss (Nordborg) A/S  
DK-6430 Nordborg, Denmark  
Phone: +45 7488 4444, Fax: +45 7488 4400