



# DKN-MS4D-7033-100

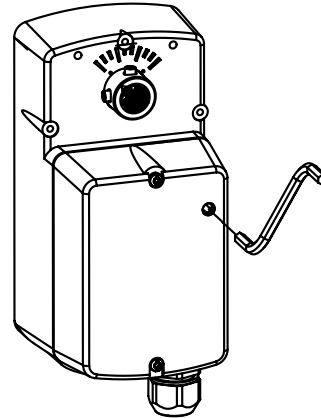
## Spring Return Rotary Shaft Actuator

### Application

DKN-MS4D-7033-100 rotary overshft actuator provides an economical and reliable solution for many overshft damper applications. The product accepts shaft sizes up to 1/2" (13 mm) in diameter.

### Features

- Controlled by a 2...10 Vdc signal. Control function direct/reverse action is jumper selectable
- Spring Return with 30 in-lb (3.4 N-m) of torque
- Polymer housing rated for NEMA 2/IP54 and plenum use
- Overload protection throughout stroke
- Automatically adjust the input span to match the damper/valve travel
- Compact size to allow installation in limited space
- Manual override to allow positioning of dampers and valves



DKN-MS4D-7033-100



### Specifications

Actuator Inputs Control Signal Power Input	See Table 1. See Table 1.
Connections	3 ft (91 cm) appliance or plenum cables, enclosure accepts 1/2" (13 mm) conduit connector. For M20 Metric conduit, use AM-756 adaptor.
Actuator Outputs Electrical	For voltage ranges, the feedback signal is the same range as the input signal.
Position Feedback Voltage	
Mechanical Timing Travel Manual Override	See Figure 1 and 2. 93° nominal. Allows positioning of damper or valve using manual crank.
RA/DA Jumper	Permits reverse acting/direct acting control.

Environment Ambient Temperature Limits Shipping & Storage	-40 to 160°F (-40 to 71°C). -22 to 140°F (-30 to 60°C).
Operating Humidity Location	15 to 95% RH, non-condensing.  NEMA 1, NEMA 2, UL Type 2 (IEC IP54) with customer supplied water tight conduit connectors. Enclosure is air plenum rated.

Table 1. 30 in-lb (3.4 N-m) Spring Return CCW Actuators (Viewed from cover side)

Part Number	Control Signal	Voltage	Wiring System	Actuator Power Input				Approximate Timing <sup>a</sup> in Sec. @ 70 °F (21 °C)		
				Running		Holding		Powered	Spring Return (CCW)	
				50/60 Hz		DC Amps	50/60 Hz			
				VA	W		W			
DKN-MS4D-7033-100	2...10 Vdc Proportional	24 Vac +/-20% or 20-30 Vdc	Plenum Cable	6.1	3.4	0.12	1.4	85	21	

## Typical Proportional Control (Wiring Diagrams)

Figure 1 illustrates typical wiring diagrams for a proportional DKN-MS4D-7033-100 actuator.

Caution: This product contains a half-wave rectifier power supply and must not be powered off transformers used to power other devices utilizing non-isolated full-wave rectifier power supplies. Refer to EN-206, Guidelines for Powering Multiple Devices from a Common Transformer.

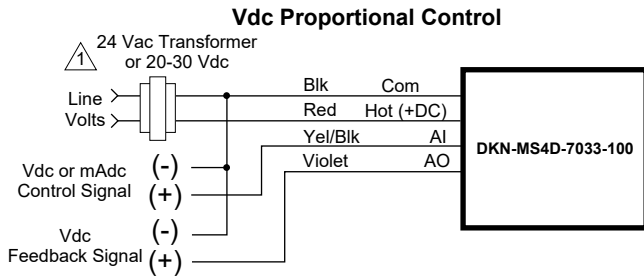


Figure 1 Typical Wiring Diagrams for Proportional Control.

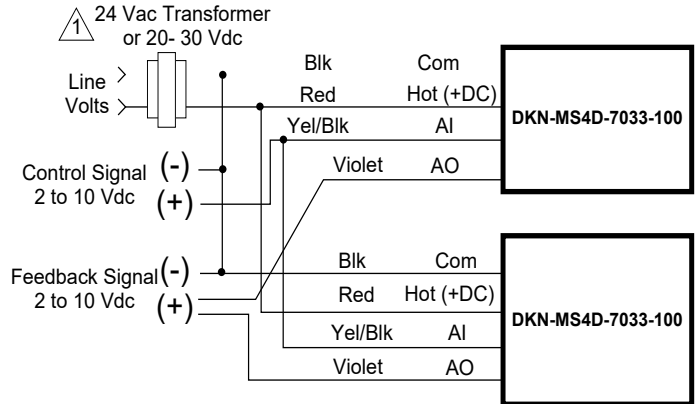


Figure 2 Typical Wiring Diagrams for Proportional Control Wired in Parallel.

- 1 Provide overload protection and disconnect as required.
- 2 Actuators may be wired in parallel. All actuator black wires are connected to the transformer common and all red wires are connected to the hot lead. Power consumption must be observed.
- 3 The Common connection from the actuator must be connected to the Hot connection of the controller. The actuator Hot must be connected to the controller Common.
- 4 If the controller uses a full-wave power supply and does not provide isolated outputs, a separate transformer is required.

## Installation

Inspect the package for damage. If damaged, notify the appropriate carrier immediately. If undamaged, open the package and inspect the device for obvious damage. Return damaged products.

### Requirements

- Wiring diagrams
- Installer must be a qualified, experienced technician
- 1/8" hex allen wrench (not provided)
- #8 Torx screwdriver (not provided)
- #8 sheet metal screws (2) (not provided)
- Appropriate drill bits (not provided)

### Precautions

#### Notice:

- Electrical shock hazard! Disconnect the power supply (line power) before installation to prevent electric shock and equipment damage.
- Make all connections in accordance with the job wiring diagram and in accordance with national and local electrical codes. Use copper conductors only.
- The product contains a half-wave rectifier power supply. It must not be powered with transformers that are used to power other devices utilizing non-isolated full-wave rectifier power supplies. Refer to EN-206, Guidelines For Powering Devices From A Common Transformer.
- Avoid electrical noise interference. Do not install near large contactors, electrical machinery, or welding equipment.
- Manual override to be used only when power is not applied to unit.
- When operating manual override (observe position indicator), back off 5° from full extended mechanical stop to ensure proper release.

### Federal Communications Commission (FCC)

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy and may cause harmful interference if not installed and used in accordance with the instructions. Even when instructions are followed, there is no guarantee that interference will not occur in a particular setting—Which can be determined by turning the equipment off and on—the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

### Canadian Department of Communications (DOC)

Note: This Class B digital apparatus meets all requirements of the Canadian Interference- Causing Equipment Regulations. Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

### European Standard EN 55022

Note: This is a Class B digital (European Classification) product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

### Location

Caution: Avoid locations where excessive moisture, corrosive fumes, vibration, or explosive vapors are present.

## Mounting

### Changing Control Function

The actuator is equipped with a jumper to control the function of the signal as received. Factory setting is for direct acting (actuator moves away from normal position as signal increases). Remove cover to change jumper settings.

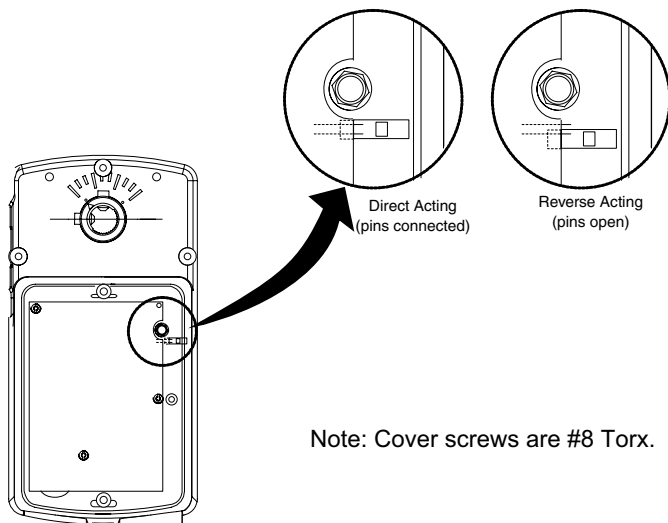


Figure 3 RA/DA Jumper Setting for DKN-MS4D-7033-100.

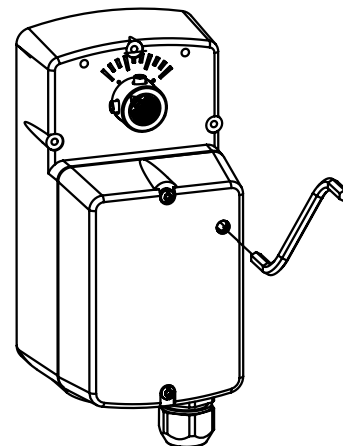


Figure 4 Location of Manual Override.

## Manual Override Operation

When necessary, the actuator's output shaft can be repositioned using the manual override mechanism as follows:

1. Disconnect power from the actuator. The internal spring will return the actuator to its normal position.
2. Insert the crank in the product. Without pushing in on the crank, rotate the manual override crank in the direction shown by the arrow on the product label until the actuator rotates to the desired position. Push in until the mechanism locks in position.
3. If you desire to reposition the actuator manually from a locked position, turn crank 1/8 turn counterclockwise and pull out to release. Adjust position as desired.

### Notice:

- Only use manual override when the actuator drive motor is not powered. (con't)

- Engaging the manual override when the actuator is powered will cause damage to the gears.
- Using power tools to adjust the override will cause damage to the gears.
- Avoid manually repositioning the actuator beyond its adjustable travel limit setting.

## Damper Mounting

### DKN-MS4D-7033-100 Actuator Rotary Damper

Notice: Do not drill additional holes in the actuator body. Pre-drilled holes are located on gear plate side to accept #8-32 thread-forming screws for mounting accessories.

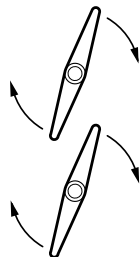
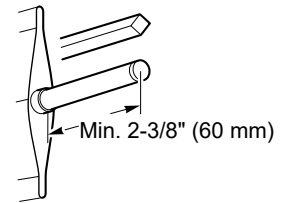
Note: The DKN-MS4D-7033-100 rotary actuators mount on shafts up to 1/2" diameter. Two set screws secure the actuator to the shaft.

Move the damper to its normal position. Verify the controller action is set to match the damper application.

Spring return models can be mounted from top or bottom.

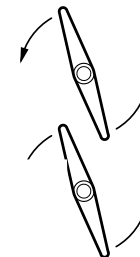
Normally closed damper: when damper is closed, actuator position indicator should be at 0°. When damper is open, actuator position indicator should be at 90°.

Normally opened damper: when damper is open, actuator position indicator should be at 0°. When damper is closed, actuator position indicator should be at 90°.



**Shaft Rotates  
Clockwise  
To Open**

This step determines shaft rotation. Linkage may change damper direction.

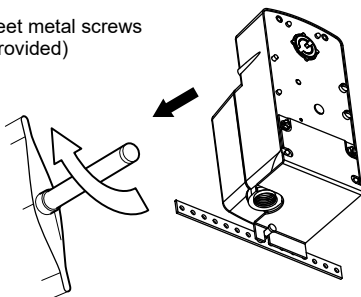


**Shaft Rotates  
Counterclockwise  
To Open**

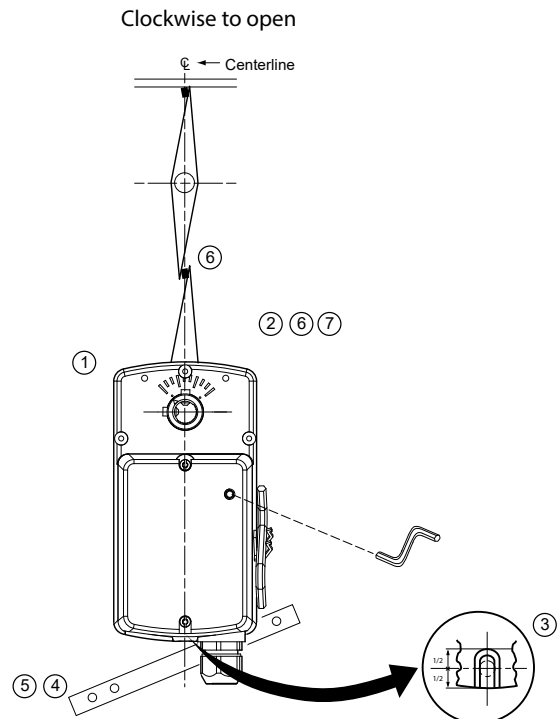
**Figure 5 Rotary Damper Position.**

1. Slide actuator over damper shaft.
2. To set a damper preload of 5°, use manual crank to position the actuator 2 full turns from the desired damper closed position. Lock the crank in position. See Manual Override Operation, page 4.
3. Hand tighten clamping set screws using 1/8" hex wrench.
4. Center the anti-rotation bracket in the slot and drill holes for two mounting screws.
5. Insert anti-rotation bracket mounting screws and tighten.
6. Tighten the two shaft set screws evenly to 50 to 60 in-lb (5.7 to 6.8 Nm) using a 1/8" hex wrench.

#8 sheet metal screws  
(not provided)



Reverse mounting  
using bracket  
provided



**Figure 6 Shaft Installation.**

## Wiring

See Table 2 for wiring data. Refer to Figure 1 and 2 for typical wiring.

**Table 2 Wiring.**

Actuator Voltage	Part Number	Maximum Wire Run in ft. (m)					
		12 AWG	14 AWG	16 AWG	18 AWG	20 AWG	22 AWG
24 Vac	DKN-MS4D-7033-100	1458	917	577	325	228	181

## Checkout

With the correct control signals applied, power the actuator. Observe movement of the output shaft to check for proper operation. Removing power should cause the actuator to spring return to its rest position. If problems are encountered, check the suggestions below.

Note: Check that the transformer(s) are sized properly.

- If a common transformer is used with multiple actuators, make sure that polarity is observed on the secondary. This means connecting all black wires to one leg of the transformer and all red wires to the other leg of the transformer.
- If multiple transformers are used with one control signal, make sure all black wires are tied together and tied to control signal negative (-).
- If the controller uses a full-wave power supply and does not provide isolated outputs, a separate transformer is required to power the actuator.

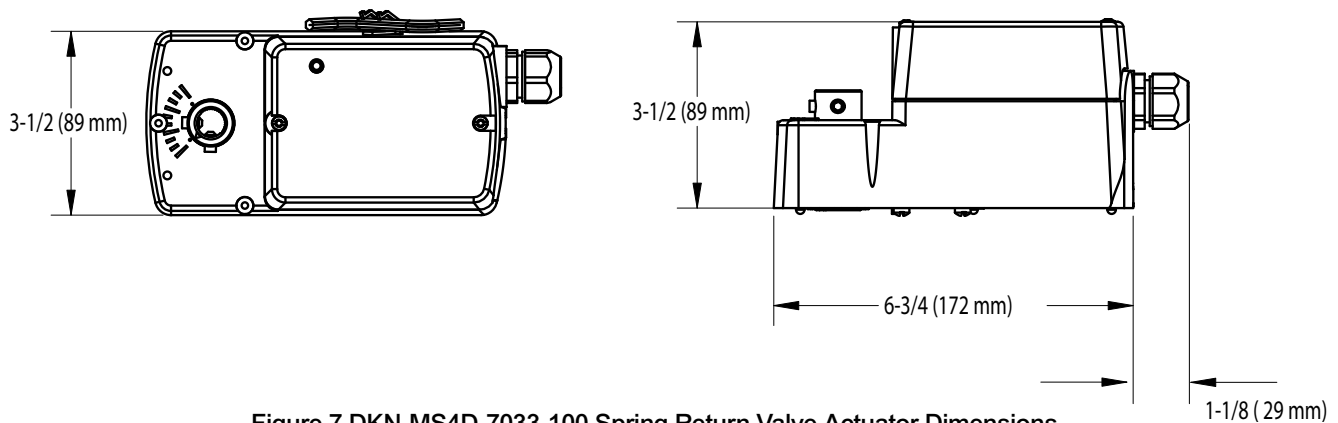
## Maintenance

Regular maintenance of the total system is recommended to assure sustained optimum performance.


## Field Repair

None. Replace with functional actuator.

## Dimensional Data



**Figure 7 DKN-MS4D-7033-100 Spring Return Valve Actuator Dimensions.**

Commercial Reference	Range Brand		Product Description				
MS4D-7033-XXX	DAIKIN LINEAR ACTUATORS		MS4D PROPORTIONAL 30-LBF SPRING-RETURN				
有害物质 - Hazardous Substances							
部件名称 Part Name	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)	
属部件 Metal Parts	X	O	O	O	O	O	
塑料部件 Plastic Parts	O	O	O	O	O	O	
电子件 Electronic	X	O	O	O	O	O	
线缆和线缆附件 Cables & cabling accessories	O	O	O	O	O	O	
<p>本表格依据 SJ/T11364 的规定编制。</p> <p>O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。</p> <p>X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。</p> <p>(企业可在此处, 根据实际情况对上表中打“X”的技术原因进行进一步说明。)</p> <p>This table is made according to SJ/T 11364.</p> <p>O: indicates that the concentration of hazardous substance in all of the homogeneous materials for this part is below the limit as stipulated in GB/T 26572.</p> <p>X: indicates that concentration of hazardous substance in at least one of the homogeneous materials used for this part is above the limit as stipulated in GB/T 26572</p>							