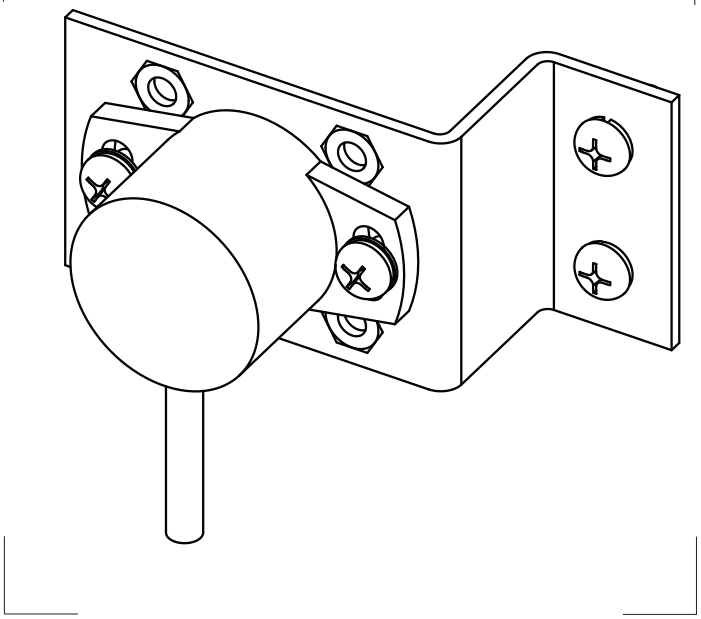
nexen®

WEB CONTROL PRODUCTS

User Manual



Dancer Position Sensor
DPS30A and DPS60A

FORM NO. L-21260-A-1107

In accordance with Nexen's established policy of constant product improvement, the specifications contained in this manual are subject to change without notice. Technical data listed in this manual are based on the latest information available at the time of printing and are also subject to change without notice.

Technical Support: 800-843-7445
(651) 484-5900

www.nexengroup.com

DANGER

Read this manual carefully before installation and operation.

Follow Nexen's instructions and integrate this unit into your system with care.

This unit should be installed, operated and maintained by qualified personnel ONLY.

Improper installation can damage your system or cause injury or death.

Comply with all applicable codes.

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Vadnais Heights, Minnesota 55127

ISO 9001 Certified

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INTRODUCTION

Nexen Dancer Position Sensors have been designed to accurately measure the rotational movement of a dancer arm. This family of sensors use Hall Effect technology which provide for benefits such as infinite resolution, low drag, and no mechanical wear. They are ideally suited to work with Nexen's Dancer Position Controllers.

INSTALLATION

NOTE: Mounting of the Dancer Position Sensor can be accomplished two ways. The first is the Direct Connection method and the second is the Coupling Connection method. Review the instructions for both methods and select the method best suited for your application.

DIRECT CONNECTION

1. Verify that the dancer arm pivot shaft's end complies with the dimensions given (See Figure 1).

2. Drill and tap two 4-40 threaded holes 90° apart for two, .25" set screws.

3. The orientation of the Dancer Position Sensor (Item 1) must be as shown in order to match the mid output of the Dancer Position Sensor to the mid travel position of the dancer arm (See Figure 2).

4. Attach Dancer Position Sensor (Item 1) to one of the three hole configurations on the Bracket (Item 3) with two shorter Pan Head Screws (Item 4), Flat Washers (Item 6), and Lock Washers (Item 5). (See Figure 3).

5. Hand tighten the screws just enough to prevent it from moving during installation (See Figure 3).

6. Slide the Dancer Position Sensor (Item 1) into the shaft until the Bracket (Item 3) contacts the machine's side frame (See Figure 3).

7. Mark the location of the Bracket's two mounting holes.

8. Remove the Dancer Position Sensor (Item 1) and Bracket (Item 3); then, drill and tap two 8-32 threaded holes centered within the marks drawn in Step **7**.

9. With the dancer arm held firmly in its mid travel position, slide the Dancer Position Sensor (Item 1) into the shaft while making sure the sensor shaft marking is pointing toward the cable (See Figure 3).

10. Using the two set screws, secure the dancer pivot shaft to the sensor shaft by tightening the screws evenly.

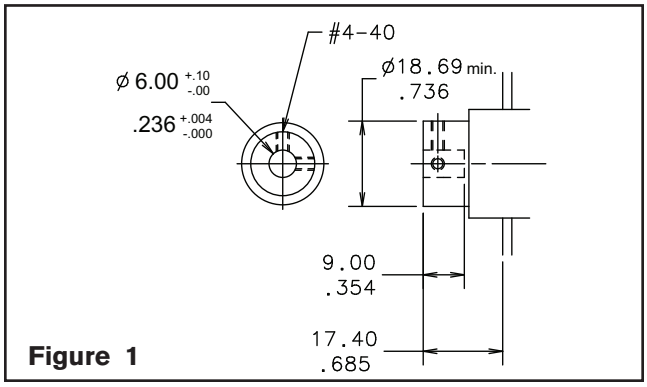

Figure 1

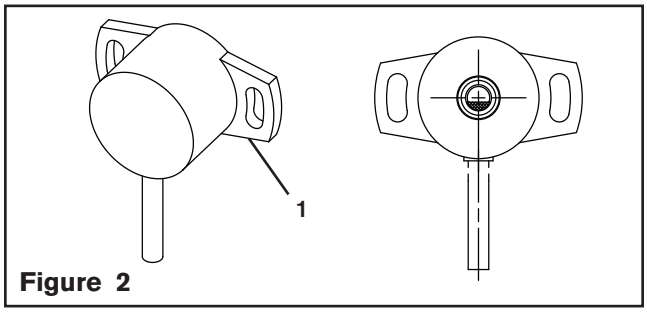

Figure 2

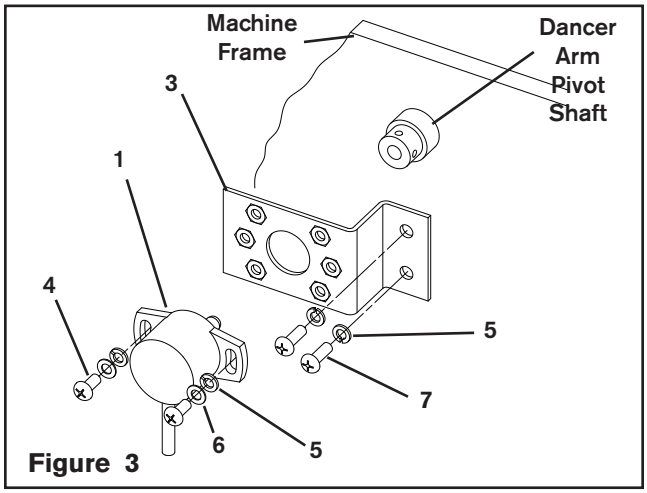

Figure 3

11. Using the two longer Pan Head Screws (Item 7) and Lock Washers (Item 5), secure the Bracket (Item 3) to the machine's side frame (See Figure 3).

COUPLING CONNECTION

1. Purchase a zero backlash flexible shaft coupler that accommodates the diameter of the sensor shaft (Item 1) on one end and the dancer arm pivot shaft on the other end (See Figures 4 and 7).

2. Slide the shaft coupler onto the dancer arm pivot shaft, inserting the shaft no further than half the thickness of the coupler clamp; then, tighten the clamp around the shaft (See Figure 4).

3. The orientation of the Dancer Position Sensor (Item 1) must be as shown in order to match the mid output of the Dancer Position Sensor to the mid travel position of the dancer arm (See Figure 5).

4. Attach Dancer Position Sensor (Item 1) to one of the three hole configurations on the Bracket (Item 3) with the two shorter Pan Head Screws (Item 4), Flat Washers (Item 6), and Lock Washers (Item 5) (See Figure 4).

5. Hand tighten the screws just enough to prevent sensor from moving during installation (See Figure 4).

6. Slide the Dancer Position Sensor (Item 1) into the coupling (See figure 4).

7. Measure the distance from the bottom of the Bracket (Item 3) to the machine's side frame. Fabricate a spacer block to make up the distance between the Bracket and the machine's side frame (See Figure 4).

8. Slide the Dancer Position Sensor (Item 1) into the coupling again with the spacer block in place on the machine's side frame and mark the location for the bracket's two mounting holes.

9. Remove the Dancer Position Sensor (Item 1) and Bracket (Item 3); then, drill and tap two 8-32 threaded holes centered within the marks drawn in Step **8**.

10. With the dancer arm held firmly in its mid travel position, slide the Dancer Position Sensor (Item 1) into the coupling again making sure the sensor shaft marking is pointing toward the cable.

    Insert the shaft no further than half the thickness of the coupling clamp.

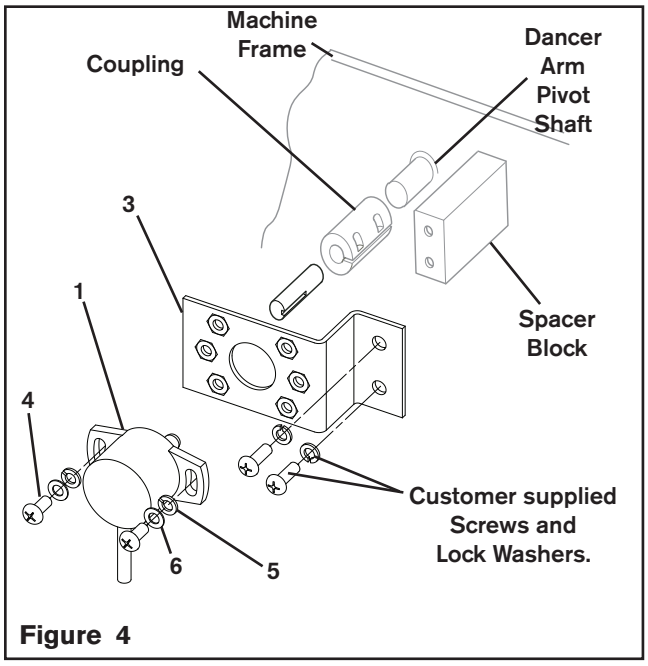

Figure 4

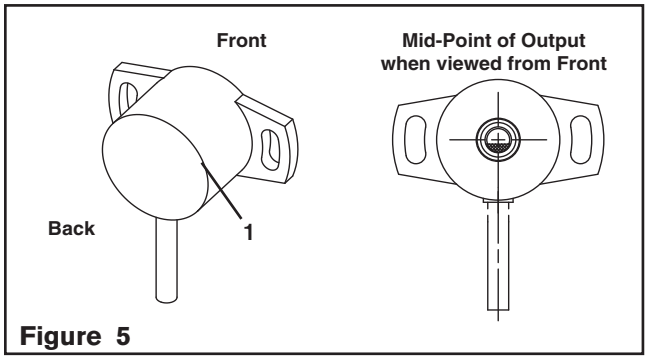

Figure 5

11. Tighten the clamp around the sensor shaft (See Figure 4).

12. Using customer supplied 8-32 screws and lock washers, secure the Bracket (Item 3) to the customer supplied spacer block and the machine's side frame (See Figure 4).

ELECTRICAL CONNECTIONS

1. Route the Dancer Position Sensor signal cable through the machine.

2. Connect the signal cable to a controller (See Figure 6).

NOTE: The shield wire from the signal cable should be earth grounded at the controller.

If noise is still present on the position signal, ensure the sensor shaft has a low impedance connection to earth ground through the machine frame.

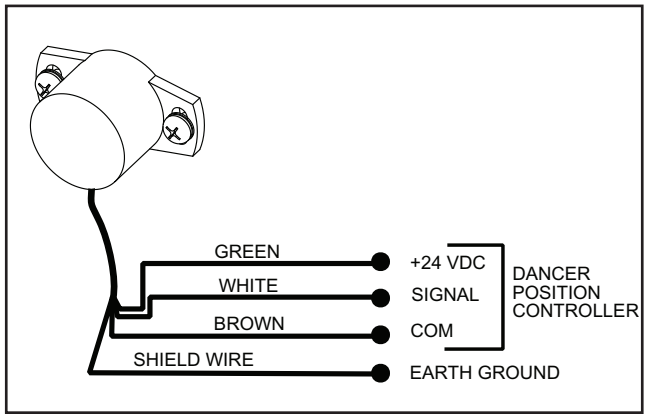

Figure 6

ADJUSTMENT

1. Apply power to the Dancer Position Sensor.

2. Refer to Installation for the proper alignment of the sensor.

3. Using a voltmeter, measure the voltage across the green (+) and brown (-) wires (See figure 6). The voltage reading must match the supply voltage for proper operation (See Specifications).

4. Measure the sensor output voltage across the white (+) and brown (-) wires. With the dancer arm held in its mid travel position, the sensor output should be approximately +5 VDC. If it is not, then slightly loosen the sensor's fasteners and rotate the sensor until the voltage reading is +5 VDC.

5. Tighten the fasteners securely to prevent the sensor from moving.

6. Move the dancer arm through its full range of motion and check that the voltage changes between 0 and 10 VDC. If the output voltage stops changing as the dancer arm is moving, slightly loosen the sensor's fasteners and rotate the sensor. If this persists, the angular movement of the dancer arm might exceed the measurement range for the sensor (See Specifications).

7. Trim back any unused wires to prevent electrical shorting problems.

8. At this time the installation and adjustment of the dancer position sensor is complete. Refer to the controller manual for any further setup and calibration procedures.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	SOLUTION
No voltage from Dancer Position Sensor.	No power to the Dancer Position sensor	Turn on the power to the Dancer Position Controller. Connect the Dancer Position Sensor according to Figure 6.
	Input power polarity is backwards	Check polarity of the power supply. Connect the Dancer Position Sensor according to Figure 6.
Dancer Position Sensor output does not change.	No power to the Dancer Position Sensor	Turn on the power to the Dancer Position Controller. Connect the Dancer Position Sensor according to Figure 6.
	Dancer Position Sensor misaligned	Align the Dancer Position Sensor according to Figure 2 for Mid Point of Output and according to the instructions in the INSTALLATION and ADJUSTMENT sections.
	Dancer arm exceeds the capacity of the sensor.	Switch to a DPS60A or restrict the swing for the Dancer arm. Refer to SPECIFICATIONS
Position Sensor Signal is erratic with no dancer arm movement.	Electrical noise interfering with sensor.	Connect the shield directly to earth ground. If noise persists, ensure the sensor shaft has a low impedance path to earth ground. See WIRING INSTALLATION GUIDE
Dancer Position Sensor output voltage is not changing through the full 30 degree or 60 degree range.	Dancer Position Sensor misaligned	Refer to Figure 2 for proper alignment of the sensor. The shaft marking should point toward the cable for mid-travel position of the dancer arm.

MOUNTING DIMENSIONS

DANCER POSITION SENSOR

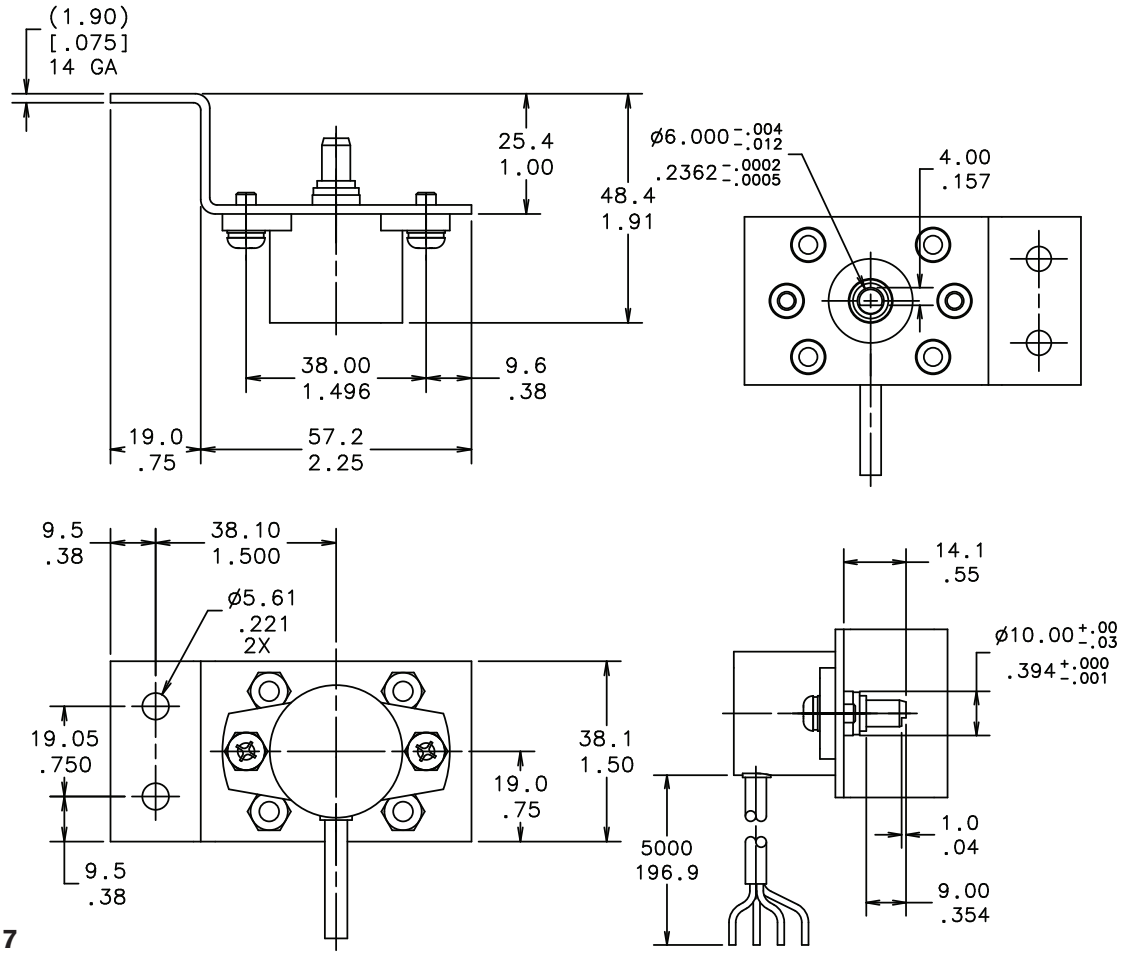

Figure 7

PARTS LIST

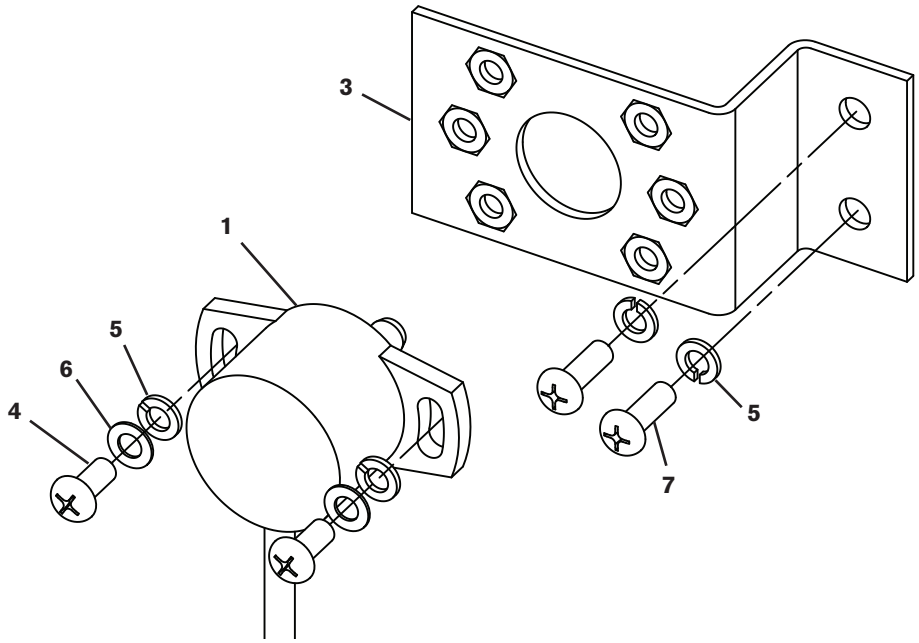

Figure 8

ITEM	DESCRIPTION	QTY
1	Dancer Position Sensor	1
3	Bracket	1
4	Pan Head Phillips Screw	2

ITEM	DESCRIPTION	QTY
5	Lock Washer	4
6	Flat Washer	2
7	Pan Head Phillips Screw	2

REPLACEMENT PARTS

The item or balloon number for all Nexen products is used for part identification on all product parts lists, product price lists, unit assembly drawings, bills of materials, and instruction manuals.

When ordering replacement parts, specify model designation, item number, part description, and quantity. Purchase replacement parts through your local Nexen Distributor.

SPECIFICATIONS

	DPS30A
Product Number	964517
Supply Voltage	24 ± 6 VDC
Output Voltage	0~10VDC @ max. angular rotation
Reverse Polarity Protection	-30VDC maximum
Temperature	-40°F [-40°C] to 185°F [85°C]
Enclosure	IP65
Accuracy	± 1°
Angular Rotation	+/- 15° maximum

	DPS60A
Product Number	964518
Supply Voltage	24 ± 6 VDC
Output Voltage	0~10VDC @ max. angular rotation
Reverse Polarity Protection	-30VDC maximum
Temperature	-40°F [-40°C] to 185°F [85°C]
Enclosure	IP65
Accuracy	± 1°
Angular Rotation	+/- 30° maximum

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