

# ACX104B

## Potentiometer Rotary Position Sensor

BLN-95-8913-5

Issued: March 1992

### DESCRIPTION

The ACX104B Potentiometer Rotary Position/Steering Sensor is a versatile control module applicable in a wide range of machine uses. In rotary position use, the sensor measures the relative height of the machine in relation to an external reference such as a stringline. In steering use, the sensor measures the machine's relative distance from a reference such as a curb. In both cases, the electrical signal is fed into a controller such as the ACE100A and, in steering usage, is compared to an ACX104C track or wheel feedback system. The ACX104B provides the necessary sensing control for rotary position or steering machinery such as asphalt or slipform pavers.

Signals come from an internal potentiometer that rotates directly with the outer hub. A follower attached to the hub provides a means of tracing a stringline or other reference surface. Follower movement rotates the shaft of the potentiometer, giving proportional signal to the controller. Typically the controller will be used to drive a V7059A Servovalve or KVF Flow Control Servovalve to reposition the machine as deviations occur.



### FEATURES

- Adjustable spring bias on the hub varies the follower tension on the stringline or reference surface
- Rugged housing
- Resists corrosion, moisture and other damaging environmental effects
- Compact unit can be mounted on almost any surface
- Connections between controller and sensor are made easily through MS connectors
- Easy to remove for service or replacement
- Two position (Run/Standby) switch available

### ORDERING INFORMATION

#### SPECIFY

1. Part Number ACX104B. See Table A.
2. Controller, if needed; ACE100A
3. Servovalve KVF
4. Cable. Part Number KW01009 Cable Assembly can be used to provide connections. The two-foot coiled cable extends to ten feet.
5. Mating Connector K04185
6. Follower. Order as necessary, see Installation, Wiring section.

TABLE A.

PART NUMBER	DESCRIPTION
ACX104B1002	1 kilohm, 90° Potentiometer, Without Switch
ACX104B1028	Auto/Manual ON/OFF Switch, No Mounting Tabs

## TECHNICAL DATA

### INPUT VOLTAGE

24 Volts maximum

### OUTPUT VOLTAGE

30% to 70% of input

### RESISTANCE

1000 ohms,  $\pm 20\%$

### TRAVEL

Physical stops limit travel to approximately 20 degrees (18 degrees minimum). The potentiometer wiper is electrically centered when the indicator line on the hub is parallel to the mark on the case.

### PHASING

Resistance between Pins A and B of the MS connector will increase when the hub is rotated clockwise.

## ENVIRONMENTAL

### VIBRATION

Withstands a vibration test designed for mobile equipment devices that includes two parts:

1. Cycling from 5 to 2000 Hz over a range of  $\pm 1.0$  g's to  $\pm 8.0$  g's for a period of one hour (if there are four resonant points), for two hours (if there are two or three resonant points) and for three hours (if there is one or no resonant point). The cycling test is performed on each of the three major axes.
2. Resonance dwell for one million cycles over a range of  $\pm 1.0$  g's to  $\pm 8.0$  g's for each of the four most severe resonant points on each of the three major axes.

### SHOCK

Withstands a shock test for mobile equipment devices that consists of three shocks of 50 g's and 11 milliseconds duration in both directions of the three major axes for a total of 18 shocks.

### OPERATING TEMPERATURE

$-18^{\circ}$  to  $+77^{\circ}$  C ( $0^{\circ}$  to  $+170^{\circ}$  F)

### STORAGE TEMPERATURE

$-40^{\circ}$  to  $+77^{\circ}$  C ( $-40^{\circ}$  to  $+170^{\circ}$  F)

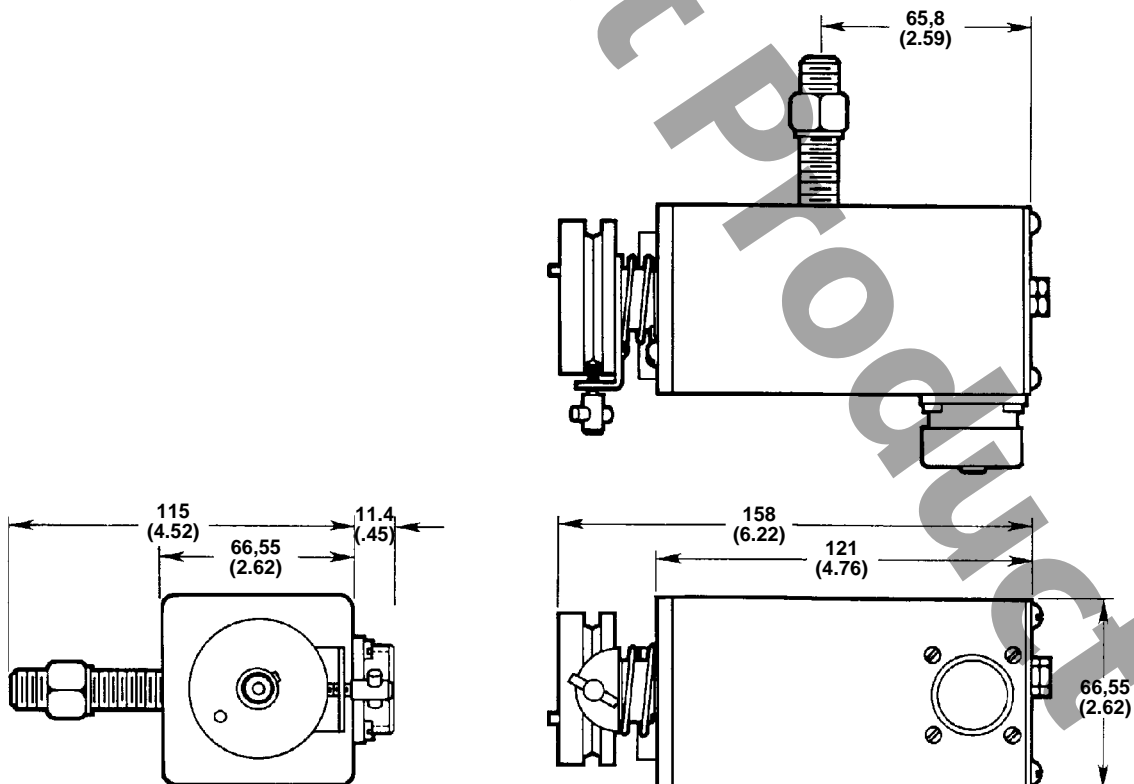
### WEIGHT

1.2 kg (2 pounds, 9 ounces)

### DIMENSIONS

Refer to the Dimensions drawing.

## DIMENSIONS



297B

Approximate Mounting Dimensions of the ACX104B Without Flanges in Millimeters (Inches).

# INSTALLATION

## LOCATION

The ACX104B may be mounted on either the left or right side of the machine with the hub and follower outward. A mounting stud extends from the back of the case. It must be inserted through a vertical plate that is attached to an appropriate height-adjusting jack. The mounting stud is approximately 4 1/4 inches above the stringline when trailing a grid of 45° below horizontal.

## MOUNTING

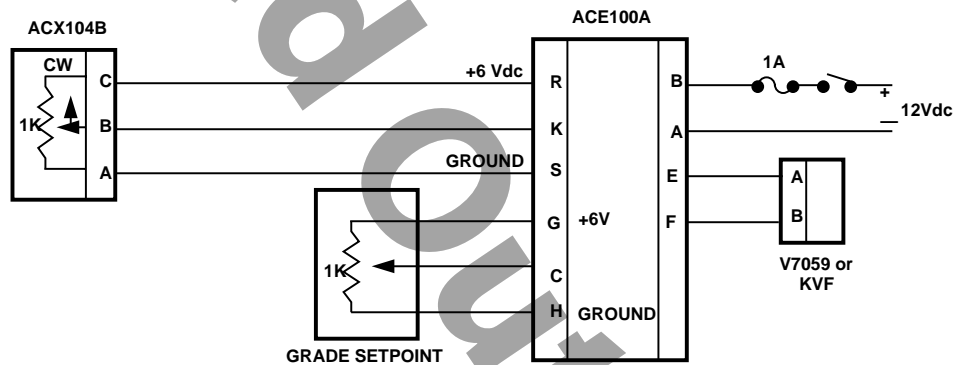
The 1/2 inch bolt extending from the case is a rotatable mounting, allowing for proper leveling. It is important that the ACX104B be level in the plane of rotation around this pivot. In grade application, an improper mounting will cause the follower attachment to move up or down on a level surface as

the machine moves closer or farther from the stringline. Use a Right Angle Follower (KG04001), skate assembly (KG06001), ski assembly (KG02001) or steering follower (KG07001) for contact to the reference surface.

## WIRING

Direct connections are made through a Bendix MS3102A-14S-6P (K04183) box receptacle on the case exterior. Connect a 134019ACAA (KW01009) cable to this receptacle. Terminate the other end of the cable with an MS3102A-14S-6P (K04183) bulkhead connector. Wire the bulkhead connector directly to the controller. Connection Diagrams 1 and 2 illustrate rotary position and steering control applications, respectively. For other wiring considerations, a simple schematic is shown in Connection Diagram 3.

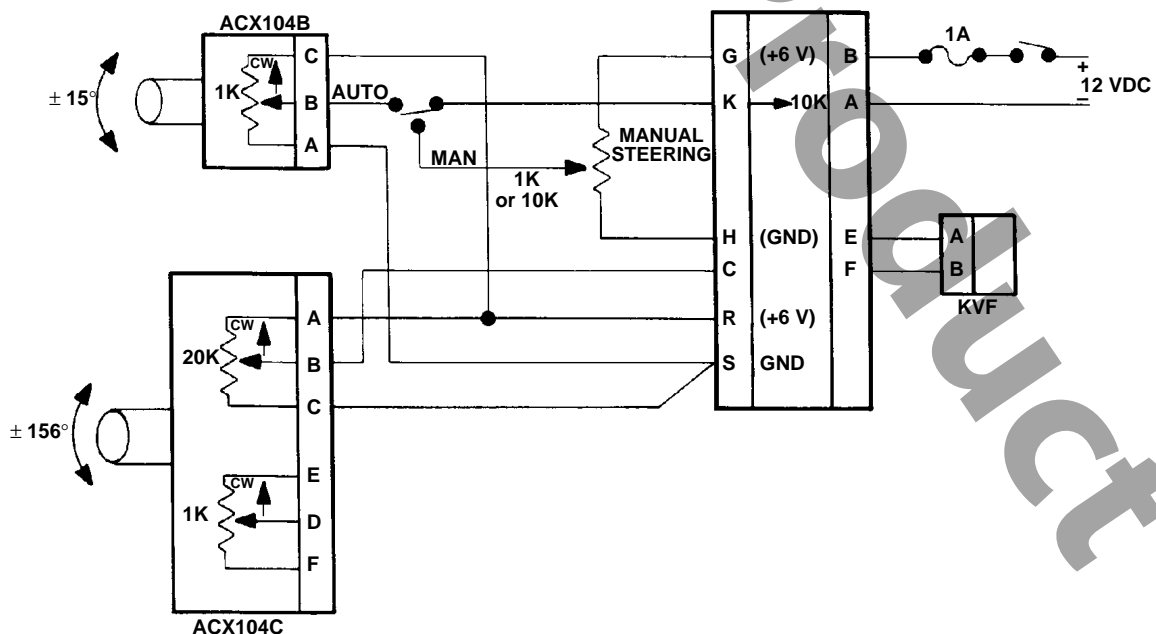
## CONNECTION DIAGRAM 1



373B

Representative Proportional Rotary Position Control.

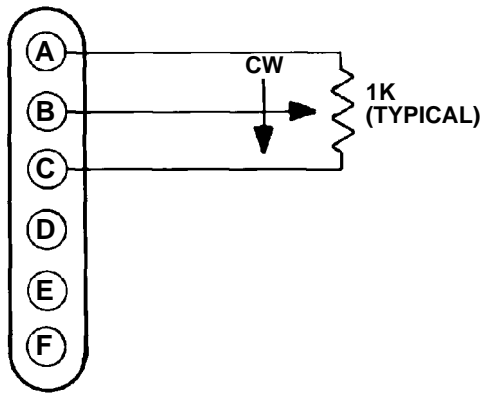
## CONNECTION DIAGRAM 2



374B

Representative Proportional Steering Control.

## CONNECTION DIAGRAM 3



375

## INSTALLATION

### LOCATION

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## CUSTOMER SERVICE

### NORTH AMERICA

#### ORDER FROM

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

#### 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

### EUROPE

#### ORDER FROM

Sauer-Danfoss (Neumünster) GmbH & Co.  
Order Entry Department  
Krokamp 35  
Postfach 2460  
D-24531 Neumünster  
Germany  
Phone: 49-4321-8710  
Fax: 49-4321-871-184